

The framework integrates blockchain solutions for data integrity and traceability in the supply chain. A digital food product passport provides secure data communication about food products from origin to consumption. An AI-powered Early Warning System implements predictive analytics for pre-emptive identification and mitigation of food fraud risks, reinforcing food quality and safety decision-making processes.



**WATSON** - A holistic framework with Anticounterfeit and intelligence-based technologies that will assist food chain stakeholders in rapidly identifying and preventing the spread of fraudulent practices.

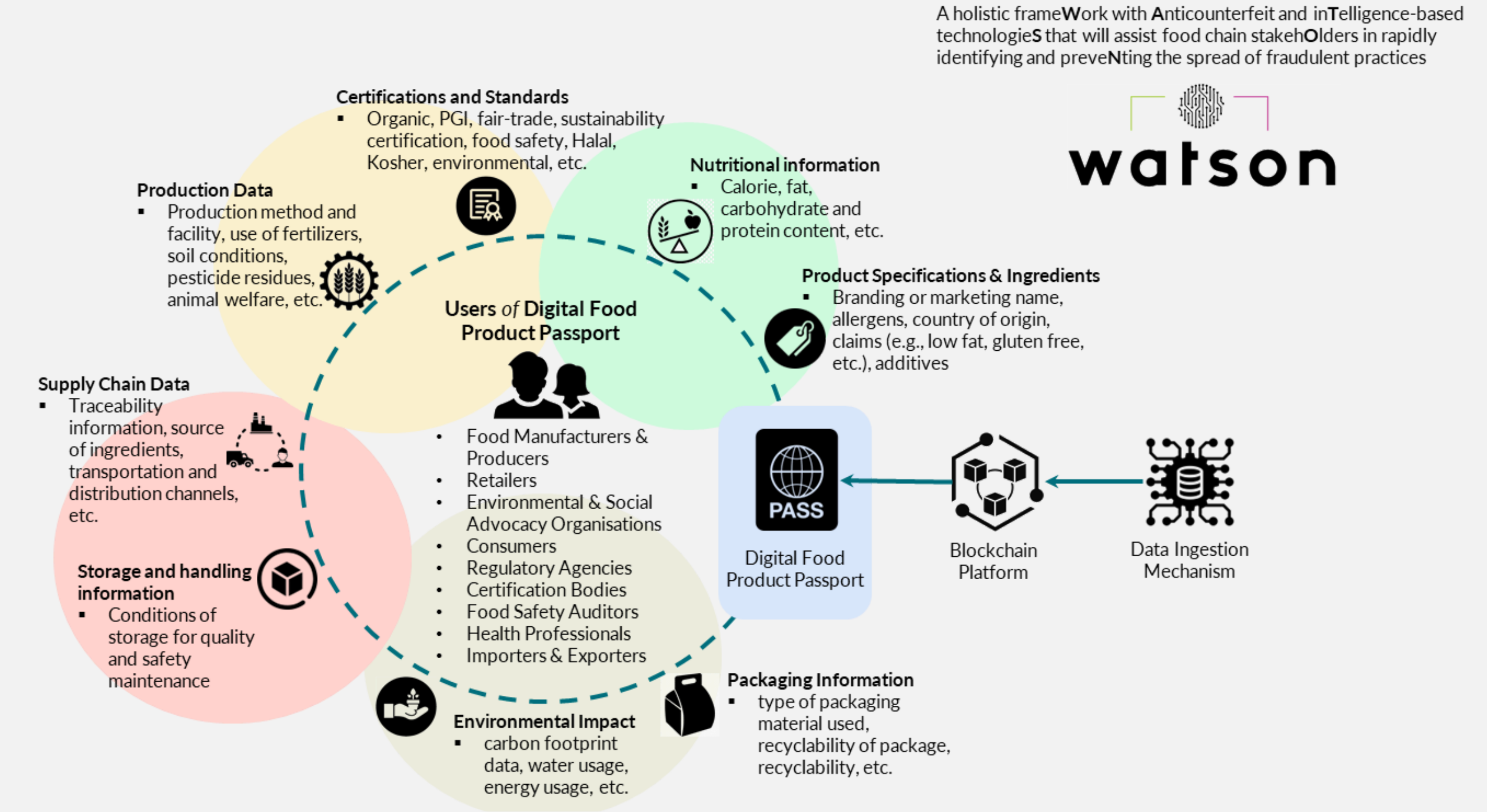
**HORIZON-CL6-2022-FARM2FORK-01-11:** Effective systems for authenticity and traceability in the food system

