CLOUD FOR DATA-DRIVEN POLICY MANAGEMENT

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D6.10 USE CASE SCENARIOS DEFINITION & DESIGN

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Abstract: This deliverable compiles the aspects related to the Development of the pilot cases of the Policycloud project

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Abbreviations and Acronyms

Abbreviation/Acronym	Definition
EC	European Commission
E2E	End to End
GTD	Global Terrorism Database
ITA	Instituto Tecnológico de Aragón
LEAs	Law Enforcement and Society
KPI	Key Performance Indicator
LON	London Borough of Camden
MAG	MAGGIOLI SPA
PDT	Policy Development Toolkit
RAND	Database of Worldwide Terrorism
SME	Small Medium Enterprise
SOF	Municipality of Sofia
UC	Use Case
OKS	OKYS LTD

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Executive Summary

This document is the second version of D6.3 Use Case Scenarios Definition & Design [1], submitted in September 2020. It provides an updated version of the use case scenarios description, and completes the information presented there. In addition, this deliverable collects the refined versions of the visualization requirements and KPIs per use case. KPIs are classified in three categories: political, technical and business. The modelled policies will be realized / implemented and monitored through the Policy Development Toolkit against these KPIs.

The use cases have been defined taking into account the information collected from the different stakeholders participating in the pilots, as well as from the previous experience and know-how of the project partners. Several workshops have been organized by the project to gather feedback and requirements from relevant stakeholders. This document is the basis for the definition of the main features to be provided by PolicyCLOUD tools and models in the different pilots' implementation.

1 INTRODUCTION

In the following deliverable, we review the 4 use cases of the PolicyCLOUD project, focusing on their different scenarios, their KPIs and the visualization requirements.
The objectives of this deliverable are to present the main indicators to be monitored in the project scenarios and show the visualization requirements of the future tools, which are an essential part of the project developments.

1.1 Summary of Changes

This deliverable is an updated version of the deliverable D6.3. In this new version the following sections have been updated

- Use case scenarios
- Key actors
- KPIs
- User requirements: Visualization requirements

These sections have been updated according to the evolution of the project and the information gathered in the different workshops carried out by the partners participating in the pilot use cases.

With respect to deliverable D6.3 [1], a new section "Description of E2E scenarios" has been added complementing the initial descriptions provided in D6.4 Use Cases Implementation & Experimentation[2], submitted in March 2021, compiling a global version from beginning to end of the processes to be developed in the pilot use cases, facilitating the automation and continuous improvement of the different scenarios of each use case.

2 MAGGIOLI USE CASE 1

2.1 DESCRIPTION

2.1.1 General Description

Use Case 1: Participatory policies against Radicalization
This use case will develop a collaborative data-driven analysis for the validation of existing policies against radicalization based on a participatory review of data coming from social media (e.g., Twitter, Reddit, RSS feeds) and open datasets (e.g., Global Terrorism Database (GTD) and RAND Database of Worldwide Terrorism). In addition, it will provide useful insights and valuable information to policy makers at any level (local/regional, national and EU level) to update current policies and/or create new ones, while at the same time allow them to interact with other relevant stakeholders (i.e. LEAs, social services, schools, civil society) during the creation and modelling of new policies and specific countermeasures, ranging from early detection methodologies to techniques and policies for the monitoring and management of domestic radicalization.

2.1.2 Main Objectives

The use case objectives are through PolicyCLOUD big data streaming and real-time big data platform to improve operational efficiency, transparency, and decision making. The PolicyCLOUD visualisation technologies will enable policy makers to identify issues, trends, and policy effects and interactions. The PolicyCLOUD analytics technologies will enable to discover insights and find meaningful explanations about the effects of policies.

2.1.3 Use case's scenarios

Name	Description	Goals
Scenario A: Radicalization incidents	Monitor the occurrence of radicalization incidents in the geographic proximity of a region. Data coming from the **GTD** and **RAND** will be used. The Policy Maker can select the area of his/her interest and consult the different incidents that have taken place in a given period.	Validate existing policies and investigate if there is a need to update them or create new ones based on the retrieved information.

Name	Description	Goals
Scenario B: Radicalized groups and individuals	Identify the main actors (individuals or groups) involved in extremism activities or propaganda spreading through online and offline activities. Data coming from the **GTD** and **RAND** will be used. The Policy Maker can select the individuals/groups active in the area of his/her interest and consult the different incidents that are linked to each of them.	Validate existing policies and investigate if there is a need to adjust/update them or create new one based on the retrieved information.
Scenario C: Trend analysis	Understand current and future trends of radicalization efforts through keywords detection, new entity recognition, and new terms identification. Data coming from the **social media** will be used. The Policy Maker can select the keywords of his/her interest and consult the different information linked to them.	Validate existing policies and investigate if there is a need to adjust/update them or create new one based on the retrieved information.
Scenario D: (Near)real-time assessment of online propaganda	Understand specific events and online activities (sentiment analysis, opinion mining, location surveillance, user monitoring) Data coming from the **social media** will be used. The Policy Maker can select the keywords of his/her interest and consult the different information linked to them.	Validate existing policies and investigate if there is a need to adjust/update them or create new one based on the retrieved information.

TABLE 1 – UC1 SCENARIOS

2.1.4 Description of E2E scenarios

Before we describe in detail the end-to-end story for each scenario, it is worth mentioning there are some preliminary steps common to all the scenarios that need to be specified, as follows:

a) First and foremost, the Policy Maker have to specify the domain: in this case is **SECURITY.**

b) Then, he/she will need to provide a short description of the policy model and its main goals.

c) Finally, the relevant stakeholders linked to the specific policy model will be specified (see Table 2 – Key actors for UC1).

In the following paragraphs, we describe the remaining steps to be followed by the Policy Maker for each of the predefined scenarios. At this phase of the project, there are four scenarios for use case 1 (see Table 1).

Scenario A

- Policy Modelling Editor

For this scenario, the following parameters will be used:

1) Relevant KPIs:

- **UC1-KPI#9**: Number of identified occurrences of radicalization incidents in a given area

- In the properties of the KPI, the policy maker needs to specify the data source: **GTD** or **RAND**.

2) Name the selected Analytical tool:

- Data Visualisation

    o Type: Heatmap

    o Additional parameters to be specified:

        ▪ "iyear", the year when the incident occurred. The policy maker can select a unique value (type:EQUAL): 2017, or a set of values (type:GREATER_OR_EQUAL): 2017 [2017, 2018, 2019, 2020]

        ▪ "region", the geographic area where the incident occurred. It can have a unique value (type:EQUAL): Italy, or a set of values (type:IN): 8 [Western Europe]

Once the policy maker has reviewed and submitted the Policy Model, he/she will be redirected to the PDT in order to evaluate the submitted Policy Model.

- Policy Development Toolkit

The policy maker select the Policy Model defined previously and specify the relevant KPIs for its evaluation, in this case UC1-KPI#9.

Scenario B

- Policy Modelling Editor

For this scenario, the following parameters will be used:

1) Relevant KPIs:

- **UC1-KPI#10**: Number of identified active groups/individuals in a given area

- In the properties of the KPI, the policy maker needs to specify the data source: **GTD** or **RAND**.

2) Name the selected Analytical tool:

- Data Visualisation

    o Type: Bar chart

Once the policy maker has reviewed and submitted the Policy Model, he/she will be redirected to the PDT in order to evaluate the submitted Policy Model.

- Policy Development Toolkit

The policy maker will select the Policy Model defined previously and specify the relevant KPIs for its evaluation, in this case UC1-KPI#10.

Scenario C

- Policy Modelling Editor

For this scenario, the following parameters will be used:

1) Relevant KPIs:

- **UC1-KPI#11**: Number of new terms / keywords identified from the policy maker

- In the properties of the KPI, the policy maker needs to specify the data source: **Twitter**.

2) Name the selected Analytical tool:

- Hashtag detection

    o Additional parameters to be specified:

        ▪ Initial keywords specified by the policy maker

- Data Visualisation

    o Type: Bar chart

Once the policy maker has reviewed and submitted the Policy Model, he/she will be redirected to the PDT in order to evaluate the submitted Policy Model.

- Policy Development Toolkit

The policy maker will select the Policy Model defined previously and specify the relevant KPIs for its evaluation, in this case UC1-KPI#11.

Scenario D
- Policy Modelling Editor

For this scenario, the following parameters will be used:

1) Relevant KPIs:

- **UC1-KPI#12**: Number of negative opinions on social networks from the different groups / individuals

- In the properties of the KPI, the policy maker needs to specify the data source: **Twitter**.

2) Name the selected Analytical tool:

- Sentiment analysis / Opinion Mining

  o Additional parameters to be specified:

    ▪ Initial keywords specified by the policy maker

- Data Visualisation

  o Type: Bar chart

Once the policy maker has reviewed and submitted the Policy Model, he/she will be redirected to the PDT in order to evaluate the submitted Policy Model.

- Policy Development Toolkit

Once the policy maker has reviewed and submitted the Policy Model, he/she will be redirected to the PDT in order to evaluate the submitted Policy Model.

2.1.5 Key Actors

The main actors involved in this Use Case are:

Role	Objective	Approach Sought	Skills and Competences
Policy Maker[1]	Prevention, De-Radicalization, Reintegration		Analytical, Screening Techniques
Local authority / Municipality	Prevention, Reintegration	Community Engagement / Empowerment	Maintains informed about radicalization as a subject, Evidence based - healthy dose of scepticism
LEAs	Prevention	Training First Line Practitioners	Tempered and does not jump to conclusions
Policy Officers	Prevention		Ability to engage with people, Ability to build trust, Have empathy, Tempered and does not jump to conclusions, Effective initiator or partner in multi or inter-agency cooperation
Families	Reintegration	Educating Young People	Non-judgmental character
Teachers and educators	Prevention, Reintegration	Delivering Alternative Narratives	Willingness to spend time with young people, Ability to recognize/observe change, Intercultural understanding
Psychologist / school councilor	De-Radicalization, Reintegration	Family support	Ability to maintain relationship within a broad spectrum
Prison / Probation Practitioner	De-Radicalization,	Exit Strategy	Legal knowledge

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[1] Entities that may create and apply policies related to radicalization management. Includes public authorities at central level (e.g. regions, ministries, EU), which have different rights and enforcement capabilities. They are the end users of the PDT.

Role	Objective	Approach Sought	Skills and Competences
Local community organizations and NGOs	Prevention, Reintegration	Community Engagement / Empowerment	Ability to engage with people and build relationship, Speak the language of minority groups, Intercultural sensitivities
Religious leaders	Prevention, Reintegration	Community Engagement / Empowerment	Ability to engage with people and build relationship, Speak the Language of minority groups
Journalists			Evidence based – healthy dose of scepticism

TABLE 2 – KEY ACTORS FOR UC1

2.2 KPIs

2.2.1 Policy KPIs

Section	Description
ID	MAG-KPI1
Title	Reduction of time to develop a new policy to counter radicalization targeting vulnerable groups (e.g. children, youth, migrant)
Priority	High
Reference Use Case	UC#1
Success Criteria	>50%

TABLE 3 – UC1 POLICY KPI1

Section	Description
ID	MAG-KPI2
Title	Increase in community engagement and multi-agent cooperation in policy development
Priority	High
Reference Use Case	UC#1
Success Criteria	>20%

TABLE 4 – UC1 POLICY KPI2

Section	Description
ID	MAG-KPI3
Title	Reduce time to make prediction of possible risk of radicalization
Priority	High
Reference Use Case	UC#1
Success Criteria	>25%

TABLE 5 – UC1 POLICY KPI3

2.2.2 Technical KPIs

Section	Description
ID	MAG-KPI4
Title	Number of data sources integrated and linked in the PDT
Priority	High
Reference Use Case	UC#1
Success Criteria	>=3

TABLE 6 – UC1 TECHNICAL KPI4

Section	Description
ID	MAG-KPI5
Title	Number of open datasets about radicalization integrated in the PDT
Priority	High
Reference Use Case	UC#1
Success Criteria	>=2

TABLE 7 – UC1 TECHNICAL KPI5

Section	Description
ID	MAG-KPI6
Title	Increased number of algorithms / analytics tools used by the policy maker
Priority	High
Reference Use Case	UC#1

Section	Description
Success Criteria	>20%

TABLE 8 – UC1 TECHNICAL KPI6

Section	Description
ID	MAG-KPI7
Title	New tools for visualisation of radicalization efforts integrated and used by the policy maker
Priority	High
Reference Use Case	UC#1
Success Criteria	>=1

TABLE 9 – UC1 TECHNICAL KPI7

Section	Description
ID	MAG-KPI8
Title	Increased number of analytics tools (algorithms) used by the policy maker
Priority	High
Reference Use Case	UC#1
Success Criteria	>20%

TABLE 10 – UC1 TECHNICAL KP18

2.2.3 Business KPIs

Section	Description
ID	MAG-KPI9
Title	Number of identified occurrences of radicalization incidents in a given area
Priority	High
Reference Use Case	UC#1
Success Criteria	>=0

TABLE 11 – UC1 BUSINESS KPI9

Section	Description
ID	MAG-KPI10
Title	Number of identified active groups/individuals in a given area

Priority	High
Reference Use Case	UC#1
Success Criteria	>=0

TABLE 12 – UC1 BUSINESS KPI10

Section	Description
ID	MAG-KPI11
Title	Number of new terms / keywords identified from the policy maker
Priority	High
Reference Use Case	UC#1
Success Criteria	>=5

TABLE 13 – UC1 BUSINESS KPI11

Section	Description
ID	MAG-KPI12
Title	Number of negative opinions on social networks from the different groups / individuals
Priority	High
Reference Use Case	UC#1
Success Criteria	>=200

