TheFSM | The Food Safety Market

The Food Safety Market: An SME-powered industrial data platform to boost the competitiveness of European food certification

D1.1: Report on Requirements for TheFSM

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ACRONYMS LIST

TheFSM	The Food Safety Market
DoA	Description of Action
WP	Work Package
EU	European Union
BR(s)	Business Requirement(s)
BSC(s)	Business Scenario(s)
rBRc	Reference business requirement category
CB	Certification Body
FSMS	Food Safety Management System
T	Task
D	Deliverable
GFSI	Global Food Safety Initiative

EXECUTIVE SUMMARY

The current deliverable aims at providing a preliminary framework regarding requirements mapping and analysis of TheFSM platform and constitutes the 1st version of business, data, legal and technical requirements under the TheFSM project. The deliverable documents the outcomes of the first iteration of the below tasks under WP1 Requirements, which is delivered on M4:

Task 1.1 Business Requirements [M1-M27]

Task 1.2 Technical Requirements [M1-M33]

Task 1.3 Legal Requirements [M1-M33]

Task 1.4 Data Requirements [M1-M33]

The requirements were examined under five (5) high level inspection and certification business scenarios in the food sector (food safety management and production systems, PDO/PGI and Organic wine certification, Dutch broiler meat case). The Report on Requirements for TheFSM includes the main business, legal and technical standards which will guide the implementation of TheFSM Platform, for the first year of the project (M1-M12)

The deliverable will be a living document which will be updated based on the results of each iteration of T1.1, T1.2, T1.3 and T1.4 (M4, M15, M27, M33) providing the relevant updated version of the document.

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1 INTRODUCTION

Within *WP1 Requirements*, we carried out a detailed analysis of all business transactions and data exchange workflows that we would like to channel through "***TheFSM*".**

The main objectives of the WP1 target in depth understanding of the needs deriving from critical business scenarios on food safety certification and address them into detailed technical, organizational, legal and commercial requirements for "*TheFSM"* platform. In this context the aim for developing the Deliverable 1.1. has been, to provide with an initial, but thorough insight of the core need from the food certification perspective, when data should be exchanged between the many different stakeholders and relevant sub-actors involved in this business area.
Deliverable "D1.1 Report on Requirements for TheFSM' assemble and documents all requirements that will be informing the work in the development and evolution of the data platform (WP2, WP3 & WP4).
The requirements analysis concerns the below high-level business scenarios (see section 3 for detailed description).

1. **Business Scenario 1: The retailer**
2. **Business Scenario 2: Food Processing**
3. **Business Scenario 3: Private Food Safety Standards Certification**
4. **Business Scenario 4: Organic PDO wine certification: the certifier**
5. **Business Scenario 5: Dutch food safety authority (NVWA) Inspection / The Dutch broiler meat supply chain.**

The above scenarios represent the core business activities of the pilot partners and are considered the ones that would benefit mostly from being channeled through the platform. Within D1.1. the business scenarios are described (T.1.1) as they are running today, so that the main data sharing challenges and pain points can be highlighted. Emphasis was given on understanding the major pain points of each stakeholder that participates, to explore how a trusted and secure data sharing platform could support them. Pilot partners during the 4 first months of the project also started the validation procedure via interviews, questionnaires and focus groups. Of course, these validation tools will serve as a continuous reference point throughout the lifetime of the project and will also be the candidate pool of local innovation partners with whom pilots will take place (in WP6). They will provide input to the description of digitized business scenarios, with an ideal TheFSM solution being in place.
To obtain relevant technical input for business scenarios (T1.2 & T1.4) specific requirements a common framework for mapping and analysis of the specific technical requirements was developed (see section 2. Methodology). This framework will provide the necessary requirements in detail for each of the business scenarios and end users. Moreover, the preliminary legal analysis (T1.3) provided a first introduction to the legal framework governing the business scenarios that have been selected, as we know them now, as well as potential issues that may arise in the project.

A list of detailed and concrete business, legal and technical requirements was created during the implementation of the 1st version of D1.1, as presented in the next sections. They will be revisited and updated once per year during the lifetime of the project.

The structure of the deliverable is as follows:

Section 1: Describes the scope, the audience, the structure and the relation of the deliverable D1.1. with the other WPs of the project

Section 2: Presents the working methodology of T1.1, T1.2, T1.3 and T1.4 in order to deliver the first release of the 1st Report on Requirements for TheFSM

Sections 3-4: Present the BUSINESS SCENARIOS (BSCs) maturation, development, evaluation process and the extraction of Business Requirements, Legal Requirements, Technical Requirements and Data Requirements

Section 5: Presents the validation process of Business Requirements

Section 6: Presents the next steps and milestones for the next versions of D1.1.

Section 7: Concludes the deliverable

Section 8: Annexes which include the timeline of D1.1., the working templates and tools, brief recording of Business Scenarios and detailed lists of Data and Legal requirements.

2 METHODOLOGY

This section includes the working methodology followed in T1.1, T1.2, T1.3 and T1.4. regarding Requirements Mapping (business, technical, legal and data) based on the nature and scope of the five high-level business scenarios.

The working methodology followed in D1.1. was developed under the following steps:

- Confirming the implementation plan / timeline and working tools with partners
- Brief recording of all scenarios / end user and per type of certificate with focus on the End Users
- Reviewing all the submitted BSs from partners, prioritization and confirmation of BSs with technological partners
- Finalization of the scenarios that will be described in the framework of D1.1
- Analyzing the selected Business Scenarios -1st draft (each partner conducts the 1st draft of his scenarios)
- Development of a questionnaire and agenda to facilitate gathering of info on the reflection of end users (certification clients) upon the platform in terms of validating their needs through this tool.
- Implementation of Focus groups - interviews (via skype, zoom, etc.) with customers and stakeholders to confirm scenarios and recording additional needs, based on the Questionnaire
- Evaluation and incorporation of the results of focus groups to the Business Requirements
- Integrating all Business scenarios from all partners into a single text, to get the Business Requirements
- Editing scenarios from a legal point of view including feedback of focus groups
- Incorporating the whole legal framework into the deliverable D1.1
- Technical specifications
- Data specifications
- Diligence and finalization of the deliverable

2.1 Working methodology

The method of identification and elicitation of the requirements is cornerstone when searching to gather all representative critical info that directly or indirectly affect or could potentially impact on a business case. The importance of efficiently gathering requirements is even bigger, when we initially visioning and afterwards planning to digitize the needs of a vertical and multi-sided marketplace, like the one of the food supply chain's certifications. The food Certification market that its stakeholders share a common need. The need to share food safety data in well-defined, automated, and robust ways, using secured and controlled mechanisms that may enhance trust and collaboration between each other during their daily transactions.

In the context of this project, a "*requirement*" can be defined as a stakeholder's need and the identification and elicitation is all about knowing the concerns and expectations of the stakeholder of any market as well as of the food certification market. It will provide a success basis for the project and the delivery of the expected system and it will reduce the gap between developers, stakeholders, and end users.

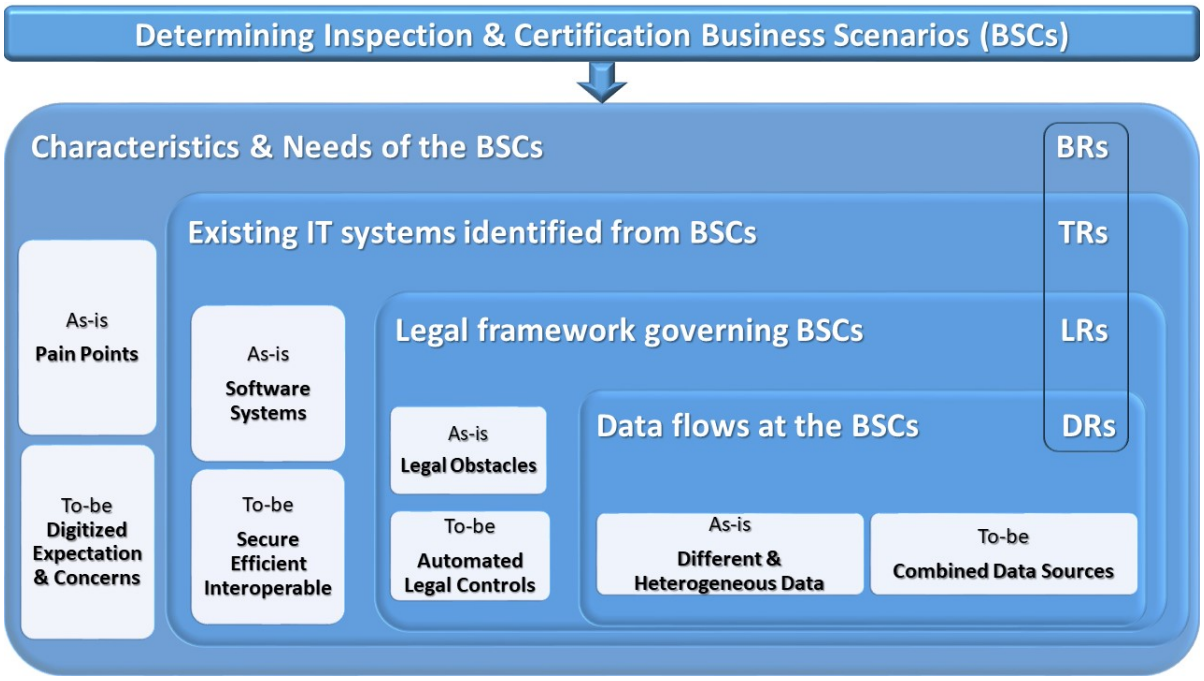

Figure 1. Main steps for determining the requirements for developing "TheFSM".

The method for the identification and elicitation of the requirements of "TheFSM" aimed to set the process for discovering the food certification stakeholders' (main actors or sub-actors) needs and collecting all the relevant requirements, through representative inspection and certification business scenarios.

When establishing this method, emphasis has especially been put on addressing the expected pain points due to the complexity of the interaction between the many different involved parties – as info providers or as info users in the food chain – the different types and formats of the info documentation that is needed for the certification process and others analyzed in this report.

The adequacy and the representativeness of the identified requirements at this collecting phase (WP1), has been a top priority issue for all the project's partners who has contributed for WP1.

This was mainly because, it was recognized that missing or wrong requirements could directly affect the overall quality of the entire architecture and the development of "TheFSM" platform, since these requirements will affect consequently "TheFSM" system's capabilities.

Thus, the first of the main objectives of the requirements' identification and elicitation methodology was to achieve, in the best documented way, the definition of the major stakeholders who interact in the food supply chain, as well as the recognition of their real needs and business expectations as currently exist, through defining and properly analyzing indicative, and at the same time representative Business Scenarios of inspection and certification, where digitized, secure and automated data flows may provide extremely high value to the supply chain stakeholders.

After having analyzed the existing operational context of the inspection and certification processes, determining the different IT systems being used throughout the food chain in order to facilitate the certification requirements, has been set as the second target to give us the needs from a technical perspective towards developing the platform.

Obtaining additionally a thorough understanding of the complexity of the commercial transactions within each business scenario, would have been also the third key differentiator towards identifying critical legal obstacles to deal with and overcome for reaching an automated legal compliance and control, when using "TheFSM" platform.

Knowing however that different and heterogeneous data should always be harmonically combined in order to have an efficient software tool for all of its users, the study of all the potential data flows was set as the last critical area of analysis for the project teams to further elaborate on them.

All the above recognized objectives to be met by the applied methodology, constituted the areas of focus and elaboration within each one of the four different project's tasks (T1.1, T1.2, T1.3 and T1.4) of the WP1, for providing a first introduction for the Business Requirements (BRs), the Technical Requirements (TRs), the Legal Requirements (LRs) and the Data Requirements (DRs), as presented in Figure 1.

2.2 Methodology for Business Requirements

2.2.1 The methodology objectives

The Business requirements are a high-level description of where "TheFSM" platform needs to be oriented in order to achieve its objectives. They are based on the vision of the process and on the vision of the architecture of the to-be design, as seen in Figure 1. Business requirements will be listed to act as key features and indicators, necessary to meet the objectives and strategies indicated for the project. The Business requirements will provide guidance for the project and are going to become the basis for further studying the Technical, Data and Legal Requirements, which are the rest of the main component of "TheFSM" development roadmap.

Therefore the methodology for defining "TheFSM" Business Requirements, determines and integrates the process of discovering, analyzing, defining and documenting the real needs of the stakeholders in the food certification chain, through a **goal oriented approach**, that are related to a specific business objective of an inspection and certification "use case" (Business Scenario).

The objectives of a concrete business requirements elicitation methodology, are:

- To map the processes and demands (pain points) of all the main actors (stakeholders) at the food certification market, in terms of data sharing, in order to explore how "TheFSM" as a trusted and secure data sharing platform could support them,
- To create the essential reference of understanding for all the project partners, and especially the technological and legal expertise ones, upon which reference they will afterwards determine the Technical, the Legal and the Data Requirements for developing the prototype "TheFSM", and
- To allow for categorizing all the validated Business Requirements, identified per stakeholder at each "use case", in certain common categories relevant to all the different certification "use cases", which will also guide the commercial exploitation of "TheFSM" platform in the food chain.

2.2.2 The methodology description

A focused and detailed business requirements analysis will help us to reduce the risk of facing at the finish project's phase, a mismatch between what has been designed through "TheFSM" project and what is actually needed from the end users of this tool.

For this reason a number of different inspection and certification Business Scenarios ("use cases"), relevant to the most known international certification standards for food safety and products' quality, have been recognized as important to be developed in order to provide the prerequisite baseline on which the Business Requirements elicitation methodology will apply.

The two critical concerns, before developing this strategic methodology, have been:

- To determine representative Business Scenarios (BSCs), both for the inspection and certification market, and for the stakeholders who are interrelating within the food supply chain with reference to sharing certification data,
- To identify and list all the predominant stakeholders (main actors) and the involved parties (sub-actors) that interact with each other in each one of the different Business Scenarios.

And these because the Business scenarios, on the one hand, provide a means with which the "TheFSM" community can link end users' (stakeholders) needs and technical solutions that the platform will provide. Besides making obvious what is needed, and why, will facilitate an efficient business requirements' validation process when reaching out the stakeholders, whereas they allow the "TheFSM" community to solve gaps and problems optimally at an early stage.

On the other hand, the identification of the predominant stakeholders has been recognized as an important task of the project, since once grouped, according to well defined categories to constitute the Target Groups to use "TheFSM" tool, they will be involved in the Business Requirements (BRs) elicitation process where business and user needs (technical, legal) are identified and captured.
Moreover, based on experience and references, the success of projects heavily depends on designers' ability to meet the needs and requirements of stakeholders throughout the entire life cycle.
In this context of "TheFSM" project, a stakeholder is any entity (individual or organization) with a legitimate expectation from the system, in other words, the stakeholders are all those who may be influenced or who would be able to influence the system in general.
And these stakeholders represent the source of the Business Requirements during the relevant requirement elicitation phase.

2.2.3 Methodology Tools

To achieve the objectives of establishing a concrete methodology for reaching out the Business Requirements of "TheFSM" project, two main process tools were set up, corresponding to two consecutive phases (Figure 2).

- The internal consultation for collecting information on Business Requirements and technologies.
- The external consultation for validating the initially defined Business Requirements from the internal consultation phase.

During the internal consultation phase, one of the basic tool used for collecting information on the BRs was the implementation of interviews conducted by each one of the certification partners with the certification executive staff of their organizations.

Each one of the certification partners gathered relevant information by communicated with lead auditors, audit reports' reviewers, certification staff granting certification etc. who held the expertise and knowledge upon the different food certification standards that have been applied and studied at each one of the project's Business Scenarios. The specialized results of this communication with the

certification staff of each certification partner, was gathered in "MS Excel" templates, which had both been developed with reference to all the critical points of concern for the project. (ANNEX II BRIEF RECORDING OF ALL SCENARIOS / END USER -BUSINESS REQUIREMENTS MATURATION PROCESS)

The tool of the remote call meetings (zoom) has been also utilized throughout the WP1 to exchange feedback between the contributing partners of this work package, based on the draft recorded business requirements.

The interaction of the WP1 project team with external parties, was exclusively focused on the predominant stakeholders' initial awareness on the objectives of "TheFSM" project. Through the external consultation phase, these main actors of the food certification market were asked to comment on "TheFSM" initiative and assess the level on which the identified Business Requirements meet their real needs and thus to validate them. The tools used for this phase have been analyzed in more details at Paragraph 8.

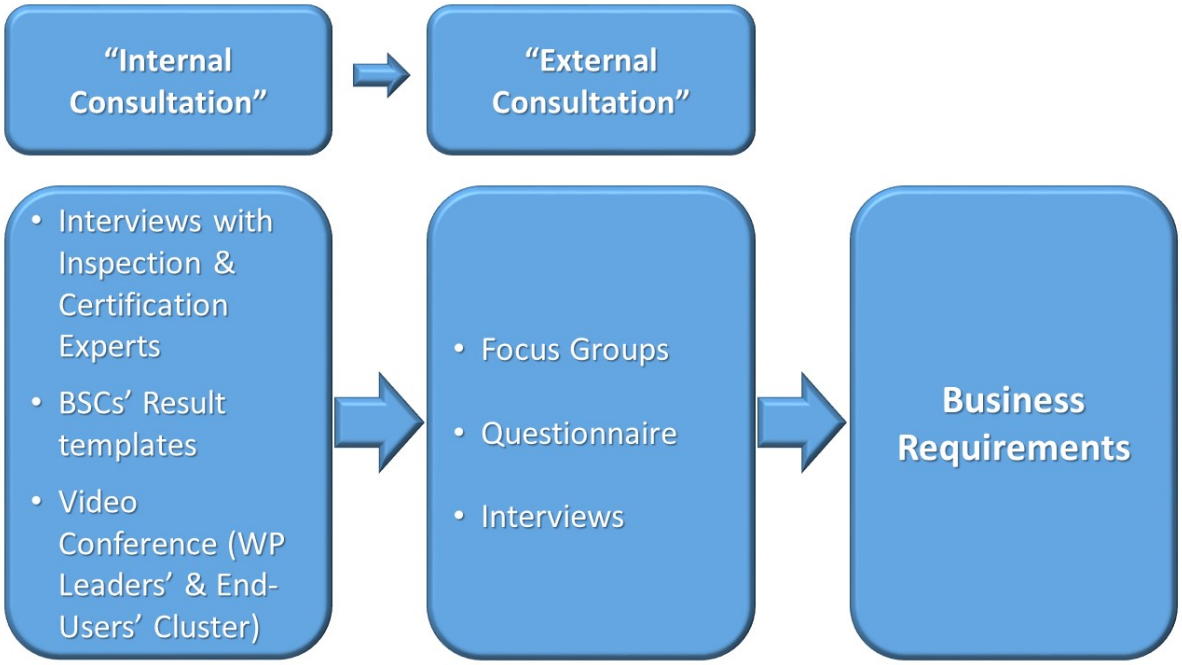

Figure 2. The steps and techniques towards reaching out the Business Requirements

Through this methodology used, where our assumptions about the certification market's needs have been challenged, and our plans and decisions were based on the most likely outcomes, the WP1 tasks aimed to safeguard that the decisions taken will more likely be sound, even if circumstances change during the project's lifetime.

2.3 Methodology for Technical Requirements

2.3.1 The methodology objective

The objective of Technical Requirements (task 1.2 DoA) is to analyze the current technical landscape of systems and processes being used within the business scenarios from the perspective of connectivity, interoperability, standardization, security and data accessibility. The preliminary analysis aims to provide the initial set of technical requirements that would further be developed iteratively

during the project based on direct learnings through analysis and pilot implementation, and in accordance with the legal, data and business requirements.

2.3.2 The methodology description and working tools

In order to perform the initial technical requirements analysis for the FSM, it was necessary to first understand the technical and non-technical systems and processes involved in the food certification industry. During the first iteration, the focus was on performing two key analyses:

1. Reviewing the existing technical systems
2. Reviewing business and data requirements

Reviewing the existing technical systems was performed in cooperation with the project partners and estimated from the perspective of core functionality, accessibility, and standardization. Due to the vast technical landscape of different tools being used by the stakeholders, one of the immediate conclusions was that the necessary solution would require a high degree of technical interoperability in order not to replace the existing systems in the ecosystem of FSM.

The initial technical requirements also consider the initial version of the business and data requirements outlined by the partners, which provide the necessary guidance on technical system boundaries relevant to the business cases. The findings relevant to legal requirements were also considered to enable the technical foundation in accordance with the regulatory frameworks relevant to FSM.

Since the body of work covers a wide range of domains (technical, legal and business) it was necessary to perform the requirements analysis from two perspectives:

- **Infrastructural requirements** ("Wide angle"): Given that the FSM needs to incorporate a large number of different technical systems, data formats and technical mechanisms, a generic technical approach is needed to establish the necessary data exchange and trust protocols. As the goal is to connect various different systems to achieve interoperability in mentioned domains (system interoperability and data interoperability in particular), the infrastructural technical requirements for FSM need a generic approach, setting fundamental technical boundaries needed for FSM to provide value to end users and enable the stakeholders to take part in trusted data exchanges.
- **Scenario specific requirements** ("Narrow angle"): By carefully analysing each specific business scenario and their relevant business requirements, the more specific technical requirements are to be developed, particularly when it comes to user-facing interfaces and specific systems utilized in each scenario.

During the initial stages of the technical requirements development the focus was to provide a high degree of specificity on the infrastructural technical requirements to facilitate necessary technical discussions pertaining to all relevant systems.

To ensure clarity of the infrastructural requirements formulation, the industry best practices for requirements definition have been used, embodied in the RFC 2119 of Internet Engineering Task Force (IETF).

To obtain relevant technical input for scenario specific requirements we have developed a common framework for mapping of the specific technical requirements for each scenario, available in ANNEX VII – TECHNICAL REQUIREMENTS WORKING TEMPLATE and collaboratively compiled the necessary

input with partners. Together with the initial input from the business and legal requirements for each scenario, this framework will provide the necessary requirements in detail for each of the use cases. The scenario specific requirements are still in development.

2.4 Methodology for Legal Requirements

2.4.1 The methodology objective

This preliminary legal analysis (T1.3 DoA) on the legal requirements aims to provide an introduction to the legal framework governing the business scenarios that have been selected for TheFSM. The purpose of the section on legal requirements within D1.1.1 is to sketch legal considerations for the examined scenarios, as we know them now, as well as potential issues that may arise in the project. The legal analysis reflects the early stage in M4 of TheFSM. It is part of four interrelated Deliverables on the relevant requirements of the project (D1.1.2, D1.1.3, D1.1.4). The legal requirements will be updated according to the specific circumstances of the case scenarios and the respective current legal situation and development at the time of the following versions. The preliminary study of T1.3 will lead further into and will be elaborated in WP 5 “Legal”.

2.3.2 The methodology description and working tools

The business scenario and requirements provided by the respective partner determined the facts for the launching of legal analysis. This procedure was divided in two distinct stages, the 1st stage included a legal review of the business scenarios before the finalization of the use cases and the 2nd stage, which included the legal analysis before and after the validation procedure of business requirements. This initial legal analysis identified the main legal issues, documents and steps to be taken as legal requirements, as known in this early stage of TheFSM, when developing the platform. A legal analysis was provided/carried out per main actor within the business scenarios and taking into consideration the sub-actors. The legal analysis structure includes:

1. Processing of personal data

2. Governance of non-personal data

3. Commercial exploitation of public and open data

4. Preliminary list of relevant food safety regulations and applicable certification standards

As all main actors interact with different other main/sub-actors and as the activities and exchanged data differ, evidently the legal perspective and thus the legal analysis/answer for every main actor might differ. As the platform develops, the level of detail will increase, proving this distinction essential.

2.5 Methodology for Data Requirements

2.5.1 The methodology objectives

The first step towards the implementation of the data requirement analysis was the identification and analysis of the collected and generated data. Through this process we aim to map the landscape of data in the specific context of the TheFSM project and to obtain a better understanding of the context

on data requirements. Data requirement mapping focused on the analysis and documentation of important data flows within each business scenario (5 in total) presented above on Business Requirement methodology. The main objective is recording an understanding of existing workflows for sharing critical information, either through software systems or through other channels. For each business scenario the corresponding data are documented and analysed- focusing on both on primary data sources that are being collected or measured across the supply chain, as well as processed or secondary data that is being generated from the original sources. Representative samples of data were collected from all business scenarios, to better understand their format, types, exchange flow and sources. The above process will be revisited and updated at least once per year during the lifetime of the project.

2.5.2 The methodology description and working tools

The data analysis phase was part of the definition of the five business scenarios (thoroughly explained below on Section 3) and focused on the data requirements, workflows, sources, types, formats and challenges. In this context, a shared document has been circulated to the project partners. Its structure reflects the dataset characteristics defined in ANNEX III PROJECT REQUIREMENTS WORKING TEMPLATES, that capture relevant information on all issues related to the business scenarios.

In the context of the Project, a dataset is defined as any set of data (no matter how many files it contains) that is meaningful to be considered as a unit from a data analysis perspective.

Examples of possible datasets are the following:

- Food recalls
- Border rejections
- Inspections
- Certifications

2.5.2.1 WORKFLOWS FOR SHARING INFORMATION

The workflows for sharing critical information between actors and sub-actors for all business scenarios occur either through software systems or through other channels. A detailed list is presented below.

Through software systems
• B2B platforms (automated or manual entries) • Interface to databases • APIs • Sensor devices • Website searches and scrapping

Other channels
• Post office, couriers • Emails • Face to face communication • Telephone calls • Teleconferences • Website searches (manually)

2.5.2.2 DATA SOURCES FOR EACH BUSINESS SCENARIO

Existing data and their metadata will be imported into the TheFSM Data Exchange platform during the project. At this 1st phase the mapping (derived from one or more datasets that relate to each business scenario) of all important data is completed. The imported data will be combined, processed and analysed further, generating additional data.

The primary data collected during the identification of business requirements refer to:

Primary Data Sources
• Farm management systems • Certification Bodies Databases • Laboratories Databases • National authorities (inspection data, official monitoring) • Public authorities • Schema Owners Databases • IoT Devices • Sensors • GIS applications • Processing Management Solutions (e.g. ERP etc.) • Certification Management Solutions (e.g. CRM etc.) • Trading Management Solutions (e.g. ERP etc.) • Public databases (FAOSTAT, RASFF, EMM, Eurostat, etc.) • European Media Monitor (EMM) and Social Media • Websites

2.5.2.3 REPRESENTATIVE SAMPLES OF DATA FROM ALL PARTNERS

To understand in depth different formats of the data it was asked from all partners to document the data formats involved in each business scenario. Following their analysis, a list was created:

Data Formats
• csv • tsv • Excel • Pdf (e.g. reports) • Word • Html • xml • MS office • handwritten documents • hardcopies from corresponding electronics (scanned documents) • images (e.g. jpg)

Data Types
• Food recalls • Board rejections • Laboratory data • Inspection results • Certificates

- Weather forecast
- Agricultural warnings
- Approved pesticide databases
- Supplier profiles
- Farm data
- Producer data
- Consultant reports
- Consumer complaints
- Audit reports
- Inspection reports

2.5.2.4 DEFINITION & ANALYSIS FRAMEWORK OF DATA REQUIREMENTS IN THE CONTEXT OF TheFSM

During the 1st phase of the project requirement analysis, a standard set of data requirements/principles was created as a roadmap for identifying, analyzing, and validating data requirements during the lifetime of the project.

Data Requirements
• Data standards: to comply or reuse existing standards whenever possible • Data format: define the format that data should be exchanged • Data exchange: use the existing infrastructure • Uploading data: easy upload process, minimum cost • Data accessibility: To provide a way to limit the data access of each actor depending on his role • Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository • Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles. • Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages • Data security

<u>Data standards</u>

The consortium will strive to comply or reuse existing standards whenever possible. Although original data sources may conform to different formats and standards, data processed by TheFSM data layer will have been likely transformed into formats complying with a set of well-known standards for the agri-food sector. As an example, relevant standards could be:

- AgroVoc : a controlled vocabulary for describing food, nutrition, agricultural, marine, forestry, environmental information. It is also part of the GACS initiative, which aims to map the core concepts of three major thesauri AgroVoc, CAB and NAL .
- ICASA : data format for documenting experiments and modelling crop growth and development, facilitating exchange of information and software
- Food Safety Knowledge Markup Language (FSK-ML): In development with the participation of BfR, aiming to describe data and models relevant to risk assessment tasks
- Food products classification by European Food Safety Agency (FoodEX2 https://www.efsa.europa.eu/en/data/data-standardisation)
- International standard for country codes and the use of an ontology like Geonames

- Data standard for exchanging the information of businesses (euBusinessGraph project https://www.eubusinessgraph.eu/ and InnoRate (http://innorate-project.eu/)):
  - The Organization Ontology
  - Registered Organization Vocabulary
  - Global Legal Entity Identifier (GLEI or LEI)
  - GLEIF Registration Authorities List
  - Entity Legal Form (ELF)
  - e-Government Core Vocabularies , standardized by the W3C, developed by the ISA2 SEMIC Joinup semantic interoperability initiative
  - Financial Industry Business Ontology
  - Statistical classification of economic activities in the European CommunityNACE Rev. 2
  - GICS - Global Industry Classification Standard
  - Thomson Reuters Business Classification (TRBC)
  - International Standard Industrial Classification of All Economic Activities (ISIC), Rev. 4
  - Industry Classification Benchmark (ICB)
- eCl@ss classification and product description is an ISO/IEC-compliant industry reference-data standard for the classification and unambiguous description of products and services. The classification establishes a uniform semantic standard, enabling Internet of Things and product master data to be exchanged digitally across all borders – across sectors, countries, languages and organizations. eCl@ss provides 39 subject areas which include among others logistics, food, laboratory, technology, office supplies etc. The classification is being used by the IOTA Data MarketPlace.

In TheFSM, access to data assets is regulated through Attribute-Based Access Control (ABAC) policies, based on the XACML OASIS standard, that allows the data providers to protect and share their data assets, even when they do not have any prior knowledge of the potential individual data consumers in the food certification data value chain. XACML promotes common terminology and interoperability between access control implementations by multiple vendors.

As a general principle, the consortium is going to reuse conceptualizations and adopt broader standards where possible (dcterms, foaf, etc.). As the project supports a Linked Data approach, when applicable, the vast majority of resulting datasets are expected to comply with semantic standards (RDF/S), and additional standardisation activities done by the World Wide Web consortium (W3C), such as OAI-ORE's JSON-LD implementation.

In addition to the data collection activities, TheFSM will also generate its own valuable data assets in terms of metadata that will improve the description, interlinking, normalization, unification, and quality assessment of the collected datasets. The use of W3C standards such as PROV-O for provenance, and DCAT for data catalogue description will be encouraged.

Data Accessibility

Data access will vary depending on the storage location. Starting with the use case data, measures will be taken to enable third parties to access, re-use, analyse, exploit, and disseminate the data (bound by the license specifications). Different access procedures will be implemented, enabling the export of an entire dataset as well as the provision of a querying interface for the retrieval of relevant subsets. Access mechanisms will also be supported as much as possible by metadata enabling search engines and other automated processes to access the data using standard web mechanisms.

Data Storage

Data resulting from each business scenario will be stored in TheFSMs data catalogues. Depending on the nature of the data, a dataset might eventually be moved to an external repository. Data generated via other means can have additional hosting arrangements.

Data Preservation

Since the majority of data integrated and generated within the TheFSM infrastructure will abide by the Linked Open Data (LOD) principles, the consortium will follow the best practices for supporting the life cycle of LOD. This includes its curation, repair, and evolution, thus also increasing the likelihood that machine-readable structured datasets (and associated metadata) resulting from project efforts can also be of long-term use for third parties.

Data Privacy

In the case that a dataset contains sensitive corporate or personal data, privacy protocols need to be established, in compliance with GDPR and followed throughout the aggregation, processing, and publishing stages. The anonymization of personal information should precede the processing stage. If additional data pre-processing measures need to be taken to safeguard individuals or groups, they will be specified in the Dataset characteristics form. If the data processing results still produce sensitive data, access controls will be enforced and described.

References:

http://aims.fao.org/vest-registry/vocabularies/agrovoc-multilingual-agricultural-thesaurus
http://www.agrisemantics.org/gacs/
http://www.cabi.org/cabthesaurus/
https://agclass.nal.usda.gov/
http://dssat.net/data/exchange/
http://www.w3.org/ns/org#
https://www.w3.org/ns/regorg#
https://www.gleif.org/en/
https://www.gleif.org/en/about-lei/gleifregistration-authorities-list
Code https://www.gleif.org/en/about-lei/common-datafile-format/lei-cdf-format
https://joinup.ec.europa.eu/asset/core_vocabularies/asset_release/core-vocabularies-v20#download-links
https://spec.edmcouncil.org/fibo/
https://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.PDF
https://www.msci.com/gics
https://www.refinitiv.com/content/dam/marketing/en_us/documents/quick-reference-guides/trbc-business-classification-quick-guide.pdf
https://unstats.un.org/unsd/publication/seriesM/seriesm_4rev4e.pdf
https://www.ftserussell.com/data/industry-classification-benchmark-icb
http://www.w3.org/TR/prov-o/
http://www.w3.org/TR/vocab-dcat/
https://gdpr-info.eu/
https://docs.google.com/spreadsheets/d/1-Kd2v60ZQCjPpmZYkL58IBpMAQlN17di_dx216_kujs/edit?usp=sharing

2.5.2.5 DATA CHALLENGES

Combining different and heterogeneous data sources
• Translate technical documents to multiple languages • Combination of different databases (with different structures) • All certification clients will have to align their data format (type) based on the technical specifications of the 'TheFSM' to facilitate quick sharing. • Encompass all the different requirements for uploading data to every potential scheme owner's databases. • Ease of Uploading data (user friendly to limit time and effort) • Loss of data through hack attacks or insufficient secured data cause an irreversible lack of ability to deliver and compromise the organization (Data security). • Implementation of an integrated data system is costly. Existing systems are partly old and incompatible and must be renewed. • Historical grown data systems are often not efficient but work in compliance with operative processes. Transparency of operative processes is low and analysis and necessary adoptions of existing processes is not done during digitalization projects. New data systems are risky. • Improper implementation of digitalization can cause inefficiencies in operational processes and in a leak of ability to supply • Protection of all the sensitive business and commercial data of all the involved parties in the food supply chain (e.g. Certification Body) • How to access live data

Transforming of data from one format to another
• Handwritten data should be digitized • Extract information from unstructured data (e.g. texts) • Get metadata from image files • Multiple languages translated to English

3 THE BUSINESS SCENARIOS (BSC)

Inspecting, auditing and certifying supply chain management system means that a numerous different sourced information and complicated parameters should be assessed simultaneously and relevant data that evidently prove their compliance against different certification standards and schemes' requirements, should be recorded and communicated properly in the certification marketplace.

Moreover, for the food supply chain, the many different technologies used and applied are, their selves, a contributor to complexity when investigating to open new directions for the management and operation of a marketplace via new innovative services that combine, enrich and serve heterogeneous data sources, types and formats, like "TheFSM" aims to achieve.

Based on this facts, drafting and developing a set of fully representative to the food safety market Business Scenarios has been an unsurpassed technique that can be used at various stages of "TheFSM" project when defining software architecture, to derive the appropriate characteristics that the components of the solution should maintain, directly from the high-level requirements of the food business.

3.1 Business Scenarios Characteristics

The representativeness as the critical characteristic of the BSC, will allow "TheFSM" technical project partners to specify the real values that the developed solution should provide to this complexed and multitasking food certification chain.

The level of the project BSCs' representativeness will be significantly affected by indicative factors such as:

- The specificity and analysis of the BSC in terms of the central idea of the solution, to facilitate secured and controlled data sharing. The deeper the BSC analysis, relevant to the current situation when exchanging data in the certification food chain, the most thorough the identification of the pain points will be, the challenges to overcome and the goals to meet.
- The realistic approach when initially decoding the needs and afterwards combining the relevant solutions for the different involved parties in the food supply chain, in order that the needs can be covered within the bounds of physical reality, time and cost constraints

3.2 Aims and Objectives of Business Scenarios development

Before developing the BSCs for the WP1, all the recognized critical characteristics that should govern each one of them and the objectives they should meet, where analyzed to the project team during scheduled video conferences for both the WP leaders' group and the cluster of the "End-Users".

Based on them the main target set for the exercise was to contribute for achieving real value to the project by:

- Reducing the risk in the development of "TheFSM" architecture and solution
- Avoiding lock-in to proprietary architecture methodologies and products
- Delivering greater freedom and flexibility to respond to changing business needs

To reach this target, the general objectives when introducing the BSCs in the WP1 has been:

- To map the business interactions taking place in the food supply chain when comes to food certification,
- To identify the special characteristics of the opportunities, occur in the food certification marketplace, in terms of exchanging data,
- To determine the burdens to overcome towards achieving the efficient establishment of a solution like "TheFSM",
- To identify specific current pain points in the food certification market, with reference to transferring and collecting relevant needed information, which could turn to become a competitive advantage for "TheFSM".

3.3 Business Scenarios development

3.3.1 The Business Scenarios project teams

In order that the WP1 makes full use of the experience and expertise that the project consortium gathers, five (5) Project Teams where established, during the kick-off meeting of the project, with the contribution of all the different partners of the project.

The main task of each team had been to design the needed representative Business Scenarios to support the objectives of the project starting with the WP1.

At each team a pilot partner holding the experience on food safety and the certification marketplace, such as TÜV AUSTRIA, TÜV AUSTRIA Cert & TÜV AUSTRIA Romania, Valoritalia, as well as partners with relevant knowledge on food safety issue, such as Agroknow and WFSR, were appointed as team leaders to coordinate the development of a representative Business Scenario relevant to the food inspection & certification area.

Where possible, a representative of each one of the technical and the legal partners also participated at the majority of the five project teams, in order to provide their expert insight and also enrich their understanding and awareness on the inspection and certification processes and operational needs, in order to facilitate their efforts for analyzing Tasks 1.2, 1.3 and 1.4 of WP1, with reference to the Technical, Legal and Data requirement elicitation respectively.

Specifically, the members of each one of the five teams were:

Project Team Scenario 1
Team leader:
AGROKNOW
Team members:
AGRIVI
External interested parties:
GlobalGAP
IBM

Project Team Scenario 2
Team leader:
TUV AUSTRIA Hellas
Team members:
UNIVIE
SAI

Project Team Scenario 3
Team leader:
TUV AUSTRIA Romania
Team members:
TUV AUSTRIA CERT
PROSPEH
SAI

Project Team Scenario 4
Team leader:
VALORITALIA
Team members:
UBITECH
Agrivi
SAI

Project Team Scenario 5
Team leader:
WFSR
Team members:
UNIVIE
Agroknow
SAI

3.3.2 The initial Business Scenarios drawing

In order that each project team would have been fully aware and being capable to brainstorming towards capturing the scope of their Business Scenario, an array of critical targets to be met and accomplished by them, had to be analyzed and decoded, at that initial drawing phase.

The fundamental goals that each Project team had to take into consideration when setting up their Business Scenario had been to:

- Choose the one that would potentially benefit mostly from being channeled through the platform
- Recognize all the potential stakeholder and involved parties related to the Business Scenario in terms of the food certification perspective,
- Describe the BSC's critical points, relevant to inspection and certification data sharing, as they are running today, so that the main challenges and pain points can be highlighted, and
- Identify and point out all the potential goals to be met through "TheFSM" system.

Beyond the above target, a more precise approach towards the development process of the BSCs, was communicated to the team leading partners, aiming to effectively reach out the objectives of the WP1 and its relevant scheduled tasks.

Specifically, these areas of concern that are also widely recognized as critical for enabling innovative solutions to food safety issues in the supply chain, were categorized in three axes in order to inspire the initiation of the BSC drafting. These have been:

- Axis 1: Innovating Data Exchange for Food Safety Certification & Verification
- Axis 2: Innovating Data Integration & Linking for Monitoring, Tracing & Predicting Risks in Food Production Lines
- Axis 3: Innovating Real-time & Intelligent Data Sharing for Suppliers

The consensus behind each one of the above axes, in terms of the expected innovations and "TheFSM" solution outcomes, could be analyzed, as follows.

Axis 1
Innovative Expectation.
The food safety inspection and audit to become a fully digital process with data assets that the inspector or the auditor could interact with and use as a starting point to navigate through the audit workflow
Innovation Outcome
An online dashboard to serve mainly the inspectors and auditors of the Certification Bodies *(Food Inspector)*

Axis 2
Innovative Expectation.
Through mapping the critical control points of the production lines, to provide each product batch with data-powered certification badge integrating critical safety and quality information relevant to its production and delivery journey
Innovation Outcome
An online dashboard to serve mainly users from food companies *(FOODAKAI 2.0)*

Axis 3
Innovative Expectation.
To automate the process of collecting and sharing real-time data to the maximum extend
Innovation Outcome
A farm management system to serve exchanging certification-relevant data

This process was followed by the initial drawing of the five (5) scenarios with the cooperation of all the involved members of each project team.

The draft BSC were presented to all the project partners, as a sequence to the kickoff meeting. These early draft BSC structures focused mainly on key aspects of provided information such as the aim, the involved parties (stakeholders), the types and forms of the data sources.

The basic characteristics of the five-initial draft BSC, in terms of their goal and the stakeholder to whom they address, are presented below.

Business Scenario1
Key Stakeholder: The retailer
Main Goal: To deliver solution to the Food Safety and Quality Assurance (FSQA) experts working in a Retailer need to assess the risk of the suppliers, producers and manufacturers

Business Scenario 2
Key Stakeholder: The Food Processor
Main Goal: To deliver a solution to a Processor maintaining a certified FSMS (FSSC22000) to efficiently adapt to upgraded certification needs (IFS) imposed by its client (retailer)

Business Scenario 3
Key Stakeholder: The Certification Body

Main Goal: To deliver solution to a Certification Body for planning and realizing the certification process with reference to Private Food Safety Certification standards in an efficient way

Business Scenario 4
Key Stakeholder: The Certification Body for Organic PDO Wine Production
Main Goal: To deliver solution to Certification Bodies which will allow the interface of certification data between them for efficiently issuing certificates

Business Scenario 5
Key Stakeholder: Food Safety Authority
Main Goal: To deliver solution to food safety authority to map the full broiler meat supply chain

Critical part of the initial BSC drawing phase was the initiation of a harmonization process addressed to all the project teams relevant to gathering and recording the needed information when analyzing further their BSCs.

A uniform way to implement the BSC analysis, would allow for obtaining readily utilizable results, since all would have met the same assessment criteria towards specific fields of interest. For this reason, an excel template (see ANNEX II Brief recording of all scenarios / end user -Business Requirements development process) was proposed to be used by all project team, for data recording.

This template predefined all the necessary fields for providing info, relevant to the objectives of the WP1 task 1.1 during the "internal consultation" phase. These fields were addressed to every stakeholder who was identified, per BSC, as main Actor and were described according to the following components:

Table 1. Gathering the needed info for the BSC analysis

Field 1. Role in a Certified Food Supply Chain
Stating the responsibility of the main actor (stakeholder) in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM
Field 2. Interrelation with Main Actors in Food Safety Certification
Stating how this main actor interrelates with other main actors in the supply chain
Field 3. Data Type of Main Actor
Stating which could be the type of this actor with reference to the data that he handles in the supply chain (e.g. data provider, data user)
Field 4. Data exchange flow with Main Actors
Stating the direct data exchange flow that this actor has with other main actors in the certified supply chain
Field 5. Data sources
Stating the potential sources of the data that the main actor handles
Field 6. Sub-actors
Stating the supportive to the main actor involved parties (sub-actors) which are entities indirectly involved in the Certification Process of the main actor. A sub-actors may interact with the main actor, during his course towards the certification by e.g. assisting, supplying, controlling part of the actor's operation, therefore he may provide or use data related to the Main Actor's certified operation.
Field 7. Type of Interaction with Sub-actor

Stating the way of interaction (involvement) between a sub-actor and the actor of reference. For each interaction, the related type of data exchange and data flow within the "TheFSM" platform are also stated
Field 8. Current Data Format
Stating the most common and usual format of the available data maintained by the Actor
Field 9. Goal
Stating the business opportunities and needs, based on which the "TheFSM" would benefit the Main Actor
Field 10. Challenges
Stating the challenges to overcome and cover, in order for the main actor to exploit the expected goals (how to get the relevant benefit from the Solution)
Field 11. Legal Obstacles
Stating the recognize basic legal obstacles governing the sharing of info in the supply chain

The above structure has been followed uniformly from all project teams, when developing each one of the five different BSC. The relevant initial drafting templates for the five scenarios, can be seen in ANNEX III PROJECT REQUIREMENTS WORKING TEMPLATES.

Apart from providing a primary structured approach to analyzing the critical factors engaged with the five BSCs, this first project output, aimed to constitute an important tool to be taken into consideration from all the technical and Legal expertise, in order to help them promptly prepare or accordingly adjust or verify, their strategy for other project tasks strongly correlated with the results of WP1.

3.4 Assessing the Business Scenarios

The initial drawing phase, where all the drafted BSCs had been presented by the project teams in a uniform way, was followed by an initial assessment phase. This step was taken by the WP1 lead partner, aiming to confirm that all or the majority of the target set had been met, or the concerns raised in the BSC's preparation phase were tackled successfully.

During the assessment process all the predetermined targets that each BSC should have met were evaluated. The measurable key indicators used to objectively assess the adequacy and appropriateness of the BSCs, were:

- The existence of documented data flows and transactions within a business scenario (target: >15 overall)
- The number of supply chain stakeholders involved in each business scenario (target: >3 different stakeholders engaged in data transactions within each scenario)

Based on the above measurable criteria, as well as the predefined goals that each BSC should have met, all the five developed BSC, as submitted with the excel templates, were assessed as sufficient to support further actions towards identifying those Business Requirements to boost drawing the architecture of "TheFSM".

Before ending up to the above conclusion, some issues of concern, relevant to the suggested and initially drawn BSCs had been taken into consideration. However, these were considered as points of minor importance for the course of the project, which would not affect its outcomes but which could rather give the project a more expanded approach towards achieving its objectives. Specifically, the points of concern were the following.

All the BSC recognized and analyzed the Certification Bodies, as part of the food supply chain, even though the role of CBs is supportive to the stakeholders of it. However, the assumption of counting

the CB as a main actor of the food supply chain was assessed not only to be accepted but rather critical for a research project with reference to the benefits of sharing certification data throughout this chain.

In this direction, the fact that the Food Authorities were identified as main actors at the food supply chain, despite the fact that this is fully oriented in supervising the performance and efficiency of the implementation of the national and European food legislation in a EU country, to manage risks in the food chain and respond effectively to any national or international food incident or crisis, again was considered as legitimate against the objective of the project. And this due to the fact that the European Food Authorities ensure the safety, integrity and authenticity of the food chain by detecting, deterring and preventing breaches of food law and taking action to protect consumers, through an inspection mechanism.

Moreover, the organic farming, despite the fact that it is not a GFSI standard, which have been defined as focal point by the project grant agreement, it deals with an evergreen and most important EU legislations bonded to "green economy" and the Common Agricultural Policy that leads the European initiatives. Moreover, the multilevel requirements of this certification standard, maintains those special complexed characteristics seeking for tools to facilitate a more structural, but also simplified daily operation; and in this context "TheFSM" could become a key differentiator for the organic food supply chain.

3.5 The course to the extended BSC structure

After confirming the suitability of each BSC to meet the objectives of "TheFSM" the phase of the final BSCs' build up process followed.

During this phase, a more detailed recording to evidently support and justify the initial draft analysis of each BSC, which had been made by each project team during the "Internal consultation" stage, was necessitated.

To achieve this, a standardized "word" template was devised to depict a structured, and at the same time expanded description of all the fields of the project's concerns, under each one of the involved stakeholders, identified at each BSC. The objectives and the targets to be met when analyzing the fields of the structured BSC analysis were clearly determined, aiming to sensibly conclude at the Business goals, the Business challenges and obstacles, which would provide the rationale behind the finally defined Business, Technical, Legal and Data Requirements.

__Table 2__. Defining the objectives of each field of the BSC analysis

Field 1. Role in a Certified Food Supply Chain
OBJECTIVE: To determine the size / range and aspects of the data related to the daily operation of the Main Actor and the importance of the data on the supply chain (Important parameters of its activity related to the data).
Field 2. Interrelation with Main Actors in Food Safety Certification
OBJECTIVE: To identify all the possible connections of the Main Actor in the food chain. For each actor, the objective is to identify and record the common and non-common priority areas of interest and all the data (information) related to them. For this data, the characteristics have to be determined and gathered (e.g. documented, valid, updated, validated, regular or periodicals, etc.) regarding foodstuffs.

Field 3. Data Type of Main Actor
OBJECTIVE: For the recognized data concerning the Main Actor to determine what it has to receive and manage, as well as what it has to provide (for the next step in the chain). This will determine the type of actor in proportion to its needs as a user or data provider. Determine which data directly concern the certification and which data concern other management needs.
Field 4. Data exchange flow with Main Actors
OBJECTIVE: To determine the channels, the frequency, the size (volume) etc. of the data that are circulated (directly or indirectly) between the Main Actor and others, depending on the purpose (certification or other needs), regarding the information involved. Also, the distribution of information has to be determined between the actor and the others and be defined to see which transaction collects the biggest amount of requirements (volume, frequency, immediacy, etc.).
Field 5. Data sources
OBJECTIVE: To identify the sources of all the data managed by the Main Actor (related to certification or other needs) in order to record the variability, complexity of the sources, etc. (and identify particularities and requirements, needs, etc. for the next step - challenges).
Field 6. Sub-actors
OBJECTIVE: To identify all those who affect the daily operation of Main Actor and relate to information / data that they receive.
Field 7. Type of Interaction with Sub-actor
OBJECTIVE: To recognize the peculiarities, complexities, etc. in the dissemination of data to the actor to assess any risks associated with the characteristics that the actor needs to gather (security, reliability, etc.).
Field 8. Current Data Format
OBJECTIVE: To identify the existing forms (recording, archiving, disposal, etc.) of the data handled by the recognized diffusion channels and identify the degree of variability and deviation from the form of data covering the Main Actor's management needs.
Field 9. Goal
OBJECTIVE: To identify the source and manner of data dissemination, based on the recognized peculiarities in terms of the form, as well as the real needs of the information management process and their characteristics, fields and optimization opportunities for the benefit of all involved.
Field 10. Challenges
OBJECTIVE: Regarding the recognized objectives, the main actors and sub-actors and their cooperation and interactions, the data and their current situation, their dissemination in the supply chain, the way the producer works, challenges and concerns that arise have to be identified.
Field 11. Legal Obstacles
OBJECTIVE: To investigate any legal restrictions that affect the achievement of the target for the data.

All the project teams having used the drafted Excel Template as their reference for further elaborating on their BSC findings by using the above-mentioned structure, prepared an extended analysis for each one of the five Business Scenarios. The full analysis of each one of the BSs is presented below.

3.6 BSC Extended Analysis on business, technical, data and legal requirements

3.6.1 Business Scenario 1: The retailer

Description

Focus groups: The key actors in the Retailer scenario is the Food Safety and Quality Assurance (FSQA) experts working in a Retailer that need to assess the risk of the suppliers, producers and manufacturers by taking into consideration several different parameters such as which materials the supplier is using, which active certificates he holds, which are the outcomes of the audits, which are the results of the laboratory analysis for the materials and finished products.
The focus groups of the retailer scenario are divided based on the product categories that they monitor: group that focuses on fresh fruits and vegetables, group for dry foods, group for fresh and frozen meat and fish products. Each category needs to monitor and assess the risk of the suppliers.

Current process: We conducted two user workshops in the premises of a large Greek retailer to understand the current process. To monitor and assess the risk of each supplier the FS and QA experts currently collect several documents in different formats and try to consolidate the information in excel files. The format of the documents varies from pdf file to word and excel files. They need to rank the suppliers to decide the plan of audits and laboratory analysis. The ranking is currently difficult and very time consuming. In some cases, it is not possible and is based on the experience of the experts. For the audits, an assessment form is currently used that is filled by the auditor and send to the FSQA experts. For each product, the expert is using an excel file that includes the specifications of the product and the certification status.

Main purpose
Within the context of the TheFSM project, we aim at providing a solution to these focus groups by digitizing and automating the process of assessing the risk for suppliers.
More specifically the main purpose is to provide digital services for

- providing a live supplier profile that will include a risk score for each supplier that will be estimated based on the outcomes of audits, the laboratory results, the risk of the materials and ingredients that he is using, the risk of the region that the supplier is located.
- importing of all the suppliers and manufactures. A service that will connect to retailer's ERP and get information about suppliers and manufacturers of the own brand products
- importing retailer's limits about physiochemical and microbiological hazards
- automatically getting the status of the certificate for a given supplier
- a dashboard with suppliers ranking based on their score that will help the FSQA experts to plan the audits and the laboratory testing
- prediction of supplier risk in order to identify early the increasing risks

These services require the exchange of data between several companies and organizations such as the Retailer, the Certification Body, the Laboratory, the company that conducts the audits.

Workflow:
The envisaged workflow that will be implemented in the context of the project will include the following steps:

1. FSQA from retailer invites the supplier/producer/manufacturer to create a profile on the FOODAKAI by providing all the necessary information.
2. Generic company information of supplier/producer/manufacturer can be pulled by the Retailer ERPs
3. Supplier/producer/manufacturer registers in FOODAKAI and uploads the information about certificates and laboratory analysis results

4. FOODAKAI system connects to GlobalGap (or other Certification Organization) to get the information about the certificates of the supplier/producer/manufacturer
5. FOODAKAI system connects to Certification Body's system to get the results of the audits
6. FOODAKAI estimates the risk score for the supplier/producer/manufacturer
7. FSQA reviews the score of the supplier/producer/manufacturer and decides to request an audit that will be perform by a third-party organization and extra laboratory testing that will be performed by Laboratory
8. Auditor visits the facility of supplier/producer/manufacturer and submits the outcomes using the auditing application of TheFSM platform
9. FOODAKAI gets the results of the audit from the TheFSM platform using a upplier/producer/manufacturer's unique ID
10. Laboratory submits the lab testing results using the FOODAKAI
11. FSQA is informed about new audit and lab testing results. Based on the risk profile of the supplier/producer/manufacturer decides for approval or not.

Main actors involved

1. FSQA experts working in a Retailer
2. FSQA experts in the Supplier/Manufacturer/Producer
3. Auditor of the company that conducts the audits on behalf of the retailer
4. Expert working in the laboratory

Main Actor / End User	**3.6.1.1** ***FSQA experts working in a Retailer***
Description of Main Actor 1	*The FSQA expert assess the risk for a supplier*
	Role in a Certified Food Supply Chain
Describe the responsibility or responsibilities of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'	
The FSQA expert who is working in a Retailer and is the end user of the FOODAKAI supplier risk prediction module. The FSQA expert is responsible to assess each supplier based on the information about the certificates that he holds, historical non-compliance events as well as the results of laboratory testing and audits. Based on the risk profile of each supplier the expert needs to decide the plan of audits and laboratory analysis. The assessment is currently difficult and very time consuming because the expert needs to process many documents, available in different formats and disconnected. In some cases, it is not possible and is based on the experience of the experts. For the audits, an assessment form is currently used that is filled by the auditor and send to the FSQA experts. The exchange of the data is currently implemented through sending emails and attachments.	
	Interrelation with Main Actors in Food Safety Certification
Describe analytically how this Actor interrelates with other main actors in the supply chain (forward &backward i.e. main actor 1 <=> main actor 2)	

The FSQA will interrelate with Auditor working in the Certification Body and Auditor of the third party that is conducting the audits on behalf of the Retailer. The FSQA expert will assess the risk of the supplier using FOODAKAI supplier risk module that will relate information coming from GlobalGap certification database, Agrivi (traceability data), Laboratory Management Systems, CRM/ERP systems, audits system and National Authorities DBs.

	Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform)(i.e main actor 1 is data provider to main actor 2 and/or data user of the main actor 2)	
The FSQA expert will act as a solution consumer of FOODAKAI and a data user (certifications, lab tests, supplier information, audits information, food recalls).	

	Data exchange flow with Main Actors
Describe analytically the direct data exchange flow with other main actors in the certified supply chain(what kind of data the main actor 1 provides to the other main actors & what kind of data the main actor 1 uses from the other main actors)	
The FSQA expert will have access to the following information: ● information about the certificate of a specific producer ● traceability report for a cultivation from a specific producer ● lab results and the certification of analysis for a specific producer ● generic information for a supplier (Name, products, location) ● information about audits and inspections for a specific producer/grower ● information for the food recalls, border rejections and inspections for a specific supplier	

	Data sources
Describe the potential sources of the data that the main actor handles (i.e. programmes, measuring devices (IoT).	
The FSQA expert can use information data coming from FOODAKAI, Certification Bodies Databases, Laboratories DB, National authorities, Schema Owners DB.	

	Sub-actors
*Describe analytically the sub-actors****(who they are, what they do, what they provide, how they involved, what is their role to the certification process)*** *to the main actor.*	

The sub actors related to the FSQA expert are:

- Suppliers
- Auditors
- Growers
- Producers
- Farmers
- Manufacturers
- Certification Schema Owners
- Certification Bodies
- Food Processing Companies
- Crop Traders
- Experts working in Laboratories

	Type of Interaction with Sub-actor
Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform. What kind of data they provide to the main actor 1. and what kind of data they use from the main actor 1	

The sub actors interact with the FSQA expert in the following ways:

- The producer interacts by providing farm data and sensor for the agricultural products that he is selling to the retailer
- The supplier is providing information about his business, certificates and materials used in the products
- Certification schema owners interact with Retailer and supplier to provide certification schema parameters and validity
- Consumer interacts with Retailer by providing complaints through call centers and social networks
- Remote sensing & IoT data (satellites, biomass growth, weather, pest risks)
- Producer-entered data (production plans, progress, practices, risks, deliveries)
- Auditor interacts by providing the information for the audit outcomes

	Current Data Format
Describe the most usual format of the available data maintained by the actor.	

The data formats maintained by the actor are:

- e-documents (pdf, excel)
- word documents
- databases with retail-entered data (plans, progress, risks, deliveries)

	Goals
Describe how the 'TheFSM' will benefit the Main Actor 1 - End User1? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*	

The benefits of TheFSM platform to the FSQA expert are:

- To access information regarding findings of the inspection of suppliers in the food chain.
- Access to current status of food supply actors regarding audit results of certify organisations
- Innovative tools to support risk monitoring
- Improve the risk assessment procedure for each supplier

	Challenges

Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). Define& describe the challenges with reference to the "data type" of the actor and the sub-actor
The challenges of the FSQA expert to benefit from TheFSM are: ● How to get data about the performance of a supplier in previous audits ● How to get live data about the status of the certification. Is it valid or not? When will it expire? ● How to deal with risk for processed products using many different data sources ● How to get available food safety and quality records for a product based on the LOT number ● How to predict an increasing risk for a supplier? ● Control over executing contract as agreed and ability to mitigate any possible risks.
Legal Obstacles
Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain
The legal obstacles governing the sharing the information in the supply chain are: ● Personal data storage, transfer, and management ● Business sensitive data storage, transfer, and management ● Commercial exploitation of the public and open data ● Compatibility with the GDPR policy ● Terms of Use components in each solution in the data exchange platform ● Privacy policy components in each solution and in the data exchange platform
Business Requirements
Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario
The benefits of TheFSM platform to the FSQA expert are: BR 1. Allow the FSQA to access information regarding potential findings of the inspection of suppliers in the food chain. BR 2. Allow the FSQA to access the current certification status of the food supply actors based on the audit results of Certification Body BR 3. Provide the FSQA with innovative tools to support monitoring of the product trace BR 4. Help the FSQA to improve the risk assessment procedure for each supplier
Legal Requirements
Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario
Processing of Personal data The GDPR applies only to the processing of personal data of natural persons (Art 4(1), GDPR). In this scenario, the Retailer uses personal data including: Contact data and certification data of natural persons associated with potential business and other cooperation partners; primarily producers, manufacturers and retailers. Contact data of employees from certification bodies (e.g. in inspection/audit report), laboratories and public authorities. The retailer processes personal data as the data controller, determining the purpose and means of processing (Art 4(7), GDPR). Each supplier will have a profile on TheFSM platform that will include a risk score. This processing might constitute “profiling” under the GDPR. For the purposes of GDPR profiling is defined as “any form of automated processing of personal data consisting of the use of personal data to evaluate certain personal aspects relating to a natural person, in particular to analyse or predict aspects concerning that natural

person's performance at work, economic situation, health, personal preferences, interests, reliability, behavior, location or movements" (Art 4 (4), GDPR).

Legal Requirements

- **LR1:** Analyse the legal basis for processing, "processing is necessary for the performance of a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract" (Art 6 (1) (b), GDPR). If there is no (direct) contract between controller and data subject, legitimate interests pursued by the controller (Art 6 (1)(f), GDPR).
- **LR2:** Establish if (risk) profiles of suppliers will be created by automated processing of personal data. If so, data protection roles and suitable legal basis for profiling should be analysed in the next step. In order to mitigate the risks for suppliers as data subjects TOMs should be identified and implemented, including - if necessary - conducting a Data Protection Impact Assessment (DPIA). Furthermore, data processing or joint controllership agreements will be drafted.

Governance of non-personal Data

Data Exchanges between the Retailer and Main Actors on the FOODAKAI System

Suppliers ("Suppliers/producers/manufacturers"):

The FSQA expert invites suppliers, producers and manufacturers wishing to contract with the Retailer to create a profile on the FOODAKAI system and provide all their necessary information. This information includes certification data, laboratory analysis results, traceability reports, farm data and IoT data. FOODAKAI estimates the risk score for the suppliers, producers and manufacturers. The retailer uses this information when approving producers, suppliers and manufacturers.

Legal Requirements

- **LR3:** The FOODAKAI terms of use and the contracts between Retailers and suppliers specify: which non-personal data must be provided and gathered, data storage, access to the data, data exchange, permission to share and/or confidentiality of the data. Terms of use of the FOODAKAI platform and separate standard contract templates etc. will be analysed

Data exchange with Sub-Actors

Retailers receive information and documentation from sub-actors such as Certification Bodies, external auditors and laboratories. This documentation includes laboratory analysis and audit reports.

Legal Requirements

- **LR4:** Identify legal circumstances relevant for participation of sub-actors in the platform. To this purpose, in particular any existing agreements with sub-actors and/or templates, especially confidentiality obligations and/or data sharing requirements therein, will be analysed.
- **LR5:** Establish if there is any legal basis, restricting the Certification Bodies from transferring information related to certification, audits and inspections to third parties. The contract between the certification bodies and suppliers, producers or manufacturers as well as any relevant Certification Standards will have to be analysed.

Commercial Exploitation of Public and Open Data

The FOODAKAI system uses the databases of public authorities, certification bodies (Globalgap certification database), Agrivi (traceability data), laboratory management systems, CRM/ERP systems and audit systems. This data is provided to Retailers through the FOODAKAI supplier risk prediction module.

Legal Requirements

- **LR6:** Establish whether there are any restrictions to the intended use according to the database terms of use (licenses).

Food Safety Laws and Standards

General regulatory requirements are laid down in Regulation (EC) No 178/2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (General Food Law Regulation) and Regulation (EC) 852/2004 on the

hygiene of foodstuffs(for overview of EU Rules regarding Food Hygiene please see here). They set out an overarching framework for the development of food and food safety legislation, standards and authorities. Outlines general principles, requirements and procedures the underpin decision making in food safety matters at all stages of production and distribution. The Regulation will set the overarching framework for the applicable food safety standards in the scenario once these standards are identified.

Legal Requirements:

- **LR7:** Identify the applicable food safety standards and analyses in particular data sharing and confidentiality obligations.

	Data Requirements
Summarize the Data Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	
• Data standards: to comply or reuse existing standards whenever possible • Data format: define the format that data should be exchanged • Data exchange: use the existing infrastructure • Uploading data: easy upload process, minimum cost • Data accessibility: To provide a way to limit the data access of each actor depending on his role • Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository • Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles. • Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages	

Main Actor / End User	**3.6.1.2 *Supplier***
Description of Main Actor 2	*Supplier of goods to the retailer*
	Role in a Certified Food Supply Chain
Describe the responsibility of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'	
The role of the supplier is to supply goods within the food chain according required certified standards and to provide data to the FOODAKAI system.	
	Interrelation with Main Actors in Food Safety Certification
Describe how this Actor interrelates with other main actors in the supply chain	
The supplier will generate data related to his profile in FOODAKAI coming from GlobalGap certification database, Agrivi, Laboratory Management Systems, CRM systems, audits system, National Authorities DBs	
	Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) *A. Data Provider (to Solution)* *B. Data User (of the Solution)*	

The supplier will act as a data provider of FOODAKAI providing certifications, lab tests, supplier information, audits information, food recalls.
Data exchange flow with Main Actors
Describe analytically the direct data exchange flow with other main actors in the certified supply chain
The supplier will share access to the following information: ● information about the certificate of a specific producer ● traceability report for a cultivation from a specific producer ● lab results and the certification of analysis for a specific producer ● information for a supplier (Name, products, location) ● information about audits and inspections for a specific producer/grower ● information for the food recalls, border rejections and inspections for a specific supplier
Data sources
Describe the potential sources of the data that the main actor handles
The supplier produces data coming from Certification Bodies Databases, Laboratories DB, National authorities, Schema Owners DB
Sub-actors
Describe analytically the sub-actors ***(who they are, what they do, what they provide, how they involved, what is their role to the certification process)*** *to the main actor.*
The sub actors related to the supplier are: ● Auditors ● Growers ● Producers ● Farmers ● Certification Schema Owners ● Certification Bodies ● Food Processing Companies ● Crop Traders
Type of Interaction with Sub-actor
Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform.
The sub actors interact with the supplier in the following ways: ● Farm data ● Sensor data ● Supplier information ● Food recalls and border rejections ● Certification schema parameters ● Consumer complaints ● Social networks ● Remote sensing & IoT data (satellites, biomass growth, weather, pest risks) ● Producer-entered data (production plans, progress, practices, risks, deliveries) Retail-entered data (plans, progress, risks, deliveries)
Current Data Format

Describe the most usual format of the available data maintained by the actor
The data formats maintained by the actor are: ● Handwritten documents ● e-documents (pdf, excel) ● databases of ERP systems
Goal
Describe how the 'TheFSM' will benefit each Main Actor - End User? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*
The main benefit of TheFSM platform to the supplier is to establish a trusted profile as a supplier to retailers.
Challenges
Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). *Define& describethe challenges with reference to the "data type" of the actor and the sub-actor*
The challenges of the supplier to benefit from TheFSM are: ● What is the benefit of the sharing his data ● What is the cost of digitalisation
Legal Obstacles
Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain
The legal obstacles governing the sharing the information in the supply chain are: ● Personal data storage, transfer and management ● Business sensitive data storage, transfer and management ● Commercial exploitation of the public and open data ● Compatibility with the GDPR policy ● Terms of Use components in each solution in the data exchange platform Privacy policy components in each solution and in the data exchange platform
Business Requirements
Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario
BR 1. Allow each supplier to establish a trusted profile as required by the retailers
Legal Requirements
Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario
Processing of Personal data The supplier uses personal data including: Contact data of natural persons associated with potential business and other cooperation partners; primarily retailers and producers. Contact data of employees from certification bodies (e.g. in inspection/audit report), laboratories and public authorities. The supplier processes personal data as the data controller, determining the purpose and means of processing (Article 4(7), GDPR).

Legal Requirements

- **LR1:** Analyse the legal basis for processing, "processing is necessary for the performance of a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract" (Art 6 (1) (b), GDPR). If there is no (direct) contract between controller and data subject, legitimate interests pursued by the controller (Art 6 (1)(f), GDPR).

Governance of non-personal data

The Suppliers Data

The supplier generates data related to its profile on the FOODAKAI system. The data provided comes from the GlobalGap certification database, Agrivi farm management software, laboratory management systems, CRM systems (record and track consumer contact details), audit systems and public authorities' databases. The data exchanges in this scenario occur on the FOODAKAI system and TheFSM platform.

Legal Requirements:

- **LR2:** As there is no statutory protection of non-personal data ("data ownership"), collected data will be protected by technical and organisational measures (TOM), including legal instruments that limit the disclosure and use of the data, such as terms of use, non-disclosure agreement (NDA) and confidentiality clauses in cooperation and other agreements.

Data Exchange between the Supplier and Main Actors using the FOODAKAI System

Retailer:

The supplier provides non-personal data to the retailer by uploading this data onto the FOODAKAI system. This data includes certification data and product traceability data. The FOODAKAI system provides a risk score for the supplier, which retailers use when deciding to purchase goods from the supplier.

Legal Requirements:

- **LR3:** The FOODAKAI terms of use and the contract between the supplier and retailer specifies: the data to be provided, data storage, access to the data, data exchange, and permission to share and/or confidentiality of the data. The terms of use and contract template will be analysed.

Data exchange with Sub-Actors

The supplier exchanges non-personal data with sub-actors such as Certification Bodies, external auditors and laboratories. This documentation includes laboratory analysis and audit reports.