- NETCOMPANY-INTRASOFT is the designer and developer of the mobile digital product passport and participates in the Blockchain development/deployment
- Duration: 2023 – 2026



**Mobile Digital (Virtual) Product Passport**

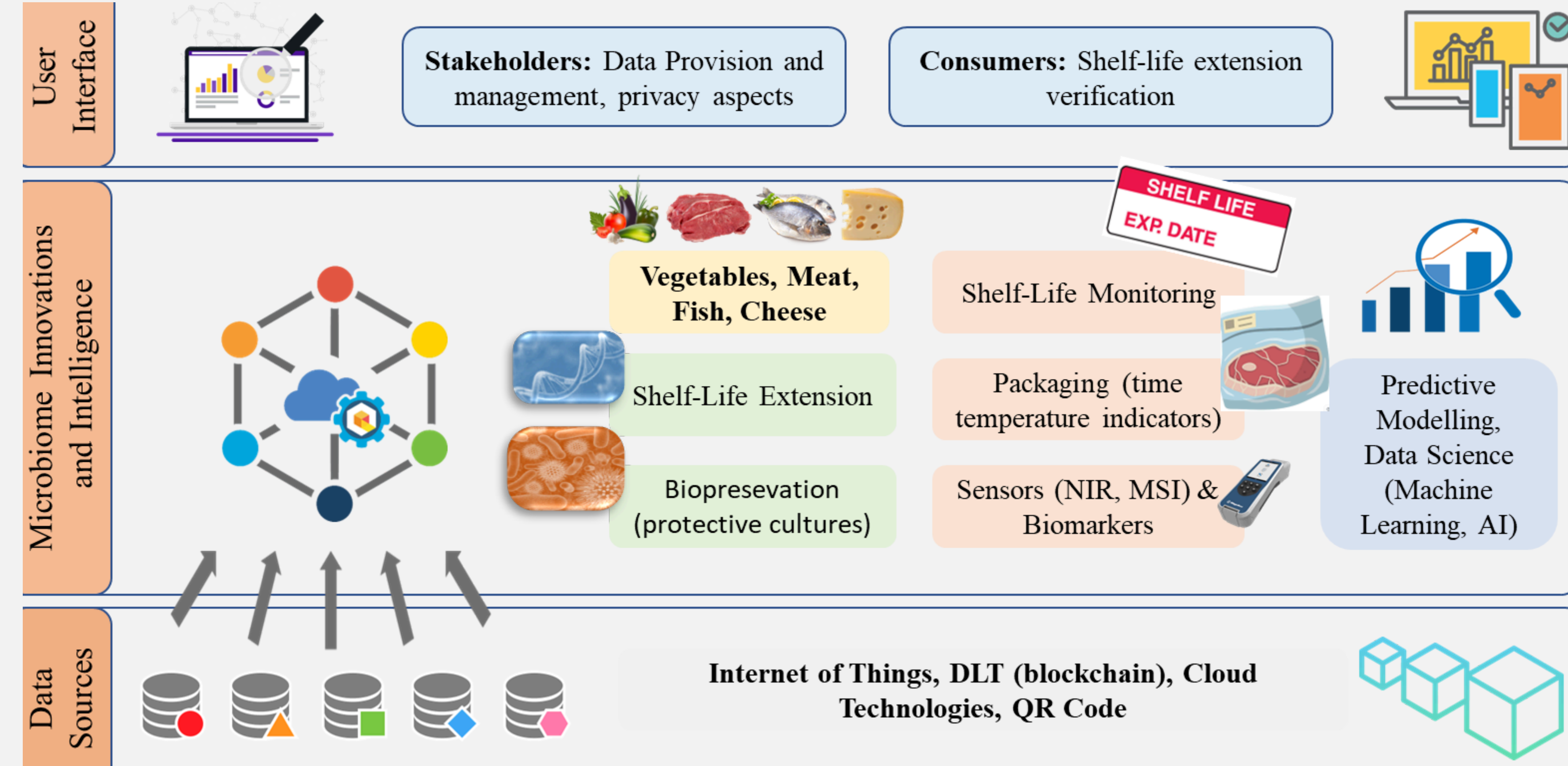
The digital passport will support the traceability of food products and the sustainability of food chains. It will include information related to a food product's origin, composition, packaging, growing methods, producer area and end of life collected in all phases of the food chain and stored in the blockchain platform. It will be linked with IoT and blockchain technology in order to make food production more transparent and sustainable also providing an overview of the production and logistic processes. Moreover, user interfaces for all the involved actors will be developed based on a tokenized method to support the producer, processor, consumer exchange of information. The proposed digital passport will embed a privacy-preserving mechanism based on current state-of-the-art digital security standards.