TABLE 14 – UC1 BUSINESS KPI12

2.3 USERS REQUIREMENTS

2.3.1 Visualizations Requirements

For UC1 "Participatory policies against radicalization" the visualization functionalities are very valuable as they enable the policy maker to check at a glance the results of the selected data and thus understand what is happing in an area of his/her interest. Hence, the first type of visualisation option to be included in the PDT shall be the heatmap. An example is provided in Figure 1.
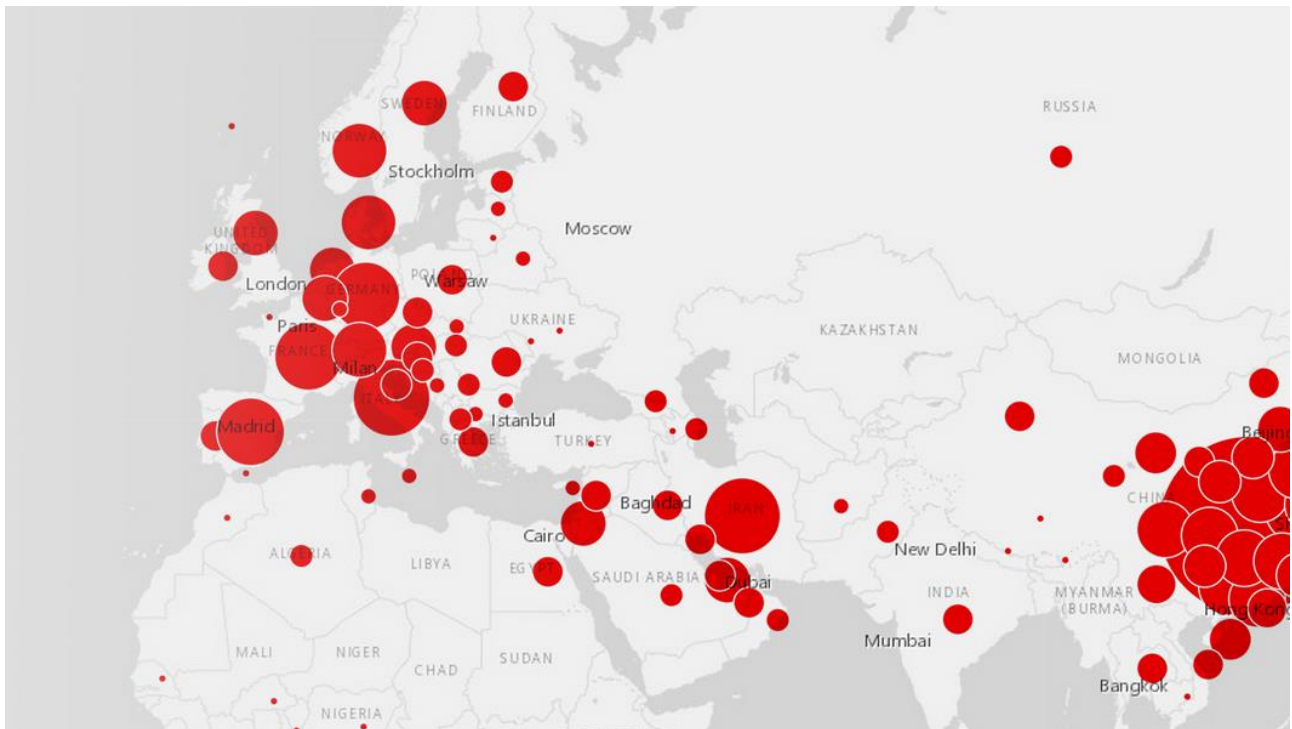
FIGURE 1 – EXAMPLE OF HEATMAP FOR UC1

For this specific scenario, data will be retrieved from the GTD and RAND, which are already available in a structured format. The policy maker shall be able to filter the data based on different criteria (e.g., location, date, number of incidents, attack type, etc.). Thus, the system should show the different panels based on the selected criteria.

In the same way, the panels must display the impact of terrorism for each criterion.

Number of terrorist attacks, 2017

Region	Value
Middle East & North Africa	3,780
South Asia	3,430
Sub-Saharan Africa	1,970
Southeast Asia	1,020
Western Europe	291
South America	172
Eastern Europe	110
North America	97
Australasia & Oceania	12
Central Asia	7
East Asia	7
Central America & Caribbean	4

⊕ Add country
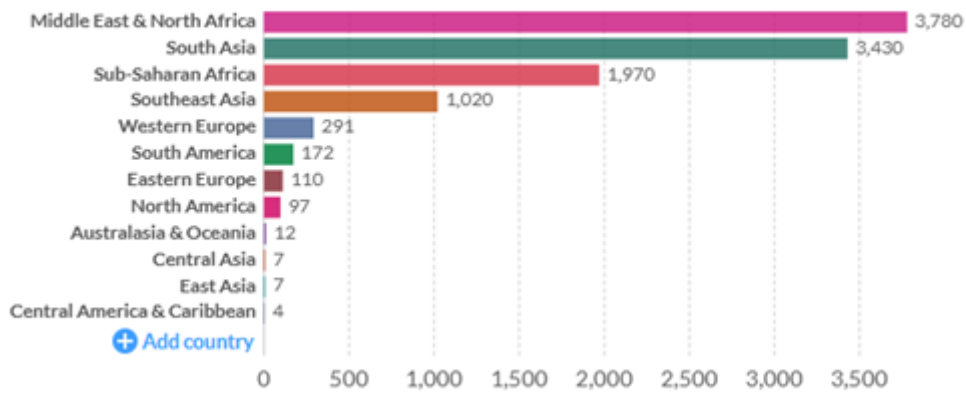
FIGURE 2 – EXAMPLE OF BAR CHART FOR UC1

COUNTRIES WITH THE HIGHEST NUMBER OF DEATHS BY TERRORISM, 2014
Five countries account for nearly 80 per cent of global terrorist deaths.

Country	Percentage
Iraq	30.4%
Nigeria	23.0%
Afghanistan	13.8%
Pakistan	5.4%
Syria	5.2%
Somalia	2.5%
Ukraine	2.0%
Yemen	2.0%
Central African Republic	1.8%
South Sudan	1.7%
Rest of the world	12.3%
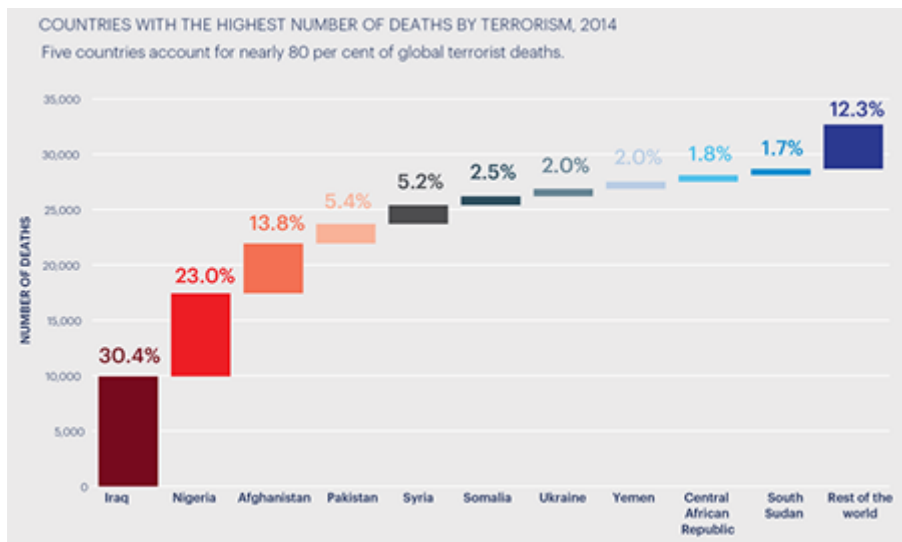
FIGURE 3 – EXAMPLE OF BAR CHART FOR UC1

Suicide attacks by target, male and female, Boko Haram, 2014–2018
Female suicide bombers were much more likely to attack public places.

SUICIDE BOMBINGS WITH MALE PERPETRATORS

SUICIDE BOMBINGS WITH FEMALE PERPETRATORS

- Marketplace/Plaza/Square
- Unnamed Civilian/Unspecified
- Refugee (including Camps/IDP/Asylum Seekers)
- Place of Worship
- Non-State Militia
- Other
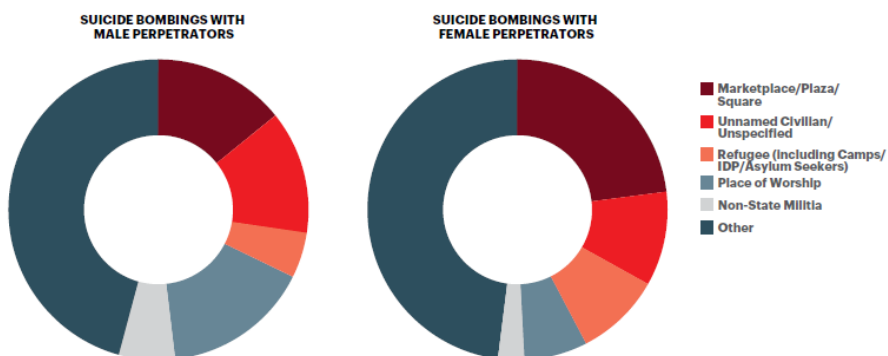
FIGURE 4 – EXAMPLE OF PIE CHART FOR UC1
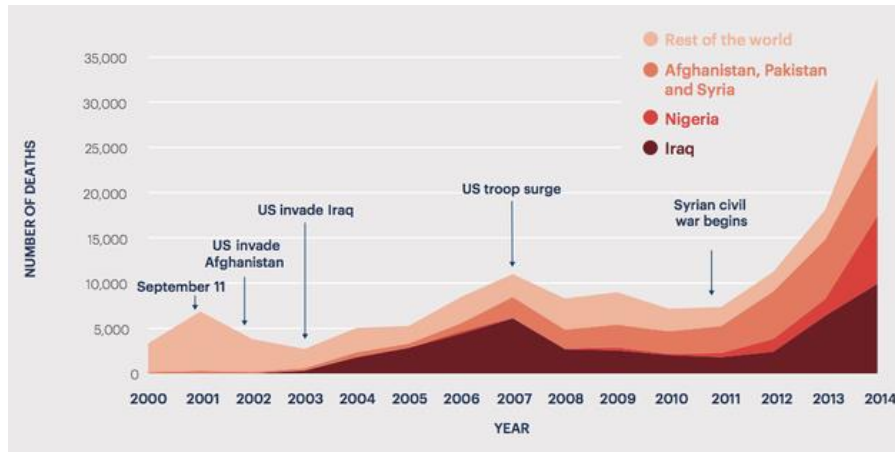
FIGURE 5 – EXAMPLE OF STACKED AREA CHART FOR UC1
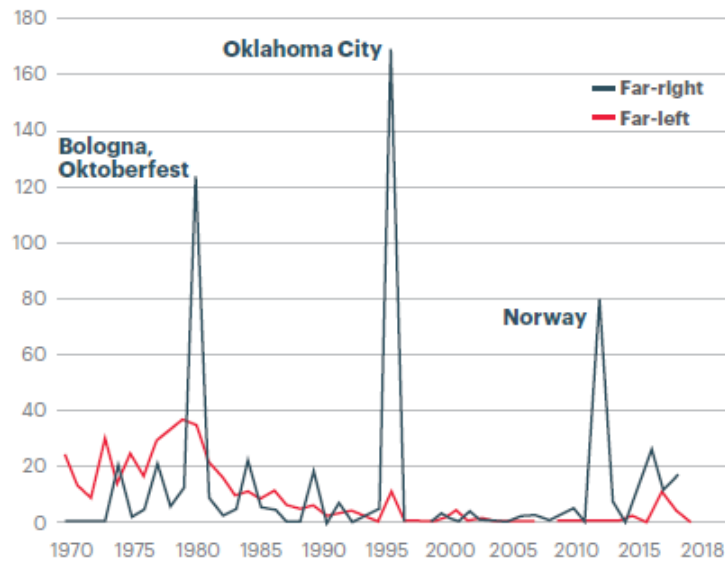
FIGURE 6 – EXAMPLE OF LINE CHART FOR UC1

FIGURE 7 – EXAMPLE OF BAR CHART FOR UC1
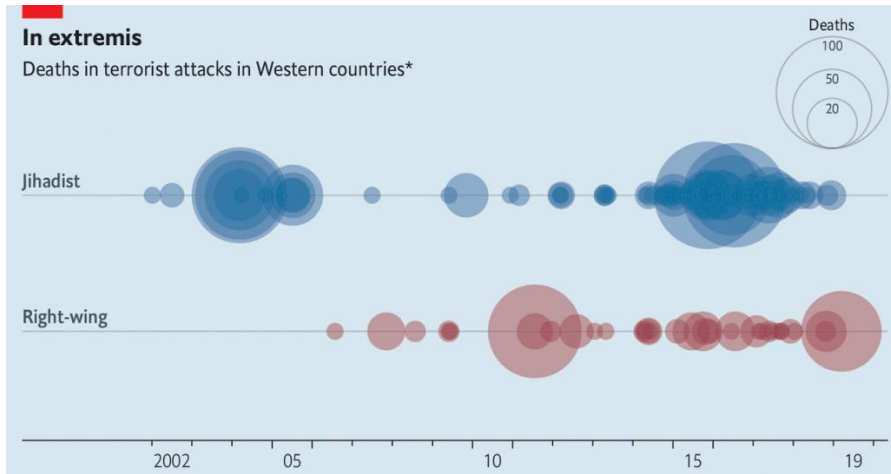
FIGURE 8 – EXAMPLE OF CHART FOR UC1

The opinion of citizens could be collected from their concerns expressed in social media. The events that have had the most impact (number of likes, comments, retweets) could be showed in different panels, with the timeline, the date, source and link to the original document source.
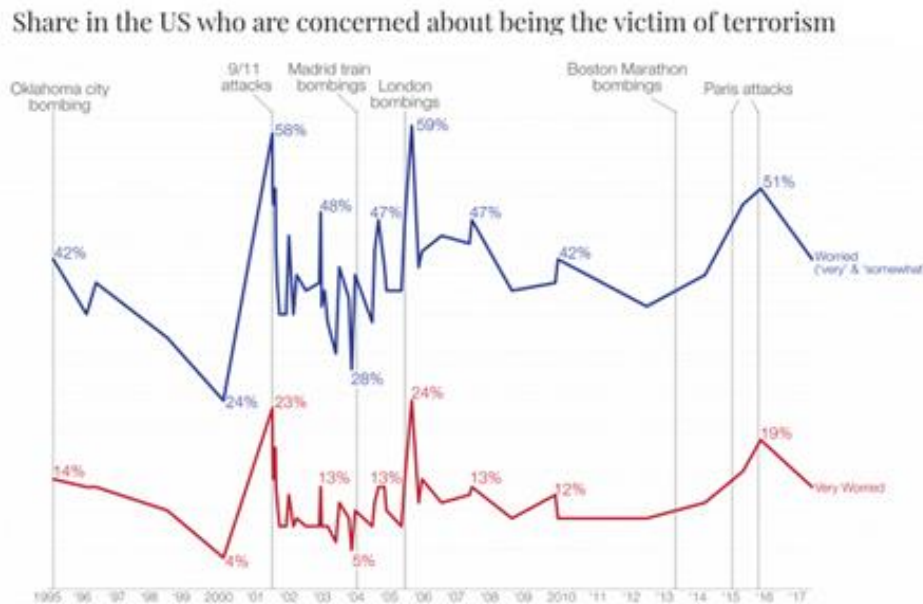
FIGURE 9 – EXAMPLE OF LINE CHART FOR UC1