Legal Requirements

- **LR4:** Identify legal circumstances relevant for participation of sub-actors in the platform. To this purpose, in particular any existing agreements with sub-actors and/or templates, especially confidentiality obligations and/or data sharing requirements therein, will be analysed.

Commercial Exploitation of Public and Open Data

The supplier uses the databases of public authorities and certification bodies to obtain information, which it then uploads to the FOODAKAI system in order to satisfy the specifications of the retailer. This data includes inspection reports, border recalls and certification data. This data is shared with retailers through the FOODAKAI supplier risk prediction module.

Legal Requirements:

- **LR5:** Establish whether there are any restrictions to the intended use according to the databases terms of use (license).

Food Safety Laws and Standards.

General regulatory requirements are laid down in Regulation (EC) No 178/2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (General Food Law Regulation) and Regulation (EC) 852/2004 on the

hygiene of foodstuffs(for overview of EU Rules regarding Food Hygiene please see here). They set out an overarching framework for the development of food and food safety legislation, standards and authorities. Outlines general principles, requirements and procedures the underpin decision making in food safety matters at all stages of production and distribution. The Regulation will set the overarching framework for the applicable food safety standards in the scenario once these standards are identified.

Legal Requirements:

- **LR6:** Identify the applicable food safety standards and analyses in particular data sharing requirements and provisions on confidentiality.

	Data Requirements
Summarize the Data Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	
● Data standards: to comply or reuse existing standards whenever possible ● Data format: define the format that data should be exchanged ● Data exchange: use the existing infrastructure ● Uploading data: easy upload process, minimum cost ● Data accessibility: To provide a way to limit the data access of each actor depending on his role ● Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository ● Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles. ● Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages	

3.6.2 Business Scenario 2: Food Processing

Description

To deliver a solution to a Processor packaging Table Olives certified under GLOBALGAP ver 5.2 by maintaining also a Food Safety Management System (FSMS) against the FSSC22000 (GFSI) Standard requirements, in order to quickly and efficiently meet the demands of a new client (retailer) for delivering the same product (in the same type of packaging) under the retailer's food policy for trading food staff which is certified against the requirements of the IFS Food Standard. The Platform, will allow for a quick sharing (downstream and upstream) of critical for the retailer info, with all its involved parties (main actors or sub-actors in the food supply chain) to achieve efficiently its IFS Food Certification from an accredited Certification Body and thus to efficiently respond to the needs of its client.

Main actors involved

1. Producer of olives
2. Processor of packed olives
3. Certification Body
4. Retailer

Main Actor / End User	**3.6.2.1 *Producer***
Description of the Producer	The producer is the cornerstone of the production chain and is responsible for the production and distribution of quality and safe products with the aim of protecting the environment, sustainability, hygiene and safety of himself and his staff, respect for both the final consumer and his immediate associates in a context of good agricultural practices, ensured through his certification according to the GLOBALGAP standard. Therefore, due to the dynamic nature of his work, the need for continuous and reliable

	information is essential in order to continuously improve the quality and quantity of his products in order to maintain and further develop his position in the chain and in the market in general.
	Role in a Certified Food Supply Chain
Describe the responsibility or responsibilities of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'	

Recognizing the role and responsibility of each person involved, as well as their position, in the food chain, is a prerequisite for ensuring mutual communication, so that in the end it is ensured that safe food is delivered to the consumer.
The Producer is the first of the stakeholders in the food supply chain, who has to produce a product with a **method** and **characteristics** that will be in accordance with the GG certification standards, which is an international GFSI standard for Integrated Farm Assurance.

Method:

The producer has to decide and choose the production method that is most efficient and at the same time in accordance with the specifications of sustainability certification, has to take into account all the characteristics of his "work environment".
In particular, the following points have to be taken into consideration:

- the layout of the business (i.e. plots' distribution and their topographic features),
- the natural and chemical characteristics of the soil of each plot,
- the characteristics of the climate and microclimate of the area where the agricultural plots are located (e.g. meteorological data),
- the peculiarities of other natural resources located close to the agricultural plots (e.g. environmental legislation with restrictions and provisions e.g. for protection of the flora and fauna, restrictions on water use),
- the available resources of producer's business (e.g. state-of-the-art production technologies, agricultural equipment which may be (or not) sufficient to cover required agricultural practice – otherwise subcontractors should take over in order to support the producer by providing services for which data are necessary to be obtained - maintained by the producer etc.) etc.

Characteristics:

The production of olive products with characteristics that meet the parameters of sustainability, safety and quality, as required by the food supply chain and determined through the compliance requirements of GLOBALGAP ver 5.2., is the main responsibility of the producer, regarding the stakeholders of the food supply chain.

These parameters are practically specified by various indicators, which correspond to data evaluation, directly related to the method of production, such as:

- Measurement of the concentration (residues) of Plant Protection Substances in the final product (olives), with reference to the acceptable limits laid down by current legislation,
- Measurements of characteristics relevant to the agricultural plots (soil), to the plantation etc., before implementing agricultural practices,
- Working and field Records etc.

These characteristics of the product are verified through the certification process, which is carried out by an accredited Certification Body (that the producer cooperates with), in accordance with this standard (GG). During the audit and certification process, specific information (data), depending on the method of production, have to be presented in an appropriate form to the Certification Body, in order to evaluate the compliance of the olive products and to record the evidence necessary to showcase conformity against the standard's criteria. The completeness and appropriateness of the data contributes to a successful evaluation and the issuance of a Certificate of Compliance for the producer and his product.
The degree of complexity of the "working" environment of the producer, as well as the "characteristics" of the olive products, in terms of quality and safety, determines the level of the volume of data, the different sources of receiving the required data, and the size of the interfaces involved in the exchange of information in order to substantiate the result and its compliance with the GG certification standard.

Indicative Business Requirements

BR 1. Collection of many different data with reference to the characteristics of the business and the final product

BR 2. Management of Data (data evaluation) deriving from different sources (with great variability) and with different characteristics (e.g. numerical, non-numerical - documents, etc.) to draw conclusions (e.g. results of analyses with legislative requirements, etc.)

BR 3. Need for constant updating of data and data sources and access to information

	Interrelation with Main Actors in Food Safety Certification

Describe analytically how this Actor interrelates with other main actors in the supply chain (forward &backward i.e. main actor 1 <=> main actor 2)

Every olive producer intents to reach the best possible trade deal with the interested buyers who are looking for a product as a raw material for packaging, other food preparation, or wholesale as a bulk end product for sale.

In each of these three possible options mentioned above, as well as the one that the product is provided to the market as a raw material that will be packaged before being marketed, the producer must ideally, before the start of the growing season, know the customer's requirements(food processing company) in terms of the characteristics that the product must have on its delivery, especially when these characteristics are related to safety and quality certification requirements, which must be assessed and monitored throughout the production process to obtain the necessary certification (GG).

The connection between the producer and the processor can therefore be related to different stages of time, which require the availability and access to different type of information.

Correlation Stages

- Cultivation stage, where the required information serves the two-way search for collaborations, based on supply and demand, for the effective evaluation of the characteristics of the producer (supplier) by the processor or of the processor by the producer.
- Crop's stage of development (growing season), where up to date (real time) information is required to monitor the stage of the degree of the agreement,
- Stage of completion of the crop where information is required that substantiates the achievement of the agreed result in terms of the characteristics of the olive product, to achieve and complete the cooperation, as well as the
- Intermediate Stage from the current harvesting period until the next one, when information is required regarding the status of the certified GLOBALG.A.P., for olive product in stock.

Types of Information

At each one of the above stages, communication is required between the producer and the processor, with a specific type of data regarding to the characteristics of the information provided.

In particular, the following:

- Information on the potential production capacity of the producer, based on valid data depending on the size of the producer's plot,
- Information on the quality characteristics (safety) that the olive product can bring, but also the morphological and physical characteristics associated with the olive variety, utilizing the data history associated with previous GG certificates issued by a Certification Body.
- Information about the current or future needs of the manufacturer in terms of meeting the operating needs, sharing search data, product and features.
- Documented, updated and validated information for the certification of specified quantities of the olive product

Business Requirements

BR 1. Recording of up-to-date and valid data assets (assets) of exploitation from a database of competent Authorities (e.g. Integrated Administration and Control System (IACS)) with limited access, provided by the producer.

BR 2. Real Time data, based on recorded plot data

BR 3. Validity of GLOBALGAP certificates from GLOBALGAP Database

BR 4. Archiving the agreed specifications, on the delivered product (olives), for cooperation

	Data Type of Main Actor

Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) (i.e main actor 1 is data provider to main actor 2 and/or data user of the main actor 2)

Producer as Data User

In order to be able to produce products that meet specific quality, safety and sustainability standards (GlobalGAP), the producer has to manage a large amount of information that he receives as a result of the interaction of agricultural practices that he applies and his work environment (characteristics of agricultural parcels, climatic conditions, etc.). This information is obtained through configured data such as,

- chemical analysis of soil, water, leaves, etc., or
- processed data based on the evaluation of the previous ones, concerning information for obtaining specific cultivation practices (e.g. quantities of fertilizers, plant protection products, etc.)

The producer receives the data either through collaborating with chemical analysis laboratories or by agricultural advisors, etc., usually in non-editable, written or electronic (pdf) formats.

Rarely, the processor can receive data on the characteristics of its plot, through satellite applications and systems (GIS apps.). Agricultural Geographic Information Systems using Geomatics Technology enable farmers to map and project current and future fluctuations in precipitation, temperature, crop output etc.

Among the information received, there are included data from competent authorities, regarding legalization documents of the plot (receipt of electronic files via e-mail), with approvals of agricultural application inputs for cultivation (obtaining information from the Ministry of Agriculture and the Ministry of Rural Development) as well as a number of stakeholders such as agronomists, agricultural supply stores, etc. who support the productive activity.

Data provided directly by the Producer to the Processor

The producer, primarily, is the first link of the food chain, which is tasked to produce the first raw material from which the final product (packaged olive) will emerge in the next stages of preparation. The producer is not a simple data provider in the chain, but the one that essentially determines the identity of the whole food chain. That is, the data that characterizes and accompanies the product - based on the object of its certification under the GlobalGAP standard - throughout the path that follows "from the field to the fork of the consumer".

In particular, the data is related, on the one hand, to the quality and safety characteristics, and on the other hand to the traceability of the product. This data, therefore, constitutes the cornerstone of the data which the processor has to manage and maintain intact, throughout the certified safe manufacturing process (according to the requirements of the FSSC 22000 standard) for the packaging of the final product. As a result, if it is required by the food chain at any stage, it can be substantiated, both the quality claims and the origin of the product - in terms of its raw materials - easily, quickly and efficiently.

Such information that may be available from the producer to the processor (if requested), and which he maintains in order to be taken into account, inter alia, during the inspection and certification process with GG, is indicative of data:

- analyzes,
- batches of production,
- production agricultural codes,
- Dates of last plant protection applications before the harvest,
- harvest dates etc.

In fact, each of this information can be transferred to the processor, through different data communication channels. In particular, the production batches are the subject of reference in the documents or electronic documents of the sale-purchase of the product (ERP), while the other information depending on the type of archiving of their form printed or electronic, can be transferred through usually un-processable files (PDF, Image files etc.).

Data provided indirectly by the Producer to the Processor

In any case, regardless of whether the above information, will be forwarded to the processor by the producer or not, their processing, their evaluation process by the Certification Body (for GlobalGAP) is result of the creation of processed, centralized and complete information, which one that corresponds to the Certificate of Conformity of the produce, which is granted after the successful completion of the inspection by the Certification Body.

The GlobalGAP Compliance Certificate is a given data either in electronic form (PDF) directly from the processor or from the GlobalGAP database. The last communication channel presupposes the knowledge of the GlobalGAP Number (GGN) which the producer receives after registering in GLOBALGAP data vase and he is obliged to indicate it on each certificate of distribution of the certified product.

Data Received / Used by the Producer

Through the process of obtaining GlobalGAP certification from the Certification Body, the Producer is also the Recipient / Administrator of the information and data, those received through the Certificate of Conformity of the production of his product (olive).

Business Requirements

BR 1. Interconnection of producer and processor recording systems, in terms of critical product data (dates of recent applications of phytosanitary preparations before harvest, harvest dates), tracking per batch and its connection with corresponding Certificates of Conformity.

	Data exchange flow with Main Actors

Describe<u>analytically</u> the direct data exchange flow with other main actors in the certified supply chain(what kind of data the main actor 1 provides to the other main actors & what kind of data the main actor 1 uses from the other main actors)

<u>CERTIFICATION BODY – PRODUCER</u>

Information transfer channels

- The information received from the producer in the certification application concerns, in addition to his personal data, the cultivation data (agricultural parcels, area) which the Certification Body receives electronically in a file with a specific template in order to issue the financial offer and by accepting this, the data entry of the producer is uploaded in the GLOBALGAP database.
- The producer's documentation managed by the certification body is obtained either through the on-site audit (physical file, recording of the information) or via e-mail. Additionally, during the on-site audit all the documented information is collected as a photographic material (printed copy or digital form).
- After the audit, the certification body shall provide the producer with the Audit report stating the non-compliances, the corrective actions needed to be done, giving him the guidelines for the actions that have to be taken to fully harmonize with the requirements, as well as the time required to be able to obtain the certificate**.**
- The certification body receives the corrective actions via email (either with photographic material regarding Plant Protection Products purchase invoices, or PDF files regarding analyzes, or with an Microsoft Word Document file on system forms that require completion) and evaluates them.

Once everything is evaluated and there is no longer any non-compliance:

1. The data is uploaded on the certification data in the GLOBALGAP database
2. The certificate is issued and sent electronically to the producer
3. The printed form is sent by courier to the producer.

Frequency of information transfer

- The information collected by the certification application is the first data collection and is used by the certification body after the acceptance of the financial offer and before the inspection / audit. Due to the annual validity of the certificate, the application is received 1 time per year with the updated data and is updated on the basis of GLOBALGAP, but without changing the GLOBALGAP NUMBER**.**
- All certified information provided by the certification body is collected once a year and specifically during that time, however the Certification Body may, on a regular basis, carry out unannounced audits with a frequency of 1 per cultivation period. All the data that come out of each audit are uploaded to the existing file on the data base.

Size of information being circulated

The largest amount of information is collected during the inspection, so that the Certification Body is able to evaluate the producer and note the findings in the audit report.

- The Certification Body gathers all the information directly from the producer
- The Certification body exclusively uploads & updates the info to the GLOBALGAP database with the details of the producer and its status of certification.

<u>PRODUCER – PROCESSOR</u>

Information transfer channels

- The producer is the data receiver of the processor, as he receives information regarding the specifications of the products that the processor wants to procure as well as the required documentation that must accompany each batch. This information is transmitted via email.
- Data that the processor receives from the producer is mainly via email in pdf format or printed files as accompanying upon delivery

Specifically

- Plot details from which the received products (hard copy or electronically) came and provide information about the date of harvest, quantities of harvest / plot as well as the application information in case it is requested (plant protection, fertilization, etc.) for traceability reasons.
- Laboratory analyzes (e.g. for pesticide residues) (pdf files).

- GLOBALGAP Certificate, which the GGN is required by the producer to indicate on the invoices, the specific number can be entered on the basis of GLOBALGAP by the processor in order to verify its validity. The producer may provide a copy of his certificate in a printed form when delivering the product, or sending it electronically via email.

Frequency of information transfer

- The specifications are declared once, unless a requirement is differentiated mainly from the processor to the producer.
- The certificate is valid for one year, so it is updated once a year in terms of duration and changing however the GGN number remains the same throughout the whole certification collaboration.
- The GGN must be indicated on each certificate of distribution of a certified product, even if the certificate has been included in the first batch.
- Based on the standards implemented by both the producer and the processor, they must inform each other about the production details/information, in the context of the readiness for the Traceability process.
- In the event of a real incident, those involved must be able to provide any information in order to avoid the possibility of withdrawal or, in the worst case, termination of cooperation.

The processor can set specifications for the product he receives from the producer in terms of its characteristics (e.g. fruit size and color), the quantity it requires, the certifications that accompany it and the relevant laboratory analyzes. This incoming data informs the producer where should aim and how to act in order to reach the required result of quality and quantity of production.

In turn, the producer adjusts his procedures so that the final product meets the above specifications and at the same time during the delivery of the certified product he informs, through relevant distribution forms (which indicate the 13numbered GGN), about the date of harvest, quantity of harvest & delivery date.

Size of information being circulated

The size of information being circulated is not large in volume since it is specific information of a specific batch. Therefore, the producer must configure all the data he holds in order to provide the processor with the required files.

Business Requirements

BR 1.Connecting channels to transfer information

BR 2. Connecting the different databases from where the information is collected.

	Data sources
Describe the potential sources of the data that the main actor handles (i.e. programmes, measuring devices (IoT).	

- **PRODUCER**
  The producer receives through IoT devices, GIS applications, data related to his cultivation on the basis of which on the one hand he prepares his work plan, the equipment that will be needed and the supplies that will need to be procured (management needs) and on the other hand he creates his documentation based on the requirements of GLOBALGAP on which it will be evaluated by the Certification Body. The use of such devices requires a username and password and only with the permission of the producer the interested party can have access.
- **PROCESSOR**
  The producer receives from the processor the specifications of the products, through the specifications he draws up his work plan regarding analyzes and certifications. It is not open data and is transferred exclusively from the processor to the producer.
- **COOPERATIVE LABORATORIES**
  The producer receives data concerning his cultivation and his plots. Based on this information, he either evaluates its current situation and makes decisions regarding the cultivating applications it will make during the current cultivar year, or verifies the correctness of the applications in relation to the data received from either public authorities or IoT devices. This information is transferred exclusively from the laboratory to the producer via email in a pdf file.
- **PUBLIC & INTERNATIONAL AUTHORITIES** (EFET-HELLENIC FOOD AUTHORITY, HELLENIC MINISTRY OF AGRICULTURAL DEVELOPMENT & FOOD, ESYD - HELLENIC ACCREDITATION SYSTEM, EUROPEAN MRL)
  The public authorities provide data directly accessible to anyone interested in legislation, regulations, approvals, accreditations, residual limits. They can be exported either in pdf or excel format, however, especially for pesticide approvals, laboratory accreditations are not personalized information and configuration is required. They also provide Meteorological data, Agricultural Warnings (http://www.minagric.gr/index.php/el/for-

farmer-2/agricultural-warnings),obtained through the use of the Internet after entering the database of the competent ministry or on websites that provide valid but broader data on the prevailing conditions or forecasts (https://www.meteofarm.gr/) (work plan management, documentation for control by the certification body). The databases of public authorities have usually open data. The interested party may download but must configure the file (usually Microsoft Excel) in order to receive the personalized information. http://wwww.minagric.gr/syspest/syspest_menu_eng.aspx (Ministry of Agriculture – Greece - Data Base) https://ec.europa.eu/food/plant/pesticides/eu-pesticides-database/public/?event=homepage&language=EN (EC EUROPA pesticides database) https://ec.europa.eu/food/plant/pesticides/max_residue_levels_en (EC EUROPA Maximum Residue Level Database), http://www.esyd.gr/portal/p/esyd/en/catalogues.jsp (Hellenic Accreditation Body database for Certification Bodies & Laboratories) https://europa.eu/european-union/topics/agriculture_en (EC EUROPA about agriculture)
https://ec.europa.eu/food/plant/pesticides/eu-pesticides-database/public/?event=homepage&language=EN (EC EUROPA pesticides database)
https://ec.europa.eu/food/plant/pesticides/max_residue_levels_en (EC EUROPA Maximum Residue Level Database)
http://www.esyd.gr/portal/p/esyd/en/catalogues.jsp (Hellenic Accreditation Body database for Certification Bodies & Laboratories)
https://europa.eu/european-union/topics/agriculture_en (EC EUROPA about agriculture)

- **GLOBALGAP DATABASE**
  The producer can easily enter into the GLOBALGAP database in order to receive information about the certification process, requirements, internal audit checklists and approved Certification Bodies (with a score) wishing to enter into a partnership. https://database.globalgap.org/globalgap/search/SearchMain.faces?init=1 (GLOBALGAP DATABASE), https://www.globalgap.org/uk_en/documents/#fq=gg.subscope:(%22fruit%22)&fq=con_locales:(%22en%22)&fq=gg.document.type:(%22checklist%22+OR+%22regulations%22+OR+%22cpacc%22)&fq=gg.standard.gg:(%22ifa5%22) (GLOBALGAP Documents, checklists), https://www.globalgap.org/uk_en/what-we-do/the-gg-system/certification/Approved-CBs/index.html (GLOBALGAP Database for approved Certification Bodies)
- **CERTIFICATE BODY**
  The certification body is the one that after entering into an agreement will upload the producer's details in the GLOBALGAP database, as well as after the audit, in case of deviations from the requirements of the standard, will note the corrective actions that the producer must take in order to complete the certification process. The information between the Agency and the Producer is highly confidential and can be given to anyone interested only with the producer's permission.

Business Requirements

BR. 1 To have all in one and up to date data, from different sources in order to receive the information easier
BR.2 To personalize the data in the platform that the producer will use in his daily operations, in order to get customized information.

	Sub-actors
Describe analytically the sub-actors ***(who they are, what they do, what they provide, how they involved, what is their role to the certification process)*** *to the main actor.*	

AUTHORITIES

- Through the databases the producer is informed about the validity (or not) of the pesticides he uses, about the maximum residue limits in case of finding residues, about the accreditation of laboratories that perform analyzes as well as about certification bodies and on whether they can carry out an inspection according to the specific standard.

LABORATORIES

- Provide analyzes of soil, plant protection products, leaves, used irrigation water in order to guide the producer in his way of action through cultivation care. At the same time, they are a tool for verifying what has been done so far, both to the Certification Body and to the next link in the supply chain. Also, they provide information material on the appropriate way to collect samples so that the results are reliable.

CONSULTANS

- The consultants, having knowledge and specialization in the implementation of the systems, direct the producer, taking into account the current situation of their customer (data users)and deliver the systemic approach (procedures, management plans, forms, instructions, recording notebook) in order to create and update the documentation that the body and FoodplusGmPH(CIPRO AUDITS) will evaluate.

Foodplus GmBH

- It is the organization that has prepared the GLOBALGAP standard and provides, through its website, all the guidelines, requirements, regulations, checklists, to the producers in order to carry out all the necessary actions for their harmonization with the scheme.

AGRICULTURAL SUPPLY STORES

- The agricultural supply stores, receiving the relevant information from the laboratories through the producer and the evaluation by the relevant scientist - agronomist, provide the producers with the appropriate supplies (fertilizers, pesticides).

	Type of Interaction with Sub-actor

Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform. What kind of data they provide to the main actor 1. and what kind of data they use from the main actor 1

AUTHORITIES

- Through databases with open access to the interested public, they provide reliable data which, however, must be configured to be more personalized for the needs of the producer. How to search for websites is often not user-friendly.

LABORATORIES

- The laboratories receive samples of soil, fruit, water and leaf which are accompanied by sampling protocols., via email or as a physical file (printed) along with the sample. They provide the producer with the analyzes from which information is drawn regarding the current situation for a specific area, a plot of land, a tree, used irrigation water in order to compile with the guidelines / instructions that the producer will apply.

CONSULTANS

- Having proven knowledge of the technical and legal requirements of the standard, they advise / guide the producer, on how to evaluate the incoming data received from ACTORS & SUB – ACTORS, prepare the Integrated Management system and assist during the inspection carried out by the Certification Body

FoodplusGmPH

- FoodplusGmPH Accepts the personal data of the producer which, through the database, shares them to any interested party. The information provided is the status of each producer (certified, open nonconformance, suspended, registered) product, extent and duration of certification. The producer can also see which body is approved to carry outGLOBALGAP inspections and what evaluation it has.

AGRICULTURAL SUPPLY STORES

- Agricultural supply stores evaluate, in collaboration with the agronomist scientist, the results of the analyzes they receive and give the appropriate agricultural supplies to the producer, with the corresponding prescription and at the same time the information of the base of the ministry for the disposal of a specific pesticide.
- http://e-services.minagric.gr/ (The link is used by the agricultural supply stores in order to make prescriptions for pesticides, it is not open data, the user must be authorized in order to be provided with a user name & password)

	Current Data Format

Describe the most usual format of the available data maintained by the actor.

- **DATABASES OF PUBLIC AUTHORITIES**, access to these data is done through the website of each organization and the way of exporting the data is either through Excel file, PDF or via Word file
- **HARDCOPIES** These are files such as input entries in a specific format which documents the requirements of the template, these physical files have a specific form and may come from corresponding electronics. Samples are checked by the Certification Body
- **ELECTRONIC ARCHIVES (pdf, word, image file)** these are files that can be provided either by the consultant, or the Certification Body, Foodplus, the laboratories, , the authorities, the suppliers, or the next link in the chain which have a specific form and help to gather information and disseminate information(concerning VAT approvals, updates of regulations to the form of certification, laboratory analyzes, material specifications)

- **BIBLIOGRAPHY (PHYSICAL / ELECTRONIC FORM)** Through the bibliography and in combination with the results of the laboratories, plant protection, fertilization, irrigation, harvesting instructions are individualized to make the Agricultural Work of the Producer more efficient, regarding quality and quantity.

Business Requirements

BR1. To digitize all the records that the producer uses in his daily operations.

	Goals
Describe how the 'TheFSM' will benefit the Main Actor 1 - End User1? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*	

- Replacing physical files with a complete digital database that will organize the daily work
- Through the information that will be obtained about the needs of the market and the adaptation of the works in the direction of the production of products that will cover the above needs, an opportunity is created for possible finding of new customers.
- Real-time data will be obtained and therefore decision-making time will be reduced.
- Due to the digitization, the production process will be more effectively controlled in terms of the control of the financial data as well as statistical analyzes regarding possible deviations, improving the efficiency of production costs.
- Due to the common use of a single platform which is used individually for the producer and based on specific needs regarding the dissemination of information from the producer to the processor, the long-term collaborations between those involved in the supply chain are strengthened.

	Challenges
Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). *Define& describethe challenges with reference to the "data type" of the actor and the sub-actor*	

- Ease of data entry through a user-friendly environment and specifically for users who are not very familiar with the technology
- The participation of all those involved with the producer in the use of this platform (actors - sub actors)
- The cost of registering and maintaining the platform, how this may affect the cost of production and therefore the cost of the final product and whether this will ultimately be competitive.
- The participation of sub actors is free since they are not directly involved in the production chain
- Protection against access to personal data
- No need for a specialized IT department in order to use the platform effectively
- Extensive use of IoT for data collection purposes
- To what extent can there be high added value and benefit of reciprocity

	Legal Obstacles
Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain	

OBJECTIVE: To investigate any legal restrictions that affect the achievement of the target for the data.

- Personal data protection
- Access to information that can be used illegally (corporate data protection)

Restriction on the disclosure of data that may be provided by the Certification Body due to confidentiality

	Business Requirements
Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario	

BR 1. Collection of many different data with reference to the characteristics of the business and the final product

BR 2. Management of Data (data evaluation) deriving from different sources (with great variability) and with different characteristics (e.g. numerical, non-numerical - documents, etc.) to draw conclusions (e.g. results of analyses with legislative requirements, etc.)
BR 3. Need for constant updating of data and data sources and access to information
BR 4. Recording of up-to-date and valid data assets (assets) of exploitation from a database of competent Authorities (e.g. Integrated Administration and Control System (IACS)) with limited access, provided by the producer.
BR 5. Real Time data, based on recorded plot data
BR 6. Validity of GLOBALGAP certificates from GLOBALGAP Database
BR 7. Archiving the agreed specifications, on the delivered product (olives), for cooperation
BR 8. Interconnection of producer and processor recording systems, in terms of critical product data (dates of recent applications of phytosanitary preparations before harvest, harvest dates), tracking per batch and its connection with corresponding Certificates of Conformity.
BR 9. Connecting channels to transfer information
BR 10. Connecting the different databases from where the information is collected.
BR 11. To have all in one and up to date data, from different sources in order to receive the information easier
BR 12. To personalize the data in the platform that the producer will use in his daily operations, in order to get customized information.
BR 13. To digitize all the records that the producer uses in his daily operations.

	Legal Requirements
Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	

Processing of personal data

Producer uses the following personal data: i) Contact data of main actors of the supply chain, primarily processors and certification bodies (e.g. in Audit report), and sub-actors, e.g. public authorities, laboratories and consultants, and/or their employees; ii) Certification data of processors and sub-actors, e.g. laboratories and consultants, and/or their employees.

GDPR only applies to personal data of natural persons (Art 4 no 1 GDPR).

Producer processes the above personal data as the controller (Art 4 no 2 and 7 GDPR).

Legal Requirements

- **LR1:** Analyse the legal basis for processing: "a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract" (Art 6 para 1 lit b GDPR); if there is no (direct) contract between controller and data subject, legitimate interests pursued by the controller or by a third party (Art 6 para 1 lit f GDPR)

Governance of non-personal data

Producer's data

Producer will generate non-personal data, including real time data, about the final product and the characteristics of its business, such as e.g. plot details from which the received products come, information about the date of harvest, quantities of harvest/plot.

Legal Requirements

LR2: As there is no statutory protection of non-personal data ("data ownership"), collected data will be protected by technical and organisational measures (TOM), including legal instruments that limit the disclosure and use of the data, such as non-disclosure agreement (NDA) and confidentiality clauses in cooperation and other agreements.

Data exchange with Food Processor

Producer provides data on the quality and safety characteristics and the traceability of the product directly to the processor. Data provided includes e.g. analyzes, batches of production, production agricultural codes, dates of last plant protection applications before the harvest, harvest dates etc.

Producer receives information regarding the specifications of the products that the processor wants to procure as well as the required documentation that must accompany each batch.

Legal Requirements

- **LR3:** Provide a data governance framework that regulates sharing of data between producer and processor (terms of use of the platform or separate standard contract template). Any existing agreements and/or templates etc will be analysed.

Data exchange with Certification body

In the course of the certification the producer shares data such as cultivation data (agricultural parcels, area) with the certification body. In addition, data is gathered directly from the producer during an audit. This includes data about the inspection/audit itself. Audit data is uploaded to the existing file in the certification database.

Legal Requirements

- **LR4:** Certification is performed on contractual basis. The broader framework is provided by the certification standard applicable. Inter alia the following items are relevant for development and operating of the platform: i) data the processor has to provide to the certification body, ii) data that may additionally be gathered during the on site or remote audit, iii) storage of the gathered data, iv) access to the gathered data and v) permission to share and/or confidentiality of the data. The applicable certification standard(s) and a contract template will be analysed.

Data exchange with Sub-actors

Producer receives information and documentation from sub-actors such as laboratories regarding the compliance of the products and services, that are provided by each sub-actor separately, including laboratory analyses conducted on behalf of the producer. Producer also receives data from competent authorities, e.g. regarding legalization documents of the plot with approvals of agricultural application inputs for cultivation.

Legal Requirements

- **LR5:** Identify legal circumstances relevant for participation of sub-actors in the platform. To this purpose in particular any existing agreements with sub-actors and/or templates, especially confidentiality obligations and/or data sharing requirements therein, will be analysed.
- **LR6:** Establish if there are any restrictions on sharing information received directly from food authorities with third parties.

Commercial exploitation of the public and open data

Producer will use databases of public authorities and GLOBALGAP Database to e.g. query the validity of his own GlobalGAP Compliance Certificates and retrieve information on certification bodies.

Legal Requirements

- **LR7:** Establish whether there are any restrictions to the intended use according to the database terms of use (licence)

Food Safety Laws and Standards

Applicable Food Safety Regulations

General regulatory requirements are laid down in Regulation (EC) No 178/2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (General Food Law Regulation) and Regulation (EC) 852/2004 on the hygiene of foodstuffs(for overview of EU Rules regarding Food Hygiene please see here). They set out an overarching framework for the development of food and food safety legislation, standards and authorities. Outlines general principles, requirements and procedures the underpin decision making in food safety matters at all stages of production and distribution. The Regulation sets the overarching framework for the applicable food safety standards in the scenario.

Applicable Food Safety Standards

Along the food supply chain various food safety standards are applicable in parallel. For the producer in particular sector food safety certification GLOBALGAP ver 5.2 and Foundation Food Safety System Certification 22000 (FSSC 22000) for the auditing and certification of Food Safety Management Systems (FSMS) are relevant.

Legal Requirements

- **LR8:** Identify and analyse data sharing requirements and possible restriction on the disclosure of data according to the relevant standards

	Data Requirements
Summarize the Dat Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	
• Data standards: to comply or reuse existing standards whenever possible • Data format: define the format that data should be exchanged • Data exchange: use the existing infrastructure • Uploading data: easy upload process, minimum cost • Data accessibility: To provide a way to limit the data access of each actor depending on his role • Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository	

- Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles.
- Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages

Main Actor / End User	**3.6.2.2 *Food Processor (Processor)***
Description of Main Actor 2	*(Short Description of the Main Actor 2)* *The company processes and packs edible olives. Selects raw materials from certified producers according to GLOBALG.A.P. The company is implementing a Food Safety Management System (FSMS) against the standard requirements of the FSSC22000 and IFS Food (GFSI).*
	Role in a Certified Food Supply Chain
Describe the responsibility or responsibilities of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'	

The processor is one of the main stakeholders in the food supply chain, who processes and packages the product with a method which should safeguard that characteristics that are in accordance with the requirements set by European and Community food safety legislation are met. Recognition of the manufacturer's level of responsibility is apparent by his provision to establish and implement higher safety standards, beyond those of his legal obligations, as expressed in particular through the international certification standards of FSSC 22000 and IFS Food, which meet the GFSI Benchmarking Requirements.
For all the food safety certification standards, communication along the food chain is essential to ensure that all relevant food safety hazards are identified and adequately controlled at each step within the food chain. This implies communication of the needs of the processor to both stakeholders upstream in the food chain and stakeholders downstream in the food chain.

Working Environment

The processor, in order to maintain the effectiveness of the food safety management system for olive packaging, has to systematically keep data towards a numerus of parameters relevant to its daily working environment, indicatively such as:

- Product
- raw materials, ingredients, and services
- production systems and equipment
- production premises, location of equipment, surrounding environment
- cleaning and sanitation programs
- packaging, storage, and distribution systems
- personnel qualification level and/or allocation of responsibilities and authorizations
- regulatory requirements (i.e. EU Reg. 852/02, Reg. 178/02 etc.)
- training and knowledge regarding food safety hazards and control measures
- customer, sector and other requirements, which the organization observes
- relevant enquiries from external interested parties
- complaints indicating health hazards associated with the product etc.

Product characteristics

Maintaining the necessary safety and quality features on the packaged olive product, against the requirements of the FSSC 22000 and IFS Food standards, presupposes that monitoring, control and recording of critical information during the process of product processing in the unit, takes place, indicatively such as the one related to:

- measurements to control identified food safety hazards (biological, chemical, physical) and critical limits to food safety,
- Chemical analysis for verification of the efficiency of the food safety management system
- Corrections and corrective actions
- Handling of potentially unsafe products
- Recalls etc.

During the audit and certification process of the processor, the above information (data) relevant to the processing method must be presented in an appropriate form to the Certification Body in order to evaluate the compliance of the

packaged olive product and record the evidences for meeting the criteria. The adequacy of the data contributes to the successful audit evaluation and the issuance of a Certificate of Compliance for the final product of the processor.
The degree of complexity of the "working" environment of the processor and of the production process that affects the "characteristics" of the final product in terms of quality and safety, reflects to the level of data volume or the different sources for data that are needed.

Business Requirements

BR 1. Collection of many different critical data characterized by high frequency of reproduction.
BR 2. Segregation of data for assessment, in terms of those arising from control points critical to product safety (regular data), and those relating to functional control points (periodical data)
BR 3. Need for constant updating of information for points that directly (critical limits for food hazards, recalls etc.) and indirectly (food regulation etc.) affect food safety.
BR 4. Easy access (e.g. to Certification Body) to aggregated data to assess compliance with food safety standards.

	Interrelation with Main Actors in Food Safety Certification

Describe analytically how this Actor interrelates with other main actors in the supply chain (forward &backward i.e. main actor 1 <=> main actor 2)

To ensure that sufficient information on issues concerning food safety are available throughout the food chain, the processor shall establish, implement and maintain effective arrangements for communicating with other stakeholders, such as
a) **suppliers**, (producers, other processors)
b) **customers**, (retailer), and
c) **Third party contractors**, such as logistics companies, if needed.
The communication shall provide adequate information on food safety aspects of the organization's products within the food chain. Specifically, for info that directly related to food safety hazards that have to be controlled by other stakeholders in the food chain, the following interrelations are noted.

- The processor that packages olives, receives from its customer (retailer) information (specifications) for the products he wishes to procure.
- The processor, based on the above specifications set by its customer, in turn seeks to procure (producers, processors) raw materials whose specifications will be appropriate to meet those of the final products he will produce.
- The processor source raw material from producers and processors of supplementary materials, and takes further actions (processing, packaging) before delivering the final product to the retailer.
- The processor, if needed, cooperates with third-party logistics that in many case consist a crucial liaison between the processor and the retailer, having the responsibility to handle (storage, transfer) the final product maintain in the most proper way the characteristics of the products without posing any additional threat.

Stages of Interrelation

- Assessment of the collaboration between processor and retailer, based on the requirements of the latter, in terms of the characteristics that the processor must reveal.
- Processor's communication and agreement with the retailer, regarding the desired characteristics of the final product (packaged olive).
- Search, finding and evaluation of olive supplier producers by the manufacturer, which meet the requirements of the company's political quality.
- Product processing and packaging, which aims to achieve the level of achievement of the agreed result in terms of the characteristics of the packaged olive product, for the successful completion of the cooperation.
- Product distribution, intermediates when needed before the end product reach the retailer, to facilitate a controlled handling of the end product during the delivery process.

Types of Info exchange

In each of the above steps, where communication is performed between the processor, the producer and the retailer, the info exchanged maintain the following features:

- Information on the quality characteristics that the final product must have for distribution by the retailer.
- Information regarding the quality, or and any other characteristics, that the raw material (olive) must have for processing.
- Information on the characteristics of the farm operation of each supplier (olive growers).
- Information relevant to the monitoring and evaluation of the course of preparation of the final product and the corresponding batches available (e.g. product analyses, lot number, food safety certificates etc.)
- Documented, updated and validated information for the certification of the Food Safety Management System.

Business Requirements
BR 1. Gathering of information from multiple producers (suppliers) regarding the quality characteristics of the raw material (olives) to maintain traceability.
BR 2. Direct and immediate info for any non-conformity raised for the producer regarding its certified product, after he has delivered the raw material (olives) to the producer.

	Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) (i.e main actor 1 is data provider to main actor 2 and/or data user of the main actor 2)	

Processor as Data User
The processor that packs edible olives is a user of the data provided by other stakeholders in the food chain such as.
Producer / other Processors

- Certificates of Conformity for olives, food additives, packaging materials (pdf files)
- Analyses of olives, food additives, packaging materials (pdf files)
- Equipment specifications as food grade infrastructures (pdf files, hardcopies)
- Cleaning Specifications (MSDS) (pdf files, hardcopies, Web database)
- Metrological calibration of devices (pdf files)
- Producer exploitation data (production batches, production plot codes, dates of recent applications of phyto-protective preparations before harvest, harvest dates, etc.
- Accounting data (ERP, Pdf,)

Retailer
The processor that packs edible olives is a data user from the retailer in the context of their cooperation. It receives information such as:

- Requirements for the final product (pdf files)
- Cooperation agreements (hardcopies, pdf)
- Complaints (hardcopies, pdf)

Certification Body
The producer within the context of its cooperation with the Certification Body, receives info such as:

- Audit scheduling (timelines) (emails, word, pdf)
- Audit Reports (word, pdf)
- Certificates of Conformity (pdf)
- Cooperation agreement (pdf)

Food Autorities

- Operating licenses (hardcopy, Pdf)
- Emergency Food Safety Notices (RASFF)
- Food Legislation / directives (pdf, web)

Processor as Data Provider
Producer / Other Processors
The processor that packs edible olives provides data to the producer and other manufacturers, with reference to his operational needs.

- Raw material specification (word, pdf, emails)

Retailer
The processor that packs edible olives is a data provider for the retailer who is the last stakeholder in the food supply chain.

- Final product's specifications (word, pdf, emails)
- Internal audits (pdf)
- Analyses (pdf)

- Third party audit's report for FSSC22000, IFS (pdf, FSSC/IFS database)
- Accounting information (pdf)
- Lot number
- Product Final Specifications (pdf)

Certification Body

The processor is a data provider to the certification body as well, so that the Food Safety Management System (FSMS) can be audited in accordance with the requirements of the FSSC 22000 and IFS standard.

- water and final product analyses (pdf)
- cleaning efficiency documents (pdf, word, hardcopies)
- raw material certificates (pdf, hardcopies)
- internal inspection results (pdf, hardcopies)
- corrective actions (pdf)
- Operational licenses (pdf, hardcopies)
- Operational data (pdf, ERP)

Food Authorities

A processor when a recall of a batch takes place, is obliged to provide data for handling the unsafe product in the market (withdrawal).

- Traceability documentation (pdf, ERP, hardcopies)

	Data exchange flow with Main Actors
Describe analytically the direct data exchange flow with other main actors in the certified supply chain(what kind of data the main actor 1 provides to the other main actors & what kind of data the main actor 1 uses from the other main actors)	

The processor for packed olives is firstly a Data User who manages info relevant to the producer and the retailer. These data can be used to document the food safety system requirements that the producer maintains in his operation.

Data Used by the Processor

From Producer:

- **Farm data on the traceability of a particular batch** such as files (hard copy or electronically) on the occurrence of plant enemies or diseases that may affect the quality characteristics of the olive fruit, the use of plant protection substances and biocides, and the use of fertilizers.
- **Product safety verification data**, such as laboratory analyses (e.g. for pesticide residues) (pdf files).
- **Food recall Data**, which are records for the sequence of actions to be taken in the event of a recall, such as the handling of recalled products.

From Retailer:

- **Retailer's requirements Data,** which are the recorded characteristics that the final product should meet prior to deliver to the retailer.
- **Data for Improvement**, which corresponds to the feedback that the processor receives relevant to its customer's satisfaction (word, excel, pdf questionnaire).

From Certification Body:

- **Certification Data**, meaning the certificates against the GLOBALGAP standard, issued by accredited certification bodies, as well as the lists of producers when the processor has to deal with an OPTION 2 GLOBALGAP certificate corresponding to a group of producers for olives. These data (pdf files) can be provided to the "The FSM" either directly by the supplier or through the GLOBALGAP web database.

From Food Authorities:

- **Food recall Data**, which are emergency notifications aiming to ensure the flow of information to enabling swift reaction when risks to public health are detected in the food chain (including raw food, processed food, food additives, feed etc.) (web data base)

From other Processors:

- **Supplementary Product Data**, which are critical info regarding food additives, and product contact materials (packages etc.) for the identification and assessment of food safety hazards (pdf files).

Data Provided by the processor

To Producers

- **Raw Materials' Specifications**, describing the required characteristics that the provided olive fruits should maintain (pdf files).

To Retailer

- **Final product Specification**, describing the critical characteristics that the supplied packed olives maintain, including instructions regarding intended use, specific storage requirements, and, as appropriate, shelf life (pdf, word files).
- **Final product safety verification data**, such as internal audits for ensuring effectiveness of the food safety management system, laboratory analyses (e.g. potential detection of chemical substances or microbiological agents) (pdf files)

To Certification Body

- **Compliance Data**, which evidently reveal conformity of the packaging process against the requirements of the food safety standards (FSSC22000, IFS) and area mainly provided to the Certification Body when auditing the processor. These indicatively include, verification data, measurements of critical safety parameters during preparation (regular temperature measurements, pH values at the product etc.), control measures relevant to the infrastructure (cleaning efficiency, use of food grade disinfectants on the surfaces in contact with the product), results of internal inspections, validation of equipment used for critical measurements (e.g. thermometer), operational licenses etc. (ERP, hardcopies, excel, pdf data)
- **Certification Data**, meaning the certificates with reference to FSSC 22000 and IFS standards, issued by the Certification Body (pdf files, FSSC and IFS data base).

	Data sources
Describe the potential sources of the data that the main actor handles (i.e. programmes, measuring devices (IoT).	

Internal Data Sources

The processor of packed olives that implements a Food Safety Management System that is aligned with the requirements of FSSC 22000 and the IFS Food standards, receives constant (regular) or periodical information both in a daily or weekly base (rarely in monthly base) for every step of his operational process.

This info is subject to internal control from the persons in charge, who they have been appointed in order to monitor and control in a systematic way the operational prerequisite programs (conditions) and even more the critical points throughout the process for packaging of olives that are key indicators for the proper implementation of the food safety management system.

This info corresponds to different data sources set at each one of the processing steps, such as:

- reception of raw materials in the unit,
- short-time storage,
- pre-processing handling,
- primary packaging,
- secondary packaging,
- storage of end products,
- release of the end products for distribution

And these data can be generated by different types of sources, which can be:

- **Data Mechanisms (software for Quality Control)**, i.e. set of actions for visual observation, data from measuring devises, that the company uses for quality control,
- **data loggers (IoT)**, which is a network-based application for day-to-day control of storage equipment temperature, humidity, CO_2 etc.,
- **Equipment's software**, such as software of packaging machines used in the unit, and
- **Intranet** that keeps up-to-dated info for working guidelines and procedures.

These different data internal sources can provide different data types which are mainly fully automated and electronically managed (excel files etc.) through a PC, or hardcopies which should then be transferred manually in excel files for further usage.

External Data Sources

The processor in order to set an efficient mechanism that evidently meet the food safety standards' criteria, has to have an up-to-date external communication system which gives him access to information that supports all its daily operational points, such as:

- Legislative issues, that allows the company to comply with all the relevant legislation (not only the one regarding food, but also the one with reference to environmental issues, occupational health and safety etc.)
- Certification issues, such as revisions of standards or requirements in the audit & certification process
- Communication with suppliers and contractors,
- Food hazards identification
- Determination of critical points and limits etc.

To cover these needs, the processor mainly uses:

- **Certification Databases**, such as the ones of FSSC and IFS where
- **Internet** searching, media reports
- **Literature**, such as books, journals, newspaper articles

Lists of registered establishments of Hellenic Food Authority E.F.E.T.
(https://efet.gr/index.php/en/food-companies/registered-establishments)
Databases of approved plant protection products of the Ministry of Rural Development and Food.
(http://wwww.minagric.gr/syspest/syspest_menu_eng.aspx)
EU - Pesticides database for pesticide residues and Maximum Residues Levels.
(https://ec.europa.eu/food/plant/pesticides/eu-pesticides-database/public/?event=pesticide.residue.selection&language=EN)
EU - Food Additives Database.
(*https://ec.europa.eu/food/safety/food_improvement_agents/additives/database_en)*
Catalogs of Accredited Bodies & Laboratories from Hellenic Accreditation System E.SY.D.
(http://www.esyd.gr/portal/p/esyd/en/catalogues.jsp)
EUR-Lex European Union Law
https://eur-lex.europa.eu/homepage.html?locale=en)

	Sub-actors

Describe analytically the sub-actors ***(who they are, what they do, what they provide, how they involved, what is their role to the certification process)*** *to the main actor. .*

The effectiveness of the Food Safety Management System (FSMS) based on the requirements of the FSSC22000 and IFS, which is applied by the processor depends not only on its cooperation with its direct partners but also on its cooperation with other indirectly involved parties of the supply chain.
These indirectly involved parties to the processor are:
Suppliers that produce supplementary materials and food additives used in the processing of handling, preserving and packaging olives (e.g. vinegar, salt, spices, and lactic acid). These ingredients must meet all the food safety requirements imposed by food legislation and the certification standards so that they do not pose any direct or indirect (cross-contamination) threat either at the end products or at the processing unit (food treatment area).
Suppliers of infrastructure construction materials, that they should provide materials followed by technical specifications for food processing areas and are kept in good condition.
Equipment suppliers, delivering all kind of infrastructure, which must be made of inert materials suitable for contact with food, which do not deteriorate after their cleaning and disinfection, and which have also smooth surfaces that can be easily cleaned.
Suppliers of packaging materials, providing packaging materials (plastic barrels, metal containers, plastic bags, and glass jars etc.) prepared in accordance with European and international regulations relevant to materials and items intended for contact with food. They should be suitable for the intended use, without allowing for immigration of chemical substances to the final product which could harm the human health.
Suppliers of cleaners and disinfectants used for hygienic assurance in the processing unit.
Pest Controllers, providing pest (such as combat rodents, insects etc.) management services by applying specialized methods for maintaining an appropriate work environment that do not pose any threat to the processing.
Laboratories, offering their services to verify the effectiveness of the Food Safety Management System (FSMS) through analysis performed, e.g. for residues of plant protection substances at the processed products and intermediate products, surfaces' microbiological test for potential existence of pathogens, analyses for water used during the process etc. Laboratories working with the processor must be accredited for the analyses they perform.
Metrological institutes / laboratories, verifying the proper operation and the reliability of the measurements provided by metric equipment critical for food processing, such as a thermometer, scales, etc. Laboratories working with the processor must be accredited for the tests they perform.

Business consultants working with the processor on the development, implementation, and updating of the Food Safety Management System (FSMS) based on the requirements of the FSSC22000 (GFSI), IFS Food and the requirements of the legislation.
Certification bodies, carrying out third-party audits and certifications and providing info on the status of certification for every involved stakeholder or sub-actor, which is a crucial info when assessing the risk of suppliers.
Public authorities, apart from their supervisory role throughout the food supply chain, are responsible for providing immediate info on food safety issues, such as food recalls, food guidance for critical and / or urgent issues affecting the food safety (e.g. pandemic issues, legislation revision, inspection finding when conducting on site audits in the food supply chain etc.
Business Requirements
BR 1. Easy access and valid info relevant to operational licenses of each type of sub-actor who provides its services to the processor
BR 2. Valid info regarding the accreditation of the different kind of laboratories that verify the effectiveness of the FSMS

	Type of Interaction with Sub-actor
Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform. What kind of data they provide to the main actor 1. and what kind of data they use from the main actor 1	

The data exchanged between all the above sub-actors and the processor that packs edible olives, can be:
Sub-Suppliers
All the suppliers (for providing auxiliary materials, food additives, infrastructure construction materials, equipment, packaging materials, detergents and disinfectants) receive information with reference to the company's interest. They ask for information about the specifications set by the company – using relevant corporate documents e.g. application form – as well as any peculiarities affecting the facility and its operation, before they plan to provide their product or service.
In this phase, the manufacturer is responsible for providing all the necessary information, in an appropriate manner in order to obtain the desired result.
In order to achieve the cooperation, both parties (manufacturer - supplier), in order for their systematic cooperation, are bound in written on the framework of this cooperation and its deliverables, e.g. a cooperation agreement is signed between the manufacturer and the pest controller.
Prior to validating their agreement, valid documentation regarding the compliance of the products and services, are provided by each supplier separately to the processor, including specifications about the services (e.g. Certificates of Compliance), the products and the materials (Certificates and relevant official affirmations), the manuals of the equipment, the declarations of compliance of the materials, the technical bulletins of products such as the cleaning-disinfectants, the instructions for use, etc.
More specifically, during the manufacturer's collaboration with the sub-actors involved, the following sequences of actions take place:
Pest Controllers
Companies providing pest controls (disinfestation – rodenticide) services submit a complete file which contains – in addition to the certificates for the service implementation – a contract with the processor, a license for their legal operation, a floor plan with bait stations, a pest control management plan stating the frequency of applications, the substances used (Technical sheets, approvals and MSDS), the on-site service report etc.
Laboratories
Labs carry out all the analyses that have been scheduled by the processor based on his operational plan regarding food safety, submitting a Certificate of analysis stating every accredited method of analysis used.
Metrological institutes / laboratories
Equipment verification services companies, after receiving and measuring the metric devices of the company, provide a relevant verification certificate for each one of them with their relevant report of finding and the due time for the next measuring assessment, as well as its accreditation certificates for the service that has provided.
Business consultants
Business consultants enter into an agreement, analyze the data provided by the processor and guide him towards the development, implementation and revision of the Food Safety Management System (FSMS) based on the requirements of the FSSC22000 (GFSI) and legal requirements. They may also take over to conduct periodical internal audits providing documented analysis of the weaknesses, opportunities and threats of the food safety management system of the company.

Certification bodies
The processor selects the Certification Body with which it will work to validate the proper implementation of the Food Safety Management System and obtain the relevant FSSC2000 and IFS Food certification in order to satisfy its customer's (retailer) requirement.
The Certification Body shall communicate to the manufacturer the audit plan.
During the audit, the processor gives access to the internal and external sources from which receives information regarding its operation which are relevant to the objectives of the audit.
Public authorities
The manufacturer regularly communicates with the competent authorities in order to maintain up-to-date legal operating documents (e.g. employees' certificates of health etc.), as well as timely information on food safety issues.
Moreover, the competent authority, informs the company of its findings after she carries out an on-site inspection at the unit

	Current Data Format
Describe the most usual format of the available data maintained by the actor.	

The most common formats of data addressed in all cases where information exchange happens between the processor and each stakeholder or sub-actor involved in the food supply chain are:

- **Handwritten Documents** e.g. forms used for measurements and observation during processing, administrative documents, audit reports, etc.
- **Office documents (**word, excel, pdf, jpg files) e.g. data logger files, management review of the Food Safety Management System, technical specifications, manual of infrastructure, Certificates of Conformity, audit reports and inspection reports, files registered in the Cloud
- **E-Mails** e.g. requests, scheduling of actions such as internal audits, emergency notice etc.
- **ERP System** e.g. for commercial actions
- **CRM System** e.g. for uploading audit reports,
- **Web Data** e.g. Certification info from databases of scheme owners etc.

This great variability of the sources and especially of the types of data relevant to the transactions of the processor, increases the time required for data sharing, while increasing the level of difficulty for the wider diffusion while protecting the privacy of the personal data.
BR 1. Categorizing and modifying all data in an editable format and transferring them in a common point of protected and controlled access.

	Goals
Describe how the 'TheFSM' will benefit the Main Actor 1 - End User1? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*	

The olives' packaging processor operates with a production process in which the degree of complexity is relatively low compared to that of other products, which are more sensitive to food risk management or in relation to that for the production of processed foods.
However, even for this relatively simple production activity, the number and complexity of the data from which the effectiveness of its daily response to safety parameters is determined (such as those defined by the FSSC 22000 and IFS Food standards), are extremely high.
Therefore, the creation of a digital platform that can manage in a short time and in a protected environment, critical data of high variability, generated by many different sources from within the entire food chain, can be a key differentiator for the food industry.
From the use of the "The FSM" platform, the processor involved in the food supply chain may face the following benefits:

- Reduction on the cost for maintaining an evergreen Food Safety Management Systems (FSMS) since the "The FSM" platform, will allow for easy access to critical info, which could be principle even when two or more different food safety standards interrelate between each other and are working in parallel (e.g. GLOBALGAP, FSSC 22000, IFS Food, etc.).
- Improving the effectiveness of the food safety management system, by simultaneously checking all the agreed obligations of the cooperating suppliers, linking them to deviations from the requested specifications, as well as depicting these deviations in terms of financial results.
- Replacing physical files with a professional digital database that is easy to use and more efficiently organize the daily work, as it can be interoperable with other central management applications (e.g. data logger, etc.).

- Reduction of the decision-making time because real-time data can be obtained. For example, information on accredited laboratories, supplier certifications and their certification status, databases, etc.
- Capability for finding new partnerships and cooperation, through the information that will be obtained relevant to the current market needs and adaptation of the operational works in the direction of producing products with characteristics that will cover the above needs.
- Strengthen long-term partnerships between those involved in the food supply chain who are users of an effective platform that can ensure data reliability and users' private data protection.

	Challenges
Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). *Define& describe the challenges with reference to the "data type" of the actor and the sub-actor*	

Challenges which should be met for achieving the above goals are:

- Interoperability of existing processing management solutions (e.g. data logger) with "TheFSM"
- Ease of data handling (data entry - upload, data processing - download etc.) through a user-friendly environment even for users who are not very familiar with relevant 'tools.
- No specialized (IT) experience or specialized involvement will be essential for using platform.
- Participation in the platform of all the key end users (main and sub-actors) with whom the processor cooperates.
- The registration and maintenance cost of the platform and how this will possibly affect the cost of the final product in terms of its competitiveness.
- The participation of sub actors which are appointed by the company, such as business consultants, by having limited access only at company's profile, with an add-on cost for the company.
- Protected environment for private information and personal data.
- The high commercial added value as benefit to get in return

	Legal Obstacles
Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain	

Indicative legal obstacles that may jeopardise the goals of this platform are:

- Protection of Personal data (GDPR).
- The principles and provisions of the GDPR apply whenever personal data is processed by persons functioning as data controllers or data processors.
- Definition: Any information relating to an identified or identifiable natural person (data subject). Examples of personal data include names, identification numbers and online identifiers such as email addresses (Article 4(1), GDPR).
- In this scenario personal data in the form of names, identification numbers and email addresses can be transmitted by the producer (farmers) to the processor and certification bodies.
- Legal protection of the sensitive business data. Unfair use of platform data by competitors or other stakeholders.
- Restriction on the disclosure of data that may be provided by the Certification Body due to confidentiality that governs the operation of certification bodies, under the accreditation standards (ISO 17065/2012 Requirements for bodies certifying products, process and services and ISO 172021/2016 Requirements for bodies provide auditing and certification for management systems. etc.

	Business Requirements
Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario	

BR 1. Collection of many different critical data, characterized by high frequency of reproduction.
BR 2. Segregation of data for assessment, in terms of those arising from control points critical to product safety (regular data), and those relating to functional control points (periodical data)
BR 3. Need for constant updating of information for points that directly (critical limits for food hazards, recalls etc.) and indirectly (food regulation etc.) affect food safety.
BR 4. Easy access (e.g. to Certification Body) to aggregated data to assess compliance with food safety standards.
BR 5. Gathering of information from multiple producers (suppliers) regarding the quality characteristics of the raw material (olives) to maintain traceability.

BR 6. Direct and immediate info for any non-conformity raised for the producer regarding its certified product, after he has delivered the raw material (olives) to the producer.
BR 7. Easy access and valid info relevant to operational licenses of each type of sub-actor who provides its services to the processor
BR 8. Valid info regarding the accreditation of the different kind of laboratories that verify the effectiveness of the FSMS
BR 9. Categorizing and modifying all data in an editable format and transferring them in a common point of protected and controlled access.

	Legal Requirements
Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	

Processing of personal data
Processor uses the following personal data: i) Contact data of main actors of the supply chain, primarily producers and retailers, and sub-actors, e.g. equipment suppliers, laboratories and other food producers, and/or their employees. ii) Certification data of producers and sub-actors, e.g. equipment suppliers, laboratories and other food producers, and/or their employees.
GDPR only applies to personal data of natural persons (Art 4 no 1 GDPR).
Food processor processes the above personal data as the controller (Art 4 no 2 and 7 GDPR).

Legal Requirements

- **LR1:** Analyse the legal basis for processing: "a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract" (Art 6 para 1 lit b GDPR); if there is no (direct) contract between controller and data subject, legitimate interests pursued by the controller or by a third party (Art 6 para 1 lit f GDPR)

Governance of non-personal data
Processor's data
Processor generates and collects data inter alia by monitoring, controlling and recording of critical information during the process of product processing. Internal data sources are e.g. data loggers (IoT) and Data Mechanisms (software for Quality Control).

Legal Requirements

- **LR2:** As there is no statutory protection of non-personal data ("data ownership"), collected data will be protected by technical and organisational measures (TOM), including legal instruments that limit the disclosure and use of the data, such as non-disclosure agreement (NDA) and confidentiality clauses in cooperation and other agreements.

Data exchange with Producer
Processor provides raw materials' specification and data about his operational needs to the producer.
Processor receives different data from producers, e.g. farm data on the traceability of a particular batch, product safety verification data (such as laboratory analyses), certificates of conformity for the raw product and food recall data.

Legal Requirements

- **LR3:** Provide a data governance framework that regulates sharing of data between producer and processor (terms of use of the platform or separate standard contract template). Any existing agreements and/or templates etc. will be analysed.

Data exchange with Certification body
During the certification process and audits of the processor, data relevant to the processing method must be presented to the Certification body. The data to be provided includes e.g. water and final product analyses, raw material certificates and internal inspection results.
Processor receives audit reports and certificates of conformity from the Certification body.

Legal Requirements

- **LR4:** Certification is performed on contractual basis. The broader framework is provided by the certification standard applicable. Inter alia the following items are relevant for development and operating of the platform: i) data the processor has to provide to the certification body, ii) data that may additionally be gathered during the on site or remote audit, iii) storage of the gathered data, iv) access to the gathered data and v) permission to share and/or confidentiality of the data. The applicable certification standard(s) and a contract template will be analysed.

Data exchange with Retailer

Processor provides retailer with e.g. final product specification and final product safety verification data, such as internal audits for ensuring effectiveness of the food safety management system and laboratory analyses.
In turn the processor is provided with e.g. retailer's requirements data, i.e. the characteristics that the final product should meet, and data for improvement, which corresponds to the feedback on customer's satisfaction.

Legal Requirements

- **LR5:** Provide a data governance framework that regulates sharing of data between processor and retailer (terms of use of the platform or separate standard contract template). Any existing agreements and/or templates etc. will be analysed.

Data exchange with Sub-actors

Processor receives information and documentation from sub-actors such as other processors, equipment suppliers and laboratories regarding the compliance of the products and services, that are provided by each sub-actor separately to the processor, including certificates of compliance and other relevant official affirmations.

Legal Requirements

- **LR6:** Identify legal circumstances relevant for participation of sub-actors in the platform. To this purpose in particular any existing agreements with sub-actors and/or templates, especially confidentiality obligations and/or data sharing requirements therein, will be analysed.
- **LR7:** Establish if there are any restrictions on sharing information received directly from food authorities with third parties.

Commercial exploitation of the public and open data

Processor will use databases of public authorities and databases of certification bodies in order to inter alia retrieve operational licenses of each type of sub-actor and accreditation of laboratories.

Legal Requirements

- **LR8:** Establish whether there are any restrictions to the intended use according to the database terms of use (license)

Food Safety Laws and Standards

Applicable Food Safety Regulations

General regulatory requirements are laid down in Regulation (EC) No 178/2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (General Food Law Regulation) and Regulation (EC) 852/2004 on the hygiene of foodstuffs(for overview of EU Rules regarding Food Hygiene please see here). They set out an overarching framework for the development of food and food safety legislation, standards and authorities. Outlines general principles, requirements and procedures the underpin decision making in food safety matters at all stages of production and distribution. The Regulation sets the overarching framework for the applicable food safety standards in the scenario.

Applicable Food Safety Standards

Along the food supply chain various food safety standards are applicable in parallel. For the processor in particular IFS Food (GFSI) for auditing food manufacturers and Foundation Food Safety System Certification 22000 (FSSC 22000) for the auditing and certification of Food Safety Management Systems (FSMS) are relevant.

Legal Requirements

- **LR9:** Identify and analyse data sharing requirements and possible restriction on the disclosure of data according to the relevant standards

	Data Requirements
Summarize the Dat Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	
• Data format: define the format that data should be exchanged • Data exchange: use the existing infrastructure • Uploading data: easy upload process, minimum cost • Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages • Data accessibility: To provide a way to limit the data access of each actor depending on his role	

Main Actor / End User	3.6.2.3 *Certification Body*
Description of Main Actor 3	The certification body is a third party independent organization , accredited to assess the compliance of the stakeholders in the food supply chain against the requirements of the standards they implement, through the principles of objectivity, impartiality and transparency.
3.1	**Role in a Certified Food Supply Chain**
Describe the responsibility or responsibilities of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'	

The Certification Body is an indirect link in the supply chain, which evaluates each stakeholder in terms of their degree of harmonization on the standards they implement, and issue the certificate of compliance. .His role is to assess the way that the stakeholder implements each scheme, to evaluate them and to verify the corrective actions that must be taken and submitted in order the stakeholder be certified.

The Certification Body should take as basic information, the size of the sites it is going to assess and evaluate, the legislation that governs the operation of the sites, the requirements of the schemes and how they are implemented, updated and upgraded.

Specifically:

- The size of the sites (size of the plots, if they use any storage places, multiple locations, use of subcontractors (on applications, harvest, etc.) for producers, the number of employees, shifts for processors
- The inspectors/auditors the Certification Body occupies per certification standard by checking their adequacy through the file with all the evidence (training, education, professional experience)
- The upgrades / updates of the schemes that they are implement. This information is talking from the website of the organization that issue the standard.

During this inspection and certification process, all information (data) concerning the production method & the production process must be presented in an appropriate form to the Certification Body in order to evaluate the compliance of the produced olive products and the packaged products by the processor and record the justification of the compliance criteria. The detailed data contributes to the successful evaluation for the issuance of a Certificate for each of the stakeholders.

Specifically

- Collection of necessary documents to evaluate the compliance of each stakeholder
- •Verify the non -compliance, the corrective actions and the time period of sending them in order the documentation file be completed.
- Evaluation of the corrective actions
- Evaluation of the whole documentation file by a reviewer of the Certification Body in order to issue the release decision and finally
- Issue the Certificate of Conformity

The Certification Body, except the annual audit / inspection, it may conducted unannounced audits / inspection in a specific stage of the production procedure (eg application period), in order to verify what it had recorded at first place.

Business Requirements

BR 1. Use of processed (aggregated) data to assess compliance with the requirements of certified schemes

BR 2. Need for access to up-to-date data from different sources and access to information relevant to new and amended legislation, new schemes' version, supervision of the competence of inspectors, accreditation issues etc.

BR 3. The Certification Body has to use a representative sample of the processed' (aggregated) data in order to evaluate compliance with product specifications

	Interrelation with Main Actors in Food Safety Certification
Describe <u>analytically</u> how this Actor interrelates with other main actors in the supply chain (forward &backward i.e. main actor 1 <=> main actor 2)	

The interconnection between Certification Body, Producer and Processor / retailer for the certification process, contain 5 stages.

Correlation Stages

The interconnection between Certification Body, Producer and Processor / retailer for the certification process, contain 4 stages.

- Application from the stakeholders, which includes personal information data, scope, type of cultivation, and hectares of the producer, inspected facilities for the processor. After the acceptance of the financial offer, the interested parties will be registered in the databases of the organizations on which the certification schemes are issued.
- The inspection / audit must take place during the harvesting period for the producer and during the maximum production activity for the processor.
- Any non compliance from the requirements , and the corrective actions that must be sent within a certain period of time, are recorded and evaluated.
- Final evaluation of the documentation file by the reviewer of the Certification Body and issue the certificate.

Types of Information

For every stage mentioned above, it is required a communication between the stakeholders that participate in the audit / inspection procedure with the Certification Body with specific type of data in terms of the characteristics of the information provided.

Specifically, the following.

- Information on the personal data of the interested parties, what is the scope of certification and the certified standard, the size of the cultivation (hectares, plots) regarding the producer and the total number of the inspected facilities/sites regarding the processor / retailer.
- Information on the critical dates for the production processes followed by each stakeholder regarding the harvesting period for the producer and when the production activity for processor will be more intense.
- Information regarding the documentation of the requirements for the certified schemes, so as to verify any non conformities and to specify the corrective actions which will be evaluated by the Certification Body.
- Information regarding clarifications on the documentation file, the reviewer requires in order to make the release decision

Business Requirements

BR.1 Collection of updated and valid data relevant to the farm operation or / and the processing unit, deriving from different official database of the corresponding public authorities (e.g. Intergrade Administration and Control System, General Registry etc.) under limited access given by producer/ processor.

BR.2 Collection of needed documentation that the CB requires to obtain prior to the certification decision.

	Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) (i.e main actor 1 is data provider to main actor 2 and/or data user of the main actor 2)	

The **Certification Body** receives the information and, after the evaluation, provides the audit report to the producer/ processor/ retailer, verifying the specific corrective actions needed to be taken in order to issue its certificate. (**certification**)

The stakeholders (producer, processor, retailer) provide data to the Certification Body in order to comply with the requirements of the scheme they implement. This information usually is documented files, regarding records of the production process (in digital form – MS Office archives / updated by the actors) and provided to the certification body (hardcopy or via email). These archives contain information regarding:

- List of evaluated suppliers and evaluation method
- For each evaluated supplier their certificates of compliance (pdf files that each supplier sends to his partner via email)
- Plant protection application records for the producer (usually hardcopy and hand written, containing information regarding Plant Protection Product brand name, active ingredient, amount of the liquid solution used per plot, amount of active ingredient used per plot , date of application, PHI (Pre Harvest Internal), cause of using , weather conditions , sprayer and spray method, prescriber
- Fertilizer application records (usually hardcopy and hand written by the producer) and contain information about the brand name of the fertilizer, the type (granular or water soluble), quantity per tree, nutrient ingredients, method of application, applicator, date of application.
- Application records of Irrigation: irrigation source, amount of irrigation, date of application
- Hard copy of harvest quantity, harvest date, plot, delivery date to the processor.

These data can either be added to the documentation folder or recorded in detail in the corresponding fields of the checklist that the certification body handles. The corresponding fields of the file that are in excel format are filled in and stored in the Certification Body's database and specifically in the client's documentation file.