**FOODGUARD** - Microbiome applications and technological hubs as solutions to minimize food loss and waste

**HORIZON-CL6-2023-FARM2FORK-01-16:** Microbiomes fighting food waste through applicable solutions in food processing, packaging, and shelf-life

- NETCOMPANY-INTRASOFT develops the secure Blockchain-powered data management module for Intelligent FOODGUARD Management System (iFGMS) and the stakeholder engagement modules and leads the FOODGUARD's exploitation activities.
- Duration: 2024 – 2027



**Blockchain-powered Data Management Module for Intelligent FOODGUARD Management System (iFGMS)**

**Benefits:**

Creates the optimal conditions for the microbiome in food processing and food packaging configurations. Aiming to increase transparency in food supply chains, enhance shelf-life management, and build stakeholder consensus on key data, a unique identity will be linked to each item in transit. This creates a data-focused digital twin of the physical product, securely recording events, attributes, and sensor measurements throughout its lifecycle. In the iFGMS, Distributed Ledger Technologies (DLTs) will be used to provide tamper-resistance, decentralized data governance, and rapid information propagation. Exploring the most suitable DLT and storage type for product attributes and sensor measurements. Implementing interfaces for data ingestion and exposure to other modules, IoT sensors, and user interfaces.

**Stakeholder Engagement module**

- The stakeholder engagement module is accessed through web and mobile applications, to provide transparency and a holistic view of the food chain, freshness, microbiome etc. to consumers and inspectors, through a QR-code on product packaging sharing provenance and quality details.
- The module stores information collected throughout the food chain, facilitating the consumer, including details about a product's ingredients, packaging, and end-of-life.

**ALLIANCE** - A holistic framework in the quality Labelled food supply chain systems' management towards enhanced data Integrity and veracity, interoperability, transparency, and traceability.

**HORIZON-CL6-2022-FARM2FORK-01-04:** Innovative solutions to prevent adulteration of food bearing quality labels: focus on organic food and geographical indications

- Duration: 2023 – 2026

**AI-enabled Early Warning and Decision Support System**

Use of AI to identify and assess critical control points in the quality-labelled FSCs and proactively recommend interventions, making faster and adaptable decisions for mitigating food fraud incidences. Its aim is to systematically link early warnings to anticipatory actions. By providing specific early action recommendations for each stage of the FSC, the EWDSS will offer decision support to proactively mitigate and/or prevent fraud incidences as a very early warning or early identification system that identifies trends, opportunities or hazards significantly early in their development before they start to adversely impact food security.

**Predictive Analytics for Food Fraud (PGI, PDO, GI) Prevention**

- Curation of collected data and subsequently employment of data mining and statistics processes to identify hidden associations among the monitored FSC performance parameters and potential vulnerability risks.
- Provision of clear evidence, by the means of statistics, for the possible adverse impacts in human health and the ramification of threats regarding the end-to-end FSC operation and how this can be compromised.
- Incorporation of advanced AI mechanisms and predictive analytics to conduct continuous vulnerability risk assessment for detecting food fraud and blind holes across the food supply chain
- Leverage of prescriptive analytics to propose insightful recommendations to actors for making preventative interventions and plan actionable policies.