Share of US citizens who say they're less willing to do certain activities because of terrorism
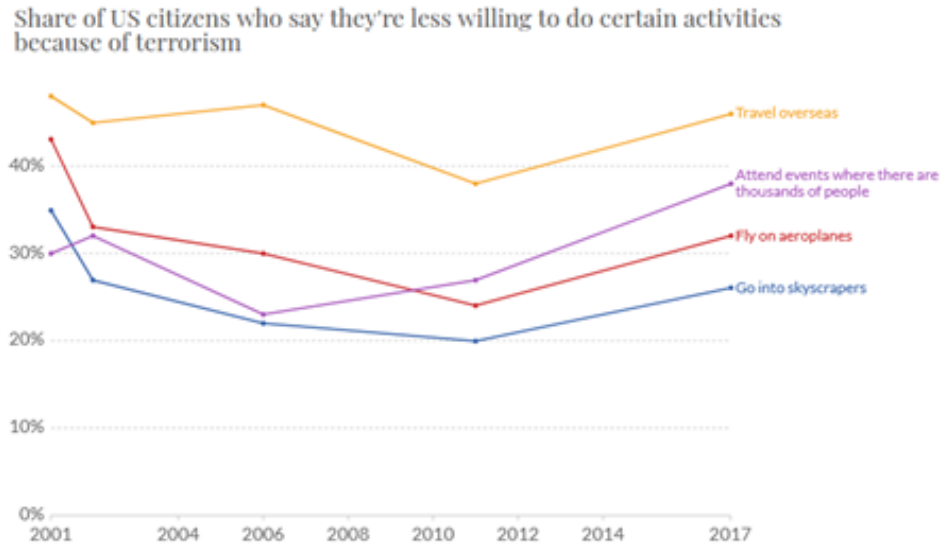
FIGURE 10 – EXAMPLE OF LINE CHART FOR UC1

Additionally, the most important terms could be displayed using tag clouds, used to check the frequency of texts, using different sizes (bigger with higher frequency) and colours:

FIGURE 11 – EXAMPLE OF TAG CLOUD FOR UC1

TOP POST

A ver si nos aclaramos: -La comida ecológica NO es más sana -NO hace falta tomar chía, lino, açaí o quinoa para comer sano -Comer sano NO es comprar pijadas en tiendas bio o macrobióticas -Comer verdura, fruta, legumbres o frutos secos SÍ es sano. Da igual si son ecológicas o no
18/10/2018

-Sí hay alimentos malos, cuyos efectos nocivos están probados. Ejemplo: muchos de los que produce CocaCola, empresa para la que trabajaba este señor. -Ojalá el ministro haga lo posible por frenar el consumo de basura comestible, que tanto daño hace a la salud de los españoles. https://t.co/0fp9ABvUqo
14/01/2020

Si en tu confinamiento dominical no tienes muchas cosas en la nevera y quieres cocinar algo con ellas en lugar de pedir comida a domicilio, desde El Comidista podemos ayudarte: dinos de qué ingredientes dispones y te diremos qué puedes hacer con ellos. ¡Empezamos ya!
15/03/2020

¿Cómo avanzaron los negros con los derechos civiles, las mujeres con el sufragio universal o los obreros con las condiciones dignas en las fábricas? Calladitos en sus casas desde la "no polémica". https://t.co/KC8nxMvux4
07/10/2018

FIGURE 12 – EXAMPLE OF TOP POST OF TWITTER

In addition, it is also important to identify and take into account trends to predict possible risks and threats of radicalization. As an example, the Data Visualization Framework could display the information in the following way showing terms going up and down:
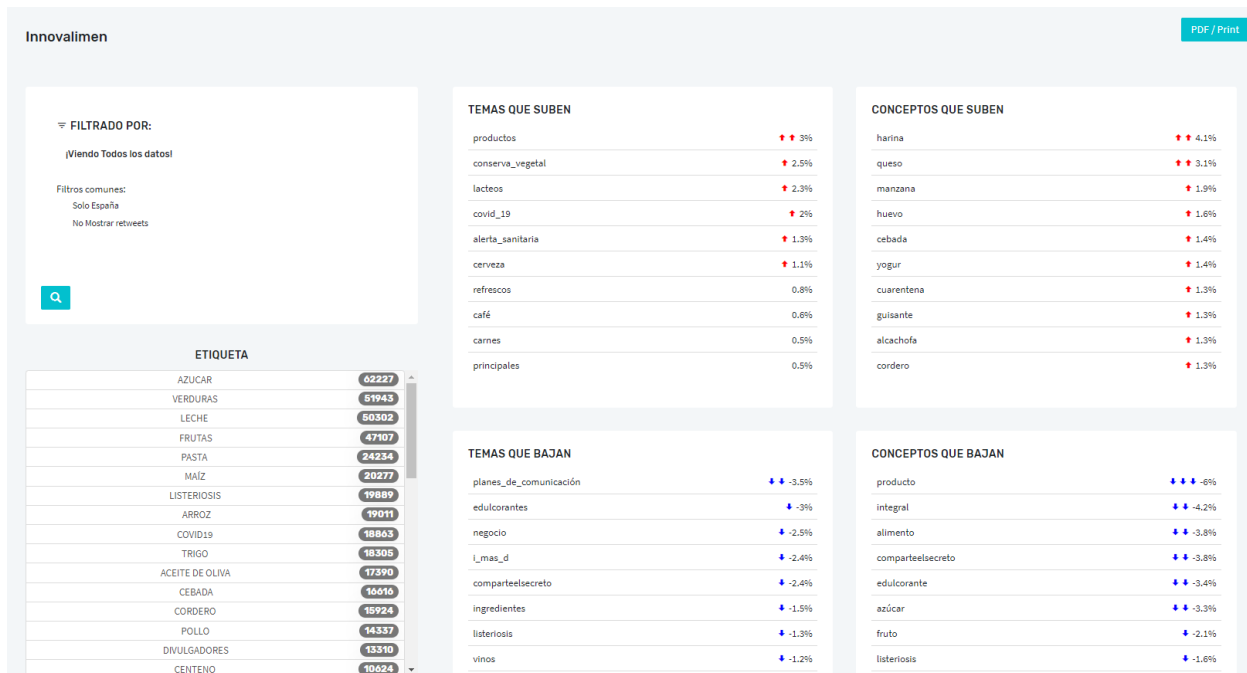
FIGURE 13 – EXAMPLE OF UI DASHBOARD TO EVALUATE TRENDS

Visualizations for UC1

Scenario	Visualizations
Scenario A: Radicalization incidents	Heatmap (see Figure 1) Alternatively, a Bar Chart (see Figure 2)
Scenario B: Radicalized groups and individuals	Bar chart (see Figure 2) Alternatively, bar chart (Figure 7)
Scenario C: Trend analysis	Dashboard (see Figure 13) + line chart (see Figure 10) + tag cloud (see Figure 11)
Scenario D: (Near)real-time assessment of online propaganda	Line chart (see Figure 9) Cloud chart (see Figure 8)

TABLE 15 – VISUALIZATIONS FOR UC1

3 SARGA USE CASE 2

3.1 DESCRIPTION

3.1.1 General Description

Use Case 2: Intelligent policies for the development of agrifood industry.
The agri-food industry in the Aragon region has annual sales exceeding € 2.5 billion, represents 8.8% of production and 11.86% of employment in the industrial sector in Aragon. Globalization and the increasing complexity of markets pose a threat to all traditional industries.

This industry is formed for the most part by small producers and SMEs with little access to new technologies, which is why it is important to collaborate with the Government of Aragon for the implementation of new investment methodologies in diffusion based on artificial intelligence. At this time from Aragon we want to give a boost to this important industrial sector, important not only economically but also socially, since we must take into account that this industrial activity takes place in rural environments, and for a region so punished by depopulation, the agri-food sector is the best tool to settle the population.

3.1.2 Main Objectives

- Improve investments in agri-food promotion by the Government of Aragon.
- Facilitate tools and access to new technologies for small and medium producers, tools based on open data, social media analysis, opinion mining.
- Improve the distribution of products thanks to the tool created in the project, a tool that allows them to search and compare prices and their positioning of their products and their rivals.
- Support for decision-making in the investment of the different geographical areas with market study elements based on artificial intelligence.
- Bringing the agri-food industry closer to new technologies.
- To support policy makers in the design and modelling of new policies / updating existing ones.
- Create stable working groups between producers and policy makers that allow to improve both communication and the development of new tools.

3.1.3 Use case's scenarios

Name	Description	Goals
Scenario A	Visualize the sale price of wine on the different specialized websites, with automatic warning systems that avoid penalties for contracts with large distributors.	Control of distribution prices of both its own products and those of the competition, allowing to improve commercial policy.

Name	Description	Goals
Scenario B	Visualize the negative and positive opinions on social networks of the different products analysed allowing an automatic and immediate response to the end user.	Create an immediate communication with the end user, knowing their impressions, both positive and negative, that will allow us to interact with the end customer more directly.
Scenario C	Analysis of the trends in the wine sector through the specialized websites of the sector.	This action will allow us to know the trends in each of the markets that are of interest, knowing the trends in the sector we will be able to adjust our diffusion policies taking into account all possible parameters.

TABLE 16 – UC2 SCENARIOS

3.1.4 Description of E2E scenarios.

In the next section we will analyse the different scenarios, starting from some common prescriptions such as
a) First, the Policy Maker must specify the domain: in this case it is Analysis of trends and parameters for a correct distribution of public funds in promotion labours of the Aragonese wine sector.
b) Then you will need to provide a short description of the main goals of the use case.
c) Finally, the relevant actors linked to the use case will be specified (see Table 17)

SCENARIO A Visualize the sale price of wine
For this scenario, the following parameters will be used:
1) Relevant KPIs:
   - KPI 7 Provide real –time calculation capacity • Increasing the reaction capacity is essential to apply efficient measures in the market.
   - KPI 12 increment price in the last month Knowing price fluctuations is a very important indicator for wineries, trading companies and especially for establishing policies based on the prices of the sector.

2) Name the selected Analytical tool:
- Useful chart (see Figure 14)
- Bar Chart (see Figure 18)

Additional parameters to be specified:
- We must take into account the temporal sequences for the correct analysis of the scenario,

- Definition of geographic areas according to Market to be determined
- Analysis by policy makers of the different strategies to adopt

SCENARIO B Visualize the negative and positive opinions on social networks of the different products analyzed allowing an automatic and immediate response to the end user

For this scenario, the following parameters will be used:

1) Relevant KPIs:
    - KPI 4 Provide real –time calculation capacity.
    - KPI 6 Increase process speed.
    - KPI 8 Total number occurrences.
    - KPI 9 relative Total nº occurrences %.
    - KPI 10 Opinion (-1 (negative) to 1 (positive)) |impact.
    - KPI 11 increment of the impact in the last month

In all these indicators, speed in data processing and analysis is essential, especially important is the immediate analysis of both positive and negative comments for the rapid action of the agents involved. An increase in the impacts and appearances in social networks of brands and wineries of the Aragonese wine sector is also sought.

2) Name the selected Analytical tool:

    - Useful chart (see Figure 14)

    - Display opinion and sentiments (see Figure 20)

    - Chart opinion media (see Figure 21)

    - Charts used for social media visualization (see Figure 22)

    - Bar chart to analyse social (see Figure 23)

Additional parameters to be specified:
- Coordination with the different actors involved in the actions to be carried out to improve and increase the impacts on social networks
- Definition of geographic areas according to Market to be determined
- Analysis by policy makers of the different strategies to adopt

SCENARIO C Analysis of the trends in the wine sector through the specialized websites of the sector.

1) Relevant KPIs:
    - KPI 8 Total number occurrences.
    - KPI 9 relative Total nº occurrences %.

In this case, the analysis has to add in addition to the sections and impact on social networks, the study of specialized websites, trendsetters and all the information available on the wine market.

2) Name the selected Analytical tool
    - Customer chart (see Figure 15)

- Chart evaluate trends (see Figure 19)
- + tag cloud (see Figure 16)
- Panel top post (see Figure 17)

Additional parameters to be specified:
- Coordination with the different actors involved in the actions to be carried out to improve and increase the impacts on social networks
- Definition of geographic areas according to Market to be determined
- Analysis by policy makers of the different strategies to adopt

3.1.5 Key Actors

The main actors involved in this Use Case are:

Actor	Role	Approach Sought	Skills and Competences
Policy Maker	Coordinate investment policies in diffusion of the wine sector.	Coordinate different administrations with competences in the sector.	Analytical, Management.
Wine producers (wineries)	Provide information on the needs of the sector and the development of the tool.	Collect information necessary for the project.	Specification of the needs of the sector. Analysis of the actions carried out so far.
Designation of Origin	Group producers information.	Meeting with small producers	Analytical Coordination
Regional promotion agencies (Aragón exterior; Sarga ...)	Coordinate promotional actions.	Coordination meetings to learn about the promotional actions carried out both nationally and internationally.	Marketing. IT experience.
Agri food cluster	Support in workshops and information analysis.	Coordination meeting.	Marketing.

TABLE 17 – KEY ACTOS FOR UC2

3.2 KPIs

3.2.1 Policy KPIs

Section	Description
ID	SAR-KPI1
Title	Improve the impact of investment in agri-food promotion (wine sector)
Priority	High
Reference Use Case	UC#2
Success Criteria	>5% sales

TABLE 18 – UC2 POLICY KPI1

Section	Description
ID	SAR-KPI2
Title	Coordinate actions of the different competent administrations
Priority	High
Reference Use Case	UC#2
Success Criteria	>5% sales

TABLE 19 – UC2 POLICY KPI2

3.2.2 Technical KPIs

Section	Description
ID	SAR-KPI3
Title	Improve the flexibility of the data structure
Priority	High
Reference Use Case	UC#2
Success Criteria	>20%

TABLE 20 – UC2 TECHNICAL KPI3

Section	Description
ID	SAR-KPI4
Title	Provide real–time calculation capacity
Priority	High
Reference Use Case	UC#2
Success Criteria	>20% of the data

TABLE 21 – UC2 TECHNICAL KPI4

Section	Description
ID	SAR-KPI5
Title	Unification and/or interoperability of data sources
Priority	High
Reference Use Case	UC#2
Success Criteria	10 data sources

TABLE 22 – UC2 TECHNICAL KPI5

Section	Description
ID	SAR-KPI6
Title	Increase process speed
Priority	High
Reference Use Case	UC#2
Success Criteria	>30% Reduce time

TABLE 23 – UC2 TECHNICAL KPI6

Section	Description
ID	SAR-KPI7
Title	Increase speed of information access
Priority	High
Reference Use Case	UC#2
Success Criteria	>25% Reduce time

TABLE 24 – UC2 TECHNICAL KPI7

3.2.3 Business KPIs

Section	Description
ID	SAR-KPI8
Title	Total number occurrences
Priority	High
Reference Use Case	UC#2
Success Criteria	>50%

TABLE 25 – UC2 BUSINESS KPI8

Section	Description
ID	SAR-KPI9
Title	Relative Total nº occurrences %
Priority	High
Reference Use Case	UC#2
Success Criteria	>10%

TABLE 26 – UC2 BUSINESS KPI9

Section	Description
ID	SAR-KPI10
Title	Opinion (-1 (negative) to 1 (positive)) |impact
Priority	High
Reference Use Case	UC#2
Success Criteria	Average positive

TABLE 27 – UC2 BUSINESS KPI10

Section	Description
ID	SAR-KPI11
Title	Increment of the impact in the last month
Priority	High
Reference Use Case	UC#2
Success Criteria	>15%

TABLE 28 – UC2 BUSINESS KPI11

Section	Description
ID	SAR-KPI12
Title	Increment price in the last month
Priority	High
Reference Use Case	UC#2
Success Criteria	10% drop relative to dangerous price drops for the end user