Laboratory analyzes reports, are major requirements of the compliance criteria in every scheme, obtained by the Certification Body in pdf form. Auditor/Inspector during the onsite inspection / audit is going to record the certificate report number, the date and the findings on the checklist he use or is going to receive the certificate report via email directly from the stakeholders.

- The Certification Body uploads – after the acceptance of the financial offer from each one of the stakeholders – all the information concerning every individual they assess, the scope of certification, the status certification, in a particular data base for every scheme (Globalgap, FSSC etc)

FOODPLUS (GLOBALGAP)

- After the acceptance of the agreement, the Certification Body inserts the personal data of the producer, type of cultivation, all the different sites – plots, and he receives the 13-digit GGN (GLOBAL GAP NUMBER) which is a unique number for the producer.
- Data concerning: Inspection / Audit date, Certification Decision Date, which inspector / auditor of the Certification Body carried out the inspection / Audit
- Validity of the certificate.

NOTE: From all the information above, open data is only the validity of the producer's certificate.

FSSC PORTAL

Certification body upload the information below:

- Audit report on the existence template already used by the auditor and is a part of the internal procedure of the Certification Body
- The checklist with the justifications, provided by FSSC Portal and recorded during the inspection / audit.
- Audit/ inspection date
- All the findings (non-compliance)

NOTE: From all the information above, open data is only if a company is certified or not.

Business Requirements

BR 1. Connecting different methods of receiving and sending information, in order to facilitate the collection of documentation during the certification process

	Data exchange flow with Main Actors
Describe analytically the direct data exchange flow with other main actors in the certified supply chain(what kind of data the main actor 1 provides to the other main actors & what kind of data the main actor 1 uses from the other main actors)	

CERTIFICATION BODY – PRODUCER

Information transfer channels

• The information received from the producer in the certification application concerns, in addition to his personal data, the cultivation data (agricultural parcels, area) which the Certification Body receives electronically in a file with a specific template in order to issue the financial offer and by accepting this, the data entry of the producer is uploaded in the GLOBALGAP database.

• The producer's documentation managed by the certification body is obtained either through the on-site audit (physical file, recording of the information) or via e-mail. Additionally, during the on-site audit all the documented information is collected as a photographic material (printed copy or digital form).

• After the audit, the certification body shall provide the producer with the Audit report stating the non-compliances, the corrective actions needed to be done, giving him the guidelines for the actions that have to be taken to fully harmonize with the requirements, as well as the time required to be able to obtain the certificate**.**

• The certification body receives the corrective actions via email (either with photographic material regarding Plant Protection Products purchase invoices, or PDF files regarding analyzes, or with a Microsoft Word Document file on system forms that require completion) and evaluates them.

Once everything is evaluated and there is no longer any non-compliance:

1. THE data is uploaded on the certification data in the GLOBALGAP database
2. The certificate is issued and sent electronically to the producer
3. The printed form is sent by courier to the producer.

Frequency of information transfer

• The information collected by the certification application is essentially the first data collection and is used by the certification body after the acceptance of the financial offer and before the inspection / audit. Due to the annual validity

of the certificate, the application is received 1 time per year with the updated data and is updated on the basis of GLOBALGAP, but without changing the GLOBALGAP NUMBER**.**

• All certified information provided by the certification body is collected once a year and specifically during that time, however the Certification Body may, on a regular basis, carry out unannounced audits with a frequency of 1 per cultivation period. All the data that come out of each audit are uploaded to the existing file on the data base.

Size of information being circulated

The largest amount of information is collected during the inspection, so that the Certification Body is able to evaluate the producer and note the findings in the audit report.

- The Certification Body gathers all the information directly from the producer
- The Certification body uploads & updates exclusively the GLOBALGAP database with the details of the producer and the certification details

CERTIFICATION BODY – PROCESSOR

Information transfer channels

• The information received from the processor in the certification application concerns, in addition to his personal data, the size of the company (employees, shifts) which the Certification Body receives electronically in a file with a specific template in order to issue the financial offer and by accepting this, the data entry of the processor is uploaded in the FSSC portal.

• The processor's documentation managed by the certification body is obtained either through the on-site audit (physical file, recording of the information) or via e-mail. Additionally, during the on-site audit all the documented information is collected as a photographic material (printed copy or digital form).

• After the audit, the certification body shall provide the processor with the Audit report stating the non-compliances, the corrective actions needed to be done, giving him the guidelines for the actions that have to be taken to fully harmonize with the requirements, as well as the time required to be able to obtain the certificate**.**

• The certification body receives the corrective actions via email (either with photographic material regarding Plant Protection Products purchase invoices, or PDF files regarding analyzes, or with an Microsoft Word Document file on system forms that require completion) and evaluates them.

• Once everything is evaluated and there is no longer any non-compliance:

1. THE data is uploaded on the certification data in the FSSC Portal database
2. The certificate is issued and sent electronically to the processor
3. The printed form is sent by courier to the processor.

Frequency of information transfer

• The information collected by the certification application is essentially the first data collection and is used by the certification body after the acceptance of the financial offer and before the inspection / audit. Due to the 3-year validity of the certificate, the application is received 1 time per year with the updated data and is updated on the basis of FSSC portal**.**

• All certified information provided by the certification body is collected once a year and specifically during that time, however the Certification Body may, on a regular basis, carry out unannounced audits with a frequency of 1 per cultivation period. All the data that come out of each audit are uploaded to the existing file on the data base.

Size of information being circulated

The largest amount of information is collected during the inspection / audit, so that the Certification Body is able to evaluate the processor and note the findings in the audit report.

- The Certification Body gathers all the information directly from the processor
- The Certification body uploads & updates exclusively the FSSC portal database with the details of the processor and the certification details

Business Requirements

BR 1.Connecting channels to transfer information

BR 2. Connecting the different databases from where the information is collected.

	Data sources
Describe the potential sources of the data that the main actor handles (i.e. programmes, measuring devices (IoT).	
DATA SOURCES **GLOBALGAP, FSSC, IFS DATA BASE:** • They provide all the guidelines concerning, certification regulations, compliance criteria, (open data, pdf files) checklists (open data, excel file). These files can be downloaded by everyone from the databases mentioned above.	

- Concerning certificate data (date of inspection/audit, certificate status, scope, audit report, etc.) are upload in these databases. All this information is uploaded by the certification body; however, the interest parties have access only in the data concerning the validity of the certificate and the scope.

PRODUCER.

Provides the documentation for GLOBALGAP in digital or hardcopy forms. These data forms are not open and the producer must provide them to the Certification Body directly. This data could transferred either as printed files, or in digital form via email or flash drive. It is needed to be updated and keep informed in any changes to the Certification Body.

PROCESSOR

Provides digital or hardcopy forms of data, which are the documentation for FSSC requirements. These data forms are not open and the processor must provide them to the Certification Body directly. This data could transferred either as printed files, or in digital form via email or flash drive. **Quite important**, some data of the processor are very confidential information concerning collaborations with suppliers of raw materials (packaging materials), services and customers (retailers who buy the final product).

CERTIFICATION BODY MANAGEMENT SYSTEMS

Contains information regarding financial offers, certification schedule, auditors' assignments, which is not accessible to everyone.

PUBLIC AUTHORITIES (MINISTRY OF AGRICULTURE, HELLENIC FOOD AUTHORITY, HELLENIC ACCREDITATION SYSTEM)

They provide data accessible to everyone, regarding national or European regulations, accreditation & approvals. These data are opened and could be downloaded in digital forms (MS office documents), however it is needed to be personalized in order to be more specific (e.g. Plant Protection Products approvals, laboratories accreditations etc.)

Business Requirement.

BR 1. To collect the information in a form that could easily be transferred, accessed and managed from the Certification Body.

	Sub-actors
Describe analytically the sub-actors ***(who they are, what they do, what they provide, how they involved, what is their role to the certification process)*** *to the main actor. .*	
National Accreditation Council • Evaluates the Certification Body and gives the authorization to conduct inspections / audits for specific scopes and standards. The accreditation information is open data and is transmitted through the organization's site, (download in ms office form) • The certification body receives laboratory accreditation information regarding a specific type of analysis required by the inspected sites. (these are open data and could be easily download in word format). **Public authorities** • Certification Body and the stakeholders receive the updated legislation-regulations. These databases are open to all interested parties and could be easily download by everyone. • The Public Authorities (e.g. Hellenic Food Authority) may conducted inspections in the stakeholders , the Certification Body must request the report in order to see the findings, the corrective actions that is taken from the actor, and to verify them. It is not accessible to everyone; it must be provided by the actors who have been assessed. The certification body does not have access in this information and the public authorities inform each interested party by email and letter. **Organizations (FOODPLUS, IFS, FSSC, GFSI)** • Certification Body must be informed of any upgrades / updates of the compliance criteria of the schemes, in order to adapt them to the inspection and documentation process. Any information regarding the updates / changes of publications, etc., conducted via mail from the organization to the Scheme Manager who is responsible, through training, to inform the inspectors / auditors	
	Type of Interaction with Sub-actor
Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform. What kind of data they provide to the main actor 1. and what kind of data they use from the main actor 1	

PUBLIC AUTHORITIES & NATIONAL ACREDITATION COUNCIL

- Through databases with open access to the interested public, they provide reliable data which, however, must be configured to be more personalized for the requirements of the scope that is needed to be assessed. How to search for websites is often not user-friendly.

Organizations (FOODPLUS, IFS, FSSC, GFSI)

• Provide the regulations, the compliance criteria, the inspection / audit procedure, Inspector /Auditor requirements (these are open data, usually in pdf form) the compliance criteria checklists (open data, excel form). These archives can be downloaded by anyone interested by inserting the user name and the password

• Certificate data (date of conducted audit, certification status, scope, recorded non-compliances, etc.) are uploaded by the certification body exclusively and are not open to everyone. Open data is only the information about whether someone is certified or not.

	Current Data Format
Describe the most usual format of the available data maintained by the actor.	

- **GLOBALGAP, FSSC, IFS DATA BASE**
  They provide all the guidelines concerning, certification regulations, compliance criteria, (open data, pdf files) checklists (open data, excel file). These files can be downloaded by everyone from the databases mentioned above.
  The certification data (date of inspection/audit, certificate status, scope, audit report, etc.) are upload in these databases. All this information is uploaded by the certification body; however the interest parties have access only in the data concerning the validity of the certificate and the scope.
- **PRODUCER.**
  Provides the documentation for GLOBALGAP in digital or hardcopy forms. These data forms are not open and the producer must provide them to the Certification Body directly. This data could transferred either as printed files, or in digital form via email or flash drive. It is needed to be updated and keep informed in any changes to the Certification Body.
- **PROCESSOR**
  Provides digital or hardcopy forms of data, which are the documentation for FSSC requirements These data forms are not open and the processor must provide them to the Certification Body directly. This data could transferred either as printed files, or in digital form via email or flash drive. Quite important, some data of the processor are very confidential information concerning collaborations with suppliers of raw materials (packaging materials), services and customers (retailers who buy the final product).
- **CERTIFICATION BODY MANAGEMENT SYSTEMS**
  Contains information regarding financial offers, certification schedule, assignments and it isn't accessible to everyone.
- **PUBLIC AUTHORITIES (MINISTRY OF AGRICULTURE, HELLENIC FOOD AUTHORITY, HELLENIC ACCREDITATION SYSTEM)**
  They provide data accessible to everyone, regarding national or European regulations, accreditation & approvals. These data are opened and could be downloaded in digital forms (MS office documents), however it is needed to be personalized in order to be more specific (e.g. Plant Protection Products approvals, laboratories accreditations etc.)

Business Requirement

BR 1. To collect the information in a form that could easily be transferred, accessed and managed from the Certification Body.

	Goal
Describe how the 'TheFSM' will benefit the Main Actor 1 - End User1? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*	

1. Have direct and official information on the findings of the National Audit Authorities in certified Producers, Processors and Retailers
2. More easily to obtain all the evidence for the justification of compliance criteria (e.g. personal data of the producer, application files, etc.)
3. Have access to a valid and up-to-date all-in-one database (legal requirements, accreditation for laboratories, MRL limits, official PPP approvals)
4. Immediate profile of the stakeholders in terms of its history, its size so that it is easier to analyze the risk in terms of taking a sample for analysis and control
5. Increase efficiency in terms of time and cost of controls (Aligning certification processes with "TheFSM", to increase efficiency and reduce the required resources of the certification mechanism
6. For effective use and re-examination of all previous customer audit findings, which are grouped into certain categories 'to further highlight the areas of risk / concern for each subsequent audit performed by different audit teams.

	Challenges

Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution).
Define& describe the challenges with reference to the "data type" of the actor and the sub-actor

- To address all restrictions and requirements regarding the handling of control information, placed on Certification Bodies by accreditation standard (ISO 17065:2012, ISO 17021:2105) and scheme holders, when using "TheFSM".
- Functionality of existing certification management solutions with "TheFSM" when sharing data - Harmonization with corporate policies and procedures.
- All certified customers must customize their data format based on TheFSM's technical specifications to facilitate their notification and disclosure.
- Participation of all those involved (main and secondary bodies) with whom there is cooperation in the certification process.
- Protection of all the sensitive business and commercial data of all the involved parties in the food supply chain (e.g. Certification Body)
- To keep the cost of certification unaffected by a possible simultaneous increase in the profit margin.
- There should be no additional maintenance costs for users.

	Legal Obstacles

Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain

Indicative legal obstacles that may jeopardise the goals of this platform are:

- Sensitive personal data (GDPR).
- Restriction on the disclosure of data that may be provided by the Certification Body due to confidentiality that governs the operation of certification bodies, under the accreditation standards (ISO 17065/2012 Requirements for bodies certifying products, process and services and ISO 172021/2016 Requirements for bodies provide auditing and certification for management systems. etc.
- Legal protection of the sensitive business data. Unfair use of platform data by competitors or other stakeholders.

	Business Requirements

Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario

BR 1. Use of processed (aggregated) data to assess compliance with the requirements of certified schemes
BR 2. Need for access to up-to-date data from different sources and access to information relevant to new and amended legislation, new schemes' version, supervision of the competence of inspectors, accreditation issues etc.
BR 3. The Certification Body has to use a representative sample of the processed' (aggregated) data in order to evaluate compliance with product specifications
BR 4. Collection of updated and valid data relevant to the farm operation or / and the processing unit, deriving from different official database of the corresponding public authorities (e.g. Intergrade Administration and Control System, General Registry etc.) under limited access given by producer/ processor.

BR 5. Collection of needed documentation that the CB requires to obtain prior to the certification decision.
BR 6. Connecting different methods of receiving and sending information, in order to facilitate the collection of documentation during the certification process
BR 7. Connecting channels to transfer information
BR 8. Connecting the different databases from where the information is collected
BR 9. To collect the information in a form that could easily be transferred, accessed and managed from the Certification Body.
BR 10. To collect the information in a form that could easily be transferred, accessed and managed from the Certification Body

	Legal Requirements

Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario

Processing of personal data

Certification body uses the following personal data: i) Contact data of main actors of the supply chain, primarily producers and processors, and sub-actors, e.g. suppliers, food authorities and certification organisations, and/or their employees. ii) Certification data of producers, processors and sub-actors, e.g. suppliers and laboratories, and/or their employees.
GDPR only applies to personal data of natural persons (Art 4 no 1 GDPR).
Certification body processes the above personal data as the controller (Art 4 no 2 and 7 GDPR).

Legal Requirements

- **LR1:** Analyse the legal basis for processing: "a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract" (Art 6 para 1 lit b GDPR); if there is no (direct) contract between controller and data subject, legitimate interests pursued by the controller or by a third party (Art 6 para 1 lit f GDPR)

Governance of non-personal data

Data exchange with Producer

Certification body receives different data from producers in their certification application, e.g. cultivation data such as type of cultivation and size of the cultivation (hectares, plots). Further information is obtained through on-site or remote audit. This might include collecting photographic material.
Producer is in turn provided with audit data and certification data.
Certification data, including the information on the assessed producer, the scope of certification, the status certification, date of conducted audit, recorded non-compliances, etc., is also uploaded in the GLOBALGAP database. Only the information on the producer's certification is publicly available in the database.

Legal Requirements

- **LR2:** Certification is performed on contractual basis. The broader framework is provided by the certification standard applicable, i.e. GLOBALGAP ver 5.2. Inter alia the following items are relevant for development and operating of the platform: i) data the processor has to provide to the certification body, ii) data that may additionally be gathered during the on site or remote audit, iii) storage of the gathered data, iv) access to the gathered data and v) permission to share and/or confidentiality of the data. The applicable certification standard(s) and a contract template will be analysed.

Data exchange with Food Processor

Certification body receives different data from processors in their certification application, e.g. the size of the company (employees, shifts), inspected facilities, data on production method and production process. Further information is obtained through on-site or remote audit. This might include collecting photographic material. Some data provided by the processor is very sensitive and confidential information concerning collaborations with suppliers of raw materials (packaging materials), services and retailers.
Processor is in turn provided with audit data and certification data.
Certification data, including the information on the assessed processor, the scope of certification, the status certification, date of conducted audit, recorded non-compliances, etc., is also uploaded in the FSSC Portal database. Only the information on the processor's certification is publicly available in the database.

Legal Requirements

- **LR3:** Certification is performed on contractual basis. The broader framework is provided by the certification standard applicable, i.e. FSSC 22000. Inter alia the following items are relevant for development and operating of the platform: i) data the processor has to provide to the certification body, ii) data that may additionally be gathered during the onsite or remote audit, iii) storage of the gathered data, iv) access to the gathered data and

v) permission to share and/or confidentiality of the data. The applicable certification standard(s) and a contract template will be analysed.

Data exchange with Sub-actors

Certification body receives information and documentation from sub-actors, primarily food authorities (e.g. Hellenic Food Authority). Food authorities may conduct inspections of producers and/or processors, and the certification body must request the report in order to see the findings and to verify them.

Legal Requirements

- **LR4:** Establish if there are any restrictions on obtaining information directly from food authorities. If the information is not accessible to everyone, it must be provided by the assessed producers and/or processors.

Commercial exploitation of the public and open data

Certification body will use databases of public authorities and other certification bodies. In addition to public data such as accreditation and approvals (e.g. Plant Protection Products approvals, laboratories accreditations etc), they will retrieve data relevant to the farm operation and/or the processing unit.

Legal Requirements

- **LR5:** Establish whether there are any restrictions to the intended use according to the database terms of use (license). If the information is not accessible to everyone, it must be provided by the assessed producers and/or processors.

Food Safety Laws and Standards

Applicable Food Safety Regulations

General regulatory requirements are laid down in Regulation (EC) No 178/2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (General Food Law Regulation) and Regulation (EC) 852/2004 on the hygiene of foodstuffs(for overview of EU Rules regarding Food Hygiene please see here). They set out an overarching framework for the development of food and food safety legislation, standards and authorities. Outlines general principles, requirements and procedures the underpin decision making in food safety matters at all stages of production and distribution. The Regulation sets the overarching framework for the applicable food safety standards in the scenario.

Applicable Food Safety Standards

Along the food supply chain various food safety standards are applicable in parallel. Certification body certifies producers pursuant to food safety certification GLOBALGAP ver 5.2 and processors pursuant to Foundation Food Safety System Certification 22000 (FSSC 22000) for the auditing and certification of Food Safety Management Systems (FSMS).

In addition, there may be (further) restrictions to the use and/or sharing of data by certification body under accreditation standards such as ISO 17065/2012 Requirements for bodies certifying products, processes and services and ISO 17021-2/2016 Requirements for bodies providing audit and certification of management systems.

Legal Requirements

- **LR6:** Identify and analyse data sharing requirements and possible restriction on the disclosure of data according to the relevant standards

	Data Requirements
Summarize the Dat Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	
• *Data accessibility: To provide a way to limit the data access of each actor depending on his role* • *Data exchange: use the existing infrastructure* • *Uploading data: easy upload process, minimum cost* • *Data format: define the format that data should be exchanged*	
Main Actor / End User	**3.6.2.4 *Retailer***
Description of Main Actor 4	*The retailer is the company that trades the final product "packaged olives". Selects only food suppliers certified against the IFS Food Standard (GFSI) for their products. Foods that are procured are transferred by private means and stored in private storage areas before being distributed.*
	Role in a Certified Food Supply Chain
Describe the responsibility or responsibilities of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'The FSM'	

The retailer procures and trades to the final consumers, packaged olives which have been processed under a certified Food Safety Management System that the processor set in conformity to the IFS Food standard. In order to maintain these characteristics in the product, the retailer considers the product's specification and its suggested way of storage, complies with the legislation on safe food handling and trading, and determines an appropriate food quality-safety policy, taking into account all the characteristics of its "environment" which could affect product's integrity.
Specifically:

- The arrangement of his business assets,
- Storage conditions and infrastructures,
- The equipment required and their suitability for storing the food being traded,
- The available resources of his business (current technologies for receiving, storing and disposing of food to consumer, workforce, licenses required for the operation of the company etc.),
- Software systems.

Before the product is storage, the achievement of the agreed features in it are verified through the supplier evaluation procedures conducted by the retailer. During this evaluation process, all the required information (data) must be in the appropriate format in order to evaluate the compliance of the supplier (processor) towards the company's quality assurance standards and to record the evidence. The adequacy of the data contributes to the successful evaluation of the supplier and the delivered product.
The number of the involved parties (stakeholders or sub-actors of the food supply chain), as well as the stages that can mediate between the manufacturer and the retailer, determine the complexity of the data that the retailer will receive in order to maintain the necessary documentation for adequate backward tracking of the received product in case of a recall.
In addition, the complexity of the retailer's "work environment", as well as the product's specifications defined for its storage conditions, cause to expand the volume of data that the retailer must manage and maintain, for each batch of product received.
Business Requirements
BR 1. Collection of different data with reference to the characteristics of the business and the final product
BR 2. Management of Data (data evaluation) deriving from different sources to draw conclusions (e.g. suppliers risk assessment etc.)

	Interrelation with Main Actors in Food Safety Certification
Describe analytically how this Actor interrelates with other main actors in the supply chain (forward &backward i.e. main actor 1 <=> main actor 2)	

In order to ensure that sufficient information on issues concerning safety and quality of the products he trades are available, the retailer shall establish, implement and maintain effective arrangements for a downwards communication with its processor for packed olives (suppliers)
Within this context the following interrelations are noted.
Retailer – Supplier (Processor)

- The retailer aiming to procure packaged olives meeting specific characteristics based on its quality policy, implements market research in order to create a candidate suppliers' list, and communicates the required specifications of the end product to the suppliers.
- The retailer, requests from the interested suppliers to gather relevant documentation regarding their status of certification against the IFS Food standard.
- The retailer, implements a supplier's risk assessment before signing the cooperation agreement with the supplier.
- The trader sources packed olives from the processor and takes further actions to meet the storage specifications and due date for trading the product (FIFO etc.).

Retailer – Logistics *(if contracted)*

- In case that the retailer willing to outsource the logistics services for procuring the end product, communicates its requirements based on its quality policy, in order to cooperate with a logistics company maintaining an IFS Logistics certificate.
- The retailer, requests from the logistics to gather relevant documentation regarding their status of certification against the IFS Logistics standard.
  The retailer, implements a risk assessment for the logistics services before signing the cooperation agreement with the contributor. (processing, packaging) before delivering the final product to the retailer.

- The processor, if needed, cooperates with third-party logistics that in many case consist a crucial liaison between the processor and the retailer, having the responsibility to handle (storage, transfer) the final product maintain in the most proper way the characteristics of the products without posing any additional threat.

Types of Info exchange

In each of the above steps, where communication is performed between the retailer, the processor and the logistics (if needed), the info exchanged maintain the following features:

- Information on the quality characteristics that the final product must have for distribution by the retailer,
- Documented, updated, and validated information for the certification (IFS) status of the suppliers to the retailer,
- Information from monitoring and evaluating the progress of the agreed requirements (e.g. product analyses) from the processor to the retailer,
- Information relevant to the monitoring and evaluation of the course of the sourced end product between the processor, the logistics and the retailer, based on the corresponding batches (e.g. products' lot number)

	Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) (i.e main actor 1 is data provider to main actor 2 and/or data user of the main actor 2)	

Retailer as Data User

The retailer that procures packaged olives is a user of the data provided by other stakeholders in the food chain such as:

Processors

- Certificates of Conformity for Food Safety Management IFS Food (pdf files)
- Final product's specifications (word, pdf, emails)
- Internal audits (pdf)
- Third party audit's report for IFS (pdf, IFS database)
- Accounting information (pdf)
- Lot number

Logistics *(if contracted)*

The retailer that cooperates with a logistics that receives and transfers the end product from the processor, storages, and then distributes packed edible olives at the different retailer's stores, receives information such as:

- Certificates of Conformity for Food Safety Management IFS Logistics (pdf files)
- Handling data: stock, hygiene, temperature / moisture records (pdf files, excel / software data)

Food Autorities

- Operating licenses (hardcopy, Pdf)
- Emergency Food Safety Notices (RASFF)
- Food Legislation / directives (pdf, web)
- On-site Audit report (pdf files, hardcopy)

Customers

- Complaints (web, email)

Retailer as Data Provider

Processors

The retailer that procure edible olives provides data to the processor and other processors, with reference to his operational needs:

- Products' quality policy for a certified Food Safety Management System against the requirements of IFS Food for Packed olives (pdf, emails)
- Final product (packed olives) specifications (pdf, emails)

Logistics

- Products' quality policy for a certified Food Safety Management System against the requirements of IFS Logistics for handling (transport, storage, distribution) packed olives (pdf, emails)

Food Autorities

A retailer when a recall of a batch takes place, is obliged to provide data relevant to the characteristics of the product, its stock, and its actions for handling the unsafe product at its premises (withdrawal).

- Traceability documentation (ERP, pdf files)

	Data exchange flow with Main Actors
Describe analytically the direct data exchange flow with other main actors in the certified supply chain(what kind of data the main actor 1 provides to the other main actors & what kind of data the main actor 1 uses from the other main actors)	
The retailer for packed olives is firstly a Data Provider who informs its suppliers about its purchasing needs and its quality assurance policy in terms of food safety. **Flow of Data Provided by the Retailer** To Processor of olives ● **End product's Specifications Data**, describing the required characteristics that the provided packed olives should maintain (email, pdf files). ● **Certification Data,** stating the needs of its quality policy for a certified FSMS against the requirements of IFS Food standard (email, pdf files). To Logistics (if contracted) ● **Certification Data,** stating the needs of its quality policy for a certified FSMS against the requirements of IFS Logistics standard (email, pdf files). **Flow of Data Used by the Retailer** From Processor: ● **Certification Data**, meaning the certificates against the IFS Food (Pdf files) ● **Management System data on the traceability of each product's batch** (hard copy or electronically) ● **Product safety verification data**, such as laboratory analyses (e.g. for chemical residues) (pdf files). ● **Food recall Data**, which are records supporting the sequence of actions to be taken in the event of a recall, such as the handling of recalled products. From Logistics (if contracted) ● **Certification Data**, meaning the certificates against the IFS Food (Pdf files) ● **Management System data on the traceability of each product's batch** (hard copy or electronically) ● **Food recall Data**, which are records supporting the sequence of actions to be taken in the event of a recall, such as the handling of recalled products. ● **Product safety verification data,** such as stock, hygiene, temperature / moisture records (pdf files, excel / software data) From Food Authorities: ● **Food recall Data**, which are emergency notifications aiming to ensure the flow of information to enabling swift reaction when risks to public health are detected in the food chain (web data base)	
	Data sources
Describe the potential sources of the data that the main actor handles (i.e. programmes, measuring devices (IoT).	
Internal Data Sources The retailer receives constant (regular) or periodical information both in a daily or weekly base (rarely in monthly base) for every step of his operational process. This info corresponds to different data sources set at each one of the following steps, such as: ● reception of end products (packed olives) at its warehouse, ● short-time storage, ● shelf placement in the store And these data can be generated by different types of sources, which can be: ● **Product handling data systems,** i.e. ERP for stock management ● **Data Mechanisms (software for Quality Control)**, i.e. set of actions for visual observation, data from measuring devises, that the company uses for quality control, ● **data loggers (IoT)**, which is a network based application for day-to-day control of storage equipment temperature, humidity, CO_2 etc., and ● **Intranet** that keeps up-to-dated info for working guidelines and procedures. **External Data Sources** The processor in order to set an efficient mechanism that evidently meet its quality assurance policy, has to have an up-to-date external communication system which gives him access to information that supports all its daily business, such as:	

- Legislative issues, that allows the company to comply with all the relevant legislation (not only the one regarding food, but also the one with reference to environmental issues, occupational health and safety etc.)
- Certification issues, such as revisions of standards or requirements in the audit & certification process
- Communication with suppliers and contractors,
- Food Recalls etc.

And these data can be generated by different types of sources, which can be :
To cover these needs, the processor mainly uses:

- **Certification Databases**, such as the ones of FSSC and IFS where
- **Suppliers' data systems (ERP)**
- **Internet** searching, media reports

	Sub-actors
Describe analytically the sub-actors ***(who they are, what they do, what they provide, how they involved, what is their role to the certification process)*** *to the main actor.*	
Suppliers of infrastructure construction materials, who they must provide materials suitable for food areas, allowing that way maintenance of proper temperature, humidity condition etc. **Equipment suppliers**, who they provide amenities, which must be made of inert materials suitable for contact with food, which they do not deteriorate after cleaning and disinfection and have smooth surfaces easy to clean. **Suppliers of cleaners and disinfectants** used for cleaning and disinfecting premises and equipment should provide materials suitable for food distribution areas. **Pest Controllers**, providing pest (such as combat rodents, insects etc.) management services at the warehouse of the retailer, by applying specialized methods for maintaining an appropriate work environment that do not pose any threat to the processing. **Laboratories** can be used by the retailer in order to verify that the end products received meet the requirements in terms of the specifications that had been set, relevant to the quality assurance policy. **Metrological institutes / laboratories**, verifying the proper operation and the reliability of the measurements provided by metric equipment critical for food storage, such as a thermometers, scales, etc. that the retailer uses to measure the storage conditions in order to meet the specifications of the product as defined and set by the processor. Laboratories working with the processor must be accredited for the tests they perform. **Public authorities**, apart from their supervisory role throughout the food supply chain, are responsible for providing immediate info on food safety issues, such as food recalls, food guidance for critical and / or urgent issues affecting the food safety (e.g. pandemic issues, legislation revision, inspection finding when conducting on site audits in the food supply chain etc.	
	Type of Interaction with Sub-actor
Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform. What kind of data they provide to the main actor 1. and what kind of data they use from the main actor 1	

The data exchanged between all the above sub-actors and the retailer that trades packed edible olives, can be:

Sub-Suppliers

All the suppliers (for providing infrastructure construction materials, equipment, detergents, and disinfectants) receive information with reference to the company's quality assurance policy. They ask for information about the specifications set by the company – using relevant corporate documents e.g. application form – as well as any peculiarities affecting the facility and its operation, before they plan to provide their product or service.

In this phase, the trader is responsible for providing all the necessary information, in an appropriate manner in order to obtain the desired result.

In order to achieve the cooperation, both parties (trader - supplier), in order for their systematic cooperation, are bound in written on the framework of this cooperation and its deliverables.

Prior to validating their agreement, valid documentation regarding the compliance of the products and services, are provided by each supplier separately to the retailer, including specifications about the services (e.g. Certificates of Compliance), the products and the materials (Certificates and relevant official affirmations), the manuals of the equipment, the declarations of compliance of the materials, the technical bulletins of products such as the cleaning-disinfectants, the instructions for their use etc.

Additionally, during the retailer's collaboration with the sub-actors involved, the following sequences of actions take place:

Pest Controllers

Companies providing pest controls (disinfestation – rodenticide) services submit a complete file which contains – in addition to the certificates for the service implementation – a contract with the processor, a license for their legal operation, a floor plan with bait stations, a pest control management plan stating the frequency of applications, the substances used (Technical sheets, approvals and MSDS), the on-site service report etc.

Laboratories

Labs carry out all the analyses that retailer's quality manager sets based on his operational plan regarding food safety, submitting a Certificate of analysis stating every accredited method of analysis used.

Metrological institutes / laboratories

Equipment verification services companies, after receiving and measuring the metric devices of the company, provide a relevant verification certificate for each one of them with their relevant report of finding and the due time for the next measuring assessment, as well as its accreditation certificates for the service that has provided.

Public authorities

The retailer regularly communicates with the competent authorities in order to maintain up-to-date legal operating documents (e.g. employees' certificates of health etc.), as well as timely information on food safety issues.

Moreover, the competent authority, informs the company of its findings after she carries out an on-site inspection at the unit.

	Current Data Format
Describe the most usual format of the available data maintained by the actor.	

The most common formats of data addressed in all cases where information exchange happens between the retailer and each stakeholder or sub-actor involved in the food supply chain are:

- **Office documents (**word, excel, pdf, jpg files) e.g. data logger files, manual of infrastructure, Certificates of Conformity, audit reports and inspection reports, files registered in the Cloud
- **E-Mails** e.g. requests, scheduling of actions such as internal audits, emergency notice etc.
- **ERP System** e.g. for commercial actions
- **Web Data** e.g. Certification info from databases of scheme owners etc.

Even in the case of a retailer, there is a significant variability of the sources and the types of data relevant to its transactions, which increases the time required for data sharing, while increasing the level of difficulty for the wider diffusion while protecting the privacy of the personal data.

	Goal
Describe how the 'TheFSM' will benefit the Main Actor 1 - End User1? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*	

From the use of the "The FSM" platform, the retailer may face the following benefits:

- Access to detailed information about the final shelf product and its correlation with critical factors treated by the previous stakeholders in the food supply chain, thus to maintain a robust traceability system allowing efficient withdrawal of products.
- Reduction of the decision-making time since up-to-date data can be obtained relevant his contracted suppliers. For example, fully documented quick supplier's risk assessment can be conducted by having direct access to principle information about their certification status, their business performance etc., through real-time data and reliable stored data (statistical analysis).
- The availability of fully traced downstream information improves transparency and prevents unfair trade practices that have significant implications for consumers and the environment.
- Strengthen long-term partnerships between the users of the platform that can ensure data reliability and users' private data protection.
- Enhance customers trust on the retailer's brand name, by presenting (with limited access to the company's profile in the platform) some important data relevant to the quality assurance actions taken by the company (e.g. additional laboratory test etc.)

	Challenges

Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution).
Define& describe the challenges with reference to the "data type" of the actor and the sub-actor

Challenges which should be met for achieving the above goals are:

- Interoperabillity of existing software management solutions with "TheFSM"
- Participation in the platform of all the key end users (main and sub-actors) with whom the retailer cooperates.
- Protected environment for private information and personal data.
- The high commercial added value as benefit to get in return

	Legal Obstacles

Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain

Indicative legal obstacles that may jeopardise the goals of this platform are:

- Sensitive personal data (GDPR).
- Legal protection of the sensitive business data. Unfair use of platform data by competitors or other stakeholders.

	Business Requirements

Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario

BR 1. Access to detailed information about the final shelf product and its correlation with critical factors treated by the previous stakeholders in the food supply chain, thus, to maintain a robust traceability system allowing efficient withdrawal of products.
BR 2. Reduction of the decision-making time since up-to-date data can be obtained relevant his contracted suppliers. For example, fully documented quick supplier's risk assessment can be conducted by having direct access to principle information about their certification status, their business performance etc., through real-time data and reliable stored data (statistical analysis).
BR 3. The availability of fully traced downstream information improves transparency and prevents unfair trade practices that have significant implications for consumers and the environment.
BR 4. Strengthen long-term partnerships between the users of the platform that can ensure data reliability and users' private data protection.
BR 5. Enhance customers trust on the retailer's brand name, by presenting (with limited access to the company's profile in the platform) some important data relevant to the quality assurance actions taken by the company (e.g. additional laboratory test etc.)

	Legal Requirements

Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario

Processing of personal data

Retailer uses the following personal data: i) Contact data of main actors of the supply chain, primarily processors, and sub-actors, e.g. third-party logistics and food authorities, and/or their employees. ii) Certification data of processors and sub-actors, e.g. third-party logistics, and/or their employees.

GDPR only applies to personal data of natural persons (Art 4 no 1 GDPR).

Food processor processes the above personal data as the controller (Art 4 no 2 and 7 GDPR).

Legal Requirements

- **LR1:** Analyse the legal basis for processing: "a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract" (Art 6 para 1 lit b GDPR); if there is no (direct) contract between controller and data subject, legitimate interests pursued by the controller or by a third party (Art 6 para 1 lit f GDPR)

Governance of non-personal data

Retailer's data

The retailer generates and collects data on every step of his operational process such as reception of end products at its warehouse, short-time storage, shelf placement in the store. Data is generated by different types of internal data sources e.g. product handling data systems, i.e. ERP for stock management; Data Mechanisms (software for Quality Control), and data loggers (IoT).

Legal Requirements

- **LR2:** As there is no statutory protection of non-personal data ("data ownership"), collected data will be protected by technical and organisational measures (TOM), including legal instruments that limit the disclosure and use of the data, such as non-disclosure agreement (NDA) and confidentiality clauses in cooperation and other agreements.

Data exchange with Food Processor

Retailer provides processor with e.g. retailer's requirements data, i.e. the characteristics that the final product should meet, certification data, stating the needs of its quality policy for a certified FSMS against the requirements of IFS Food standard, and data for improvement, which corresponds to the feedback on customer's satisfaction.

In turn the retailer is provided with e.g. final product specification and final product safety verification data, such as internal audits for ensuring effectiveness of the food safety management system and laboratory analyses, and certificates of conformity for Food Safety Management IFS Food.

Legal Requirements

- **LR3:** Provide a data governance framework that regulates sharing of data between retailer and processor (terms of use of the platform or separate standard contract template). Any existing agreements and/or templates etc will be analysed.

Data exchange with Sub-actors

Retailer provides information to sub-actors such as third-party logistics and food authorities. To third-party logistics retailer provides certification data, stating the needs of its quality policy for a certified FSMS against the requirements of IFS Logistics standard, and receives certificates of conformity for Food Safety Management IFS Logistics and Handling data (e.g. stock, hygiene, temperature and/or moisture records).

From food authorities retailer receives operating licenses for processors, Emergency Food Safety Notices (RASFF) and provides them with traceability documentation when a recall of a batch takes place.

Legal Requirements

- **LR4:** Identify legal circumstances relevant for participation of sub-actors in the platform. To this purpose in particular any existing agreements with sub-actors and/or templates, especially confidentiality obligations and/or data sharing requirements therein, will be analysed.
- **LR5:** Establish if there are any restrictions on sharing information received directly from food authorities with third parties.

Commercial exploitation of the public and open data

Retailer will use databases of public authorities and databases of certification bodies (e.g. FSSC and IFS) in order to inter alia retrieve operational licenses of each type of sub-actor and accreditation of laboratories.

Legal Requirements

➢ **LR6:** Establish whether there are any restrictions to the intended use according to the database terms of use (license)

Food Safety Laws and Standards

Applicable Food Safety Regulations

General regulatory requirements are laid down in Regulation (EC) No 178/2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (General Food Law Regulation) and Regulation (EC) 852/2004 on the hygiene of foodstuffs(for overview of EU Rules regarding Food Hygiene please see here). They set out an overarching framework for the development of food and food safety legislation, standards and authorities. Outlines general principles, requirements and procedures the underpin decision making in food safety matters at all stages of production and distribution. The Regulation sets the overarching framework for the applicable food safety standards in the scenario.

Applicable Food Safety Standards

Along the food supply chain various food safety standards are applicable in parallel. For the retailer in particular IFS Food (GFSI) for auditing food manufacturers and IFS Logistics 2.2 for auditing companies whose activities are logistics oriented for food and non-food products, such as transport, storage, loading/unloading, are relevant.

Legal Requirements

➢ **LR7:** Identify and analyse data sharing requirements and possible restriction on the disclosure of data according to the relevant standards

	Data Requirements
Summarize the Data Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	

- *Data accessibility: To provide a way to limit the data access of each actor depending on his role*
- *Data exchange: use the existing infrastructure*
- *Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages*
- *Data security*

3.6.3 Business Scenario 3: Private Food Safety Standards Certification

Description

Private food standards and **certified seals of approval** are playing an increasingly important role in determining market access in international trade. There is wide range of private and public standards and seals. A comprehensive database is created to provide all relevant information to the food supply chain (**producer**, **processor**, **and distributor**) regarding requirements of **retailer** and the certification process of these requirements.

Focus group: The focus group consists of the owner of an egg farm (**producer**), FSQA Experts from various **processor** (producer of margarine, dressing and dip-sauces, producer of frozen dumplings and strudel, producer of frozen pastry), FSQA expert from one **distributor** and the FSQA Expert from one **food broker**.

The focus group is integrated in the evaluation of the scenario and delivers input on how the data platform should be designed to meet the requirements of the food supply chain.

Current process:

Data flow within the supply chain and between supply chain, retailer and certification body is individually organized. Nearly no standard is implemented. Data are very often not validated. Time critical data are sent temporally delayed. Current process is costly, not efficient and provides no secured database.

Workflow:

Food supply chain (producer, processor, distributor) is providing relevant data to the planned comprehensive database (FSM). Existing systems are used if feasible.

Retailer is providing their specific requirements concerning certification and seals of approval.

Certification bodies provide detailed information regarding standards, seals of approval and certification process.

Data use is based on specific agreements between two organisations, industrial sector agreements or general confirmation from connected organisations.

In a first step more or less static data will be integrated into the platform (Company data, technical scopes, product scopes, requirements of specific standards and seals of approval, specifications, available certificates, etc.). In an advanced step the platform will integrate lot-related data which allows risk-analysis and traceability of products.

Main purpose:

Certification bodies find all necessary information for planning and realizing the certification process in an efficient way. Data exchange is also required within organizations of the supply chain.
Producer, **processor** and **distributor** use the database to improve management of their own processes for better compliance with sustainability, food safety and quality. Further the database will support the selection of suitable partners to prepare, implement and realize certification processes.
Validated data, provided in the database for supplier and customer, strengthen the confidence and makes the process more efficient.
The initiative saves resources of all actors of the target group and accelerates both standard implementation and certification process. Finally, **certification bodies** and consultants can offer specific services based on available data provided by all stakeholders.

Main actors involved

1. Producer
2. Processor
3. Distributor
4. Certification Body
5. Retailer

Main Actor / End User	**3.6.3.1 *Producer***
Description of Main Actor 1	*Primary production of goods as certified end product for the market / or raw material for food processing*
	Role in a Certified Food Supply Chain

Describe the responsibility or responsibilities of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'

In general, producers are the first stakeholder in the food supply chain. He raises animals for production of meat, milk, eggs, honey. He grows, traps and fish fish and seafood. Producer grows or harvests plants and hydrophytes for food. He farms grains and pulses. Part of our focus group are certified grain producers and one smaller egg farm which is organic certified.
Producers have the responsibility to provide safe food with high quality, sustainable raised, based on consumer and customer requirements. He gives evidence of production standards and traceability by gaining certification for processes and products and seals of approval.
Producer faces several challenges linked to the certification process:

- There is a high variety of private standards (ISO 22000, FSSC, Global Gap, QS, etc.), seals of approval (fair trade, HG, RSPO, ASC, MSC, …) and specific customer requirements. Getting specific information is time consuming and confusing.
- Producers need to decide which standards and seals of approval should be implemented to meet all customer requirements to raise competitiveness. He needs to know if his organization has the prerequisites to fulfill the specific requirements and which resources must be allocated.
- He has to find external experts and consultants to support the implementation process
- He has to find certification bodies which can certify elected standards.
- In daily business a high number of data, records and specifications from different sources and diverse characteristics must be maintained, recycled and evaluated during the certification process.

All these activities are time consuming. Mainly smaller companies have no resources to manage all these requirements beside their core activities. This fact may result in non-sustainable implementation of standards.

Interrelation with Main Actors in Food Safety Certification

Describe <u>analytically</u> how this Actor interrelates with other main actors in the supply chain (forward &backward i.e. main actor 1 <=> main actor 2)

Producer to **processor:**
- Valid certificates, analysis reports, changes of scopes or company data, process data **on regular base** (e.g. annually) and after request.
- **Presale data** of the company, business license, technical scope, product scope and certificates.

Producer to **retailer:**
- Valid certificates, analysis reports, changes of scopes or company data, process data **on regular base** (e.g. annually) and after request.
- **Presale data** of the company, business license, technical scope, product scope and certificates.

Producer to **distributor:**
- Search for distributor and send request for data of the company, business license, technical scope, certificates.

Producer to **certification body**:
- Before contract data of the company, business license, technical scope, product scope, process description is sent
- During certification process descriptions, process data records, analysis reports, management handbook, traceability data, internal guidelines, specifications, ….

Processor to **producer:**
- Requirements, searched by producer or directly sent by processor

Retailer to **producer:**
- Requirements, searched by producer or directly sent by retailer

Distributor to **producer**:
- Contracted **distributor** provides certificates, changes in company data, technical scope, product scope **on a regular basis** (e.g. annually) and after request.
- Potential **distributor** provides certificates, business license, technical scope, product scope.

Certification body to **producer**:
- Detailed information regarding certification process, prices, expenditures etc. which allow producer detailed calculation of the certification process
- Detailed information regarding requirements according specific standards and seals of approval
- Audit agenda, audit report, certificate

Provided data are sourced from different origins with diverse characteristics. Normally such data are not validated. Data provided by all relevant stakeholders to a comprehensive, uniform database, updated by data owner and validated within the certification process is an efficient way to give access to standardized and validated data.

	Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) (i.e main actor 1 is data provider to main actor 2 and/or data user of the main actor 2)	

Producer provides following data to other main actors (processor, retailer, certification body):
- Data of the company: manual entries, interaction ERP System
- Business license: Pdf-Upload
- Technical scope: manual entries, interaction farm management systems, interaction global gap database
- Product scope: manual entries, interaction farm management systems, interaction global gap database
- Certificates: Pdf-upload
- Analysis reports, process data etc.: laboratory management software, IoT, Pdf-Uploads, hard copy records, office documents, data records of equipment

Producer uses following data from main actors:
- Retailer requirements: Office documents, Website, E-Mail, B2B-platform
- Consultants list of services: Office documents, pdf-download, Website, E-Mail, verbal
- Distributors list of services: Office documents, pdf-download, Website, E-Mail, verbal

- Technical scope and provision of certificates from distributor: Office documents, pdf-download, Website, E-Mail, verbal
- Certification bodies list of services: Office documents, pdf-download, Website, E-Mail, verbal
- Detailed requirements for each standard and seals of approval: pdf-download, Website, Hard copy manuals
- Detailed information regarding the certification process for each standard and seal: pdf-download, Website, Hard copy manuals
- Audit agenda, audit report, Certificate

Calculation of costs and time expenditures for each standard and seal based on data provided by the producer.

	Data exchange flow with Main Actors

Describe analytically the direct data exchange flow with other main actors in the certified supply chain (what kind of data the main actor 1 provides to the other main actors & what kind of data the main actor 1 uses from the other main actors)

Data provision:
Producers, which are registered at the Global Gap database or use one of farming management software solutions, are able to provide most relevant data electronically. Data transfer via B2B platforms or via interfaces to other databases are possible. Receivers are customer (**processor, retailer**) and certification bodies.
Data management of producers, which have no access to digital data management solutions, have a mixture of digital and hardcopy-based data storage. Data transfer to customer (**processor, retailer**) and **certification bodies** happens via E-Mail or manual entries into B2B platforms.
Data provided to **certification bodies** are sent unique during preparation of a new certification process and regularly before and during audits. (e.g. annually).
Data provided to customers (**processor and retailer**) are sent during initial business contact and regularly based on the customer requirements.
Data use:
Producers receive data regarding specific requirements and specifications for products from customer prior initial business contact. These data are provided via B2B platforms or sent via E-Mail.
Certification bodies require specific information in order to provide their services. Face to face communication, sending E-Mails, phone calls and other methods are used to transfer information to the producer.

	Data sources

Describe the potential sources of the data that the main actor handles (i.e. programmes, measuring devices (IoT).

Company- and contact data: Office documents, ERP System, CRM System, Website, B2B platform
Business license: Pdf
Technical scope: Office documents, ERP System, CRM System, Website, B2B platform
Product scope: Office documents, ERP System, CRM System, Website, B2B platform
HACCP concept: Office documents, pdf
Certificates: Pdf, Website, B2B platform
Analysis reports: pdf, Laboratory management software
Process data: IoT, ERP, facility software, machine data records, paper records
Producers are required to provide a high variety of data from different sources. Data collection after requests from customer or certification bodies is time consuming and costs resources. Error rate is high and causes knock-on problems. For a new request data collection starts from beginning with the same time expenditure.
Steady collection of all relevant data (partly automated) to one comprehensive database would facilitate the data provision, improve data quality and confidence in these data.

	Sub-actors

Describe analytically the sub-actors ***(who they are, what they do, what they provide, how they involved, what is their role to the certification process)*** *to the main actor.*

Consultants: Collects data and supports strategic decision processes. Help to implement private standards, seals of approval, specific customer requirements and legal requirements. Performing internal audits. Help to make farming processes sustainable and optimize the use of fertilizer, pesticides and veterinary drugs. Support implementation of farming management systems.
Provide data necessary for the certification process and to satisfy customers. Use data to find solutions for the producer.
Laboratories: Sampling of soil, crops, fruits, vegetables. Sampling of eggs, fish, seafood, animal swabs meat, milk. Chemical, physical and microbiological analysis. Providing certificates. Deliver expertise and consultancy in respect of any product related deviation of legal or market requirements.
Generate a high number of data which are relevant for the certification process and to fulfill customer requirements.
Public authorities: Collects data which are relevant to confirm implementation of legal requirements. Issue business license. Compose written reports. Take samples for further analysis. Require traceability data.

	Type of Interaction with Sub-actor
Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform. What kind of data they provide to the main actor 1. and what kind of data they use from the main actor 1	

Consultants: Producers authorize consultants based on the required service. Producers collect and provide data which supports consultants' tasks. Consultant collect and analyze data regarding products, processes, infrastructure, raw materials, supplier and customer, compare these data with the requirements or benchmarks, determine gaps and propose measures to reduce such gaps.
Data collection and holistic interpretation of all data is the main challenge of consulting activities. Digital dashboard solutions based on a comprehensive database rise quality of consultant results.
Laboratories: Producers provide samples and order analysis and certificates. Laboratories are authorized to take samples for analysis. Laboratories produce data which are relevant for the daily business of the producer. Data are maintained in laboratory management software. Analysis certificates are sent via E-Mail or as hard copy to the producer.
Online access to laboratory data allows real-time measures where necessary for food safety, legality and quality and facilitates integrated data evaluation.
Public authorities: Producers provide data to gain the business license or to prove legality of the business. Public authorities collect data, take random samples, analyze these samples and compose written reports. These reports are sent normally in hardcopy.
Data collection and holistic interpretation of all data is the goal to evaluate business processes and quality of products. This is supported by a comprehensive data base with valid and validated data

	Current Data Format
Describe the most usual format of the available data maintained by the actor.	

- Handwritten notes
- Handwritten completed checklists and forms
- E-Mails from supplier, partner, customer
- Office documents
- ERP System
- CRM System
- Farming management software
- Laboratory management software
- Global gap database

Data is not validated. Handwritten documents are often not feasible or with non-readable notes. Supervision of data is often done on a weekly or monthly basis with the result of a high number of nonconformities with no corrective actions. Checklists get sometimes lost or are not traceable in case of deviations.
Integrated date evaluation is time consuming which results in a lack of fact driven management.

	Goal
Describe how the 'TheFSM' will benefit the Main Actor 1 - End User1? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*	

Producers face a high number of different requirements which must be fulfilled to be competitive. They are interested in developing collaboration with big retailers and at the same time to reduce the constraints regarding multiple certifications.
A high variety of data from different sources and data owners must be collected and maintained for managing the daily business and give proof of compliance. During preparation and realization of certification processes a stable database is essential.
The provision of a comprehensive database where all actors and sub-actors provide, and use certification-relevant data would support the producer in following tasks:

- Accelerate the preparation and realization of certification
- Enable the precise finding of required certificates and seal of approval required by a specific customer.
- Support the selection of consultants, which can support the implementation of the requirements.
- Support the selection of certification bodies, which can realize the certification process.
- Gives an estimation of costs and expenditures in respect to the certification process.
- Supports realization of remote audits

Further:

- Allows integrated data assessments for fact driven management of the business.
- Enable a comprehensive just on time evaluation of data from different sources and stakeholders which supports fast decision processes
- Provides validated data of all stakeholder.
- Enable just-on-time traceability of products.
- Assist the implementation of additional digital measures (e.g. predictive quality assurance, automated process data, provision of data of sustainability and product origin for the consumer)
- Competitiveness rises through more efficient business processes.

	Challenges
Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). *Define& describe the challenges with reference to the "data type" of the actor and the sub-actor*	

- Data exchange of individual business processes is a cultural obstacle. Providing business sensitive data to other organizations in the food supply chain is felt as a loss on competitiveness.
- Sympathy and confidence in new digital data systems is low. The understanding of how data systems work is not available.
- Employees are partly not willing to learn new tasks and have no basic knowledge.
- Implementation of an integrated data system is costly. Existing systems are partly old and incompatible and must be renewed.
- Historical grown data systems are often not efficient but work in compliance with operative processes. Transparency of operative processes is low and analysis and necessary adoptions of existing processes is not done during digitization projects. New data systems are risky.
- Loss of data through hack attacks or insufficient secured data cause an irreversible lack of ability to deliver and compromise the organization (Data security).

	Legal Obstacles
Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain	

General data protection regulation (GDPR)
DIRECTIVE (EU) 2016/1148 (…security of network and information systems across the Union)
Directive 85/374/EEC — product liability

	Business Requirements
Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario	

BR 1. To support to the producer to accelerate the preparation and realization of certification
BR 2. To enable the producer for the precise finding of required certificates and seal of approval required by a specific customer.

BR 3. To support the producer to select the consultants, who can support the implementation of the certification requirements.
BR 4. To support the producer to select a certification body that can undertake the certification process.
BR 5. To give the producer an estimation of costs and expenditures in respect to the certification process.
BR 6. To support the producer in realization of remote audits
BR 7. To allow for integrated data assessments for fact driven management of the business.
BR 8. To enable a comprehensive on time evaluation of real time data from different sources and stakeholders which supports fast decision processes
BR 9. To provide for validated data from all stakeholders.
BR 10. To enable just-on-time traceability of products.
BR 11. To assist the implementation of additional digital measures (e.g. predictive quality assurance, automated process data, provision of data of sustainability and product origin for the consumer)
BR 12. To facilitate a competitiveness rise through more efficient business processes.

	Legal Requirements

Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario

OBJECTIVE: To investigate any legal restrictions that affect the achievement of the target for the data.
In this business scenario a large amount of data is being processed by different actors. To comply with legal data protection standards personal data have to be strictly distinguished from non-personal data. Personal data is subject to the General Data Protection Regulation (GDPR) whereas non-personal, and herein in particular sensitive business data, have to be protected by different means.

Processing of personal data

The producer uses the following personal data: i) Contact data of main actors of the supply chain, primarily producers and retailers, and sub-actors, e.g. equipment suppliers, laboratories and other food producers, and/or their employees. ii) Certification data of producers and sub-actors, e.g. equipment suppliers, laboratories and other food producers, and/or their employees. GDPR only applies to personal data of natural persons (Art 4 no 1 GDPR). The producer processes the above personal data as the controller (Art 4 no 2 and 7 GDPR).

Legal Requirements

➢ **LR1:** GDPR compliance at all times, analysis of legal basis for processing: "processing is necessary for the performance of a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract" (Art 6 para 1 lit b GDPR); if there is no (direct) contract between controller and data subject, legitimate interests pursued by the controller (Art 6 para 1 lit f GDPR)

Governance of non-personal data

All data that does not qualify as personal data is so-called non-personal data. Non-personal data includes e.g. analysis reports, lab data, audit reports, certificates, certification schema parameters or retailers' lists of requirements. Non-personal data is not subject to the GDPR. Instead, a variety of different European legal regulations might apply such as

- the Regulation (EU) 2018/1807 on the free flow of non-personal data
- the E-commerce Directive 2000/31/EC
- the Regulation (EU) 2018/302 on unjustified geo-blocking
- the Directive 85/374/EEC concerning liability for defective products

The **Directive on Security of Network and Information Systems (NIS) EU 2016/1148** only applies to operators of essential services (OES) and digital service providers (DSPs). TheFSM does not provide a service that is essential for the maintenance of critical activities and hence does not qualify as an OES. Furthermore, TheFSM is neither a search engine, nor a cloud service nor will - to the current knowledge - online sales or service contracts be concluded via the platform. TheFSM is consequently no DSP either. The NIS Directive therefore does not apply to TheFSM.

Due to the common default of a legal concept of "data ownership" TheFSM will have to rely on de facto control of data and data governance on a contractual basis to legally prevent the illegitimate use of information and to resort to non-disclosure and confidentiality agreements to restrict unwanted disclosure of data.

Producer's data

The Producer will generate non-personal data, including real time data, about the final product and the characteristics of its business.

LR2: As there is no statutory protection of non-personal data ("data ownership"), collected data will be protected by technical and organisational measures (TOM), including legal instruments that limit the disclosure and use of the data, such as non-disclosure agreement (NDA) and confidentiality clauses in cooperation and other agreements.

Data exchange

Producer and processor:

The producer provides valid certificates, analysis reports, company data, process data, business license, technical scope, product scope and certificates to the processor. The processor sends requirements to the producer.

- **LR3:** A contractual basis for the exchange of data between producer and processor will have to be provided including a provision for non-disclosure of business sensitive and confidential data. Possible existing contracts will have to be analyzed.

Producer and retailer:

Producer provides the retailer with valid certificates, analysis reports, company data, process data, business license, technical scope, product scope and certificates. Like the processor the Retailer sends the requirements to the producer.

- **LR4:** A contractual basis for the exchange of data between producer and retailer will have to be provided including a provision for non-disclosure of business sensitive and confidential data. Possible existing contracts will have to be analyzed.

Producer and distributor:

The producer sends company data, business license, technical scope, certificates to the distributor whereas the distributor provides the producer with certificates, business license, technical scope, product scope.

- **LR5:** A contractual basis for the exchange of data between producer and distributor will have to be provided including a provision for non-disclosure of business sensitive and confidential data. Possible existing contracts will have to be analyzed.

Producer and certification body:

Before and during the certification process, contract data of the company, business license, technical scope, product scope, process description, process data records, analysis reports, management handbook, traceability data, internal guidelines, specifications are sent by the producer to the certification body. The certification body provides the producer with detailed information regarding certification process, prices, expenditures, requirements according specific standards and seals of approval and data regarding the audit (audit agenda, audit report, certificate).

- **LR6:** The certification is performed on a contractual basis. The contract concluded between the producer and the certification body specifies which non-personal data the producer has to provide to the certification body and which non-personal data may in addition be gathered during the audit. Storage of gathered data, their confidentiality, permission to share etc are also regulated in this contract. The standard contract will have to be analysed.

Sub-actors:

Data will be shared with various sub-actors (consultants, laboratories, public authorities) during the certification process. The certification body receives information and documentation from sub-actors, primarily food authorities (e.g. Hellenic Food Authority). Food authorities may conduct inspections of producers and/or processors, and the certification body must request the report in order to see the findings and to verify them.

- **LR7:** Study the legal bases of the relation to the various sub-actors and their relevance to the platform. Laboratory analyses for example are performed on contractual basis. The confidentiality of the non-personal data and possibility to share the results of the analysis with third parties are governed by this contract. This contract will have to be analysed. All eventual existing contracts with relevance to the platform will have to be analyzed.
- **LR8:** It is further to establish if there are any restrictions on sharing information received directly from competent authorities with third parties

Commercial exploitation of the public and open data

The Producer will use databases of public authorities.

- **LR9:** It is to establish whether there are any restrictions to the intended use according to the database terms of use (licence)

Food Safety Laws and Standards

Applicable Food Safety Regulations

The Regulation (EC) No 178/2002 sets out an overarching framework for the development of food and food safety legislation. The Regulation outlines general principles, requirements and procedures of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (General Food Law Regulation) at all stages of production and distribution. It provides an overarching legal framework for the food safety standards in this scenario.

Applicable Food Safety Standards

➢ There is a high variety of private standards (ISO 22000, FSSC, Global Gap, QS, …), seals of approval (fair trade, HG, RSPO, ASC, MSC, …) and specific customer requirement (see 1.1)

Legal Requirements

➢ **LR10:** analyse data sharing requirements and provisions on confidentiality according to the relevant Standards

	Data Requirements

Summarize the Dat Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario

- Data standards: to comply or reuse existing standards whenever possible
- Data exchange: use the existing infrastructure
- Data accessibility: To provide a way to limit the data access of each actor depending on his role
- Data format: define the format that data should be exchanged
- Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository
- Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages

Main Actor / End User	**3.6.3.2 *Processor***
Description of Main Actor 2	*Process and prepare food/feed direct for the market or ingredients for further processing steps based on delivered raw materials from producer. Realize cutting, packing, portioning or other sub-processes as co-processor. Process and allocate packing materials for food/feed industry.*
	Role in a Certified Food Supply Chain

Describe the responsibility of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'

This group includes food and feed manufacturers turning agricultural products (from producer) to ingredients for further processing or ready to eat food/feed. Further this group includes any kind of food packing producer.
Processors supply food consumed by the world's population. Population expects safe and sustainable food with high quality which is affordable for everybody. Retailers require specific certificates and seals of approval to ensure consumer requirements.
For managing their processes and ensuring traceability, processors maintain a high number of data, records and specifications from different sources and diverse characteristics.
A comprehensive provision of quality- and safety relevant data are prerequisite for a successful certification process.
Essential for traceability of food and feed is data exchange along the food chain from farm to folk. Processors act as supplier and customer. They deliver data to the customer and require data from the producer or other processor which delivers ingredients for further processing.
Processors have to decide which type of standard (IFS, BRC, ISO 22000, FSSC, GMP+, organic food …) and which seals of approval (fair trade, HG, RSPO, ASC, MSC, …) will be gained. Producers in our focus group deliver to different markets and customer groups, therefore they have to fulfill various requirements and hold several certificates.
Detailed information is required to be able to plan necessary resources and external support to prepare and realize all these requirements.
Finally, processors need to find suitable external support and the best possible certification body.
All these activities are time consuming and cost resources. Mainly smaller companies have problems to manage all these requirements beside their core activities. This fact may result in non-sustainable implementation of standards.

	Interrelation with Main Actors in Food Safety Certification

Describe how this Actor interrelates with other main actors in the supply chain

Processor to **producer:**
- Internal requirements

Processor to **processor:**
- Valid certificates, analysis reports, process data, changes of scopes or company data, on **regular base** (e.g. annually) and after request.
- **Presale data** of the company, business license, technical scope, product scope and certificates.

Processor to **retailer:**
- Valid certificates analysis reports, process data, changes of scopes or company data, **on regular base** (e.g. annually) and after request.
- **Presale data** of the company, business license, technical scope, product scope and certificates.

Processor to **distributor:**
- Search for distributor and sends request for data of the company, business license, technical scope, certificates.

Processor to **certification body**:
- Before contract, data of the company, business license, technical scope, product scope, process description is sent
- During certification process descriptions, process data records, analysis reports, HACCP Concept, management handbook, traceability data, internal guidelines, specifications, ….

Producer to **processor:**
- Valid certificates and changes of scopes or company data, process data **on regular base** (e.g. annually) and after request.
- **Presale data** of the company, business license, technical scope, product scope and certificates.

Retailer to **processor:**
- Requirements, searched by processor or directly sent by retailer

Distributor to **processor**:
- Contracted **distributor** provides certificates, changes in company data, technical scope, product scope **on regular base** (e.g. annually) and after request.
- Potential **distributor** provides certificates, business license, technical scope, product scope.

Certification body to **processor**:
- Detailed information regarding certification process, prices, expenditures etc. which allow producer detailed calculation of the certification process
- Detailed information regarding requirements according specific standards and seals of approval
- Audit agenda, audit report, certificates

Provided data are sourced from different origins with diverse characteristics. Normally such data are not validated. Data provided by all relevant stakeholders to a comprehensive, uniform database, updated by data owner and validated within the certification process is an efficient way to give access to standardized and validated data.

	Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) *A. Data Provider (to Solution)* *B. Data User (of the Solution)*	

Processor provides following data to other main actors (processor, retailer, certification body):

- Data of the company: manual entries, interaction ERP System
- Business license: Pdf-Upload
- Technical scope: manual entries, interaction farm management systems, interaction global gap database
- Product scope: manual entries, interaction farm management systems, interaction global gap database
- HACCP Concept, CCPs. CPs: Pdf-upload, Office documents
- Certificates: Pdf-upload
- Analysis reports, process data, CCPs. CPs etc.: laboratory management software, IoT, Pdf-Uploads, data records of equipment

Processor uses following data from main actors:

- **Retailer** requirements: Office documents, Website, E-Mail, B2B-platform
- **Consultants** list of services: Office documents, pdf-download, Website, E-Mail, verbal
- **Distributors** list of services: Office documents, pdf-download, Website, E-Mail, verbal
- Technical scope and provision of certificates from **distributor**: Office documents, pdf-download, Website, E-Mail, verbal
- **Certification bodies** list of services: Office documents, pdf-download, Website, E-Mail, verbal
- Detailed requirements for each standard and seal of approval: pdf-download, Website, Hard copy manuals
- Audit agenda, audit report, certificate
- Detailed information regarding the certification process for each standard and seal: pdf-download, Website, Hard copy manuals

From **producer** and **other processor:**

- Data of the company: manual entries, interaction ERP System
- Business license: Pdf-Upload
- Technical scope: manual entries, interaction farm management systems, interaction global gap database
- Product scope: manual entries, interaction farm management systems, interaction global gap database
- HACCP Concept, CCPs. CPs: Pdf-upload, Office documents
- Certificates: Pdf-upload
- Analysis reports, process data, CCPs. CPs etc.: laboratory management software, IoT, Pdf-Uploads, data records of equipment

Calculation of costs and time expenditures for each standard and seals based on data provided by the producer.

	Data exchange flow with Main Actors
Describe<u>analytically</u> the direct data exchange flow with other main actors in the certified supply chain	
Data provision: For managing their processes and ensure traceability, **processor** maintain a high number of data, records and specifications from different sources and diverse characteristic. Data transfer to customer (other **processor, retailer**) and **certification bodies** happens via E-Mail or manual entries into B2B platforms. Data provided to **certification bodies** are sent unique during preparation of a new certification process and regularly (e.g. annually) in preparation of and during audits. Data provided to customer (other **processor and retailer**) are sent during initial business contact and regularly based on the customer requirements. **Data use:** **Processors** receive data regarding specific requirements and specifications for products and process from **retailer** and **other processor** prior initial business contact. These data are provided via B2B platform, found on Website or sent as pdf or office documents via E-Mail. **Certification bodies** require specific information in order to provide their services. Face to face communication, sending E-Mails, phone calls and other methods are used to transfer information to the producer. **Processors** require and use data from their supplier (other **processor**). These data are sent via E-Mail (pdf, office documents, machine data records, analysis certificates, …)	
	Data sources
Describe the potential sources of the data that the main actor handles	

Company- and contact data: Office documents, ERP System, CRM System, Website, B2B platform
Business license: Pdf
Technical scope: Office documents, ERP System, CRM System, Website, B2B platform
Product scope: Office documents, ERP System, CRM System, Website, B2B platform
HACCP concept: Office documents, pdf
Certificates: Pdf, Website, B2B platform
Analysis reports: pdf, Laboratory management software
Process data: IoT, ERP, facility software, machine data records, paper records
Processors are required to provide a high variety of data from different sources. Data collection after requests from customer or certification bodies is time consuming and costs resources. Error rate is high and cause knock-on problems. For a new request data collection starts from beginning with the same time expenditure.
Steady collection of all relevant data (partly automated) to one comprehensive database would facilitate the data provision, improve data quality and confidence in these data.

	Sub-actors

Describe analytically the sub-actors ***(who they are, what they do, what they provide, how they involved, what is their role to the certification process)*** *to the main actor.*

Consultants: Collects data and supports strategic decision processes. Help to implement private standards, seals of approval, specific customer requirements and legal requirements. Performing internal audits. Moderate risk assessments and improve efficiency of processes.
Provide data necessary for the certification process and to satisfy customers. Use data to find solutions for the processor.
Laboratories: Sampling of raw materials, packing materials, intermediate and end products, environmental swabs. Realizing chemical, physical and microbiological analysis. Providing certificates. Deliver expertise and consultancy in respect of any product related deviation of legal or market requirements.
Generate a high number of data which are relevant for the certification process and to fulfill customer requirements.
Public authorities: Collects data which are relevant to confirm implementation of legal requirements. Issue business license. Compose written reports. Take samples for further analysis. Require traceability data.

	Type of Interaction with Sub-actor

Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform.

Consultants: Processors authorize consultants based on the required service. Processors collect and provide data which supports consultants' tasks. Consultants collect and analyze data regarding products, processes, infrastructure, raw materials, supplier and customer, compare these data with the requirements or benchmarks, determine gaps and propose measures to reduce such gaps.
Data collection and holistic interpretation of all data is the main challenge of consulting activities. Digital dashboard solutions based on a comprehensive database rise quality of consultant results.
Laboratories: Processors provide samples and order analysis and certificates. Laboratories are authorized to take samples for analysis. Laboratories produce data which are relevant for the daily business of the producer. Data is maintained in laboratory management software. Analysis certificates are sent via E-Mail or as hard copy to the producer. Online access to laboratory data allows real-time measures where necessary for food safety, legality and quality and facilitates integrated data evaluation.
Public authorities: Processors provide data to gain the business license or to prove legality of the business. Public authorities collect data, take random samples, analyze these samples and compose written reports. These reports are sent normally in hardcopy.
Data collection and holistic interpretation of all data is the goal to evaluate business processes and quality of products. This is supported by a comprehensive database with valid and validated data.

	Current Data Format

Describe the most usual format of the available data maintained by the actor

- Handwritten notes
- Handwritten completed checklists and forms
- E-Mails from all stakeholder
- Office documents, pdf
- ERP System
- CRM System
- Business management software (process, logistic, product planning etc.)
- Laboratory management software
- Websites

Data is not validated. Handwritten documents are often not feasible or with non-readable notes. Supervision of data is often done on a weekly or monthly basis with the result of a high number of nonconformities with no corrective actions. Checklists get sometimes lost or are not traceable in case of deviations.
Integrated date evaluation is time consuming which results in a lack of fact driven management.

	Goal
Describe how the 'TheFSM' will benefit each Main Actor - End User? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*	

Processors face a high number of different requirements which must be fulfilled to be competitive.
The provision of a comprehensive database where all actors and sub-actors provide and use certification-relevant data would support the processor in following tasks:

- Accelerate the preparation and realization of certification
- Enable the precise finding of required certificates and seals of approval required by a specific customer.
- Support the selection of consultants, which can support the implementation of the requirements.
- Support the selection of certification bodies, which can realize the certification process.
- Gives an estimation of costs and expenditures in respect to the certification process.
- Supports realization of remote audits
- Direct contact to the shareholders

Further:

- Allows integrated data assessments for fact driven management of the business.
- Enable a comprehensive just on time evaluation of data from different sources and stakeholders which supports fast decision processes
- Provides validated data of all stakeholder.
- Enable just-on-time traceability
- Assist the implementation of additional digital measures (e.g. predictive quality assurance, automated process data, provision of data of sustainability and product origin for the consumer)
- Competitiveness rise through more efficient business processes

	Challenges
Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). *Define& describethe challenges with reference to the "data type" of the actor and the sub-actor*	

- Data exchange of individual business processes is a cultural obstacle. Providing business sensitive data to other organizations in the food supply chain is felt as a loss on competitiveness.
- Sympathy and confidence in new digital data systems is low. The understanding of how data systems work is not available.
- Employees are partly not willing to learn new tasks and have no basic knowledge.
- Implementation of an integrated data system is costly. Existing systems are partly old and incompatible and must be renewed.
- Historical grown data systems are often not efficient but work in compliance with operative processes. Transparency of operative processes is low and analysis and necessary adoptions of existing processes is not done during digitization projects. New data systems are risky.
- Loss of data through hack attacks or insufficient secured data cause an irreversible lack of ability to deliver and compromise the organization.

	Legal Obstacles

Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain

General data protection regulation (GDPR)
DIRECTIVE (EU) 2016/1148 (…security of network and information systems across the Union)
Directive 85/374/EEC — product liability

	Business Requirements

Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario

BR 1. To support to the processor to accelerate the preparation and realization of certification
BR 2. To enable the processor for the precise finding of required certificates and seal of approval required by a specific customer.
BR 3. To support the processor to select the consultants, who can support the implementation of the certification requirements.
BR 4. To support the processor to select a certification body that can undertake the certification process.
BR 5. To give the processor an estimation of costs and expenditures in respect to the certification process.
BR 6. To support the realization of remote audits
BR 7. To allow for integrated data assessments for fact driven management of the business.
BR 8. To enable a comprehensive on time evaluation of real time data from different sources and stakeholders which supports fast decision processes
BR 9. To provide for validated data from all stakeholders.
BR 10. To enable just-on-time traceability of products.
BR 11. To assist the implementation of additional digital measures (e.g. predictive quality assurance, automated process data, provision of data of sustainability and product origin for the consumer)
BR 12. To facilitate a competitiveness rise through more efficient business processes.

	Legal Requirements

Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario

OBJECTIVE: To investigate any legal restrictions that affect the achievement of the target for the data.

In this business scenario a large amount of data is being processed by different actors. To comply with legal data protection standards personal data, have to be strictly distinguished from non-personal data. Personal data is subject to the General Data Protection Regulation (GDPR) whereas non-personal, and herein in particular sensitive business data, have to be protected by different means.

Processing of personal data
The processor uses the following personal data: i) Contact data of main actors of the supply chain, primarily producers and retailers, and sub-actors, e.g. equipment suppliers, laboratories and other food producers, and/or their employees. ii) Certification data of producers and sub-actors, e.g. equipment suppliers, laboratories and other food producers,

and/or their employees. GDPR only applies to personal data of natural persons (Art 4 no 1 GDPR). The Food processor processes the above personal data as the controller (Art 4 no 2 and 7 GDPR).

Legal Requirements

- **LR1:** GDPR compliance at all times, analysis of the legal basis for processing: "processing is necessary for the performance of a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract" (Art 6 para 1 lit b GDPR); if there is no (direct) contract between controller and data subject, legitimate interests pursued by the controller (Art 6 para 1 lit f GDPR)

Governance of non-personal data

All data that does not qualify as personal data is so-called non-personal data. Non-personal data includes e.g. company data, analysis reports, lab data, audit reports, certificates, data from other actors in the supply chain, supplier information, certification schema parameters or retailers' lists of requirements. Non-personal data is not subject to the GDPR.

Due to the common default of a legal concept of "data ownership" TheFSM will have to rely on de facto control of data and data governance on a contractual basis to legally prevent the illegitimate use of information and to resort to non-disclosure and confidentiality agreements to restrict unwanted disclosure of data.

Processor's data

The processor generates and collects data inter alia by monitoring, controlling, and recording of critical information during the process of product processing.

Legal Requirements

- **LR2:** As there is no statutory protection of non-personal data ("data ownership"), collected data will be protected by technical and organisational measures (TOM), including legal instruments that limit the disclosure and use of the data, such as non-disclosure agreement (NDA) and confidentiality clauses in cooperation and other agreements.

Data exchange

Processor and producer:

The processor will send internal requirements to the producer. The producer will share valid certificates and changes of scopes or company data, business license, technical scope, product scope and certificates with the producer.

- **LR3:** Existing contracts will have to be analysed. A legal framework on a contractual basis for the exchange of data between processor and producer will have to be provided.

Processor and retailer:

The processor sends valid certificates, analysis reports, process data, changes of scopes or company data, product data, certificates, business license, technical scope, product scope and certificate to the retailer whereas the retailer provides those requirements, that are searched by processor or directly sent by retailer to the processor.

- **LR5:** Existing contracts will have to be analysed. A legal framework on a contractual basis for the exchange of data between processor and retailer will have to be provided.

Processor and distributor:

The processor sends requests for data of the company, business license, technical scope, certificates to the distributor. The potential or contracted distributor provides certificates, changes in company data, technical scope, business license, technical scope, product scope.

- **LR6:** Existing contracts will have to be analysed. A legal framework on a contractual basis for the exchange of data between processor and distributor will have to be provided.

Processor and certification body

Before and during the certification process the processor sends data of the company, business license, technical scope, product scope, process description, process data records, analysis reports, HACCP Concept, management handbook, traceability data, internal guidelines, specifications to the certification body. The certification body provides the processor with detailed information regarding certification process, prices, expenditures, information regarding requirements according specific standards and seals of approval as well as audit agenda, audit report and certificates to the processor.

- **LR7:** The certification is performed on contractual basis. Storage of gathered data, their confidentiality, permission to share etc are also regulated in this contract and the applicable certification standard. The standard contract will have to be analysed.

Sub-actors:
Data is shared during the certification process with various sub-actors (consultants, laboratories, other processors, public authorities).

- **LR8:** Study the legal bases of the relation to the various sub-actors and their relevance to the platform. Laboratory analyses e.g. are performed on a contractual basis. The confidentiality of the non-personal data and possibility to share the results of the analysis with third parties are governed by this contract. This contract will have to be analysed.
- **LR9:** It is to establish if there are any restrictions on sharing information received directly from competent authorities with third parties.

Commercial exploitation of the public and open data
The processor will use databases such as the GlobalGAP database.

- **LR10:** establish whether there are any restrictions to the intended use according to the database terms of use (license)

Food Safety Laws and Standards

Applicable Food Safety Regulations
The Regulation (EC) No 178/2002 sets out an overarching framework for the development of food and food safety legislation. The Regulation outlines general principles, requirements and procedures of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (General Food Law Regulation) at all stages of production and distribution. It provides an overarching legal framework for the food safety standards in this scenario.

Applicable Food Safety Standards
The Processor has to decide which type of standard (IFS, BRC, ISO 22000, FSSC, GMP+, organic food …) and which seals of approval (fair trade, HG, RSPO, ASC, MSC, …) will be gained

- **LR11:** analyse data sharing requirements and provisions on confidentiality according to the relevant standards

	Data Requirements
Summarize the Dat Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	
● Uploading data: easy upload process, minimum cost ● Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages ● Data security ● Data standards: to comply or reuse existing standards whenever possible ● Data format: define the format that data should be exchanged ● Data exchange: use the existing infrastructure ● Data accessibility: To provide a way to limit the data access of each actor depending on his role ● Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository	

Main Actor / End User	3.6.3.3 *Distributor*
Description of Main Actor 3	Distribution of goods within the supply chain according required certified standards.
	Role in a Certified Food Supply Chain
Describe the responsibility of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'	

This group includes the companies who make transfer of intermediate goods between firms involved in production to consumers or retailers.
Every activity in the supply chain requires man or natural resources, and if a part of the chain is endangered, this affects the entire chain. To avoid the chain to fall apart, i.e. the products to perish, it is crucial that participants value certain characteristics of a product, its origin, legal requirements and management system requirements. Important roles here play the distributors who are obliged to ensure traceability of a product at any time and storage and transport conditions.
Distributor has to decide which type of standard (IFS Logistics, ISO 22000, organic food, etc.) and which seals of approval will be gained.
He needs detailed information to be able to plan necessary resources and external support.

	Interrelation with Main Actors in Food Safety Certification
Describe how this Actor interrelates with other main actors in the supply chain	

Processor to **distributor:**

- Search for distributor and send request for data of the company, business license, technical scope, certificates.

Distributor to **certification body**:

- Before contract, data of the company, business license, technical scope, product scope, process description is sent
- During certification process descriptions, process data records, analysis reports, HACCP Concept, management handbook, traceability data, internal guidelines, specifications, ….

Retailer to **Distributor:**

- Requirements, searched by distributor or directly sent by retailer

Distributor to **processor**:

- Contracted **distributor** provides certificates, changes in company data, technical scope, product scope **on a regular basis** (e.g. annually) and after request.
- Potential **distributor** provides certificates, business license, technical scope, product scope.

Certification body to **distributor**:

- Detailed information regarding certification process, prices, expenditures etc. which allow producer detailed calculation of the certification process
- Detailed information regarding requirements according specific standards and seals of approval
- Provided data are sourced from different origins with diverse characteristics. Normally such data are not validated. Data provided by all relevant stakeholders to a comprehensive, uniform database, updated by data owner and validated within the certification process is an efficient way to give access to standardized and validated data.

	Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) *A. Data Provider (to Solution)* *B. Data User (of the Solution)*	

Distributor provides following data to other main actors (producer, processor and certification body):

- Certificates: pdf, B2B platform
- Company data: ERP system, Website, Office documents
- Process data: temperature records, interaction ERP System, facility management software

Distributor uses following data from main actors:

- Customer requirements (producer, processor)
- Information regarding specific standards
- Certifications offer
- Audit agenda, audit report
- Certificate

	Data exchange flow with Main Actors

Describe analytically the direct data exchange flow with other main actors in the certified supply chain

Data provision:
For managing their processes and ensure traceability, **distributor** maintain a high number of data, records and specifications from different sources and diverse characteristic. Data transfer to customer (**retailer, processor, producer**) and **certification bodies** happens via E-Mail or manual entries into B2B platforms.
Data provided to **certification bodies** are sent unique during preparation of a new certification process and regularly (e.g. annually) in preparation of and during audits.
Data provided to customer (**producer, processor and retailer**) are sent during initial business contact and regularly based on the customer requirements.
Data use:
Distributor receive data regarding specific customer requirements prior initial business contact. These data are provided via B2B platform, found on Website or sent as pdf or office documents via E-Mail.
Certification bodies provide information regarding specific standards/requirements and regarding the certification process. Face to face communication, sending E-Mails, phone calls and other methods are used to transfer information to the distributor.

	Data sources

Describe the potential sources of the data that the main actor handles

Company- and contact data: Office documents, ERP System, CRM System, Website, B2B platform
Business license: Pdf
Technical scope: Office documents, ERP System, CRM System, Website, B2B platform
Product scope: Office documents, ERP System, CRM System, Website, B2B platform
Certificates: Pdf, Website, B2B platform
Process data: IoT, ERP, facility software, machine data records, paper records

	Sub-actors

*Describe analytically the sub-actors****(who they are, what they do, what they provide, how they involved, what is their role to the certification process)*** *to the main actor.*

Consultants: Collects data and supports strategic decision processes. Help to implement private standards, specific customer requirements and legal requirements. Performing internal audits. Moderate risk assessments and improve efficiency of processes.
Provide data necessary for the certification process and to satisfy customers. Use data to find solutions for the processor.
Public authorities: Collects data which are relevant to confirm implementation of legal requirements. Issue business license. Compose written reports. Require traceability data.

	Type of Interaction with Sub-actor

Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform.

Consultants: Distributors authorize consultants based on the required service. Processors collect and provide data which supports consultants' tasks. Consultant collect and analyze data regarding processes, infrastructure and customer, compare these data with the requirements or benchmarks, determine gaps and propose measures to reduce such gaps.
Data collection and holistic interpretation of all data is the main challenge of consulting activities. Digital dashboard solutions based on a comprehensive database rise quality of consultant results.
Public authorities: Processors provide data to gain the business license or to prove legality of the business. Public authorities compose written reports. These reports are sent normally in hardcopy.
Data collection and holistic interpretation of all data is the goal to evaluate business processes and quality of products. This is supported by a comprehensive database with valid and validated data.

	Current Data Format
Describe the most usual format of the available data maintained by the actor	

- E-Mails from all stakeholder
- Office documents, pdf
- ERP System
- CRM System
- Business management software (process, logistic, etc.)
- Websites

	Goal
Describe how the 'TheFSM' will benefit each Main Actor - End User? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*	

Distributors face a high number of different requirements for him and for his suppliers (producer and processor) which must be fulfilled to be competitive.
The provision of a comprehensive database where all actors and sub-actors provide and use certification-relevant data would support the distributor in following tasks:

- Accelerate the preparation and realization of certification
- Enable the precise finding of required certificates and seals of approval required by a specific customer.
- Support the selection of consultants, which can support the implementation of the requirements.
- Support the selection of certification bodies, which can realize the certification process.
- Gives an estimation of costs and expenditures in respect to the certification process.
- Supports realization of remote audits

Further:

- Allows integrated data assessments for fact driven management of the business.
- Enable a comprehensive just on time evaluation of data from different sources and stakeholders which supports fast decision processes
- Provides validated data of all stakeholder.
- Enable just-on-time traceability of products.
- Assist the implementation of additional digital measures (e.g. predictive quality assurance, automated process data, provision of data of sustainability and product origin for the consumer)

Competitiveness rise through more efficient business processes

	Challenges
Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). *Define& describethe challenges with reference to the "data type" of the actor and the sub-actor*	

- Data exchange of individual business processes is a cultural obstacle. Providing business sensitive data to other organizations in the food supply chain is felt as a loss on competitively.
- Sympathy and confidence in new digital data systems is low. The understanding of how data systems work is not available.
- Employees are partly not willing to learn new tasks and have no basic knowledge.
- Implementation of an integrated data system is costly. Existing systems are partly old and incompatible and must be renewed.
- Historical grown data systems are often not efficient but work in compliance with operative processes. Transparency of operative processes is low and analysis and necessary adoptions of existing processes is not done during digitization projects. New data systems are risky.

Loss of data through hack attacks or insufficient secured data cause an irreversible lack of ability to deliver and compromise the organization

	Legal Obstacles

Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain

General data protection regulation (GDPR)
DIRECTIVE (EU) 2016/1148 (…security of network and information systems across the Union)
Directive 85/374/EEC — product liability

	Business Requirements

Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario

BR 1. To support the distributor to accelerate the preparation and realization of certification.
BR 2. To enable the distributor for the precise finding of required certificates required by a specific customer.
BR 3. To support the distributor to select consultants, who can support the implementation of the certification requirements.
BR 4. To support the distributor to select a certification body that can undertake the certification process.
BR 5. To give the distributor an estimation of costs and expenditures in respect to the certification process.
BR 6. To support the realization of remote audits
BR 7. To allow for integrated data assessments for fact driven management of the business.
BR 8. To enable a comprehensive on time evaluation of real time data from different sources and stakeholders which supports fast decision processes
BR 9. To provide for validated data from all stakeholders.
BR 10. To enable just-on-time traceability of products.
BR 11. To assist the implementation of additional digital measures (e.g. predictive quality assurance, automated process data, provision of data of sustainability and product origin for the consumer)
BR 12. To facilitate a competitiveness, rise through more efficient business processes.

	Legal Requirements

Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario

OBJECTIVE: To investigate any legal restrictions that affect the achievement of the target for the data.

In this business scenario a large amount of data is being processed by different actors. To comply with legal data protection standards personal data, have to be strictly distinguished from non-personal data. Personal data is subject to the General Data Protection Regulation (GDPR) whereas non-personal, and herein in particular sensitive business data, have to be protected by different means.

Processing of personal data
The distributor uses the following personal data: i) Contact data of main actors of the supply chain, primarily producers and processors, and sub-actors, e.g. suppliers, food authorities and certification organisations, and/or their employees. ii) Certification data of producers, processors and sub-actors, e.g. suppliers and laboratories, and/or their employees. GDPR only applies to personal data of natural persons (Art 4 no 1 GDPR). The distributor processes the above personal data as the controller (Art 4 no 2 and 7 GDPR).

Legal Requirements

- **LR1:** GDPR compliance at all times, analyse the legal basis for processing: "processing is necessary for the performance of a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract" (Art 6 para 1 lit b GDPR); if there is no (direct) contract between controller and data subject, legitimate interests pursued by the controller (Art 6 para 1 lit f GDPR)

Governance of non-personal data

All data that does not qualify as personal data is so-called non-personal data. Non-personal data includes e.g. company data, analysis reports, lab data, audit reports, certificates, data from other actors in the supply chain, supplier information, certification schema parameters or retailers' lists of requirements. Non-personal data is not subject to the GDPR.

Due to the common default of a legal concept of "data ownership" TheFSM will have to rely on de facto control of data and data governance on a contractual basis to legally prevent the illegitimate use of information and to resort to non-disclosure and confidentiality agreements to restrict unwanted disclosure of data.

Data exchange

Distributor and processor

The processor searches for a distributor and sends a request for data of the company, business license, technical scope, certificates to the distributor. The distributor provides the contracted or potential processor with certificates, changes in company data, technical scope, product scope**,** certificates, business license, technical scope, product scope.

Retailer to Distributor

The retailer sends requirements to the distributor.

- **LR2:** A legal framework on a contractual basis for the exchange of data between distributor and these main actors will have to be analysed or provided.

Distributor and certification body:

Before and during certification process contract, data of the company, business license, technical scope, product scope, process description, process data records, analysis reports, HACCP Concept, management handbook, traceability data, internal guidelines, specifications are sent from the distributor to the certification body. The certification body provides the distributor with information regarding certification process, prices, expenditures, requirements according specific standards and seals of approval.

- **LR3:** The certification is performed on contractual basis. Storage of gathered data, their confidentiality etc are also regulated in this contract and in the applicable certification standard. The standard contract will have to be analysed.

Sub-actors:

Data is shared during the certification process between the distributor and various sub-actors such as consultants and public authorities.

- **LR4:** Study the legal bases of the relation to the various sub-actors and their relevance to the platform. If they are based upon a contract, this contract has to be analysed.
- **LR5:** It is to establish if there are any restrictions on sharing information received directly from competent authorities with third parties.

Commercial exploitation of the public and open data

The distributor will use databases such as the GlobalGAP database.

- **LR6:** establish whether there are any restrictions to the intended use according to the database terms of use (licence)

Food Safety Laws and Standards

Applicable Food Safety Regulations

The Regulation (EC) No 178/2002 sets out an overarching framework for the development of food and food safety legislation. The Regulation outlines general principles, requirements and procedures of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (General Food Law Regulation) at all stages of production and distribution. It provides an overarching legal framework for the food safety standards in this scenario.

Applicable Food Safety Standards

- Distributor has to decide which type of standard (IFS, BRC, ISO 22000, FSSC, GMP+, organic food …) and which seals of approval (fair trade, HG, RSPO, ASC, MSC, …) will be gained.

- **LR7:** analyse data sharing requirements and provisions on confidentiality according to the relevant standards

	Data Requirements
Summarize the Dat Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	
• *Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages* • *Data security* • *Data standards: to comply or reuse existing standards whenever possible* • *Data format: define the format that data should be exchanged* • *Data exchange: use the existing infrastructure* • *Data accessibility: To provide a way to limit the data access of each actor depending on his role* • *Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository* • *Uploading data: easy upload process, minimum cost*	
Main Actor / End User	**3.6.3.4** ***Certification Body***
Description of Main Actor 4	*Certification bodies, as TUV Austria is, are third party organisations who have been accredited by recognised accreditation bodies for their competence to audit and issue certifications.*
	Role in a Certified Food Supply Chain
Describe the responsibility of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'	
Certification bodies are third party organisations who have been accredited by recognised accreditation bodies for their competence to audit and issue certifications which confirm that businesses along the food supply chain meet the standard requirements. Certifies fulfillment of requirements within the supply chain (Producer, Processor and Distributor) and provides relevant information for the certification process. The rolls of the certification body are: • To meet international certification standards • To be licensed by the private scheme owner if is applicable • To provide impartial certification processes, procedures and practices • To provide competent auditors approved by the private scheme owner • To have independent decision-making on issuing certification	
	Interrelation with Main Actors in Food Safety Certification
Describe how this Actor interrelates with other main actors in the supply chain	
Producer/Processor/Distributor to **Certification Body**: • Before contract data of the company, business license, technical scope, product scope, process description is sent • During certification process descriptions, process data records, analysis reports, management handbook, traceability data, internal guidelines, specifications, …. **Certification body** to **Producer/Processor/Distributor**: • Detailed information regarding certification process, prices, expenditures etc. which allow producer detailed calculation of the certification process • Detailed information regarding requirements according specific standards and seals of approval • Provided data are sourced from different origins with diverse characteristics. Normally such data are not validated. Data provided by all relevant stakeholders to a comprehensive, uniform database, updated by data owner and validated within the certification process is an efficient way to give access to standardized and validated data. • Valid certificates, audit report	
	Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) *A. Data Provider (to Solution)*	

B. Data User (of the Solution)

Certification Body provides:

- Certification agreement: Hardcopy, office documents
- Audit services according to his accreditation and recognition: Hardcopy, pdf-download, Website, face to face, E-Mail
- Audit reports: pdf-download, B2B platform, Hardcopy
- Valid certificates: pdf-download, B2B platform, Hardcopy
- Certification logo: digital image (img, …)

Certification body uses following data from the main actors (producer, processor, retailer, distributor):

- Data of the company: manual entries, interaction ERP System, Website
- Business license: Pdf-Upload, E-Mail
- Technical scope: manual entries, interaction farm management systems, ERP-System, CRM-System, B2B-Platform
- Product scope: manual entries, interaction farm management systems, interaction global gap database
- HACCP Concept, CCPs. CPs: Pdf-upload, Office documents
- Description of processes and operation, technical resources, functions, relationships and any relevant legal obligations
- Analysis reports, process data etc.: laboratory management software, IoT, Pdf-Uploads, hard copy records, office documents, data records of equipment
- Desired scope of the certification: office documents, E-Mail, face to face
- Identification of outsourced processes used by the organization that will affect conformity to requirements;
- the standards or other requirements for which the applicant organization is seeking certification;

Calculation of costs and time expenditures for each standard and seal based on data provided by the producer.

	Data exchange flow with Main Actors

Describe <u>analytically</u> the direct data exchange flow with other main actors in the certified supply chain

Data provision:

The certification body provide information to producer, processor, distributor:

- Audit services according to his accreditation and recognition
- Certification process based on specific standards
- Certification agreement
- Audit report
- Certificates
- Certification logo

Data use:

The certification body uses information provided by producer, processor and distributor to conduct a review of the application and supplementary information for certification are requested if necessary.

Determine audit objectives, scope and criteria

Obtain necessary information regarding the scope of the management system, including:

- the client's site(s)
- process description and equipment used.
- levels of controls established (particularly in case of multisite clients)
- applicable statutory and regulatory requirements
- HACCP concept
- Company data
- Technical scope
- Product scope

During the audit, collected information relevant to the audit objectives, scope and criteria (including information relating to interfaces between functions, activities and processes) are used for audit conclusion.

- Process data
- Traceability data
- CCP/CP records
- Observations
- Analysis reports

- Delivery notes
- Specifications
- Guidelines, legal requirements, authority reports

	Data sources
Describe the potential sources of the data that the main actor handles	
Company- and contact data: Office documents, ERP System, CRM System, Website, B2B platform **Business license:** Pdf **Technical scope:** Office documents, ERP System, CRM System, Website, B2B platform **Product scope:** Office documents, ERP System, CRM System, Website, B2B platform **HACCP concept:** Office documents, pdf **Certificates:** Pdf, Website, B2B platform **Analysis reports:** pdf, Laboratory management software **Process data:** IoT, ERP, facility software, machine data records, paper records	
	Sub-actors
Describe analytically the sub-actors ***(who they are, what they do, what they provide, how they involved, what is their role to the certification process)*** *to the main actor.*	
Consultants: Collects data and supports strategic decision processes. Help to implement private standards, seals of approval, specific customer requirements and legal requirements. Performing internal audits. Moderate risk assessments and improve efficiency of processes. Provide data necessary for the certification process and to satisfy customers. Use data to find solutions for the processor. **Laboratories:** Sampling of raw materials, packing materials, intermediate and end products, environmental swabs. Realizing chemical, physical and microbiological analysis. Providing certificates. Deliver expertise and consultancy in respect of any product related deviation of legal or market requirements. Generate a high number of data which are relevant for the certification process and to fulfill customer requirements. **Public authorities:** Collects data which are relevant to confirm implementation of legal requirements. Issue business license. Compose written reports. Take samples for further analysis. Require traceability data.	
	Type of Interaction with Sub-actor
Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform.	
Consultants: Support preparation of the certification and intermediate during the audit process. **Laboratories:** Normally no interaction with certification bodies **Public authorities:** Can use certification audit reports for further risk evaluation of an organisation. Adopts sampling plan based on audit results.	
	Current Data Format
Describe the most usual format of the available data maintained by the actor	

- Handwritten notes
- Handwritten completed checklists and forms
- E-Mails from supplier, partner, customer
- Office documents, pdf
- ERP System
- CRM System
- Farming management software
- Laboratory management software
- Global gap database
- Databases from private standard owner (e.g. IFS)

	Goal
Describe how the 'TheFSM' will benefit each Main Actor - End User? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*	

Certification bodies have no access to specific needs and requirements which have to be fulfilled by an organization of the food supply chain. They have to require a lot of detailed data from an organization until they are ready to plan and calculate a certification.
Collecting data is time consuming and costs resources.
During an audit an auditor takes random samples, the certification decision is based on a small view of data. Sometimes it takes time that the audited organization provides requested information.
The provision of a comprehensive database where all actors and sub-actors provide and use certification-relevant data would support the certification body in following tasks:

- Access to specific requirements of retailer and the possibility of optimizing internal services
- Provision of all relevant data for preparation and realization of certification
- Standardisation of database and synchronisation of internal data systems
- Direct contact to and interaction with organizations of the food supply chain
- Boost the efficiency in preparation of the audit process
- Boost the efficiency of audit realization
- Supports realization of remote audits
- Provides validated data
- Enable just-on-time traceability of products.
- Deliver a better overall view of the ability of an audited organization and therefore better audit results
- Offering data validation as a new service as part of the certification process

	Challenges
Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). *Define& describe the challenges with reference to the "data type" of the actor and the sub-actor*	

- Goals for certification bodies are dependent on the will and the ability of all stakeholders to provide data to the platform.
- Planning and realization of the certification process is based on validated data which has to be ensured by the concept of the FSM-database.
- Auditors must be open and competent to use digital tools for realizing audits.
- Cyber security is costly.
- Loss of data through hack attacks or insufficient secured data cause an irreversible lack of ability to deliver and compromise the organization.

	Legal Obstacles
Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain	

General data protection regulation (GDPR)
DIRECTIVE (EU) 2016/1148 (…security of network and information systems across the Union)
Directive 85/374/EEC — product liability

	Business Requirements
Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario	
BR 1 Need access to relevant static company data (technical scope, product scope, unit size, …) BR 2 Need access to retailers information regarding the specific requirements for their supplier BR 3 Need a system to pose specific requirements for offered standards which can be filtered based on specific retailer and static company data BR 4 Data System has to be connected to internal IT framework BR 5 Need access to process data of audited organization (CCP records, temperature records, …) during remote audits BR 6 Need access to traceability data of audited organization during remote audits BR 7 All data have to be valid and actualized BR 8 Need a system to be able to calculate audit time and expenditures based on platform data BR 9 Need templates for audit agenda, audit report, proposal etc. BR 10 Need a direct communication channel to (potential) clients (pots, E-Mail template, chat-function, …) BR 11 Need tools to be able to validate and certify clients data during an audit	
	Legal Requirements
Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	

OBJECTIVE: To investigate any legal restrictions that affect the achievement of the target for the data.

In this business scenario a large amount of data is being processed by different actors. To comply with legal data protection standards personal data have to be strictly distinguished from non-personal data. Personal data is subject to the General Data Protection Regulation (GDPR) whereas non-personal, and herein in particular sensitive business data, have to be protected by different means.

Processing of personal data

Certification bodies use the following personal data: i) Contact data of main actors of the supply chain, primarily producers and processors, and sub-actors, e.g. suppliers, food authorities and certification organisations, and/or their employees. ii) Certification data of producers, processors and sub-actors, e.g. suppliers and laboratories, and/or their employees. GDPR only applies to personal data of natural persons (Art 4 no 1 GDPR). Certification body processes the above personal data as the controller (Art 4 no 2 and 7 GDPR).

Legal Requirements

- **LR1:** GDPR compliance at all times, analyse the legal basis for processing: "processing is necessary for the performance of a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract" (Art 6 para 1 lit b GDPR); if there is no (direct) contract between controller and data subject, legitimate interests pursued by the controller (Art 6 para 1 lit f GDPR)

Processing of non-personal data

All data that does not qualify as personal data is so-called non-personal data. Non-personal data includes e.g. company data, analysis reports, lab data, audit reports, certificates, data from other actors in the supply chain, supplier information, certification schema parameters or retailers' lists of requirements. Non-personal data is not subject to the GDPR.

Data exchange:

Certification body and producer, processor, distributor (see 4.4.):

The certification body provides a significant amount of information (e.g. audit services according to his accreditation and recognition, certification process based on specific standards, certification agreement, audit report, certificates, certification logo) to producer, processor, distributor. The certification body in return receives also information provided by producer, processor and distributor (e.g. the client's site, process description and equipment used, levels of controls established, applicable statutory and regulatory requirements, HACCP concept, company data, technical scope, product scope).

During the audit, collected information relevant to the audit objectives, scope and criteria (e.g. process data, traceability data, CCP/CP records, observations, analysis reports, delivery notes, specifications, guidelines, legal requirements, authority reports) are gathered.

Legal Requirements:

- **LR1:** Certification is performed on contractual basis. Storage of gathered data, their confidentiality, permission to share etc are also regulated in this contract and in the applicable certification standard. The standard contract and its implications for all relevant parties will have to be analysed.

Sub-actors:
Data will be shared with sub-actors such as consultants and laboratories (e.g. samples, analysis). Under normal circumstances no data is shared with public authorities, however, the public authorities have access to certain data (e.g. audit finding) if accepted by the company.

- ➢ **LR2:** The framework that serves as a legal basis for the exchange of data between the certification body and the sub-actors has to be analysed with regard to its relevance for the platform and the permission to have access and to share information.
- ➢ **LR3:** Establish if there are any restrictions on sharing information received directly from competent authorities with third parties

Commercial exploitation of the public and open data
The certification body will use databases (Global gap database, Databases from private standard owner e.g. IFS)

- ➢ **LR4:** establish whether there are any restrictions to the intended use according to the database terms of use (licence)

Food Safety Laws and Standards

Applicable Food Safety Regulations
The Regulation (EC) No 178/2002 sets out an overarching framework for the development of food and food safety legislation. The Regulation outlines general principles, requirements and procedures of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (General Food Law Regulation) at all stages of production and distribution. It provides an overarching legal framework for the food safety standards in this scenario.

Applicable Food Safety Standards

- ➢ All private standards relevant to the main actors (ISO 22000, FSSC, Global Gap, QS, …), seals of approval (fair trade, HG, RSPO, ASC, MSC, …), specific customer requirement and ISO standards that apply to the Certification body itself

- ➢ **LR5:** analyse data sharing requirements and provisions on confidentiality according to the relevant standards

	Data Requirements
Summarize the Dat Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	
• Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages • Data security • Data standards: to comply or reuse existing standards whenever possible • Data format: define the format that data should be exchanged • Data exchange: use the existing infrastructure • Data accessibility: To provide a way to limit the data access of each actor depending on his role • Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository • Uploading data: easy upload process, minimum cost	

Main Actor / End User	**3.6.3.5 *Retailer***
Description of Main Actor 5	In the distribution channel, retailers are considered to be the final link, who deals directly with the customer. They have a large role in promoting safe and quality products. The retailer performs the dual functions of buying and assembling of goods. Retailers are responsible for creating and improving the demand for various products by taking care of the display and merchandising activities. The responsibility of a retailer is to set the certification requirements in order to obtain safe food products from the suppliers and passing on the advantages to the consumer.

	Role in a Certified Food Supply Chain
Describe the responsibility of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'	
The retailer performs the dual functions of buying and assembling of goods. The growing role of retailers in food governance is significant. The responsibility of a retailer is to set the certification requirements in order to obtain safe food products from the suppliers and passing on the advantages to the consumer. Also, the retailer gathers the needed documentation to support its policy for food quality /safety and provides information regarding specific requirements to distributors, processors and producers. Use data (certificates, product scopes, technical scopes, food labels ...) from certification bodies.	
	Interrelation with Main Actors in Food Safety Certification
Describe how this Actor interrelates with other main actors in the supply chain	
Retailer to **producer, processor, distributor:** ● Requirements, searched by producer, processor, distributor or directly sent by retailer **Producer, Processor** to **retailer:** ● Valid certificates analysis reports, process data, changes of scopes or company data, **on regular base** (e.g. annually) and after request. ● **Presale data** of the company, business license, technical scope, product scope and certificates. ● Further: traceability data to improve risk analysis ● Further: process data to improve risk analysis in case of complaints ● Further: product specification, product declaration data, label design **Distributor** to **retailer:** ● Valid certificates process data, changes of scopes or company data, **on regular base** (e.g. annually) and after request. ● **Presale data** of the company, business license, technical scope, product scope and certificates. **Certification body** to **retailer:** ● Certificates ● Detailed information regarding requirements according specific standards and seals of approval ● Audit reports The prime focus of a retailer is on maximizing customer satisfaction by delivering safe and quality products. As a result of which, retailers always run the risk of receiving unsafe products. All entered data updated by the data owner. All data are validated by the **certification body** during the certification process. Data owned by the certification body are validated by the accreditation body or the scheme owner.	
	Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) *A. Data Provider (to Solution)* *B. Data User (of the Solution)*	

Retailer provides following data to other main actors (producer, processor and certification body):

- Certification requirements: manual entries, interaction ERP System, B2B Platform
- Products requirements: manual entries, interaction ERP System, B2B Platform
- Sales data: manual entries, interaction ERP System, B2B Platform
- Sales forecast: manual entries, interaction ERP System, B2B Platform

Retailer uses following data from main actors:

- Certificates: pdf
- Detailed information regarding requirements according specific standards and seals of approval: Web, B2B platform, pdf, hardcopy
- Audit reports: B2B platform, pdf
- Test reports: LMS, E-Mail, pdf
- Further: process data (CCP-checks, temperature related data, …): ERP, machine data, facility management software, pdf, hardcopy checklist
- Further: product specification, product declaration, label: B2B platform, pdf

	Data exchange flow with Main Actors

Describe analytically *the direct data exchange flow with other main actors in the certified supply chain*

Data provision:
Certification- and product requirements are sent to the suppliers and in case of pre sale or initial business activities. Analysis reports, audit reports, sales data evaluation, product deviations and consumer complaints are sent to existing suppliers**.**
Traceability data might be provided to consumers.
Data use:
Retailers receive data regarding existing certification and product specifications on a regular basis. Traceability data is sent as a random sample and in case of any deviations.
Product declaration and product label are sent during product design process.

	Data sources

Describe the potential sources of the data that the main actor handles

Company - and contact data: Office documents, ERP System, CRM System, farming management software
Business license: Pdf-Upload on local server, Cloud etc.
Technical scope: Office documents, ERP System, CRM System, global gap database
Product scope: Office documents, ERP System, CRM System, global gap database
Certificates: Pdf-Upload on local server, Cloud etc.
Traceability- and temperature data: ERP-systems, IoT, Equipment specific software, facility software, manual notes, handwritten checklists
Producers are required to provide a high variety of data from different resources. Data collection after requests from retailers is time consuming and costs resources.
Automated connection of all relevant data sources to one comprehensive database would facilitate the data provision and improve data quality.

	Sub-actors

*Describe analytically the sub-actors****(who they are, what they do, what they provide, how they involved, what is their role to the certification process)*** *to the main actor.*

Consultants: Collects data from producer, processor, distributor. Performing internal audits. Realize risk assessments regarding food safety and quality.
Provide data necessary for evaluation of the retailer's supplier. Propose corrective actions and improvements in supplier's operation.
Laboratories: Sampling at the supplier and in retail. Chemical, physical and microbiological analysis. Providing test reports. Consultancy in respect of any deviation of legal or market requirements.
Generate a high number of data which are relevant for the certification process and to fulfill customer requirements.
Public authorities: Collects data which are relevant to confirm implementation of legal requirements. Issue business license. Compose written reports.

	Type of Interaction with Sub-actor
Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform.	
Consultants: Are authorized to audit suppliers, to take samples and to realize risk assessments. **Laboratories:** Retailers provide samples and order analysis and certificates. Laboratories are authorized to take samples for analysis. Laboratories produce data which are relevant for the daily business of the retailer. Data are maintained in laboratory management software. Analysis certificates are sent via E-Mail or as hard copy to the producer. Online access to laboratory data allows real-time measures where necessary for food safety, legality and quality and facilitates integrated data evaluation. **Public authorities:** Producers provide data to gain the business license or to prove legality of the business. Public authorities collect data, take random samples, analyze these samples and compose written reports. These reports are sent normally in hardcopy. Data collection and holistic interpretation of all data is the goal to evaluate business processes and quality of products. This is supported by a comprehensive database with valid and validated data.	

	Current Data Format
Describe the most usual format of the available data maintained by the actor	
• E-Mails from supplier, partner, customer • Office documents • ERP System • CRM System	

	Goal
Describe how the 'TheFSM' will benefit each Main Actor - End User? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*	
Retailers have an efficient tool to provide specific information regarding their requirements to existing and to potential suppliers for each individual product group and technical scope. Retailers get knowledge how existing and potential suppliers comply with their requirements. Retailers can easily find all potential suppliers which already meet their requirements. The provision of a comprehensive database where all actors and sub-actors provide and use certification-relevant data would support the retailers in following tasks: • Accelerate results regarding compliance of suppliers • Find new suppliers and how they comply with their requirements • Allow detailed risk analysis of delivered products (if necessary) • Avoid unnecessary product recalls through possibility of integrated data evaluation through the whole food chain.	

	Challenges
Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). *Define& describe the challenges with reference to the "data type" of the actor and the sub-actor*	

Retailers are at "the end of the supply chain". The only risk is to get NO data, because of loss of data through hack attacks or insufficient secured data.
Improper implementation of digitization can cause inefficiencies in operational processes and in a leak of ability to supply.

	Legal Obstacles

Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain

General data protection regulation (GDPR)
DIRECTIVE (EU) 2016/1148 (…security of network and information systems across the Union)
Directive 85/374/EEC — product liability

	Business Requirements

Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario

BR 1 Need access to technical scope, product scope, valid certificates and seals of approval for (potential) supplier
BR 2 Need a system to pose their requirements
BR 3 Retailers have to filter relevant supplier based on their requirements and the provided supplier data
BR 4 Need access to product specification
BR 5 Need a workflow to release specification data, labels etc.
B 6 Need access to process data of supplier (CCP records, temperature records, …) in case of complaints
B 7 Need access to traceability data of supplier
B 8 All data have to be valid and actualized
B 9 Need a direct communication channel to (potential) supplier (pots, E-Mail template, chat-function, …)

	Legal Requirements

Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario

OBJECTIVE: To investigate any legal restrictions that affect the achievement of the target for the data.

In this business scenario a large amount of data is being processed by different actors. To comply with legal data protection standards personal data have to be strictly distinguished from non-personal data. Personal data is subject to the General Data Protection Regulation (GDPR) whereas non-personal, and herein in particular sensitive business data, have to be protected by different means.

Processing of personal data
The retailer processes a number of personal data: : i) Contact data of main actors of the supply chain, primarily processors and certification bodies (e.g. in Audit report), and sub-actors, e.g. public authorities, laboratories and consultants, and/or their employees; ii) Certification data of processors and sub-actors, e.g. laboratories and consultants, and/or their employees.
GDPR only applies to personal data of natural persons (Art 4 no 1 GDPR). The retailer processes the above personal data as the controller.

Legal Requirements

- **LR1:** GDPR compliance at all times, analyse the legal basis for processing: "processing is necessary for the performance of a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract" (Art 6 para 1 lit b GDPR); if there is no (direct) contract between controller and data subject, legitimate interests pursued by the controller (Art 6 para 1 lit f GDPR)

Governance of non-personal data
All data that does not qualify as personal data is so-called non-personal data. Non-personal data includes e.g. company data, analysis reports, lab data, audit reports, certificates, data from other actors in the supply chain, supplier information, certification schema parameters or retailers' lists of requirements. Non-personal data is not subject to the GDPR.

Data exchange

Retailer and producer, processor, distributor (see 5.2.):
The retailer provides requirements, searched by producer, processor, distributor or directly sent by retailer. The producer, processor send valid certificates analysis reports, process data, changes of scopes or company data, business license, technical scope, product scope and certificates to retailer.
Retailer and distributor:
The distributor sends valid certificates process data, changes of scopes or company data, business license, technical scope, product scope and certificates to the retailer.
Retailer and certification body:
Certificates, detailed information regarding requirements and audit reports will be shared between retailer and certification body.

Legal Requirements

- **LR2:** A contractual basis for the exchange of data between retailer and the relevant main actors will have to be analysed or provided.

Sub-actors:
Data will be shared with sub-actors such as consultants (e.g. samples), laboratories (e.g. samples, certificates, chemical/physical/microbiological analysis, test reports, business relevant information) and public authorities (e.g. samples, reports).

- **LR3:** The framework that serves as a legal basis for the exchange of data between the retailer and the sub-actors has to be analysed with regard to its relevance for the platform and the permission to have access and to share information.
- **LR4:** Establish if there are any restrictions on sharing information received directly from competent authorities with third parties

Commercial exploitation of the public and open data
The retailer will use databases (e.g. public, certification body)

- **LR5:** establish whether there are any restrictions to the intended use according to the database terms of use (licence)

Food Safety Laws and Standards

Applicable Food Safety Regulations
The Regulation (EC) No 178/2002 sets out an overarching framework for the development of food and food safety legislation. The Regulation outlines general principles, requirements and procedures of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (General Food Law Regulation) at all stages of production and distribution. It provides an overarching legal framework for the food safety standards in this scenario.

Applicable Food Safety Standards

- All private standards relevant to the main actors (ISO 22000, FSSC, Global Gap, QS, …), seals of approval (fair trade, HG, RSPO, ASC, MSC, …) and specific customer requirement

- **LR6:** analyse data sharing requirements and provisions on confidentiality according to the relevant standards

	Data Requirements
Summarize the Dat Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	
• Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages • Data security • Data standards: to comply or reuse existing standards whenever possible • Data format: define the format that data should be exchanged	

- Data exchange: use the existing infrastructure
- Data accessibility: To provide a way to limit the data access of each actor depending on his role
- Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository
- Uploading data: easy upload process, minimum cost

3.6.4 Business Scenario 4: Organic PDO wine certification: the certifier

Description

The aim of Business Scenario is to create a system that will allow to enhance traceability and reliability of the organic PDO wine value chain. The system should allow the interface of certification data from different certifiers, reducing the burden of farmers and improving the efficiency of issuing certifications. To implement the scenario, a platform for data interface that grants data ownership and privacy is needed.
We will first proceed in understanding if the main actors identified are really interested in the improved system and which could be the main advantages they can obtain. Identifying one or more actor for each category should help us to identify also the needs and the risks they face day by day.

Main actors involved (1, 2, 3, 4, …)

1. Auditors
2. Certification Committee
3. Farmers
4. winegrowers
5. Winemakers
6. Bottlers
7. Dealers (retailers, GDO, Importers, Horeca)
8. Authorities (National Authorities and Consortia)

Main Actor / End User	**3.6.4.1** ***The Inspector***
Description of Main Actor 1	*The inspector of Valoritalia is the physical person who goes into the vineyards or cellars to verify if the Operator/Company is working respecting the requirements and Rules that the certification imposes. In few words, he takes a photograph of the production method and of the situation/stocks of the Company and fills in a report (Digital or paper) with all data.*
	Role in a Certified Food Supply Chain
Describe the responsibility or responsibilities of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'	
The inspector checks the Producer's / Processor's cellar or vineyard. For Organic Certification, he assesses the methods and processes in wine production, if they comply with Organic regulation. Concerning PDO, PGI wine certification, he checks if the declarations and registration of winegrowers and bottlers are reliable. *His work is collecting as many information as possible and comparing the collected data with the information coming from the CB (which standards he is certified for, annual production declarations, compulsory declarations or Registers…).*	
	Interrelation with Main Actors in Food Safety Certification
Describe analytically how this Actor interrelates with other main actors in the supply chain (forward counting &backward i.e. main actor 1 <=> main actor 2)	

The inspector comes to the Vineyards / Cellar with a dossier including all the information the CB has already. The inspector comes out of the Vineyard / Cellar with a filled in report and a completed check list, in order to inform the Certification Committee of the actual situation in the Vineyard / Cellar.
Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) (i.e. main actor 1 is data provider to main actor 2 and/or data user of the main actor 2)
The information the inspector has in the dossier are: - FOR VINEYARDS: Name, address and contacts of the Company. Ortophotos with the area of the different vineyards, the variety of grape in each vineyard; All farm certification docs, Yearly production plan, management plan; farming practices register; accounting data on purchases (grape, wine... but also farm and cellar inputs) and goods sold (wine or grape); Non conformities or unresolved issues. - FOR CELLARS: Name, address and contacts of the Company. Report of information declared in the National DB; list of transactions and oenological practices and bottlings communicated to the CB; All farm certification docs; Yearly production plan; management plan; processing practices register; labels/certificates requests; Non conformities or unresolved issues. The information he has to fill in the inspection report and checklist are: - VINEYARDS: not corresponding data measuring the area of the vineyards or verifying the type of grape; estimated yield; use of not allowed substances in Organic Method; data of samples done at the moment of the inspection (place where it has been made and reasons /risks) - CELLARS: not corresponding remaining stocks of bulk wine or bottled wine; not corresponding transactions or substances used; data of samples done at the moment of the inspection (lot numbers, analytic data and labelling data)
Data exchange flow with Main Actors
Describe analytically the direct data exchange flow with other main actors in the certified supply chain(what kind of data the main actor 1 provides to the other main actors & what kind of data the main actor 1 uses from the other main actors)
The inspector uses data of: - FARMERS/WINE GROWERS: Production data, practices, Farm books/registers, Accounting books, management plan, farming practices reports, if available also IoT data (meteo data sensors) - WINE MAKERS: cellar data in the National Register, production wine data, oenological practices, Cellar store situation; Cellar registers; wine/must analysis archive; - BOTTLERS: bottling data in the National Register, oenological practices, Cellar store situation; lots and labels. The inspector provides data to the CERTIFICATION COMMITTEE: - Checklist and reports with findings
Data sources
Describe the potential sources of the data that the main actor handles (i.e. programmes, measuring devices (IoT).
The inspector collect data from Private DB of the Companies, he compares the data stored in Dioniso (Valoritalia's database), National DB, if available also IoT devices of the cellar/vineyard. He provides a paper or digital report to the Certification Committee.
Sub-actors
Describe analytically the sub-actors ***(who they are, what they do, what they provide, how they involved, what is their role to the certification process)*** *to the main actor.*

Public Authorities: For example, ICQRF (Quality Control and Fraud Repression Institute certification); ACCREDIA (Italian Accreditation Body), Regions. They Periodically assesses traceability / food quality and safety of traded products, so they check the inspection reports. In the case of ICQRF it is also important that Valoritalia's inspector knows if the ICQRF has recently sun a similar control in that cellar/vineyard and of there have been findings. National/Regional DB: SIAN as it is called the Italian National Register, lets reports of wine makers and bottlers available for the inspection checks. That there are some specific Italian regions that have Regional different systems to collect cadastral data, ortophotos and other vineyard data.
Type of Interaction with Sub-actor
Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform. What kind of data they provide to the main actor 1. and what kind of data they use from the main actor 1
Public Authorities: they should let available their inspection reports already done in that cellar/vineyard or at least the non-compliances found. National DB: SIAN is a wine National Register in which every wine cellar collects data of every movement of the wine (Grapes collected, must obtained, wine obtained, products used, transaction between other wine companies, bottlings, labelling and sellings.). Regional DB or SIAN concerning cadastral data (area, grape variety and also the maximum potential of that vineyard depending on the Specific PDO/IG regulation).
Current Data Format
Describe the most usual format of the available data maintained by the actor.
SIAN is an excel file available to download with an assigned password. CB/Valoritalia can access all the wine companies. DIONISO is Valoritalia's DB and accepts and provides excel or csv files. In case of bought in goods from operators certified by other Cbs, they are accompanied by their certificate but missing background data.
Goal
Describe how the 'TheFSM' will benefit the Main Actor 1 - End User1? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*
Valoritalia's inspectors will benefit using the FSM, for the following reasons: they will have a digital report to fill in and, at the same time, they will quickly access all the official info regarding findings of the National Control Authorities; also National Authorities could benefit in the same manner. In the case of PDO and organic wine producers and processors, the inspector could have an all in one database (legal requirements, accreditation certs for laboratories, Specific parameters) and spare time filling the checklists/reports for both standards; consequently they can increase the effectiveness (time/cost) of the audits, reducing paper and time spent onsite. The platform will increase the interaction of data sources from different Cbs, so increasing reliability.
Challenges
Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). *Define& describe the challenges with reference to the "data type" of the actor and the sub-actor*

The first big challenge will be of course the interoperability of existing certification management solutions with "TheFSM" when sharing data (e.g. data immigration): Dioniso should be connected to the FSM but also the National Databases (SIAN or Regional DB) and other CBs systems . There should be the participation of all the key end users (main and sub-actors) with whom it cooperates in the certification process. Handling audit information means meet all the limitations and requirements posed to Certification Bodies by the international standards for accreditation and the scheme owners, when using the "TheFSM' . All certification clients will have to align their data format (type) based on the technical specifications of the 'TheFSM' to facilitate quick sharing. All these challenges should keep the certification cost unaffected and hopefully increase the profit margin and also no further maintenance costs for users.

	Legal Obstacles

Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain

The first legal obstacle is the problem of sharing confidentiality and ownership info gathered during the audit and certification process. There will be Operators' sensitive data collected during the audit (contacts, remaining stocks of wine, suppliers and purchasers). It won't be possible the exploitation of sensitive data and there will be the high risk of conflict of interest.

	Business Requirements

Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario

BR 1 Need an all in one database (legal requirements, accreditation certs for laboratories, Specific parameters, historical data of the Company…)
BR 2 Need to have a digital report to fill in and an immediate tool through which issuing certificates
BR 3 Need a system to be able to calculate audit time and expenditures based on platform data
BR 4 Need access to retailers information regarding the specific requirements for their supplier
BR 5 Easy access to conformity certificates also for the other participants in the supply chain
BR 6 Keep the certification cost unaffected and hopefully increase the profit margin
BR 7 Need of Rules that recognize new digital tools

	Legal Requirements

Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario

The Certification Body

This section focuses on the Certification Body (CB) of Valoritalia. The auditor/inspector and the certification committee (CEC) are employees of Valoritalia who execute different tasks in the certification process. As such, this legal analysis will be conducted by combining these two actors into one actor referred to as the 'Certification Body'. A Certification Body may be empowered under law when a certification process is a statutory requirement. The EU Organic Certification is an example of a statutory certification scheme required under EU Regulation 834/2007. In contrast, Certification Committees may be empowered on a contractual basis through non-statutory certification standards. Such standards are established by a private-sector body and are available for use by any person or organization.

Processing of personal data

The GDPR applies only to the processing of personal data of natural persons (Art 4(1), GDPR). In this scenario, Personal data includes, contact data and certification data of natural persons associated with potential business and other cooperation partners, primarily Vineyards, Cellars and Bottlers. Contact data of employees from certification bodies (e.g. in inspection/audit report), laboratories and public authorities. The Certification Body processes personal data as the data controller, determining the purpose and means of processing (Article 4(7), GDPR). Employees do not have a separate data protection standard, therefore the Inspector and the members of the certification committee processes personal data as controllers.

Legal Requirements:

- ➢ **LR1:** Analyse the legal basis for processing, with a distinction between statutory (required by law) and non-statutory certification.
- ➢ Statutory certification: "processing is necessary for compliance with a legal obligation to which the controller is subject" (Art 6(1)(c), GDPR).
- ➢ Non-statutory certification: "processing is necessary for the performance of a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract" (Art 6 (1) (b), GDPR); if there is no (direct) contract between controller and data subject, legitimate interests pursued by the controller (Art 6 (1) (f) GDPR).

Governance of non-personal Data

Data Collection by the Certification Body

Acting on behalf of the Certification Body, the Inspector verifies data provided by actors in the supply chain to ensure compliance with certification requirements and Regulations.

- Wine Growers (Vineyards/Farms): Orthophotos, grape variety, IoT sensor data, farm certification docs, farming practices reports, Yearly production plan, management plans and accounting data. Information on Nonconformities or unresolved issues.
- Wine Makers: Information in the National DB, list of transactions, oenological practices and bottlings communicated to the CB. Farm certifications, yearly production plan, management plan, processing practices register and reports, labels/certificates requests and non-conformities or unresolved issues.
- Bottlers: Bottling data in the National Register, oenological practices, Cellar store situation, LOT numbers and labels.

The inspector directly collects non-personal, real time data during the inspection. This data includes samples taken at the time of inspection, corresponding laboratory results once samples are tested, evidence of non-corresponding data and data to prove non-conformity with certification and legal requirements.

Data Exchange between Certification Body and Main Actors

Farmers, Wine Growers, Winemakers and Bottlers:

The Certification Body collects non-personal data provided by these actors in their certification application. This data includes Orthophotos, farm data, oenological practices, business management plans, bottling data and accounting data. During the onsite inspection, additional non-personal data is provided to inspectors. This data includes product samples. These actors receive audit data and certification data from the Certification Bodies. The data may include the scope of certification, the status of certification and recorded non-compliances. Non-personal data is indirectly provided by way of obtaining or maintaining a Compliance Certificate, which signals the information about the certified product.

Legal Requirements:

- ➢ **LR2:** Statutory certification is governed by law. The governing Regulation determines which non-personal data has to be provided to the certification body, data collection, storage, confidentiality etc. Regulation (EC) No 834/2007 and Regulation (EC) No 203/2012, governing organic certification will be analysed. (See also LR7).
- ➢ **LR3:** Non-Statutory Certification is performed on contractual basis, the broader framework is provided by the applicable certification standard, i.e. PDO and PGI. The governing standards specifies which non-personal data has to be provided to the certification body, data collection during audits, data storage, and access to data, data exchange and confidentiality. The applicable certification standards will be analysed (see also LR7) and a standard contractual template will be analysed.

Data Exchange between Certification Body and Sub-Actors

Public Authorities:

The Certification Body receives information from public authorities such as ICQRF and ACCREDIA. The Certification Body receives findings from control audits conducted by public authorities. In addition, public authorities check and monitor the audit reports, certificates and documents of non-compliance issued by the Certification Body.

Legal Requirement:

- **LR4:** Establish if there are any restrictions on obtaining information directly from food authorities. If the information is not accessible to everyone, it must be provided by the assessed producers and/or processors.

Laboratories:

The samples collected during the inspection undergo laboratory analysis, this form part of the audit report and certification data. Wine Growers, Winemakers and Bottlers receive information from laboratories regarding the compliance of the products and services.

Legal Requirements:

- **LR5:** Laboratory analyses are performed on contractual basis. The confidentiality of the non-personal data and possibility to share the results of the analysis with third parties are governed by this contract. A contract template will have to be analysed.

Commercial Exploitation of Public and Open Data

The Certification Body uses the databases of public authorities and other certification bodies. This is done to collect and verify information obtained from the actors in the organic wine supply chain. Public databases include SIAN, national and regional databases. In addition, the Certification Body will use public data such as accreditation and approvals relevant to the farming operations and processing unit.

Legal Requirements:

- **LR6:** Establish whether there are any restrictions to the intended use according to the database terms of use (licenses).

Food Safety Laws and Standards

Laws:

Regulation (EC) No 178/2002 lays down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. (General Food Law Regulation). Regulation (EC) 852/2004 sets out rules regarding the hygiene of foodstuffs(for overview of EU Rules regarding Food Hygiene please see here). These Regulations set out an overarching framework for the development of food and food safety legislation, standards and authorities.

The following Regulations apply specifically to this scenario and the wine production process. Regulation (EC) No 834/2007, the Organic Regulation sets out the general principles, aims and overarching rules of organic production and organic labelling. Regulation (EC) No 203/2012 sets out the rules governing the production of organic wine. EU Organic Certification is required by statue for organic farming, production, distribution, marketing and the use of organic labelling. Regulation (EC) No 510/2006 governs the protection of geographical indications and designations of origin for agricultural products and foodstuffs. This Regulation sets out the broad framework for EU quality standards aimed at protecting the names and unique characteristics of specific products, linked to their geographical origin and traditional know-how.

Standards:

The Protected Designation Origin (PDO) registers products that have the strongest links to the place in which they are made. This label is optional for wine, therefore registration or certification occurs on a voluntary basis. The Protected Geographical Indication (PGI) emphasises the relationship between the specific geographic region and the name of the product, where a particular quality, reputation or other characteristic is essentially attributable to its geographical origin. This label is optional for wine, therefore registration or certification occur on a voluntary basis.

Legal Requirements:

- **LR7:** analyse data sharing requirements and provisions on confidentiality in the Organic Regulations and the PDO and PGI standards (see LR2 and LR3 above).

	Data Requirements

Summarize the Data Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario
• Data standards: to comply or reuse existing standards whenever possible • Data format: define the format that data should be exchanged • Data exchange: use the existing infrastructure • Uploading data: easy upload process, minimum cost • Data accessibility: To provide a way to limit the data access of each actor depending on his role • Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository • Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles. • Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages • Data security

Main Actor / End User	**3.6.4.2 *Certification Committee (CEC)***
Description of Main Actor 2	*The Certification Committee of Valoritalia (also called CEC) is a group of 2 or 3 people, with a high knowledge on certification procedures who reviews the audit report, together with analysis results and other relevant documentation and takes a decision about the compliance to the PDO Standard and Organic Regulations.*
	Role in a Certified Food Supply Chain
Describe the responsibility of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'	
The Certification Committee checks auditors reports, if the information in reports are in conformity against Pdo/PGI and Organic standard requirements, so that they can issue certification or irregularity/ non-compliance document. Thanks to the FSM CEC could easily access digital reports, with the link on all other information needed (National DB, positive list of substances allowed, Specific Regulations, maximum potential yield, laboratories analysis results, Authorities reports, etc). Besides, they can issue a certificate that could be easily available for the next steps of the value chain.	
	Interrelation with Main Actors in Food Safety Certification
Describe how this Actor interrelates with other main actors in the supply chain	
The CEC relates with the inspector because they assess if the information found in reports are in conformity against Pdo/PGI and Organic requirements. If the requirements are met, than they can issue the certification itself and they send the digital format to the winegrower/winemaker/bottler. If they have doubts concerning information, they can ask to the inspector, and if they assess that the Operator doesn't meet the requirements, they can issue a measure of non-compliance, irregularity etc.	
	Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) *A. Data Provider (to Solution)* *B. Data User (of the Solution)*	

The information the CEC has in the dossier are:
- FOR VINEYARDS: Name, address and contacts of the Company. Ortophotos with the area of the different vineyards, the variety of grape in each vineyard; All farm certification docs, Yearly production plan, management plan; farming practices register; Non conformities or unresolved issues.
- FOR CELLARS: Name, address and contacts of the Company. Report of information declared in the National DB; list of transactions and oenological practices and bottlings communicated to the CB; All farm certification docs; Yearly production plan; management plan; farming practices register; labels/certificates requests; Non conformities or unresolved issues.
The information he finds in the inspection report and checklist are:
- VINEYARDS: not corresponding data measuring the area of the vineyards or verifying the type of grape; estimated yield; use of not allowed substsaces in Organic Method; data of samples done at the moment of the inspection (place where it has been made and reasons /risks)
- CELLARS: not corresponding remaining stocks of bulk wine or bottled wine; not corresponding transactions or substances used; data of samples done at the moment of the inspection (lot numbers, analytic data and labelling data)
They issue certification or irregularity/non-compliance documents in digital format, which are pre-moduled and revised according ISO 17065:2012.

	Data exchange flow with Main Actors

Describe analytically the direct data exchange flow with other main actors in the certified supply chain

The CEC uses data of inspectors, Reports and checklists, but also National DB or Regional DB and analytic results from laboratories; positive list of allowed substances, campaign-agronomic books or cellar reports.
He provides a digital document to the controlled Company.

	Data sources

Describe the potential sources of the data that the main actor handles

The CEC can use Dioniso (Valoritalia's database), National DB, analytic results from laboratories to further compare data and verify the conformity.
He provides digital signed report to the Operator.

	Sub-actors

Describe analytically the sub-actors(who they are, what they do, what they provide, how they involved, what is their role to the certification process) to the main actor.*

Public Authorities: For example, ICQRF (Quality Control and Fraud Repression Institute certification); ACCREDIA (Italian Accreditation Body), Regions. They Periodically assesses traceability / food quality and safety of traded products, so they check the inspection reports. In the case of ICQRF it is also important that Valoritalia's inspector knows if the ICQRF has recently sun a similar control in that cellar/vineyard and of there have been findings.
National/Regional DB: SIAN as it is called the Italian National Register, lets reports of wine makers and bottlers available for the inspection checks. That there are some specific Italian regions that have Regional different systems to collect cadastral data, ortophotos and other vineyard data.

	Type of Interaction with Sub-actor

Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform.

Public Authorities: they should let available their inspection reports already done in that cellar/vineyard or at least the non-compliances found. National DB: SIAN is a wine National Register in which every wine cellar collects data of every movement of the wine (Grapes collected, must obtained, wine obtained, products used, transaction between other wine companies, bottlings, labelling and sellings.). Regional DB or SIAN concerning cadastral data (area, grape variety and the maximum potential of that vineyard depending on the Specific PDO/IG regulation).
Current Data Format
Describe the most usual format of the available data maintained by the actor
SIAN is an excel file available to download with an assigned password. CB/Valoritalia'CEC can access all the wine companies. DIONISO is Valoritalia's DB and accepts and provides excel or csv files. CERTIFICATION DOCUMENT: is a pre-moduled and revised according ISO 17065:2012, it is usually sent to the Operator through a pdf scanned file.
Goal
Describe how the 'TheFSM' will benefit each Main Actor - End User? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*
Valoritalia's CEC will benefit using the FSM, for the following reasons: they will have a digital report to verify and, at the same time, they will quickly access all the official info regarding findings of the National Control Authorities; also National Authorities could benefit in the same manner. It is very important also for CEC, an all in one database (legal requirements, accreditation certs for laboratories, Specific parameters) able to interface with other Cbs data without losing reliability or security.
Challenges
Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). *Define& describe the challenges with reference to the "data type" of the actor and the sub-actor*
The first big challenge will be of course the interoperability of existing certification management solutions with "TheFSM" when sharing data (e.g. data immigration): Dioniso should be connected to the FSM but also the National Databases (SIAN or Regional DB) and other Cbs databases. There should be the participation of all the key end users (main and sub-actors) with whom it cooperates in the certification process. Handling audit information means meet all the limitations and requirements posed to Certification Bodies by the international standards for accreditation and the scheme owners, when using the "TheFSM' . All certification clients will have to align their data format (type) based on the technical specifications of the 'TheFSM' to facilitate quick sharing. All these challenges should keep the certification cost unaffected and hopefully increase the profit margin and no further maintenance costs for users.
Legal Obstacles
Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain

The first legal obstacle is the problem of sharing confidentiality info gathered during the audit and certification process. There will be Operators' sensitive data collected during the audit (contacts, remaining stocks of wine, suppliers and purchasers). It won't be possible the exploitation of sensitive data and there will be the high risk of conflict of interest. Another problem is the interface of Dbs from different Cbs and the will to share data that can give competitive advantages to Cbs.

	Business Requirements
Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario	
BR 1 Need of an all in one database (legal requirements, accreditation certs for laboratories, Specific parameters, historical data of the Company…) BR 2 Need to have a digital report to fill in and an immediate tool through which issuing certificates BR 3 Need a system to be able to calculate audit time and expenditures based on platform data BR 4 Need access to retailers information regarding the specific requirements for their supplier BR 5 Easy access to conformity certificates also for the other participants in the supply chain BR 6 Keep the certification cost unaffected and hopefully increase the profit margin BR 7 Need of Rules that recognize new digital tools	

	Legal Requirements
Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	
Please see the legal analysis on the "Certification Body" in the Main Actor 1 section above.	