TABLE 29 – UC2 BUSINESS KPI12

3.3 USERS REQUIREMENTS

3.3.1 Visualizations Description and Requirements

For the UC "Intelligent Policies for the development of denomination of origin" the visualization dashboards are very valuable as policies try to boost the promotion of the regional wine sector by providing support and aid for investment in wineries and by promoting wines in third countries; therefore these policies seek to ensure that the efforts and public resources invested are reflected in the wine market, one of the most competitive and specialized at international level.
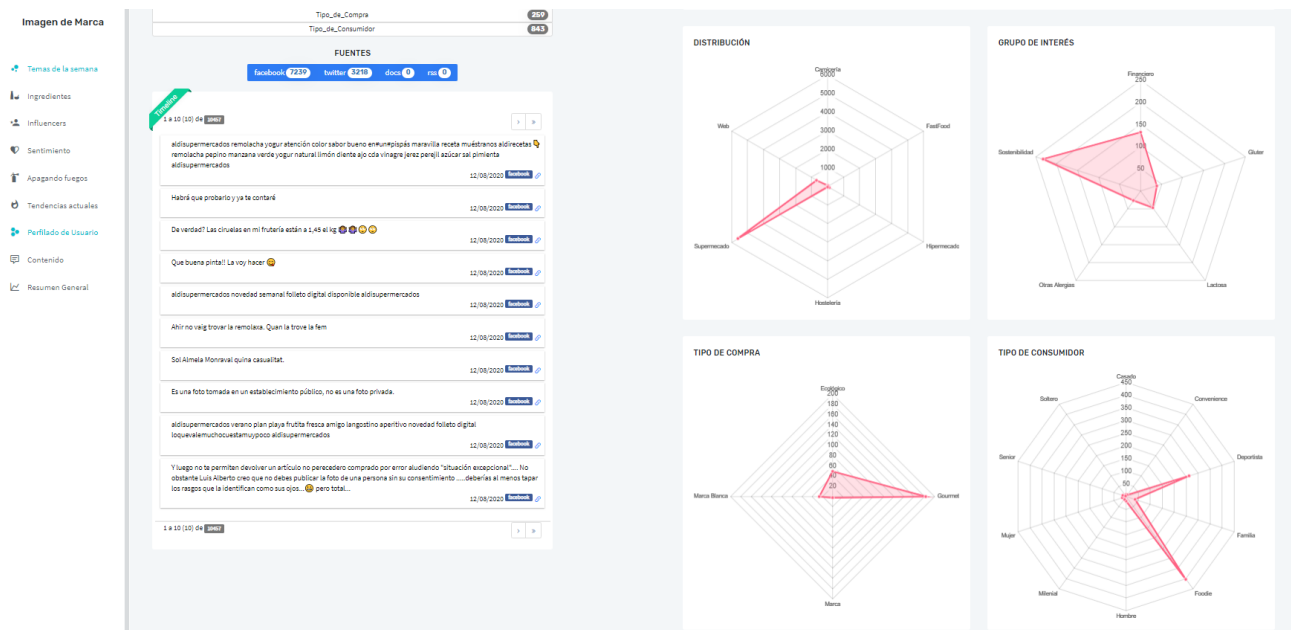

FIGURE 14 – EAMPLE OF UI WITH USEFUL CHARTS AND PANNELS FOR THE UC

For enabling policy makers to check in a glance the results of selected data analytics queries outcomes the following chart options with their associated data would be relevant for the use case. To collect the

data and provide them from different perspectives, data sources can be filtered according to multiple criteria and show the different panels from several points of view. Thus, the data can be shown from several perspectives: distribution, competitors, customers, etc.

To identify the behaviour of the competitors and their strategies, both in sales and positioning, the data will come from the social networks probes that will be configured by indicating which competitors want to be considered and which will subsequently display the data under this competitive pursuit.

In the same way, the panels and dashboards have to display the impact of the campaigns on consumers. It may be useful to profile the type of consumer in order to try to determine whether demographic and social factors are relevant to the perception of wine and its consumption habits. For this purpose, radar charts could be very useful as shown in the example:
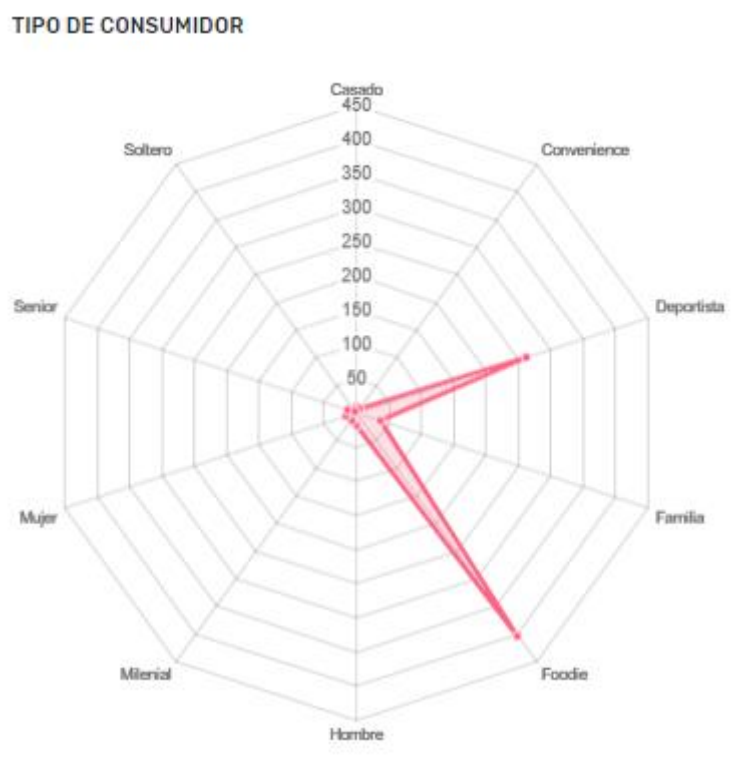
FIGURE 15 – EXAMPLE OF CHART FOR CUSTOMER PROFILING

The opinion of customer could be collected from their opinions including panels and also the themes they mention. The documents of our customers that have had the most impact (number of likes, comments, retweets) could be showed in different document content panels, with the timeline, the date, source and link to the original document source. Additionally, the most important terms could be displayed using tag clouds, used to check the frequency of texts, using different sizes (bigger with higher frequency) and colours:
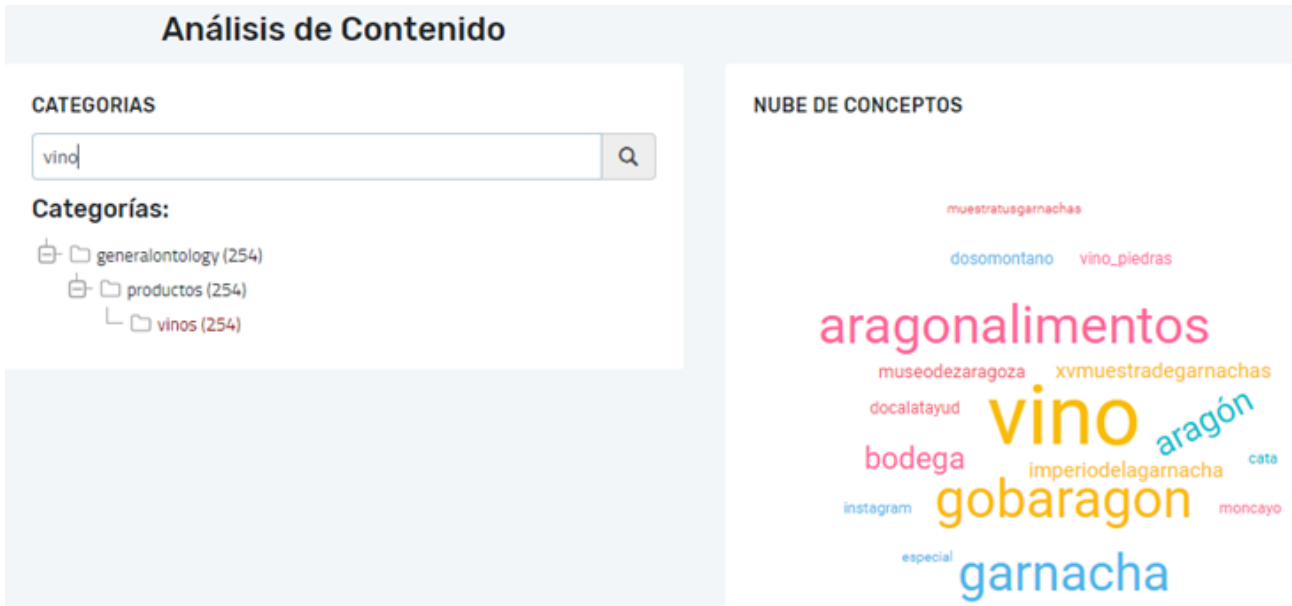
FIGURE 16 – TAG CLOUD REGARDING THE WORLD OF WINE
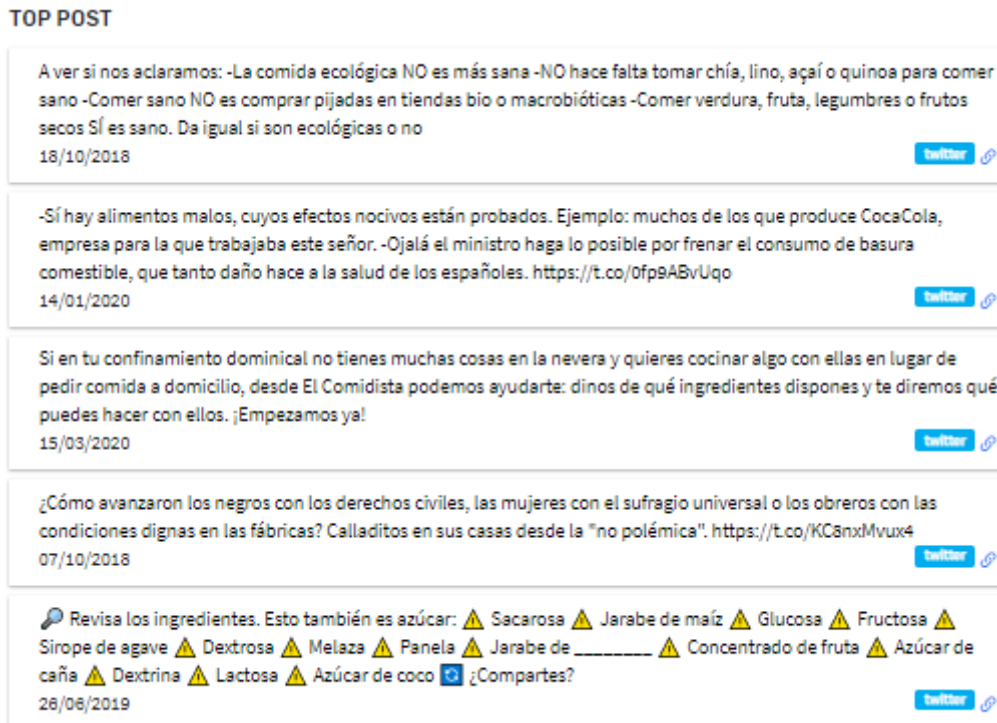
FIGURE 17 – EXAMPLE OF THE PANEL TOP POST

In accordance with scenario A, it is very important to know the variations in wine prices in order to plan an appropriate commercial offer as well as to avoid possible sanctions with distributors for penalties in the contract.
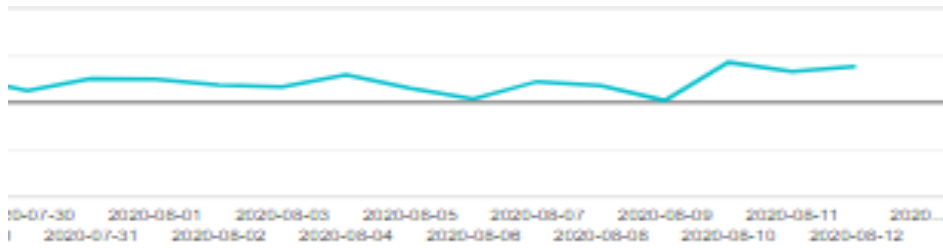
FIGURE 18 – EXAMPLE OF CHARTS TO CHECK THE EVOLUTION OF THE PRICE

In addition, it is also important to identify and take into account trends in the wine sector to determine the topics and terms and its evolution by comparing time periods. As an example, the Data Visualization Framework could display the information in the following way showing terms going up and down:
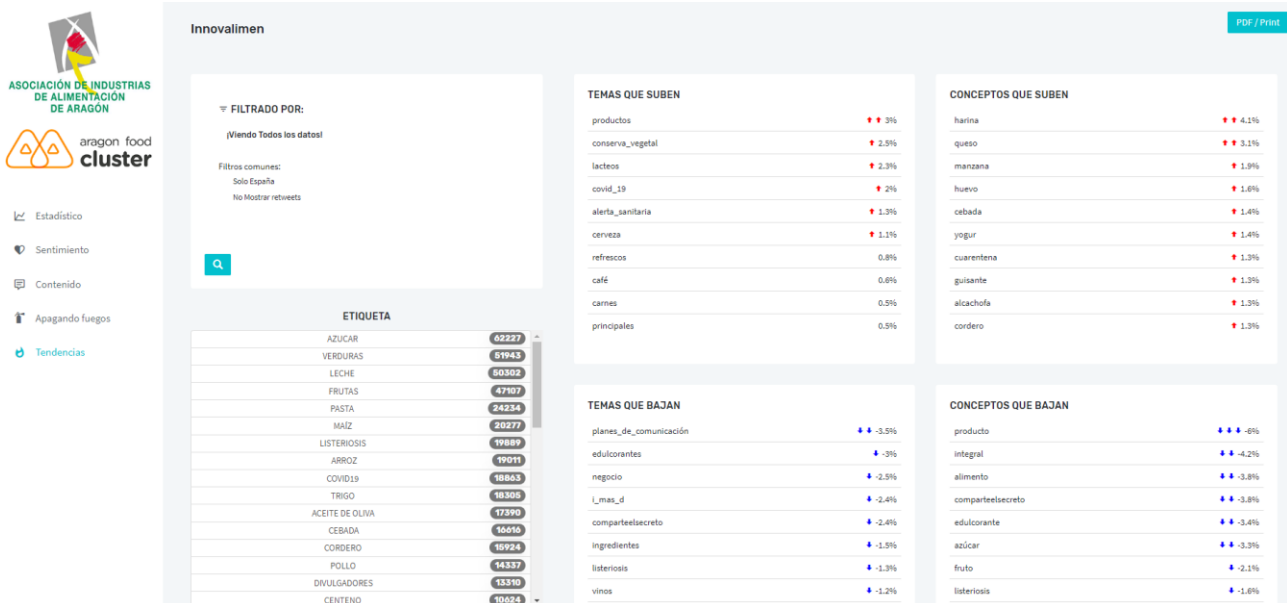
FIGURE 19 – EXAMPLE OF CHARTS TO EVALUATE TRENDS

To evaluate the efficiency in the investment of public funds for wine promotion and the study of new positions among new consumers, it can be exploited the data which comes from the influencers with the most representative users and those who have more followers, as well as the specialized websites to determine if the campaigns are well received by these users/media.