	Data Requirements
Summarize the Data Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	
• Data standards: to comply or reuse existing standards whenever possible • Data format: define the format that data should be exchanged • Data exchange: use the existing infrastructure • Uploading data: easy upload process, minimum cost • Data accessibility: To provide a way to limit the data access of each actor depending on his role • Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository • Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles. • Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages • Data security	

Main Actor / End User	**3.6.4.3 *Farmer***
Description of Main Actor 3	*Farmers, meaning the producers of grape/the producers of grape: their farming activity is the characterizing element because they do not have the cellar, they only sell the gape.*
	Role in a Certified Food Supply Chain
Describe the responsibility of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'	

Farmer are required to: 1) be fully aware of the regulation to be fulfilled 2) keep updated registers of operations and input used 3) keep and update accounting books where all bought in and sold items are reported 4) keep and update farm files (SINAB) infos 5) allow auditors to inspect the farm, supplying any required data.
Interrelation with Main Actors in Food Safety Certification
Describe how this Actor interrelates with other main actors in the supply chain
Farmer interrelate with: 1. public authorities for farm files registration (SINAB) 2. CB for certification processes (including the auditor and CEC) 3. winemakers (in the case processing is not taking place on farm), who requires all certification data to be able to bring the process forward 4. wine bottlers, who requires all certification data to be able to bring the process forward 5. wine dealers, who requires all certification data to be able to bring the process forward
Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) *A. Data Provider (to Solution)* *B. Data User (of the Solution)*
Farmers are on one side data providers (the main data provider), directly through farm files and accounting info and indirectly through certification documents. On the other hand, they are also data users as any input they bring into the farm should be certified or allowed (i.e. farming inputs). They also use the certification data for marketing purposes.
Data exchange flow with Main Actors
Describe analytically the direct data exchange flow with other main actors in the certified supply chain
Farmers exchange data with: 1. public authorities, via SIAN or Regional DB farm files 2. Consultant DB or private campaign books and accounting. 3. input suppliers who should supply certification data 4. grape/wine buyers, who the farmers supply their certification data
Data sources
Describe the potential sources of the data that the main actor handles
1. Public database (SIAN) Regional DB, the farmers input data *2.* CB database, indirectly supplying auditor the info
Sub-actors
Describe analytically the sub-actors ***(who they are, what they do, what they provide, how they involved, what is their role to the certification process)*** *to the main actor.*

Farmers usually interface with CB, consultants, usually agronomists, who give advice concerning best practices in vineyard. They provide timelines, products or techniques suggestions, and they sometimes also fill in campaign books or bureaucracy documents related to certification. If IoT solutions are available, they can take data from IoT sensors. For those farmers who don't have a consultant, they also interface with National DB or CB Database (Dioniso), where they have to update vineyard data (production data, area, variety, yield, agronomic practices, etc.)
Type of Interaction with Sub-actor
Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform.
Production data, area, variety, yield, agronomic practices to register in their campaign book, and to communicate to the National Authorities (SIAN) and Control Bodies (Dioniso).
Current Data Format
Describe the most usual format of the available data maintained by the actor
Public DB: PDF, excel CB DB: PDF files, excel
Goal
Describe how the 'TheFSM' will benefit each Main Actor - End User? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*
The FSM is to strengthen the traceability before the farmers, meaning input suppliers, and after, meaning buyers. Another big goal for farmers is to replace the hardcopy archives to a digital database (organizing and reporting day2day work), of course this should be an easy way to fill in data, in order to have them available for every kind of certification, avoiding redundancies. Having Real time data, it minimizes the response time to decide actions). They can control the production process (i.e. financial control and stat analysis) and improve the cooperation with traders.
Challenges
Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). *Define& describe the challenges with reference to the "data type" of the actor and the sub-actor*
The platform should be easy and convenient, limiting time and effort also for elder users. Low registration and maintenance cost for the platform Access to the platform by sub-users with no cost. It could be useful a broader use of farm IoT tech to gather data. High commercial added value - benefit to get in return
Legal Obstacles
Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain

- Business sensitive data
- Commercial exploitation of the public and open data
- difficult relation with all the platform connected

	Business Requirements

Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario

BR 1. Improvement tool (enhance production cost effectiveness).
BR 2. Digitalize the certification information flow.
BR 3. Direct access to market needs (Up to date info) & new clients.
BR 4. Real time data (minimize response time to decide actions).
BR 5 Reduce time needed to input data for certification and, in general, reduce time to bureaucracy
BR 6. Replacement of the hardcopy archives to a digital database.
BR 7. Long lasting cooperations with all actors in the supply chain.

	Legal Requirements

Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario

Processing of Personal data

The farmers use the following personal data: contact data and certification data of main actors in the supply chain and their employees, primarily winemakers, bottler and sub-actors, e.g. equipment suppliers, consultants and laboratories. The winegrowers may also process the personal data of its employees. Farmers process the personal data as the data controllers, determining the purposes and means of the processing of personal data (Article 4(7), GDPR).

Legal Requirements

➢ **LR1:** Analyse the legal basis for processing. "processing is necessary for the performance if a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract" (Art 6(1)(b), GDPR). If there is no (direct) contract.

Governance of non-personal data

Farmers data

Farmers generate non-personal data including real time data about the product (grapes) and the characteristics of the vineyard business. This data includes farm files, accounting data, IoT sensory data, farm production data, plot details and harvest information.

Legal Requirements

➢ **LR2:** As there is no statutory protection of non-personal data ("data ownership"), collected data will be protected by technical and organisational measures (TOM), including legal instruments that limit the disclosure and use of the data, such as non-disclosure agreement (NDA) and confidentiality clauses in cooperation and other agreements.

Data exchange between the Farmers and Main Actors

Certification Body:

Farmers directly provide non-personal data during the certification process. The data provided includes orthophotos, grape variety, farm certification documents, yearly production plans, farm management plans and farming practices register. In addition, data is collected from the vineyard or farm in the course of an inspection/audit. This data includes product and soil samples. Farmers receive audit data and certification data from the Certification Body. The data may include the scope of certification, the status of certification and recorded non-compliances.

Legal Requirements

- **LR3:** Statutory certification is governed by law. The governing Regulation determines which non-personal data has to be provided to the certification body, data collection, data storage, confidentiality etc. Regulation (EC) No 834/2007 and Regulation (EC) No 203/2012, governing organic certification will be analysed (see also LR9).
- **LR4:** Non-Statutory Certification is performed on contractual basis, the broader framework is provided by the applicable certification standard, i.e. PDO and PGI. The governing standards specifies which non-personal data has to be provided to the certification body, data collection during audits, data storage, and access to data, data exchange and confidentiality. The applicable certification standards will be analysed (see also LR9) and a standard contractual template will be analysed.

Wine Makers, Wine Bottlers and Dealers:

Farmers exchange their certification data and farm data with other parties in the supply chain who bring the processing forwards. This data includes farm data on traceability, product safety verification and certification data.

Legal Requirements

- **LR5:** Provide a data governance framework that regulates sharing of data between farmers, wine makers, bottlers and dealers (terms of use of the platform or separate standard contract template). Any existing agreements and/or templates etc will be analysed.

Public Authorities:

Farmers exchange non-personal data directly with public bodies. This exchange occurs when farmers input data into public databases such as SIAN and during control inspections. In addition, data is provided through certification and audit reports by the Certification body. Farmers receive reports from public authorities indicating compliance or non-compliance with horizontal and sector specific regulations, such as the Organic Regulations.

Legal Requirements

- **LR6:** establish if there are any restrictions on obtaining and sharing information received directly from competent public authorities. If the information is not publicly accessible, it must be provided by the assessed farmer. Regulation (EC) No 834/2007 and Regulation (EC) No 203/2012, governing organic wine production will be analysed (see also LR9).

Data exchange with Sub-actors

Farmers provide data to consultants such as agronomists and oenologists. The aim of the data exchange is to obtain advice concerning best practices in the vineyard. The data provided includes production data, orthophotos of the vineyard, grape variety, yield and IoT sensory data.

Legal Requirements

- **LR7:** Identify legal circumstances relevant for participation of consultants in the platform. To this purpose in particular any existing agreements with consultants and/or templates, especially confidentiality obligations and/or data sharing requirements therein, will be analysed.

Commercial exploitation of the public and open data

Farmers will use databases of public authorities such as SIAN, national and regional databases. In addition, farmers use Certification Bodies Databases, such as Dioniso to e.g. query the validity of their own Certificates and retrieve information on certification bodies.

Legal Requirements

- **LR8:** Establish whether there are any restrictions to the intended use according to the database terms of use (licence).

Food Safety Laws and Standards

Laws:

Regulation (EC) No 178/2002 lays down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. (General Food Law Regulation). Regulation (EC) 852/2004 sets out rules regarding the hygiene of foodstuffs(for overview of EU Rules

regarding Food Hygiene please see here). These Regulations set out an overarching framework for the development of food and food safety legislation, standards and authorities.
The following Regulations apply specifically to this scenario and the wine production process. Regulation (EC) No 834/2007, the **Organic Regulation** sets out the general principles, aims and overarching rules of organic production and organic labelling. Regulation (EC) No 203/2012 sets out the rules governing the production of organic wine. EU Organic Certification is required by statue for organic farming, production, distribution, marketing and the use of organic labelling. Regulation (EC) No 510/2006 governs the protection of geographical indications and designations of origin for agricultural products and foodstuffs. This Regulation sets out the broad framework for EU quality standards aimed at protecting the names and unique characteristics of specific products, linked to their geographical origin and traditional know-how.
Standards:
The Protected Designation Origin (PDO) registers products that have the strongest links to the place in which they are made. This label is optional for wine, therefore registration or certification occurs on a voluntary basis. The PDO standard requires that grapes be grown in the geographical area where the wine is made. The Protected Geographical Indication (PGI) emphasises the relationship between the specific geographic region and the name of the product, where a particular quality, reputation or other characteristic is essentially attributable to its geographical origin. PGI standard requires that at least 85% of the grapes used come exclusively from the geographical region where the wine is made. This label is optional for wine, therefore registration or certification occur on a voluntary basis.

Legal Requirements

- **LR9:** Analyse data sharing requirements and provisions on confidentiality in the Organic Regulations, PDO and PGI standards (see LR3, LR4 and LR6 above).

	Data Requirements
Summarize the Dat Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	
● Data standards: to comply or reuse existing standards whenever possible ● Data format: define the format that data should be exchanged ● Data exchange: use the existing infrastructure ● Uploading data: easy upload process, minimum cost ● Data accessibility: To provide a way to limit the data access of each actor depending on his role ● Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository ● Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles. ● Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages ● Data security	

Main Actor / End User	**3.6.4.4 *Winegrowers***
Description of Main Actor 4	*Winegrower, meaning the producers of grape that process it on farm: besides the farming activity also wine-making, and sometimes also the bottling is done in the same farm.*
	Role in a Certified Food Supply Chain
Describe the responsibility of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'	

Winegrowers are required to: 1) be fully aware of the regulation to be fulfilled 2) keep updated registers of operations and input used 3) keep and update accounting books where all bought in and sold items are reported 4) keep and update farm files (SINAB) info 5) allow auditors to inspect the farm and the cellar, supplying any required data.
Interrelation with Main Actors in Food Safety Certification
Describe how this Actor interrelates with other main actors in the supply chain
Winegrowers interrelate with: • public authorities for farm files registration (SINAB) • CB for certification processes (including the auditor and CEC) • wine bottlers, who requires all certification data to be able to bring the process forward • wine dealers, who requires all certification data to be able to bring the process forward
Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) *A. Data Provider (to Solution)* *B. Data User (of the Solution)*
Winegrowers are on one side data providers (the main data provider) if they sell bulk wine to bottlers, directly through farm files and accounting infos and indirectly through certification documents. On the other hand, they are also data users as any input they bring into the farm should be certified (i.e. sugar or rectified must or grape) or allowed (i.e. farming inputs). They also use the certification data for marketing purposes.
Data exchange flow with Main Actors
Describe analytically the direct data exchange flow with other main actors in the certified supply chain
Farmers exchange data with: • CB, through Dioniso and audit • public authorities, via SIAN farm files and cellar files • input suppliers who should supply certification data • wine buyers, who the farmers supply their certification data
Data sources
Describe the potential sources of the data that the main actor handles
• Public database (SIAN), the farmers input data • CB database, indirectly supplying auditor the info
Sub-actors
Describe analytically the sub-actors ***(who they are, what they do, what they provide, how they involved, what is their role to the certification process)*** *to the main actor.*

Winegrowers usually interface with CB, consultants, usually agronomists or oenologists, who give advice concerning best practices in vineyard and in the cellar. They provide timelines, products or techniques suggestions, and they sometimes also fill in campaign books or SIAN or DIONISO or other bureaucracy documents related to certification. If IoT solutions are available, they can take data from IoT sensors. For those farmers who don't have a consultant, they also interface with National DB or CB Database (Dioniso), where they have to update vineyard data (production data, area, variety, yield, agronomic practices…) or cellar data, bottling and transactions.
Type of Interaction with Sub-actor
Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform.
Production data, area, variety, yield, agronomic practices to register in their campaign book; cellar practices, transactions and bottlings to communicate to the National Authorities (SIAN or Regional DB) and Control Bodies (Dioniso).
Current Data Format
Describe the most usual format of the available data maintained by the actor
Public DB: PDF, excel CB DB: PDF files, excel
Goal
Describe how the 'TheFSM' will benefit each Main Actor - End User? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*
The FSM is to strengthen the traceability before the winegrowers, meaning input supliers, and after, meaning buyers. Another big goal for farmers is to replace the hardcopy archives to a digital database (organizing and reporting day2day work), of course this should be an easy way to fill in data, in order to have them available for every kind of certification, avoiding redundancies. Having Real time data, it minimizes the response time to decide actions). They can control the production process (i.e. financial control and stat analysis) and improve the cooperation with traders.
Challenges
Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). *Define& describethe challenges with reference to the "data type" of the actor and the sub-actor*
The platform should be easy and convenient, limiting time and effort also for elder users. Low registration and maintenance cost for the platform Access to the platform by sub-users with no cost. It could be useful a broader use of farm IoT tech to gather data. High commercial added value - benefit to get in return
Legal Obstacles
Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain

- Business sensitive data
- Commercial exploitation of the public and open data
- difficult relation with all the platform connected

	Business Requirements

Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario

BR 1. To receive producer's data about the harvest period of the certified product (date, quantity) for the traceability system
BR 2. To receive producer's certification validity and report (supplier's documents)
BR 3. To have all in one database (suppliers of packaging material etc.)
BR 4. Real time data (minimize response time to decide actions)
BR 5. Easy way to fill in daily data that could be used automatically for every kind of certification, avoiding redundancies

	Legal Requirements

Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario

Processing of Personal data

In vineyards where farming, winemaking and bottling take place, the following personal data is used contact data of sub-actors and their employees, primarily equipment suppliers, consultants and laboratories. The winegrowers may also process the personal data of its employees. Winegrowers process the personal data as the data controllers, determining the purposes and means of the processing of personal data (Article 4(7), GDPR).

Legal Requirements

➢ **LR1:** Analyse the legal basis for processing. "processing is necessary for the performance of a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract" (Art 6 para 1 lit b GDPR); if there is no (direct) contract between controller and data subject, legitimate interests pursued by the controller (Art 6 para 1 lit f GDPR).

Governance of non-personal data

Winegrowers data

In vineyards where farming, winemaking and bottling take place, a wide variety of non-personal data can be generated. These Winegrowers generate non-personal data including real time data about the product (grapes), wine making process and the characteristics of the business. This data includes farm files, accounting data, IoT sensory data, wine production data, cellar practices and bottling data.

Legal Requirements

➢ **LR2:** As there is no statutory protection of non-personal data ("data ownership"), collected data will be protected by technical and organisational measures (TOM), including legal instruments that limit the disclosure and use of the data, such as non-disclosure agreement (NDA) and confidentiality clauses in cooperation and other agreements.

Data exchange between Winegrowers and Main Actors

Certification Body:

Winegrowers directly provide non-personal data on the specifications, quality, safety characteristics and traceability of the raw materials and the final product. The data provided includes orthophotos of the vineyard, grape variety, farm certification documents, yearly production plans, farming practices register, health practice registries and bottling information. In addition, data is collected from the vineyard in the course of an inspection/audit. This data includes product, bottling and soil samples.

Legal Requirements

- **LR3:** Statutory certification is governed by law. The governing Regulation determines which non-personal data has to be provided to the certification body, data collection, data storage, data exchange and confidentiality etc. Regulation (EC) No 834/2007 and Regulation (EC) No 203/2012, governing organic certification will be analysed (see also LR8).
- **LR4:** Non-Statutory Certification is performed on contractual basis, the broader framework is provided by the certification standard applicable, i.e. PDO and PGI. The governing standards specifies which non-personal data has to be provided to the certification body, data collection during audits, data storage, and access to data, data exchange and confidentiality. The PDO and PGI standards (see also LR8) and a contract template will be analysed.

Public Authorities:
Winegrowers exchange non-personal data directly with public bodies. This exchange occurs when winegrowers directly input data into public databases such as SIAN. In addition, data is indirectly provided through the certification and audit reports. Farmers receive reports from public authorities indicating compliance or non-compliance with horizontal and sector specific regulations, such as the Organic Regulations.

Legal Requirements

- **LR5:** establish if there are any restrictions on obtaining and sharing information received directly from competent public authorities. If the information is not publicly accessible, it must be provided by the assessed winegrower. Regulation (EC) No 834/2007 and Regulation (EC) No 203/2012, governing organic wine production will be analysed (see also LR8).

Winemakers and Bottlers:
In this section, the entire wine making process takes place on the farm or vineyard; therefore, there is no data exchange with external winemakers or bottlers.

Data exchange with Sub-actors
Winegrowers provide data to consultants such as agronomists and oenologists. The aim of the data exchange is to obtain advice concerning best practices in the vineyard. The data provided includes production data, orthophotos of the vineyard, grape variety, yield and IoT sensory data.

Legal Requirements

- **LR6:** Identify legal circumstances relevant for participation of consultants in the platform. In particular, any existing agreements with consultants and/or templates, especially confidentiality obligations and/or data sharing requirements therein, will be analysed.

Commercial exploitation of the public and open data
Winegrowers will use databases of public authorities, such as SIAN and Certification Bodies Database, such as Dioniso to e.g. query the validity of their own Certificates and retrieve information on certification bodies.

Legal Requirements

- **LR7:** Establish whether there are any restrictions to the intended use according to the database terms of use (licence)

Food Safety Laws and Standards
Laws:
Regulation (EC) No 178/2002 lays down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. (General Food Law Regulation). Regulation (EC) 852/2004 sets out rules regarding the hygiene of foodstuffs (for overview of EU Rules regarding Food Hygiene please see here). These Regulations set out an overarching framework for the development of food and food safety legislation, standards and authorities.
The following Regulations apply specifically to this scenario and the wine production process. Regulation (EC) No 834/2007, the Organic Regulation sets out the general principles, aims and overarching rules of organic production and organic labelling. Regulation (EC) No 203/2012 sets out the rules governing the production of organic wine.

EU Organic Certification is required by statue for organic farming, production, distribution, marketing and the use of organic labelling. Regulation (EC) No 510/2006 governs the protection of geographical indications and designations of origin for agricultural products and foodstuffs. This Regulation sets out the broad framework for EU quality standards aimed at protecting the names and unique characteristics of specific products, linked to their geographical origin and traditional know-how.
Standards:
The Protected Designation Origin (PDO) registers products that have the strongest links to the place in which they are made. This label is optional for wine, therefore registration or certification occurs on a voluntary basis. The Protected Geographical Indication (PGI) emphasises the relationship between the specific geographic region and the name of the product, where a particular quality, reputation or other characteristic is essentially attributable to its geographical origin. This label is optional for wine, therefore registration or certification occur on a voluntary basis.

Legal Requirements

- **LR8:** analyse data sharing requirements and provisions on confidentiality in the Organic Regulations and the PDO and PGI standards (see LR3, LR4 and LR5 above).

	Data Requirements
Summarize the Data Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	
• Data standards: to comply or reuse existing standards whenever possible • Data format: define the format that data should be exchanged • Data exchange: use the existing infrastructure • Uploading data: easy upload process, minimum cost • Data accessibility: To provide a way to limit the data access of each actor depending on his role • Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository • Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles. • Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages • Data security	

WORK PACKAGE 1	**3.6.4.5** ***winemakers***
Description of Main Actor 5	*Winemakers, meaning the producers of wine, starting from purchased grapes, and usually also the bottling is done.*
	Role in a Certified Food Supply Chain
Describe the responsibility of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'	
Winemakers are required to: 1) be fully aware of the regulation to be fulfilled 2) keep updated registers of operations and input used 3) keep and update accounting books where all bought grapes and sold wine/bottles are reported 5) allow auditors to inspect the cellar, supplying any required data.	
	Interrelation with Main Actors in Food Safety Certification

Describe how this Actor interrelates with other main actors in the supply chain
Winemakers interrelate with: - CB for certification processes (including the auditor and CEC) - wine bottlers, who requires all certification data to be able to bring the process forward (in the case of bulk wine selling) - wine dealers, who requires all certification data to be able to bring the process forward

	Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) *A. Data Provider (to Solution)* *B. Data User (of the Solution)*	
Winemakers are on one side data providers (the main data provider) if they sell bulk wine to bottlers, directly through farm files and accounting infos and indirectly through certification documents. On the other hand, they are also data users as any grape they bring into the farm should be certified or allowed (i.e. sugar, must). They also use the certification data for marketing purposes.	

	Data exchange flow with Main Actors
Describe <u>analytically</u> the direct data exchange flow with other main actors in the certified supply chain	
Winemakers exchange data with: • CB, through Dioniso and audit • public authorities, via SIAN cellar files • input/grape suppliers who should supply certification data • wine buyers, who the farmers supply their certification data	

	Data sources
Describe the potential sources of the data that the main actor handles	
• Public database (SIAN) • CB database, indirectly supplying auditor the infos	

	Sub-actors

Describe analytically the sub-actors ***(who they are, what they do, what they provide, how they involved, what is their role to the certification process)*** *to the main actor.*
Winemakers usually interface with CB, consultants, oenologists, who give advice concerning best practices in the cellar. They provide timelines, products or techniques suggestions, and they sometimes also fill in SIAN or DIONISO or other bureaucracy documents related to certification. If IoT solutions are available, they can take data from IoT sensors. For those who don't have a consultant, they also interface with National DB or CB Database (Dioniso), where they have to update vineyard data (production data, meaning hectolitres of wine obtained) or cellar data, bottling and transactions.

	Type of Interaction with Sub-actor
Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform.	
Cellar practices, transactions and bottlings to communicate to the National Authorities (SIAN or Regional DB) and Control Bodies (Dioniso).	
	Current Data Format
Describe the most usual format of the available data maintained by the actor	
Public DB: PDF, excel CB DB: PDF files, excel	
	Goal
Describe how the 'TheFSM' will benefit each Main Actor - End User? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*	
The FSM is to strengthen the traceability before the winemakers, meaning grape suppliers, and after, meaning buyers. Another big goal for winemakers is to fill in only one register with the transactions and practices, in an easy way, in order to have them available for every kind of certification, avoiding redundancies. Improve the cooperation with traders.	
	Challenges

Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). *Define& describe the challenges with reference to the "data type" of the actor and the sub-actor*
The platform should be easy and convenient, limiting time and effort also for elder users. Low registration and maintenance cost for the platform Access to the platform by sub-users with no cost. It could be useful a broader use of farm IoT tech to gather data. High commercial added value - benefit to get in return

	Legal Obstacles

Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain
Business confidentiality data; Commercial exploitation of the public and open data; difficult relation with all the platform connected.

	Business Requirements

Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario
BR 1. To receive producer's data about the harvest period of the certified product (date, quantity) for the traceability system BR 2. To receive producer's certification validity and report (supplier's documents) BR 3. To have all in one database (suppliers of packaging material etc.) BR 4. Real time data (minimize response time to decide actions) BR 5. Easy way to fill in daily data that could be used automatically for every kind of certification, avoiding redundancies

	Legal Requirements

Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario

Processing of Personal data

Winemakers use the following personal data: Contact data and certification data of main actors in the supply chain and their employees, primarily farmers and sub-actors, e.g. equipment suppliers, consultants and laboratories. The winemakers may also process the personal data of its employees.

Winemakers process the personal data as the data controllers, determining the purposes and means of the processing of personal data (Article 4(7), GDPR).

Legal Requirements

- **LR1:** Analyse the legal basis for processing: "processing is necessary for the performance of a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract" (Art 6 para 1 lit b GDPR); if there is no (direct) contract between controller and data subject, legitimate interests pursued by the controller (Art 6 para 1 lit f GDPR).

Governance of non-personal data

Winemakers data

Winemakers generate non-personal data including real time data about the wine production process and the characteristics of the wine cellar business. This data includes cellar practices, wine analysis, transactions, bottling data and accounting data.

Legal Requirements

- **LR2:** As there is no statutory protection of non-personal data ("data ownership"), collected data will be protected by technical and organisational measures (TOM), including legal instruments that limit the disclosure and use of the data, such as non-disclosure agreement (NDA) and confidentiality clauses in cooperation and other agreements.

Data exchange between Winemakers and Main Actors

Certification Body:

Winemakers directly provide non-personal data on the wine making process, quality, safety characteristics and traceability of the final product. The data provided includes: production wine data, oenological practices, Cellar store situation; Cellar registers; wine analysis archives. In addition, data is collected from the wine cellars in the course of an inspection/audit. This data includes product samples. The winemakers receive audit data and certification data from the Certification Body. The data may include, the scope of certification, the status of certification and recorded non-compliances.

Legal Requirements

- **LR3:** Statutory Certification is governed by law. The governing Regulation determines which non-personal data has to be provided to the certification body, data collection, data storage, data exchange and, confidentiality etc.. Regulation (EC) No 834/2007 and Regulation (EC) No 203/2012, governing organic certification will be analysed (see also LR9).
- **LR4:** Non-Statutory Certification is performed on contractual basis. The broader framework is provided by the certification standard applicable, i.e. PDO and PGI. Inter alia the following items are relevant for development and operating of the platform: i) data the winemaker has to provide to the certification body, ii) data that may additionally be gathered during the on site or remote audit, iii) storage of the gathered data, iv) access to the gathered data and v) permission to share and/or confidentiality of the data. The PDO and PGI standards (see also LR9) and a contract template will be analysed.

Public Authorities:

Winemakers exchange non-personal data directly with public bodies which are legally mandated to investigate the traceability, safety and quality of the product. This exchange occurs when winemakers directly input data into public databases such as SIAN. In addition, data is indirectly provided through the certification and audit reports as public bodies have access to this information. Winemakers receive reports from public authorities indicating compliance or non-compliance with horizontal and sector specific regulations, such as Organic Regulations.

Legal Requirements

- **LR5:** establish if there are any restrictions on obtaining and sharing information received directly from competent public authorities. If the information is not publicly accessible, it must be provided by the assessed winegrower. Regulation (EC) No 834/2007 and Regulation (EC) No 203/2012, governing organic wine production will be analysed (see also LR9).

Farmers:
During the sale of the raw product (grapes), farmers and winemakers exchange data based on predetermined specifications. This data includes: certification data and data related to farming or cellar practices.
Winebotters and Winedealers:
Winemakers exchange data with wine bottlers and dealers, directly through farm files and accounting information and indirectly through certification documents.

Legal Requirements

- **LR6:** Provide a data governance framework that regulates sharing of data between the actors (terms of use of the platform or separate standard contract template). Any existing agreements and/or templates etc will be analysed.

Data exchange with Sub-actors
Consultants:
Winemakers provide data to consultants such as agronomists and oenologists. The aim of the data exchange is to obtain advice concerning best practices. The data provided includes: production data and data related to certification.

Legal Requirements

- **LR7:** Identify legal circumstances relevant for participation of consultants in the platform. To this purpose any existing agreements with consultants and/or templates, especially confidentiality obligations and/or data sharing requirements therein, will be analysed.

Commercial exploitation of the public and open data
Winemakers will use databases of public authorities (SIAN or Regional databases) and Certification Bodies Databases (Dioniso) to e.g. query the validity of their own Certificates and retrieve information on certification bodies.

Legal Requirements

- **LR8:** Establish whether there are any restrictions to the intended use according to the database terms of use (licence).

Food Safety Laws and Standards
Laws:
Regulation (EC) No 178/2002 lays down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. (General Food Law Regulation). Regulation (EC) 852/2004 sets out rules regarding the hygiene of foodstuffs(for overview of EU Rules regarding Food Hygiene please see here). These Regulations set out an overarching framework for the development of food and food safety legislation, standards and authorities.
The following Regulations apply specifically to this scenario and the wine production process. Regulation (EC) No 834/2007, the Organic Regulation sets out the general principles, aims and overarching rules of organic production and organic labelling. Regulation (EC) No 203/2012 sets out the rules governing the production of organic wine. EU Organic Certification is required by statue for organic farming, production, distribution, marketing and the use of organic labelling. Regulation (EC) No 510/2006 governs the protection of geographical indications and designations of origin for agricultural products and foodstuffs. This Regulation sets out the broad framework for EU quality standards aimed at protecting the names and unique characteristics of specific products, linked to their geographical origin and traditional know-how.
Standards:

This scenario also applies voluntary standards. The Protected Designation Origin (PDO) registers products that have the strongest links to the place in which they are made. This label is optional for wine, therefore registration or certification occurs on a voluntary basis. The Protected Geographical Indication (PGI) emphasises the relationship between the specific geographic region and the name of the product, where a particular quality, reputation or other characteristic is essentially attributable to its geographical origin. This label is optional for wine, therefore registration or certification occur on a voluntary basis.

Legal Requirements

- **LR9:** analyse data sharing requirements and provisions on confidentiality in the Organic Regulations and the PDO and PGI standards (see also LR3, LR4 and LR5 above).

	Data Requirements

Summarize the Data Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario

- Data standards: to comply or reuse existing standards whenever possible
- Data format: define the format that data should be exchanged
- Data exchange: use the existing infrastructure
- Uploading data: easy upload process, minimum cost
- Data accessibility: To provide a way to limit the data access of each actor depending on his role
- Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository
- Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles.
- Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages
- Data security

WORK PACKAGE 1	**3.6.4.6** ***Bottlers***
Description of Main Actor 3	*Bottlers, meaning who buys bulk wine and bottles.*
	Role in a Certified Food Supply Chain

Describe the responsibility of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'

Bottlers are required to:
1) be fully aware of the regulation to be fulfilled
2) keep updated registers of operations and input used
3) In the case of parallel bottling lines (conventional and Organic one) they have to keep separate bottling lines or, in case of only one line, they have to document the different moment of bottling with the substances and practices used to clean the line).
3) keep and update accounting books where all bought wine is reported
5) allow auditors to inspect the cellar, supplying any required data.

	Interrelation with Main Actors in Food Safety Certification
Describe how this Actor interrelates with other main actors in the supply chain	
Bottlers interrelate with: • CB for certification processes (including the auditor and CEC) • wine makers, who requires all certification data to be able to bring the process forward • wine dealers, who requires all certification data to be able to bring the process forward	
	Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) *A. Data Provider (to Solution)* *B. Data User (of the Solution)*	
Bottlers are on one side data providers through certification documents; they provide information concerning the certified bottle they sell. On the other hand they are also data users as all the wine they bring into the cellar should be certified or allowed (i.e. sugar, must). They also use the certification data for marketing purposes.	
	Data exchange flow with Main Actors
Describe analytically the direct data exchange flow with other main actors in the certified supply chain	
Bottlers exchange data with: • CB, through Dioniso and audit • public authorities, via SIAN cellar files • input/wine suppliers who should supply certification data • wine buyers, who the bottlers supply their certification data	
	Data sources
Describe the potential sources of the data that the main actor handles	
• Public database (SIAN)	

- CB database, indirectly supplying auditor the info

	Sub-actors
Describe analytically the sub-actors ***(who they are, what they do, what they provide, how they involved, what is their role to the certification process)*** *to the main actor.*	
Bottlers interface with National DB or CB Database (Dioniso), where they have to update cellar data, (production data, meaning bottles obtained and lots).	
	Type of Interaction with Sub-actor
Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform.	
Cellar practices, transactions and bottlings, cleaning procedures, substance used to communicate to the National Authorities (SIAN or Regional DB) and Control Bodies (Dioniso).	
	Current Data Format
Describe the most usual format of the available data maintained by the actor	
Public DB: PDF, excell CB DB: PDF files, excell	
	Goal
Describe how the 'TheFSM' will benefit each Main Actor - End User? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*	
The FSM is to strengthen the traceability before the bottlers, meaning wine suppliers, and after, meaning buyers. Another big goal for winemakers is to fill in only one register with the transactions and practices, in an easy way, in order to have them available for every kind of certification, avoiding redundancies. Improve the cooperation with traders.	

	Challenges
Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). Define& describethe challenges with reference to the "data type" of the actor and the sub-actor	
The platform should be easy and convenient, limiting time and effort also for elder users. Low registration and maintenance cost for the platform Access to the platform by sub-users with no cost. It could be useful a broader use of farm IoT tech to gather data. High commercial added value - benefit to get in return	
	Legal Obstacles
Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain	
Business confidentiality data; Commercial exploitation of the public and open data; difficult relation with all the platform connected.	
	Business Requirements
Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario	
BR 1. To receive producer's data about the harvest period of the certified product (date, quantity) for the traceability system BR 2. To receive producer's certification validity and report (supplier's documents) BR 3 To have all in one database (suppliers of packaging material etc.) BR 4. Easy way to fill in daily data that could be used automatically for every kind of certification, avoiding redundancies BR 5. Need to reach different retailers, importers of customers communicating them the value of the certified product.	
	Legal Requirements
Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	
Processing of Personal data The wine bottlers use the following personal data: Contact data and certification data of main actors in the supply chain and their employees, primarily wine makers, dealers and sub-actors, e.g. equipment suppliers, consultants	

and laboratories. The wine bottlers may also process the personal data of its employees. Wine bottlers process the personal data as the data controllers, determining the purposes and means of the processing of personal data (Article 4(7), GDPR).

Legal Requirements

- **LR1:** Analyse the legal basis for processing: "processing is necessary for the performance of a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract" (Art 6 para 1 lit b GDPR). If there is no (direct) contract between controller and data subject, legitimate interests pursued by the controller (Art 6 para 1 lit f GDPR).

Governance of non-personal data

Wine bottlers data

Bottlers generate non-personal data including real time data about the wine bottling process and the characteristics of the business. This data includes bottling data, lots, accounting data, cleaning procedures and substance data.

Legal Requirements

- **LR2:** As there is no statutory protection of non-personal data ("data ownership"), collected data will be protected by technical and organisational measures (TOM), including legal instruments that limit the disclosure and use of the data, such as non-disclosure agreement (NDA) and confidentiality clauses in cooperation and other agreements.

Data exchange between Wine bottlers and Main Actors

Certification Body:

Bottlers directly provide non-personal data on the bottling process, quality, safety characteristics and traceability of the final product. The data provided includes: production data, Cellar practices and cleaning procedures. In addition, data is collected from the wine bottlers in the course of an inspection/audit. This data includes product samples. The bottlers receive audit data and certification data from the Certification Body. The data may include, the scope of certification, the status of certification and recorded non-compliances.

Legal Requirements

- **LR3:** Statutory certification is governed by law. The governing Regulation determines i) which non-personal data has to be provided to the certification body and ii) which non-personal data may be collected, storage of the collected information, confidentiality etc. Regulation (EC) No 834/2007 and Regulation (EC) No 203/2012, governing organic certification will be analysed (see also LR8).
- **LR4:** Non-Statutory certification is performed on contractual basis. The broader framework is provided by the certification standard applicable, i.e. PDO and PGI. Inter alia the following items are relevant for development and operating of the platform: i) data the bottler has to provide to the certification body, ii) data that may additionally be gathered during the on site or remote audit, iii) storage of the gathered data, iv) access to the gathered data and v) permission to share and/or confidentiality of the data. The PDO and PGI standards (see also LR8) and a contract template will be analysed.

Winemakers and Wine Dealers:

Bottlers exchange certification data with wine makers and dealers.

Legal Requirements

- **LR5:** Provide a data governance framework that regulates sharing of data between the actors (terms of use of the platform or separate standard contract template). Any existing agreements and/or templates etc. will be analysed.

Data exchange with Sub-actors

Public Authorities:

Data is exchanged with public authorities by inputting data into SIAN and other national databases as well as during control audits. This data includes production data bottles obtained and LOT references. In addition, data is indirectly provided through the certification and audit reports. Bottlers receive reports from public authorities

indicating compliance or non-compliance with horizontal and sector specific regulations, such as Organic Regulations.

Legal Requirements:

- **LR6:** establish if there are any restrictions on obtaining and sharing information received directly from competent public authorities. If the information is not publicly accessible, it must be provided by the assessed bottler. Regulation (EC) No 834/2007 and Regulation (EC) No 203/2012, governing organic wine production will be analysed (see also LR8).

Commercial exploitation of the public and open data

Bottlers will use databases of public authorities (SIAN or Regional DB) and Control Bodies Database (Dioniso) to e.g. query the validity of their own Certificates and retrieve information on certification bodies.

Legal Requirements

- **LR7:** Establish whether there are any restrictions to the intended use according to the database terms of use (licence).

Food Safety Laws and Standards

Laws:

Regulation (EC) No 178/2002 lays down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. (General Food Law Regulation). Regulation (EC) 852/2004 sets out rules regarding the hygiene of foodstuffs (for overview of EU Rules regarding Food Hygiene please see here). These Regulations set out an overarching framework for the development of food and food safety legislation, standards and authorities.

The following Regulations apply specifically to this scenario and the wine production process. Regulation (EC) No 834/2007, the Organic Regulation sets out the general principles, aims and overarching rules of organic production and organic labelling. Regulation (EC) No 203/2012 sets out the rules governing the production of organic wine. EU Organic Certification is required by statue for organic farming, production, distribution, marketing and the use of organic labelling. Regulation (EC) No 510/2006 governs the protection of geographical indications and designations of origin for agricultural products and foodstuffs. This Regulation sets out the broad framework for EU quality standards aimed at protecting the names and unique characteristics of specific products, linked to their geographical origin and traditional know-how.

Standards:

This scenario also applies voluntary standards. The Protected Designation Origin (PDO) registers products that have the strongest links to the place in which they are made. The PDO standard applies to all stages of the wine process, including bottling. This label is optional for wine, therefore registration or certification occurs on a voluntary basis. The Protected Geographical Indication (PGI) emphasises the relationship between the specific geographic region and the name of the product, where a quality, reputation or other characteristic is essentially attributable to its geographical origin. This label is optional for wine, therefore registration or certification occur on a voluntary basis. The PGI standard requires that at least one stage of production, processing or preparation take place in the relevant region. This standard may not be applicable to wine bottling when another stage of the winemaking process has taken place in the relevant region.

Legal Requirements

- **LR8:** analyse data sharing requirements and provisions on confidentiality in the Organic Regulations and the PDO and PGI standards (see LR3, LR4 and LR6).

	Data Requirements

Summarize the Dat Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario
• Data standards: to comply or reuse existing standards whenever possible • Data format: define the format that data should be exchanged • Data exchange: use the existing infrastructure • Uploading data: easy upload process, minimum cost • Data accessibility: To provide a way to limit the data access of each actor depending on his role • Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository • Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles. • Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages • Data security

Main Actor / End User	**3.6.4.7 *Dealers***
Description of Main Actor 7	***Dealers**: the group includes retailers, horeca actors, supermarket chains buyers and whoever buys bottled wine or wine in its final use packaging (bag-in-box, containers for tap distribution etc.)*
	Role in a Certified Food Supply Chain
Describe the responsibility of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'	
The dealers receive organic AOP wines in bottle or in another final container, accompanied by the certification label. Usually they do not have access to certification documents. Dealers must not handle products not labelled and do not have to alter or mix products with different labels. They are in the best position to communicate to final user the meanings and contents of the certification process and product qualities.	
	Interrelation with Main Actors in Food Safety Certification
Describe how this Actor interrelates with other main actors in the supply chain	
Dealers receive the products and the infos from wine-makers or processors. They can be certified but it is not compulsory, they have to check certification labels and can communicate it all to final consumers.	
	Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) *A. Data Provider (to Solution)* *B. Data User (of the Solution)*	
Dealers are basically data users and communicators of the data together with the product.	
	Data exchange flow with Main Actors
Describe <u>analytically</u> the direct data exchange flow with other main actors in the certified supply chain	

Dealers do not usually receive data but only certificate document or label by the producer. They can be interested in having further parts of certification data and use them for marketing purposes.
	Data sources
Describe the potential sources of the data that the main actor handles
So far, the certificate or the label (according to EC Reg. 834/07) are printed or in a PDF file, further usable data can be handled through web platform.
	Sub-actors
Describe analytically the sub-actors ***(who they are, what they do, what they provide, how they involved, what is their role to the certification process)*** *to the main actor.*
Dealer of dealers, but the flow of information does not change
	Type of Interaction with Sub-actor
Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the ΄TheFSM' platform.
none
	Current Data Format
Describe the most usual format of the available data maintained by the actor
Label or PDF documents, potentially web based platform
	Goal
Describe how the 'TheFSM' will benefit each Main Actor - End User? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*
Dealers can benefit from FMS as a tool to communicate their customers more information that what is allowed by a simple label, on the origin of the wine, the processing method etc.
	Challenges
Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). *Define& describethe challenges with reference to the "data type" of the actor and the sub-actor*
The main challenge is to obtain the data in an easy to use format, that can be communicated and understood by customers. The data should be reliable as well maintain privacy and ownership
	Legal Obstacles

Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain
Probably only an issue of privacy and data ownership, or permission to use the data.
Business Requirements
Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario
BR 1 Need access to technical scope, product scope, valid certificates and seals of approval for (potential) supplier *BR 2 All data have to be valid and actualized* *BR 3 Retailers have to filter relevant supplier based on their requirements and the provided supplier data* *BR 4 Need access to product specification* *BR 5 Need a workflow to release specification data, labels etc.* *BR 6 Need access to traceability data of supplier* *BR 7 potentials for use of specific production data as a marketing tool and to increase buyers knowledge of the production system*
Legal Requirements
Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario
Processing of Personal data The wine dealers use the following personal data: Contact data and certification data of main actors from whom they purchase wine and their employees, primarily wine makers and bottlers. The dealers may also process the personal data of its employees. Wine dealers process the personal data as the data controllers, determining the purposes and means of the processing of personal data (Article 4(7), GDPR). **Legal Requirement:** ➢ **LR1:** Analyse the legal basis for processing: "processing is necessary for the performance of a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract" (Art 6 para 1 lit b GDPR); if there is no (direct) contract between controller and data subject, legitimate interests pursued by the controller (Art 6 para 1 lit f GDPR). **Governance of non-personal data** Wine Dealers data Wine dealers do not generate data on the wine production process. Wine dealers receive certification labels and documents from winemakers and bottlers. Wine dealers may access certification data for marketing purposes. **Legal Requirements** ➢ **LR2:** Provide a data governance framework that regulates sharing of data between the dealers, growers, makers and bottlers (terms of use of the platform or separate standard contract template). Any existing agreements and/or templates etc. will be analysed. **Commercial exploitation of the public and open data** Wine dealers may use databases of public authorities (SIAN, national and regional databases) and Certification Bodies Databases (Dioniso) for marketing purposes and communications with consumers. **Legal Requirements** ➢ **LR3:** Establish whether there are any restrictions to the intended use according to the database terms of use (licence). **Food Safety Laws and Standards** Applicable Food Safety Laws: Regulation (EC) No 178/2002 lays down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. (General Food Law

Regulation). Regulation (EC) 852/2004 sets out rules regarding the hygiene of foodstuffs(for overview of EU Rules regarding Food Hygiene please see here). These Regulations set out an overarching framework for the development of food and food safety legislation, standards and authorities. The following Regulations apply specifically to this scenario and the wine production process. Regulation (EC) No 834/2007, the Organic Regulation sets out the general principles, aims and overarching rules of organic production and organic labelling. Regulation (EC) No 203/2012 sets out the rules governing the production of organic wine.

	Data Requirements
Summarize the Dat Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	
• Data standards: to comply or reuse existing standards whenever possible • Data format: define the format that data should be exchanged • Data exchange: use the existing infrastructure • Uploading data: easy upload process, minimum cost • Data accessibility: To provide a way to limit the data access of each actor depending on his role • Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository • Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles. • Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages • Data security	
Main Actor / End User	**3.6.4.8** ***Public authorities***
Description of Main Actor 8	***Public authorities****: it includes National Public Authorities, such as ICQRF (Quality Control and Fraud Repression Institute certification), ACCREDIA (Italian Accreditation Body), Regional bodies in charge of surveillance on CBs. They Periodically assesses traceability / food quality and safety of traded products, so they check the inspection reports.*
	Role in a Certified Food Supply Chain
Describe the responsibility of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'	
The public authorities have basically two roles: 1. surveillance on the Cbs activities, meaning checking the certification body implementation of EC Reg.834/07. They do it through inspections of certified operators and checking the CB's files and procedures. 2. overall surveillance on operator's fulfilment of horizontal and sector specific regulations.	
	Interrelation with Main Actors in Food Safety Certification
Describe how this Actor interrelates with other main actors in the supply chain	
Public authorities can have access to all operators and certifiers files. On the other hand, they produce the official Dbs • with operators farming data • with operators processing and food heath data • with certifiers data.	
	Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform)	

A. Data Provider (to Solution) *B. Data User (of the Solution)*
Public authorities can use FSM to implement their surveillance and control also in remote. Usually the number of checks is limited, FSM can increase the overall number, so strengthening the system. Besides an interface between public authorities Dbs and FSM would allow a direct update and a string control.
	Data exchange flow with Main Actors
Describe analytically the direct data exchange flow with other main actors in the certified supply chain
Public authorities receive data from operators, CB and other public authorities and, after assessing and verifying them, upload them into the Dbs.
	Data sources
Describe the potential sources of the data that the main actor handles
• Farm registers • processing and health registers • inspection and certification documents They are all verified and uploaded into specific Dbs. Besides public authorities produce their own reports when assessing or verifying operators and CB work.
	Sub-actors
Describe analytically the sub-actors ***(who they are, what they do, what they provide, how they involved, what is their role to the certification process)*** *to the main actor.*
none
	Type of Interaction with Sub-actor
Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform.
none
	Current Data Format
Describe the most usual format of the available data maintained by the actor
Data bases. The problem is that for the same kind of data there are different formats and DB (regional, provincial, national) not interacting with each other and also the different categories produce Dbs that hardly communicate.
	Goal
Describe how the 'TheFSM' will benefit each Main Actor - End User? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*

Public authorities can benefit from FSM as a tool to cross data and better verify compliance to several sets of rules. Besides FSM can be a tool to interlink different public DBs
Challenges
Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). *Define& describethe challenges with reference to the "data type" of the actor and the sub-actor*
Main challenge is how to overcome the complication due to different Dbs, with different structures.
Legal Obstacles
Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain
Ownership da data protection while allowing full use of public DBs
Business Requirements
Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario
BR 1. To have direct and official info regarding findings of the inspection of all actors in the supply chain. BR 2. Easy access to current status of all food supply actors regarding audit results of certify organisations, relevant data performance data of all actors BR 3. Receive all the evidence easier for the justification of compliance criteria (e.g. producer's personal data, records of applications etc.). BR 4. To have an all in one database (legal requirements, accreditation certs for laboratories, MRL Limits, official PPP Approvals). BR 5. To have Rules that ac new knowledge digital tools
Data Requirements
Summarize the Dat Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario
● Data standards: to comply or reuse existing standards whenever possible ● Data format: define the format that data should be exchanged ● Data exchange: use the existing infrastructure ● Uploading data: easy upload process, minimum cost ● Data accessibility: To provide a way to limit the data access of each actor depending on his role ● Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository ● Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles. ● Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages ● Data security

3.6.5 Business Scenario 5: Dutch food safety authority (NVWA) Inspection / The Dutch broiler meat supply chain.

Description

The objective of this case study is: (i) to map the full broiler meat supply chain in the Netherlands (farm to fork), (ii) to identify the key stakeholders and (iv) to define the key requirements from users (Dutch Food Safety Authority (NVWA) & if possible certify organizations) and data owners/ suppliers regarding data, technology and legal point of view.

The process:

Many actors in the broiler meat supply chain in the Netherlands are audited every year and inspected with regard to their compliance with the basic principles of the HACCP system and to the EU food safety regulation. During inspections, the businesses may also be assessed to establish the extent to which they complied with the basic conditions for hygiene, architectural state and pest control.

In addition, several actors in the supply chain may be audited with regards to their compliance to the quality certifications and labels such as:

- BLK product label
- Organic label
- ISO certification
- EKO label
- HALAL certification
- BRC certification
- IFS certification
- FSSC 22000
- The QS Qualität und Sicherheit
- IKB certification

The main goals to achieve are:

- To support NVWA inspectors to decide (predict) when to check, what, and where.
- To support digitization of the inspection and certification information flow in the broiler meat supply chain in the Netherlands.
- To facilitate access to accurate data for all actors in the supply chain (e.g. Monitoring data, Data from actors in the supply chain).
- To provide data about the performance of an actor in the supply chain in previous audits.

Main actors involved (1, 2, 3, 4, …)

The aim is to involve representatives of, as many as possible, main actors that are involved in Dutch broiler meat supply chain. The main actors are:

1. Food Safety Authority (NVWA)
2. Farmers
3. Industry (feed, processing, waste (RENDAC))
4. Slaughterhouses
5. Retail
6. Certification Bodies

Main Actor / End User	3.6.5.1 *Food Safety Authority*

Description of Main Actor 1	Food Safety Authority (NVWA)
	Role in a Certified Food Supply Chain
Describe the responsibility or responsibilities of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'	
The role of NVWA is supervision of the food supply chain, validating all actors in the supply chain for producing goods in conformity against EU food safety regulation standard requirements. During these inspections, all actors in the supply chain are also assessed to establish the extent to which they complied with the basic conditions for hygiene, architectural state and pest control.	
	Interrelation with Main Actors in Food Safety Certification
Describe analytically how this Actor interrelates with other main actors in the supply chain (forward &backward i.e. main actor 1 <=> main actor 2)	
Collects data, information related to performance on food safety of all actors in the supply chain, performs, if needed, inspections on-site at all actors, decides and issue results, upload results to their database and informs the decisions/ results to actors inspected.	
	Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform)(i.e main actor 1 is data provider to main actor 2 and/or data user of the main actor 2)	
NVWA is a potential Data user and a potential Data provider. **Data User**: for all actors in the supply chain up-to-date data/ performance data on food safety relevant to inspection, historical inspection data, combined data collected from all actors in the supply chain such as declared volumes/quantities. **Data Provider**: inspection process scheduling, Inspection info to all actors concerned and inspection reports for the audited actors.	
	Data exchange flow with Main Actors
Describe analytically the direct data exchange flow with other main actors in the certified supply chain(what kind of data the main actor 1 provides to the other main actors & what kind of data the main actor 1 uses from the other main actors)	
Data User Before starting any inspection, NVWA needs up-to-date data of all actors related to performance on food safety relevant to inspection, historical inspection data, combined data collected from all actors in the supply chain such as declared volumes/quantities. ***Data Provider*** The inspection authority is responsible for informing the inspected actors about the inspection process scheduling, information about the information about the inspection and inspection reports.	
	Data sources
Describe the potential sources of the data that the main actor handles (i.e. programmes, measuring devices (IoT).	

The food authority uses many data sources, examples are: Data Management system (e.g. ERP etc.), Databases of actors in the supply chain, Laboratories databases, National authority (inspection , official monitoring), Public databases (FAOSTAT, RASFF, EMM, Eurostat, ..etc), and European Media Monitor (EMM) and Social Media.
Sub-actors
Describe analytically the sub-actors ***(who they are, what they do, what they provide, how they involved, what is their role to the certification process)*** *to the main actor.*
The sub actors related to NVWA are: • Inspectors of the food authority • Laboratories of the food authority • Public authorities
Type of Interaction with Sub-actor
Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the ΄TheFSM' platform. What kind of data they provide to the main actor 1. and what kind of data they use from the main actor 1
Inspectors: Periodically evaluates /assesses /controls against EU regulations (such as (EG) nr. 178/2002) (Data User). **Laboratories:** Provides product analysis to verify compliance towards certification requirements (Data Providers) **Public Authorities:** (e.g. Ministry of Agriculture, National Authority for Food Safety): Communicates complaints - accusations for certified producers or processors (Data Provider)
Current Data Format
Describe the most usual format of the available data maintained by the actor.
Goal
Describe how the 'TheFSM' will benefit the Main Actor 1 - End User1? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*
TheFSM may benefit this main actor: 1. To have direct and official info regarding findings of the inspection of all actors in the supply chain. 2. Easy access to current status of all food supply actors regarding audit results of certify organisations, relevant data performance data of all actors 3. Useful tools to support risk based monitoring 4. Receive all the evidence easier for the justification of compliance criteria (e.g. producer's personal data, records of applications etc.). 5. To have an all in one database (legal requirements, accreditation certs for laboratories, MRL Limits, official PPP Approvals). 6. To make the risk assessment easier for the samples (producers & products for analysis). 7. To increase the effectiveness (time/cost) of the audits (Align certification processes with the "TheFSM", to increase effectiveness and reduce the needed resources of the certification mechanism).
Challenges
Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). *Define& describe the challenges with reference to the "data type" of the actor and the sub-actor*

Challenges of this main actor to get benefit of TheFSM provided solutions are:
1. To meet all the limitations and requirements for handling inspection info (such as confidentiality, data ownership, data governance etc), posed to inspecteurs by the authorities and the scheme owners, when using the TheFSM.
2. Interoperability of existing certification management solutions with "TheFSM" when sharing data (e.g. data immigration) - Harmonization with the corporate policies and processes.
3. All inspection clients have to align their data format (type) based on the technical specifications of the 'TheFSM' to facilitate quick sharing.
4. Participation of all the key end-users (main and sub-actors) with whom it cooperates in the inspection process.
5. Encompass all the different requirements for uploading data to every potential scheme owner's databases.
7.No further costs for users.

	Legal Obstacles

Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain

Legal obstacles governing the sharing of info and data are:

- GDPR: Protection of personal data (only natural persons, but also employees of businesses and public authorities).
- Ownership and Governance of non-personal data (“Farmer data ownership and protection”).
- Commercial exploitation of the public and open data
- Terms and Conditions (including data governance/license):
- Food Safety Law and Standards

	Business Requirements

Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario

BR 1. To have direct and official info regarding findings of the inspection of all actors in the supply chain.
BR 2. Easy access to current status of all food supply actors regarding audit results of certify organisations, relevant data performance data of all actors
BR 3. Useful tools to support risk-based monitoring
BR 4. Receive all the evidence easier for the justification of compliance criteria (e.g. producer's personal data, records of applications etc.).
BR 5. To have an all in one database (legal requirements, accreditation certs for laboratories, MRL Limits, official PPP Approvals).
BR6. To make the risk assessment for the samples (producers & products for analysis).
BR7. To increase the effectiveness (time/cost) of the audits (Align certification processes with the TheFSM, to increase effectiveness and reduce the needed resources of the certification mechanism).

	Legal Requirements

Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario

OBJECTIVE: To investigate any legal restrictions that affect the achievement of the target for the data.

The Food authority collects data from all main actors, makes on-site inspections, uploads results to their database and informs the actors about their decision. A data exchange happens between the Food Authority and all actors, the Food authority will hold both a position as data user and data provider (e.g. process scheduling, inspection info, reports for the audited actors) for and to all actors. The data processed by the Food Authority include personal and non-personal data which for the legal analysis have to be strictly distinguished.

Processing of personal data

The Food Authority uses the following personal data: i) Contact data of main actors of the supply chain, primarily farmers and retailers, and sub-actors, and/or their employees. ii) Certification data of producers and sub-actors, e.g. equipment suppliers, laboratories and other food producers, and/or their employees. GDPR only applies to personal data of natural persons (Art 4 no 1 GDPR). The Food Authority processes the above personal data as the controller (Art 4 no 2 and 7 GDPR).

Legal Requirements

- **LR1:** Analyse legal basis for processing. There are six lawful bases for processing according to the GDPR: consent, contract, legal obligation, vital interests, task in the public interest, legitimate interest. Depending on the relationship between the Food authority and the relevant main actor the lawful basis for processing has to be established; Art 6 para 1 lit c (legal obligation) or lit e (exercise of official authority) could be of relevance.

Governance of non-personal data

All other data processed in this scenario qualifies as non-personal. This includes e.g. company data, analysis reports, lab data, audit reports, certificates, inspection info. Non-personal data is not subject to the GDPR and has therefore to be protected by different legal instruments.

Data exchange

The Food Authority receives data from all actors concerning performance on food safety relevant to inspection, historical inspection data and combined data gathered from all actors (e.g. regarding volumes, quantities). In return the Food authority sends data to the inspected actor about the inspection process scheduling, the inspection and inspection reports.

Legal Requirements

- **LR2:** The Food Authority acts under a public mandate and enforces national or EU regulations. The legal framework for the exchange of data between each of the main actors and the Food Safety Authority will have to be analysed under the broader framework of the national or EU regulation with special regard to the platform and to the use, collection and disclosure of business sensitive and confidential data to third parties, including an analysis of what data can or has to be gathered (such as during the on-site inspections), stored and shared, standard templates and/or existing contracts have to be analysed

Sub-actors:

Data will be shared during the certification process with sub-actors such as inspectors of the food authority, laboratories of the food authority and other public authorities (e.g. Ministry of Agriculture, National Authority for Food Safety).

- **LR3:** The Food Authority acts under a public mandate and enforces national or EU regulations. Data sharing with public authorities is performed under a legal obligation.

Commercial exploitation of the public and open data

Among other data sources the Food Safety Authority relies on a number of databases (e.g. laboratories databases, public databases such as FAOSTAT, RASFF, Eurostat as well as European Media Monitor (EMM) and Social Media.

- **LR4:** Establish whether there are any restrictions to the intended use according to the database terms of use (licence)

Food Safety Laws and Standards

Applicable Food Safety Regulations

The Regulation (EC) No 178/2002 sets out an overarching framework for the development of food and food safety legislation. The Regulation outlines general principles, requirements and procedures of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (General Food Law Regulation) at all stages of production and distribution. It is complemented by the Regulation (EC) No 852/2004 on the Hygiene of Foodstuffs.
Regarding Pest control EU Regulation (EU) No 852/2004 requires food business operators to prevent animals and pests from causing contamination by taking the adequate measures.

Applicable Food Safety Standards with relevance to this business scenario are the following:

- BLK product label
- Organic label
- ISO certification
- EKO label
- HALAL certification
- BRC certification
- IFS certification
- FSSC 22000
- The QS Qualität und Sicherheit
- IKB certification

Legal Requirements

➢ **LR5:** analyse data sharing requirements and provisions on confidentiality according to the applicable standards

	Data Requirements
Summarize the Dat Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	
• Data standards: to comply or reuse existing standards whenever possible • Data format: define the format that data should be exchanged • Data exchange: use the existing infrastructure • Uploading data: easy upload process, minimum cost • Data accessibility: To provide a way to limit the data access of each actor depending on his role • Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository • Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles. • Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages • Data security	
Main Actor / End User	**3.6.5.2** ***Farmers***
Description of Main Actor 2	*Farmer*
	Role in a Certified Food Supply Chain
Describe the responsibility of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'	

The role of the farmer is the production of broiler meat as certified product for slaughterhouses and for food processing.
The farmers are also assessed by food authority and certification bodies to establish the extent to which they complied with the law and certification standards.

	Interrelation with Main Actors in Food Safety Certification
Describe how this Actor interrelates with other main actors in the supply chain	
The farmers cooperate with: ● The food authority for data sharing and controls (EU regulation) ● Certification Bodies (contract) by audits and certifications ● Trades (contract) to slaughterhouses and Processors	

	Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) *A. Data Provider (to Solution)* *B. Data User (of the Solution)*	
Farmers are both data users and data providers. **Data user**: reports of inspection, audits reports, combined data collected from all actors in the supply chain such as declared volumes/quantities/prices. **Data provider**: fill in forms of inspection, report volumes, prices and food safety results to authorities, exchange reports with the certification bodies.	

	Data exchange flow with Main Actors
Describe analytically the direct data exchange flow with other main actors in the certified supply chain	
The farmers can set specifications for the products it sells to the slaughterhouses and industry in terms of its characteristics such as weight, type, the quantity, the certifications that accompany it and the relevant laboratory analyses. This data is sent to the next steps in the supply chain the producer in order to reach the desired result of quality and quantity of production. The farmers receive from the food authority and certification bodies relevant data of the results of the inspection and specifically in case the farmer has not completed the process of sending the corrective actions to the specific schedule set by the respective certification regulation to show the open nonconformance indication in case has successfully completed the certify process with the validity of its certificate. Specific data is disclosed to any interested parties through the GLOBALGAP database.	

	Data sources
Describe the potential sources of the data that the main actor handles	
The main data sources used by farmers are: ● Farm Management system (e.g. ERP) ● Certification bodies databases ● Food authority management system ● Slaughterhouse management system (e.g. ERP)	

	Sub-actors
*Describe analytically the sub-actors****(who they are, what they do, what they provide, how they involved, what is their role to the certification process)*** *to the main actor.*	

The sub actors that interact with farmers are: ● Consultants ● Inspectors ● Laboratories ● Public Authorities
Type of Interaction with Sub-actor
Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform.
Consultants: conduct audits, analyze farm data and guide the implementation of best agricultural practices against certification standards (Data user / Data Provider). **Laboratories**: Provide soil and product's analysis to verify compliance towards legislation and certification requirements (Data Providers). **Public Authorities** (e.g. Ministry of Agriculture): Approve inputs for agriculture, approve access to resources, farmer's competence license issuance, control process (Data Provider). **Inspectors**: Periodically evaluates /assesses the farmers against the food safety standards.
Current Data Format
Describe the most usual format of the available data maintained by the actor
The most used data formats are handwritten documents / e-documents (jpeg, pdf, excel, word files)
Goal
Describe how the 'TheFSM' will benefit each Main Actor - End User? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*
The benefits TheFSM will deliver to this actor are: 1. Replacement of the hardcopy archives to a digital database. 2. Digitalize the certification information flow. 3. Direct access to market needs (Up to date info) & new clients. 4. Real time data (minimize response time to decide actions). 5. Control of the production process (i.e. financial control and stat analysis). 6. Improvement tool (enhance production cost effectiveness). 7. Long lasting cooperations with all actors in the supply chain.
Challenges
Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). *Define& describe the challenges with reference to the "data type" of the actor and the sub-actor*

Challenges to address are:

1. Ease of Uploading data (user friendly to limit time and effort) - elder users.
2. Participation of all the key end users (main and sub-actors) with whom he cooperates in this platform.
3. Low registration and maintenance cost for the platform.
4. Access to the platform by sub-users with no costs.
5. No need for special IT infrastructure to use the platform effectively.
6. Safeguarding info and personal data.
7. Broad use of farm IoT tech to gather data.
8. High commercial added value - benefit to get in return.

	Legal Obstacles

Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain

Legal issues to consider:

- GDPR: Protection of personal data (only natural persons, but also employees of businesses and public authorities).
- Ownership and Governance of non-personal data ("Farmer data ownership and protection").
- Commercial exploitation of the public and open data
- Terms and Conditions (including data governance/license)
- Food Safety Law and Standards

	Business Requirements

Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario

BR 1. Replacement of the hard copy archives to a digital database.
BR 2. Digitalize the certification information flow.
BR 3. Direct access to market needs (Up to date info) & new clients.
BR 4. Real time data (minimize response time to decide actions).
BR 5. Control of the production process (i.e. financial control and stat analysis).
BR 6. Improvement tool (enhance production cost effectiveness).
BR 7. Long lasting cooperations with all actors in the supply chain.

	Legal Requirements

Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario

OBJECTIVE: To investigate any legal restrictions that affect the achievement of the target for the data.

The Farmer acts both as data user and data provider. In his role as data user the farmer receives reports of inspection, audits reports, combined data collected from all actors in the supply chain such as declared volumes/quantities/prices. As a data provider he fills in forms of inspection, reports volumes, prices and food safety results to authorities, exchanges reports with the certification bodies. The data processed by the farmer include personal and non-personal data which for the legal analysis have to be strictly distinguished.

Processing of personal data

The farmer uses the following personal data: i) Contact data of main actors of the supply chain, and sub-actors, and/or their employees. ii) Certification data of producers and sub-actors, and/or their employees. GDPR only

applies to personal data of natural persons (Art 4 no 1 GDPR). The farmer processes the above personal data as the controller (Art 4 no 2 and 7 GDPR).

Legal Requirements

- **LR1:** Analyse legal basis for processing, Art 6 para 1 lit b GDPR ("processing is necessary for the performance of a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract") or Art 6 para 1 lit f GDPR (legitimate interests pursued by the controller) if there is no (direct) contract between controller and data subject

Governance of non-personal data

All other data processed by the main actor qualifies as non-personal. This includes e.g. company data, analysis reports, lab data, audit reports, certificates, inspection info. Non-personal data is not subject to the GDPR and has therefore to be protected by different legal instruments.

The legal concept of data ownership is unknown to EU Law. Consequently and under the umbrella of the broader legal framework of the applicable certification standards, the protection of non-personal data, in particular business sensitive data, has to be ensured by a legal framework on a contractual basis that governs all confidential information and protects the interests of the farmer.

Farmer's data

The Farmer will generate non-personal data, e.g. real time data, about the final product and the characteristics of its business.

LR2: As there is no statutory protection of non-personal data ("data ownership"), collected data will be protected by technical and organisational measures (TOM), including legal instruments that limit the disclosure and use of the data, such as non-disclosure agreement (NDA) and confidentiality clauses in cooperation and other agreements.

Data exchange

Farmer and Producers, Slaughterhouses, Industry, Processors,

The farmer sends product specifications (e.g. weight, type, quantity), certifications, laboratory analysis to the next steps in the supply chain (e.g. slaughterhouses and producers)

Legal Requirements

- **LR3:** A legal framework on a contractual basis for the exchange of data between farmers and these main actors will have to be provided regarding the gathering, storing and sharing of data. Any existing contracts have to be analysed.

Farmer and certification bodies

The farmers receive relevant data of the results of the inspection from certification bodies and send data such as corrective actions.

- **LR4:** The contract concluded which serves as a legal basis for the data exchange between farmer and certification body will be analysed. The contract together with the applicable certification standard govern what non-personal data has to be provided to the certification body and what data in addition can be gathered during the audit and then furthermore shared or stored. In addition, the confidentiality of data and permission to share are regulated by the contract.

Farmer and food authority

The farmers provide the requested information according to the desired certification and receive relevant data of the results of the inspection from the food authority.

- ➢ **LR5:** The public mandate of the Food authority and the broader legal framework of the certification process govern the data exchange and have to be analysed with regard to the permission to gather, store and share data by the food authority.

Sub-actors:
Data like audit reports, soil and product's analysis, farmer's competence license and information about control processes will be shared during the certification process with sub-actors such as consultants, laboratories, public authorities (e.g. Ministry of Agriculture) and inspectors.

- ➢ **LR6:** Analyse the legal circumstances for participation in the platform by the various sub-actors. Laboratory analyses e.g. are performed on a contractual basis. The confidentiality of the non-personal data and possibility to share the results of the analysis with third parties are governed by this contract. This contract will have to be analysed.
- ➢ **LR7:** Establish if there are any restrictions on sharing information received directly from food authorities with third parties.

Commercial exploitation of the public and open data
Certification body databases will serve as data sources, specific data is disclosed to any interested parties through the GLOBALGAP database.

- ➢ **LR8:** Establish whether there are any restrictions to the intended use according to the database terms of use (licence)

Food Safety Laws and Standards

Applicable Food Safety Regulations

The Regulation (EC) No 178/2002 sets out an overarching framework for the development of food and food safety legislation. The Regulation outlines general principles, requirements and procedures of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (General Food Law Regulation) at all stages of production and distribution. It is complemented by the Regulation (EC) No 852/2004 on the Hygiene of Foodstuffs.
Regarding Pest control EU Regulation (EU) No 852/2004 requires food business operators to prevent animals and pests from causing contamination by taking the adequate measures.

Applicable Food Safety Standards with relevance to this business scenario are the following:

- BLK product label
- Organic label
- ISO certification
- EKO label
- HALAL certification
- BRC certification
- IFS certification
- FSSC 22000
- The QS Qualität und Sicherheit
- IKB certification

Legal Requirements

- ➢ **LR9:** analyse data sharing requirements and provisions on confidentiality according to the applicable standards

	Data Requirements

Summarize the Dat Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario
• Data standards: to comply or reuse existing standards whenever possible • Data format: define the format that data should be exchanged • Data exchange: use the existing infrastructure • Uploading data: easy upload process, minimum cost • Data accessibility: To provide a way to limit the data access of each actor depending on his role • Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository • Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles. • Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages • Data security

Main Actor / End User	**3.6.5.3 *Industry***
Description of Main Actor 3	Industry (feed, processing, waste (RENDAC))
	Role in a Certified Food Supply Chain
Describe the responsibility of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'	
The role of the industry is processing the certified goods (packaging / processing / storage / distribution) for trading certified processed products in the market The industry is inspected/audited by food authority and certification bodies to establish to which extent they complied with the food safety law and certification standards.	
	Interrelation with Main Actors in Food Safety Certification
Describe how this Actor interrelates with other main actors in the supply chain	
The industry accepts and hosts periodic on-site audits from the food authority inspectors and certification bodies. The industry cooperates with: • The food authority for data sharing and controls (EU regulation) • Certification Bodies (contract) by audits and certifications • Trades (contract) to slaughterhouses and retailers	
	Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) *A. Data Provider (to Solution)* *B. Data User (of the Solution)*	
The industry uses and provides the data. **Data user**: reports of inspection, audits reports, combined data collected from all actors in the supply chain such as declared volumes/quantities/prices. **Data provider**: fill in forms of inspection, report volumes, prices and food safety results to authorities, exchange reports with the certification bodies.	