Moreover, the opinion of these users and media is extremely relevant, so sentiment panels are necessary to collect their opinions and analyse the sentiment reflected in their comments.

The following figure could illustrate as a general UI interface how to display opinion and sentiment:
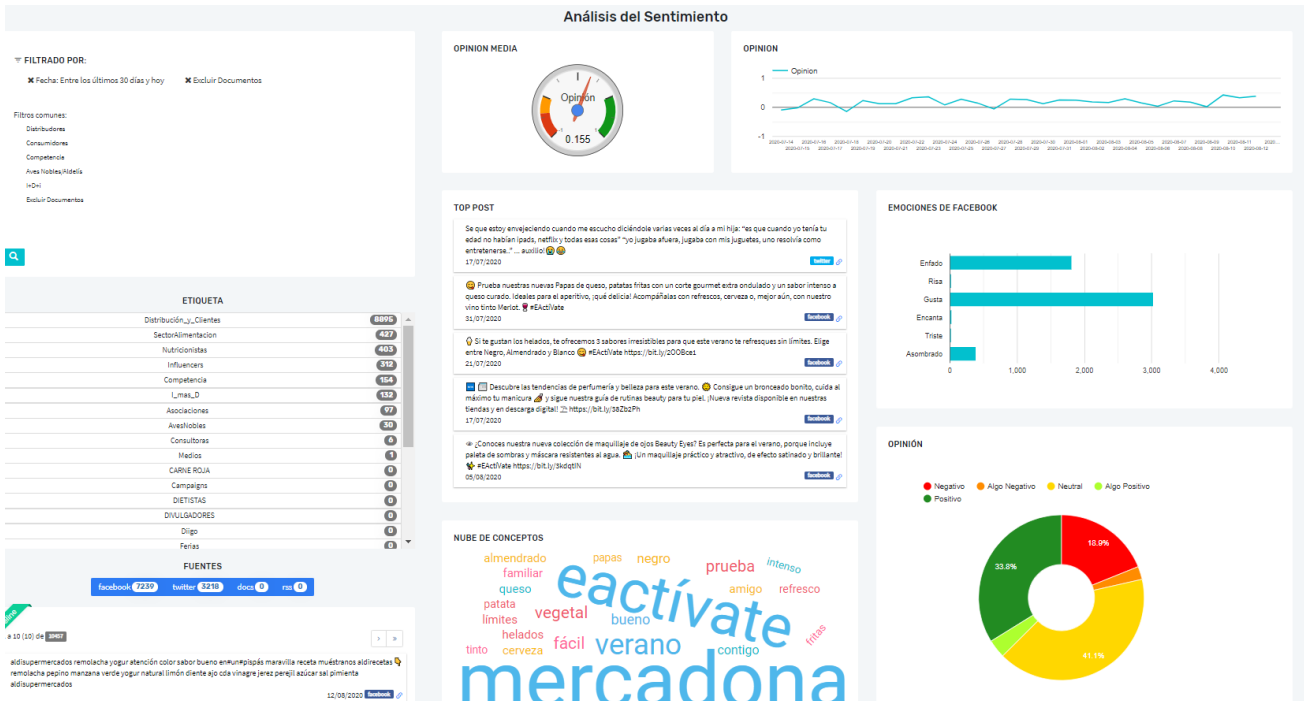
FIGURE 20 – EXAMPLE OF UI TO DISPLAY OPINION AND SENTIMENT

This chart could be used to display in a functional way which is the average opinion about a theme. It shows in a glace if the sentiment is mostly positive or negative:

FIGURE 21 – EXAMPLE OF CHART TO DISPLAY OPINION MEDIA

This sentiment analysis could also be shown over the time using line charts. The example below can represent, for example, the behaviour of opinion or sentiment about a topic over the time:
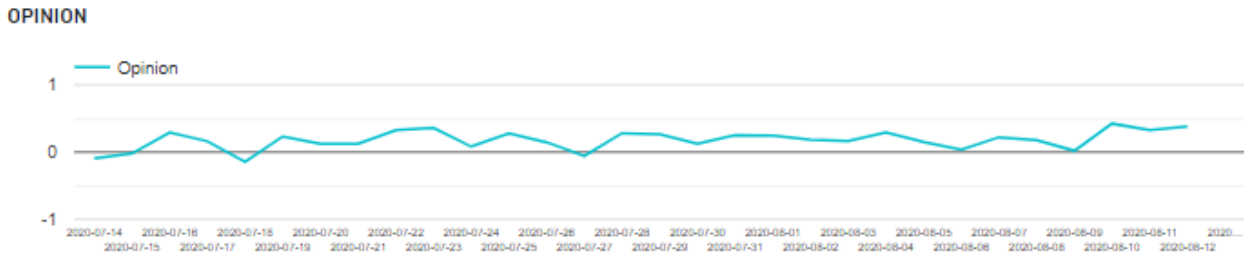
FIGURE 22 – CHARTS USED FOR SOCIAL MEDIA VISUALIZATION OVER TIME

And additionally, it can be shown the accumulative values using bar charts:
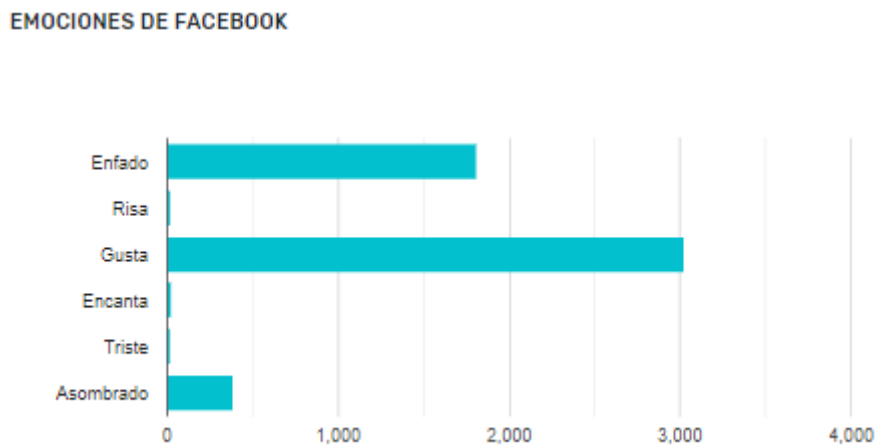
FIGURE 23 – BAR CHART TO ANALYZE SOCIAL MEDIA SENTIMENT

To analyse the data, different charts and visualization options are defined to better evaluate the data to be displayed.

Scenario	Visualizations
Scenario A: Visualize the sale price of wine on the different specialized websites	Useful Charts (see Figure 14) Bar Chart (see Figure 18)

Scenario	Visualizations
Scenario B: Visualize the negative and positive opinions on social networks of the different products analysed allowing an automatic and immediate response to the end user.	Useful chart (see Figure 14) Display opinion and sentiments (see Figure 20) Chart opinion media (see Figure 21) Charts used for social media visualization (see Figure 22) Bar chart to analyse social (see Figure 23)
Scenario C: Analysis of the trends in the wine sector through the specialized websites of the sector.	Customer chart t (see Figure 15) Chart evaluate trends (see Figure 19) + tag cloud (see Figure 16) Panel top post (see Figure 17)

TABLE 30 – VISUALIZATIONS FOR UC2

4 SOFIA USE CASE 3

4.1 DESCRIPTION

4.1.1 General Description

Use case 3 - Facilitating urban policy making and monitoring through crowdsourcing data analysis.

Sofia Municipality is constantly working to improve the urban environment and meet the challenges that the city is facing. Evidence-based policy making is crucial for addressing urban challenges in a cost-efficient way. The aim of this use case is to support Sofia Municipality's policy making in important areas of citizen's everyday lives by using crowdsourced data from its Contact Centre (CallSofia) as well as data from the AirThings platform.

The PolicyCLOUD project will support Sofia Municipality to improve its urban environment and address the challenges related to it through data assessment and validation. Furthermore, the city will be able to adapt the design of its policies considering analytics' results that combine information of sectors, related to 1) road infrastructure; 2) environment and air quality; 3) waste collection and waste disposal; 4) transport, and parking; 5) cleanliness of public spaces; 6) violation of public order, and other topics of importance to residents.

By improving the policy making in the abovementioned areas, the overall quality of citizens' lives will be enhanced, which is the overall goal of this project.

4.1.2 Main Objectives

- To support Sofia Municipality's urban policy making in key areas for the city.
- To support policy makers in the design and modelling of new policies/updating existing ones by enhancing their knowledge and capability to identify the problems, issues and trends related to the urban environment.
- To support policy makers in the adoption or modification of adequate policy making decisions on budget planning and effective use of budget and public resources.
- To enhance the Municipality's operational efficiency, transparency, and decision-making in order to improve the overall quality of life in Sofia.
- To utilize visualization to support policy makers to identify issues, trends and tendencies (incl. behavioural trends), and policy effects and interactions.
- To validate existing policies and assess potential policies and initiatives in focus areas.
- To facilitate more efficient use of resources.
- To share best practices and lessons learned with relevant stakeholders (at any level).

Policy Cloud — Cloud for Data-Driven Policy Management

D6.10 – v1.0

4.1.3 Use case's scenarios

All scenarios will use data from Sofia Municipality's Contact Centre CallSofia (mobile application, 24/7 phone contact centre, and web channel), with scenario 2) Environment and air quality also using data from the Airthings platform (monitoring air quality in the Municipality). Scenarios 1), 3), 4), 5), 6) utilize data with similar attributes, variables and KPIs and will have similar end-to-end structure. Scenario 2) would add an additional type and source of data, and can include cross-analysis of data sources.

1) Road infrastructure, together with adjacent urban environment (such as pavement, fences etc.) is one of the most important and budget-consuming elements, that affects citizens' everyday life.
2) Air quality is also a key issue for citizens and priority for Sofia Municipality, which is dedicated to its long-term improvement, as well as the enhancement of the overall urban environment.
3) Waste collection and waste disposal is also an important area for the city, including efforts to provide more effective and efficient waste sorting and separate waste collection, more effective and sustainable overall waste processing and management, etc.
4) Transport and parking (incl. modernisation; ongoing improvement of service quality; more efficient and less time-consuming services for the citizens; etc.) alongside road infrastructure, are also among the key and most budget-consuming urban areas affecting citizens, and focus of the Transport and Urban Mobility department of Sofia Municipality and the Urban Mobility Centre-Sofia.
5) Cleanliness of public spaces (incl. streets, parks, etc.) and 6) Violation of public order (in all degrees) is also among the issues of big importance for Sofia's residents.

The goal of all these scenarios is to use the analytics and visualisations produced from the PolicyCLOUD platform to identify key information that could help determine policies and approaches to facilitate and encourage urban development and improved quality of life for Sofia's citizens.

Name	Description	Goals
SC1 - Road Infrastructure	Visualise the signals received via Sofia's Call Centre CallSofia related to road infrastructure and adjacent urban infrastructure and provide a detailed analysis of their frequency over time and territorial distribution by categories / types, areas, districts, major transport roads, etc. to support and facilitate data-based municipal decision-making	- improvement of long-term policy making in the area of road infrastructure - better envisioning and capacity building of district administrations and municipal administration in solving road infrastructure-related problems - validate existing policies and investigate if there is a need to update/modify them or create new ones based on the retrieved information

Name	Description	Goals
SC2 – Environment and Air Quality	Visualise the signals received via Sofia's call centre Call Sofia and additional data provided by the Air Things air monitoring platform to provide detailed analysis of the signals related to air quality, their frequency over time and territorial distribution by categories / types, areas, districts, etc. to support and facilitate data-based municipal decision-making	- improvement of long-term policy making in the area of air quality and, by extension, in other environmental areas related to air quality - improved long-term health and quality of life of Sofia's citizens - validate existing policies and investigate if there is a need to update/modify them or create new ones based on the retrieved information
SC3 – Waste Collection and Waste Disposal	Visualise the signals received via Sofia's call centre CallSofia related to waste collection and waste disposal to provide detailed analysis of their frequency over time and territorial distribution by categories / types, areas, districts, etc. to support and facilitate data-based municipal decision-making	- more efficient ways and methods of waste collection - improvement of long-term planning and policy making related to waste collection and waste disposal using smart meters - validate existing policies and investigate if there is a need to update/modify them or create new ones based on the retrieved information
SC4 – Transport and Parking	Visualise the signals received via Sofia's Call Centre CallSofia related to transport and parking to provide detailed analysis of their frequency over time and territorial distribution by categories / types, areas, districts, etc. to support and facilitate data-based municipal decision-making	- improvement of the quality of the services - improvement of transport times and allowing better connections for citizens. - assessment of multimodal pricing schemes and initiatives such as "Green ticket". - adoption of quantity measures for better parking management. - improvement of the overall parking capabilities - validate existing policies and investigate if there is a need to update/modify them or create new ones based on the retrieved information.
SC5 – Cleanliness of Public Spaces	Visualise the signals received via Sofia's Call Centre CallSofia related to cleanliness of public spaces to provide detailed analysis of their frequency over time and territorial distribution by categories / types, areas, districts, etc. to support and facilitate data-based municipal decision-making	- improvement of the overall level of cleanliness of public spaces. - improvement of planning and adoption and/or modification of current measures to ensure cleaner public spaces and the overall improvement of the urban environment. - validate existing policies and investigate if there is a need to update/modify them or create new ones based on the retrieved information.

Name	Description	Goals
SC6 – Violation of Public Order	Visualise the signals received via Sofia's Call Centre CallSofia related to public order violation to provide detailed analysis of their frequency over time and territorial distribution by categories / types, areas, districts, etc. to support and facilitate data-based municipal decision-making	- improvement of long-term policies related to violation prevention and maintaining of public order. - validate existing policies and investigate if there is a need to update/modify them or create new ones based on the retrieved information.

TABLE 31 – UC3 SCENARIOS

4.1.4 Description of E2E scenarios

The Policy Model Editor (PME):

The Policy Model Editor (PME) is the core component which supports and guides the end-user to effectively create a Policy Model safely. More specifically, the PME is a Single Page Application that relays on the PDT backend REST API to fetch or store related entities of the Policy Model.

For all of Sofia's scenarios, as they utilize data with similar attributes, variables and KPIs and will have similar end-to-end structure, the following parameters can be defined:

KPIs:
- # of incidents/signals
- # of incidents/signals per year
- # of incidents/signals per geographical location
- # of incidents/signals per category per location
- % per type of incident/signal
- % per month/signal
- % per year/signal
- change in frequency over the years

Configurable parameters related to the selected KPIs
- Dependant on choice - users should see either an Annual percentage increase/decrease in #
- Combined analysis including cross analysis of several criteria should be possible – e.g. per type and district and year
- Increase / decrease per type/ year/ district/ month
- Geographical spread per district/ per geo location
- Share of incidents per type / per month / per year

Once the policy maker has reviewed and submitted the Policy Model, he/she will be redirected to the PDT in order to evaluate the submitted Policy Model.