	Data exchange flow with Main Actors
Describe<u>analytically</u> the direct data exchange flow with other main actors in the certified supply chain	
The industry can set specifications for the products it sends to the market of retailers in terms of its characteristics such as weight, type, the quantity, the certifications that accompany it and the relevant laboratory analyses. The industry also receives information from the slaughterhouses. In addition, the industry receives from the food authority and certification bodies relevant data of the results of the inspection and specifically in case the industry has not completed the process of sending the corrective actions to the specific schedule set by the respective certification regulation to show the non-conformities indication in case has successfully completed the certify process with the validity of its certificate. The specific data is disclosed to any interested parties through the GLOBALGAP database.	
	Data sources
Describe the potential sources of the data that the main actor handles	
The potential sources of data used by the industry are: ● Processing Management system (e.g. ERP etc.) ● Certification bodies databases ● Laboratories databases ● Public databases (FAOSTAT, RASFF, EMM, Eurostat, etc.)	
	Sub-actors
*Describe <u>analytically</u> the sub-actors***(who they are, what they do, what they provide, how they involved, what is their role to the certification process)** to the main actor.*	
The sub actors that interact with industry are: ● Consultants ● Inspectors ● Laboratories	
	Type of Interaction with Sub-actor
Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform.	
Consultants: conduct audits, guide the implementation of best practices against certification standards (Data user / Data Provider). **Laboratories**: Provide food safety analysis and quality analysis to verify compliance towards legislation and certification requirements (Data Providers). **Inspectors**: Periodically evaluate /assess the industry against the food safety standards.	
	Current Data Format
Describe the most usual format of the available data maintained by the actor	

The most used data formats are: handwritten documents / e-documents (jpeg, pdf, excel, word files)

	Goal
Describe how the 'TheFSM' will benefit each Main Actor - End User? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*	

The benefits TheFSM will deliver to this actor are:

1. To receive farmers data about the production of the certified product (date, quantity) for the traceability system
2. Digitalize the certification flow of information
3. To receive producer's certification validity and report (supplier's documents)
4. To have all in one database (suppliers of packaging material etc.)
5. Direct access to market needs (Up to date info) & new clients
6. Real time data (minimize response time to decide actions)
7. Maintaining up-to-date communication channel with traders (retailers) regarding agreed timelines, terms & conditions

	Challenges
Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). *Define& describethe challenges with reference to the "data type" of the actor and the sub-actor*	

Challenges to address are:
1. Interoperability of existing processing management solutions with TheFSM
2. Ease of Uploading data (user friendly to limit time and effort)
3. Participation of all the key end users (main and sub-actors) with whom he cooperates in this platform
4. Safeguarding info and personal data
5. High commercial added value - benefit to get in return

	Legal Obstacles
Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain	

Legal issues to consider are:
Confidentiality of info gathered during the audit and certification process / Commercial exploitation of the public and open data. GDPR: Protection of personal data (only natural persons, but also employees of businesses and public authorities). Ownership and Governance of non-personal data ("Farmer data ownership and protection"). Terms and Conditions (including data governance/license). Food Safety Law and Standards

	Business Requirements
Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario	

BR 1. To receive farmers data about the production of the certified product (date, quantity) for the traceability system
BR 2. Digitalize the certification flow of information

BR 3. To receive producer's certification validity and report (supplier's documents)
BR 4. To have all in one database (suppliers of packaging material etc.)
BR 5. Direct access to market needs (Up to date info) & new clients
BR 6. Real time data (minimize response time to decide actions)
BR 7. Maintaining up-to-date communication channel with traders (retailers) regarding agreed timelines, terms & conditions

	Legal Requirements

Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario

OBJECTIVE: To investigate any legal restrictions that affect the achievement of the target for the data.

The Industry acts both as data user and data provider. In its capacity as data user the Industry receives reports of inspection, audits reports, combined data collected from all actors in the supply chain. As a data provider the Industry sends completed forms of inspection, report volumes, prices and food safety results to authorities, exchange reports with the certification bodies. The data processed by the Industry include personal and non-personal data which for the legal analysis have to be strictly distinguished.

Processing of personal data

The Industry uses the following personal data: i) Contact data of main actors of the supply chain and sub-actors, and/or their employees. ii) Certification data of producers and sub-actors. GDPR only applies to personal data of natural persons (Art 4 no 1 GDPR). The Industry processes the above personal data as the controller (Art 4 no 2 and 7 GDPR).

Legal Requirements

- **LR1:** Analyse legal basis for processing, Art 6 para 1 lit b GDPR ("processing is necessary for the performance of a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract") or Art 6 para 1 lit f GDPR (legitimate interests pursued by the controller) if there is no (direct) contract between controller and data subject are likely

Governance of non-personal data

All other data processed in this scenario qualifies as non-personal. This includes e.g. company data, analysis reports, lab data, audit reports, certificates, inspection info. Non-personal data is not subject to the GDPR and has therefore to be protected by different legal instruments.
The legal concept of data ownership is unknown to EU Law. Consequently, the protection of non-personal data, in particular business sensitive data, has to be ensured by a legal framework on a contractual basis that governs all confidential information and protects the interests of all actors.

<u>Industry's data</u>

The Industry will generate and collect non-personal data about the production process.

LR2: As there is no statutory protection of non-personal data ("data ownership"), collected data will be protected by technical and organisational measures (TOM), including legal instruments that limit the disclosure and use of the data, such as non-disclosure agreement (NDA) and confidentiality clauses in cooperation and other agreements.

<u>Data exchange</u>

Industry and market of retailers

The industry sends product's specifications (e.g. weight, type, quantity, certifications, laboratory analyses) to the market of retailers.

- **LR3:** The contractual basis for the exchange of data will have to be analysed or provided including a provision for non-disclosure of business sensitive and confidential data.

Industry and slaughterhouses
The industry receives information from the slaughterhouses and shall provide the Slaughterhouses with product requirements.

- **LR4:** A contractual basis for the exchange of data will have to be provided including a provision for non-disclosure of business sensitive and confidential data. Possible existing contracts will have to be analyzed.

Industry and food authority
The Industry is inspected on-site by the food authority. The Industry receives information from the food authority and sends completed forms of inspection, report volumes, prices and food safety results to the authorities.

- **LR5:** The public mandate and the legal framework of the applicable certification standard govern the exchange of data between the Industry and the Food authority. It will have to be analysed with special regard to the non-disclosure of business sensitive and confidential data

Industry and certification body
The Industry is inspected on-site by the certification body. The Industry exchanges relevant data of the results of the inspection with the certification body.

- **LR6:** The certification is performed on a contractual basis and subject to the regulations of the applicable certification standard. The contract concluded specifies storage of gathered data, their confidentiality, permission to share etc. The standard contract will have to be analysed.

Sub actors
The Industry interacts and exchanges data (audit data, implementation guide, food safety analysis) with sub-actors such as consultants, inspectors, laboratories.

- **LR7:** Analyse the legal circumstances for participation in the platform by the various sub-actors. Laboratory analyses e.g. are performed on a contractual basis. The confidentiality of the non-personal data and possibility to share the results of the analysis with third parties are governed by this contract. This contract will have to be analysed.

Commercial exploitation of the public and open data
Certification bodies databases, laboratories databases and public databases (FAOSTAT, RASFF, EMM, Eurostat, etc) are used by the Industry as data sources. Specific data is disclosed to any interested parties through the GLOBALGAP database

- **LR8:** Establish whether there are any restrictions to the intended use according to the database terms of use (licence)

Food Safety Laws and Standards

Applicable Food Safety Regulations

The Regulation (EC) No 178/2002 sets out an overarching framework for the development of food and food safety legislation. The Regulation outlines general principles, requirements and procedures of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (General Food Law Regulation) at all stages of production and distribution. It is complemented by the Regulation (EC) No 852/2004 on the Hygiene of Foodstuffs.
Regarding Pest control EU Regulation (EU) No 852/2004 requires food business operators to prevent animals and pests from causing contamination by taking the adequate measures.

Applicable Food Safety Standards with relevance to this business scenario are the following:

- BLK product label
- Organic label
- ISO certification
- EKO label
- HALAL certification
- BRC certification
- IFS certification
- FSSC 22000
- The QS Qualität und Sicherheit
- IKB certification

Legal Requirements

➢ **LR9:** analyse data sharing requirements and provisions on confidentiality according to the applicable standards

	Data Requirements
Summarize the Dat Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	
• Data standards: to comply or reuse existing standards whenever possible • Data format: define the format that data should be exchanged • Data exchange: use the existing infrastructure • Uploading data: easy upload process, minimum cost • Data accessibility: To provide a way to limit the data access of each actor depending on his role • Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository • Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles. • Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages • Data security	

Main Actor / End User	**3.6.5.4 *Slaughterhouses***
Description of Main Actor 4	Slaughterhouses
	Role in a Certified Food Supply Chain
Describe the responsibility of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'	
The Slaughterhouse's role is handling certified goods (packaging / storage / distribution) received from the farmers. The processed products are distributed to Industry and retailers. Slaughterhouses are also inspected by food authority and certification bodies to check if the food safety law and certification standards are respected.	
	Interrelation with Main Actors in Food Safety Certification
Describe how this Actor interrelates with other main actors in the supply chain	

Slaughterhouses accept and host periodic on-site audits from the Certification Bodies and food authority. Slaughterhouses have relations with:

- The food authority for data sharing and controls (EU regulation)
- Certification Bodies (contract) by audits and certifications
- Trades (contract) to industry and retailers

	Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) *A. Data Provider (to Solution)* *B. Data User (of the Solution)*	
The Slaughterhouses are users and providers of data. Data user: reports of inspection, audits reports, combined data collected from all actors in the supply chain such as declared volumes/quantities/prices. Data provider: fill in forms of inspection, report volumes, prices and food safety results to authorities, exchange reports with the certification bodies.	
	Data exchange flow with Main Actors
Describe <u>analytically</u> the direct data exchange flow with other main actors in the certified supply chain	
The slaughterhouses receive information related to the product from the farmers. They can set specifications for the products that they send to the industry or retailers in terms of its characteristics such as weight, type, the quantity, the certifications that accompany it and the relevant laboratory analyses. The slaughterhouses receive from the food authority and certification bodies relevant data of the results of the inspection and specifically in case a slaughterhouse has not completed the process of sending the corrective actions to the specific schedule set by the respective certification regulation to show the non-conformities indication in case has successfully completed the certify process with the validity of its certificate. The specific data is disclosed to any interested parties through the GLOBALGAP database.	
	Data sources
Describe the potential sources of the data that the main actor handles	
The potential sources of data used are: ● Slaughterhouse Management system (e.g. ERP etc.) ● Certification bodies databases ● Laboratories databases	
	Sub-actors
*Describe <u>analytically</u> the sub-actors**(who they are, what they do, what they provide, how they involved, what is their role to the certification process)** to the main actor.*	
The sub actors that interact with slaughterhouses are: ● Consultants ● Inspectors ● Laboratories ● Public Authorities	

	Type of Interaction with Sub-actor
Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform.	
Consultants: conduct audits, guide the implementation of best practices against certification standards (Data user / Data Provider). **Laboratories**: Provides food safety analysis and quality analysis to verify compliance towards legislation and certification requirements (Data Providers). **Inspectors**: Periodically evaluate /assess the slaughterhouse against the food safety standards.	
	Current Data Format
Describe the most usual format of the available data maintained by the actor	
The main data formats are: handwritten documents / e-documents (jpeg, pdf, excel, word files)	
	Goal
Describe how the 'TheFSM' will benefit each Main Actor - End User? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*	
The benefits TheFSM will deliver to this actor are: 1. To receive farmers data about the production of the certified product (date, quantity) for the traceability system 2. Digitalize the certification flow of information 3. To receive producer's certification validity and report (supplier's documents) 4. To have all in one database (suppliers of packaging material etc.) 5. Direct access to market needs (Up to date info) & new clients 6. Real time data (minimize response time to decide actions) 7. Maintaining up-to-date communication channel with traders (retailers) regarding agreed timelines, terms & conditions	
	Challenges
Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). *Define& describethe challenges with reference to the "data type" of the actor and the sub-actor*	
Challenges to consider are: 1. Interoperability of existing processing management solutions with TheFSM. 2. Ease of Uploading data (user friendly to limit time and effort). 3. Participation of all the key end users (main and sub-actors) with whom he cooperates in this platform. 4. Safeguarding info and personal data. 5. High commercial added value - benefit to get in return.	
	Legal Obstacles
Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain	

Legal issues to consider are:

- Confidentiality of info gathered during the audit and certification process / Commercial exploitation of the public and open data.
- GDPR: Protection of personal data (only natural persons, but also employees of businesses and public authorities).
- Ownership and Governance of non-personal data ("Farmer data ownership and protection").
- Terms and Conditions (including data governance/license). Food Safety Law and Standards

	Business Requirements
Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario	

BR 1. To receive farmers data about the production of the certified product (date, quantity) for the traceability system
BR 2. Digitalize the certification flow of information
BR 3. To receive producer's certification validity and report (supplier's documents)
BR 4. To have all in one database (suppliers of packaging material etc.)
BR 5. Direct access to market needs (Up to date info) & new clients
BR 6. Real time data (minimize response time to decide actions)
BR 7. Maintaining up-to-date communication channel with traders (retailers) regarding agreed timelines, terms & conditions

	Legal Requirements
Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	

OBJECTIVE: To investigate any legal restrictions that affect the achievement of the target for the data.

Slaughterhouses act both as data user and data provider. They receive reports of inspection, audits reports, combined data collected from all actors in the supply chain such as declared volumes/quantities/prices. As a data provider they send completed forms of inspection, report volumes, prices and food safety results to authorities, exchange reports with the certification bodies. The data processed by the Slaughterhouses include personal and non-personal data which for the legal analysis have to be strictly distinguished.

Processing of personal data

Slaughterhouses use the following personal data: i) Contact data of main actors of the supply chain, and sub-actors, e.g. equipment suppliers, laboratories and other food producers, and/or their employees. ii) Certification data of producers and sub-actors, e.g. equipment suppliers, laboratories and other food producers, and/or their employees. GDPR only applies to personal data of natural persons (Art 4 no 1 GDPR). The Slaughterhouses process the above personal data as the controller (Art 4 no 2 and 7 GDPR).

Legal Requirements

➢ **LR1:** Analyse legal basis for processing, Art 6 para 1 lit b GDPR ("processing is necessary for the performance of a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract") or Art 6 para 1 lit f GDPR (legitimate interests pursued by the controller) if there is no (direct) contract between controller and data subject are likely

Governance of non-personal data

All other data processed in this scenario qualifies as non-personal. This includes e.g. company data, analysis reports, lab data, audit reports, certificates, inspection info. Non-personal data is not subject to the GDPR and has therefore to be protected by different legal instruments.

The legal concept of data ownership is unknown to EU Law. Consequently, the protection of non-personal data, in particular business sensitive data, has to be ensured by a legal framework on a contractual basis that governs all confidential information and protects the interests of all actors.

Data exchange

Slaughterhouses and farmers
The slaughterhouses receive information related to the product from the farmers and set specifications (weight, type, the quantity, the certifications) for the products in return.

- **LR2:** The contractual basis for the exchange of data has to be analysed or provided including a provision for non-disclosure of business sensitive and confidential data.

Slaughterhouses and food authority
Slaughterhouses are inspected on-site by the food authority where data is gathered. They receive relevant data from the food authority.

- **LR3:** The public mandate and the legal framework of the applicable certification standard govern the exchange of data between the Slaughterhouses and the Food Safety Authority. It will have to be analysed with special regard to the non-disclosure of business sensitive and confidential data.

Slaughterhouses and certification body
The slaughterhouses receive from the certification bodies relevant data of the results of the inspection.

- **LR4:** The certification is performed on a contractual basis and subject to the regulations of the applicable certification standard. The contract concluded specifies storage of gathered data, their confidentiality, permission to share etc. The standard contract will have to be analysed.

Sub-actors
The slaughterhouses exchange data (e.g. conduct audits, implementation guide, food safety analysis and quality analysis) with consultants, inspectors, laboratories and public Authorities.

- **LR5:** Study the legal bases of the relation to the various sub-actors and their relevance to the platform. Laboratory analyses e.g. are performed on a contractual basis. The confidentiality of the non-personal data and possibility to share the results of the analysis with third parties are governed by this contract. This contract will have to be analysed.

Commercial exploitation of the public and open data
Certification bodies databases, laboratories databases are used by the Industry as data sources. Specific data is disclosed to any interested parties through the GLOBALGAP database

- **LR6:** Establish whether there are any restrictions to the intended use according to the database terms of use (licence)

Food Safety Laws and Standards

Applicable Food Safety Regulations

The Regulation (EC) No 178/2002 sets out an overarching framework for the development of food and food safety legislation. The Regulation outlines general principles, requirements and procedures of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (General Food Law Regulation) at all stages of production and distribution. It is complemented by the Regulation (EC) No 852/2004 on the Hygiene of Foodstuffs.
Regarding Pest control EU Regulation (EU) No 852/2004 requires food business operators to prevent animals and pests from causing contamination by taking the adequate measures.

Applicable Food Safety Standards with relevance to this business scenario are the following:

- BLK product label
- Organic label
- ISO certification
- EKO label
- HALAL certification
- BRC certification
- IFS certification
- FSSC 22000
- The QS Qualität und Sicherheit
- IKB certification

Legal Requirements

➢ **LR7:** analyse data sharing requirements and provisions on confidentiality according to the applicable standards

	Data Requirements
Summarize the Dat Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	
• Data standards: to comply or reuse existing standards whenever possible • Data format: define the format that data should be exchanged • Data exchange: use the existing infrastructure • Uploading data: easy upload process, minimum cost • Data accessibility: To provide a way to limit the data access of each actor depending on his role • Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository • Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles. • Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages • Data security	

Main Actor / End User	**3.6.5.5 *Retail***
Description of Main Actor5	Retail
	Role in a Certified Food Supply Chain
Describe the responsibility of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'	
The retail role is trading certified end products to consumers. Retailers in the meat supply chain are also inspected by food authority and certification bodies to check if the food safety law and certification standards are respected.	
	Interrelation with Main Actors in Food Safety Certification
Describe how this Actor interrelates with other main actors in the supply chain	

Retailers accept and host periodic on-site audits from the Certification Bodies and food authority. They have relations with:

- The food authority for data sharing and controls (EU regulation)
- Certification Bodies (contract) by audits and certifications
- Trades (contract) to industry

	Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) *A. Data Provider (to Solution)* *B. Data User (of the Solution)*	
The retailers are users and providers of data. **Data user**: reports of inspection, audits reports, combined data collected from all actors in the supply chain such as declared volumes/quantities/prices. **Data provider**: fill in forms of inspection, report volumes, prices and food safety results to authorities, exchange reports with the certification bodies.	
	Data exchange flow with Main Actors
Describe<u>analytically</u> the direct data exchange flow with other main actors in the certified supply chain	
The retailers receive information related to the product from the industry. They can set specifications for the products that they send to the consumers in terms of its characteristics such as weight, type, the quantity, the certifications that accompany it and the relevant laboratory analyses. Retailers receive from the food authority and certification bodies relevant data of the results of the inspection and specifically in case a retailer has not completed the process of sending the corrective actions to the specific schedule set by the respective certification regulation to show the non-conformities indication in case has successfully completed the certify process with the validity of its certificate. The specific data is disclosed to any interested parties through the GLOBALGAP database.	
	Data sources
Describe the potential sources of the data that the main actor handles	
The potential sources of data used are: ● Trading Management system (e.g. ERP etc.) ● Certification bodies databases ● Laboratories databases	
	Sub-actors
*Describe <u>analytically</u> the sub-actors***(who they are, what they do, what they provide, how they involved, what is their role to the certification process)** to the main actor.*	

The sub actors that interact with retailers are:

- Consultants
- Inspectors
- Laboratories
- Public Authorities

	Type of Interaction with Sub-actor
Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform.	
Consultants: conduct audits, guide the implementation of best practices against certification standards (Data user / Data Provider). **Laboratories**: Provides food safety analysis and quality analysis to verify compliance towards legislation and certification requirements (Data Providers). **Inspectors**: Periodically evaluate /assess the slaughterhouse against the food safety standards.	

	Current Data Format
Describe the most usual format of the available data maintained by the actor	
Main data formats are: e-documents (jpeg, pdf, excel, word files) / partially handwritten documents	

	Goal
Describe how the 'TheFSM' will benefit each Main Actor - End User? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*	
The benefits TheFSM will deliver to this actor are: 1. Meet customized 'food quality' requirements based on its policy 2. Access to analytical info regarding the end trade products (basic data e.g. producers, date of harvest, quantity, GLOBALG.A.P. number of producer's traceability, for supplier's digital archive 3. To have all in one database (Inspection reports, suppliers, and customers - e.g. Supermarkets)	

	Challenges
Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). *Define& describe the challenges with reference to the "data type" of the actor and the sub-actor*	
Challenges to address are: 1. Harmonization of the platform with the corporate management solutions - tools and policies 2. Specified requirements posed by retailer to be easily communicated to interested suppliers for cooperation with the retailer 3. Participation of all its suppliers (key end users -main and sub-actors) with whom it cooperates	

	Legal Obstacles
Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain	

Legal obstacles to consider:

- Confidentiality of info gathered during the audit and certification process / Commercial exploitation of the public and open data.
- GDPR: Protection of personal data (only natural persons, but also employees of businesses and public authorities).
- Ownership and Governance of non-personal data ("Farmer data ownership and protection"). Terms and Conditions (including data governance/license).
- Food Safety Law and Standards

	Business Requirements
Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario	
BR 1. Meet customized 'food quality' requirements based on its policy BR 2. Access to analytical info regarding the end trade products (basic data e.g. producers, date of harvest, quantity, GLOBALG.A.P. number of producer's traceability, for supplier's digital archive BR 3. To have all in one database (Inspection reports, suppliers and customers - e.g. Supermarkets)	

	Legal Requirements
Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	

OBJECTIVE: To investigate any legal restrictions that affect the achievement of the target for the data.

The retailers are users and providers of data. They receive reports of inspection, audits reports, combined data collected from all actors in the supply chain such as declared volumes/quantities/prices. They provide completed forms of inspection, report volumes, prices and food safety results to authorities and they exchange reports with the certification bodies. The data processed by the Retailers include personal and non-personal data which for the legal analysis have to be strictly distinguished.

Processing of personal data

The retailer uses the following personal data: i) Contact data of main actors of the supply chain, and sub-actors, and/or their employees. ii) Certification data of producers and sub-actors, e.g. equipment suppliers, laboratories and other food producers, and/or their employees. GDPR only applies to personal data of natural persons (Art 4 no 1 GDPR). The retailer processes the above personal data as the controller (Art 4 no 2 and 7 GDPR).

Legal Requirements

➢ **LR1:** Analyse legal basis for processing, Art 6 para 1 lit b GDPR ("processing is necessary for the performance of a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract") or Art 6 para 1 lit f GDPR (legitimate interests pursued by the controller) if there is no (direct) contract between controller and data subject are likely

Governance of non-personal data

All other data processed in this scenario qualifies as non-personal. This includes e.g. company data, analysis reports, lab data, audit reports, certificates, inspection info. Non-personal data is not subject to the GDPR and has therefore to be protected by different legal instruments.

The legal concept of data ownership is unknown to European Law. Consequently, the protection of non-personal data, in particular business sensitive data, has to be ensured by a legal framework on a contractual basis that governs all confidential information and protects the interests of all actors.

<u>Data exchange</u>

Retailer and Industry
The retailers receive information related to the product from the industry and set specifications for the products such as weight, type, the quantity, the certifications that accompany and the relevant laboratory analyses in return.

- **LR2:** The contractual basis for the exchange of data has to be analysed or provided including a provision for non-disclosure of business sensitive and confidential data.

Retailer and food authority
Retailers receive relevant information from the food authority and are inspected on-site by the food authority where data is gathered.

- **LR3:** The public mandate of the food authority and the legal framework of the applicable certification standard govern the exchange of data between the Retailer and the Food Safety Authority. It will have to be analysed with special regard to the non-disclosure of business sensitive and confidential data

Retailer and certification body
Retailers receive relevant information of the results of the inspection and possible corrective actions from the certification body and are inspected on-site by the certification body where data is gathered.

- **LR4:** The certification is performed on a contractual basis and subject to the regulations of the applicable certification standard. The contract concluded specifies storage of gathered data, their confidentiality, permission to share etc. The standard contract will have to be analysed.

Sub-actors
The Retailer exchange data (e.g. audit data, implementation guide, food safety analysis and quality analysis) with consultants, inspectors, laboratories and public Authorities.

- **LR5:** Study the legal bases of the relation to the various sub-actors and their relevance to the platform. Laboratory analyses e.g. are performed on a contractual basis. The confidentiality of the non-personal data and possibility to share the results of the analysis with third parties are governed by this contract. This contract will have to be analysed.
- **LR6:** Establish if there are any restrictions on sharing information received directly from food authorities with third parties.

Commercial exploitation of the public and open data
Certification bodies databases, laboratories databases are used by the Retailer as data sources. Specific data is disclosed to any interested parties through the GLOBALGAP database

- **LR7:** Establish whether there are any restrictions to the intended use according to the database terms of use (licence)

Food Safety Laws and Standards

Applicable Food Safety Regulations

The Regulation (EC) No 178/2002 sets out an overarching framework for the development of food and food safety legislation. The Regulation outlines general principles, requirements and procedures of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (General Food Law Regulation) at all stages of production and distribution. It is complemented by the Regulation (EC) No 852/2004 on the Hygiene of Foodstuffs.
Regarding Pest control EU Regulation (EU) No 852/2004 requires food business operators to prevent animals and pests from causing contamination by taking the adequate measures.

Applicable Food Safety Standards with relevance to this business scenario are the following:

- BLK product label
- Organic label
- ISO certification
- EKO label
- HALAL certification
- BRC certification
- IFS certification
- FSSC 22000
- The QS Qualität und Sicherheit
- IKB certification

Legal Requirements

➢ **LR8:** analyse data sharing requirements and provisions on confidentiality according to the applicable standards

	Data Requirements

Summarize the Data Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario

- Data standards: to comply or reuse existing standards whenever possible
- Data format: define the format that data should be exchanged
- Data exchange: use the existing infrastructure
- Uploading data: easy upload process, minimum cost
- Data accessibility: To provide a way to limit the data access of each actor depending on his role
- Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository
- Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles.
- Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages
- Data security

Main Actor / End User	**3.6.5.6** ***Certification Body***
Description of Main Actor 6	
	Role in a Certified Food Supply Chain

Describe the responsibility of the Actor in the Food Supply chain that is directly linked with the certification process which will be boosted by the 'TheFSM'

Certification body audits and validates all actors in the supply chain for producing goods in conformity against standards requirements (GLOBAL G.A.P, Organic farming, Halal meat, ..etc).
Actors in the broiler meat supply chain are audited with regards to their compliance to the quality certifications and labels such as:

- BLK product label
- Organic label
- ISO certification
- EKO label
- HALAL certification
- BRC certification
- IFS certification
- FSSC 22000
- The QS Qualität und Sicherheit
- IKB certification

	Interrelation with Main Actors in Food Safety Certification
Describe how this Actor interrelates with other main actors in the supply chain	
Certification body audits on-site all actors in the broiler meat supply chain, decides and issues Certificate, Upload Certificate to GLOBALG.A.P. database. They have connections with all actors in the supply chain.	
	Data Type of Main Actor
Which could be the type of the main actor (Entity directly involved in certification process) with reference to the data that they handle in the supply chain? (regarding 'TheFSM' platform) *A. Data Provider (to Solution)* *B. Data User (of the Solution)*	
The certification bodies are users and providers of data. Data user: audits reports, audits data collected from all actors in the supply chain Data provider: generate audits reports, reports exchange with all actors in the supply chain.	
	Data exchange flow with Main Actors
Describe<u>analytically</u> the direct data exchange flow with other main actors in the certified supply chain	
The certification bodies receive information related to the product/process/company from all actors in the supply chain. The certification bodies generate audits reports. The specific data is disclosed to any interested parties through the GLOBALGAP database.	
	Data sources
Describe the potential sources of the data that the main actor handles	
GLOBALGAP database	
	Sub-actors
*Describe <u>analytically</u> the sub-actors****(who they are, what they do, what they provide, how they involved, what is their role to the certification process)*** *to the main actor.*	
The sub actors that interact with CB are: ● GLOBALG.A.P ● Accreditation Bodies	
	Type of Interaction with Sub-actor
Describe the way of Interaction (involvement) between each Sub-actor and the actor. For each interaction, state the related type of data exchange and data flow within the 'TheFSM' platform.	
Accreditation Bodies: Periodically evaluates /assesses the Certification Body's competence & impartiality to certify against the GLOBALG.A.P. scheme, by auditing files of certified clients (Data User) **GLOBALG.A.P:** Periodically audits the Certification Body to safeguard the integrity of the certification process , by auditing files of certified clients (Data User) / Maintains (i) the certification status of producer and (ii) the recognition status of the Certification Body in the GLOBALG.A.P. database (Data Provider)	

	Current Data Format
Describe the most usual format of the available data maintained by the actor	
Data formats is e-documents (jpeg, pdf, excel, word files)	
	Goal
Describe how the 'TheFSM' will benefit each Main Actor - End User? *What the End User should expect by using 'TheFSM'?* *Describe any benefit that a Sub-actor could gain by the 'TheFSM'.*	
The benefits TheFSM will deliver to this actor are: 1. To have direct and official info regarding findings of the National Control Authorities to certified Producers and Processors 2. Receive all the evidence easier for the justification of compliance criteria (e.g. producer's personal data, records of applications etc.) 3. To have an all in one database (legal requirements, accreditation certs for laboratories, MRL Limits, official PPP Approvals) 4. To make the risk assessment for the samples (producers & products for analysis) 5. To increase the effectiveness (time/cost) of the audits (Align certification processes with the TheFSM, to increase effectiveness and reduce the needed resources of the certification mechanism)	
	Challenges
Define& describe the challenges for the actor to achieve the above Goals (to get benefit from the Solution). *Define& describethe challenges with reference to the "data type" of the actor and the sub-actor*	
Challenges to address are: 1. To meet all the limitations and requirements for handling audit info, posed to Certification Bodies by the international standards for accreditation and the scheme owners, when using the TheFSM 2. Interoperability of existing certification management solutions with TheFSM when sharing data (e.g. data immigration) - Harmonization with the corporate policies and processes 3. All certification clients to align their data format (type) based on the technical specifications of the 'TheFSM' to facilitate quick sharing 4. Participation of all the key end users (main and sub-actors) with whom it cooperates in the certification process 5. Encompass all the different requirements for uploading data to every potential scheme owner's databases 6. Keep the certification cost unaffected and hopefully increase the profit margin 7.No further maintenance costs for users.	
	Legal Obstacles
Recognize and describe the basic legal obstacles governing the sharing of info in the supply chain	
Legal issues to consider are: ● Confidentiality of info gathered during the audit and certification process / Commercial exploitation of the public and open data. ● GDPR: Protection of personal data (only natural persons, but also employees of businesses and public authorities). ● Ownership and Governance of non-personal data ("Farmer data ownership and protection"). ● Terms and Conditions (including data governance/license). ● Food Safety Law and Standards	

	Business Requirements
Summarize the Business Requirements relevant to the current End User (Main Actor) identified within the Business Scenario	
BR 1. To have direct and official info regarding findings of the National Control Authorities to certified Producers and Processors BR 2. Receive all the evidence easier for the justification of compliance criteria (e.g. producer's personal data, records of applications etc.) BR 3. To have an all in one database (legal requirements, accreditation certs for laboratories, MRL Limits, official PPP Approvals) BR 4. To make the risk assessment for the samples (producers & products for analysis) 5. To increase the effectiveness (time/cost) of the audits (Align certification processes with the TheFSM, to increase effectiveness and reduce the needed resources of the certification mechanism)	
	Legal Requirements
Summarize the Legal Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	

OBJECTIVE: To investigate any legal restrictions that affect the achievement of the target for the data.

The certification body audits and validates all actors in the supply chain conformity against standards requirements (GLOBALG.A.P, Organic farming, Halal meat, etc.) and performs audits on-site to all actors. Moreover, the certification body issues and uploads certificates to the GLOBALG.A.P. database. It acts both as user and provider of data when exchanging audits reports. The data processed by the Retailers include personal and non-personal data which for the legal analysis have to be strictly distinguished.

Processing of personal data

The certification body uses the following personal data: i) Contact data of main actors of the supply chain, and sub-actors, and/or their employees. ii) Certification data of producers and sub-actors, e.g. equipment suppliers, laboratories and other food producers, and/or their employees. GDPR only applies to personal data of natural persons (Art 4 no 1 GDPR). The certification body processes the above personal data as the controller (Art 4 no 2 and 7 GDPR).

Legal Requirements

- **LR1:** Analyse legal basis for processing, Art 6 para 1 lit b GDPR ("processing is necessary for the performance of a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract") or Art 6 para 1 lit f GDPR (legitimate interests pursued by the controller) if there is no (direct) contract between controller and data subject are likely

Governance of non-personal data

All other data processed in this scenario qualifies as non-personal. This includes e.g. company data, analysis reports, lab data, audit reports, certificates, inspection info. Non-personal data is not subject to the GDPR and has therefore to be protected by different legal instruments.

The legal concept of data ownership is unknown to EU Law. Consequently, the protection of non-personal data, in particular business sensitive data, has to be ensured by a legal framework on a contractual basis that governs all confidential information and protects the interests of all actors.

<u>Data exchange</u>

Certification body and Farmers

The certification bodies receive information related to the product/process/company from all actors in the supply chain and generate audit reports.

- **LR2:** The legal framework for the exchange of data is subject to the broader legal framework of the applicable certification standard and the relevant contractual basis. Any existing contract for the exchange of data has to be analysed or it will have to be provided including a provision for non-disclosure of business sensitive and confidential data.

Certification body and Industry
The certification bodies receive information related to the product/process/company from all actors in the supply chain and generate audit reports.

- **LR3:** The legal framework for the exchange of data stands under the broader legal framework of the applicable certification standard. The contractual basis for the exchange of data has to be analysed or provided including a provision for non-disclosure of business sensitive and confidential data.

Certification and Slaughterhouses
The certification bodies receive information related to the product/process/company from all actors in the supply chain and generate audit reports.

- **LR4:** The legal framework for the exchange of data stands under the broader legal framework of the applicable certification standard. The contractual basis for the exchange of data has to be analysed or provided including a provision for non-disclosure of business sensitive and confidential data.

Certification and Retailer
The certification bodies receive information related to the product/process/company from all actors in the supply chain and generate audit reports.

- **LR5:** The legal framework for the exchange of data stands under the broader legal framework of the applicable certification standard. The contractual basis for the exchange of data has to be analysed or provided including a provision for non-disclosure of business sensitive and confidential data.

Certification body and Food authority
The certification bodies receive information related to the product/process/company from all actors in the supply chain and generate audit reports.

- **LR6:** The public mandate of the food authority and the legal framework of the applicable certification standard govern the exchange of data between the certification body and the Food Safety Authority. It will have to be analysed with special regard to the non-disclosure of business sensitive and confidential data.

Sub-actors
The certification body exchanges data with accreditation bodies and GlobalG.A.P.
The Accreditation Bodies receive auditing files of certified clients to evaluate and assess the Certification Body's competence & impartiality to certify against the GLOBALG.A.P. scheme. GLOBALG.A.P receives auditing files of certified clients for evaluation.

- **LR7:** Study the legal bases of the relation of both sub-actors and their relevance to the platform.
- **LR8:** Establish if there are any restrictions on sharing information received directly from food authorities with third parties.
-

Commercial exploitation of the public and open data
Databases are used by the certification body. Specific data is disclosed to any interested parties through the GLOBALGAP database

- **LR9:** Establish whether there are any restrictions to the intended use according to the database terms of use (licence)

Food Safety Laws and Standards

Applicable Food Safety Regulations

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Regarding Pest control EU Regulation (EU) No 852/2004 requires food business operators to prevent animals and pests from causing contamination by taking the adequate measures.

Applicable Food Safety Standards with relevance to this business scenario are the following:

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- Organic label
- ISO certification
- EKO label
- HALAL certification
- BRC certification
- IFS certification
- FSSC 22000
- The QS Qualität und Sicherheit
- IKB certification

Legal Requirements

➢ **LR10:** analyse data sharing requirements and provisions on confidentiality according to the applicable standards

	Data Requirements
Summarize the Data Requirements relevant to the current End Used (Main Actor) identified within the Business Scenario	
● Data standards: to comply or reuse existing standards whenever possible ● Data format: define the format that data should be exchanged ● Data exchange: use the existing infrastructure ● Uploading data: easy upload process, minimum cost ● Data accessibility: To provide a way to limit the data access of each actor depending on his role ● Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository ● Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles. ● Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages ● Data security	

The common technical requirements of all business scenarios consist of:

	Technical Requirements
TR1. The system **shall** enable ingestion, storing and retrieving of data of different formats, including standardized data models (such as W3C Web of Things, GS1 EPCIS, etc.) and non-standard formats. TR2. The system **shall** enable data governance by each involved actor in such a way that the actor is able to decide whom they share specific data with, in which format they share it and under which legal conditions. TR3: The system **shall** enable discovery of datasets based on specific supply chain identifiers across all actors' data and metadata that the actors have designated accessible and discoverable.	

TR4. The system **should not** have a technical boundary for any actor to join the FSM without permission, as long as they satisfy the technical requirements of the system.
TR5. Each actor in the system **shall** be assigned, or can self-assign, a valid undisputable identity (such as a public key in the existing PKI infrastructure) which the actor can use for authentication, authorization and verification mechanisms within FSM.
TR6. The system **may** enable manual data input or provide tools to generate semantic, structured data from non digital or non-structured/non-semantic data input.
TR7. Each actor within FSM **shall** be able to exchange any dataset they possess with any other actor within FSM given that both actors agree to the exchange and abide by the legal requirements.
TR8. Each actor within FSM **shall** be able to verify the integrity of any dataset received from other parties by utilizing cryptographic verification mechanisms.
TR9. The system **should** enable actors to link, process and aggregate obtained datasets through FSM within the scope of their interest, regardless of dataset structure.
TR10. The actors **should** be able to individually decide on the dataset access control policies within the FSM access control framework.
TR11. The actors **should** be able to identify each dataset issuer from the dataset itself.
TR12. The actors **should** be able to utilize the system through a human-readable, user friendly interface, without the need to possess highly technical knowledge such as programming.
TR13. The actors **shall** utilize encrypted communication protocols for data exchange.
TR14. The actors **should** not need to use any specific technical component implementation in order to utilize the FSM (e.g. the same browser, database implementation, etc.)
TR15. The actors **shall** be free to use technologies of different technical vendors within FSM.
TR16. The system **should** be highly available by design.

The scenario specific requirements are still in development.

4 RESULTS & STATS OF BUSINESS SCENARIOS ON THE BUSINESS REQUIREMENTS

The five Business Scenarios' analysis ended up with many significant Business Requirements, which have been identified for all the stakeholders involved in each one of them. Specifically, one hundred and seventy-five (175) BR have been recorded throughout all these BSCs, all in relation to the six (6) categories of the different types of stakeholders who were determined. However, each one of the five BSC focused only to those key stakeholders that are directly influencing or could affect the described BSC and therefore BRs were identified specifically based on them.

Moreover, due to the fact that all the BSC are bonded to the same generic scope, as the one of the "inspection and certification in the food supply chain", and due to the bidirectional interactions and interrelation that exists between its main actors, some common BRs have been recorded amongst the different BSC and the different stakeholder within each BSC.

For that reason, the action of categorizing all the recognized as critical BRs for each one of the BSCs or their key stakeholders, has been adopted to provide a more practical and flexible overview and evaluation on the BRs, in order to facilitate their further study and exploitation in terms of confronting the project need for the relevant Work Packages' tasks as well.

Specifically, four (4) reference BR Categories have been introduced in our BR analysis, under which all the 175 identified BRs were allocated. These four reference BR categories have been adapted based on both the relevant customized international literature for developing business scenarios (Manager's Guide to Business Scenarios, by The Open Group Architecture Forum) and the former experience of the WP1 project team.
These reference BR categories are:

- rBRc 1: Improve business process performance
- rBRc 2: Improve business operation
- rBRc 3: Improve management efficacy
- rBRc 4: Improve business continuity& sustainability

(rBRc: reference BR category)

To justify the allocation of all the 175 BRs in these four reference categories, we set several objectives that directly apply to them. These objectives are presented in the Table 3. The objective of the four reference categories of the Business Requirements.

***Table 3**. The objective of the four reference categories of the Business Requirements*

rBRc 1 Improve business process performance
Business process improvements can be realized through the following objectives:
• Increased process throughput
• Consistent output quality
• Predictable process costs
• Reduced time sending business information from one process to another

rBRc 2 Improve business operations
Business operations improvements can be realized through the following objectives:
• Reduced costs of running the business

• Shorter time to market for products or services
• Improved quality of services to customers
• Improved quality of business information
• Constant quality control

rBRc 3 Improve management efficacy
Management efficacy improvements can be realized through the following objectives:
• Increased flexibility of business
• Shorter time to make decisions
• Better quality decisions

rBRc 4 Improve business continuity & sustainability
Business continuity can be realized through the following objectives:
• Easy and direct adaptation to legal changes and certification standards' revisions
• Increasing up-to-date information maintenance
• Effectively implementing risk assessment
• Maintaining traceability info of product and services
• Retaining and expanding synergies and cooperation
• Achieving quality external communication
• Meeting expectations and adapting to market changes

All the identified BRs were segregated based on their evaluation towards the above objectives always in conjunction to and with reference to the stakeholder that they were addressed. The results extracted, based on the above method and the rationale for allocating the BRs under the four categories, are stated in Table 4.

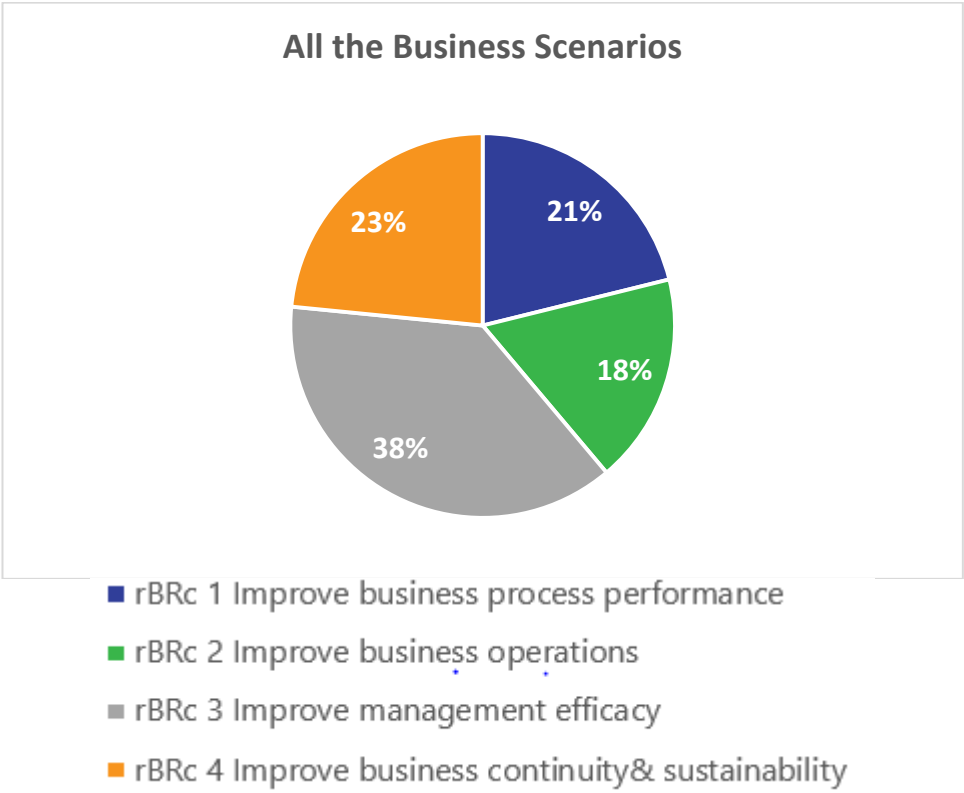
***Table 4**. Allocation of the Business Requirements into reference categories*

	All BSC	BSC 1	BSC 2	BSC 3	BSC 4	BSC 5
rBRc #1	37	0	11	14	8	4
rBRc #2	31	2	5	7	7	10
rBRc #3	66	2	7	25	21	11
rBRc #4	41	2	13	11	5	11

More precisely, as shown below in Chart 1, the majority of the BRs identified throughout all the five BSC of the WP1, were relevant to the objectives of the third reference category of business requirement (rBRc #3 Improve management efficacy), with a percentage of 38% amongst the 175 BRs.

The fourth reference category of business requirement (rBRc #4 Improve business continuity& sustainability) assembled the 23% of the BRs, whereas, under the first (rBrc #1) and the second reference categories (rBRc #1 Improve business process performance & rBRc #2 Improve business operation) a percentage of 21% and 18% of the BRs were allocated respectively.

Chart 1. Allocation of the BRs under the four rBRc



It is worth mentioning that the objective that lead the majority of the BRs allocated under the rBRc #3, was the one of the *"Better quality decisions"* with a percentage of 42%, whereas the one of "*Shorter time to make decisions"* assembled a percentage of 35%.

With reference to the most important objectives at the rest of the reference categories of BRs the below outcomes were recorded.

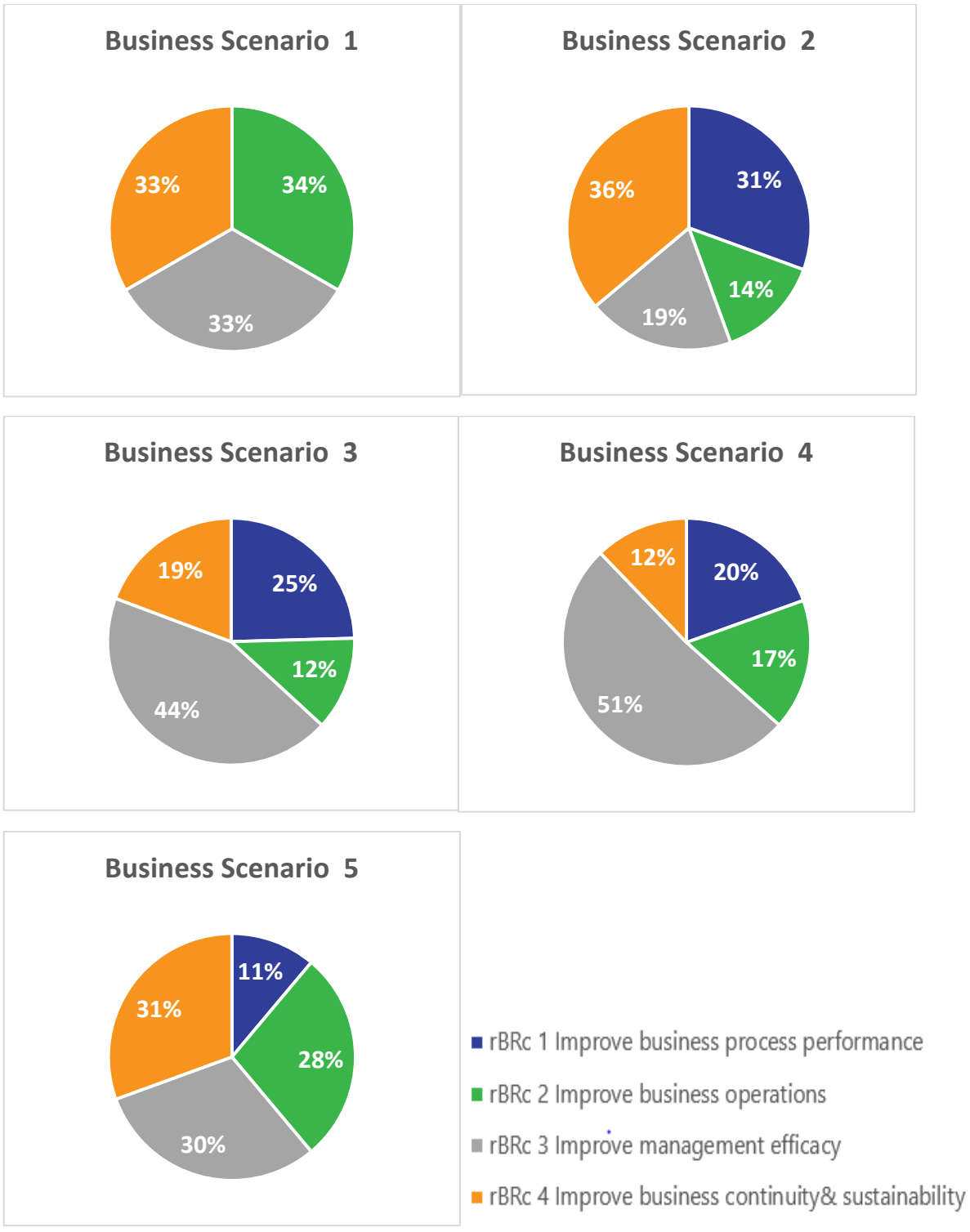
- The objective that lead most of the BRs allocated under the rBRc #1, was the one of the *"Reduce excessive effort"* with a percentage of 65%.
- The objective that lead most of the BRs allocated under the rBRc #2, was the one of the *"Reduced costs of running the business"* with a percentage of 47%.
- The objective that lead the majority of the BRs allocated under the rBRc #4, was the one of the *"Meeting expectations and adapting to market changes"* with a percentage of 29%, whereas each one of the objectives for *"Maintaining traceability info of product and services"* and *"Achieving quality external communication"* assembled 24% respectively.

All the BRs that were identified after the initial internal consultation in T1.1. as being allocated under each one of the four reference BR categories, are presented in the following Tables 5, 6, 7 and 8. In these Tables, each BR apart from being addressed to a specific rBRc, is also corresponded to the specific objective of the relevant rBRc, whereas the BSC from which it has derived, as well as the interested stakeholder behind this, are also stated.

The proportional allocation of the BRs of each individual Business Scenario, under the reference BR categories, is also presented at the Charts 2-6.

Based on their analysis, it has been revealed that for all these five business cases, the BRs allocated under the third (rBRc #3 Improve management efficacy) and the fourth (rBRc #4 Improve business continuity& sustainability) reference categories of business requirements constitute the majority of them, which had been identified during the internal consultation stage of T1.1., assembling a percentage from 55% (at BSC 2) to 66% (at BSC 1).

Charts 2-6. The BR allocation of the five individual Business Scenario, under rBRc



4.1 Reference Business Requirements Category 1 Improve business process performance

Table 5. The BRs under the rBRc #1

rBRc 1 Improve business process performance			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR 1. Collection of many different data with reference to the characteristics of the business and the final product	BS2	PRODUCER	reduce excessive effort
BR 4. Recording of up-to-date and valid data assets (assets) of exploitation from a database of competent Authorities (e.g. Integrated Administration and Control System (IACS)) with limited access, provided by the producer.	BS2	PRODUCER	increased process throughput
BR 7. Achieving the agreed specifications, on the delivered product for cooperation	BS2	PRODUCER	output quality consistent
BR 10. Connecting the different databases from where the information is collected.	BS2	PRODUCER	reduce excessive effort
BR 11. To have all in one and up to date data, from different sources in order to receive the information easier	BS2	PRODUCER	reduce excessive effort
BR 12. To personalize the data in the platform that the producer will use in his daily operations, in order to get customized information.	BS2	PRODUCER	reduce excessive effort
BR 13. To digitize all the records that the producer uses in his daily operations.	BS2	PRODUCER	increased process throughput
BR 2. Segregation of data for assessment, in terms of those arising from control points critical to product safety (regular data), and those relating to functional control points (periodical data)	BS2	PROCESSOR	increased process throughput

rBRc 1 Improve business process performance			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR 9. Categorizing and modifying all data in an editable format and transferring them in a common point of protected and controlled access.	BS2	PROCESSOR	increased process throughput
BR 4. Collection of updated and valid data relevant to the farm operation or / and the processing unit, deriving from different official database of the corresponding public authorities (e.g. Intergrade Administration and Control System, General Registry etc.) under limited access given by producer/ processor.	BS2	CB	time reduce
BR 9. To collect the information in a form that could easily be transferred, accessed and managed from the Certification Body.	BS2	CB	reduce excessive effort
BR 1. To support to the producer to accelerate the preparation and realization of certification	BS3	PRODUCER	reduce excessive effort
BR 5. To give the producer an estimation of costs and expenditures in respect to the certification process.	BS3	PRODUCER	predictable process cost
BR 6. To support the producer in realization of remote audits	BS3	PRODUCER	reduce excessive effort
BR 1. To support to the processor to accelerate the preparation and realization of certification	BS3	PROCESSOR	reduce excessive effort
BR 5. To give the processor an estimation of costs and expenditures in respect to the certification process.	BS3	PROCESSOR	predictable process cost

rBRc 1 Improve business process performance			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR 6. To support the realization of remote audits	BS3	PROCESSOR	reduce excessive effort
BR 1. To support the distributor to accelerate the preparation and realization of certification.	BS3	DISTRIBUTOR	reduce excessive effort
BR 5. To give the distributor an estimation of costs and expenditures in respect to the certification process.	BS3	DISTRIBUTOR	predictable process cost
BR 6. To support the realization of remote audits	BS3	DISTRIBUTOR	reduce excessive effort
BR 3 Need a system to pose specific requirements for offered standards which can be filtered based on specific retailer and static company data	BS3	CB	reduce excessive effort
BR 4 Data System has to be connected to internal IT framework	BS3	CB	time reduce
B 8 Need a system to be able to calculate audit time and expenditures based on platform data	BS3	CB	increased process throughput
B 9 Need templates for audit agenda, audit report, proposal etc.	BS3	CB	reduce excessive effort
BR 2 Need a system to pose their requirements	BS3	RETAILER	reduce excessive effort

rBRc 1 Improve business process performance			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR 1 Need an all in one database (legal requirements, accreditation certs for laboratories, Specific parameters, historical data of the Company…)	BS4	CB	reduce excessive effort
BR 2 Need to have a digital report to fill in and an immediate tool through which issuing certificates;	BS4	CB	time reduce
BR 6 Keep the certification cost unaffected and hopefully increase the profit margin	BS4	CB	reduce excessive effort
BR 5 Reduce time needed to input data for certification and, in general, reduce time to bureaucracy	BS4	PRODUCER	reduce excessive effort
BR 5. Easy way to fill in daily data that could be used automatically for every kind of certification, avoiding redundancies	BS4	WiNEGROWER	reduce excessive effort
BR 5. Easy way to fill in daily data that could be used automatically for every kind of certification, avoiding redundancies	BS4	WINEMAKER	reduce excessive effort
BR 5. Need to reach different retailers, importers of customers communicating them the value of the certified product.	BS4	BOTLER	reduce excessive effort
BR 3. Receive all the evidence easier for the justification of compliance criteria (e.g. producer's personal data, records of applications etc.).	BS4	PUBLIC AUTHORITY	reduce excessive effort
BR 4. Receive all the evidence easier for the justification of compliance criteria (e.g. producer's personal data, records of applications etc.).	BS5	PUBLIC AUTHORITY	reduce excessive effort

rBRc 1 Improve business process performance			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR 1. Replacement of the hardcopy archives to a digital database.	BS5	PRODUCER	increased process throughput
BR 1. Meet customized 'food quality' requirements based on its policy	BS5	RETAILER	reduce excessive effort
BR 1. To have direct and official info regarding findings of the National Control Authorities to certified Producers and Processors	BS5	CB	reduce excessive effort

4.2 Reference Business Requirements Category 2 Improve business operations

Table 6. The BRs under the rBRc #2

rBRc 2 Improve business operations			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR 1. Allow each supplier to establish a trusted profile as required by the retailers	BS1	PROCESSOR	quality info
BR 1. Allow each supplier to establish a trusted profile as required by the retailers	BS1	PRODUCER	quality info
BR 3. Need for constant updating of data and data sources and access to information	BS2	PRODUCER	constant control

rBRc 2 Improve business operations			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR 4. Easy access (e.g. to Certification Body) to aggregated data to assess compliance with food safety standards.	BS2	PROCESSOR	constant control
BR 1. Use of processed (aggregated) data to assess compliance with the requirements of certified schemes	BS2	CB	constant control
BR 3. The Certification Body has to use a representative sample of the processed' (aggregated) data in order to evaluate compliance with product specifications	BS2	CB	constant control
BR 6. Connecting different methods of receiving and sending information, in order to facilitate the collection of documentation during the certification process	BS2	CB	less cost of running business
BR 9. To provide for validated data from all stakeholders.	BS3	PRODUCER	constant control
BR 12. To facilitate a competitiveness rise through more efficient business processes.	BS3	PRODUCER	improved quality of service/product to customer
BR 9. To provide for validated data from all stakeholders.	BS3	PROCESSOR	constant control
BR 12. To facilitate a competitiveness rise through more efficient business processes.	BS3	PROCESSOR	improved quality of service/product to customer
BR 9. To provide for validated data from all stakeholders.	BS3	DISTRIBUTOR	constant control

rBRc 2 Improve business operations			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR 12. To facilitate a competitiveness rise through more efficient business processes.	BS3	DISTRIBUTOR	improved quality of service/product to customer
BR 4 Need access to product specification	BS3	RETAILER	constant control
BR 3 Need a system to be able to calculate audit time and expenditures based on platform data	BS4	CB	less cost of running business
BR 1. Improvement tool (enhance production cost effectiveness).	BS4	PRODUCER	less cost of running business
BR 3. To have all in one database (suppliers of packaging material etc.)	BS4	WiNEGROWER	less cost of running business
BR 3. To have all in one database (suppliers of packaging material etc.)	BS4	WINEMAKER	less cost of running business
BR 3 To have all in one database (suppliers of packaging material etc.)	BS4	BOTLER	less cost of running business
BR 4 Need access to product specification	BS4	DEALER	constant control
BR 4. To have an all in one database (legal requirements, accreditation certs for laboratories, MRL Limits, official PPP Approvals).	BS4	PUBLIC AUTHORITY	less cost of running business

rBRc 2 Improve business operations			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR 3. Useful tools to support risk based monitoring	BS5	PUBLIC AUTHORITY	constant control
BR 5. To have an all in one database (legal requirements, accreditation certs for laboratories, MRL Limits, official PPP Approvals).	BS5	PUBLIC AUTHORITY	less cost of running business
BR7. To increase the effectiveness (time/cost) of the audits (Align certification processes with the TheFSM, to increase effectiveness and reduce the needed resources of the certification mechanism).	BS5	PUBLIC AUTHORITY	less cost of running business
BR 5. Control of the production process (i.e. financial control and stat analysis).	BS5	PRODUCER	constant control
BR 6. Improvement tool (enhance production cost effectiveness).	BS5	PRODUCER	less cost of running business
BR 4. To have all in one database (suppliers of packaging material etc.)	BS5	PROCESSOR	less cost of running business
BR 4. To have all in one database (suppliers of packaging material etc.)	BS5	SLAUGHTERHOUSE	less cost of running business
BR 3. To have all in one database (Inspection reports, suppliers and customers - eg SuperMarkets)	BS5	RETAILER	less cost of running business
BR 3. To have an all in one database (legal requirments, accreditation certs for laboratories, MRL Limits, official PPP Approvals)	BS5	CB	less cost of running business

rBRc 2 Improve business operations			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR5. To increase the effectiveness (time/cost) of the audits (Align certification processes with the "TheFSM", to increase effectiveness and reduce the needed resources of the certification mechanism)	BS5	CB	less cost of running business

4.3 Reference Business Requirements Category 3 Improve management efficacy

Table 7. The BRs under the rBRc #3

rBRc 3 Improve management efficacy			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR 1. Allow the FSQA to access information regarding potential findings of the inspection of suppliers in the food chain.	BS 1	RETAILER	better quality decision
BR 3. Provide the FSQA with innovative tools to support monitoring of the product trace	BS 1	RETAILER	constant control
BR 2. Management of Data (data evaluation) deriving from different sources (with great variability) and with different characteristics (e.g. numerical, non-numerical - documents, etc.) to draw conclusions (e.g. results of analyses with legislative requirements, etc.)	BS 2	PRODUCER	shorter time to make decision
BR 6. Validity of GLOBALGAP certificates from GLOBALGAP Database	BS 2	PRODUCER	better quality decision
BR 3. Need for constant updating of information for points that directly (critical limits for food hazards, recalls etc.) and indirectly (food regulation etc.) affect food safety.	BS 2	PROCESSOR	shorter time to make decision

rBRc 3 Improve management efficacy			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR 7. Easy access and valid info relevant to operational licenses of each type of sub-actor who provides its services to the processor	BS 2	PROCESSOR	shorter time to make decision
BR 8. Valid info regarding the accreditation of the different kind of laboratories that verify the effectiveness of the FSMS	BS 2	PROCESSOR	shorter time to make decision
BR 5. Collection of needed documentation that the CB requires to obtain prior to the certification decision.	BS 2	CB	better quality decision
BR 2. Reduction of the decision-making time since up-to-date data can be obtained relevant to his contracted suppliers.	BS 2	RETAILER	shorter time to make decision
BR 3. To support the producer to select the consultants, who can support the implementation of the certification requirements.	BS 3	PRODUCER	better quality decision
BR 4. To support the producer to select a certification body that can undertake the certification process.	BS 3	PRODUCER	shorter time to make decision
BR 7. To allow for integrated data assessments for fact driven management of the business.	BS 3	PRODUCER	flexibility of business
BR 8. To enable a comprehensive on time evaluation of real time data from different sources and stakeholders which supports fast decision processes	BS 3	PRODUCER	shorter time to make decision
BR 11. To assist the implementation of additional digital measures (e.g. predictive quality assurance, automated process data, provision of data of sustainability and product origin for the consumer)	BS 3	PRODUCER	flexibility of business

rBRc 3 Improve management efficacy			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR 3. To support the processor to select the consultants, who can support the implementation of the certification requirements.	BS 3	PROCESSOR	better quality decision
BR 4. To support the processor to select a certification body that can undertake the certification process.	BS 3	PROCESSOR	shorter time to make decision
BR 7. To allow for integrated data assessments for fact driven management of the business.	BS 3	PROCESSOR	flexibility of business
BR 8. To enable a comprehensive on time evaluation of real time data from different sources and stakeholders which supports fast decision processes	BS 3	PROCESSOR	shorter time to make decision
BR 11. To assist the implementation of additional digital measures (e.g. predictive quality assurance, automated process data, provision of data of sustainability and product origin for the consumer)	BS 3	PROCESSOR	flexibility of business
BR 3. To support the distributor to select consultants, who can support the implementation of the certification requirements.	BS 3	DISTRIBUTOR	better quality decision
BR 4. To support the distributor to select a certification body that can undertake the certification process.	BS 3	DISTRIBUTOR	shorter time to make decision
BR 7. To allow for integrated data assessments for fact driven management of the business.	BS 3	DISTRIBUTOR	flexibility of business
BR 8. To enable a comprehensive on time evaluation of real time data from different sources and stakeholders which supports fast decision processes	BS 3	DISTRIBUTOR	shorter time to make decision

rBRc 3 Improve management efficacy			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR 11. To assist the implementation of additional digital measures (e.g. predictive quality assurance, automated process data, provision of data of sustainability and product origin for the consumer)	BS 3	DISTRIBUTOR	flexibility of business
BR 1 Need access to relevant more or less static company data (technical scope, product scope, unit size, …)	BS 3	CB	better quality decision
BR 2 Need access to retailers information regarding the specific requirements for their supplier	BS 3	CB	better quality decision
B 5 Need access to process data of audited organization (CCP records, temperature records, …) during remote audits	BS 3	CB	flexibility of business
B 6 Need access to traceability data of audited organization during remote audits	BS 3	CB	flexibility of business
B 7 All data have to be valid and actualized	BS 3	CB	shorter time to make decision
B 11 Need tools to be able to validate and certify client's data during an audit	BS 3	CB	better quality decision
BR 1 Need access to technical scope, product scope, valid certificates, and seals of approval for (potential) supplier	BS 3	RETAILER	better quality decision
BR 3 Retailers have to filter relevant supplier based on their requirements and the provided supplier data	BS 3	RETAILER	better quality decision

rBRc 3 Improve management efficacy			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
B 6 Need access to process data of supplier (CCP records, temperature records, …) in case of complaints	BS 3	RETAILER	shorter time to make decision
B 8 All data have to be valid and actualized	BS 3	RETAILER	shorter time to make decision
BR 4 Need access to retailers' information regarding the specific requirements for their supplier	BS 4	CB	better quality decision
BR 5 Easy access to conformity certificates also for the other participants in the supply chain	BS 4	CB	better quality decision
BR 7 Need of Rules that recognize new digital tools	BS 4	CB	flexibility of business
BR 2. Digitalize the certification information flow.	BS 4	PRODUCER	flexibility of business
BR 4. Real time data (minimize response time to decide actions).	BS 4	PRODUCER	shorter time to make decision
BR 6. Replacement of the hardcopy archives to a digital database.	BS 4	PRODUCER	flexibility of business
BR 1. To receive producer's data about the harvest period of the certified product (date, quantity) for the traceability system	BS 4	WiNEGROWER	better quality decision

rBRc 3 Improve management efficacy			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR 2. To receive producer's certification validity and report (supplier's documents)	BS 4	WiNEGROWER	better quality decision
BR 4. Real time data (minimize response time to decide actions)	BS 4	WiNEGROWER	shorter time to make decision
BR 1. To receive producer's data about the harvest period of the certified product (date, quantity) for the traceability system	BS 4	WINEMAKER	better quality decision
BR 2. To receive producer's certification validity and report (supplier's documents)	BS 4	WINEMAKER	better quality decision
BR 4. Real time data (minimize response time to decide actions)	BS 4	WINEMAKER	shorter time to make decision
BR 1. To receive producer's data about the harvest period of the certified product (date, quantity) for the traceability system	BS 4	BOTLER	better quality decision
BR 2. To receive producer's certification validity and report (supplier's documents)	BS 4	BOTLER	better quality decision
BR 4. Easy way to fill in daily data that could be used automatically for every kind of certification, avoiding redundancies	BS 4	BOTLER	shorter time to make decision
BR 1 Need access to technical scope, product scope, valid certificates and seals of approval for (potential) supplier	BS 4	DEALER	better quality decision

rBRc 3 Improve management efficacy			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR 2 All data have to be valid and actualized	BS 4	DEALER	shorter time to make decision
BR 3 Retailers have to filter relevant supplier based on their requirements and the provided supplier data	BS 4	DEALER	better quality decision
BR 1. To have direct and official info regarding findings of the inspection of all actors in the supply chain.	BS 4	PUBLIC AUTHORITY	better quality decision
BR 2. Easy access to current status of all food supply actors regarding audit results of certify organisations, relevant data performance data of all actors	BS 4	PUBLIC AUTHORITY	better quality decision
BR 5. To have Rules that ac new knowledge digital tools	BS 4	PUBLIC AUTHORITY	flexibility of business
BR 1. To have direct and official info regarding findings of the inspection of all actors in the supply chain.	BS 5	PUBLIC AUTHORITY	better quality decision
BR 2. Easy access to current status of all food supply actors regarding audit results of certify organisations, relevant data performance data of all actors	BS 5	PUBLIC AUTHORITY	better quality decision
BR 2. Digitalize the certification information flow.	BS 5	PRODUCER	flexibility of business
BR 4. Real time data (minimize response time to decide actions).	BS 5	PRODUCER	shorter time to make decision

rBRc 3 Improve management efficacy			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR 2. Digitalize the certification flow of information	BS 5	PROCESSOR	flexibility of business
BR 3. To receive producer's certification validity and report (supplier's documents)	BS 5	PROCESSOR	better quality decision
BR 6. Real time data (minimize response time to decide actions)	BS 5	PROCESSOR	shorter time to make decision
BR 2. Digitalize the certification flow of information	BS 5	SLAUGHTERHOUSE	flexibility of business
BR 3. To receive producer's certification validity and report (supplier's documents)	BS 5	SLAUGHTERHOUSE	better quality decision
BR 6. Real time data (minimize response time to decide actions)	BS 5	SLAUGHTERHOUSE	shorter time to make decision
BR 2. Receive all the evidence easier for the justification of compliance criteria (e.g. producer's personal data, records of applications etc.)	BS 5	CB	better quality decision

4.4 Reference Business Requirements Category 4 Improve business continuity& sustainability

Table 7. The BRs under the rBRc #4

rBRc 4 Improve business continuity& sustainability			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR 2. Allow the FSQA to access the current certification status of the food supply actors based on the audit results of Certification Body	BS 1	RETAILER	up-to-date data maintenance
BR 4. Help the FSQA to improve the risk assessment procedure for each supplier	BS 1	RETAILER	effective risk assessment
BR 5. Real Time data, based on recorded plot data	BS 2	PRODUCER	up-to-date data maintenance
BR 8. Interconnection of producer and processor recording systems, in terms of critical product data (dates of recent applications of phytosanitary preparations before harvest, harvest dates), tracking per batch and its connection with corresponding Certificates of Conformity.	BS 2	PRODUCER	meeting market's expectation
BR 9. Connecting channels to transfer information	BS 2	PRODUCER	external quality contact
BR 1. Collection of many different critical data, characterized by high frequency of reproduction.	BS 2	PROCESSOR	up-to-date data maintenance
BR 5. Gathering of information from multiple producers (suppliers) regarding the quality characteristics of the raw material to maintain traceability.	BS 2	PROCESSOR	traceability maintenance

rBRc 4 Improve business continuity& sustainability			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR 6. Direct and immediate info for any non-conformity raised for the producer regarding its certified product, after he has delivered the raw material to the producer.	BS 2	PROCESSOR	up-to-date data maintenance
BR 2. Need for access to up-to-date data from different sources and access to information relevant to new and amended legislation, new schemes' version, supervision of the competence of inspectors, accreditation issues etc.	BS 2	CB	adapt to legal changed - standards' revision
BR 7. Connecting channels to transfer information	BS 2	CB	external quality contact
BR 8. Connecting the different databases from where the information is collected	BS 2	CB	external quality contact
BR 1. Access to detailed information about the final shelf product and its correlation with critical factors treated by the previous stakeholders in the food supply chain, thus, to maintain a robust traceability system allowing efficient withdrawal of products.	BS 2	RETAILER	traceability maintenance
BR 3. The availability of fully traced downstream information improves transparency and prevents unfair trade practices that have significant implications for consumers and the environment.	BS 2	RETAILER	meeting market's expectation
BR 4. Strengthen long-term partnerships between the users of the platform that can ensure data reliability and users' private data protection.	BS 2	RETAILER	keeping & expanding synergies/cooperation
BR 5. Enhance customers trust on the retailer's brand name, by presenting (with limited access to the company's profile in the platform) some important data relevant to the quality assurance actions taken by the company (e.g. additional laboratory test etc.)	BS 2	RETAILER	meeting market's expectation
BR 2. To enable the producer for the precise finding of required certificates and seal of approval required by a specific customer.	BS 3	PRODUCER	external quality contact

rBRc 4 Improve business continuity& sustainability			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR 10. To enable just-on-time traceability of products.	BS 3	PRODUCER	traceability maintenance
BR 2. To enable the processor for the precise finding of required certificates and seal of approval required by a specific customer.	BS 3	PROCESSOR	external quality contact
BR 10. To enable just-on-time traceability of products.	BS 3	PROCESSOR	traceability maintenance
BR 2. To enable the distributor for the precise finding of required certificates required by a specific customer.	BS 3	DISTRIBUTOR	external quality contact
BR 10. To enable just-on-time traceability of products.	BS 3	DISTRIBUTOR	traceability maintenance
BR 10 Need a direct communication channel to (potential) clients (pots, E-Mail template, chat-function, …)	BS 3	CB	external quality contact
BR 5 Need a workflow to release specification data, labels etc.	BS 3	RETAILER	external quality contact
BR 7 Need access to traceability data of supplier	BS 3	RETAILER	traceability maintenance
BR 9 Need a direct communication channel to (potential) supplier (pots, E-Mail template, chat-function, etc.)	BS 3	RETAILER	meeting market's expectation

rBRc 4 Improve business continuity& sustainability			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR 3. Direct access to market needs (Up to date info) & new clients.	BS 4	PRODUCER	external quality contact
BR 7. Long lasting cooperation with all actors in the supply chain.	BS 4	PRODUCER	meeting market's expectation
BR 5 Need a workflow to release specification data, labels etc.	BS 4	DEALER	external quality contact
BR 6 Need access to traceability data of supplier	BS 4	DEALER	traceability maintenance
BR 7 potentials for use of specific production data as a marketing tool and to increase buyers knowledge of the production system	BS 4	DEALER	meeting market's expectation
BR 6. To make the risk assessment for the samples (producers & products for analysis).	BS 5	PUBLIC AUTHORITY	effective risk assessment
BR 3. Direct access to market needs (Up to date info) & new clients.	BS 5	PRODUCER	meeting market's expectation
BR 7. Long lasting cooperation with all actors in the supply chain.	BS 5	PRODUCER	meeting market's expectation
BR 1. To receive farmers data about the production of the certified product (date, quantity) for the traceability system	BS 5	PROCESSOR	traceability maintenance

rBRc 4 Improve business continuity& sustainability			
Business Requirements	**BSC**	**Stakeholder**	**BR Objectives**
BR 5. Direct access to market needs (Up to date info) & new clients	BS 5	PROCESSOR	meeting market's expectation
BR 7. Maintaining up-to-date communication channel with traders (retailers) regarding agreed timelines, terms & conditions	BS 5	PROCESSOR	meeting market's expectation
BR 1. To receive farmers data about the production of the certified product (date, quantity) for the traceability system	BS 5	SLAUGHTER HOUSE	traceability maintenance
BR 5. Direct access to market needs (Up to date info) & new clients	BS 5	SLAUGHTER HOUSE	meeting market's expectation
BR 7. Maintaining up-to-date communication chanel with traders (retailers) regarding agreed timelines, terms & conditions	BS 5	SLAUGHTER HOUSE	meeting market's expectation
BR 2. Access to analytical info regarding the end trade products (basic data e.g. producers, date of harvest, quantity, GLOBALG.A.P. number of producer's traceability, for supplier's digital archive	BS 5	RETAILER	traceability maintenance

5 VALIDATION OF BUSINESS REQUIREMENTS

The process of the requirements validation attempts to verify that the relevant requirements created and established are complete. This process is furthermore important to prevent errors from being made during software development by identifying them beforehand

The requirements validation process is the last phase of the requirements' elicitation stage and aims to resolve issues with "ambiguous requirements".

The more precise the requirements are, the better the system will provide for the needs of the stakeholder. Requirements analysis as well as requirements validation helps to ensure the precision of the requirements. These processes thus ensure that the requirements are complete and correct, as well as consistent.

Through the implemented validation methods, each project team that identified the critical needs of the involved parties (stakeholders) determined at their Business Scenario, has aimed to validate, or to revise, to adjust or even reconsider and reformulate the initially identified, during the initial consultation stage of the project, BRs based on the 'real world's' need, which are the expectations of the stakeholder at the certification food supply chain.

In order to achieve this, customized to the special characteristics of the food chain market and also to the existing global business and social conditions, validation tools and methodology have been set up.

Moreover, it has been recognized as of a high importance issue to maintain a harmonized approach by all the five different project teams, when implementing the individual validation tools, so that valuable conclusions could be extracted and shared throughout this project's task.

Before proceeding the rollout of the validation methodology, the WP1 project team in cooperation with the project leader, evaluated the current global market's conditions in terms of the ease and the effectiveness of implementing it. It was recognized that the unprecedented pandemic of the corovavirus that has stroked all the countries around the globe, could become a hamper factor to the scheduled efforts for contacting food enterprises. Therefore, a number of alternatives (optional) was decided that should be taken into consideration proactively, when drawing the validation strategy.

5.1 Methodology for BRs validation

5.1.1 The Focus Group

The Focus Groups are made up of a mix of stakeholders who come together to provide input on business needs. They are particularly useful as a validation tool in order to get a lot of information in a short time, whereas they are also ideal for establishing a consensus view and highlighting areas of conflict and disagreement during requirement activity.

In the context of the needs for T1.1. of WP1, the use of Focus Group has been predefined as the basic validation tool to be used.

Additionally, the focus groups within this project, are also targeting to serve as a continuous reference point throughout the lifetime of it, acting also as the candidate pool of local innovation partners with whom pilots will take place (in WP6).

In this direction, they were expected to provide useful input to the build-up and architecture of TheFSM solution.

5.1.2 The Questionnaire

The questionnaires are mainly used during the early stages of requirements processing and can be structured to offer a series of finite choices for each question or they can offer open-ended input, depending on the needs of the project.

Open-ended questions are useful for a broader discovery of business needs. However, the open-ended questions are more prohibitive to analyse than closed questions when the number of participants becomes significantly large. Therefore, based on the needs of our project, a Questionnaire of closed questions has been recognized as most appropriate.

This Questionnaire has been developed not only to assist the focus group meetings by gathering info in a similar way, but also to be used in cases where a focus group would not be feasible to be conducted.

The structure and the sequence of the questions set at this Questionnaire, aimed to clearly validate or not the objectives of all the fields of the BSC analysis template (presented in paragraph 3.5. allowing also for recording any other relevant to the scope of its use, comments or aspects. Special focus has given when developing this tool, so that the questions should avoid gathering large amounts of redundant and irrelevant information. The template of the Questionnaire is displayed at ANNEX XCR.

5.1.3 The Interviews

In the validation phase is always important for the project partners to get to know the stakeholders and at the same time, it is important to let them feel part of the process. For these reasons, the interviews are the most popular and common technique used for the validation. They offer the opportunity to discuss the thoughts of stakeholders and get their perspectives on their business needs and the feasibility of potential solutions providing an efficient way to quickly collect large amounts of data.

Because the interviews are essentially social activities based on human interaction, they are intrinsically informal and their effectiveness depends a lot on the quality of interactions among the interviewees. The interviews results, such as the usefulness of the information collected, may change significantly depending on the interviewer's skills.

Based on the above and for the needs of T1.1. of WP1 of the project, the remote interview method as a validation tool, has been suggested to assist, both the initial validation tools described (Focus Group and

Questionnaire), were this would have been feasible due to the current strict hygienic condition governing the global entrepreneurship, and the food industry as well.

5.1.4 Preparative validation steps

For the needs of carrying out the validation process, representative third parties that are already working with partners in each country, where pilots are going to take place, had to be invited to participate mainly at focus group meetings where they could contribute upon the business scenarios generated in the context of WP1, with the aim to validate the recognized Business Requirements addressed by the corresponding project teams in terms of their business operation.

In this context, a set of actions and steps to be followed uniformly by the representatives of each project team, were defined. Specifically, these actions included the following areas of concern.

Reaching out the most appropriate stakeholder's representatives to participate in the focus group was the first priority issue to meet the project's expectations. Therefore, each project team has taken over to review the types of the stakeholders that has identified as main actors of their BSCs, initiating this way the validation process.

A thorough screening, mainly but not exclusively, at the certification partners' clientele or cooperation partners or professional contacts at the food supply chain has been set as a consequent step.

The indicative criteria determined for selecting the representatives of the food supply chain to validate the Business Requirements, were the followings.

- Stakeholders who have experience in GFSI certification standard implementation,
- Stakeholders who cooperate with others that are certified under GFSI standards,
- Stakeholders who assemble similar characteristics comparing to the main actors of the corresponding Business Scenario
- Stakeholders who could potentially contribute as project's pilots, in terms of adopting the FSM Platform in their daily operation.

An invitation letter, presenting both the main objectives and the benefits that the TheFSM could provide to the relevant food chain's stakeholders, has been considered as necessary means, not only for looking into the participation availability, but also to making from the very begging, most of the food actors that the project's consortium deals with, aware about TheFSM solution perspectives. This invitation letter had been scheduled to be sent to as many as possible of the stakeholders of the food supply chain, who were defined as relevant to facilitate this action's needs.

All the relevant tools and material prepared for this validation stage, constitute the base for the evolution towards updating and reviewing the results of D1.1. during the life cycle of the WP1, and also has partially been used for the current needs of this project phase, where focus groups did not take place. All validation tools (focus groups, questionnaires, interviews) will serve as a continuous reference point throughout the lifetime of the project and will be repeated according to the future needs of the project.

5.1.4.1 *Selection criteria of the participants*

Business Scenario1
Key Stakeholder: The retailer
Main Goal: To deliver solution to the Food Safety and Quality Assurance (FSQA) experts working in a Retailer need to assess the risk of the suppliers, producers and manufacturers
Selection criteria ● Experts in Food Safety Quality Assurance ● Experts working for a retailer ● Possible users of FOODAKAI system ● Experts collecting information and data from multiple sources **Profile/Expertise** ● Quality Assurance Manager at a retailer ● Quality Assurance Manager at a retailer with focus on dry food products

Business Scenario 2
Key Stakeholder: The Food Processor
Main Goal: To deliver a solution to a Processor maintaining a certified FSMS (FSSC22000) to efficiently adapt to upgraded certification needs (IFS) imposed by its client (retailer)
Selection Criteria: ● Involved partners who have experience in GFSI standard implementation, ● Involved partners who cooperate with companies that are certified under GFSI standards, ● Involved partners who have similar characteristics comparing the main actors of the Business Scenario ● Involved partners who can potentially become pilots in terms of adjusting the FSM Platform in their daily operation. **Profile/Expertise** ● Producers: The selected producers are certified under globalgap ver 5.2 and they cultivate annual and perennial crops. They collaborate with consultants and agronomists from whom they collect the data needed for the production process and the guidelines for the implementation of the scheme (GLOBALG.A.P.). They collaborate also with companies that set specifications for the product they need to buy from the producer. Another important factor is that they are positive to adjust in their daily

operation the FSM Platform through which they will be able to collect and share information and data.

- Processors /retailers: The selected companies are certified under GFSI standards and ISO 22000. The requirements and the compliance criteria of all the schemes above, are based on the same principles and obligations, and the data exchange flow is almost the same. Another important factor is that their suppliers are certified as well, in terms of the products or the services they provide. Although they have different certification scopes, the processes and data they exchange and the channels they use are the same, with the Main Actors presented on the Business Scenario.

Business Scenario 3

Key Stakeholder: The Certification Body

Main Goal: To deliver solution to a Certification Body for planning and realizing the certification process with reference to Private Food Safety Certification standards in an efficient way

VALIDATION TÜV AUSTRIA CERT

Criteria

- Experts and decision makers working in SME's in the food supply chain
- Experts are familiar and experienced with certification processes
- SME's certified and/or owner of seals of approval
- SME's interested in digitization
- SME's with requirements to handle date from/for partner

Profile/Expertise

- **Austrian producer:**
  - Owner of Fenz egg far, organic certified
- **Austrian processor:**
  - HSQA expert Wewalka GmbH, largest family owned, global producer of fresh dough, two production units, various certificates and seals of approval
  - HSQA expert SENNA Nahrungsmittel GmbH & Co KG, production of margarine, Sauces, ketchup, mayonnaises and salad dressings, various certificates and seals of approval
  - HSQA expert Weinbergmaier GmbH., two production units, various certificates and seals of approval
- **Austrian distributor:**
  - HSQA expert Daily Service GmbH., leading frozen food logistics provider, IFS logistic and organic food certification
- **Austrian food broker/trader:**
  - HSQA expert MARESI Austria GmbH, strong national private brands and international trademarks, various certificates and seals of approval

VALIDATION TÜV AUSTRIA ROMANIA

Criteria

- Experts and decision makers working in SME's in the food supply chain
- Experts are familiar and experienced with certification processes
- SME's certified and/or owner of seals of approval
- SME's interested in digitization
- SME's with requirements to handle date from/for partner

Profile/Expertise

Romanian producer

- Cereal Bio - grain producer and processor, certified by TUV Austria Romania
- Holly-Wood – grain producer, certified by TUV Austria Romania

Romanian processor

- Carpatica Honey - Carpatica Honey SRL was founded in 2007, with fully German capital, as a subsidiary of a company operating in the field of honey since 1792.
- Golden Banana – is processor and distributor of organic fruits. It is certified by TUV Austria Romania according to Organic Certification Standard.
- Cereal Bio – grain producer processor, certified by TUV Austria Romania.
- Zorian Export – cold pressed oil processor. The company is certified by TUV Austria Romania.

Romanian distributor

- Golden Banana– is processor and distributor of organic fruits. It is certified by TUV Austria
- Biochem organics - BIOCHEM ORGANICS SRL is focused towards bringing organic certified grain commodities according to REG. (EC) No. 834/2007 and REG. (EC) No. 889/2008, from Romania to its partners around the world

Business Scenario 4
Key Stakeholder: The Certification Body for Organic PDO Wine Production
Main Goal: To deliver solution to Certification Bodies which will allow the interface of certification data between them for efficiently issuing certificates

Criteria

- Representatives of all actors involved in the "certified" food supply chain;
- Experts who are familiar and experienced with certification processes
- Actors involved in PDO/ORGANIC wine data exchange (from/for)
- SME's interested in digitization

Profile/Expertise

- **Italian winemaker/bottler:**
  - General Manager of an important group of wine cellars, one placed in Franciacorta PDO area, and two others in Marche and Tuscany Region; cellars and vineyards also certified Organic.
- **Italian President of PDO WINE Consortium:**
  - President of Consortium Franciacorta PDO wine, one of the most important Consortia in Italy, with the aim to guarantee and monitor

compliance with the rules for producing Franciacorta wine. It is the Italian Consortium with the major number of vineyards certified Organic;

- **Italian wine distributor:**
  - Interested in the distribution of wine to HO.RE.CA landscape and abroad
- **Italian Quality Manager of a supermarket (mass distribution):**
  - This supermarket is also Organic Certified concerning food processing.
- **Ministerial Authority:**
  - 3 Participants working in the Organic Regulation Office specifically dealing with data, reports and SIB (Italian Organic Ministerial Database).

Business Scenario 5
Key Stakeholder: Food Safety Authority
Main Goal: To deliver solution to food safety authority to map the full broiler meat supply chain
Criteria & **Profile** · Participants should have expertise on the poultry supply chain. · Participants should be divided over the supply chain as much as possible t requirements of all the actors in the chain. · Participants from the certification sector should be included. · Participants from the food authority should be included as well.

5.2 Validation results

Since every stakeholder in the food supply chain, even the ones sharing the same or similar daily disciplines and roles are assembling different characteristics, it was critical for meeting the project's objectives, to evaluate all their different perspectives in terms of data exchange, data types and data sources that they handle, in order to verify and validate the BRs and thus to draw the roadmap towards developing TheFSM solution.

The results based on the validation methods used for the five individual Business Scenarios, are presented below.

5.2.1 Business Scenario 1 validation results

The participants of Focus Group 1 were Food Safety Quality Assurance experts from the AB Vasilopoulos company. The meetings took place in April 2020 and were coordinated by Agroknow Head of Product, Dr. Giannis Stoitsis. The analysis of their feedback is the following:
Laboratory data have a major role in terms of the volume of data exchange, processing, and requests from the stakeholders. The most wanted feature of the data is to be comprehensive and have periodical updates. Concerning the kind of data, the stakeholders' request from the Food Safety Quality Assurance experts, is the Quality and Safety specifications. Additionally, following the Focus Group feedback, it

seems that there's a need for optimizing the process of sharing data, both in terms of speed and ease of accessibility.
The next actions include the addition of more members in this Focus Group, with expertise on laboratory data and suppliers.

5.2.2 Business Scenario 2 validation results

Due to the unexpected situation the market has faced regarding the COVID 19, there have been many difficulties in coordinating and communicating with all the involved partners, because of the modification of partial or total work procedures. In order to face this situation, TUV Austria Hellas team, after selecting the involved partners, based on the described characteristics as presented on the Business Scenario and because they could be potential pilot users of the FSM platform, developed a questionnaire as presented above, in combination with long -distance interviews via telephone in order to validate the objectives and the business requirements that are concluded in every paragraph of the business Scenario. However, TUV Austria Hellas team has already planned that the focus groups validation tool is going to be used during the next phase, for the development of D1.1.and before performing pilots, as soon as the pandemic restrictions and the resulting business obligations are reduced.
TheFSM questionnaire with the informative material was sent, via email, to 10 involved partners who had the option to answer it, either by sending it back with their answers to the TUV Austria Hellas team, or answer the questions by phone through an interview by a member of the TAH team. The Main Actors / End Users who provided the answers to the questionnaire are in total 8: 4 are producers, 3 processors & 1 retailer.
Results and Conclusions are the following:
Q1. Rank the mentioned co-operations in terms of the magnitude and volume of data exchange that they mostly require with reference to your operation in the food supply chain:
Producers: From the 100% of the answered questionnaires, it seems that the largest volume of the disseminated information is coming from the products suppliers and services, mainly agronomic stores that supply the producer with PPP & fertilizers, and laboratories and the consulting companies that offer the producers the guidelines for the implementation of the quality systems. However, very important cooperation for the producer is:
1. The buyers, who are processors and retailers in the food supply chain and provide the producer with the product specifications and what should accompany the product,
2. The certification bodies, that provide the producers with the Certificate and
3. The public authorities, concerning the regulations and the obligations the producers should follow.
Processors: The mentioned co-operations, in terms of the magnitude and volume of data exchange, that they mostly require, are ranked as following:

- Client in the food supply chain (2 Audit & Certification Bodies)
- Public Authorities (4 Supplier i.e. product or service suppliers)

Retailers: The mentioned co-operations, in terms of the magnitude and volume of data exchange, that they mostly require are ranked as following:
1. Client in the food supply chain,
2. The Supplier (i.e. product or service suppliers),
3. The Audit & Certification Bodies
4.Public authorities

- The Main Actor's feedback, validates the magnitude and volume of data exchange with reference to their daily operation in the food supply chain, as analyzed in the Business Scenario.

Q2. Rank the mentioned different types of data (in terms of their subject / content) that you mostly have to handle / manage during your daily operation:

Producers: The different type of data that the producers mostly have to handle/manage during their daily operation are:

1. Production Data / Processing Data / Trading Data for archiving, relevant to food safety & quality (e.g. agricultural practices, processing practices, trading practices etc.), 2. Accounting Data received with reference to suppliers or clients (e.g. invoices etc.) regarding your facility, 3. Supportive data to Production / Processing / Trading, 4. Legal Data (e.g. regulations, cooperation agreements etc.),

Processors: The different type of data that the retailers mostly have to handle/manage during the daily operation are:

1 Accounting Data received with reference to suppliers or clients (e.g. invoices etc.) regarding your facility, 2 Production Data / Processing Data / Trading Data for archiving, relevant to food safety & quality (e.g. agricultural practices, processing practices, trading practices etc.) , 3 Data of external communication with authorities, suppliers, service providers etc. supporting the daily operation (e.g. requests and info, cooperation and work scheduling etc.) , 4 Supportive data to Production / Processing / Trading, 5 Legal Data (e.g. regulations, cooperation agreements etc.)

Retailers: The different type of data that the retailers mostly have to handle/manage during the daily operation are:

1. Production Data / Processing Data / Trading Data for archiving, relevant to food safety & quality (e.g. agricultural practices, processing practices, trading practices etc.) 2. Supportive data to Production / Processing / Trading 3. Data of external communication with authorities, suppliers, service providers etc. supporting the daily operation (e.g. requests and info, cooperation and work scheduling etc.) 4. Supportive data to Production / Processing / Trading 5. Legal Data (e.g. regulations, cooperation agreements etc.) 6. Accounting Data received with reference to suppliers or clients (e.g. invoices etc.) regarding the reatiler's facility

- From each Main Actor the type of data that mostly have to handle in the daily operation are the production / processing / trading data, relevant to food safety & quality.

Q3 Rank the most wanted and important characteristic that the data you handle daily should have, in order to better facilitate your operation's needs:

Producers: According to 100% of the answered questionnaire the ranking of the most wanted and important characteristics are:

1. Documented Data, 2. Up-to-date Data (i.e. regular Data), 3. Analytical Data, 4. Comprehensive periodical Data.

Retailers/ Processors : According to the answered questionnaire the ranking of the most wanted and important characteristics are:

1. Documented Data, 2. Analytical Data, 3. Up-to-date Data (i.e. regular Data), 4. Comprehensive periodical Data

- The Main Actors perspective of the important characteristics that the daily handled data should have, validates the aims of the Business Scenario .

Q4. Rank the data of your interest that you often request from your stakeholders in the supply chain, in the context of your cooperation:

Producers: In 100% of the answered questionnaire, the requested data from the stakeholders in the supply chain are 1. Special characteristics (quality, safety) of the product or service they provide, 2. Product or service Certificates, 3. Audit findings from relevant bodies and authorities (i.e. generated from an internal or external audit), 4. Aspects of the Management System (quality, safety) that they implement for the product or service that they provide.

Processors: According to the answered questionnaire, the ranking of the requested data from the stakeholders in the supply chain is:
1. Product or Service Certificates, 2. Special characteristics (quality, safety) of the product or service they provide, 3. Aspects of the Management System (quality, safety) that they implement for the product or service that they provide, 4. Audit findings from relevant bodies and authorities (i.e. generated from an internal or external audit)
Retailers: According to the answered questionnaire, the ranking of the requested data from the stakeholders in the supply chain is:
1. Special characteristics (quality, safety) of the product or service they provide, 2. Aspects of the Management System (quality, safety) that they implement for the product or service that they provide 3. Product or service Certificates 4. Other: Food information (labelling, advertising etc.)

- The most significant factors for long terms corporations between the stakeholders in the food supply chain are the certificates regarding the food safety management systems and the characteristics of the product or the service, concerning the specifications.

Q5. Rank the data that the stakeholders of yours, mostly require to receive by your side, in the context of your cooperation:
Producers: The data that the stakeholders mostly required are ranking as following:
1. Product or service Certificates, 2. Special characteristics (quality, safety) of the product or service they receive from the producer, 3. Internal or external Audit findings (i.e. generated from an internal or external audit), 4 Aspects of the Management System (quality, safety) that they implement for the product or service that they provide
Retailers/ Processors: The data that the stakeholders mostly required are ranking as following: 1. Special characteristics (quality, safety) of the product or service they provide 2. Aspects of the Management System (quality, safety) that they implement for the product or service that they provide 3. Product or service Certificates 4. Other: Food information (labelling, advertising etc.)

- Certificates and Special characteristics of the product that main actors provide, concerning quality and safety, are the basic requirements that the stakeholders need in order to evaluate the suppliers and to ensure the specifications of the product they received. This conclusion validates the kind of data needed to be exchanged between the stakeholders as analyzed in the Business scenario

Q6. Rank the most often used channels for sharing audit and certification info with your suppliers and/ or clients in the supply chain.
Producers: The most often used channels for sharing audit and certification info with the suppliers and/or clients are ranking as following:
1. Direct e-mail 2. Through authorized partners (e.g. certification bodies for data relevant to certified products), however they don't use any customize data base regarding the data exchange.
Processors: The most often used channels for sharing audit and certification info with the suppliers and/or clients are ranking as following: 1. Direct e-mail 2. Controlled databases (private or public ones) where

data can be uploaded or downloaded 3. Through authorized partners (e.g. certification bodies for data relevant to certified products)

Retailers: The most often used channels for sharing audit and certification info with the suppliers and/or clients are ranking as following: 1. Direct e-mail 2. Controlled databases (private or public ones) where data can be uploaded or downloaded 3. Through authorized partners (e.g. certification bodies for data relevant to certified products)

- All the stakeholders they use mostly direct email as a channel for sharing audit and certification information with their suppliers. This conclusion validates the current data exchange flow as mentioned in the business scenario.

Q7. Rank the following data sources that you most regularly use in order to receive (reach) critical / needed info (data) for your operation.

Producers: According to the 100% of the answers the data sources mostly used by the producers are
1. The option "other", that refers to the agronomists / Consultants and
2. Suppliers' sources communicated through data transferring apps,
3. They are open in obtaining IoT solutions although the high cost seems to be an obstacle.

Processors: According to the answers, the majority of the processors are using single web databases where treated data is available, after the administrator has updated the database, however they adjust also to their work to IoT systems concerning sensors or "cloud" sharing points.

Retailers: According to the answers the data sources mostly used by the retailers are:
1. IoT systems that generate real time (raw) data, through sensors or other IoT tools (apps etc.) or "cloud" sharing points 2. Single web databases where treated data are available, after the administrator has updated the database and 3 Suppliers' sources communicated through data transferring apps

- Singe web data bases and IoT systems (sensors etc.) are the most regularly data sources for processors and retailers in order to receive critical operation information. Although the producers expect to receive these data from the consultant / agronomist who are cooperating with.

Q8. Rank the most important sub actors for your daily operation regarding the safety and quality of your product / service:

Producers: According to the 75% of the answers the most important sub actor for the daily operation regarding the safety and quality is the consultants, because they set up all the directions for the proper implementation of the scheme (GLOBALG.A.P.) and secondly the certification body, which evaluate the degree of harmonization. For the 25% the most important sub actor is the agronomist who gives the prescriptions and the guidelines for the cultivation and secondly the laboratories who provide the MRL Test reports, which are very important criteria of what kind of action plans the producer should follow.

Processors: The sub-actors that identify in the Business Scenario, seems to be very important in their daily operation regarding the quality and the safety of their product/service. Consultants, Laboratories and Certification Body are the most significant sub – actors.

Retailers: According to the answers the most important sub actor for the daily operation regarding the safety and quality is the Consultant followed by the Certification Body, the Laboratories and the public Authorities

- The role of the consultants seems to be very significant among the main actors in the food supply chain.

Q9. Rank the most significant contribution (important for your work) that the FSM platform could have to your daily operation

Producers: According to the 100% of the questionnaires the most significant contributions that the FSM platform could have are:

1. Improving / organizing the management of data (by substituting the current bureaucratic situation) 2. Ensuring quick and direct contact between the stakeholders in the food supply chain. However, it seems to be important to obtain real time and up to date data and control the daily processes in an efficient way.
Processors: It is noticeable that processors prioritize what they believe to be the most significant contribution that the FSM platform could have in their daily operation. Specifically:
TERRACRETA: They firstly want to ensure quick and direct contact between the stakeholders in the food supply chain, and they expect that by adjusting the FSM Platform they could find the opportunity for new profitable corporations with other stakeholders in the food supply chain. Also, they expect to reduce the time needed for sharing data and information in the food supply chain, by having direct access to the data source.
KTINOTROFIKI MAGNISIAS/ Candia Nuts SA: The most significant contribution that the FSM Platform could have to their daily operation is:
1. Improving / organizing the management of data (by substituting the current bureaucratic situation), 2. Obtaining real time and up-to-date data 3. Limiting the needed time for sharing data in the food supply chain, having direct access to info.
Retailers: According to the questionnaires, the most significant contribution that the FSM platform could have is:
1. Improving / organizing the management of data (by substituting the current bureaucratic situation) 2. Limiting the needed time for sharing data in the food supply chain, having direct access to info 3. Controlling the daily processes in an efficient way 4. Ensuring quick and direct contact between the stakeholders in the food supply chain 5. allowing the set up of new profitable cooperation with other stakeholders in the food supply chain 6. Obtaining real time and up-to-date data

- The Main Actors expect that by adjusting the FSM Platform to their daily operation, they may improve / organize the management of data, however their consideration is the limitation and the safety in order to protect their data and procedures. This conclusion validates one of the aims mentioned on the Business Scenario and the challenge concerning the safety of the data exchange through the FSM Platform

Q10. Rank the following factors which will affect and determine mostly, your decision to use the "TheFSM" tool
Producers: Human resources needed for administration, cost and type of the data that will be shared with it are the factors which will affect and determine mostly their decision of using and adding in the daily operation the "FSM Platform"
Processors: According to the 100% of the answered questionnaires, the factors which will affect and determine mostly, the decision to use the "TheFSM" tool are:
1. Type of the data that will be shared with it & 2. Level of its acceptance and usage by other stakeholders, interested and involved parties in the supply chain
Retailers : Cost, level of its acceptance and usage by other stakeholders, interested and involved parties in the supply chain, Type of the data that will be shared with it, Human resources needed for administration are the factors which will affect and determine mostly, the retailers decision in using the "TheFSM" tool**.**

- Cost is one of the most significant factors on using the FSM Platform, that validates one of the Busciness Scenario challenges

Q11. Do you agree that the FSM platform can be easily adjusted to your working procedures of your company?

Producers: The sample of the producers agree that the FSM platform can be easily adjusted in their working procedures which is a very positive feedback for the next steps.
Processors: The 100% of the processors strongly agree that the FSM Platform can be easily adjusted in their working procedures
Retailers: The retailers agree that the FSM platform can be easily adjusted in their working procedures which is a very positive feedback for the next steps.

Through the validation process, was confirmed the correctness of the Business Scenario analysis, regarding the interactions between the main & the sub actors, in terms of the data exchange, the current data types and data sources, using mostly in their daily operations. During the interviews was highlighted the importance of easy information transfer between the stakeholders through a platform such as the FSM.

5.2.3 Business Scenario 3 validation results

TÜV AUSTRIA CERT
The main data exchange with reference to the operation of the focus group is realized with customer and supplier. Beside accounting data, production- and process data are mainly relevant for food safety and quality.
There is no general preference regarding characteristics for data in order to better facilitate operation's requirement. These depends on the process and task.
Focus group requires and has to deliver a multitude of data from and to their stakeholder, mainly certificates and specifications on regular base. Audit data and certificates are mainly shared via B2B platforms and E-Mail. GS1 database is a common method to share specification data between supplier and retailer.
Critical data are shared mainly via E-Mail. B2B platforms are common between retailer and supplier, not for data share between processor or producer and processor.
Laboratories are relevant partner for daily food safety operation. Laboratory results are sent by E-Mail or in hard copy. Time critical data are shared casual, there is no online system in place.
Product- and service relevant data are shared on regular base. How many actors share data depends on product scope and customer structure.
Focus group expects from FSM mostly real-time-data-sharing and direct contact to the stakeholder. Time efficiency is another important argument for registration ata comprehensive data platform. Decision of joining FSM is mainly triggered by the volume of administrative resources and the necessary investment of infrastructure.
The producer and two of three processor agree that the FSM platform can be easily adjusted to the existing operation structure of their organisations. The food broker disagrees due to the complex existing digital workflows.

TÜV AUSTRIA ROMANIA
Producers and processors are interested in developing collaboration with big retailers and at the same time to reduce the constraints regarding multiple certifications. They have to deliver a multitude of data to their stakeholder, mainly certificates and specifications on regular base so as such platform can be helpfully in order to fulfil retailer requirements regarding certification. Focus group expects from FSM mostly real-time-data-sharing and direct contact to the stakeholder. Time efficiency is another important

argument for registration at a comprehensive data platform. Decision of join FSM is mainly triggered by the volume of administrative resources and the necessary investment of infrastructure.
There is no general preference regarding characteristics for data in order to better facilitate operation's requirement. This depends on the process and task.
The distributors are also interested, but due to the complex existing digital workflows they would like to know their effort before to apply.

5.2.4 Business Scenario 4 validation results

During the focus group made on 21st May 2020, through GoToMeeting platform, we (Valoritalia) collected a lot of interesting opinions from main representatives of our actors. We decided to invite all of them together in an hour of meeting, so it was easier to exchange opinions. As described in the profile/criteria section, we collected at least one representative for each main category, and all of them agreed to continue this cooperation during the project, in order to contribute and maybe test the new platform, once it will be ready.

The first common opinion of the focus group is that a solution to reduce bureaucracy is highly welcome by all participants.

In Italy wine companies have to declare the same data through different DB or declarations, and to different actors (e.g. production data), so a unique platform should be the solution for the future. Unfortunately, this is not so easy as it seems, because there are many challenges to face.

Although there is already a quite common use of digitalized DB which collect certification and traceability data, there are two big problems that slow down a general digitalization and simplification: the first concerning the Rules, which often don't recognize the officiality of certain digital data and require a paper document as well; the second, is that this fragmentation of the data now available, through a lot of different digital DBs, cannot easily stop frauds, or give immediate and aligned reports. So, the challenge of the new platform is to collect, and give safer and more certain data in real time.

Another important point raised, was that usually consumers don't know the importance of certifications, so it will be helpful, once we will have this platform available, to promote the importance of certification and what stands behind a certified product.

Critical data are shared mainly via E-Mail. Among Authorities and Control bodies, there are already some digitized platforms but none of them are connected to each other.

In the end, mainly all actors agree that the FSM could be a good solution for the future, being now too bureaucratic… but producer and distributor recommends simplifying things and don't add anything new.

Concerning scenario 4, the below business requirements were pointed as the most important during the focus group:

- Easy way to fill in daily data that could be used automatically for every kind of certification, avoiding redundancies
- All data have to be valid and actualized
- To receive producer's data, for example about the harvest period of the certified product (date, quantity), for the traceability system

- Retailers have to filter relevant supplier based on their requirements and the provided supplier data, also for import/export requirements
- Retailers Need access to product specification
- Need a workflow to release specification data, labels etc.
- Need of an all in one database (legal requirements, accreditation certs for laboratories, Specific parameters, historical data of the Company…)
- Replacement of the hardcopy archives to a digital database.

5.2.5 Business Scenario 5 validation results

The aim of the focused group of scenario 5 required the involvement of experts from the different steps in the poultry supply chain, ranging from farmers, slaughterhouses, retailers, and certification organisations.
In order to collect the preliminary users requirements, 32 actors in the broiler meat supply chain where contacted (i.e. 26 from the Industry, 4 certification organisations and 2 from the food authority) were contacted. From the 32 contacts, 8 were phoned for an interview using a pre-defined questionnaire.
A stakeholder contact list was established in a Microsoft Word document. It contained information on contact details of the stakeholders (name, address, organization) as well as columns to specify their expertise on poultry supply chain. Most of the actors were found using Google searches. In addition, the list was filled by adding actors from the project team's own network and the following data sources:

- ✓ Global B2B Online Directory 2018: https://us.kompass.com/.
- ✓ Hoovers DB. https://www.dnb.com/
- ✓ The Poultry Site. https://thepoultrysite.com/
- ✓ Retail Insiders. https://www.retailinsiders.nl/branches/foodspeciaalzaken/poeliers/
- ✓ Websites of the following certification organisations:
  - BLK product label
  - Organic l
  - ISO certification
  - EKO label
  - HALAL certification
  - BRC certification
  - IFS certification
  - FSSC 22000
  - The QS Qualität und Sicherheit
  - IKB certification

Several experts in the interviews indicated that the main data exchange within the broiler meat supply chain is realized between farmers and slaughterhouses and between slaughterhouses and retailers. The flow of information between the actors in the broiler meat supply chain is by far more important than the flow of data shared between actors in the supply chain and the food authority or certification organisations.
Audit data and certificates are mainly shared via e-mails. And sometimes few actors in the supply chain can use the same ERP to share common information such as between farmers and slaughterhouses. The classical and most used way of communication between the actors in the supply chain is the email. The

results of the food authority inspection and the laboratories are sent by email or in hard copy. Inspections in slaughterhouses are very important for the food authority because of law. Each slaughter has to be inspected by an inspector. This is regulated by law. This activity gives much data for food authority. In the law, most attention is on the last party of the supply chain (slaughterhouse).

The results of the interviews showed that the main contribution of TheFSM will be:

- ✓ Real-time-data-sharing and direct contact to the actors in the supply chain.
- ✓ Time efficiency.
- ✓ Digitalize the flow of information
- ✓ The food authority would very much like to have data from companies from their data management system.
- ✓ Link use of animal medicines with animal health
- ✓ Signals of drivers that may have an impact are also interesting
- ✓ Decision of joining TheFSM will mainly depends on:
- ✓ The costs
- ✓ The add value of the system
- ✓ Accessibility and user-friendliness
- ✓ Other issues were mentioned by the stakeholders:
- ✓ Most of the participants asked for a clear agreement or contract to be involved in the project.
- ✓ The food authority requested a signature of a legal agreement before sharing any information.
- ✓ A general answer got from stakeholders; “it is inappropriate to contact with these questions in these times (COVID19 crisis)”.

6 NEXT STEPS AND TIMELINE FOR NEXT VERSIONS OF D1.1

Despite the fact that the validation process implemented with the contribution of representative to each business case food companies (such as producers, food processors and retailers) indicated that the initial internal consultation phase of the WP1 introduced, was on the right direction for determining the most crucial BRs, further relevant investigation has been recognized as necessary to be taken during the next phase of the project.

This has been mainly due to the fact that a bigger sample of representative to the project's objectives stakeholders, as well as more unbiased market conditions from external factors (like the ones of the coronavirus pandemic), would further boost and allow for extracting even more secured results, on which the architecture of TheFSM could rely on.

The following steps regarding D1.1. includes:

1. Specification of technical & data requirements according to business requirements and scenarios
2. Further specification of legal requirements according to business requirements
3. Creation of an integrated database consisting of all specific requirements connected to business scenarios
4. Feedback/input from technical partners on platform testing
5. Implementation of focus groups/interviews for further development & validation of the BRs
6. Continuous update of the requirements according technical requirements of the platform and legal issues
7. Preparation steps on the piloting and market research

Deliverable Number	Deliverable Title	WP	Lead beneficiary	Type	Due Date (in months)
D1.1.1	Report on Requirements for TheFSM	1	8 - TÜV AU HELLAS	Report	M4
D1.1.2	Report on Requirements for TheFSM	1	8 - TÜV AU HELLAS	Report	M15
D1.1.3	Report on Requirements for TheFSM	1	8 - TÜV AU HELLAS	Report	M27
D1.1.4	Report on Requirements for TheFSM	1	8 - TÜV AU HELLAS	Report	M33

7 CONCLUSIONS

Within WP1 Requirements, we carried out a detailed analysis of all business transactions and data exchange workflows to channel through "TheFSM".

Five detailed and thoroughly documented Business Scenarios were developed, under which six (6) different types of critical stakeholders were recognized and further evaluated in terms of identifying their special needs, which would potentially constitute the provided high value functionalities of TheFSM in terms of sharing food certification data in the food supply chain.

One hundred and seventy-five (175) Business Requirements were recorded with reference to the recognized critical stakeholders.

The identified BRs were segregated, based on an objective oriented approach, into four (4) reference categories of business needs to provide for a more flexible assessment by the technical partners of the project. The exceptional business need under which most of the BRs were allocated, was the one of the "Improve management efficacy", assembling a percentage of 38%.

The validation processes implemented with the contribution of representative stakeholders, showed that most of the identified BRs during the internal survey phase, respond to some critical needs of the market.

Moreover, based on the analysis of the identified business need and challenges within these five Business Scenarios, a number of one hundred twenty nine (129) Legal and compliance Requirements that should be incorporated in the platform in order to support automated and robust controls on compliance of legal rights were also recorded and evaluated.

Additionally, based on the analysis and documentation of the most important data flows described in each business scenario a number of seventeen (17) main corresponding Data Requirements focusing on both on primary data sources as well as at processed or secondary data that is being generated from the original sources were determined.

A primary convergence was also made with reference to the Technical Requirements, based on the existing software systems that are being used from the stakeholders of the Business Scenarios, by recording sixteen (16) relevant issues of concern.

The results obtained through the so far analysis in the context of WP1 constitutes an initial roadmap for the development and deployment of TheFSM service ecosystem.

The validation process however will be further continued towards updating the results, based on the current trends and business needs in the food certification market.

ANNEX I - TIMELINE OF THE WORKING METHODOLOGY FOLLOWED IN D1.1

									Action plan WP1											
A/A	Actions	Responsibility	Implementation						03/02/2020-3/04/2020	10/02/2020-14/02/2020	6/4/2020-10/04/2020	13/4/2020-17/04/2020	20/4/2020-24/04/2020	26/4/2020-30/04/2020	27/4/2020-01/05/2020	04/05/20-8/5/20	11/05/20-15/5/20	18/05/20-22/5/20	25/05/20-29/5/20	01/06/20-5/06/2020
1	Confirming the implementation plan / timeline with Agroknow	TUV AUSTRIA HELLAS	AGROKNOW																	
2	Brief recording of all scenarios / end user and per type of certificate	TUV AUSTRIA HELLAS	TUV AUSTRIA HELLAS	Platform Partners																
3	Send action 2 (Business scenarios relevant to project objectives, with focus on the End Users) to Partners for adjusting their own Business scenarios (BSs), by preparing a similar doc in structure.(template by TUV AUSTRIA HELLAS)	TUV AUSTRIA HELLAS	TUV AUSTRIA HELLAS	TUV AU ROMANIA	VALORITALIA	TUV AU CERT	WFSR	Platform Partners												
4	Reviewing all the submited BSs from partners, prioritization and confirmation of BSs with technological partners	TUV AUSTRIA HELLAS	TUV AUSTRIA HELLAS																	
5	Finalization of the scenarios that will be described in the framework of D1.1/Notification to certification partners (in order to start analyzing further their scenarios) and technologies partners (in order to start the elaboration of Tasks 1.2, 1.4)	TUV AUSTRIA HELLAS	TUV AUSTRIA HELLAS																	
6	Analyzing the selected BSs after step 5 - 1st draft (each partner conducts the 1st draft of his scenarios)	TUV AUSTRIA HELLAS	TUV AUSTRIA HELLAS	TUV AU ROMANIA	VALORITALIA	TUV AU CERT	WFSR	Platform Partners												
7	Development of a questionnaire to facilitate gathering of info on the reflection of end users (certification clients) upon the platform in terms of validating their needs through this tool. The questionnaire will be sent to relevant partners (i.e. certification partners)	TUV AUSTRIA HELLAS	TUV AUSTRIA HELLAS																	
8	Implementation of Focus groups - interviews (via skype, zoom etc) with customers and stakeholders to confirm scenarios and recording additional needs, based on the Questionnaire (templates of agenda and questionnaires by Tuv Austria Hellas)	TUV AUSTRIA HELLAS	TUV AUSTRIA HELLAS	TUV AU ROMANIA	VALORITALIA	TUV AU CERT	WFSR	AGROKNOW												
9	Incorporating the results of focus groups to the 1st draft of BSs (each partner conducts the 2nd draft of his scenarios after the implementation of focus groups)	TUV AUSTRIA HELLAS	TUV AUSTRIA HELLAS	TUV AU ROMANIA	VALORITALIA	TUV AU CERT	WFSR													
10	Gathering of feedback after the focus groups-interviews from certification partners and assessment	TUV AUSTRIA HELLAS	TUV AUSTRIA HELLAS																	

									Action plan WP1											
A/A	Actions	Responsibility	Implementation						03/02/2020-3/04/2020	10/02/2020-14/02/2020	6/4/2020-10/04/2020	13/4/2020-17/04/2020	20/4/2020-24/04/2020	26/4/2020-30/04/2020	27/4/2020-01/05/2020	04/05/20-8/5/20	11/05/20-15/5/20	18/05/20-22/5/20	25/05/20-29/5/20	01/06/20-5/06/2020
	Task 1.1 Business Requirements																			
10	Integrating all Bisuness scenarios from all partners into a single text, to get the Bus.Reqs	TUV AUSTRIA HELLAS	TUV AUSTRIA HELLAS																	
	Task 1.3 Legal Requirements																			
11	Notification to Legal Partner to start editing scenarios from a legal point of view including feedback of focus groups (sending 1st draft of scenarios)	TUV AUSTRIA HELLAS	TUV AUSTRIA HELLAS																	
12	First draft by Legal partner with respect to legal aspects of the scenarios	UNIVIE	UNIVIE																	
13	Sending 2nd draft of scenarios	TUV AUSTRIA HELLAS	TUV AUSTRIA HELLAS																	
14	Second draft by Legal partner with respect to legal aspects of the scenarios	UNIVIE	UNIVIE																	
15	Incorporating the whole legal framework (ideally per scenario) into the deliverable D1.1	TUV AUSTRIA HELLAS	TUV AUSTRIA HELLAS																	
	Task 1.2 Technical Requirements [M1-M33]																			
16	Prepare text analyzing in detail all the technical specifications relevant to each specific Business scenario	PROSPEH	PROSPEH	Platform Partners																
17	Submission of the report to TUV AUSTRIA Hellas for integration in D1.1	PROSPEH	PROSPEH																	
	Task 1.4 Data Requirements [M1-M33]																			
18	Manage and edit the detailed scenarios from data specifications' perspective and submission toTUV AUSTRIA Hellas for integration in D1.1	AGROKNOW	AGROKNOW	Platform Partners																
19	Submission of the report to TUV AUSTRIA Hellas for integration in D1.1	AGROKNOW	AGROKNOW																	
	D1.1 Report on Requirements for TheFSM																			
20	Review with Technological partners	AGROKNOW	AGROKNOW	Platform Partners																
21	diligence and finalization of the deliverable	TUV AUSTRIA HELLAS	TUV AUSTRIA HELLAS																	

ANNEX II - BRIEF RECORDING OF ALL SCENARIOS / END USER -BUSINESS REQUIREMENTS DEVELOPMENT PROCESS

Business Scenario1

Key Stakeholder: The retailer

Main Goal: To deliver solution to the Food Safety and Quality Assurance (FSQA) experts working in a Retailer need to assess the risk of the suppliers, producers and manufacturers

		Stakeholders:	END USER 1	END USER 2
	Goal: to deliver a solution to the Food Safety and Quality Assurance (FSQA) experts working in a Retailer that will help them to assess the risk of a supplier.			
1	FSQA expert Scenario	**Main Actor**	**FSQA experts working in the retailer**	**Supplier**
		Role in a Certidied Food Supply Chain	End user of the FOODAKAI supplier risk prediction module	Provider of data of the FOODAKAI system / Supply of goods within the food chain according required certified standards.
		Interrelation with Main Actors in Food Safety Certifiction	1) FOODAKAI supplier risk module with GlobalGap certification database 2) FOODAKAI supplier risk module with Agrivi 3) FOODAKAI supplier risk module with Laboratory Management System 4) FOODAKAI supplier risk module with CRM 5) FOODAKAI supplier risk module with audits system 6) FOODAKAI supplier risk module with National Authorities DBs	1) FOODAKAI supplier risk module with GlobalGap certification database 2) FOODAKAI supplier risk module with Agrivi 3) FOODAKAI supplier risk module with Laboratory Management System 4) FOODAKAI supplier risk module with CRM 5) FOODAKAI supplier risk module with audits system 6) FOODAKAI supplier risk module with National Authorities DBs
		Data Type of Main Actor	Solution consumer / Data user	Data provider

		Data exchange flow with Main Actors	1) information about the certificate of a specific producer 2) traceability report for a cultivation from a specific producer 3) lab results and the certification of analysis for a specific producer 4) information for a supplier (Name, products, location) 5) information about audits and inspections for a specific producer/grower 6) information for the food recalls,border rejections and inspections for a specific supplier	1) information about the certificate of a specific producer 2) traceability report for a cultivation from a specific producer 3) lab results and the certification of analysis for a specific producer 4) information for a supplier (Name, products, location) 5) information about audits and inspections for a specific producer/grower 6) information for the food recalls,border rejections and inspections for a specific supplier
		Data sources	FOODAKAI, Certification Bodies Databases, Laboratories DB, National authorities, Schema Owners DB	Certification Bodies Databases, Laboratories DB, National authorities, Schema Owners DB
		Sub-actors	suppliers, Auditors, Growers, Producers, Farmers, Certification Schema Owners, Certification Bodies, Food Processing Companies, Crop Traders	Auditors, Growers, Producers, Farmers, Certification Schema Owners, Certification Bodies, Food Processing Companies, Crop Traders
		Type of Interaction with Sub-actor	Farm data, Sensor data, Supplier information, Food recalls and border rejections, Certification schema parameters, Consumer complaints, Social networks, Remote sensing & IoT data (satellites, biomass growth, weather, pest risks), Producer-entered data (production plans, progress, practices, risks, deliveries), Retail-entered data (plans, progress, risks, deliveries)	Farm data, Sensor data, Supplier information, Food recalls and border rejections, Certification schema parameters, Consumer complaints, Social networks, Remote sensing & IoT data (satellites, biomass growth, weather, pest risks), Producer-entered data (production plans, progress, practices, risks, deliveries), Retail-entered data (plans, progress, risks, deliveries)
		Current Data Format	Handwritten documents / e-documents (pdf, excel) / databases	Handwritten documents / e-documents / databases
		Goal	assess the risk of a supplier	Establish a trusted profile as a supplier to retailers

		Challenges	How to get data about the performance of a supplier in previous audits? / How to get live data about the status of the certification. Is it valid or not? When will it expire? / How to deal with risk for processed products using many different data sources? / How to get available food safety and quality records for a product based on the LOT number? / How to predict an increasing risk for a supplier? / Control over executing contract as agreed and ability to mitigate any possible risks.	What is the benefit of the data sharing? / Cost of digitalisation
		Legal Obstacles	Personal data storage, transfer and management / / Business sensitive data storage, transfer and management / Commercial exploitation of the public and open data / Compatibility with the GDPR policy / Terms of Use components in each solution in the data exchange platform / Privacy policy components in each solution and in the data exchange platform	Personal data storage, transfer and management / / Business sensitive data storage, transfer and management / Commercial exploitation of the public and open data / Compatibility with the GDPR policy / Terms of Use components in each solution in the data exchange platform / Privacy policy components in each solution and in the data exchange platform

Business Scenario 2

Key Stakeholder: The Food Processor

Main Goal: To deliver a solution to a Processor maintaining a certified FSMS (FSSC22000) to efficiently adapt to upgraded certification needs (IFS) imposed by its client (retailer)

	Stakeholders:	**END USER 1**	**END USER 2**	**END USER 3**	**END USER 4**
Business Scenario: To deliver a solution to a Processor packaging Table Olives certified under GLOBALGAP ver 5.2 by maintaining also a Food Safety Management System (FSMS) against the FSSC22000 (GFSI) Standard requirements, in order to quickly and efficiently meet the demands of a new client (retailer) for delivering the same product (in the same type of packaging) under the retailer's food policy for trading food staff which is certified against the requirements of the IFS Food Standard (GFSI). *(note: 1. the IFS service will be provided by a different CB to the one that provides the GLOBALGAP and the FSSC22000 certification to the processor. 2. The processor has two different suppliers of GLOBALGAP certified olives certified by different CBs)*					
GLOBALGAP) / FSSC 22000 / IFS Food	**Main Actor**	**Producer (Farmer)**	**Processor**	**Certification Body**	**Retailer**

	Role in a Certified Food Supply Chain	Production of goods as GLOBALGAP certified product (olives) for food processing	Handling GLOBALGAP certified suppliers (olive producers) to produce GLOBALGAP certified end product (packaging / labeling / storage / distribution) of table olives for trading in the market	Validates Producers' / Processor's mechanism for producing goods in conformity against the Organic standard requirements and maintaining a Food Safety Management System that conforms to the FSSC22000 and IFS Food certification standards.	Trades certified end products to consumers
	Interrelation with Main Actors in Food Safety Certification	Cooperates with a Certification Body & FoodPLUS GmpH(contract) for on-site inspections &GLOBALGAP certification / Trades (contract) bulk GLOBALGAP certified olives to Processors	Accepts and hosts periodic on-site audits from the Certification Bodies for FSSC22000 (Management System Certification), IFS Food (product certification)	Audits on-site the producers / processor, Decides and Issue Certificate, Upload Certificate to different databases (globalgap database, and the AuditXpress Database of the IFS scheme owner)	Gathers the needed documentation to support its policy for food quality /safety
	Data Type of Main Actor	Data Providers / Data User	Data Users / Data Providers	Data Users / Data providers	Data Users / Data providers
	Data exchange flow with Main Actors	**Data Provider** (i.e. Farm (Field) data) **:** →CB **Data Provider** (i.e. Farm (Field) data, Certification Data etc.) : → Processor **Data User** (i.e. market needs, product requirements) **:** ← Processor **Data User** (i.e. audit process scheduling, Certification info etc.) **:** ← CB.	**Data Provider** (i.e. Processing data) **:** →CB **Data Provider** (i.e. End product data) :→Trader. **Data Provider** (i.e. specifications for products):→Producer. **Data User** (Farm data): ← Multiple Producers **Data User** (i.e. audit process scheduling, Certification info etc.) **:** ← CB. **Data User** (i.e. market needs) : ← Trader.	**Data User** (i.e. up-to-date processing data relevant to certification) **:** ← Processor. **Data User** (i.e. up-to-date production data relevant to certification.) **:** ← Producer **Data Provider** (i.e. audit process scheduling, Certification info etc) : →Producer →Processor.	**Data User** (Farm data, Certification info): ← Producer or Group of producers **Data User** (i.e. Processing data, Certification info) **:** ←Processor. **Data Provider** (i.e. market needs) :→Trader. **Data Provider** (i.e. market needs):→Producer.

	Data sources	Farm Management (i.e. IoT) Solutions	Processing Management Solutions (e.g. ERP etc.)	Certification Management Solutions (e.g. CRM etc.)	Trading Management Solutions (e.g. ERP etc.)
	Sub-actors	**Laboratories** (Data Providers) / **Public Authorities** (e.g. Ministry of Agriculture) / **Consultants** (Data Provider/Data user) / **Foodplus GmPH** (globalgap data base holder)	**Consultants / Laboratories / Public Authorities / Service Providers** like **Facility Management companies** (cleaning, security etc.), **Logistics / Suppliers for Packaging Matterial, food additives, processing equipments and infrustructure etc.**	**Accreditation Bodies /Public Authorities / GLOBALG.A.P**	**Public Authorities / Laboratories**
	Type of Interaction with Sub-actor	**Consultants :** analyze farm data and guides the implementation of best agricultural practices against certification standards (Data user / Data Provider to "TheFSM"), **Laboratories:** Provides soil and product's analysis to verify compliance towards legislation and certification requirements (Data Providers) / **Public Authorities (**e.g. Ministry of Agriculture**):** Approve inputs for certified cultivation, approve access to resources, farmer's competence licence issuance, control process (Data Provider)	**Consultants :** analyze processing data and guides the implementation of best product handling practices against certification standards (Data user / Data Provider to "TheFSM"), **Laboratories:** Provides product's analysis to verify compliance towards certification requirements (Data Providers) / **Public Authorities (**e.g. Ministry of Agriculture**):** Issue and control the Operational licence, Approve access to resources, Issue health certificates (Data Provider) / **Service Providers like Facility Management companies (cleaning, security etc.), Logistics** (Data Provider) / **Suppliers for Packaging Matterial, food additives, processing equipments etc. (Data Provider)**	**Accreditation Bodies:** Periodically evaluates /assesses the Certification Body's competence & impartiality to certify against the GLOBALG.A.P. scheme, by auditing files of certified clients (Data User) **/ GLOBALG.A.P:** Periodically audits the Certification Body to safeguard the integrity of the certification process , by auditing files of certified clients (Data User) / Maintains (i) the certification status of producer and (ii) the recognition status of the Certification Body in the GLOBALG.A.P. database (Data Provider) / **Public Authorities** (e.g. Ministry of Agriculture, National Authority for Food Safety): Communicates complaints - accusations for certified producers or processors (Data Provider)	**Laboratories:** Provides product's analysis to verify quality and safety against legislation or trader's standards (Data Providers) **/ Public Authorities:** Periodically assesses traceability / food quality and safety of traded products (Data User)

	Current Data Format	Handwritten documents / e-documents (jpeg, pdf, excel, word files)	Handwritten documents / e-documents (jpeg, pdf, excel, word files)	e-documents (Excel and word files)	e-documents (jpeg, pdf, excel, word files) / partially handwritten documents
	Goal	1. Replacement of the hardcopy archives to a digital database (organizing day2day work)/ 2. Direct access to market needs (Up to date info) & new clients / 3. Real time data (minimize response time to decide actions) / 4. Control of the production process (i.e. financial control and stat analysis) / 5. Improvement tool (enhance production cost effectiveness) / 6. Long lasting cooperation with processors and traders - retailers	1. To effectively receive and handle farm data from multiple producers potentially certified by many different Certification Bodies / 2. To receive producers' certificates validity and reports (suppliers' documentation) / 3. To effectively receive and handle processing data from different suppliers e.g for packaging materials etc., potentially certified by many different Certification Bodies / 4. To have all in one database (suppliers of packaging material etc.) / 5. Direct access to market needs (Up to date info) & new clients / 6. Real time data (minimize response time to decide actions) / 7. Maintaining up-to-date communication channel with traders (retailers) regarding agreed timelines, terms & conditions / 8. To efficiently use its resources to meet the certification requirements of the different certification standards (GLOBALGAP, FSSC22000, IFS Food) / 9. To limit the extra cost due to the many different certifications / 10. Get valid and quick info about accredited Labs to conduct chemical analysis to products for verifying the FSMS / 11. To easily find suppliers (sub-actors) holding certifications for FSMS to meet requirements and minimize the risk / 12. To efficiently control its cooperation with the many different supliers / 13. Get reliable and direct (real) data regarding the certification status of each of its suppliers / 14. To efficiently make use and review all the past audit finding,	1. To have direct and official info regarding findings of the National Control Authorities to certified Producers and Processors / 2. Receive all the evidence easier for the justification of compliance criteria (e.g. producer's personal data, records of applications etc.) / 3. To have an all in one database (legal requirements, accreditation certs for laboratories, MRL Limits, official PPP Approvals) / 4. To make easier the risk assessment for the samples (producers & products for analysis) / 5. To increase the effectiveness (time/cost) of the audits (Align certification processes with the "TheFSM", to increase effectiveness and reduce the needed resources of the certification mechanism) / 6. To efficiently make use and review all the past audit finding of a client, being grouped in certain categories for further pointing out areas of concern for every next audit conducted by different audit teams. / 7. To give statistical analysis of the most usually occurring audit finding per scope of certification, per standard, per category of standards' requirements etc. for corporate training of auditors - calibration	1. Meet customized 'food quality' requirements based on its policy / 2. Access to analytical info regarding the end trade products (basic data e.g. producers, date of harvest, quantity, GLOBALG.A.P. number of producer's traceability, for supplier's digital archive / 3. To have all in one database (suppliers and customers - e.g. Supermarkets)

			being grouped in certain categories for improvement		

	Challenges	1. Ease of Uploading data (user friendly to limit time and effort) - elder users / 2. Participation of all the key end users (main and sub-actors) with whom he cooperates in this platform / 3. Low registration and maintenance cost for the platform / 4. Access to the platform by sub-users with no cost / 5. No needs for special IT infrastructure to use platform effectively / 6. Safeguarding info and personal data / 7. Broad use of farm IoT tech to gather data / 8. High commercial added value - benefit to get in return	1. Interoperability of existing processing management solutions with "TheFSM" / 2. Ease of Uploading data (user friendly to limit time and effort) / 3. Participation of all the key end users (main and sub-actors) with whom he cooperates in this platform / 4. Safeguarding info and personal data / 5. High commercial added value - benefit to get in return	1. To meet all the limitations and requirements for handling audit info, posed to Certification Bodies by the international standards for accreditation and the scheme owners, when using the "TheFSM' / 2. Interoperability of existing certification management solutions with "TheFSM" when sharing data (e.g. data immigration) - Harmonization with the corporate policies and processes / 3. All certification clients to align their data format (type) based on the technical specifications of the 'TheFSM' to facilitate quick sharing / 4. Participation of all the key end users (main and sub-actors) with whom it cooperates in the certification process / 5. Encompass all the different requirements for uploading data to every potential scheme owner's databases / 6. Keep the certification cost unaffected and hopefully increase the profit margin / 7.No further maintenance costs for users.	1. Harmonization of the platform with the corporate management solutions - tools and policies / 2. Specified requirements posed by retailer to be easily communicated to interested suppliers for cooperation with the retailer / 3. Participation of all its suppliers (key end users -main and sub-actors) with whom it cooperates
	Legal Obstacles	Business sensitive data / Commercial exploitation of the public and open data	Business sensitive data / Commercial exploitation of the public and open data	Confidentiality of info gathered during the audit and certification process / Commercial exploitation of the public and open data	GDPR: Handling personal data of suppliers

Business Scenario 3
Key Stakeholder: The Certification Body
Main Goal: To deliver solution to a Certification Body for planning and realizing the certification process with reference to Private Food Safety Certification standards in an efficient way

	Stakeholders:	**END USER 1**	**END USER 2**	**END USER 3**	**END USER 4**	**END USER 5**
Business Scenario: Private Food Safety Standards Certification						
Private Food Safety Standards (Certification Scheme)	**Main Actor**	**Producer (Farmer)**	**Processor (Food Industry, Packaging)**	**Distributor**	**Certification Body**	**Retailer**
	Role in a Certified Food Supply Chain	Primary production of goods as certified end product for the market / or raw material for food processing	Processing (preparing / heating / packaging / storage) of goods as certified end product for the market or ingredient for other processor	Distribution of goods within the supply chain according required certified standards.	Certifies fulfillment of requirements within the supply chain (Producer, Processor and Distributor) and provides relevant information for the certification process.	Trades certified end products to consumers
	Interrelation with Main Actors in Food Safety Certification	Produce and deliver based on customer and consumer requirements to the retailer and food processor. Cooperates with certification bodies (contract).	Produce and deliver based on customer and consumer requirements to the retailer and other processor. Cooperates with certification bodies (contract).	Distribute goods to retailer and food processor according certified requirements. Cooperates with certification bodies (contract).	Providing contracts to producer, processor and distributor. Realize On-site- and documentation audits to producer, processor and distributor. Decides and issues certificate, Provide database with certified companies.	Gathers the needed documentation to support its policy for food quality /safety
	Data Type of Main Actor	Data provider / Data user	Data provider / Data user	Data provider / Data user	Data provider / Data user	Data provider / Data user

	Data exchange flow with Main Actors	Provides certificates, product scopes, technical scopes, food labels to processor Provides certificates, product scopes, technical scopes, food labels to retailer Provides certification relevant information (products, technical scopes, unit size, ...) to the certification body Use information specific to different standards and labels (requirements, certification process, expenditures, ...) from the certification body Use information regarding specific requirements from retailer Use information regarding available certificates from distributor	Provides certificates, product scopes, technical scopes, food labels to other processor Provides certificates, product scopes, technical scopes, food labels to retailer Provides certification relevant information (products, technical scopes, unit size, ...) to the certification body Use information specific to different standards and labels (requirements, certification process, expenditures, ...) from the certification body Use information regarding specific requirements from retailer Use information regarding available certificates from distributor Use information regarding certificates, product scopes, technical scopes, food labels from other food processor Use information regarding certificates, product scopes, technical scopes, food labels from producer	Provides certificates to processor Provides certificates to producer Provides certificates to retailer Provides certification relevant information to the certification body Use information specific to different standards (requirements, certification process, expenditures, ...) from the certification body Use information regarding specific requirements from retailer Use information regarding specific requirements from processor Use information regarding specific requirements from producer	Provides certificates to processor Provides certificates to producer Provides certificates to distributor Provides certificates to retailer Provides certification relevant information to processor Provides certification relevant information to producer Provides certification relevant information to distributor Provides certification relevant information to retailer Provides information specific to different standards (requirements, certification process, expenditures, ...) to processor Provides information specific to different standards (requirements, certification process, expenditures, ...) to producer Provides information specific to different standards (requirements, certification process, expenditures, ...) to distributor Provides information specific to different standards (requirements, certification process, expenditures, ...) to retailer Use information relevant to the certification process (product data, process data, unit data, ...) from processor Use information relevant to the certification process (product data, process data, unit data, ...) from producer Use information relevant to the certification process (product	Provides information regarding specific requirements to processor Provides information regarding specific requirements to producer Provides information regarding specific requirements to distributor Use data (certificates, product scopes, technical scopes, food labels, ...) from certification body

					data, process data, unit data, ...) from distributor	

	Data sources	Farm Management (i.e. IoT) Solutions	ERP System, CRM, External product data base systems (e.g. GS1)	ERP System, Routing & Scheduling Software, Process management database	Certification Management Solutions (e.g. CRM etc.)	Trading Management Solutions (e.g. ERP etc.)
	Sub-actors	Consultants, Laboratories, Public Authorities	Consultants, Laboratories, Public Authorities, Producer	Consultants, Public Authorities	Accreditation Bodies, Public Authorities, Certification scheme owner	Public Authorities, Laboratories, Consultants
	Type of Interaction with Sub-actor	**Consultants :** analyze farm data and guides the implementation of best agricultural practices against certification standards / Training (Data user / Data Provider to "TheFSM"), **Laboratories:** Provides soil and product's analysis to verify compliance towards legislation and certification requirements (Data Providers) / **Public Authorities (**e.g. Ministry of Agriculture)**:** Approve inputs for agriculture, approve access to resources, farmer's competence licence issuance, control process (Data Provider)	**Consultants :** analyze processing data and guides the implementation of best product handling practices against certification standards / Trainig (Data user / Data Provider to "TheFSM"), **Laboratories:** Provides product's analysis to verify compliance towards certification requirements (Data Providers) / **Public Authorities** (e.g. Ministry of Agriculture): Issue and control the Operational licence, Approve access to resources, Issue health certificates (Data Provider) / Producer: deliver relevant data for audit process, indirect part of traceability tests (Data Provider)	**Consultants :** analyze processing data and guides the implementation of best logistic practices against certification standards / Training (Data user / Data Provider to "TheFSM") / **Public Authorities** (e.g. Ministry of Agriculture): Issue and control the Operational licence, Approve access to resources, Issue health certificates (Data Provider)	**Accreditation Bodies:** Periodically evaluates /assesses the Certification Body's competence & impartiality to certify against standard scheme, by auditing files of certified clients (Data User) / **Certification scheme owner:** Periodically audits the Certification Body to safeguard the integrity of the certification process , by auditing files of certified clients (Data User) / Maintains (i) the certification status and (ii) the recognition status of the Certification Body (Data Provider) / **Public Authorities** (e.g. Ministry of Agriculture, National Authority for Food Safety): Communicates complaints - accusations for certified producers or processors (Data Provider)	**Laboratories:** Provides product's analysis to verify quality and safety against legislation or trader's standards (Data Providers) **/ Public Authorities:** Periodically assesses traceability / food quality and safety of traded products (Data User) / **Consultants:** Advice regarding certification standard requirements, product specification / Realise 2nd party audits at the supplier / Training (data user, data provider)

	Current Data Format	Handwritten documents / e-documents (jpeg, pdf, excel, word files)	Handwritten documents / e-documents (jpeg, pdf, excel, word files)	Handwritten documents / e-documents (jpeg, pdf, excel, word files)	e-documents (Excel and word files)	e-documents (jpeg, pdf, excel, word files) / partially handwritten documents
	Goal	1. Has access to database with potential customers and their requirements. 2. Get specific information regarding requirements (certificates, labels, standards, …) from customer (retailer, processor) 3. Get specific information which standard meets customer requirements and what has to be prepared and fulfilled. 4. Can easily estimate expenditures to get the relevant certificates and labels 5. Get very fast and efficient proposals from certification bodies. 6. Get automatic information regarding changes of customer requirements	1. Has access to database with potential customers and their requirements. 2. Has access to database with potential supplier and their certificates, labels, information regarding product scope, technical scope, size, ... 3. Get specific information regarding requirements (certificates, labels, standards, …) from customer (retailer, processor) 4. Get specific information which standard meets customer requirements and what has to be prepared and fulfilled. 5. Can easily estimate expenditures to get the relevant certificates and labels 6. Get very fast and efficient proposals from certification bodies. 7. Get automatic information regarding changes of customer requirements 8. Get automatic information regarding changes of standard requirements (certification process,	1. Has access to database with potential customers and their requirements. 2. Get specific information regarding requirements (certificates, labels, standards, …) from customer (retailer, processor) 3. Get specific information which standard meets customer requirements and what has to be prepared and fulfilled. 4. Can easily estimate expenditures to get the relevant certificates and labels 5. Get very fast and efficient proposals from certification bodies. 6. Get automatic information regarding changes of customer requirements 7. Get automatic information regarding changes of standard requirements (certification process, changes in specific requirements) 8. Has access to database of listed	1. Has access to database with existing and potential customers, their requirements, product scopes, technical scopes, sizes, ... 2. Get specific information regarding requirements (certificates, labels, standards, …) from retailer, producer, processor and distributor 3. Get specific information regarding the requirement of retailers and can adopt their processes based on this knowledge. 4. Prepare very fast and efficient proposals for customers based on database information. 5. Get automatic information regarding changes of retailer requirements 6. Get automatic information regarding changes of standard requirements (certificates, labels) 7. Has access to database of listed certification bodies 8. Has access to database of listed consulter 9. Has access to database of accredited laboratories	1. Has access to database with existing and potential suppliers, their certificates and labels, product scopes, technical scopes, sizes, ... 2. Get automatic information regarding changes of standard requirements (certificates, labels) 3. Get automatic information regarding certificate status of existing supplier 4. Has access to database of listed certification bodies 5. Has access to database of listed consulter 6. Has access to database of accredited laboratories

		7. Get automatic information regarding changes of standard requirements (certification process, changes in specific requirements) 8. Has access to database of listed certification bodies 9. Has access to database of listed consulter 10. Has access to database of accredited laboratories	changes in specific requirements) 9. Has access to database of listed certification bodies 10. Has access to database of listed consulter 11. Has access to database of accredited laboratories 12. Get automatic information regarding certificate status of existing supplier	certification bodies 9. Has access to database of listed consulter 10. Has access to database of accredited laboratories		

	Challenges	1. Costs of digitalisation (Software tools, Consultants, …) 2. Costs of certification preparation and process 3. Willingness to share data 4. Staff training (preparedness for digitalisation) 5. Fulfilling legal requirements 6. Agreements, and policies and contracts to share data 7. Cultural issues, Trust in partner, ... 8. Data access rights/agreements	1. Costs of digitalisation (Software tools, Consultants, …) 2. Costs of certification preparation and process 3. Willingness to share data 4. Staff training (preparedness for digitalisation) 5. Fulfilling legal requirements 6. Agreements, and policies and contracts to share data 7. Cultural issues, Trust in partner, ... 8. Data access rights/agreements	1. Costs of digitalisation (Software tools, Consultants, …) 2. Costs of certification preparation and process 3. Willingness to share data 4. Staff training (preparedness for digitalisation) 5. Fulfilling legal requirements 6. Agreements, and policies and contracts to share data 7. Cultural issues, Trust in partner, ... 8. Data access rights/agreements	1. Data maintenance and data responsibility 2. Fulfillment of legal requirements 3. Processes and workflow (proposals, audit preparation, …) 4. Agreements and policies within certification body business 5. Keeping the level of quality 6. Data access rights/agreements	Data access rights/agreements
	Legal Obstacles	Business sensitive data / Commercial exploitation of the public and open data	Business sensitive data / Commercial exploitation of the public and open data	Business sensitive data / Commercial exploitation of the public and open data	Confidentiality of info gathered during the audit and certification process / Commercial exploitation of the public and open data	GDPR: Handling personal data of suppliers

Business Scenario 4

Key Stakeholder: The Certification Body for Organic PDO Wine Production

Main Goal: To deliver solution to Certification Bodies which will allow the interface of certification data between them for efficiently issuing certificates

	Stakeholders:	END USER 1	END USER 2	END USER 3	END USER 4	END USER 5
Business Scenario: to create an interoperable platform for Certifiers and Auditors, which will help Valoritalia to improve the certification system, reducing the burden of farmers, improving the efficiency of issuing certifications and increasing the reliability of food certifications for consumers.						
PDO/PGI and Organic wine certification	**Main Actor**	**Auditors**	**Certification Committee**	**Farmers/winegrowers**	**winegrowers and winemakers**	**Processors/bottlers**
	Role in a Certidied Food Supply Chain	Check Producer's / Processor's methods in wine production, they check if the declarations and registration of winegrowers and bottlers are reliable	Check auditors reports, if the information in reports are in conformity against Pdo/PGI and Organic standard requirements, so that they can issue certification	Producers of grapes in conformity with PDO/PGI and Organic requirements	Producers of grapes, wine and bottles in conformity with PDO/PGI and Organic requirements	Producers of wine and bottlers in conformity with PDO/PGI and Organic requirements
	Interrelation with Main Actors in Food Safety Certifiction	Assess and fill in the report with the data acquired in the Companies inspected	Verifies the inspection reports, checks data and issue certifications	Accepts and hosts periodic on-site audits from the Certification Body, and registers all data (production, agronomic practices) in national databases and private registers	Accepts and hosts periodic on-site audits from the Certification Body, and registers all data (agronomic practices, production, oenological practices, bottles produced) in national databases and private registers	Accepts and hosts periodic on-site audits from the Certification Body, and registers all data (production, oenological practices, bottles produced) in national databases and private registers
	Data Type of Main Actor	Data Users / Data Providers	Data Users / Data Providers	Data providers / Data users	Data Users / Data providers	Data Users / Data providers
	Data exchange flow with Main Actors	**Data User** (i.e. farm/production data relevant to certification reports) : ← FARMERS . **Data User** (i.e. cellar/production data relevant to certification reports) : ←	**Data User** (i.e. audit reports, Certification info etc.) : ←AUDITORS **Data Provider** (i.e. CERTIFICATE OF CONFORMITY) : →PRODUCERS AND PROCESSORS **Data Provider** (i.e. CERTIFICATE OF CONFORMITY) : →Traders	**Data Provider** (i.e. Farm (Field) data) : →AUDITORS **Data Provider** (i.e. Farm (Field) data, Certification Data etc.) : → Processor →Trader. **Data User** (i.e. advise/best	**Data User** (Farm data, Certification info): ← Producer or Group of producers **Data User** (i.e. advise/best practices) : ← Consultant **Data Provider** (i.e. production reports, certification infos) :→Auditors	**Data User** (Farm data, Certification info): ← Producer or Group of producers **Data User** (i.e. advise/best practices) : ← Consultant **Data Provider** (i.e. production reports, certification info) :→Auditors **Data Provider** (i.e. market needs):→Traders.