<u>Policy Development Toolkit</u>

For all suggested scenarios for UC3, the policy maker will need to select the Policy Model defined previously and specify the relevant KPIs for its evaluation. In the properties of the KPI, the policy maker needs to specify the necessary tools and parameters, so the toolkit can perform the analysis and show the corresponding visualization results for the Sofia Municipality.

4.1.5. Key Actors

The Sofia Use Case focuses on 6 key areas of importance to citizens. Therefore, the primary policy makers identified are part of Sofia Municipality's administration, working within units, responsible for the abovementioned focus areas.

Apart from Sofia Municipality's central administration, there are 24 district administrations, which are responsible for policy making on a district level. Sofia also has several organizations, which are governed by Sofia City Council and are responsible for strategy making and project development. Below is a list of responsible entities, concerning definition, implementation and monitoring of policies:

- Air quality: directorate "Environment" and directorate "Climate, Energy and Air" within Sofia Municipality central administration, representatives from the district authorities and the Association for Development of Sofia, which is a non-government entity, established by the City Council
- Road infrastructure and urban environment, Transport and parking: Directorate "Transport and Urban Mobility" within Sofia Municipality, representatives from the district authorities and Sofia Urban Mobility Centre, which is the municipal enterprise, responsible for mobility in Sofia
- Waste Collection: directorate "Waste Management and Control Activities" within Sofia Municipality
- We're consulting with the Digitalization, Innovation and Economic Development department, responsible for implementation of digital and innovative solutions and improving the internal processes within the organization through innovation and SofiaPlan, responsible for coordination of the strategic and planning documents of Sofia. The activities of SofiaPlan are governed by Sofia City Council.

The main actors involved in this Use Case can be summarised as follows:

Actor	Role	Approach Sought	Skills and Competences
Policy Makers	-Provide insights & information on the urban challenges faced by both citizens & policy makers -Provide information on and feedback regarding the modelling requirements and tools -Stay informed about the project's progress and, if necessary, participate in meetings related to it -Raise awareness about the project	-Assist with the evaluation of the PDT and usefulness of the produced visualizations. - Participation and support in stakeholder workshops	Analytical Policy creation process Management Municipal processes expertise Marketing
Local Municipality: experts from various Municipal departments, enterprises and projects	-Provide information on the needs and the necessary KPIs -Provide information on urban challenges -Provide feedback regarding the modelling requirements and tools -Raise awareness about the project and the importance of data-based decision making for urban development	-Assist with the evaluation of the PDT and usefulness of the produced visualizations. -Participation and support in stakeholder workshops and /or internal meetings and information analysis -Support with wider community engagement	Analytical Policy creation processes Municipal processes expertise Urban environment expertise Marketing
Data administrators: Sofia Municipality IT Department and Call Centre Department	-Provide datasets and additional information about the datasets - Provide feedback regarding the modelling requirements and tools	-Assist with the evaluation of the PDT and usefulness of the produced visualizations -Verify the analytical statistics -Support in workshops and information analysis.	Technical expertise IT experience. Analytical Municipal processes expertise

Actor	Role	Approach Sought	Skills and Competences
Local ecosystem: associations, clusters, NGOs, academic and R&D sector, local community organizations	-Signals non-urgent deviations from normal practice within the urban environment -Provides feedback, ideas and suggestions related to the different aspects of the Project -Raises awareness about the project	-Support in workshops and information analysis -Facilitates community engagement and empowerment	Analytical Technical experience Marketing Ideation Community engagement Hands-on experience and citizen perspective on urban environment
Local community	-Signals non-urgent deviations from normal practice within the urban environment and gives feedback on urban challenges and opportunities, local community needs and existing policies -Raises awareness about the project	Exact approaches to be defined	Analytical Hands-on experience regarding the urban environment and citizens needs Ideation

TABLE 32 – UC3 KEY ACTORS

4.2 KPIs

4.2.1 Policy KPIs

Section	Description
ID	SOF-KPI1
Title	Increased efficiency: Reduction of time to develop a policy
Priority	High
Reference Use Case	UC#3
Success Criteria	>50%

TABLE 33 – UC3 POLICY KPI1

Section	Description
ID	SOF-KPI2
Title	Increase in stakeholders' engagement in policy development
Priority	High

Section	Description
Reference Use Case	UC#3
Success Criteria	>20%

TABLE 34 – UC3 POLICY KPI2

Section	Description
ID	SOF-KPI3
Title	Policy recommendations implemented in the annual city plan
Priority	High
Reference Use Case	UC#3
Success Criteria	>25%

TABLE 35 – UC3 POLICY KPI3

4.2.2 Technical KPIs

Section	Description
ID	SOF-KPI4
Title	Number of data sources integrated and linked to the PDT
Priority	High
Reference Use Case	UC#3
Success Criteria	>=2

TABLE 36 – UC3 TECHNICAL KPI4

Section	Description
ID	SOF-KPI5
Title	Increased speed of access to information
Priority	High
Reference Use Case	UC#3
Success Criteria	>15%

TABLE 37 – UC3 TECHNICAL KPI5

4.2.3 Business KPIs

Section	Description
ID	SOF-KPI6
Title	Increase in local ecosystem and community engagement and collaboration in urban policy development
Priority	High
Reference Use Case	UC#3
Success Criteria	>15%

TABLE 38 – UC3 BUSINESS KPI6

4.3 USERS REQUIREMENTS

4.3.1 Visualizations Description and Requirements

For Sofia's use case, policy monitoring and analysis visualization tools have great importance. Analysing the data by category, type, territory and time will enable municipal and district administrations to identify problems, issues, and behaviour trends. The analysis will also facilitate monitoring and control of the services under review, enabling preventative action to be taken where potential risk is identified, and guiding decision making around policy adjustment and/or adoption and also around the effective use of budget and public resources.

Visualization tools should support decision-makers to obtain insights on the effects of introducing or changing policies. They should allow for data analytics, which will enable the authorities to understand the effects of the change and find explanations for the behaviours observed. The PolicyCLOUD visualization technologies will also enable policy makers to identify tendencies. To analyse the data, different charts and visualization options are defined to better evaluate the data to be displayed.

Visualization tools should be intuitive and at the same time informative. It is important that policy makers are able to efficiently assess data queries outcomes and impact, and to be able to connect deviation in results with alterations in inputs. Data should be able to be shown by various criteria, including cross analysis between different data sets. The results will be presented to the policy maker using, for example:

- **Line Graphs**, that illustrate the frequency of issues per area over time, etc.
- **Pie Charts**, that illustrate major categories of incidents
- **Heatmaps**, that illustrate:
  - the occurrence of incidents or issues, leading to citizen signals in a given area,
  - geographical distribution,
  - areas with repeating incidents over given time

- Additionally, the most often used words could be displayed using **Tag Clouds**, in order to showcase the frequency of texts by displaying them in different sizes (the higher the frequency of use, the bigger the font) and colours.
  - o the applicability and usability of the Tag Clouds with regard to SOF's use case are yet to be further discussed and specified following SOF's activities on WP 4 and more specifically T 4.3. and T 4.4.

The images below are examplary, they do not contain relevant data and are non-exhaustive list of possible visualization options.

Example 1: Dashboards
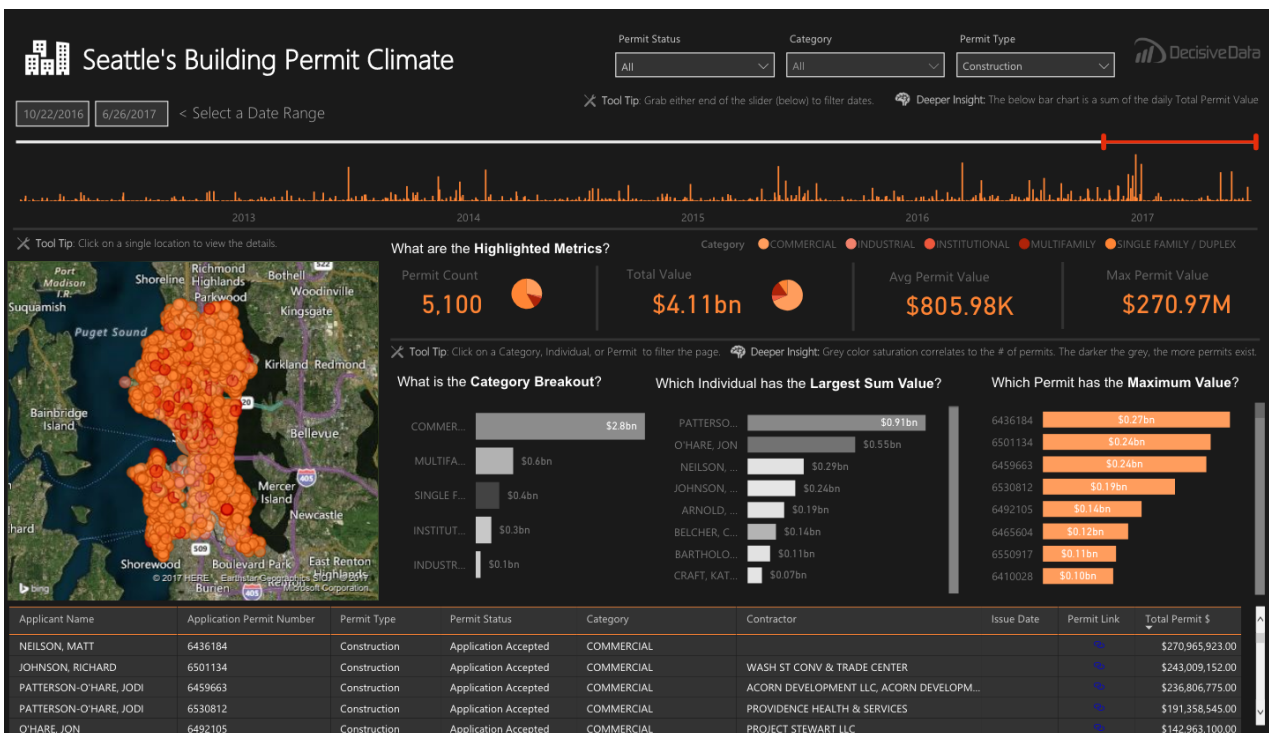

FIGURE 24 – DASHBOARDS SOURCE: HTTPS://WWW.DECISIVEDATA.NET/
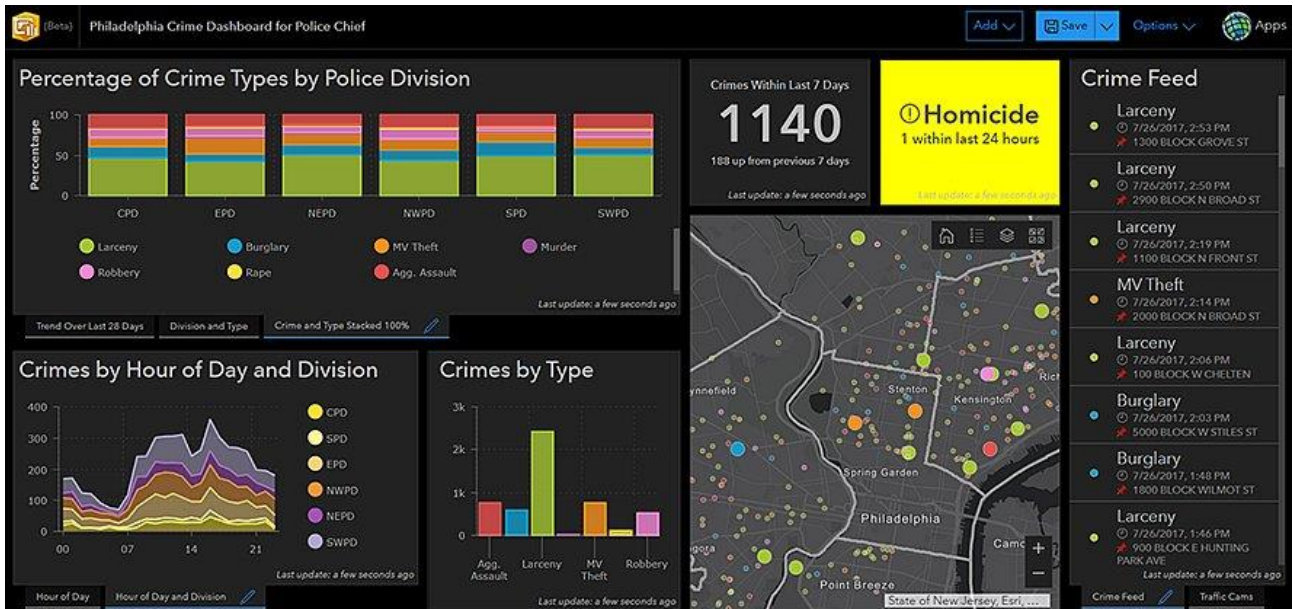
FIGURE 25 – DASHBOARDS SOURCE: ESRI
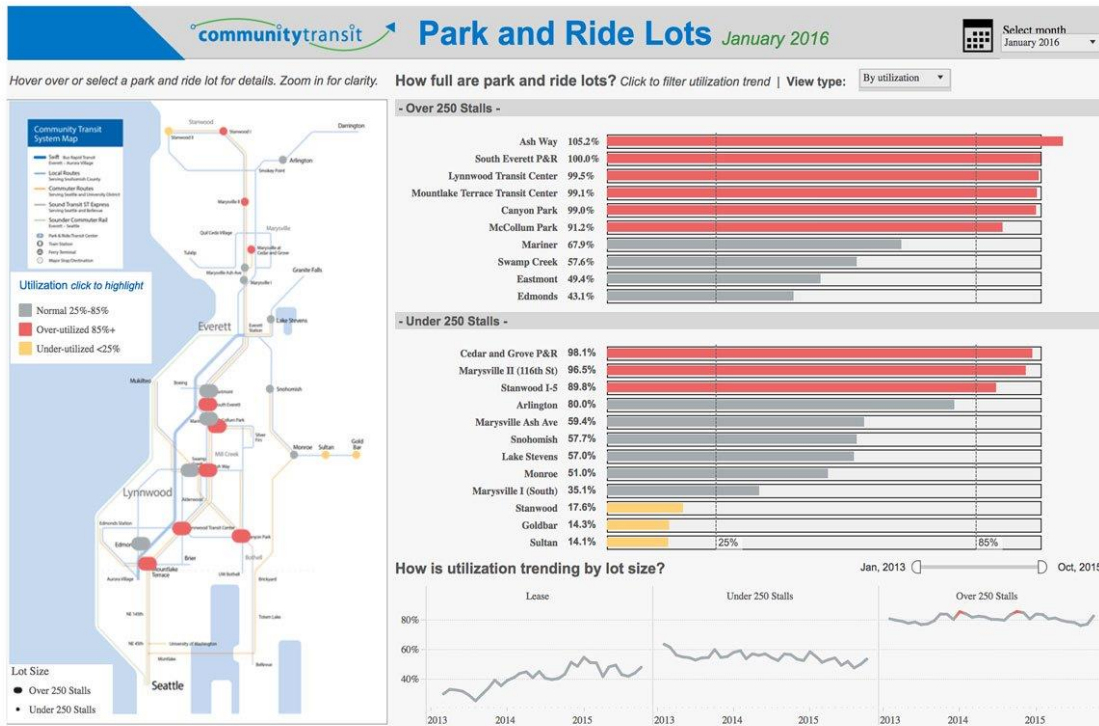
FIGURE 26 – DASHBOARDS SOURCE: HTTPS://WWW.DECISIVEDATA.NET/

Example 2: Heatmaps
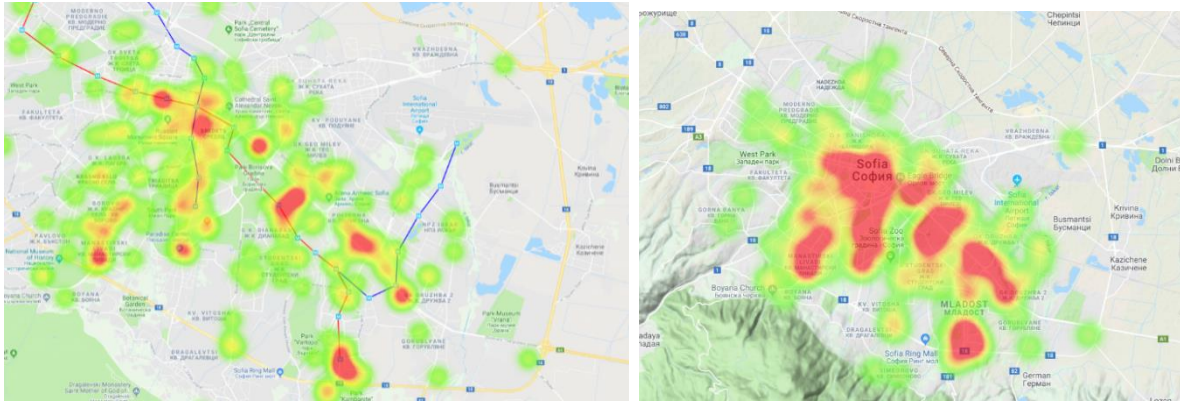
FIGURE 27 – HEATMAPS

Example 3: Circular Area charts
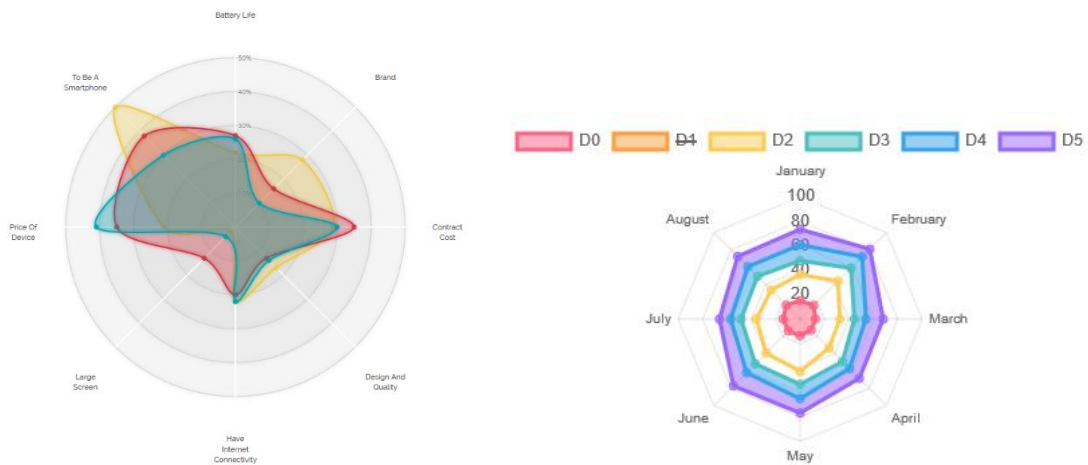
FIGURE 28 – CIRCULAR AREA CHARTS SOURCE: STACKOVERFLOW

Example 4: Tag Clouds

FIGURE 29 – TAG CLOUDS SOURCE: BETTER EVALUATION

Example 5: Line Graph

FIGURE 30 - LINE GRAPH SOURCE: RESEARCHGATE

Example 6: Charts, bars, tables with dynamic criteria (by type, KPI, location, etc.)
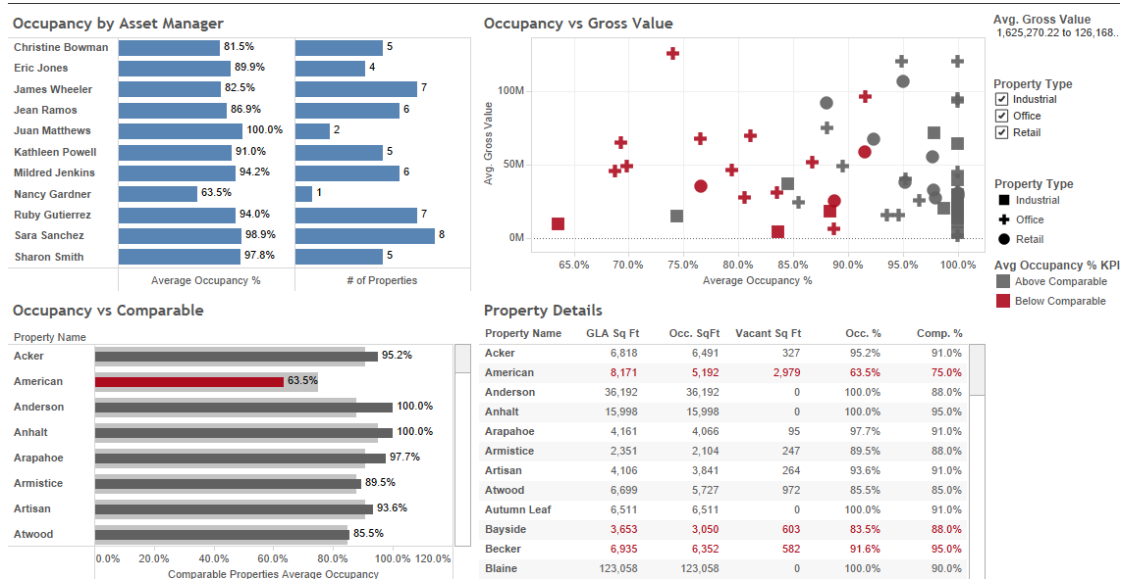
FIGURE 31 – CHARTS, BARS AND TABLES SOURCE: HTTPS://WWW.DECISIVEDATA.NET/

Example 7: Pie Charts
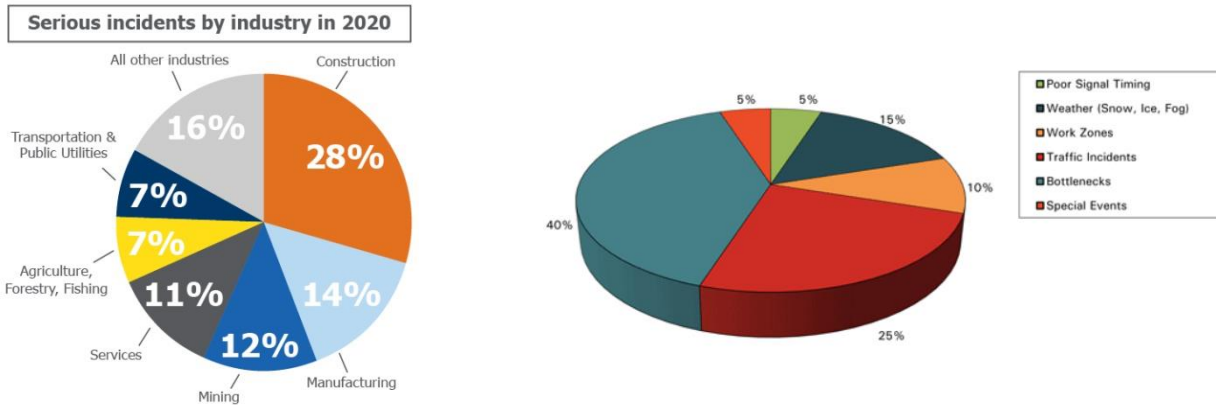
FIGURE 32 – PIE CHARTS SOURCES: FHA, TEXASMUTUAL

When analysing the available data, various charts and visualization options have been defined in order to better evaluate the data to be displayed and to support more 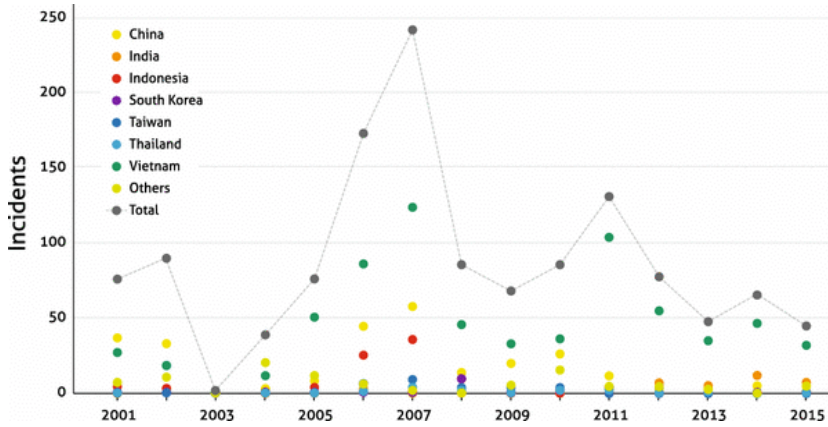effectively and efficiently urban decision-makers. The visualizations mentioned and showcased above can all be applicable for all SOF scenarios, because, as already mentioned before, all of them will use data from Sofia Municipality's Contact Centre-CallSofia (with scenario 2) **Environment and air quality** also using data from the Airthings platform), utilizing data with similar attributes, variables and KPIs, and having similar end-to-end structure. Scenario 2) would add an additional type and source of data, can include cross-analysis of data sources, and also make use of all these visualisations.

Scenarios	Visualizations
1 – Road Infrastructure 2 – Environment and Air Quality 3 – Waste Collection and Waste Disposal 4 – Transport and Parking 5 – Cleanliness of Public Spaces 6 – Violation of Public Order	All visualisations described above are applicable for all scenarios.

TABLE 39 – VISUALIZATIONS FOR UC3

5 LONDON USE CASE 4

5.1 DESCRIPTION

5.1.1 General Description

Use case 4 – Predictive analysis towards unemployment risks identification and policy making.
This section of the document will be based on the use case scenario for work package 6: is to assist policy makers in creating effective policies that will address employment figures. The overall goal of this is use case is for Policy makers to be able to use statistics from predictive algorithms from the toolkit to assist in making decision during policy creation process. The main objective will be to design the algorithms that will help predict future trends using the unemployment datasets provided.

5.1.2 Main Objectives

- Users should be able to use the platform to assist with the policy creation process.
- The PolicyCLOUD platform should produce visualizations that will be relevant during the.
- Platform should be able to produce important KPIs.
- Visualizations that will highlight the correlations and information to help with decision making.

5.1.3 Use case's scenarios

Name	Description	Goals
Scenario A	Conduct analysis based off the statistics on specific time periods. For example, the unemployment is expected to go up during the year 2022 due to the current pandemic. Therefore the statistics recorded against the current year can help to identify the possible unemployment rate if there is second wave of infections the following year.	The goal of this scenario is to use the analytics and visualizations produced from the PolicyCLOUD platform to identify key information that could help determine groups of citizens that are affected by unemployment.
Scenario B	Using predictive analysis to predict a future outcome.	The goal of this scenario is to use specially designed algorithms from PolicyCLOUD to predict future outcomes.

Name	Description	Goals
Scenario C	Analysis of the trends in the public sector based on specific regions.	This action will allow us to know the trends in each of the markets that are of interest, knowing the trends in regard to employment and local citizens.

TABLE 40 – UC4 SCENARIOS

5.1.4 Description E2E scenarios

In the following paragraphs, we describe the remaining steps to be followed by the Policy Maker for each of the predefined scenarios. At this phase of the project, there are three scenarios for use case 4 (see Table 40).

Scenario A
- Policy Modelling Editor.

For this scenario, the following parameters will be used:

1) Relevant KPIs:

- # of Men claiming per month.
- # of Females claiming per month.

2) Name the selected Analytical tool:

- Data Visualisation.

    o Type: Bar chart.

    o Additional parameters to be specified:

        ▪ Year of reporting.

Once the policy maker has reviewed and submitted the Policy Model, he/she will be redirected to the PDT in order to evaluate the submitted Policy Model.

- Policy Development Toolkit.

The policy maker select the Policy Model defined previously and specify the relevant KPIs for its evaluation, in this case UC4- Percentage KPIs.

Scenario B

- Policy Modelling Editor.

For this scenario, the following parameters will be used:

1) Relevant KPIs:

- % Annual percentage increase/decrease of males claiming benefits.

- % Annual percentage increase/decrease of females claiming benefits.

2) Name the selected Analytical tool:

- Data Visualisation.

   o Type: line chart.

   o Additional parameters to be specified:

      ▪ User chosen year.

      ▪ Ability to see figures against specific months.

Once the policy maker has reviewed and submitted the Policy Model, he/she will be redirected to the PDT in order to evaluate the submitted Policy Model.

- Policy Development Toolkit.

The policy maker select the Policy Model defined previously and specify the relevant KPIs for its evaluation, in this case UC4- Percentage KPIs.

Scenario C

- Policy Modelling Editor.

For this scenario, the following parameters will be used:

1) Relevant KPIs:

- % Annual percentage increase/decrease of citizens between the age of16-24 claiming benefits.
- % Annual percentage increase/decrease of citizens between the age of 25-49 claiming benefits.
- % Annual percentage increase/decrease of citizens between the age 50+ claiming benefits.

Once the policy maker has reviewed and submitted the Policy Model, he/she will be redirected to the PDT in order to evaluate the submitted Policy Model.

- Policy Development Toolkit.

The policy maker select the Policy Model defined previously and specify the relevant KPIs for its evaluation, in this case UC4- Percentage KPIs.

5.1.5 Key Actors

The main actors involved in this Use Case are:

Actor	Role	Approach Sought	Skills and Competences
Policy Designer	Coordination meetings to learn about the promotional actions carried out both nationally and internationally.	Coordination meetings to learn about the promotional actions carried out both nationally and internationally.	Analytical, Policy creation process.
Data Administrator	Provide information on the datasets.	Verify the analytical statistics.	Analytical. Technical. IT experience.
Senior Policy officer	Provide information on the needs of the necessary KPIs.	Engaging with policy officers to reach a consensus on decision making.	Analytical. Management. Policy creation process.
Policy Maker	Provide information on the modelling requirements.	Assists with the evaluation of the PDT and usefulness of each produced visualization.	Marketing. IT experience. Policy creation process.

TABLE 41 – KEY ACTORS FOR UC4

5.2 KPIs

5.2.1 Policy KPIs

Section	Description
ID	LON-KPI1
Title	Count of unemployed citizens under 25. This KPI will include a total count of all the citizens that are unemployed which are aged below 25.
Priority	N/A

Section	Description
Reference Use Case	UC#4
Success Criteria	Analytics based on the requested KPI should be clearly displayed in a number format or visualisation.

TABLE 42 – UC4 POLICY KPI1

Section	Description
ID	LON-KPI2
Title	Count of unemployed divided by age group. This KPI will include a total count of all the citizens and categorise them into various age ranges i.e. 25-40.
Priority	N/A
Reference Use Case	UC#4
Success Criteria	Analytics based on the requested KPI should be clearly displayed in a number format or visualisation.

TABLE 43 – UC4 POLICY KPI2

Section	Description
ID	LON-KPI3
Title	Annual percentage of males claiming benefits. This KPI will include a total count of all the citizens and categorise them by gender.
Priority	N/A
Reference Use Case	UC#4
Success Criteria	The PDT will have to analyse the existing dataset and conduct a calculation to provide the correct figure.

TABLE 44 – UC4 POLICY KPI3

Section	Description
ID	LON-KPI4
Title	Annual percentage increase/decrease of females claiming benefits. This KPI will include a total count of all the citizens and categorise them by gender.
Priority	N/A
Reference Use Case	UC#4
Success Criteria	The PDT will have to analyse the existing dataset and conduct a calculation to provide the correct figure.

TABLE 45 – UC4 POLICY KPI4

Section	Description
ID	LON-KPI5
Title	Number of Men claiming per month. This KPI will include a total count of all the citizens and categorise them by gender.

Section	Description
Priority	N/A
Reference Use Case	UC#4
Success Criteria	This field contains information on how to assess the fulfilment of this requirement.

TABLE 46 – UC4 POLICY KPI5

Section	Description
ID	LON-KPI6
Title	Number of Female claiming per month. This KPI will include a total count of all the citizens and categorise them by gender.
Priority	N/A
Reference Use Case	UC#4
Success Criteria	This field contains information on how to assess the fulfilment of this requirement.

TABLE 47 – UC4 POLICY KPI6

5.2.2 Technical KPIs

Section	Description
ID	LON-KPI7
Title	User Engagement. Numerical statistics that will track the number of users that engage with the platform.
Priority	Potential log in system/ collect user's information via online form
Reference Use Case	UC#4
Success Criteria	Statistics based on the amount of user's engagement with the platform should be clearly displayed in a number format or visualisation.

TABLE 48 – UC4 TECHNICAL KPI7

Section	Description
ID	LON-KPI8
Title	Log of errors. A feature within the PolicyCloud that tracks and logs and errors that users come across while using the platform.
Priority	N/A
Reference Use Case	UC#4
Success Criteria	A system that logs all errors experienced by users with a id number and short description that define the details of the issue.

TABLE 49 – UC4 TECHNICAL KPI8

5.2.3 Business KPIs

Section	Description
ID	LON-KPI9
Title	Feedback from optional survey. One of the
Priority	One question will have to specifically related to the user's experience being negative or positive in order for the data to analysed and quantified.
Reference Use Case	UC#4
Success Criteria	Statistics based on the user's experience with the platform can be produced and presented to stakeholders and reviewers.

TABLE 50 – UC4 BUSINESS KPI9

5.3 USERS REQUIREMENTS

5.3.1 Visualizations Description and Requirements

The following visualizations are examples of the desired visualizations to be produced by PDT. The following have been identified by policy makers as useful types of visualizations for each use case. Each visualization will be followed by a brief explanation of the selected visualizations.

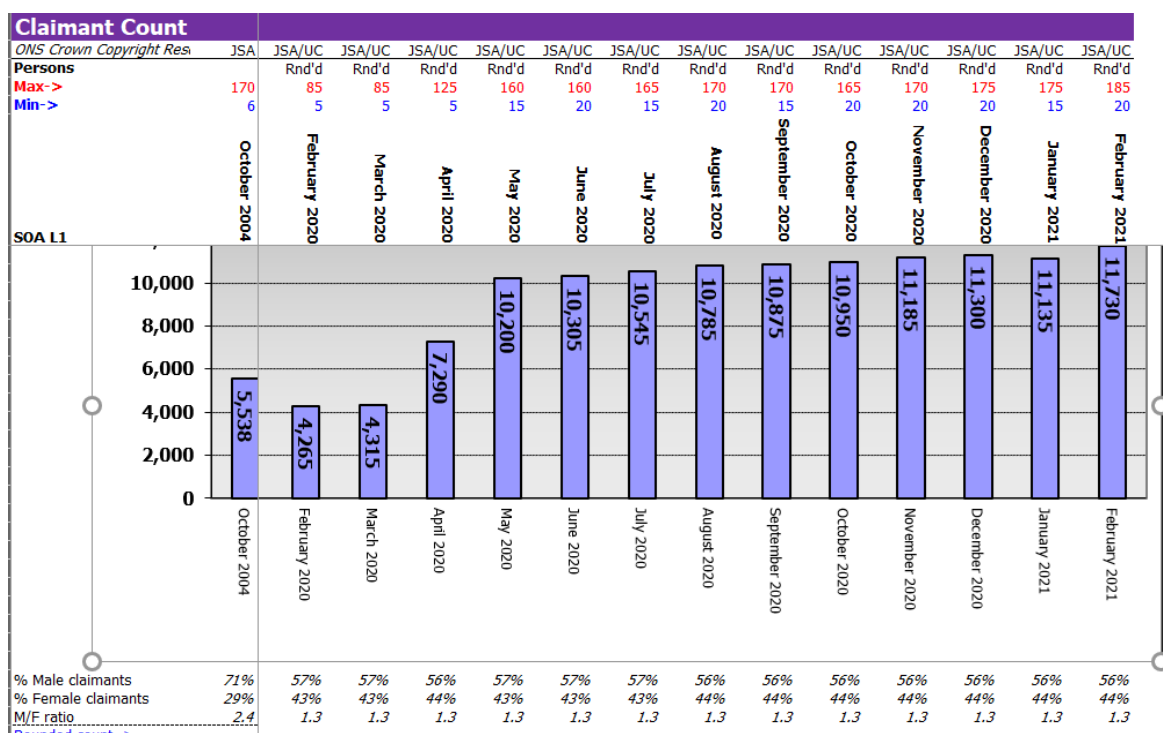The images below images are exemplary, they do contain relevant data in relation to the specified use case scenarios.
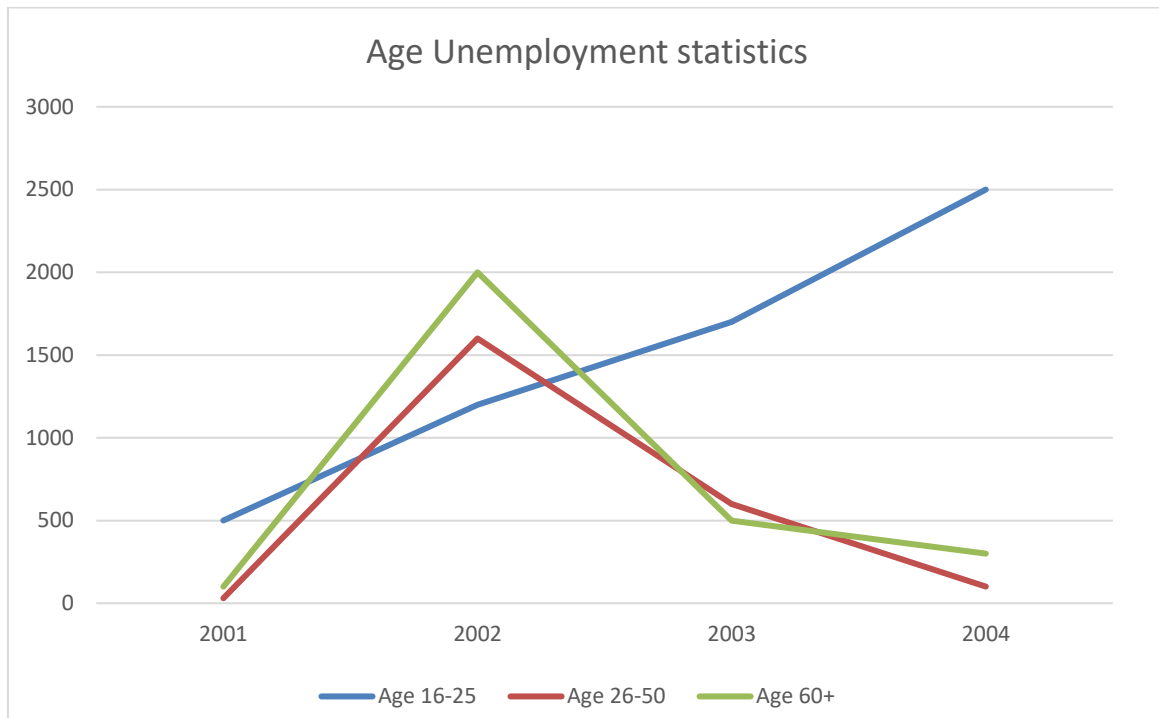

FIGURE 33 – BAR CHART

Figure 33 displays an example of bar chart that would be produced to help in the policy creation process. As shown in this figure there is a clear yearly increase with the number of unemployed citizens on a monthly basis with additional statistics on the percentage of gender ratios.

FIGURE 34 – LINE GRAPH

Figure 34 displays an example of the type of visualisations that would be produced to help in the policy creation process. As shown in this figure there is a clear yearly increase with the number of unemployed citizens on an annual basis. This key information can trigger policy creator to investigate why citizens between 16 – 25 have a high rate of unemployment and what policies could be created to help that specific group of citizens.

FIGURE 35 – LINE GRAPH

Figure 35 displays an example of the type of visualisations that would be produced to help in the policy creation process. As shown in this figure there is a clear yearly increase with the number of unemployed citizens on an annual basis. This key information can trigger policy creator to investigate why citizens between 16 – 25 have a high rate of unemployment and what policies could be created to help that specific group of citizens.
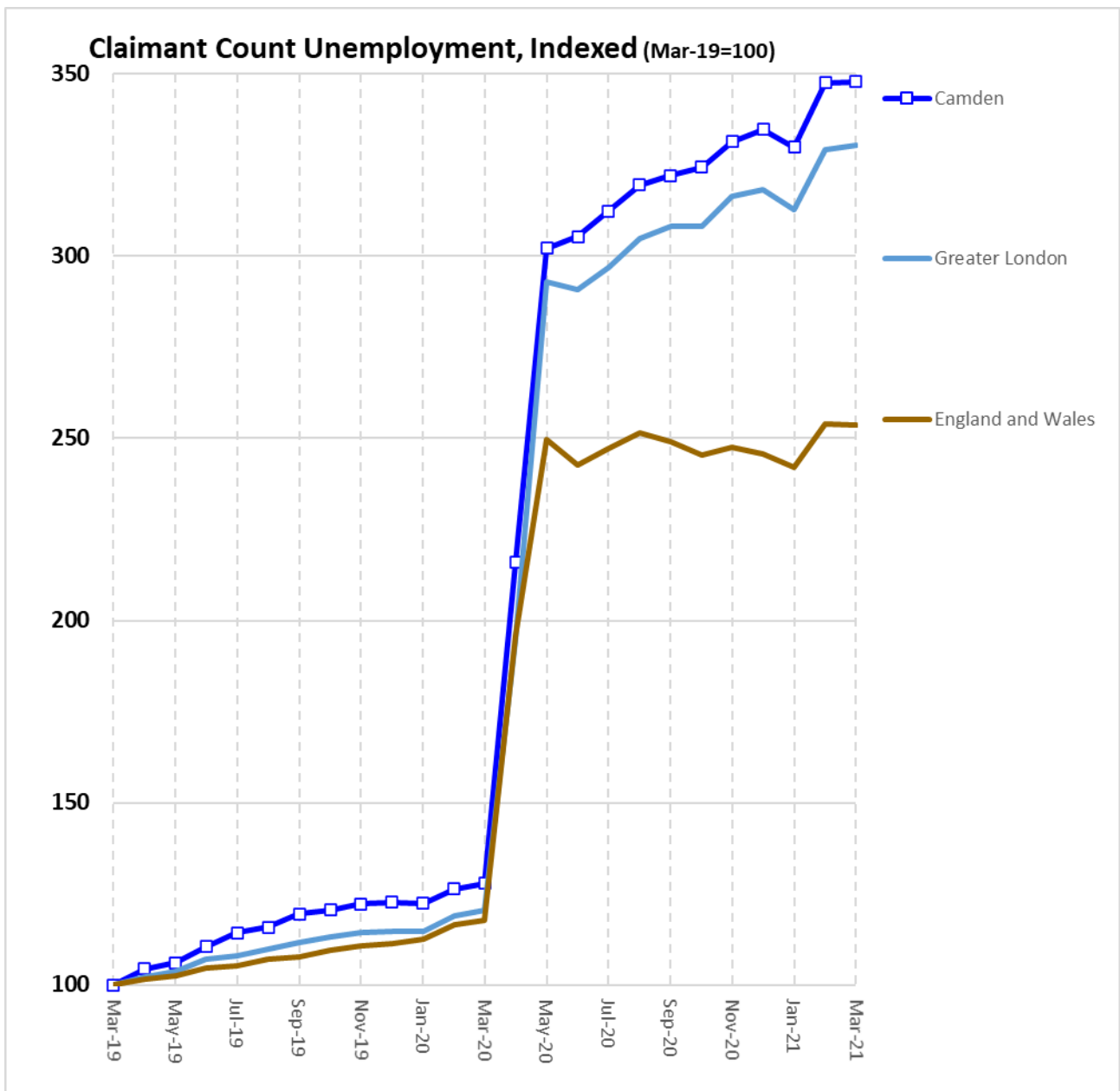
Scenario	Visualizations
Scenario A: Statistical Analysis	Bar chart (see Figure 33)
Scenario B: Predictive analysis	Line Graph (Figure 34)
Scenario C: Trend analysis	Line Graph (see Figure 35)

TABLE 51 – VISUALIZATIONS FOR UC4

6 Conclusion

This report collects information on fundamental aspects of the use cases and their development within the PolicyCLOUD project. Following a common methodology, end to end descriptions of the uses case's scenarios for the four project pilots, key actors and KPIs have been updated and reviewed. This deliverable is the second version and complements D6.3 Use Case Scenarios Definition & Design and entails an improvement of all the deliverable 's sections and the addition of a new one: End to end scenarios description.

For the sake of homogeneity and to facilitate the specification of the tools, the four use cases have been defined following the same structure. Common features and functionalities have been analysed and extracted.

The definition and design of the use case's scenarios is planned in the project as a continuous activity. The final results, that is, the description of the final scenarios requirements and platforms will be provided D6.11 Use Case Scenarios Definition & Design M28 (April 2022).

References

[1] PolicyCLOUD *D6.3 - Use Case Scenarios Definition & Design.* Javier Sancho. 2020.

[2] PolicyCLOUD *D6.4 - Use Cases Implementation & Experimentation.* Ben Williams. 2021.