		PROCESSORS/BOTTLERS **Data Provider** (i.e. audit reports, Certification info etc.) : →CERTOFICATION COMMITTEE		practices) : ← Consultant	**Data Provider** (i.e. market needs):→Traders.	
	Data sources	Dioniso and National DB	Dioniso	Processing Management Solutions (e.g. ERP etc.) - National DB	Processing Management Solutions (e.g. ERP etc.) - National DB	Processing Management Solutions (e.g. ERP etc.) - National DB
	Sub-actors	**Public Authorities /National DB**	**Accreditation Bodies /Public Authorities /National DB**	**Consultants/Laboratories/National DB**	**Consultants/Laboratories/National DB**	**Consultants/Laboratories/National DB**
	Type of Interaction with Sub-actor	**Public Authorities: Periodically assesses traceability / food quality and safety of traded products (Data User) National DB: let reports and data available for the inspection checks**	**Accreditation Bodies:** Periodically evaluates /assesses the Certification Body's competence & impartiality to certify against the schemes, by auditing files of certified clients (Data User) **Public Authorities** (e.g. Ministry of Agriculture): Issue and control the Operational licence, Approve access to resources, **National DB:** let reports and data available for the inspection checks	**Consultants** : analyze farm data and guides the implementation of best agricultural practices against certification standards (Data user / Data Provider to "TheFSM"), **Laboratories:** Provides soil and product's analysis to verify compliance towards legislation and certification requirements (Data Providers) / **National DB:** let reports and data available for the inspection check	**Consultants :** analyze cellar data and guides the implementation of best oenological practices against certification standards (Data user / Data Provider to "TheFSM"), **Laboratories:** Provides wine analysis to verify compliance towards legislation and certification requirements (Data Providers) / **National DB:** let reports and data available for the inspection check	**Consultants :** analyze cellar data and guides the implementation of best oenological practices against certification standards (Data user / Data Provider to "TheFSM"), **Laboratories:** Provides wine analysis to verify compliance towards legislation and certification requirements (Data Providers) / **National DB:** let reports and data available for the inspection check
	Current Data Format	Handwritten documents	Data stored in database tables, Excel files	Data stored in database tables, Excel files	Data stored in database tables, Excel files	Data stored in database tables, Excel files
	Goal	1. To have a digital report to fill in; 2, To have a direct and official info regarding findings of the National Control Authorities to certified	1 To have an immediate and digital report concerning the audits; 2 To have an immediate tool through which issuing certificates; 3 Let the conformity certificates	1. Replacement of the hardcopy archives to a digital database (organizing and reporting day2day work)/ 2. Real time data	1. To receive producer's data about the harvest period of the certified product (date, quantity) for the traceability system / 2. To receive producer's certification	1. To receive producer's data about the harvest period of the certified product (date, quantity) for the traceability system / 2. To receive producer's certification validity and report (supplier's documents) / 3. To have all in one database

		Producers and Processors / 3. Receive all the evidence easier for the justification of compliance criteria (e.g. producer's personal data, records of applications etc.) / 4. To have an all in one database (legal requirements, accreditation certs for laboratories, Specific parameters) / 5. To make easier the risk assessment for the samples (producers & products for analysis) / 6. To increase the effectiveness (time/cost) of the audits, reducing paper and time spent onsite	easily available also for the other participants in the supply chain	(minimize response time to decide actions) / 3. Control of the production process (i.e. financial control and stat analysis) / 4. Improvement tool (enhance production cost effectiveness) / 5, Easy way to fill in daily data that could be used automatically for every kind of certification, avoiding redundancies / 6. Long lasting cooperation with processors and traders - retailers	validity and report (supplier's documents) / 3. To have all in one database (suppliers of packaging material etc.) / 4. Direct access to market needs (Up to date info) & new clients / 5. Real time data (minimize response time to decide actions) / 6. Maintaining up-to-date communication channel with traders (retailers) regarding agreed timelines, terms & conditions / 7. Easy way to fill in daily data that could be used automatically for every kind of certification, avoiding redundancies	(suppliers of packaging material etc.) / 4. Direct access to market needs (Up to date info) & new clients / 5. Real time data (minimize response time to decide actions) / 6. Maintaining up-to-date communication channel with traders (retailers) regarding agreed timelines, terms & conditions / 7. Easy way to fill in daily data that could be used automatically for every kind of certification, avoiding redundancies
	Challenges	1. To meet all the limitations and requirements for handling audit info, posed to Certification Bodies by the international standards for accreditation and the scheme owners, when using the "TheFSM' / 2. Interoperability of existing certification management solutions with "TheFSM" when sharing data (e.g. data immigration) - Harmonization with the corporate policies and processes / 3. All certification clients to align their data format	1. To meet all the limitations and requirements for handling audit info, posed to Certification Bodies by the international standards for accreditation and the scheme owners, when using the "TheFSM' / 2. Interoperability of existing certification management solutions with "TheFSM" when sharing data (e.g. data immigration) - Harmonization with the corporate policies and processes / 3. All certification clients to align their data format (type) based on the technical specifications of the 'TheFSM' to facilitate	1. Ease of Uploading data (user friendly to limit time and effort) - elder users / 2. Participation of all the key end users (main and sub-actors) with whom he cooperates in this platform / 3. Low registration and maintenance cost for the platform / 4. Access to the platform by sub-users with no cost / 5. No needs for special IT infrastructure to use platform effectively / 6. Safeguarding info and personal data /	1. Ease of Uploading data (user friendly to limit time and effort) - elder users / 2. Participation of all the key end users (main and sub-actors) with whom he cooperates in this platform / 3. Low registration and maintenance cost for the platform / 4. Access to the platform by sub-users with no cost / 5. No needs for special IT infrastructure to use platform effectively / 6. Safeguarding info and personal data / 7. Broad use of farm IoT tech to gather data / 8. High	1. Interoperability of existing processing management solutions with "TheFSM" / 2. Ease of Uploading data (user friendly to limit time and effort) / 3. Participation of all the key end users (main and sub-actors) with whom he cooperates in this platform / 4. Safeguarding info and personal data / 5. High commercial added value - benefit to get in return

		(type) based on the technical specifications of the 'TheFSM' to facilitate quick sharing / 4. Participation of all the key end users (main and sub-actors) with whom it cooperates in the certification process / 5. Encompass all the different requirements for uploading data to every potential scheme owner's databases / 6. Keep the certification cost unaffected and hopefully increase the profit margin / 7. No further maintenance costs for users.	quick sharing / 4. Participation of all the key end users (main and sub-actors) with whom it cooperates in the certification process / 5. Encompass all the different requirements for uploading data to every potential scheme owner's databases / 6. Keep the certification cost unaffected and hopefully increase the profit margin / 7. No further maintenance costs for users.	7. Broad use of farm IoT tech to gather data / 8. High commercial added value - benefit to get in return	commercial added value - benefit to get in return	
	Legal Obstacles	Confidentiality of info gathered during the audit and certification process / Commercial exploitation of the public and open data	Confidentiality of info gathered during the audit and certification process / Commercial exploitation of the public and open data	Business sensitive data / Commercial exploitation of the public and open data	Business sensitive data / Commercial exploitation of the public and open data	Business sensitive data / Commercial exploitation of the public and open data

Business Scenario 5

Key Stakeholder: Food Safety Authority

Main Goal: To deliver solution to food safety authority to map the full broiler meat supply chain

Stakeholders:		**END USER 1**	**END USER 2**	**END USER 3**	**END USER 4**	**END USER 5**	**END USER 6**	**END USER 7**
Business Scenario: The Dutch broiler meat case								
GlobalGAP (GG) Certification Scheme	**Main Actor**	**Farmers**	**Slaughterhouses**	**Industry**	**Food Safety Authority (NVWA)**	**Certification Body**	**Retailer**	**Branch organizations (RVO, FAO, EU, etc.)**
	Role in a Certified Food Supply Chain	Production of goods as certified end product for the market / or raw material for food processing	Handling certified goods (packaging / storage / distribution) of goods for trading certified processed end products in the market	Handling certified goods (packaging / storage / distribution) of goods for trading certified processed end products in the market	Validates all actors in the supply chain for producing goods in conformity against food safety regulation standard requirements	Validates Producer's / Processor's mechanism for producing goods in conformity against GLOBALG.A.P. standard requirements	Trades certified end products to consumers	Data provider
	Interrelation with Main Actors in Food Safety Certification	Cooperates with a Certification Body (contract) for on-site GLOBALG.A.P. audits & certification / Trades (contract) to Processors / Trades (contract) to Retailers	Accepts and hosts periodic on-site audits from the Certification Body and food safety authority	Accepts and hosts periodic on-site audits from the Certification Body	Inspections on-site for all actors, Decides and Issue results, Upload results to their data base and send to actors inspected.	Audits on-site the producer / processor, Decides and Issue Certificate, Upload Certificate to GLOBALG.A.P. database	Gathers the needed documentation to support its policy for food quality /safety	
	Data Type of Main Actor	Data Providers / Data User	Data Users / Data Providers	Data Users / Data Providers	Data Users / Data providers	Data Users / Data providers	Data Users / Data providers	Data provider

	Data exchange flow with Main Actors	**Data Provider** (i.e. Farm (Field) data) **:** →CB **Data Provider** (i.e. Farm (Field) data, Certification Data etc.) : →industry →Slautherhouses →Retail. **Data User** (i.e. market needs) **:** ← Industry ← Retail. **Data User** (i.e. audit process scheduling, Certification info etc.) **:** ← CB.	**Data Provider** (i.e. Processing data) **:** →CB **Data Provider** (i.e. End product data) :→Farmer. **Data Provider** (i.e. specifications for products):→Industry. **Data Provider** (i.e. specifications for products):→Food Safety Authority. **Data User** (Farm data): ← Producer or Group of producers **Data User** (i.e. audit process scheduling, Certification info etc.) **:** ← CB. **Data User** (i.e. market needs) : ← Retail.	**Data Provider** (i.e. Processing data) **:** →CB **Data Provider** (i.e. End product data) :→Trader. **Data Provider** (i.e. specifications for products):→Producer. **Data User** (Farm data): ← Producer or Group of producers **Data User** (i.e. audit process scheduling, Certification info etc.) **:** ← CB. **Data User** (i.e. market needs) : ← Trader.	**Data User** (i.e. up-to-date processing data relevant to inspection) **:** ← Farmer, Industry, Slaughterhouse, Retail, Branch organisations. **Data Provider** (i.e. inspection process scheduling, Inspection info etc.) : →Producer →Processor.	**Data User** (i.e. up-to-date processing data relevant to certification) **:** ← Farmer, slaughterhouse, industry, retail. **Data Provider** (i.e. audit process scheduling, Certification info etc) : →Farmer →Slaughterhouse →Industry →Retail.	**Data User** (Farm data, Certification info): ← Producer or Group of producers **Data User** (i.e. Processing data, Certification info) **:** ←Processor. **Data Provider** (i.e. market needs) :→Trader. **Data Provider** (i.e. market needs):→Producer.	**Data Provider** (i.e. market needs) :→All actors. **Data**
	Data sources	Farm Management sytem (e.g. ERP etc.)	Processing Management Solutions (e.g. ERP etc.)	Processing Management Solutions (e.g. ERP etc.)	Data Management system (e.g. ERP etc.)	Certification Management Solutions (e.g. CRM etc.)	Trading Management Solutions (e.g. ERP etc.)	Data Management Solutions (e.g. ERP etc.)
	Sub-actors	**Consultants / Laboratories / Public Authorities**	**Consultants / Laboratories / Public Authorities**	**Consultants / Laboratories / Public Authorities**	**Inspectors/Laboratories/Public Authorities / GLOBALG.A.P**	**Accreditation Bodies /Public Authorities / GLOBALG.A.P**	**Public Authorities / Laboratories**	**Public Authorities / Laboratories**

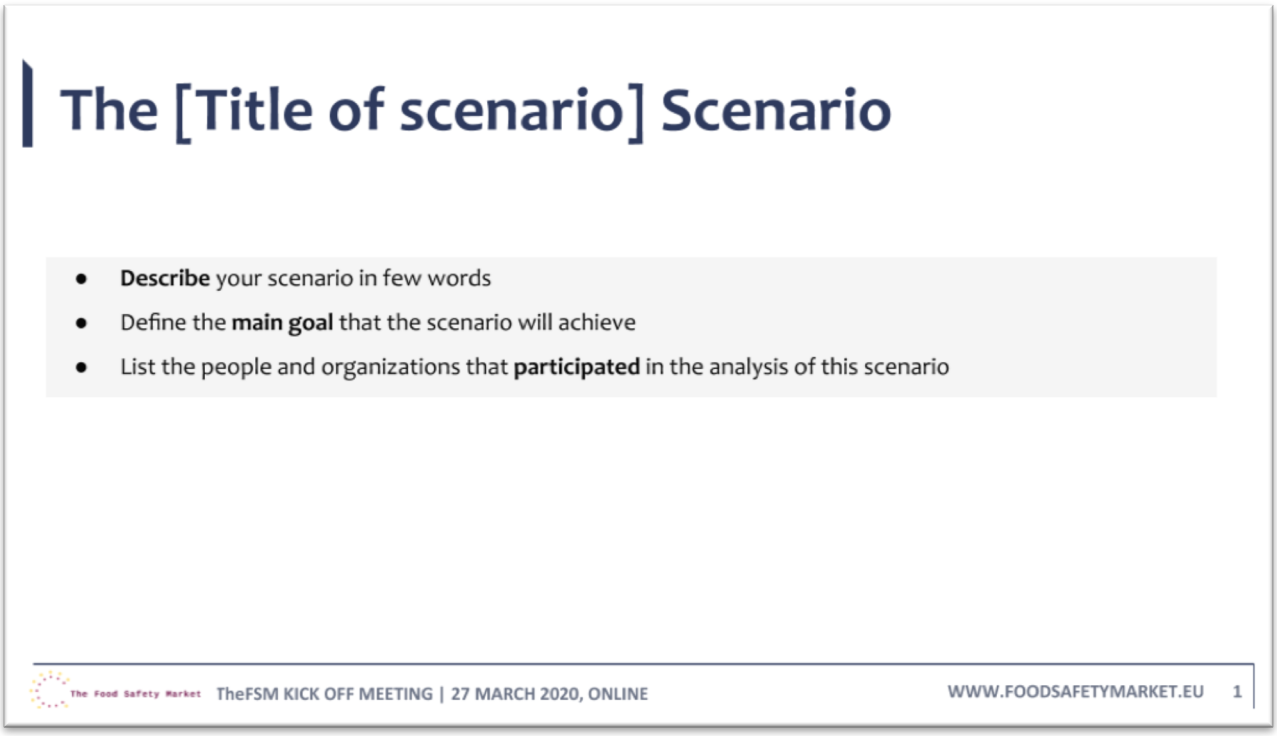
	Type of Interaction with Sub-actor	**Consultants :** analyze farm data and guides the implementation of best agricultural practices against certification standards (Data user / Data Provider to "TheFSM"), **Laboratories:** Provides soil and product's analysis to verify compliance towards legislation and certification requirements (Data Providers) / **Public Authorities (**e.g. Ministry of Agriculture)**:** Approve inputs for agriculture, approve access to resources, farmer's competence licence issuance, control process (Data Provider)	**Consultants :** analyze processing data and guides the implementation of best product handling practices against certification standards (Data user / Data Provider to "TheFSM"), **Laboratories:** Provides product's analysis to verify compliance towards certification requirements (Data Providers) / **Public Authorities (**e.g. Ministry of Agriculture)**:** Issue and control the Operational licence, Approve access to resources, Issue health certificates (Data Provider)	**Consultants :** analyze processing data and guides the implementation of best product handling practices against certification standards (Data user / Data Provider to "TheFSM"), **Laboratories:** Provides product's analysis to verify compliance towards certification requirements (Data Providers) / **Public Authorities (**e.g. Ministry of Agriculture)**:** Issue and control the Operational licence, Approve access to resources, Issue health certificates (Data Provider)	**Inspectors:** Periodically evaluates /assesses the Certification Body's competence & impartiality to certify against the GLOBALG.A.P. scheme, by auditing files of certified clients (Data User) **/ GLOBALG.A.P:** Periodically audits the Certification Body to safeguard the integrity of the certification process , by auditing files of certified clients (Data User) / Maintains (i) the certification status of producer and (ii) the recognition status of the Certification Body in the GLOBALG.A.P. database (Data Provider) / **Public Authorities** (e.g. Ministry of Agriculture, National Authority for Food Safety): Communicates complaints - accusations for certified producers or processors (Data Provider)	**Accreditation Bodies:** Periodically evaluates /assesses the Certification Body's competence & impartiality to certify against the GLOBALG.A.P. scheme, by auditing files of certified clients (Data User) **/ GLOBALG.A.P:** Periodically audits the Certification Body to safeguard the integrity of the certification process , by auditing files of certified clients (Data User) / Maintains (i) the certification status of producer and (ii) the recognition status of the Certification Body in the GLOBALG.A.P. database (Data Provider) / **Public Authorities** (e.g. Ministry of Agriculture, National Authority for Food Safety): Communicates complaints - accusations for certified producers or processors (Data Provider)	**Laboratories:** Provides product's analysis to verify quality and safety against legislation or trader's standards (Data Providers) **/ Public Authorities:** Periodically assesses traceability / food quality and safety of traded products (Data User)	**Laboratories:** Provides product's analysis to verify quality and safety against legislation or trader's standards (Data Providers) **/ Public Authorities:** Periodically assesses traceability / food quality and safety of traded products (Data User)

	Current Data Format	Handwritten documents / e-documents (jpeg, pdf, excel, word files)	Handwritten documents / e-documents (jpeg, pdf, excel, word files)	Handwritten documents / e-documents (jpeg, pdf, excel, word files)	Handwritten documents / e-documents (jpeg, pdf, excel, word files)	e-documents (Excel and word files)	e-documents (jpeg, pdf, excel, word files) / partially handwritten documents	e-documents (jpeg, pdf, excel, word files) / partially handwritten documents
	Goal	1. Replacement of the hardcopy archives to a digital database (organizing day2day work)/ 2. Direct access to market needs (Up to date info) & new clients / 3. Real time data (minimize response time to decide actions) / 4. Control of the production process (i.e. financial control and stat analysis) / 5. Improvement tool (enhance production cost effectiveness) / 6. Long lasting cooperation with processors and traders - retailers	1. To receive producer's data about the harvest period of the certified product (date, quantity) for the traceability system / 2. To receive producer's certification validity and report (supplier's documents) / 3. To have all in one database (suppliers of packaging material etc.) / 4. Direct access to market needs (Up to date info) & new clients / 5. Real time data (minimize response time to decide actions) / 6. Maintaining up-to-date communication channel with traders (retailers) regarding agreed timelines, terms & conditions	1. To receive producer's data about the harvest period of the certified product (date, quantity) for the traceability system / 2. To receive producer's certification validity and report (supplier's documents) / 3. To have all in one database (suppliers of packaging material etc.) / 4. Direct access to market needs (Up to date info) & new clients / 5. Real time data (minimize response time to decide actions) / 6. Maintaining up-to-date communication channel with traders (retailers) regarding agreed timelines, terms & conditions	1. To have direct and official info regarding findings of the National Control Authorities to inspect all actors in the supply chain / 2. Receive all the evidence easier for the justification of compliance criteria (e.g. producer's personal data, records of applications etc.) / 3. To have an all in one database (legal requirements, accreditation certs for laboratories, MRL Limits, official PPP Approvals) / 4. To make easier the risk assessment for the samples (producers & products for analysis) / 5. To increase the effectiveness (time/cost) of the audits (Align certification processes with the "TheFSM", to increase effectiveness and reduce the needed resources of the certification mechanism)	1. To have direct and official info regarding findings of the National Control Authorities to certified Producers and Processors / 2. Receive all the evidence easier for the justification of compliance criteria (e.g. producer's personal data, records of applications etc.) / 3. To have an all in one database (legal requirements, accreditation certs for laboratories, MRL Limits, official PPP Approvals) / 4. To make easier the risk assessment for the samples (producers & products for analysis) / 5. To increase the effectiveness (time/cost) of the audits (Align certification processes with the "TheFSM", to increase effectiveness and reduce the needed resources of the certification mechanism)	1. Meet customized 'food quality' requirements based on its policy / 2. Access to analytical info regarding the end trade products (basic data e.g. producers, date of harvest, quantity, GLOBALG.A.P. number of producer's traceability, for supplier's digital archive / 3. To have all in one database (suppliers and customers - e.g. Supermarkets)	

	Challenges	1. Ease of Uploading data (user friendly to limit time and effort) - elder users / 2. Participation of all the key end users (main and sub-actors) with whom he cooperates in this platform / 3. Low registration and maintenance cost for the platform / 4. Access to the platform by sub-users with no cost / 5. No needs for special IT infrastructure to use platform effectively / 6. Safeguarding info and personal data / 7. Broad use of farm IoT tech to gather data / 8. High commercial added value - benefit to get in return	1. Interoperability of existing processing management solutions with "TheFSM" / 2. Ease of Uploading data (user friendly to limit time and effort) / 3. Participation of all the key end users (main and sub-actors) with whom he cooperates in this platform / 4. Safeguarding info and personal data / 5. High commercial added value - benefit to get in return	1. Interoperability of existing processing management solutions with "TheFSM" / 2. Ease of Uploading data (user friendly to limit time and effort) / 3. Participation of all the key end users (main and sub-actors) with whom he cooperates in this platform / 4. Safeguarding info and personal data / 5. High commercial added value - benefit to get in return	1. To meet all the limitations and requirements for handling inspection info, posed to inspectors by the authorities and the scheme owners, when using the "TheFSM' / 2. Interoperability of existing certification management solutions with "TheFSM" when sharing data (e.g. data immigration) - Harmonization with the corporate policies and processes / 3. All certification clients to align their data format (type) based on the technical specifications of the 'TheFSM' to facilitate quick sharing / 4. Participation of all the key end users (main and sub-actors) with whom it cooperates in the certification process / 5. Encompass all the different requirements for uploading data to every potential scheme owner's databases / 6. Keep the certification cost unaffected and hopefully increase the profit margin / 7.No further maintenance costs for users.	1. To meet all the limitations and requirements for handling audit info, posed to Certification Bodies by the international standards for accreditation and the scheme owners, when using the "TheFSM' / 2. Interoperability of existing certification management solutions with "TheFSM" when sharing data (e.g. data immigration) - Harmonization with the corporate policies and processes / 3. All certification clients to align their data format (type) based on the technical specifications of the 'TheFSM' to facilitate quick sharing / 4. Participation of all the key end users (main and sub-actors) with whom it cooperates in the certification process / 5. Encompass all the different requirements for	1. Harmonization of the platform with the corporate management solutions - tools and policies / 2. Specified requirements posed by retailer to be easily communicated to interested suppliers for cooperation with the retailer / 3. Participation of all its suppliers (key end users - main and sub-actors) with whom it cooperates	1. Harmonization of the platform with the corporate management solutions - tools and policies / 2. Specified requirements posed by retailer to be easily communicated to interested suppliers for cooperation with the retailer / 3. Participation of all its suppliers (key end users -main and sub-actors) with whom it cooperates

						uploading data to every potential scheme owner's databases / 6. Keep the certification cost unaffected and hopefully increase the profit margin / 7.No further maintenance costs for users.		
	Legal Obstacles	Business sensitive data / Commercial exploitation of the public and open data	Business sensitive data / Commercial exploitation of the public and open data	Business sensitive data / Commercial exploitation of the public and open data	Confidentiality of info gathered during the audit and certification process / Commercial exploitation of the public and open data	Confidentiality of info gathered during the audit and certification process / Commercial exploitation of the public and open data	GDPR: Handling personal data of suppliers	

ANNEX III - PROJECT REQUIREMENTS WORKING TEMPLATES



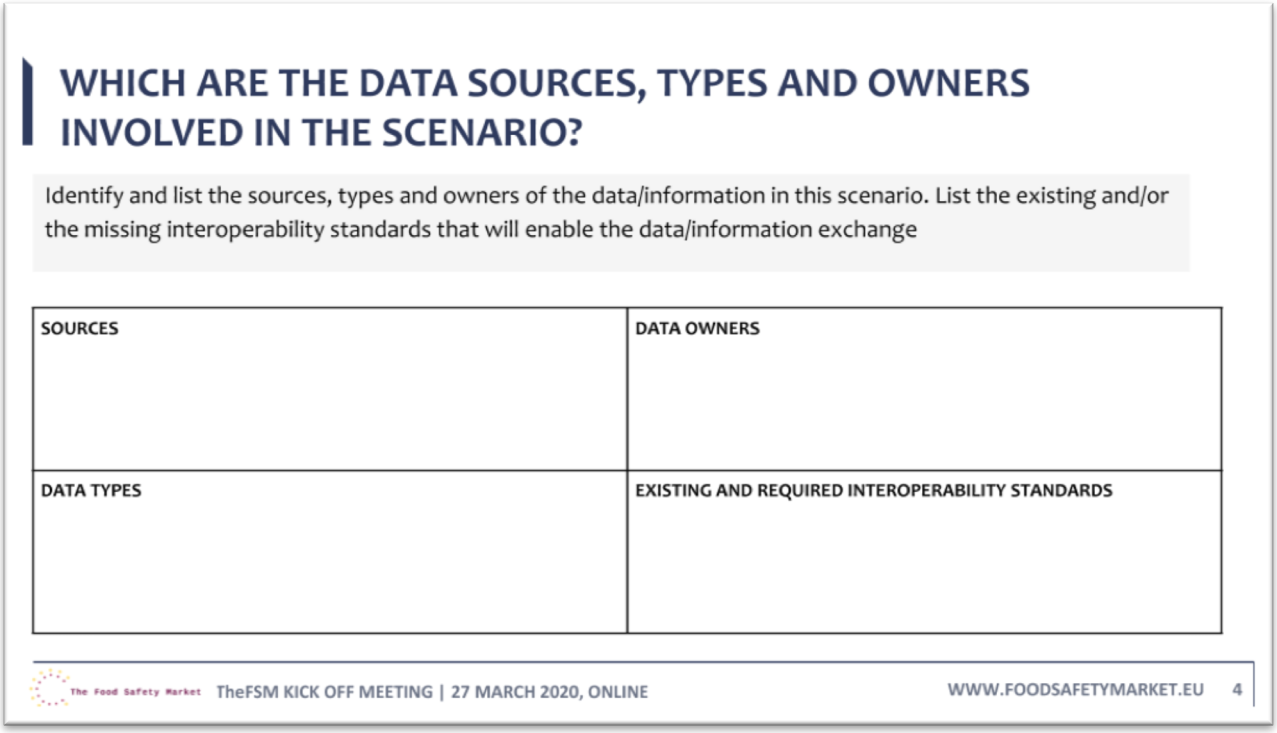
WHICH ARE THE SUPPLY CHAIN ACTORS INVOLVED IN SUCH A SCENARIO? WHAT IS THE ROLE OF EACH ACTOR?

Identify the key actor of this scenario and the end user(s) of the proposed solution. List also additional actors from the supply chain that are involved in the scenario

Actor	Type	Role

WHICH ARE THE MAIN NEEDS AND THE CHALLENGES?

List the main challenges and questions that the end users from the key actor may have in this scenario. These are the questions (competence) that the proposed system should answer



WHICH ARE THE DATA SOURCES, TYPES AND OWNERS INVOLVED IN THE SCENARIO?

Identify and list the sources, types and owners of the data/information in this scenario. List the existing and/or the missing interoperability standards that will enable the data/information exchange

SOURCES	DATA OWNERS
DATA TYPES	EXISTING AND REQUIRED INTEROPERABILITY STANDARDS

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WHICH ARE THE DIGITAL SOLUTIONS USED IN THE FOOD SUPPLY CHAIN IN THIS SCENARIO?

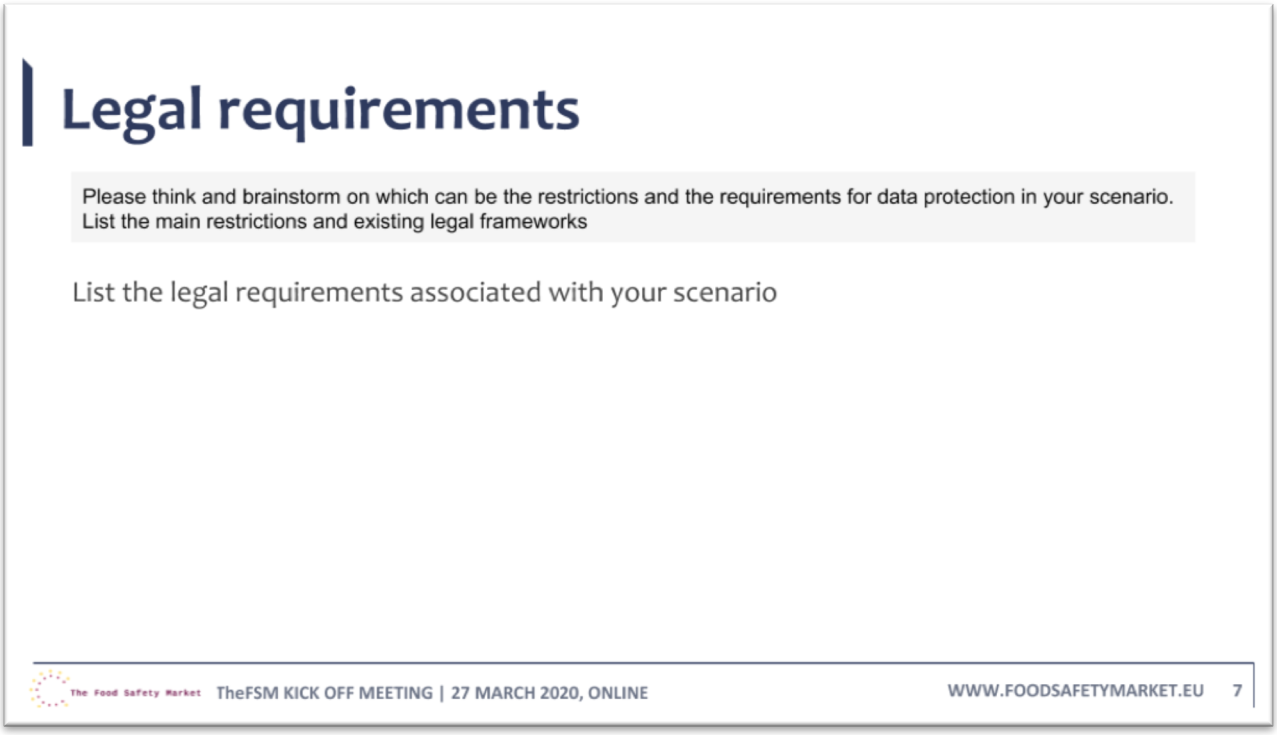
Identify what type of solutions are currently used in this scenario by the different actors. Feel free to add and modify categories of the template.

TRACEABILITY SOLUTIONS	CERTIFICATION SOLUTIONS
•	•
SUPPLIER MANAGEMENT SOLUTIONS	**FARMING AND PRODUCTION SOLUTIONS**
•	•

WHICH ARE THE DATA EXCHANGE REQUIREMENTS IN SUCH SCENARIO?

Use the following table to list the data exchange requirements between the systems in your scenario.

Systems	Data exchange required
e.g. Audit application and CRM	Report of the audit need to exchanged between the audit application and CRM system that the Certification Company is using.


Legal requirements
Please think and brainstorm on which can be the restrictions and the requirements for data protection in your scenario.
List the main restrictions and existing legal frameworks
List the legal requirements associated with your scenario
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ANNEX IV – LEGAL REQUIREMENTS LIST

Main Actors	LRs	Scenario 1	Scenario 2	Scenerio 3	Scenerio 4	Scenerio 5
	1	Analyse the legal basis for processing of personal data, in accordance with GDPR	Analyse the legal basis for processing of personal data, in accordance with GDPR	Analyse the legal basis for processing of personal data, in accordance with GDPR	Analyse the legal basis for processing personal data, with a distinction between statutory and non-statutory certification.	Analyse the legal basis for processing of personal data, in accordance with GDPR
	2	Establish if (risk) profiles of suppliers will be created by automated processing of personal data. If so, analyse the legal basis for profiling.	Protection of non-personal data by technical and organisational measures (TOM), including legal instruments.	Protection of non-personal data by technical and organisational measures (TOM), including legal instruments.	Analyse Regulation (EC) No 834/2007 and Regulation (EC) No 203/2012 governing organic certification to determine data requirements and confidentiality obligations.	The legal framework for the exchange of data between each of the main actors and the Food Safety Authority will have to be analysed under the broader framework of the national or EU regulation with special regard to the platform and to the use, collection and disclosure of business sensitive and confidential data to third parties, including an analysis of what data can or has to be gathered (such as during the on-site inspections), stored and shared, standard templates and/or existing contracts have to be analysed
	3	Analyse FOODAKAI terms of use and separate standard contract templates between supplier and retailer.	Data governance framework that regulates sharing of data between producer and processor. Analyse any existing agreements and/or templates.	Data governance framework that regulates sharing of data between producer and processor. Analyse any existing agreements and/or templates.	Analyse applicable PDO, PGI certification standards and standard contractual templates to determine data requirements and confidentiality obligations.	Establish whether there are any restrictions to the intended use according to the database terms of use (licence)
Main Actor 1	4	Analyse existing agreements with sub-actors to determine data sharing requirements and confidentiality obligations	Analyse applicable certification standards and standard contractual templates to determine data requirements and confidentiality obligations.	Data governance framework that regulates sharing of data between producer and retailer. Analyse any existing agreements and/or templates.	Establish if there are any restrictions on obtaining information directly from food authorities.	Identify and analyse data sharing requirements and provisions on confidentiality according to the applicable standards

	5	Analyse contract between CB and suppliers and certification standards to determine if there is any legal basis restricting the transfer of data to thrid-parties.	Identify legal circumstances relevant for participation of sub-actors in the platform. Analyse any existing agreements and/or templates.	Data governance framework that regulates sharing of data between producer and distributor. Analyse any existing agreements and/or templates.	Analyse contract template governing laboratory analysis in order to determine data requirements and confidentiality obligations.	
	6	Establish whether there are any restrictions to the intended use according to the databases terms of use (license).	Establish if there are any restrictions on sharing information received directly from food authorities with third parties.	Analyse applicable certification standards and standard contractual templates to determine data requirements and confidentiality obligations.	Establish whether there are any restrictions to the intended use according to the database terms of use (licenses).	
	7	Identify the applicable food safety standards and analyse data sharing requirements and provisions on confidentiality	Establish whether there are any restrictions to the intended use according to the database terms of use (licenses).	Identify legal circumstances relevant for participation of sub-actors in the platform. Analyse any existing agreements and/or templates.	Analyse data sharing requirements and provisions on confidentiality in the Organic Regulation, PDO and PGI standards. (see LR2 and LR3 also)	
	8		Identify and analyse data sharing requirements and possible restriction on the disclosure of data according to the relevant standards	Establish if there are any restrictions on sharing information received directly from food authorities with third parties.		
	9			Establish if there are any restrictions on sharing information received directly from food authorities with third parties.		
	10			Analyse applicable certification standards and standard contractual templates to determine data requirements and confidentiality obligations.		
Main Actor 2	1	Analyse the legal basis for processing of personal data, in accordance with the GDPR	Analyse the legal basis for processing of personal data, in accordance with GDPR	Analyse the legal basis for processing of personal data, in accordance with GDPR	Analyse the legal basis for processing personal data in accordance with the GDPR.	Analyse the legal basis for processing personal data in accordance with the GDPR.
	2	Analyse TOM, terms of use, NDA and confidentiality clauses to determine legal protection of non-personal data.	Protection of non-personal data by technical and organisational measures (TOM), including legal instruments.	Protection of non-personal data by technical and organisational measures (TOM), including legal instruments.	Protection of non-personal data by technical and organisational measures (TOM), including legal instruments.	Protection of non-personal data by technical and organisational measures (TOM), including legal instruments.
	3	Analse FOODAKAI terms of use and the contracts between supplier and retailer to	Data governance framework that regulates sharing of data between producer and	Data governance framework that regulates sharing of data between processor and	Analyse Regulation (EC) No 834/2007 and Regualtion (EC) No 203/2012 governing	Data governance framework that regulates sharing of data between Farmer and

		determine data and confidentaility requirements.	processor. Analyse any existing agreements and/or templates.	producer. Analyse any existing agreements and/or templates.	organic certification to determine data requirements and confidentiality obligations in relation to the Farmers data.	Producers, Slaughterhouses, Industry, Processor. Analyse any existing agreements and/or templates.
	4	Anayse exisiting agreements with sub-actors to determine data sharing requirements and confidentiality obligations.	Analyse applicable certification standards and standard contractual templates to determine data requirements and confidentiality obligations.	Data governance framework that regulates sharing of data between processor and retailer. Analyse any existing agreements and/or templates.	Analyse applicable PDO, PGI certification standards and standard contractual templates to determine data requirements and confidentiality obligations with regards to the Farmers data.	Analyse applicable certification standards and standard contractual templates to determine data requirements and confidentiality obligations.
	5	Establish whether there are any restrictions to the intended use according to the databases terms of use (license).	Data governance framework that regulates sharing of data between processor and retailer. Analyse any existing agreements and/or templates.	Data governance framework that regulates sharing of data between processor and distributor. Analyse any existing agreements and/or templates.	Data governance framework that regulates sharing of data between farmers, wine makers, bottlers and dealers. Analyse any existing agreements and/or templates.	The public mandate of the Food authority and the broader legal framework of the certification process govern the data exchange between Farmer and Food Authority and have to be analysed with regard to the permission to gather, store and share data by the food authority.
	6	Identify the applicable food safety standards and analyse data sharing requirements and provisions on confidentiality	Identify legal circumstances relevant for participation of sub-actors in the platform. Analyse any existing agreements and/or templates.	Analyse applicable certification standards and standard contractual templates to determine data requirements and confidentiality obligations.	Establish if there are any restrictions on obtaining and sharing information received directly from competent public authorities. Regualtion (EC) No 203/2012 governing organic wine production will be analysed.	Identify legal circumstances relevant for participation of sub-actors in the platform. Analyse any existing agreements and/or templates.
	7		Establish if there are any restrictions on sharing information received directly from food authorities with third parties.	Identify legal circumstances relevant for participation of sub-actors in the platform. Analyse any existing agreements and/or templates.	Identify legal circumstances relevant to the participation of consultants on the platform. Analyse exisiting agreements and/or templates with consultants to determine data requirements and confidentiality obligations.	Establish if there are any restrictions on sharing information received directly from food authorities with third parties.
	8		Establish whether there are any restrictions to the intended use according to the database terms of use (licenses).	Establish if there are any restrictions on sharing information received directly from food authorities with third parties.	Establish whether there are any restrictions to the intended use according to the databases terms of use (license).	Establish whether there are any restrictions to the intended use according to the databases terms of use (license).

	9		Identify and analyse data sharing requirements and possible restriction on the disclosure of data according to the relevant standards	Establish whether there are any restrictions to the intended use according to the database terms of use (licenses).	Analyse data sharing requirements and provisions on confidentiality in the Organic Regulation, PDO and PGI standards. (see also LR3, LR4 and LR6)	Identify and analyse data sharing requirements and possible restriction on the disclosure of data according to the relevant standards
	10			Identify and analyse data sharing requirements and possible restriction on the disclosure of data according to the relevant standards		
	1		Analyse the legal basis for processing of personal data, in accordance with GDPR	Analyse the legal basis for processing of personal data, in accordance with GDPR	Analyse the legal basis for processing personal data in accordance with the GDPR.	Analyse the legal basis for processing personal data in accordance with the GDPR.
	2		Analyse applicable certification standard, i.e. GLOBALGAP ver 5.2, and standard contractual templates to determine data requirements and confidentiality obligations.	A legal framework on a contractual basis for the exchange of data between distributor and the main actors will have to be analysed or provided.	Protection of non-personal data by technical and organisational measures (TOM), including legal instruments.	Protection of non-personal data by technical and organisational measures (TOM), including legal instruments.
	3		Analyse applicable certification standard, i.e. FSSC 22000, and standard contractual templates to determine data requirements and confidentiality obligations.	Analyse applicable certification standards and standard contractual templates to determine data requirements and confidentiality obligations.	Analyse Regaultion (EC) No 834/2007 and Regualtion (EC) No 203/2012 governing organic ertification to determine data requirements and confidentiality obligations, in relation to winegrowers data.	Data governance framework that regulates sharing of data between Industry and Retailers. Analyse any existing agreements and/or templates.
	4		Establish if there are any restrictions on sharing information received directly from food authorities with third parties.	Identify legal circumstances relevant for participation of sub-actors in the platform. Analyse any existing agreements and/or templates.	Analyse applicable PDO, PGI certification standards and standard contractual templates to determine data requirements and confidentiality obligations, in relation to winegrowers data.	Data governance framework that regulates sharing of data between Industry and Slaughterhouses. Analyse any existing agreements and/or templates.
Main Actor 3	5		Establish whether there are any restrictions to the intended use according to the database terms of use (licenses).	Establish if there are any restrictions on sharing information received directly from food authorities with third parties.	Establish if there are any restrictions on obtaining and sharing information received directly from competent public authorities. Regualtion (EC) No 203/2012 governing organic wine production will be analysed.	The public mandate and the legal framework of the applicable certification standard govern the exchange of data between the Industry and the Food authority. It will have to be analysed with special regard

						to the non-disclosure of business sensitive and confidential data
	6		Identify and analyse data sharing requirements and possible restriction on the disclosure of data according to the relevant standards	Establish whether there are any restrictions to the intended use according to the database terms of use (licenses).	Identify legal circumstances relevant to the participation of consultants on the platform. Analyse exisiting agreements and/or templates with consultants to determine data requirements and confidentiality obligations.	Analyse applicable certification standards and standard contractual templates to determine data requirements and confidentiality obligations.
	7			Identify and analyse data sharing requirements and possible restriction on the disclosure of data according to the relevant standards	Establish whether there are any restrictions to the intended use according to the database terms of use (licenses).	Identify legal circumstances relevant for participation of sub-actors in the platform. Analyse any existing agreements and/or templates.
	8				Analyse data sharing requirements and provisions on confidentiality in the Organic Regulation, PDO and PGI standards. (see also LR3, LR4 and LR5)	Establish whether there are any restrictions to the intended use according to the database terms of use (licenses).
	9					Identify and analyse data sharing requirements and possible restriction on the disclosure of data according to the relevant standards
	1		Analyse the legal basis for processing of personal data, in accordance with GDPR	Analyse the legal basis for processing of personal data, in accordance with GDPR	Analyse the legal basis for processing personal data in accordance with the GDPR.	Analyse the legal basis for processing personal data in accordance with the GDPR.
	2		Protection of non-personal data by technical and organisational measures (TOM), including legal instruments.	The standard contract and its implications for all relevant parties will have to be analysed.	Protection of non-personal data by technical and organisational measures (TOM), including legal instruments.	Data governance framework that regulates sharing of data between Slaughterhouses and Farmers. Analyse any existing agreements and/or templates.
Main Actor 4	3		Data governance framework that regulates sharing of data between retailer and processor. Analyse any existing agreements and/or templates.	Identify legal circumstances relevant for participation of sub-actors in the platform. Analyse any existing agreements and/or templates.	Analyse Regaultion (EC) No 834/2007 and Regulation (EC) No 203/2012 governing organic certification to determine data requirements and confidentiality obligations	The public mandate and the legal framework of the applicable certification standard govern the exchange of data between the Slaughterhouses and the

					in relation to the winemakers data.	Food Safety Authority. It will have to be analysed with special regard to the non-disclosure of business sensitive and confidential data.
	4		Identify legal circumstances relevant for participation of sub-actors in the platform. Analyse any existing agreements and/or templates.	Establish whether there are any restrictions to the intended use according to the database terms of use (licenses).	Analyse applicable PDO, PGI certification standards and standard contractual templates to determine data requirements and confidentiality obligations, in relation to winemakers data.	Analyse applicable certification standards and standard contractual templates to determine data requirements and confidentiality obligations.
	5		Establish if there are any restrictions on sharing information received directly from food authorities with third parties.	Identify and analyse data sharing requirements and possible restriction on the disclosure of data according to the relevant standards	Establish if there are any restrictions on obtaining and sharing information received directly from competent public authorities. Regulation (EC) No 203/2012 governing organic wine production will be analysed.	Identify legal circumstances relevant for participation of sub-actors in the platform. Analyse any existing agreements and/or templates.
	6		Establish whether there are any restrictions to the intended use according to the database terms of use (licenses).		Data governance framework that regulates sharing of data between winemakers, bottlers and dealers. Analyse any existing agreements and/or templates.	Establish whether there are any restrictions to the intended use according to the database terms of use (licenses).
	7		Identify and analyse data sharing requirements and possible restriction on the disclosure of data according to the relevant standards		Identify legal circumstances relevant to the participation of consultants on the platform. Analyse exisiting agreements and/or templates with consultants to determine data requirements and confidentiality obligations.	Identify and analyse data sharing requirements and possible restriction on the disclosure of data according to the relevant standards
	8				Establish whether there are any restrictions to the intended use according to the database terms of use (licenses).	
	9				Analyse data sharing requirements and provisions on confidentiality in the Organic Regulation, PDO and	

					PGI standards. (see also LR3, LR4 and LR5)	
	1				Analyse the legal basis for processing personal data in accordance with the GDPR.	Analyse the legal basis for processing personal data in accordance with the GDPR.
	2				Protection of non-personal data by technical and organizational measures (TOM), including legal instruments.	Data governance framework that regulates sharing of data between Slaughterhouses and farmers. Analyse any existing agreements and/or templates.
	3				Analyse Regulation (EC) No 834/2007 and Regulation (EC) No 203/2012 governing organic certification to determine data requirements and confidentiality obligations in relation to the wine bottlers data.	The public mandate and the legal framework of the applicable certification standard govern the exchange of data between the Slaughterhouses and the Food Safety Authority. It will have to be analysed with special regard to the non-disclosure of business sensitive and confidential data.
	4				Analyse applicable PDO, PGI certification standards and standard contractual templates to determine data requirements and confidentiality obligations, in relation to wine bottlers data.	Analyse applicable certification standards and standard contractual templates to determine data requirements and confidentiality obligations.
	5				Data governance framework that regulates sharing of data between bottlers, winemakers and dealers. Analyse any existing agreements and/or templates.	The framework that serves as a legal basis for the exchange of data between the Slaughterhouses and the sub-actors has to be analysed with regard to its relevance for the platform and the permission to have access and to share information.
Main Actor 5	6				Establish if there are any restrictions on obtaining and sharing information received	Establish if there are any restrictions on sharing information received directly

					directly from competent public authorities. Regualtion (EC) No 203/2012 governing organic wine production will be analysed.	from food authorities with third parties.
	7				Establish whether there are any restrictions to the intended use according to the database terms of use (licenses).	Establish whether there are any restrictions to the intended use according to the database terms of use (licence)
	8				Analyse data sharing requirements and provisions on confidentiality in the Organic Regulation, PDO and PGI standards. (see also LR3, LR4 and LR6)	Analyse data sharing requirements and provisions on confidentiality according to the applicable standards
	1			Analyse the legal basis for processing personal data in accordance with the GDPR.	Analyse the legal basis for processing personal data in accordance with the GDPR.	Analyse the legal basis for processing personal data in accordance with the GDPR.
	2			A contractual basis for the exchange of data between retailer and the relevant main actors will have to be analysed or provided.	Data governance framework that regulates sharing of data between dealers, bottlers and winemakers. Analyse any existing agreements and/or templates.	The contractual basis for the exchange of data between Certification body and Farmer has to be analysed or provided including a provision for non-disclosure of business sensitive and confidential data.
	3			Identify legal circumstances relevant for participation of sub-actors in the platform. Analyse any existing agreements and/or templates.	Establish whether there are any restrictions to the intended use according to the database terms of use (licenses).	The contractual basis for the exchange of data between Certification body and Industry has to be analysed or provided including a provision for non-disclosure of business sensitive and confidential data.
Main Actor 6	4			Establish if there are any restrictions on sharing information received directly from competent authorities with third parties		The contractual basis for the exchange of data between Certification body and Slaugherhouses has to be analysed or provided including a provision for non-disclosure of business sensitive and confidential data.

	5			Establish whether there are any restrictions to the intended use according to the database terms of use (licenses).		The contractual basis for the exchange of data between Certification body and Retailer has to be analysed or provided including a provision for non-disclosure of business sensitive and confidential data.
	6			Identify and analyse data sharing requirements and possible restriction on the disclosure of data according to the relevant standards		The public mandate of the food authority and the legal framework of the applicable certification standard govern the exchange of data between the certification body and the Food Safety Authority. It will have to be analysed with special regard to the non-disclosure of business sensitive and confidential data.
	7					Study the legal bases of the relation of both sub-actors and their relevance to the platform.
	8					Establish if there are any restrictions on sharing information received directly from food authorities with third parties.
	9					Establish whether there are any restrictions to the intended use according to the database terms of use (licenses).
	10					Identify and analyse data sharing requirements and possible restriction on the disclosure of data according to the relevant standards
	1				Analyse the legal basis for processing personal data in accordance with the GDPR.	
Main Actor 7	2				Analyse Regaultion (EC) No 834/2007 and Regualtion (EC)	

					No 203/2012 governing organic ertification to determine data requirements and confidentiality obligations for statutory certification of organic wines.	
	3				Analyse data sharing requirements and provisions on confidentiality in the Organic Regulations and other applicable legislation governing actions of the food authority (e.g. regarding professional/official secrets).	

ANNEX VI – DATA REQUIREMENTS LIST

		Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
main actor 1	1	Data standards: to comply or reuse existing standards whenever possible	Data standards: to comply or reuse existing standards whenever possible	Data standards: to comply or reuse existing standards whenever possible	Data standards: to comply or reuse existing standards whenever possible	Data standards: to comply or reuse existing standards whenever possible
	2	Data format: define the format that data should be exchanged	Data format: define the format that data should be exchanged	Data exchange: use the existing infrastructure	Data format: define the format that data should be exchanged	Data format: define the format that data should be exchanged
	3	Data exchange: use the existing infrastructure	Data exchange: use the existing infrastructure	Data accessibility: To provide a way to limit the data access of each actor depending on his role	Data exchange: use the existing infrastructure	Data exchange: use the existing infrastructure
	4	Uploading data: easy upload process, minimum cost	Uploading data: easy upload process, minimum cost	Data format: define the format that data should be exchanged	Uploading data: easy upload process, minimum cost	Uploading data: easy upload process, minimum cost
	5	Data accessibility: To provide a way to limit the data access of each actor depending on his role	Data accessibility: To provide a way to limit the data access of each actor depending on his role	Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository	Data accessibility: To provide a way to limit the data access of each actor depending on his role	Data accessibility: To provide a way to limit the data access of each actor depending on his role
	6	Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository	Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository	Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages	Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository	Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository
	7	Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles.	Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles.		Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles.	Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles.

		Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
	8	Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages	Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages		Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages	Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages
	9				Data security	Data security
mainactor2	1	Data standards: to comply or reuse existing standards whenever possible	Data format: define the format that data should be exchanged	Uploading data: easy upload process, minimum cost	Data standards: to comply or reuse existing standards whenever possible	Data standards: to comply or reuse existing standards whenever possible
	2	Data format: define the format that data should be exchanged	Data exchange: use the existing infrastructure	Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages	Data format: define the format that data should be exchanged	Data format: define the format that data should be exchanged
	3	Data exchange: use the existing infrastructure	Uploading data: easy upload process, minimum cost	Data security	Data exchange: use the existing infrastructure	Data exchange: use the existing infrastructure
	4	Uploading data: easy upload process, minimum cost	Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages	Data standards: to comply or reuse existing standards whenever possible	Uploading data: easy upload process, minimum cost	Uploading data: easy upload process, minimum cost
	5	Data accessibility: To provide a way to limit the data access of each actor depending on his role	Data accessibility: To provide a way to limit the data access of each actor depending on his role	Data format: define the format that data should be exchanged	Data accessibility: To provide a way to limit the data access of each actor depending on his role	Data accessibility: To provide a way to limit the data access of each actor depending on his role
	6	Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository		Data exchange: use the existing infrastructure	Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository	Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository

		Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
	7	Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles.		Data accessibility: To provide a way to limit the data access of each actor depending on his role	Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles.	Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles.
	8	Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages		Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository	Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages	Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages
	9				Data security	Data security
main actor 3	1		Data accessibility: To provide a way to limit the data access of each actor depending on his role	Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages	Data standards: to comply or reuse existing standards whenever possible	Data standards: to comply or reuse existing standards whenever possible
	2		Data exchange: use the existing infrastructure	Data security	Data format: define the format that data should be exchanged	Data format: define the format that data should be exchanged
	3		Uploading data: easy upload process, minimum cost	Data standards: to comply or reuse existing standards whenever possible	Data exchange: use the existing infrastructure	Data exchange: use the existing infrastructure
	4		Data format: define the format that data should be exchanged	Data format: define the format that data should be exchanged	Uploading data: easy upload process, minimum cost	Uploading data: easy upload process, minimum cost
	5			Data exchange: use the existing infrastructure	Data accessibility: To provide a way to limit the data access of each actor depending on his role	Data accessibility: To provide a way to limit the data access of each actor depending on his role
	6			Data accessibility: To provide a way to limit the data access of each actor depending on his role	Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository	Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository

		Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
	7			Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository	Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles.	Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles.
	8			Uploading data: easy upload process, minimum cost	Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages	Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages
	9				Data security	Data security
mainactor4	1		Data accessibility: To provide a way to limit the data access of each actor depending on his role	Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages	Data standards: to comply or reuse existing standards whenever possible	Data standards: to comply or reuse existing standards whenever possible
	2		Data exchange: use the existing infrastructure	Data security	Data format: define the format that data should be exchanged	Data format: define the format that data should be exchanged
	3		Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages	Data standards: to comply or reuse existing standards whenever possible	Data exchange: use the existing infrastructure	Data exchange: use the existing infrastructure
	4		Data security	Data format: define the format that data should be exchanged	Uploading data: easy upload process, minimum cost	Uploading data: easy upload process, minimum cost
	5			Data exchange: use the existing infrastructure	Data accessibility: To provide a way to limit the data access of each actor depending on his role	Data accessibility: To provide a way to limit the data access of each actor depending on his role
	6			Data accessibility: To provide a way to limit the data access of each actor depending on his role	Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository	Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository

		Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
	7			Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository	Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles.	Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles.
	8			Uploading data: easy upload process, minimum cost	Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages	Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages
	9				Data security	Data security
main actor 5	1			Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages	Data standards: to comply or reuse existing standards whenever possible	Data standards: to comply or reuse existing standards whenever possible
	2			Data security	Data format: define the format that data should be exchanged	Data format: define the format that data should be exchanged
	3			Data standards: to comply or reuse existing standards whenever possible	Data exchange: use the existing infrastructure	Data exchange: use the existing infrastructure
	4			Data format: define the format that data should be exchanged	Uploading data: easy upload process, minimum cost	Uploading data: easy upload process, minimum cost
	5			Data exchange: use the existing infrastructure	Data accessibility: To provide a way to limit the data access of each actor depending on his role	Data accessibility: To provide a way to limit the data access of each actor depending on his role
	6			Data accessibility: To provide a way to limit the data access of each actor depending on his role	Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository	Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository

		Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
	7			Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository	Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles.	Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles.
	8			Uploading data: easy upload process, minimum cost	Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages	Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages
	9				Data security	Data security
main actor 6	1				Data standards: to comply or reuse existing standards whenever possible	Data standards: to comply or reuse existing standards whenever possible
	2				Data format: define the format that data should be exchanged	Data format: define the format that data should be exchanged
	3				Data exchange: use the existing infrastructure	Data exchange: use the existing infrastructure
	4				Uploading data: easy upload process, minimum cost	Uploading data: easy upload process, minimum cost
	5				Data accessibility: To provide a way to limit the data access of each actor depending on his role	Data accessibility: To provide a way to limit the data access of each actor depending on his role
	6				Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository	Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository
	7				Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles.	Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles.

		Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
	8				Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages	Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages
	9				Data security	Data security
main actor 7	1				Data standards: to comply or reuse existing standards whenever possible	
	2				Data format: define the format that data should be exchanged	
	3				Data exchange: use the existing infrastructure	
	4				Uploading data: easy upload process, minimum cost	
	5				Data accessibility: To provide a way to limit the data access of each actor depending on his role	
	6				Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository	
	7				Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles.	
	8				Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages	
	9				Data security	

		Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
main actor 8	1				Data standards: to comply or reuse existing standards whenever possible	
	2				Data format: define the format that data should be exchanged	
	3				Data exchange: use the existing infrastructure	
	4				Uploading data: easy upload process, minimum cost	
	5				Data accessibility: To provide a way to limit the data access of each actor depending on his role	
	6				Data storage: Data may be stored in TheFSMs data catalogues or moved to an external repository	
	7				Data preservation: follow best practices for supporting the life cycle of Linked Open Data (LOD) principles.	
	8				Data privacy: privacy protocols need to be established and followed throughout the aggregation, processing, and publishing stages	
	9				Data security	

ANNEX VII – TECHNICAL REQUIREMENTS WORKING TEMPLATE

Business case:	Enter name of the Business case								
Stakeholders:	Enter stakeholder 1								
What is the claim? (data points)	**Who issues the claim? (data provider)**	**What is data source ? (IT system)**	**Is the data source digitalised ?**	**Authentication & Identity scheme**	**Access Control**	**Existing Integration tools**	**Interfaces / data formats**	**Documentation**	**The FSM relation**
Enter data point 1	Select from stakeholders	Enter IT system that is the source for data points	Provide input if data points are available in digital form (e.g. file, database, API...) or not (e.g. pen&paper)	Describe methods of user authentication, if applicable	Describe how access control/permissions are handled in the system.	Describe how the system currently integrates with other systems.	Describe how data points can be accessed in the system (which data formats, which database...).	Explain what kind of sytem documentation is available.	Select from possible options: Substitute, Complement, Component, Not relevant
Enter data point 2	Select from stakeholders		Example: Yes/No	Example: OpenID/OAuth2.0, Auth0, JWT	Example: ABAC, DAC, IBAC, OrBAC, CP-ABE	Example: Oracle Integration Cloud, Apache Kafka / Spark	Example: REST/RESTful API, SOAP, GraphQL, gRPC, manual file import/export or no specific interface available (e.g. excel file on	Example: http://docs.origintrail.io/en/latest/	Example: Substitute

							farmers computer)		
Enter data point 3	Select from stakeholders								
Enter data point 4	Select from stakeholders								
Enter data point 5	Select from stakeholders								

ANNEX VIII – BUSINESS REQUIREMENTS VALIDATION TOOLS

Focus Group - Questionnaire | The FSM Platform

Job Description

PRODUCER	PROCESSOR	RETAILER	BROKER

Position in the company:

1. **Rank the below mentioned co-operations in terms of the magnitude and volume of data exchange that they mostly require with reference to your operation in the food supply chain:**

- __ Client in the food supply chain
- __ Public Authorities
- __ Audit & Certification Bodies
- __ Supplier (i.e. product or service suppliers)
- __ Other:

2. **Rank the below mentioned different types of data (in terms of their subject / content) that you mostly have to handle / manage during your daily operation:**

- __ Accounting Data received with reference to suppliers or clients (e.g. invoices etc.) regarding your facility
- __ Production Data / Processing Data / Trading Data for archiving, relevant to food safety & quality (e.g. agricultural practices, processing practices, trading practices etc.)
- __ Data of external communication with authorities, suppliers, service providers etc. supporting the daily operation (e.g. requests and info, cooperation and work scheduling etc.)
- __ Supportive data to Production / Processing / Trading
- __ Legal Data (e.g. regulations, cooperation agreements etc.)
- __ Other:

3. **Which is the most wanted and important characteristic that the data that you handle daily should have in order to better facilitate your operation's needs:**

   -__ Documented Data

   -__ Up-to-date Data (i.e. regular Data)

   -__ Analytical Data

   -__ Comprehensive periodical Data

   -__ Other:

4. **Rank the data of your interest that you often request from your stakeholders in the supply chain, in the context of your cooperation:**

   -__ Product or service Certificates

   -__ Audit findings from relevant bodies and authorities (i.e. generated from an internal or external audit)

   -__ Special characteristics (quality, safety) of the product or service they provide

   -__ Aspects of the Management System (quality, safety) that they implement for the product or service that they provide

-__ Other:

5. **Rank the data that the stakeholders of yours, mostly require to receive by your side, in the context of your cooperation:**

-__ Product or service Certificates

-__ Internal or external Audit findings (i.e. generated from an internal or external audit)

-__ Special characteristics (quality, safety) of the product or service they receive from you

-__ Aspects of the Management System (quality, safety) that they implement for the product or service that they provide

-__ Other:

6. **Rank the most often used channels for sharing audit and certification info with your suppliers and/ or clients in the supply chain.**

-__ Controlled databases (private or public ones) where data can be uploaded or downloaded

-__ Direct e-mail

-__ Through authorized partners (e.g. certification bodies for data relevant to certified products)

-__ Other:

7. **Rank the following data sources that you most regularly use in order to receive (reach) critical / needed info (data) for your operation.**

-__ IoT systems that generate real time (raw) data, through sensors or other IoT tools (apps etc.) or “cloud” sharing points

-__ Single web databases where treated data are available, after the administrator has updated the database

-__ Suppliers’ sources communicated through data transferring apps

-__ Other:

8. **Rank the most important sub actors for your daily operation regarding the safety and quality of your product / service:**

-__ Certification Body

-__ Consultant

-__ Laboratory

-__ Public Authorities relevant to the product or service

-__ Other:

9. **Define the number of the supportive actors to your operation who they regularly or occasionally provide data that are strongly related to the product or service that you provide in the food supply chain, thus to the data that you provide respectively to the food supply chain stakeholders:**

- ☐ up to three (3)
- ☐ up to five (5)
- ☐ up to seven (7)
- ☐ More than seven (7)

10. **Rank the most significant contribution (important for your work) that the FSM platform could have to your daily operation:**

- __ Improving / organizing the management of data (by substituting the current bureaucratic situation)
- __ Limiting the needed time for sharing data in the food supply chain, having direct access to info
- __ Obtaining real time and up-to-date data
- __ Controlling the daily processes in an efficient way
- __ Ensuring quick and direct contact between the stakeholders in the food supply chain
- __ allowing the set up of new profitable cooperation with other stakeholders in the food supply chain

11. **Rank the following factors which will affect and determine mostly, your decision to use the "TheFSM" tool.**

- __ Needed infrastructure for hosting the platform

- __ Human resources needed for administration
- __ Type of the data that will be shared with it
- __ Level of its acceptance and usage by other stakeholders, interested and involved parties in the supply chain
- __ Other:

12. Do you agree that the FSM platform can be easily adjusted to your working procedures of your company?

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree