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1. EXECUTIVE SUMMARY

This deliverable has been issued under the *ISA[2] - Action 2016.04: Participatory knowledge for supporting decision-making*, with the aim of providing an overview of the activities performed in the context of the study "Leveraging Social Media full potential to increase citizen engagement and participation in Publics Administrations (PAs) decision-making processes":

The **main objectives of this study** is summarised as follows:

- **Take stock of the current use of social media** as a data source for policy and decisions making in European PAs, including technologies and techniques used for data processing and analysis;

- **Identify the business and technology requirements and produce a list of good practices and guidelines** on the use of social media for PAs, including an analysis of supporting IT tools;

- **Communicate the outcome of the activities to the relevant stakeholders** (e.g. EC or external meetings, conferences and workshops).

More in detail, within this deliverable an overview of social media current usage and trends from European PAs is provided together with a description of the methodological approach followed. Under TASK 01 of the aforementioned study, the following main outcomes have been achieved:

- Setup of the general framework of the study on the current situation on existing projects/initiatives and current trends on social media analysis supporting policy-making in EU PAs;

- Identification of a set of relevant projects/initiatives on social media analysis in EU PAs. In this context, also an initiative carried out in the context of an extra-EU PAs has been considered;

- Definition of a thorough assessment model in order to analyse the selected initiatives against a clear set of criteria;

- Establishment of a direct communication channel and connection with the initiatives owners, allowing the collection of a trustable set of information and supporting documentation on the identified initiatives;

- Detailed description of each of the selected initiatives, considering both the features of the technology implemented and to the process implemented for data collection and analysis.

As a result, this report represents a first step forward and thrives to enhance the participation of stakeholders in decision-making as well as to enable governments to make policies that are more informed, legislative acts and internal decisions. This leads to a participatory type of government that relies strongly on the evidence and the collective knowledge that the various stakeholders bring in. This shall also contribute to the inter-administration cooperation and better decision-making processes taking into consideration different perspectives coming from different domains and Member States (MSs).

2. INTRODUCTION

2.1. CONTEXT

The business of digital government is changing at an accelerating pace driven by the embrace of social technologies and the rapid adoption of social media technologies and tools to enhance a democratic participation in the policy decision-making. Using web and mobile services, government organisations are becoming more accessible, open and accountable.

Participatory knowledge for decision-making not only engenders a better communication with stakeholders by communicating proactively on new policies, on-going and upcoming activities, but it also naturally engages them in the overall policy-making process by making them feel that their opinion is voiced and that they can make a meaningful contribution. Each citizen, organisation and business in Europe feel empowered and this can only become a benefit for society as a whole.[1] As a result, Public Administrations (PAs) are able to customise even more the provided services to meet best citizens' needs. It also, ensures PAs' transparency and accountability efforts while providing insights and additional knowledge to Member States' PAs. In other words, European institutions become more collaborative and open in their innovation, more empathic and responsive in their citizen service, more adept in crisis response, more transparent in social responsibility and more directly engaged with MS citizens.[2] Finally, e-Participation benefits also from others purely Information and Communication Technology-related features that contribute to foster its effectiveness and efficiency: it is independent of time and place, information can be provided and updated at reasonable costs, and it ensures the involvement of a wide range of citizens regardless of demographics, family or work situation[3].

This is the reason **e-Participation** is experiencing a **rapid and solid expansion** in being a **tool of engagement and collaboration between governments and citizens** or inside institutions and organisations. Indeed, **citizens' participation in governments' decision-making** processes represents a significantly valuable asset.

As the **global social media audience increases from 1.47 billion in 2012 to 1.73 billion in 2013** - meaning that nearly a quarter of the whole world's population uses social media networks when being online- social media can truly become a meaningful leverage for European institutions in order to engage e-Participation. Therefore, **PAs use various web-based and mobile social media to collect stakeholders' input and feedbacks** and turn communication into an interactive dialogue, among which internet forums, weblogs, social blogs, wikis, podcasts, photographs or pictures, video, rating and social bookmarking, or Twitter, Facebook, Instagram, Flickr and YouTube.

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[1] https://publicadministration.un.org/en/eparticipation

[2] https://www2.deloitte.com/content/dam/Deloitte/lu/Documents/public-sector/lu-social-media-social-activation-eu-31102014.pdf

[3] http://www.eopinio.com/sites/default/files/social_media_and_eparticipation_challenges_of_social_media_for_managing_public_projects.pdf

Putting people at the heart of operations does not only engage citizenry while depleting citizens' increasing disillusionment of traditional marketing messages, but it also represents a significant data opportunity for European PAs.

Within this context, a continuous increase in the use of social media by European PAs is expected in order to collect stakeholders' (citizens and organisations) input and feedback to support decision- and policy-making. Social media fosters an easier communication with stakeholders, a more effective stakeholders' engagement, and a stronger support to PA transparency and accountability efforts. It is therefore of the utmost importance to count upon solutions allowing an efficient and in-depth collection and analysis of stakeholders opinions from such channel.

At European level, several initiatives of public opinion integration in PA generated by stakeholders via social media have already been funded by European Union's Research and Innovation funding programmes: first under the FP7 - European Seventh Framework Programme (2007-2013), then under the Horizon 2020 funding programme as well as the most recent ISA Programme[4].

Nevertheless, despite the large amount of opinions, needs and preferences expressed by citizens, governments' organisations and processes are so far still not able to consume this unstructured and dispersed knowledge in order to extract meaningful knowledge and use it as input to policy-making.

2.2. SCOPE AND OBJECTIVES

Within this context, this specific study, namely **"Leveraging Social Media full potential to increase citizen engagement and participation in public administrations' decision-making processes"**, is an integral part of the **ISA² Action 2016.04 - Participatory Knowledge for supporting Decision-Making** and aims at investigating the use of social media analysis tools and activities as a data source to support decision-making across European public administrations. This collective shared knowledge will in turn be used to provide insights on existing decision-making, transforming them in data-driven processes.

After a comprehensive data collection activity of MSs' PAs' best practices that incorporates the core of this report's analysis, **the scope of this document** is to take stock and to analyse the current situation and those existing projects/initiatives and the current trends on the use of social media analysis tools by European MSs' public authorities in their decision- and policy-making process.

In the context of these projects/initiatives, the study will identify and detail the main use cases, how data is collected, how it is analysed (methodologies, technologies, techniques), and how the results of the analysis are fed in the policy-making lifecycle.

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[4] https://joinup.ec.europa.eu/sites/default/files/d03.01_business_case_social_media_analysis_v1.00.pdf

2.3. STRUCTURE OF THE DOCUMENT

This report represents the final deliverable of Task 01. The report contains four main sections, structured according to the approach to the study, each section detailing the main findings and forming the basis for the next steps and sections:

- **Key definitions** – introducing the concept of social media and social media analysis in the context of this study;

- **Methodological approach** – presenting the methodological approach used in pursuing the study. The methodology has been developed along three main steps: 1) Data collection activities; 2) Definition of the Assessment Model for the selection of relevant initiatives; 3) Selection of shortlisted initiatives and subsequent detailed analysis (next section);

- **Detailed Analysis of Selected Initiatives** –reporting the main characteristics of the shortlisted initiatives, in terms of general overview, implementation process and procedural aspects and social media analysis tool and technological features. The content of this section are a product of continuous interactions in form of interviews with coordinators/stakeholders of the initiatives and of desk research activities to integrate the collected preliminary information;

- **Summary of main evidences** – presenting a general overview of the main outcomes coming from the analysis of the shortlisted initiatives.

In addition to these chapters, the present study contains two annexes:

- **Annex 1 – Data set (Stakeholder list, Sources list):** includes the Stakeholder list and Sources list utilized to carry out the study;

- **Annex 2 – Interview minutes:** summary of topics discussed with Stakeholders of the selected initiatives;

- **Annex 3 – Questionnaire:** structured list of questions used to perform the interviews with social media analysis initiatives' reference contact persons;

- **Annex 4 – Initiatives sheets:** overview of the collected information of each selected initiative;

- **Annex 5 – Assessment Model Tool:** presenting the assessment model (quantitative and qualitative criteria) including the Initiatives Scoring Sheet for each selected initiative;

- **Annex 6 – Analytical Scoring Model**: presenting the analytical scoring model used to perform the analysis of the initiatives.

3. KEY DEFINITIONS

3.1. SOCIAL MEDIA

Social media include a broad range of applications that can be used both by users and organisations and contribute to generate deep social analytics knowledge. Consequently, social media data analysis may focus not only on social networks such as Facebook or Twitter, but also on a complex environment of Web 2.0 platforms as well as on organisations' internal collaboration networks.

In fact, an exemplificative list of social media may encompass:

- Social networks (internal and external), where members build personal pages and connect with friends/colleagues to share content and communication;

- Blogs, being essentially online journals or personal pages;

- Wikis, aiming at searching, creating and adapting contributions to socialised knowledge;

- Podcasts, allowing the download of audio/video resources for asynchronous use;

- Forums, being online discussions around specific issues;

- Content communities such as Flickr, Instagram (photos), videos (YouTube) and Digg (bookmarked links);

- Microblogging, comprising social networking combined with bite-sized blogging where small amounts of content (updates) are distributed online and through the mobile phone network (e.g. on Twitter);

- Location-based social networking sites (e.g. FourSquare) enabling users to find friends in the neighbourhoods or locate useful places of interest;

- Social gaming, allowing connecting with friends and strangers to play games.

Social media analysis initiatives may address one or more of the above clusters, depending on the purpose of the social media initiative and the scope of the subsequent analysis. It is true, however, that the initiatives that aim at collecting a wider spectrum of data tend to include in their scope the major social networks, if not exclusively to focus on them, in consideration of the number of users and the huge amount of information that can be crawled through them.

In the context of this study, the term "social media initiative" refers to the use of any of the previous item of the list but only if used to support European Public Administrations (PAs) for decision- and/or policy-making through the collected data.

3.2. SOCIAL MEDIA ANALYSIS FOR SUPPORTING DECISION-MAKING

As it will be further detailed in paragraphs below, social media can be used by PAs both in an active way, providing and exchanging information with their stakeholders (citizens, organisations etc.) or in a passive way, using the information already present on social medias independently from direct/stimulated interactions with PAs.

Both approaches can turn into powerful sources of information to be further elaborated and analysed, which aims at supporting PAs decision-/policy-making. However, while in the first case the PA can somehow direct and guide the interaction with its counterpart, selecting the applicable

channels and possibly somehow facilitating the analysis of the resulting information, in the second case it will have to crawl for and handle mostly unstructured information collected from a wide range of posts, comments etc. not necessarily immediately attributable to PA matters.

It is of the utmost importance, when evaluating a **social media analysis initiative** for supporting decision-making, to examine it at 360° degrees (i.e. organisation, processes, software tools, communication activities, stakeholders engagement, etc.) in order to evaluate its capability to support the handling of diverse set of data, as well as its scalability to possibly cover wider and wider groups of stakeholders or to be applied to different contexts.

Additionally, the peculiarities of social media analysis for supporting decision-making imply specific assessment parameters for the selection and evaluation of initiatives of this kind. For instance, in view of enhancing open government practices, it is essential to evaluate how the initiatives under assessment foster such openness, in terms of availability of data and of visibility and reliability of the process used to collect and interpret the information.

4. METHODOLOGICAL APPROACH

This section provides a description of the overall methodological approach (represented in *Figure 1 – Methodological Approach*) applied in order to ensure completeness and full coverage of the scope of the tasks to guarantee the achievement of the objectives of the study as presented above:

- **Step 1. Data Collection** – the focus of this paragraph is to describe the data collection methods applied to collect relevant information for the study. In particular both primary and secondary data collection methods have been implemented;

- **Step 2. Selection and Assessment Model definition** – the aim of this step is to consolidate a clear set of criteria, coherent and relevant to the objectives of this study, to be used for the preliminary classification of all the identified initiatives. In addition, the assessment and evaluation model includes a scoring model to select a subset of most relevant initiatives to be further analysed;

- **Step 3. Selection of shortlisted Initiatives** – the intent of this step is to proceed with the shortlisting of the identified initiatives and to provide a detailed analysis of those projects, based on the data collected in the previous steps.

Figure 1 – Methodological Approach

Step 1.
Data collection activities

- Desk Research:
  - EC initiatives
  - Member States' institutions initiatives
  - EU funded projects…
- Open Call for contribution:
  - National ISA Committee representatives
  - Citizens/Business (i.e. news on ISA Website, email to ISA Programme mailing list)
- Targeted Interviews:
  - National contact points
  - KPMG International Network direct contacts

Step 2.
Definition of the assessment model

Main Qualitative criteria:
  - Organisation (sponsor/users)
  - Timeline
  - Social Technologies
  - Users engagement / communication methodology
  - Sentiment Analysis tools
  - …
Main Quantitative criteria:
  - # of users / participants / contributions
  - # of initiatives launched on each Social
  - Timeline and Frequency
  - Budget and costs
  - …

Step 3.
Detailed Analysis of shortlisted initiatives

Classification of identified initiatives and iIdentification of a short-list Social Media e-Participation initiatives and related characteristics

4.1. STEP 1 - DATA COLLECTION

In the study initiation, the project team has executed extensive data collection activities aimed at setting the framework for the study on the current situation and trends on existing projects/initiatives related to social media analysis supporting policy-making in EU Public Administrations (PAs).

This phase aims at presenting the data collection process in which **several key stakeholders** were involved in relation to their **associated initiatives**. This data collection process was significant in the initial part of the project as it allowed the project team to acquire valuable data and a full understanding of the initiatives, in relation to the assessment and evaluation model defined and used in the Step 2.

During the Data Collection step, the project team undertook the following main activities:

- **Activity 1 – Data Gathering** – The aim of this activity was to obtain detailed data, both directly from the different key informants regarding their involvement and work in the initiatives and via an accurate desk research for the selection of relevant cases. The project team started by investigating initiatives around participatory knowledge for supporting decision-making in the PA in the EU Member States (MSs) through desk research. It consisted in reviewing online/paper version of available material on social media initiatives supporting policy-making in order to obtain a clear overview of the information needed in the context of the study. Data triangulation has ensured the reliability of the information.

  In the context of this activity, the following data source categories have been considered during this step for desk research activities:

  - **Commission Services initiatives**;
  - **Other studies/scientific papers on this topic**;
  - **EU funded initiatives under** the Seventh Framework Programme and Horizon 2020;
  - **EU and other available National/Regional social media analysis initiatives,** in EU and extra-EU PAs. Private and research sectors' existing projects have also been analysed: in particular, a targeted analysis of the credentials published on the web pages of the social media analysis tools has been carried out in order to complement the above sources.

  This activity resulted in the identification of the current landscape of initiatives and a long list of initiatives focusing on participatory knowledge application and social media analysis projects.

  In this specific case, in order to ensure the reliability of the information collected through Desk research activities, we deemed necessary to complement it with a primary data collection phase through dedicated meetings/interviews. Subsequently, this phase employed specific questionnaires for the execution of detailed and targeted interviews with the different stakeholders involved coming from a wide range of MSs' local authorities and private entities.

- **Activity 2 – Integration of data collected** – The focus of this activity has been to elaborate, normalise and integrate data gathered from the previous activity. Preparing and integrating secondary data (i.e. data had been collected by someone else and already exists in some format), is usually not as straightforward as it seems and includes:

  o **Quality control:** since data were collected from different sources, confidence in the data quality depends on a judgment about the quality of the original data collection process;

  o **Formatting:** secondary data are not always directly usable. Thus, collected data need to be imported from one format to another (e.g., from a spreadsheet into a statistical software package or database), or relevant data need to be extracted from irrelevant data;

  o **Coding:** data can be correlated and correctly interpreted.

  In particular, this activity led to the delivery of a structured and comprehensive data set and of detailed Initiatives Factsheets (see Annex 4).

- **Activity 3 – Conduction of interviews** with the relative stakeholders of the retained initiatives following a pre-established questionnaire (see Annex 3). This activity aimed at performing structured interviews with the reference contacts of each identified initiative, with the objective of collecting specific and more detailed information and insights from social media analysis in the PAs best practices. This process of interviewing the owners of the shortlisted initiatives allowed those stakeholders to actively participate in the overall study by contributing as much as they could in the data gathering and through their later feedbacks and validation of the findings. This activity foresaw a preliminary setting up of a questionnaire that was used for all the interviews. This questionnaire has been carried out following a structured, limited set of questions as per the list below, in order to give a logical organisation to these data and to make results comparable.

Interview Questionnaire structure

- Stakeholder's basic information contacts
- Introductory Questions
- Focus on Social Media Analysis Projects (proof of concepts, pilots, etc.)
- Focus on Data (clusterisation, relevance, etc.)
- Focus on the Governance (organisational structure, skills, etc.)
- Focus on Technologies
- Focus on Follow-up

The analysis framework was later used as the basis for structuring the interviews, which allowed the project team to acquire deeper insights into each use case. Indeed, each interview was run to gather additional information as well as to confirm the overall initial understanding of the initiative. After debriefing the interviews, a detailed follow-up report was sent to the interviewed stakeholders for their own review, inquiring them to validate the findings.

The complete list of interviews that have been carried out during this phase is provided in the following table:

Table 1 – List of Interviews

Stakeholders	Initiatives	Interviewees	Interview Dates
European Centre for Social Media		**Mr. Sotiris Diplaris** (ECSM Administration & Management)	February 23rd, 2017 (phone interview)
NVWA **(Netherlands Food and Consumer Product Safety Authority** - THE NETHERLANDS -	• NVWA Initiatives Social Media Analysis field	**Ms. Marloes van Eijk** (NVWA Data scientist)	February 24th, 2017 (phone interview)
Directorate-General for Interpretation (DG SCIC)		**Mr. Angelo Tosetti** (Head of Unit DG SCIC S.4)	March 2nd, 2017 (physical interview)
DRAXIS - GREECE -	• STEP4Youth	**Ms. Maria Vogiatzi** (Dissemination manager of the STEP project)	March 9th, 2017 (phone interview)
Health Canada - CANADA -	• Health Canada Social Media Mining Project	**Mr. Charles Antoine Drouin** (Business Intelligence Analyst)	March 9th, 2017 (phone interview)
University of the Aegean, - GREECE -	• NOMAD Project	**Charalampos Alexopoulos** **Aggeliki Androutsopoulou** (Researchers and PhD Candidates participating in the NOMAD project)	March 17th, 2017 (phone interview)
CERTH-ITI, Multimedia Knowledge and Social Media Analytics Lab - GREECE -	• MULTISENSOR – EU • SOCIAL SENSOR • WEKNOWIT • REVEAL	**Dr. Yiannis Kompatsiaris** (Senior Researcher and co-ordinator) **Dr Symeon Papadopoulos** (Researcher and co-ordinator)	March 20th, 2017 (phone interview)
Ayuntamiento de Madrid - SPAIN -	• Decide Madrid	**Miguel Arana** (Participation Project Director)	March 21st, 2017 (phone interview)
Universität Koblenz-Landau, Institute for Web Science and Technologies (WEST) - GERMANY -	• EDEMOCRACY • WeGov	**Prof. Dr. Steffen Staab** (Head of Institute WEST – Web Science and Technologies & Institute for Computer Science)	March 21st, 2017 (phone interview)
University of Trento - ITALY -	• SENSEI	**Prof. Giuseppe Riccardi** (Project Coordinator, in the Department of Information Engineering and Computer Science University of Trento)	March 23rd, 2017 (phone interview)
Directorate-General for Informatics (DG DIGIT.D3)	• DIGIT D3 Initiative	**Kelly Liljemo** (Information Systems Architect)	March 29th, 2017 (physical interview)

As anticipated, **all data gathered through interviews and desk research have been organised into detailed Initiatives Factsheets**. The set of specific factsheets on each initiative, aims at providing a snapshot of the main features and characteristics of each use case, including:

- **Initiative overview and description**, including information on use cases and objectives of the initiative, main challenges encountered during implementation and key success factors of the initiative;
- **Social Media Analysis tool**, including information on the software tools (custom made or commercial) used to support the initiative in terms of technical features of the platform, main modules and functionalities, APIs, data quality tools, privacy issue management;
- All the **comments received by the stakeholders** themselves during the interview;
- **Preliminary findings** of the project team's research.

4.2. STEP 2 – SELECTION AND ASSESSMENT MODEL

The model used to provide a detailed landscaping of the social media analysis initiatives supporting policy-making in EU PAs has been developed through an iterative process during the desk research, the initiatives scouting and the interviews to the pertinent stakeholders. This approach was used in order to allow a better shaping of the model according to the scope of the study and to the specificity of the initiatives. Thus, the approach for the definition of the selection and assessment model encompassed the following sub-activities:

- Definition of a set of "**Selection criteria and sub-criteria**" useful for the identification of those social media-related initiatives that are relevant for the subsequent detailed analysis and for the collection of relevant information;
- Deployment of **"Assessment criteria"** with pertinent clustering;
- **Weighting of the criteria** in order to determine the relative importance of each criterion in the overall assessment.

The following paragraphs further describe the aforementioned steps.

4.2.1. DEFINITION OF THE SELECTION CRITERIA FOR SOCIAL MEDIA INITIATIVES

The model has been developed to guide the scouting, identification and assessment, technologies and tools that represent potential best practices components to support a potential Social Media Initiative and to provide a set of processes and technological guidelines for future initiatives to put in place across European PAs.

The model is based on the initial analysis of a long list of policy and decision-making related initiatives (see **Annex 1**), in order to identify if and to which extent each scouted initiative is in line with the purpose of this study. To this extent, in order to restrict the scope of the initiative to be considered, the identified selection criteria applied for the initiative in scope for the study are:

1. **Scope:** whether it concerns PAs or other domains (i.e. businesses). In particular, initiatives will be considered in scope whether they support PAs in their tasks of:
- *Policy-making,* in any step of the policy lifecycle (preparation, adoption, implementation and application)*;*
- *Decision-making*, in relation to any domain of intervention inside/outside the organisation*.*

2. **Nature of the analysis:** identifying to which of the following clusters it belongs:

- *Active*, the organisation implements the initiative on a platform (i.e. e-Participation web platform, dedicate social media page…) through which a policy maker could stimulate citizens' opinions/reactions on specific topics;

- *Passive,* implying the collection of data related to citizens' opinions related to specific policy contents from a list of identified social media and Web.2.0 sources, without any stimulation by policy makers in order to raise such opinion; a sub-set of such initiatives focuses on specific subject matter expert groups, providing their opinions around such domains.

Note: the study has focused on the second clusters of initiatives, which are in line with the objective to identify the best practices in social media analysis for policy- and decision-making, while including active ones would have switched the focus on e-participation initiatives.

3. **Technological content:** whether the scope of the initiative includes the use or development of a technological platform, supporting the analysis of data retrieved from the social media.

   Note: the study focused on those initiatives, which had foreseen the use of custom or COTS software supporting the data collection and analysis from social media.

4. **Degree of success:** whether the initiative can be considered successful or not. The success of the initiative has been evaluated based on the fulfilment of at least one of the following conditions: a follow-up has been executed/planned; the initiative has set the ground for subsequent projects/initiatives; the initiative has encompassed the implementation of multiple pilot projects.

Figure 2 – Selection Criteria
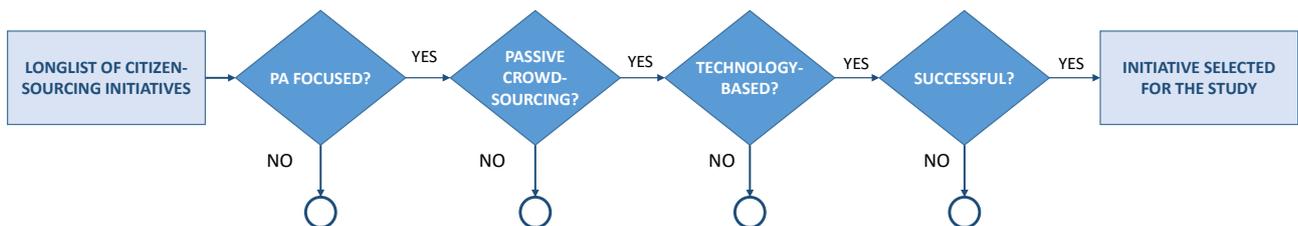
Therefore, at the end of this process, the above selection criteria have allowed selecting, from a long list of initiatives, the ones that focus on the **technology-based analysis** of data **gathered from social media** to support the **PAs in their policy- and decision-making** activities.

4.2.2. DEFINITION OF THE ASSESSMENT CRITERIA

The initiatives selected as per the above process have been submitted to a detailed analysis based on a series of **assessment criteria** further described below.

The **assessment model** was defined focusing on two different main sets of criteria and associated sub-criteria:

- **Qualitative criteria,** used to provide the analysis with general aspects characterising the initiative, aspects related both to the technology/tool adopted, *i.e.* the data manipulation methodology (analysis, crawling, clustering and mining, etc.) and to the process implemented for the collection and analysis of data. An important factor that also came up during scouting was the technological maturity level of the initiatives itself, mainly addressing the readiness of the digital platform, tool and of the technology behind it.

- **Quantitative criteria**, used to assess whether the impact of the initiative, or part of it, can be considered successful in achieving its scope and can then be identified as a best practice. Such

criteria are mainly focused on the effectiveness of the initiatives, in terms of comparison of the initiative achievements with the relative Key Performance Indicators; e.g. if the initiative itself is in line with the plan, if it has reached the target population or, if the technology/tool developed achieved a scalability level to be considered a product and hence able to support multiple sector in decision/policy-making strategies). Investigation on the number of implemented use cases for each initiative is also part of the quantitative criteria.

The visual representation of how the whole selection and assessment model is applied is provided in the following representation, while the detailed list of criteria is further described in the following sections:

Figure 3 – Representation of the "Selection Model" and "Assessment Model"
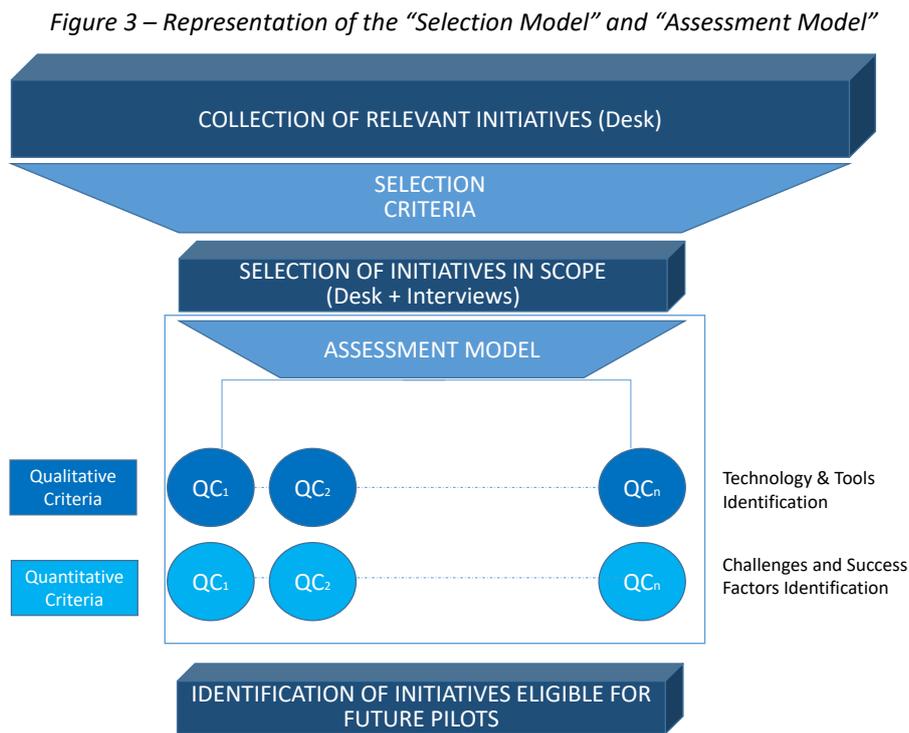
- *Qualitative Criteria*

The complete list of the qualitative assessment criteria and sub-criteria is reported in Table 2.

Table 2 – List of Qualitative Criteria and Sub-Criteria

ID	Criterion	Description	Sub-criterion	Description
1	**Project Nature**	This criterion identifies the category of the Social Media project to be assessed (e-Gov, Public Awareness, Financial Sector) and the "role" of the Social Media analysis outcome ("advisory", "scouting", "evaluating")	**1.1 – Demand analysis**	This sub-criterion assesses whether a demand analysis has been performed in terms of expected number of end-users and their broadband coverage.
			1.2 – Geographical Coverage	This sub-criterion assesses the level of coverage of the project and/or of the data considered within and outside the EU.
			1.3 – End Users	The sub-criterion assesses who are the end-users, i.e. PAs, Citizens & Businesses.

ID	Criterion	Description	Sub-criterion	Description
2	Process	Data collection and analysis process adopted	2.1 – Process Maturity	This sub-criterion assesses whether a process to collect, manage and analyse data has been defined, how it is structured and if it has been tested and run during the initiative.
			2.2 – Process Flexibility	This sub-criterion assesses the degree of flexibility of the initiative: can the process be iterative (with multiple cycle of collection and analysis, i.e. in real-time) or is it designed for one-time only use?
3	Digital Platform	This criterion assesses the features of the Digital Platform adopted within the initiative	3.1 – In-house or Custom Developed Platforms	This sub-criterion investigates on the nature of the digital platform adopted by the initiative (in-house or off-the-shelf)
			3.2 – Licensing model	This sub-criterion investigates which tools and or technologies have been used for the various steps of the initiatives: Proprietary Technologies or Open Source Technologies
4	Functionalities	This criterion assesses the presence of specific functionalities within the digital platform	4.1 – Data Mining	This sub-criterion assess the presence of data mining techniques functions
			4.2 – Data Visualisation	This sub-criterion assesses the presence of visual reporting or infographics functions to report data
			4.3 – Predictive Modelling	This sub-criterion assesses the presence of automated predictive modelling functionalities
			4.4 – Optimisation	This sub-criterion assesses the presence of optimisation functionalities
			4.5 – Deep Learning and Chat Bots	This sub-criterion assesses the presence of chat bots or of deep learning algorithms
			4.6 – Natural Language Text	This sub-criterion assesses the presence of functionalities able to analyse Natural Language Text
			4.7 – Geo-Spatial Analytics	This sub-criterion assesses the presence of geo-spatial analytics tools
			4.8 – Streaming Analytics	This sub-criterion assesses the presence of analytics for data in streaming
			4.9 – Sentiment Analysis via Text Mining	This sub-criterion assesses the presence of functionalities related to sentiment analysis via text mining
			4.10 – Social Analytics	This sub-criterion assesses the presence of functionalities related to social analytics
			4.11 – End-User Feedback Analysis	This sub-criterion assesses the presence of functionalities related to analyse end-user feedback
			4.12 – Complex Event Processing Analytics	This sub-criterion assesses the presence of functionalities related to the analysis of complex event (multiple streaming of data of different sources)

ID	Criterion	Description	Sub-criterion	Description
			4.13 – Query and Reporting	This sub-criterion assesses the presence of query and reporting functionalities
5	Openness	This criterion assesses whether the project outputs are accessible, implementable and upgradable freely or if proprietary licence constraints exist		
6	Scalability & Re-Use	This criterion assesses the potential level of reuse of the project outputs in other contexts, in order to pursue a high level of harmonisation of social media-related projects across Europe		
7	End-Users and Multiple Language Coverage	This criterion assesses the ability of the initiative to cover end-users with multi-cultural ethnicity		
8	Interoperability	This criterion assesses the level of compatibility of the project with other projects currently in use across the EU (social media project compatibility/synergies with other EU projects)		
9	Risks management	This criterion assesses the level of risks related to the initiative in terms of privacy, of data, security and reliability	9.1 – Data Privacy	This sub-criterion assesses the presence of data privacy as a whole terms and conditions Is the privacy of single individuals taken into consideration?
			9.2 – Data Reliability	Does the initiative have a data validity check process in order to ensure appropriate uses of data?
			9.3 – Data Quality	Does the initiative have a data quality check process in order to ensure appropriate uses of data?
			9.4 – Cyber Security Aspects	Does the initiative have Cybersecurity measures?
			9.5 – Data Storage Methodology	Where are the data stored? Public or Private Cloud?
			9.6 – Data Accessibility for PAs	Is there any authentication for PAs access?
10	User interaction and transparency	This criterion assesses which and what level of interaction there is between the end-users (i.e., citizens, PAs, Agencies, etc.)	10.1 – Interaction between the PAs and end-users	Does the initiative promote exchange between PAs and Users? Does the initiative support user engagement? Does the initiative promote user engagement? Does the initiative foster user engagement? Does the initiative have tool to display content to users for informed participation? Is the social Media initiative facilitating access to person with disabilities?
			10.2 – Readiness and Transparency of Data	Can the PA (policy maker/Decision maker) easily incorporate social - media produced feedback into policy and decision-making? Can the source of the information be easily identified?

ID	Criterion	Description	Sub-criterion	Description
				Is the Social Media initiative inclusive?
				Is the Social Media Initiative supporting PAs, Policy Makers and Decision makers to create sustainable social media technologies?
				Is the Social Media Initiative supporting PAs, Policy Makers and Decision makers to create sustainable social media strategies?
11	Readiness	This criterion assesses the Technology Readiness Level of the initiative and of the technology developed and/or adopted	Technology Readiness Levels as defined in the Work Programme of Horizon 2020 Programme.[5]

Since the study aims to identify a list of **best practices**, not only in terms of the initiatives in general, but also in terms of their technological contents, several assessment criteria focused on the investigation of the technology/tool developed/used by the social media initiatives.

- *Quantitative criteria*

As previously described, the main aim of the quantitative criteria is to provide a measurement of the potential impact of the project and/or the main outcomes of the initiativ*e. Figure 4* below presents the seven identified quantitative criteria used for the comparison and evaluation of the social media initiative.

Figure 4 – Quantitative Criteria

The quantitative criteria, investigated through the key success factors, are to be used to measure the potentialities and the impact the initiative achieved; each criterion is a quantification of the interaction happened during the end-to-end process of social media analysis (from the involvement

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[5] Horizon 2020, Work Programme 2014 – 2015, 19. General Annexes – Annex G

on policy makers to the analysis of users' opinion). The numerical value and the sum will be used during the ranking exercise.

The number of visits to the initiative website may also be considered as an additional parameter, if the pertinent information is available, either from the site itself or through other analytical tools. Such criterion has however not been used in the present study for lack of information on the analysed initiatives.

4.3. STEP 3 – OVERVIEW OF SELECTED INITIATIVES

This Chapter aims to provide an overview of selected initiatives based on the information gathered through desk research and interviews. The description of each initiative is structured as to provide insights on the following aspects that have been deemed relevant to guarantee a full understanding of the main features of each project.

More in detail, based on all activities conducted within STEP 1 – Data Collection, that included desk research and interviews with relevant stakeholder, the following initiatives were selected to be further investigated:

- **NOMAD** – Policy formulation and validation through non-moderated crowd-sourcing. Project Coordinator: University of Aegean. *(January 2012 – December 2014)*;

- **NVWA Initiatives** (Netherlands Food and Consumer Product Safety Authority) - Two initiatives on hold, two initiatives implemented. Project Coordinator: NVWA. *(Ongoing)*;

- **Step4Youth** - Societal and political engagement of young people in environmental issues. Project coordinator: DRAXIS Environmental S.A. *(June 2015 – November 2017)*;

- **SENSEI** – Making Sense of Human-Human Conversation Data. Project Coordinator: University of Trento. *(November 2013 – October 2016)*;

- **WeGov –** Where e-Government meets the eSociety. Project Coordinator: University of Southampton. *(January 2010 – September 2012)*;

- **Stakeholder Engagement CEF Building Block–** Project Coordinator: EC DIGIT D3. *(Ongoing)*;

- **Health Canada Initiatives** – 2 Pilot projects on health topics. Project Coordinator: Health Canada. (*Ongoing*).

For each initiative mentioned above a description of the following elements is provided:

- **Initiative overall description**

- **Main characteristics of the initiative**, in terms of:
    - *Implementation process and procedural aspects*
    - *Use Cases*
    - *Main challenges and Barriers*
    - *Dealing with privacy issue*

- **Social Media Analysis Tool**

- **Key Success Factors and Key Performance Indicators**

Such elements are then summarised within the relative Initiative Sheets (Annex 4).

The information collected for each initiative were then used for the assessment and evaluation aimed at the identification of initiatives eligible for future pilots, as described in the following Chapter 5.

4.3.1. *NOMAD – POLICY FORMULATION AND VALIDATION THROUGH NON-MODERATED CROWDSOURCING*

INITIATIVE OVERALL DESCRIPTION

The NOMAD project, namely *"Policy validation and formulation through non-moderated crowd-sourcing"* is a 3-year initiative (January 2012 – December 2014) co-funded by the European Commission (EC) under the FP7 Programme.

The NOMAD project aims to stimulate significant progress in the domain of ICT-enabled policymaking as well as to assist policy makers, organisations and citizens to compose and validate new policy through analysing information available in the web. Nomad's vision is to provide decision-makers with fully automated solutions for content search, acquisition, categorisation and visualisation that work in a collaborative form in the policy-making arena.

Therefore, the main objectives of NOMAD[6] are:

1. Analysing and interpreting citizens' opinions, judgements and prejudices available on the web in order to use them as a core information to support the policy life cycle;
2. Enhancing citizens' active participation in the decision-making and policy-making process;
3. Providing decision-makers with fully automated solutions for content search, acquisition, categorisation and visualisation that work in a collaborative form in the policy-making arena.

NOMAD has been carried out by a Consortium composed by a pool of European partners: University of the Aegean (GR – Project Coordinator), Athens Technology Center (GR – Coordinator), Google Ireland (IR), NCSR'D' (GR), CP Critical publics (UK), Fraunhofer IGD (DE), KantorQwentes SA (BE), AUP Parlamentsdirektion (AU), HEP Hellenic Parliament (GR) as showed in the following :

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[6] www.nomad-project.eu

Figure 5 – Structure of the NOMAD Consortium
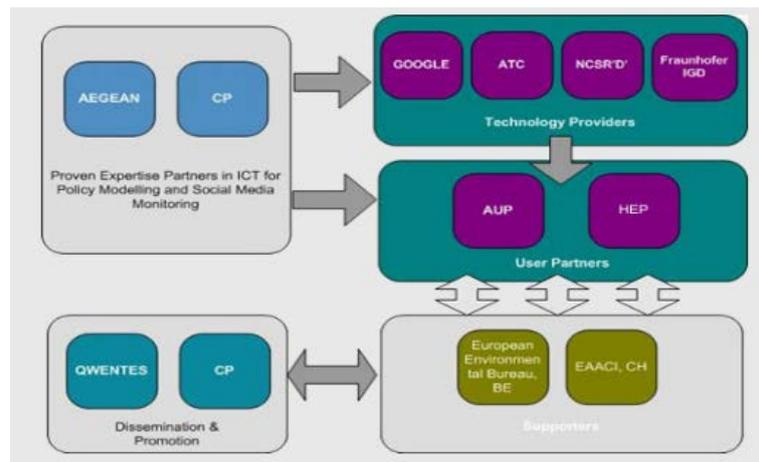
CHARACTERISTICS OF THE INITIATIVE

- *Implementation process and procedural aspects*

The NOMAD project has developed a methodological approach for the implementation of social media Analysis initiatives that includes - once that the policy area of investigation has been defined - the following phases and activities[7]:

1. **Listen**: this phase consists of monitoring what people say investigating their needs, opinions and proposals. For this purpose the NOMAD Crawler has been used – a programme, which searches the web, goes and visit the relevant possible sources of information such as, among others: micro-blogging sites such as Twitter, Blogs including Blogger, WordPress, Typepad and LiveJournal, video sites including YouTube, Vimeo, Metacafe, Bliptv, social networks such as Facebook and MySpace, Discussion forums, news sites (international, national or regional), images sites such as Flickr, corporate sites;

2. **Analyse**: This phase includes the analysis of information hidden within the text of citizens conversations (content, concerns, sentiments and other information) and the creation of a stream of data that is coherent with the specific policy-makers' objectives to be leveraged in the next phases. Each web page found by the NOMAD Crawler goes through a series of automated analysis processes, namely: language detection, opinion and argument extraction, sentiment analysis, argument summarisation;

3. **Receive**: The analysis outcome will include a Position Map of the extracted argument clusters, built upon the relevance, the visibility and the sentiment (either positive or negative) of the data collected from the web hosted conversations. With the use of visual analytics all related data will be presented into a visible form that highlights important features, including commonalities and/or discrepancies. In this context, all the data that comes from sources as diverse as blogs, online opinion polls and government reports are properly displayed for an effective use;

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[7] www.nomad-project.eu

4. **Act**: This phase consists in testing the policy agenda developed based on the information collected and visualised by using the NOMAD tools.

Based on this approach, the implementation of a social media analysis initiative by using the NOMAD tool roots on a structured **data collection and analysis process** that includes the following steps for the users[8]:

1. **Set-up of the "domain model"** in order to identify the policy objectives and areas of interest of the involved policy makers. That is a representation of the main domains that the policy-makers intend to address through a policy (e.g. energy domain, education domain, health domain), as well as relations among them, in a tree structure; this is done using a graphical modelling tool;

2. **Definition of the "policy model"** based on the above domain model. The policy model represents the public policy to be investigated in the social media, always in a tree structure, with a number of "policy statements" associated with one or more nodes of the policy model and for each of them a set of positive or negative "arguments". This is done using the same graphical modelling tool;

3. **Identification social media sources** (e.g. political blogs, websites, Twitter, Facebook, etc.) to be crawled in order to collect relevant content about the domain or public policy in scope. The identification of sources is carried out by the policy-makers;

4. **The sources are crawled** using the ICT infrastructure in order to find relevant content against the domain or the public policy of interest and **requirements of the model are fine-tuned** (e.g. automated generation of keywords to enrich the policy model). Collected content are processed using opinion mining techniques and results are presented in a reporting form.

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[8] Loukis, E., et al., Promoting Open Innovation in the Public Sector Through Social Media Monitoring, Government Information Quarterly (2016), http://dx.doi.org/10.1016/j.giq.2016.09.004

Figure 6 – NOMAD Implementation Process
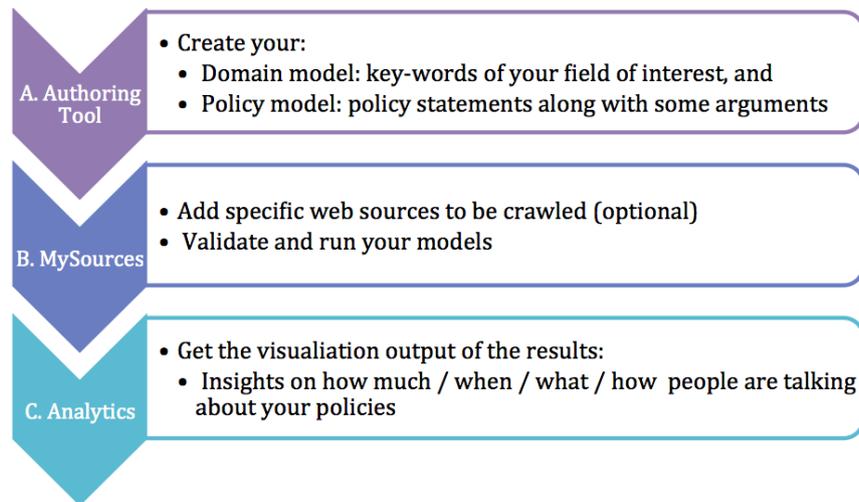
- *Use cases*

The NOMAD project has foreseen the development of three Pilot Cases implemented with the collaboration of both PAs (Hellenic Parliament and Austrian Parliament) and private organisations (Critical Publics). Given the scope of this Study, only cases referred to PAs were assessed.

Following the methodological approach described above, the two Pilot Cases that involved PAs were developed along the following steps:

1. Defining the policy model and the subject to be investigate;

2. Using the policy model to investigate relevant content on social media sources;

3. Collecting relevant content and analyse it;

4. Presenting aggregated results;

5. Evaluating with Policy Makers how they appreciate the overall concept. The choice of the policy topics was made by the Policy Makers and PAs participating in the project (Hellenic and Austrian Parliament) during the requirements and design phase, when the particular use cases scenarios have been developed.

Further details related to the Pilot Cases[9] [10] in scope are presented in the box below.

Greek Pilot (Hellenic Parliament) - Energy Planning

Within the greater context of the Greek debt crisis and the target set by the EC to achieve 20% share of energy from renewable sources in 2020, the Hellenic Parliament recognised as a priority the management of energy resources assuring the satisfaction of the nation's energy needs in a reliable and sustainable manner. In such a scenario, the Hellenic Parliament used NOMAD to identify the "sentiment" of active citizens and arguments related to energy planning with special focus on the use of wind energy in Greece in order to obtain information and insights to be used to build an attractive environment for empowering investments in renewable sources.

The Pilot was executed following the general NOMAD's data collection and analysis process and related steps/activities.

German Pilot (Austrian Parliament) - Open Data

The main goal of the Austrian Parliamentary Administration in carrying out a Social Media Analysis initiative was to monitor public debate on what might be called a freedom of information and open government data policies in order to support the actors of the legislative process in obtaining a clearer picture of the positions of major interest groups towards the Open Government Data (OGD) movement.

Indeed, OGD movement represents an influential factor in government data policies in Western democracies and requires both Substantial and Procedural Transparency. Moreover, a public debate was initiated in Austria by the OGD movement. In spite of all these aspects, a legal basis forcing government bodies to proactively publish their data was still missing and a certain degree of incoherence among positions towards such topic could be detected.

- *Main challenges and Barriers*

Main challenges encountered during the implementation of the initiative mainly refer to:

- **Data privacy:** only data that are publicly available can be collected and only aggregated results can be revealed to users. As an example, some demographic information that could have been interesting to process, either could not be found or could not be processed due to data privacy rules. As better described within the following section "Dealing with privacy issue", data protection legislation varies among EU MSs, thus the members of the Consortium needed to undergo a specific process of drafting a common privacy policy and submitting it for approval to national authorities;

- **Fast-changing technologies**: data analysis technologies and tools have to be continuously readjusted to specific policy and technologies used by Social Media Platforms under analysis. For example, if Twitter changes its APIs or its Data sharing policy, the infrastructure used within the projects needs to be changed. These continuous changes on Web 2.0 sources APIs that affect NOMAD crawlers generates a relatively high cost of maintenance. This challenge can be overcome by using open crawling methods;

- **Significant computational capacity** is needed to support simultaneous users and linguistic analysis executions.

- *Dealing with privacy issue*

As mentioned in the previous section, within the NOMAD project only publicly available data have been analysed. However, as data protection legislation varies among EU MSs, the Consortium members had to contact their countries' data protection authorities in order to get advice and had to design a common privacy policy that complies to all laws that apply in the different countries.

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[9] www.nomad-project.eu. For further information refer to: http://www.nomad-project.eu/Portals/0/NOMAD_HEP_PILOT_WORKSHOP.pdf
[10] www.nomad-project.eu. For further information refer to: http://www.nomad-project.eu/Portals/0/NOMAD_UK_PILOT_WORKSHOP.PDF

This data privacy policy needed to be validated by the authorities. This challenge can be overcome if data anonymisation techniques are used.

SOCIAL MEDIA ANALYSIS TOOL

NOMAD has succeeded in providing its users with a fully automated tool-suite (namely, the **NOMAD Platform**) for modelling, content search and acquisition, classification and visualisation without requiring any particular expertise or programming knowledge from them.

The initiative used the dedicated platform designed and deployed for the particular purposes of the initiative. The design of the ICT solution followed the requirements elicitation processes conducted in collaboration with the end users participating in the pilots. Open access to platform was provided for the NOMAD initiative.

The platform was developed following a modular approach, and thus consists in seven application components integrated into the overall platforms.

- **Policy Model Authoring Environment**;

- **Data Acquisition and Management Module:** data crawling that goes through the identified sources in order to collect relevant information;

- **Linguistic Analysis Module:** this module makes use of a Natural Language Processing algorithm, which will recognise the language used in the page. NOMAD provided linguistic analysis modules, covering the three languages of the pilots (English, German and Greek). Although the pilot operations took place in Austria, Greece a pan-European reach was through the third pilot, while additional activities took place in the rest countries of the Consortium members (U.K., Germany, Belgium);

- **Argument Extraction Module**: using appropriate semantic similarity measures and the inference mechanism, this module allows to identify analysed content that is pertinent to the arguments inherent to a specific policy;

- **Argument Summarisation Module:** this modules makes use of specific algorithms for generating qualitative information about opposing arguments, in the form of anonymity-preserving and automatically-generated summaries;

- **Opinion Mining and Sentiment Analysis Module:** Smart sentiment classifiers analyse the mentions and recognise their 'tone' (positive, neutral, negative) towards each query;

- **Visualisation Module:** with the use of visual analytics all related data are presented into a visible form that highlights important features, including commonalities and/or discrepancies.

Therefore, the individual tools can be further developed, customised and reused in a follow-up initiative. Each service within the platform, is owned by the department participating in the project that has developed it. Apart from the visualisation services, all partners have made their code available as open source.

The implemented platform is a multiple domain platform as several data sources have been scanned (Twitter, Facebook, Blogs, News sites, RSS feeds, YouTube (only comments) etc.). Scanned data include:

- Social Media Analytics (e.g. interactions / likes / shares / retweets / views, etc.);
- Textual Content (e.g. Documents, Posts, Web Articles, Comments, Replies);
- Social Media Profiles (e.g. publicly available users' data).

Where applicable, geo-localisation data have been analysed as well. All contents were processed/revealed in aggregated and anonymised form.

Data were stored in the servers owned by the Consortium, which were mainly infrastructures maintained by the research centres and private companies participated in the project.

Data collected were solely open data made publicly available in web locations by users.

There was authentication and user management services both for PAs and other type of users (societal stakeholders), accessing the platform and the data visualized there.

KEY SUCCESS FACTORS AND KEY PERFORMANCE INDICATORS

Regarding the key success factors of the initiatives, the main focus of the NOMAD tool was to engage everyone to participatory democracy. The citizens could have their opinion on specific subject (without even requested to do so – non-moderated crowdsourcing), and Policy Makers were able to see those opinions (even if not obliged to follow them). However, success of initiatives depends on the reliability of tools, on the culture of the users and their intention to trust these kinds of approaches.

Within this context, one of the key success factors is related to the structure of the Consortium: the NOMAD Consortium was led by the Information Systems Laboratory of the information and Communications systems department of the University of Aegean and comprised Google, Fraunhofer IGD, Athens Technology Centre, NCSR Demokritos, Critical Publics, Qwentes and the Greek and Austrian parliaments as final users.

Referring to the evaluation of the success of the initiatives, different actions were undertaken:

- Definition and measurement of a set of KPIs;
- Implementation of ratings related to the evaluation metrics, cost-efficient and useful policy models;
- Preparation and submission of questionnaires where Policy Makers provided some ratings (qualitative and quantitative). As an overall result, Policy Makers found initiatives quite positive overall, which made them satisfied. The Policy Makers were positive towards the adoption of the tools if they reach a mature level.

The following Table shows the main KPIs monitored during the NOMAD project, and related values obtained:

Table 3 – NOMAD KPIs

KPIs	Values
Connected Domain Entities	*734*
Arguments	*837*
Policy Components	*194*
Policies	*50*
Domains	*31*
Number of policy makers involved	*97*
Number of sources crawled	*>1000*

4.3.2. NVWA INITIATIVES

INITIATIVE OVERALL DESCRIPTION

The NVWA was created to guarantee the protection for both human and animal health and welfare. In fact, the Authority screens the safety level for food and any different types of consumer products, working to enforce the regulatory framework at issue.

The authority has three main tasks that could be grouped into supervision, risk assessment and risk communication. NVWA activities could be classified into three different topics and areas:

- *Animal health:* the Authority efforts are made to guarantee animals healthy, in fact, there are many controls over the animal product's process;

- *Plant health:* the principal efforts are made to halt and prevent the introduction and eventual sharing of pests and diseases in the market;

- *Food safety:* related to this topic there is a total supervision activity made by the NVWA aiming to check each stage; preparation, production and product transportation too.

Since 2015, the NVWA has been working on different initiatives that make use of different social media analysis tools. More in detail, out of four initiatives carried out by the NVWA, two can be considered "on hold" and two have been already implemented.

In the following sections, four different initiatives related to social media analysis will be analysed.

Considered the mission, each pilot aims to reach a specific goal, in line with the main tasks of the NVWA. Pilots "on hold" are:

- **Detection of illegal activities**: related to the **supervision** goal for the NVWA;

- **Prioritisation of inspections**: considering in this case the **risk assessment** task.

Pilots that have been already implemented are listed as follows:

- **"Think before ink":** for this pilot, the aim of the Authority is to communicate the risk related to a specific practice;

- **"Coosto dashboards for brand monitoring and gathering signals":** this pilot was implemented with a specific goal reassumed into the possibility to have a whole vision, considering any element, for a brand considered.

C̲HARACTERISTICS OF THE INITIATIVE

- *Implementation process and procedural aspects*

No specific information available.

- *Use cases*

Among use cases, the ones on hold are:

- “**Detection of illegal activities**”: NVWA’s aim is to halt subjects that offer services without permit. Indeed, the Authority uses tools to understand who is not allowed to advertise a specific product on the web. Coosto is the tool used for this type of project, able to “take control” over activities of a brand. The strategy is to use it to find specific advertisements for the product at issue. After each type of information is obtained, there is a web scrape activity finalised to gather data to compare them with the ones correctly registered;

- **“Prioritisation of inspections”**: in this case NVWA uses machine learning techniques to create a validated model and classify a company to be inspected or not. There is a deep analysis and screen activity on company website at issue, in order to obtain data. The second step is represented by a combination of these data with known inspection results; here, the use of a tool able to check these information guarantees the possibility to obtain a clear answer about the priority inspection level.

The projects already implemented are:

- “**Think before you ink**”: the goal is to promote safety importance for the practice of Tattoos. The Authority, working to protect human health, tries to communicate any type of risk related with the practice at issue, highlighting the skin cancer possibility too. The project was implemented thanks to an info graphic posted on Facebook. The choice is imposed by the identified target group: young people. The project works to create a social pressure to improve compliance level;

- “**Coosto dashboards for brand monitoring and gathering signals**”: the idea is to utilise the social media tool for insight activities, sentiment analysis and so on. The project should guarantee a constant “follow-up” to inform consumers and gather signals from the specific brand monitored.

- *Main challenges and Barriers*

NVWA initiatives, on hold or implemented, should be able to face different type of challenges, grouped into three categories.

- **Technical issues**: the main point is related with the fact that using public networks there is the possibility to face situations where contents are locked for any type of technical problem, that obviously could affect also the own network traffic;

- **Capacity & knowledge**: started from 2015, the project, to use social media and website contents to improve the work made needs of specific knowledge. The related problem is the possibility to have a shortage of experts for different roles. Possible scenarios in this case are

to hire external resources, able to fill the gap, or to postpone components, modifying the expectations for the project at issue;

- **Data accessibility**: use alternative sources and/or shift focus in case of private data that cannot be used (also referred as "Censorship issue").

- *Dealing with privacy issues*

When it comes to work with data obtained from external sources (both social media and websites), the Authority is particularly committed to maintain compliance with the relevant regulation that sets specific guidelines about the use of data. Over the legal restriction, there is another type of issue to consider: social media can block users that make an extensive use of data, compromising the activity of continuous data collection. For this reason, the Authority should maintain the right level/amount of info collected, in order to avoid incurring into restrictions.

SOCIAL MEDIA ANALYSIS TOOL

For the implementation of its initiatives, NVWA is using a tool "Coosto" whose main features can be classified as follows:

- **Social listening and Social Media analytics**: the tool is able to measure the reputation or the public idea about a specific topic via social media sentiment and analyse the underlying feelings, problems and needs. Coosto is able to offer a "real-time alerting" to be instantly informed by automatic alerts. The tool is able to work into an offline mood too, guarantying the chance to monitor any info in each moment. Other service offered is the possibility to made automatic sentiment analysis, to measure specific parameters and elements at issue;

- **Social publishing**: this service offered by Coosto is fully in line with the aim of NVWA to use social media in order to influence the policy decision-making process. The Tool is able to make NVWA informed about any type of decision around the contents considered. The possible actions that Coosto is able to offer are measure campaigns (giving relevant feedback measuring and comparing online and offline data). The tool could also guarantee a clear monitor for a specific target group (considering opinions, behaviours and needs for the target group).

The tool aims at guaranteeing a single unique solution able to realise a social media monitoring, a management for the information needed, with the possibility to engage people involved. Coosto is used for different reasons; for instance, its ability to guarantee a control and measure over social media content is really appreciated by users. Furthermore, considering the work made by the NVWA, it is useful for two essential reasons: its capacity to monitor a target group and to measure specific campaigns. Coosto is able to obtain opinion and behaviours, gaining valuable and relevant information feedbacks, used to measure the efficiency and efficacy level for both online and offline campaigns. As a result, the tool represents a starting point from which the Authority makes data analysis.

Explained the major features, there are functionalities to underline too. For example, in the initiatives made by the NVWA the tool capacity to produce query and reports, with a real time personalised targeting is clear. About data collected, there is a high quality offered for data

visualisation (many layouts available) and a data mining capacity, able to guarantee the extraction of specific topics and news. Coosto is able to guarantee also geo location data, and the Authority has been using this information into its analyses.

Considered the tool used and its capabilities, it is possible to explain how the NVWA uses information obtained and performs data quality activities. In detail, there is a legal inspection for each data collected, in order to evaluate legal compliance; when the next steps of the different projects will be implemented an assessment model choice will be run.

KEY SUCCESS FACTORS AND KEY PERFORMANCE INDICATORS

The key success factors are classified according to the different initiatives and tools used:

- **Illegal activities**: regarding the project to check which products are on the market without permit, the use of technological tools is able to guarantee a lower level of costs. In fact, shifting from a manual collection to a digital one there is the possibility to obtain any type of data in a lower time interval, and the possibility to collect more data. These advantages have a clear repercussion on the Authority cost side;

- **Review sites**: on the one hand, thanks to a constant combination of data available online and already collected ones, there is the opportunity to obtain a great efficiency level, increasing the number of essential inspections and thus avoiding wasting important economic resources. On the other hand, non-essential inspections will be carried out;

- **"Think before you ink"**: the initiative has been able to obtain important results in terms of people reached. First point is that more than 700 000 young people were reached by the info graphic visible of Facebook, with many of them that have decided to click on the related website. It is also worth pointing out that according to data analysis made, more than the 54% of young people interested in tattoos have been reached;

- **Coosto**: the usage of it is guarantying the chance to detect particular signals in a quicker time.

4.3.3. HEALTH CANADA INITIATIVES

INITIATIVE OVERALL DESCRIPTION

Health Canada is the Federal department responsible for helping Canadians maintain and improve their health, while respecting individual choices and circumstances.[11] The Authority mission and vision focuses on having the healthiest people in the world.

The Authority, with the view of guarantee a support in the long-term, believes that promotion activity for health and prevention could be able to increase the Canadians' life quality in the future. To achieve its goals, the Department is trying to work in collaboration with other related partners all over the world. Obviously, there is a strong effort to improve the Canadian health care system with a constant partnership with internal provinces.

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[11] Source: http://www.hc-sc.gc.ca/ahc-asc/index-eng.php

Each initiative from 2016 aims at obtaining an opinion on social media about products and drugs, with the mission to detect market hazards.

Since 2014, Health Canada started to focus on the role that social media could have in supporting the achievements of its institutional goals. In fact, there were discussions and analysis to understand if social media analytics and big data analysis techniques could enhance detection of product safety trends and emerging risks posed by consume products. A first demonstration of a possible usage of social media was realised with the IBM Social Media Analytics lab at the Insight 2014 Conference. The result obtained shown that the technology had the capacity to collect, to collate and to summarise social media data. Now, after confirming the important possible results offered by social media activities, there is a specific Pilot, whose implementation process is structured in four main phases:

- **Proof of technology**: a key activity is a continuous check about the technology used, to guarantee a great efficacy about its work;

- **Proof of value**: important to understand if there is enough value of detection for each use case;

- **Prioritisation**: made the detection, it will be important the identification of priorities for the organisation;

- **Integration**: there is a constant work to integrate each data collected thanks to the social media analysis.

Thanks to social media monitoring activities, the Canadian organisation is able to collect information from citizens, obtaining an important source for future policy discussions. Therefore, the goals are again underlined and reassumed into the possibility to detect hazards in the market and to identify compliance issues to select the most appropriated counteraction in order to get it fixed.

CHARACTERISTICS OF THE INITIATIVE

- *Implementation process and procedural aspects*

No specific information available.

- *Use cases*

There are two basic use cases: **detection** and **characterisation**.

- The **detection use case** is characterised by a problem statement to select social media records related to generic injuries or hazards, and considering the injury concept, detect specific products of interest to Health Canada. This type of case is suitable to a post-market programme such as consumer product safety, in case of unknown issues, and where the detection should be made considering generic themes of injury and hazard.

- The **characterisation use case** presents a problem statement to select social media that should be related to a known specific theme, and should provide related concepts and sentiment and demographic distribution of the active conversations. In this case, it is suitable

in situation of pre-market approval programmes for drugs or pest control products, where the discrete list of specific terms is known.

- *Main challenges and Barriers*

One of the main challenges refers to the definition of what are the boundaries of the initiatives. To this end, the project team collects a set of parameters and then assesses them accordingly. The other main challenge is related to the need of people and workers with specific knowledge. As a matter of fact, the knowledge required to analyse social media information, which is considered as a barrier. The aim of the organisation is to find the right resources (i.e. people) to overcome such barrier.

- *Dealing with privacy issues*

Health Canada disclaims that it monitors the data and with special regards to data collection makes use only of data that are collected by the tool.

However, a particular issue refers to the possibility of scanning closed sources, as even only looking at closed data – without participating – can be considered a breach of privacy.

SOCIAL MEDIA ANALYSIS TOOL

The Social Media Analysis tool used by Health Canada is a platform called Nexalogy, provided by the Canadian Environics Research Group.

Nexalogy is a cloud service that helps discovering insights on social networks. Its main functionalities are:

- Continuous retrieval and analyses of social media data (Twitter, GNIP, Tumblr, Facebook Pages, RSS feeds Blogs, News, Videos, Forums), using a powerful analytics engine;
- Provision different visualisations:
  - Timeline
  - Top Content (most shared links)
  - Top terms (Hashtags and words)
  - Lexical Map of the top words and co-words and words clusters
  - Topics Map of 26 human aspects
  - Actors by Query (showing interaction between actors and queries)
  - Top Actors (Active and Mentioned)
  - Actor Interactions
  - Retweet Statistics
- Capacity to create email alerts;
- Capacity to create multiple personalized filters.

The tool also offers geography and demographics features.

Once data are collected, a number of data quality activities are performed. Among others: profiling, data cleansing, data crunching, data visualization, reporting.

Regarding data storage, all data are stored on Nexalogy private server farm to which Health Canada can through a web portal. All information gathered by Nexalogy is publicly available.

KEY SUCCESS FACTORS AND KEY PERFORMANCE INDICATORS

The key success factors of the initiatives refer to two main areas:

- **Implementation process**: at the very start of the project, Health Canada has identified clear steps and specific deliverables for each step. For the completion of each step it is verified that a high delivery value has been achieved and that all specific goals have been accomplished;

- **Social media analysis tool**: the tool used by Health Canada allows to access closed sources. Hence, Health Canada is able to enter closed websites and, without participating, look at the interactions and get data of interest. In order to access such data, a request for permission is necessary.

4.3.4. STEP4YOUTH

INITIATIVE OVERALL DESCRIPTION

The Step4Youth promotes the societal and political participation of young people in the decision-making process on environmental issues. Indeed, the project employs innovative social media analytics and monitoring tools, as part of effective strategies that will be developed, in order to engage young citizens in the pilot activities and increase their motivation to participate. It extends technology to help PAs in social media monitoring. This project wants to help local authority to monitor discussion about the environment and to engage young people in these kind of discussions.

The initiative focuses on developing and pilot testing a cloud eParticipation SaaS platform enhanced with web/social media mining, gamification, machine translation, and visualisation features.

For instance, the initiative's team develops specialised components and continuously develops new complements such as the Stream Manager, which aggregate information and some new components for each projects; e.g. REVEAL component to check if TWITTER comments are real.

The Step4Youth initiative was developed by a Consortium of several partners that collaborated together for the overall STEP project, namely CERTH-ITI (Greece), Linguatec GMBH, Abertay University (United Kingdom), INMARK Europa (Spain), Region of Crete (Greece), Sampas Bilisim Ve Iletisim Sistemleri Sanayi Ve Ticaret A.S. (Turkey), Hatay Metropolitan Municipality (Turkey), Comune di Sant'Agata del Bianco (Italy), Youth and Environment Europe (Croatia), Ajuntament de Mollet del Valles (Spain), Kairos Future Aktiebolag (Sweden), Ayuntamiento de Valdemoro (Spain), Plano2 Symvouleftikes Ypiresies Ike (Greece). The Thessaloniki-based-company DRAXIS Environmental S.A. acted as the project coordinator. **DRAXIS Environmental S.A.** is an IT solution company that provides integrated solutions within the environmental sector. Indeed, DRAXIS' projects involve Environmental technology and have the goal to involve young participation in environmental issue.

This project has received **funding** from the European Union's Horizon 2020 research and innovation programme.

Step4Youth counts several **objectives** [12], among which:

- Enabling public authorities to quickly open their decision-making procedures to young people;
- Enabling young citizens to participate in decision-making on issues with environmental impact by:
    - Providing them with personalised information on decisions under consultation;
    - Giving them the opportunity to express their opinion;
    - Informing them on what other people are saying on the specific issues of interest, filtering information from noisy content in social media and web streams, and providing it translated in their own language;
    - Giving them the opportunity to bring issues to the attention of policy makers.
- Developing engagement and motivation strategies for increasing youth participation in environmental decision-making;
- Executing pilot test of the services in an operational environment in terms of technical, organisational and legal feasibility, with the participation of end users (young citizens) and policy makers;
- Assessing the usability, effectiveness and impact of the project in embedding open engagement in public sector processes, and to identify the key barriers for wide scale deployment.

CHARACTERISTICS OF THE INITIATIVE

- *Implementation process and procedural aspects*

The STEP public participation framework approach has been developed through several distinctive steps. This approach includes five basic steps [13]:

- STEP 1: *Background*, in which the general context of the pilot is mapped and it represents the beginning of the project;
- STEP 2: *Planning*, includes the main preparation activities and sets concrete goals, timeframe, responsibilities, and rules. This is the first step for realising what has been sketched out in the Background;
- STEP 3: *Action*, embodies the actual pilot execution of the e-participation process, once the environment is prepared and the whole process planned;

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[12] http://step4youth.eu/

[13] http://step4youth.eu/wp-content/uploads/2016/11/D5.1-Definition-of-STEP-pilots-and-evaluation-methodology.pdf

- STEP 4: *Communication*, includes all the communication activities, which will be performed throughout the pilot lifetime. The most important mission of this step is to engage young people and increase STEP popularity;

- STEP 5: *Feedback and evaluation*, Feedback is an iterative process as the collected input by the platform users enhances and enriches the evaluation process, while the quality of the evaluation enables continuous improvement and learning through its implementation.

On top of developing a cloud eParticipation SaaS platform, the STEP project foresees local pilot plans supported by a questionnaire developed for the collection of information from the pilot partners. Through the questionnaire, the public authorities are guided to define and explain the approach of conducting public participation and how this relates to the particular characteristics of the pilot and meet the needs of decision makers, public authority officers and young citizens. This process results in specifications for the public participation processes, and the input collected will be used to form the local pilot plans.

- *Use cases*

As a result, the STEP project is designed to implement 5 different pilot/use cases in specific administrative environment taking into account organisation, social, linguistic and cultural differences across the EU. The STEP platform will be tested in 4 countries in order to ensure a wide context of national and regional local environments: Greece, Italy, Spain and Turkey, with the active participation of one regional authority, four municipalities and one association of municipalities which are member of the STEP Consortium, namely:

- Region of Crete – Greece

- Resilient Thessaloniki – Greece

- Association of the Municipalities of Locride – Italy

- Mollet del Vallès Municipality – Spain

- Valdemoro Municipality – Spain

- Hatay Metropolitan Municipality – Turkey

Below, a deeper description of each of the aforementioned STEP pilots:

Region of Crete – Greece

The level of public participation in the Region of Crete according to the IAP2's Public Participation Spectrum will be to actually involve by working with the public to ensure concerns and aspirations are understood and considered.
The overall objective of the pilot is to:

- Encourage young people to participate in the Environmental Impact Assessment procedure, which takes place for each large scale public infrastructure, private investment or action plan;

- Encourage young people to get involved in the regional planning for a number of important environmental issues, such as energy planning and energy saving in Crete, water conservation and wastewater reclamation and reuse, habitats and species conservation in protected areas,

promotion of the protected areas of the European Network NATURA 2000, climate change, coastal zone management, sustainable tourism, ecotourism etc.;

- Inform the young people, providing scientific and reliable, integrated information on crucial environmental issues;

- Receive feedback from the young people, for the Environmental Committee of the Region of Crete to consider for the determination of the terms and restrictions needed to prevent environmental deterioration, decide the actions for each Regional Planning and if possible, to get new ideas and suggestions. This feedback may develop alternative.

On a social media perspective, the pilot team will use mainly Facebook, since it is more common in Crete. The responsible administrators will be Eleni Hatziyanni and Eirini Vasilaki. As soon as an issue for consultation is uploaded to the STEP platform, there will be an announcement about it in the social media account that will call young people to participate. The call will also be made to already registered users by e-mail. The social media account will be fed with a frequency of 7-8 issues per month regarding Impact Assessment Procedures and other environmental issues and there will be at least a monthly reminder for the rest of the issues uploaded. The social media users will not have the ability to comment in order to avoid inappropriate content (abuse, privacy protection etc.).

Resilient Thessaloniki – Greece

One of the main priorities of the city of Thessaloniki's administration is to create new pathways and methods of collaborations and deliberations with the citizens and the various actors of the city. The Municipality's goal is to enhance active citizen participation, empower self-organising and support new forms of collective action to address issues of public concern. Within this context, the Resilience Strategy of Thessaloniki has as its fundamental value the active and continuous participation of the diverse stakeholders of the city in every phase and step towards building resilience in the City of Thessaloniki.

Resilient Thessaloniki is deploying a strategic development process (implemented in 3 phases) for certain Discovery Areas. These Discovery Areas look at issues that can be addressed by both the Municipality and the stakeholders of the city and have profound benefits across a wide range of challenges. The Discovery Areas that were selected are the following:

- Thermaikos Bay: bringing water in the everyday life of the city

- Creating an ecosystem that enables human talent

- Co-ownership of public space

- Mobility as a driver for change

- Data empowered city

The social media involved in this pilot communication activities are the Facebook pages of Resilient Thessaloniki and Topio, as well as the tumblr Topio blog page. The Resilient team's goal is to create an event page for each STEP e-participation procedure and post related issues 2-3 times per week. Each initiative (Resilient Thessaloniki and Topio) will administer its own social media page giving the opportunity to other collaborators to contribute.

Association of the Municipalities of Locride – Italy

The association of municipalities of the Locri district has supported the participation of Sant'Agata del Bianco in the STEP project as the representative municipality of the area. The municipality of Sant'Agata del Bianco is one of the 42 municipalities forming the Locri district in the Italian Calabria region which is characterised by socio-economic underdevelopment and faces severe environmental issues. In addition, there is lack of real participation from the citizens in decision-making processes, while any form of e-participation is completely absent.

The aim of this collaboration is to foster youth participation in order to generate virtuous effects for public authorities. Through youth engagement, the local communities can benefit from fresh ideas and proposals that could be helpful in the solution of environmental issues. STEP also embodies a unique opportunity for local youngsters to express their opinion on political decisions to be taken for environmental protection. The overall aim of the pilot is to actively involve (work with the public to ensure concerns and aspirations are understood and considered, according to IAP2's Public Participation Spectrum) in the STEP pilot 1.500 young people residing in the Locri area, 10 different municipalities and 40 policy makers.

The issues for which the municipality of Sant'Agata del Bianco will use STEP for decision-making are presented below:

Figure 7 - Reasons Sant'Agata del Bianco will Use STEP for its Decision-Making

Topic	Waste sorting
Environmental issues	Proposal for waste collection door to door against the current road containers waste collection
	New ideas to introduce waste sorting at work, in schools, in public spaces (supported by sorting games)
Topic	Protection of green spaces
Environmental issues	Select location for new green and park areas in the cities
Topic	Water treatment
Environmental issues	Proposal for green water treatment plant, as most of the water treatment plants (large, medium and small) in Locri district do not function properly, with result that over 62% of the public is not served by an efficient system of waste disposal

On a social media perspective, Facebook was chosen to promote the STEP project. The pilot partner has contracted an external expert, Alessandro Mollace, in order to provide objective management on the social media operation. The Facebook page, www.facebook.com/steplocride, will receive comments from all users without prior approval. In addition, the persons authorised to manage comments, and feed with information are Pasqualina Caruso, the platform administrator, and Daniela Capogreco, the person responsible for collecting feedback, who will both update the Facebook page on a weekly basis, and upload posts and initiatives related to pilot's activities.

Mollet del Vallès Municipality – Spain

The STEP participation procedure aims to generate new ideas, gather suggestions and get feedback on the plans of Mollet del Vallès Municipality. The STEP public participation process will fit in the participation model of Mollet del Vallès, in which four levels of participation are recorded:

- Express yourself (give your opinion);

- Enrich the decision;

- Stimulate public interest and participation in decision-making;

- Promote the culture of co-creation and co-responsibility.

A different participation level will be allocated to each of the issues piloted.

The pillar of STEP pilot in Mollet del Vallès is the TAP 2016-19 (Term Action Plan, PAM in Catalan). The Municipality's TAP 2016-19 has already been submitted to a participation process and 70% of the citizens' proposals have been already accepted: 15 proposals within the area of participation and transparency, 9 for young people policies, 19 for sustainability and environment, etc. However, the authority plans to accept new proposals as output from the STEP pilot, as long as they are not out of the scope of the TAP 2016-19 or economically unviable.

The topics will be the following:

- Issues related to the Consortium of Gallecs: 50% of the territory of Mollet belongs to a natural protected area called Gallecs of almost 1.000 hectares. The main activity (75%) is agriculture but there are several projects related to natural conservation (plants and animals). On one side, some of the issues will be connected to sustainable food systems: creation of a Food Council, short circuits of distribution, organic or conventional. On the other side, there will also be issues connected to nature and environmental volunteers or potential new routes to experience the natural protected area;

- The city of Mollet has recently been awarded a European Green Leaf, which means that the city performs very well as a green and sustainable city. Therefore, there will also be included issues related to: energy savings, waste management, implementation of the city mobility plan, sustainable use of public spaces and facilities, etc.;

- Currently, the Municipality of Mollet is working on a new plan for young people and we will pilot several dialogues to gather ides or feedbacks on the issues related to sustainability included in the plan for young people;

- Creation of sustainable activities in the city Festival Calendar (especially during the winter and summer festival).

On a social media perspective, the pilot team will get a new communication manager at the Municipality who will coordinate the use of social media and especially Facebook and Twitter, until then Patricia del Pozo will be the one responsible for their operation. The pilot's perspective is to allow users to comment without any permission on social media, while every second or third day the social media accounts will be updated with new informative posts.

Valdemoro Municipality – Spain

Valdemoro Municipality aims to reach young citizens in a level of participation that will involve them in the STEP pilot with their own visions or ideas. The pilot's main objective is to prepare the public participation framework and generate new ideas in the scope of:

- **Creating a solid communication channel for young people** so that they will be involved in local environmental decisions;

- **Organising consultations for young citizens** in order to ensure adequate participation metrics;

- **Organising public participation procedures** for receiving feedback on local environmental issues;

- Collecting the dialogue reports to exploit the results by informing the policy makers.

Valdemoro Municipality has introduced the main issues for the pilot:

- **Focus on issues of interest**: transport, food, Reducing Waste /recycling, green and clean areas;

- **Promote Trust**: There is some level of mistrust between young people and policy action at a very general level and this inevitably will reflect on environmental policy and participation of young people. Providing clear guidelines for how participants' input will be used and giving feedback;

- **Promote Leadership**: young people should feel that their action is meaningful and helps make a difference. Inform young people how their actions have made a difference, state how any information was used and highlight any actions following a consultation;

- **Nurture existing partnership**: Utilise existing Youth/Environmental Organisations, partnerships; these should be nurtured where possible. Youth, sports and environmental Associations.

On a social media perspective, Valdemoro Municipality use social media, which are already created:

- Municipality Facebook
- Municipality Twitter
- Youth House Facebook

The administrators of these accounts are responsible for pilot communication in cooperation with the youth department. They intent to allow comments without a prior acceptance; however, they will delete any disrespectful or offensive comment. As they will try to feed the social media accounts once per week, they will choose the content of the posts with the help of Environmental, Education, Youth and Participation Departments.

Hatay Metropolitan Municipality – Turkey

The aspiration of the Hatay Municipality is to involve young people in public participation procedures via STEP pilot as well as to generate new ideas including suggestions on environmental issues. The local pilot will engage young citizens in order to strengthen the environmental decisions, as they will provide feedback on specific environmental topics using the STEP platform. The level of participation in Hatay pilot will be "involved" according to the IAP2's Public Participation Spectrum. Since young people are the main source of fresh ideas in the city of Hatay, they will have the opportunity to work with public authorities to ensure that their concerns and aspirations are understood and considered by the policy makers.

According to Hatay's environmental master plan, an initiative is organised for a greenbelt full of herbal plants that will be performed by young people who are studying on the Faculty of Agriculture in Hatay, Antakya Mustafa Kemal University. An issue to be brought under consultation via STEP platform is the public participation in the creation of the Medicinal Aromatic Herbal Plants Park. Another issue is the creation of a new green area between the University campus and new city centre, which will benefit the general public and especially the students. Moreover, an issue that comes from public requests: Cleaning of the river Asi in the middle of the Hatay city, is going to be included in the STEP consultation procedures. On a social media perspective, apart from the web-site for the local pilot www.stephatay.com, the pilot team has created a Facebook account for STEP, https://www.facebook.com/groups/235538683480545/. The Facebook administrators is Sinem Pelin Oruc Bebek, as she will have the responsibility of creating content twice per week, feeding with pilot news and manage the comments. Their intention is to allow the users to comment without permission and interfere only if an insulting comment comes up.

All these STEP pilots enable public authorities to involve young citizens in decision-making processes that have an environmental impact. The public authorities will create dialogues using various scenarios that have been defined as use cases of the STEP platform, while young citizens will provide comments and suggestions on local environmental issues. Throughout the pilot implementation, feedback will be collected and used for with the aim to improve the STEP platform and the public participation process.

- *Main challenges and Barriers*

Some **challenges and barriers** appeared when the team was collecting and analysing social media content, in relation to

- **Monitoring tools**: the project team found itself with limitation of use because of the high volatile landscapes in terms of Application Programme Interface (APIs). For instance, the team was able to freely collect from Instagram up to a point when access was blocked. The same happened with Facebook with which access was much more open and now it became more restricted. On one hand, this represents a significant challenge to monitor tools especially in case of no pre-established partnerships with these social network companies and on the other hand, it pushed the initiative's team to investigate new sources of content;

- **Data policy**: Some of the team's technologies had to be modified in order to change the frequency so that they do not violate the terms and conditions of use. Some difficulties arose when collecting data in policy related applications in different form of gathering data, for the environmental and air quality they ask for contribution and this is also not straight forward. Building an engaged community and participants is also an obsolete task. For instance, the team tried to establish contacts, while coordinating the SocialSensor project, with social media platforms, in particular Twitter and Facebook. In the case of Twitter, a temporary elevated data access was granted for the period of the SocialSensor pilots. In the case of Facebook, no such privileged access was possible;

- **Local authorities**: Some local administrations are more traditional and less open to the adoption of new technologies/tools;

- **Participant's engagement:** Participant's engagement represents definitely a challenge.

- *Dealing with privacy issues*

The privacy issue has been approach by the STEP4YOUTH team through the implementation of an ad hoc project: USEMP - User Empowerment.

In particular, there are two cases:

- Cases in which data collected are not particularly private, so there is not so much need to treat these data as confidential (some basic security like the level of access to the data);

- Cases of more sensitive data. In this case, there is a Data Licensing Agreement that the users need to sign, declaring what the data will be used for, as there are some privacy measures.

Indeed, there is a special data privacy agreement in place: e.g. to grant access to Facebook data and then to explain clearly what the data will be used for.

SOCIAL MEDIA ANALYSIS TOOL

The STEP project uses a cloud eParticipation SaaS platform as social media analysis tool: *Step.green*, which is a monitoring tool. The STEP social media-monitoring tool was designed with the two following aims:

- To allow public servants to monitor in social media the impact of their environmental campaigns, as well as any other topics of interest;

- To enable citizens who engage within the STEP e-participation platform to browse social media content relevant to their own topics of interest, with the goal of getting up-to-date on important matters and driving more vivid discussions on the e-participation part of the STEP platform, and ultimately providing more insights about the issues discussed and more content shared.

The STEP social media monitoring tool include the following technical features:

- Creating collections from social media platforms (Twitter, Facebook, Google+, YouTube, Flickr) and RSS feeds by entering keywords and/or user accounts of interest;

- Collection of content in the form of items (posts made in social platforms, e.g. tweets, Facebook and YouTube videos, etc.);

- Collection of contributors of social media content;

- Detection of dominant topics and languages in each collection;

- Filtering of items in a collection based on language, platform (Facebook, Twitter, YouTube, etc.), publication date (since-until) and originality (original content or shared);

- Sorting of items according to publication time, popularity and relevance;

- Analytics over collections with a number of visualisation widgets.

The STEP Social Media monitoring tool is built on top of a set of independent services that are deployed over Docker containers that is a software "packaging" technology that facilitates deployment and testing. The tool consists of the following modules – services:

- **StreamManager**: this tool supports the continuous monitoring of five social media streams: Twitter, Facebook, Flickr, Google+ and YouTube to collect content relevant to a set of user – selected keywords, user accounts of locations, by using the corresponding APIs that are provided by each platform;

- **Solr**: This is an open source enterprise search platform built on top of Apache Lucene. It is used primarily for full text indexing of the collected social media items and the retrieval of content based on free text queries;

- **MongoDB**: this is an Open-Source, document database used to store the data collected from the StreamManager, such as Items, Media Items, Web Pages, Users, etc.;

- **Redis:** This is an open source, in memory data structure store, used as a database, cache and message broker. It is primarily used as a publish/subscribe service to enable the different components of the tool to communicate with each other;

- **Graylog:** This is an open source log aggregator and management service, which aggregates and maintains the logs produced by the rest of the services.

From a geospatial and location intelligence of data perspective, it is important that from the start to specify whether the public data will be available or not, even if **it is mainly closed data.** When collecting citizens data, one needs to be very clear on where it comes from and what for the data will be used for. Another data source is Wikipedia data or some data from some companies (WIKIRATE), performing data collection about companies, about CSR, another data source that we have developed a solution for it.

KEY PERFORMANCE INDICATORS AND KEY PERFORMANCE INDICATORS

In this initiative, KPIs (collecting data, scientific evaluation) were designed to assess how well the different high quality components were performing and delivered and how much data per second was possible to process related to the computational infrastructure in order to evaluate the quality of the results, the scalability and computational power of the technologies.

All the projects undertaken have deliverables reporting the results, which are then publicly available. Each project's result benefits from a strong accuracy. Many cases refer to the collection and the allocation of data sets. In some cases, the team did users studies, so the results are more open to interpretation.

The following table shows the main KPIs monitored during the NOMAD project, and related values obtained:

Table 4 – Step4Youth KPIs

KPIs	Values
Number of young people involved in pilot	*8,200*
Number of policy makers involved in pilot	*85*
Number of decision-making procedures piloted through STEP	*65*
Number of downloads of STEP app	*6,500*
Number of additional public authorities interested in adopting STEP	*8*

Number of young people informed about STEP	*62,000*

4.3.5. SENSEI

INITIATIVE OVERALL DESCRIPTION

The SENSEI project is a pan-European, public-private partnership set up to make sense of the millions of blog posts and social media conversations that occur every day and it has the ultimate goal of adding real commercial value to this research.

SENSEI Project focused on assessing whether it was feasible to **use conversational interaction technologies as a stream and to make sense of such conversations and help create assets and value for private and public organisations' decision makers**. SENSEI studied the online public conversation as it can derive in many forms. Using social media platforms, the project analysed these conversations through millions of blog posts exchanged amongst users. The project developed a technology for the analysis of conversational interaction contents across multiple channels, from the telephone to social media, taking into account and including the end-users in the design and evaluation, with the objective of creating assets and value for private and public organisation's decision makers. The technology was based on the most modern techniques in computational linguistics, machine learning and human-machine interaction.

SENSEI was committed to develop methodologies for professional conversation data analysts and create innovative analytics services for large-scale data streams.

SENSEI Project was funded by the EC under the FP7_7th Framework Programme.

The overall objectives of the SENSEI project are twofold:

- First, SENSEI developed summarisation/analytics technology to help users make sense of human conversation streams from diverse media channels;
- Second, SENSEI designed and evaluated its summarisation technology in real-world environments, aiming to improve task performance and productivity of end-users.

SENSEI's scientific and technological objectives were to develop new technologies that will empower users to make sense of conversations through the following advances:

- To parse human conversations for both content, affect and other behavioural traits;
- To create adaptive technology to address the diversity and velocity of the media sources. Automatically generate human-readable multimedia, graphical and tabular summaries of dialogues and/or multiparty conversations;
- To evaluate technology where it is being used and not only in the lab. Indeed, SENSEI aimed at designing, evaluating and putting in place a new way of analysing social media conversations in order to extract important useful information in real world from different kind of people (politicians, commentators, journalists and random citizens).

When using social media for analysis, **the issue** was to assess whether what people wrote has value and a meaningful content.

CHARACTERISTICS OF THE INITIATIVE

- *Implementation process and procedural aspects*

No specific information available.

- *Use cases*

The SENSEI project includes the two following significant use cases:

On BREXIT forecasts: "Monitoring BREXIT"

The system analysed people's conversations in multiple languages and individual posts from global social media and thematic blogs during the month preceding the U.K. E.U. Referendum date. The SENSEI's system monitored millions of social media conversations and successfully predicted the outcome of the BREXIT referendum with a very high accuracy, actually almost exactly.

Indeed, the SENSEI project, in conjunction with web crawling and text analytics experts Websays, has been applying a unique combination of advanced technology and human intervention over the course of the BREXIT referendum to assess whether their combination of "man and machine" can more accurately predict the outcome of the referendum than traditional pollsters. The team's combination of humans and machine reading algorithms listened to more than 6 million social media conversations relating to the BREXIT vote to identify and predict voting sentiment.

The Guardian: on data from newspapers

In a news publisher websites, such as The Guardian, journalists publish articles on different topics from politics and civil rights to health, sports and celebrity news. The website design supports the publication and consumption of original news articles and at the same time facilitates user-involvement via reader comments. Increasingly, in a period of disruptive change for the traditional media, newspapers see their future as lying in such conversations with and between readers, and new technologies to support these conversations are essential. In this scenario, there is a number of potential users: news readers and the originating journalist want to gain a structured overview of the mass of comments, in terms of the sub-topics they address and their connection with the original article and in terms of the opinions (polarity and strength) the commenters hold about these topics; news readers who join a forum discussion need to be empowered so that they can respond to the originating article (or parts of it) and/or to a sub-set of earlier comments that may be relevant to their own personal view on the matter; editors or media analysts may need a more widely scoping analysis. At present, none of these users can effectively exploit the mass of comment data – frequently hundreds of comments per article – as there no tools to support them in doing so. What they need is new tools to help them make sense of this data deluge.

Within SENSEI, the team developed algorithms that support clustering, cluster labelling and summarisation of reader comments. The algorithms could be exploited singly or jointly by anyone wishing to build analytics or summarisation tools or systems for reader comments in social media. In terms of impact, these tools could allow readers of comment in social media to rapidly and accurately to determine the principal issues and topics being discussed in very large volumes of comments.

In outsourced call centres, large corporations outsource their customer touch-point to a hosting call centre. The in-coming and out-going calls may be monitored in real time, or recorded for a later review. The monitoring is done by human evaluators for small random call samples (much less than 1%). Their job is to track indicators of call quality and efficiency of the agents' job. The call centre's corporate client may require reporting in different aggregated forms according to, for instance, the topic of the calls or, in other words, what their customers are asking about or the emotional content of the call – concerned, frustrated etc. In the quality function, there are professional evaluators filling out forms, which include behavioural and conversational indicators, such as politeness, listening attitudes, empathy, language use, ability to keep the interaction focused, etc... In the outbound marketing campaigns, the data collected by ad-hoc human evaluators are used for assessing the performance of the call centre agents, for identifying job-training needs, and to provide recommendations the overall quality improvements in the course of interactions with customers. The services provided by the human analysts and evaluators are very expensive in some cases or not feasible in others because of the data deluge.

- *Main challenges and Barriers*

As in the other projects, the SENSEI team encountered the following **challenges** as the project unfolds:

- To use guidelines to data access (for instance Twitter) in a the most compliant way and how to authorise these data;

- About transferring public data: the team claims that public data should also be easy and free to be transferred and used for a public or scientific purpose. This has to reach necessary level of open data however;

- The theme here is about the engagement process of data and data availability;

- About the true nature of the data found in posts/blogs.

The general feeling from the SENSEI team is that issues often arise in terms of a procedural and legislative perspective, rather than cost-related challenges.

- *Dealing with privacy issues*

No specific information available.

SOCIAL MEDIA ANALYSIS TOOL

The SENSEI project created its own platform – the SENSEI Platform – to support social media analysis tool. Several software modules compose the SENSEI platform, such as:

- Syntactic parser (Macaon)

- Semantic parser (Fastsem)

- Synopsis generator

- Sentiment analyser (SemEval2016)

- Abstractive cluster labeller

- Computation platform
- Coreference resolver (BART)
- Website parsers
- Discourse parser (CoNLL2016)
- Agreement predictor (ADRian)
- Mood predictor (coMOOD)
- Repository
- Repository tools
- Comment clustering and summarization
- Event/sentiment detector (GATE)
- Social media eval prototype
- ACOF (Agent Conversation Observation Form) tool

KEY SUCCESS FACTORS AND KEY PERFORMANCE INDICATORS

The team pursued a valuation on its projects on social media.

Specifically regarding the use case on monitoring the BREXIT campaign and its outcome: the team received several positive feedbacks given the fact that with the use of social media, the analysis covers a broader range of people compared to the actual project's expenditure. Twitter was preferred in the analysis because of timing reasons.

Another key success factor was the collaboration/partnership[14] with other prestigious European and worldwide-known universities and companies: Université d'Aix Marseille, University of Sheffield and University of Essex and Teleperformance (world leader for contact centres) and WEBSAYS (SME, Barcelona); the University of Trento being the project coordinator and director of the scientific and technological agenda. Websays and SIS Lab (University of Trento), the creators of www.sense-eu.info are two of the leading industry and research groups within the rest of SENSEI Consortium.

This collaboration brought significant enrichment to the project since it gathered high-skilled experts working together.

4.3.6. WEGOV (WHERE EGOVERNMENT MEETS THE ESOCIETY)

INITIATIVE OVERALL DESCRIPTION

The WeGov toolbox (software solution) is a web application, which includes tools and components that support policy-makers in the analysis of social networks. The project aims at providing the tools and techniques for closing the look between policy makers and citizens, taking advantage of the plethora of well-established social networking sites, by developing a cutting-edge toolbox allowing policy-makers to:

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[14] http://knowtransfer.unitn.it/15/brexit-leave-or-remain

- Use the power of social networking to improve the policy-making process;
- Engage with citizens via social media & understands their actual opinions;
- Highlight those citizen's opinions that should influence policy decisions.

Indeed, these tools thrive to enable policy makers to move away from limitations involved in the current practice of government-hosted websites and instead to make use of the high levels of participation and rich discussions that already take place in existing social networking communities.

The **WeGov** project was **funded** by the EC under the Seventh Framework Programme Theme ICT 2009.7.3 ICT for Governance and Policy Modelling.

The WeGov project counts seven Work Packages that run in parallel over the whole duration of the project, each with a different objective and are structured as follows: [15]

- **WORK PACKAGE 1: Information exchange with social network sites**

The objective of WP1 is to develop extraction and injection tools for information and content exchange with a wide range of social network sites in a way that adheres to privacy and safeguarding measures. This WP will investigate the types of information that social networking sites contain, and build interfaces to allow automated access to this information. WP1 will develop mechanisms to write information directly into social network sites, for example to initiate new discussion groups, to start a new topic, and to connect between various relevant pieces of information and/or groups.

- **WORK PACKAGE 2: Analytics of online discussions**

The objective of WP2 is to develop analytics tools so discussions on government policies can be understood by participants in online communities. In order to understand online discussion on social platforms it is necessary to provide information at a low –and high- level analysis. This WP is focused on building tools for the creation and analysis of topic-discussion-opinion graphs in four main areas:

  o **Understanding the subject of discussions** e.g. a topic of a discussion and opinions expressed by people and how they are related to it;

  o **Understanding the people and groups involved in the debate** through diagnostics that indicate discussion health e.g. number or people involved, any attempts to manipulate a discussion;

  o **Understanding the direction and dynamics of the discussion** e.g. if the discussion is diverging, converging, going in circles, splintering, or influenced heavily by some individual;

  o **Understanding the balance of the discussion**, e.g. its range of opinions or its weighing of different points of view.

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[15] http://www.wegov-project.eu/index.php?option=com_content&view=article&id=4&Itemid=1

- **WORK PACKAGE 3: Communication models and tools**

The objective of WP3 is to develop tools and processes for effective engagement of policy makers with citizens in online communities. In particular, its purpose is to stimulate a discussion about placing the best content and how people behave, to encourage debate, and to promote healthy discussion whilst isolating or marginalising disruptive behaviours. This work package will focus on:

- How to capture and automate the process of communication between policy makers and citizens in a structured way;

- How to model peoples' behaviour in order to inform decision-making on promoting healthy discussion;

- How to best place content into social network sites in order to stimulate a discussion.

- **WORK PACKAGE 4: Opinion and Discussion Toolbox**

The objective of this WP is to develop dashboards for live visualisation of discussions, using service-oriented models on cloud-infrastructures for scalability and performance. This WP includes how to access these tools in an integrated way using a 'live view dashboard' for policy makers, and how to organise and operate the toolbox as a service on cloud infrastructures in order to achieve the necessary scalability and performance for large-scale discussions across multiple social network sites. This WP includes the systems integration activity of the project (interfaces, integration, testing and technical verification).

- **WORK PACKAGE 5: Scenarios, Testbeds and Evaluation**

The objective of WP5 is to develop methodology, guidelines and best practice for use of WeGov techniques and tools when interacting with citizens on open social networking sites. WP5 will develop three complementary scenarios for use of the WeGov toolbox. It also includes investigation and analysis of the legal and ethical issues, first in the early stages of the project so it can inform the scenarios and then again in the later stages of the project in the context of evaluation using the testbeds. The experience of the testbeds, the results of the legal analysis, and the findings of the technical WPs will be aggregated in WP5 into a methodology that will be published for use of the toolbox.

- **WORK PACKAGE 6: Dissemination and Exploitation**

Dissemination and exploitation will be a continuous and ongoing activity in the project using a wide range of mechanisms including project website, conferences and journal publications, market analysis and positioning study, development of an exploitation plan, and agreements on IP licensing. Specific actions will include the use of social networking sites as dissemination vehicles for the tools and methodology we want to promote, and dissemination of the legal investigations of the project as well as the technical achievements and best practice guidelines. Particular emphasis will be given in the exploitation plan to come up with a sustainable model of maintaining the implemented toolbox as a service after the lifetime of the project.

- **WORK PACKAGE 7: Management**

The project will be organised into a simple management structure, in which all-significant operational project decisions are made at the level of a General Assembly (GA), containing representatives of each partner on an equal basis. The project manager will chair the GA, and will be the principal route for information exchange with the EC Project Officer. Technical management of the project, including monitoring of progress and risk management, will be the responsibility of the Technical Steering Board (TSB), chaired by a Technical Manager. All Work Package Leaders will be represented on the TSB. Specific responsibilities, such as dissemination and exploitation will be allocated to appropriate individuals by the GA.

CHARACTERISTICS OF THE INITIATIVE

- *Implementation process and procedural aspects*

Given the fact that WeGov's end users are policy makers and members of parliaments who have busy agendas, it was primordial from the beginning, for the good implementation of the project, to engage policy makers from the beginning of the process, specifically the design of the analysis tools. The development process needed to be continuous, with new iterations combining policy makers' requirements with the technical feasibility of analysis tool development, as well as presenting and discussing software prototypes throughout.

Therefore, the team built into its methodology a process for stakeholder engagement that would facilitate a viable model in response to these aforementioned constraints. This model of engagement sustains interest from the stakeholders because it stresses the need for frequent reporting to the on project evolution, hands-on demonstrations as well as the arrangement of face-to-face and virtual conferences or symposia, where project findings could be debated with the immediate and wider stakeholder group. This approach did not only ensure the team with an almost secure participation from the wanted stakeholders but also it enabled the team to provide feedback to these stakeholders on how their suggestions, comments and views were integrated in the evolving prototype of the toolkit. Finally, this approach permitted to keep a loyal core user group engaged during the full project duration.[16]

- *Use cases*

The WeGov project identifies discussions on government policies and analyse them (e.g. opinion exchange on consumer policies).

- *Main challenges and Barriers*

The main challenges the WeGov team encountered were in terms of **the access to useful data due to technical, legal and ethical restrictions**. Twitter is the only resource through which it is possible to obtain more data on what people discuss, as its posts are meant to be inherently public, while Facebook is widely based on restricted access to users' posts. An issue with Twitter is that it is not widely used in all European Member States.

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[16] http://cordis.europa.eu/docs/projects/cnect/2/248512/080/deliverables/001-248512WeGovD53EvaluationofthefinalWeGovToolbox.pdf

regarding, the **regulations to share and reuse data on opinions relevant for policy-making,** particularly when it comes to the management of personal data, are quite restrictive and differ even among the various European countries, e.g. with UK adopting a more liberal approach while Germany a more restrictive one. This makes it difficult to adopt a common effective approach in such European-wide projects.

These barriers have affected the success in both projects, although with Reveal, it was less an issue, due to a change in terms of use.

One additional issue is linked to the fact that there are many places where to find open data (data centres…), but the question comes to which of these data sources should we use, also depending on the use to be done of the data retrieved.

Finally, at the beginning of the project, one challenge was to reconcile the politician's needs with the technical feasibility of analysis components that were developed in the project.

- *Dealing with privacy issues*

The WeGov team is well aware that data protection is a very sensitive issue for politicians. Within this context, the programming interfaces of Twitter and Facebook allow a huge amount of data to be collected. Concerning Facebook, the interface may provide posts and comments where its authors do not know that these messages are publicly accessible. Therefore, the WeGov toolbox limits itself to collect data from public pages and groups.

SOCIAL MEDIA ANALYSIS TOOL

The tool that supported the WeGov project is the *Toolbox 3.0.*

Toolbox 3.0 represents the final version that was developed within the WeGov project. This last phase focused on the validation of analysis results and its usefulness for the policy maker's everyday use. Also, this third and last phase considered the evaluation of the system as a whole and how the different end user groups may use the tool. Its strategy included the preparation of customised analysis reports for each end user based on their specific thematic and geographic interests. Compared to the previous evaluations, the overall purpose of this Toolbox 3.0 was to show end users more concrete results related to how the tool may support them, as research showed that stakeholders were not fully willing to spend the time on the tool that was necessary to get in-depth analysis results.[17]

The technical features that the Toolbox 3.0 benefits are listed as follows:

- Integration of topic and behaviour analysis code, including initial support for German language;
- Analysis now runs as a tool, storing data in database which can be viewed in UI (previously all analysis was run on an ad hoc basis);
- The WeGov team can now feed multiple search results sets into analysis;

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[17] http://cordis.europa.eu/docs/projects/cnect/2/248512/080/deliverables/001-248512WeGovD53EvaluationofthefinalWeGovToolbox.pdf

- Topic summary table now integrated into advanced search page, including expansion of topic to display contained posts;

- New tabbed layout (mainly because topics summary needs full width of page);

- Improved search history and new analysis history. These are context sensitive, for instance (click Twitter radio button to see only Twitter results, Click Facebook radio button to see only Facebook results, or Click Topics analysis tab to view corresponding results).

Key Success Factors and Key Performance Indicators

Among the key success factors the project WeGov includes is the fact that the project has been confirmed by the various continuation actions/projects that have stemmed from them.

Also, the successful collaboration of the Consortium undoubtedly embodies a solid key success factor as it is constituted of seven experts in the eParticipation community (Hansard, Gov2u, GFI), the government consulting (GESIS), and the ICT research and development academic community (University of Southampton – ITInn, OU – Knowledge Media institute, University of Koblen-Landau – WeST), with an outstanding international reputation and skills in advanced open social networking platforms. The participation of commercial and NGO partners with exploitation interests in both IT and non-IT markets associated with eGovernment provides a strong assurance that the project results will be widely exploited.

4.3.7. *Stakeholder Engagement CEF Building Block*

The project is an initiative of DIGIT D3, which is actively using social media platforms to increase citizens and business participation. Trying to increase the efficacy of any type of decision-making process. The internal function involved into this activity is the Stakeholder Engagement Team with the CEF Building Blocks unit. The mission is to raise awareness, promote the benefits and get consensus and engagement from the considered stakeholders. Focusing on the social media analysis, the idea is underline how this tool could be a channel able to guarantee a higher level of engagement.

Considering the initiatives ongoing or already implemented, it is interesting to say that social media was already included in the strategy that has being followed, considered as one of different channels used to engage people. The main issue was related with their usage.

For instance, it turned out that the Yammer EC Tool was not useful for the evaluation and impact of events on a significant scale, while Twitter is still considered very effective, in terms of cost/benefit balance. LinkedIn is another social media used by DIGIT D3.

In the way to use social media to obtain different benefits, Engager represents the social media analysis tool considered for the project at issue. It represents a particular "in-house" solution of the Directorate-General Communication (DG COMM). The main benefit guaranteed should be the possibility to manage different searches. Furthermore, it would give the possibility to analyse data according to "trend topics" stressed by Twitter or LinkedIn. The DG DIGIT D3 initiatives would proceed with clear and organised steps, considering in a first moment a small scale, being ready to go to a larger one.

In the initiative analysis, considered the mission and the tool used to reach it, a focus should be made on the main challenges faced and on key success factor. Regarding challenges there is no issue to underline, considering that the project has just started. In terms of KPIs, there is already a clear evidence. Indeed, they are mostly quantitative and the main element considered is the number of re-tweets.

In terms of organisational structure, there is a collection of feedback from the CEF portal, without using any type of social media, but with a direct contact with stakeholders by sending email. Regarding to data collection, there is no structured process, because the collection has been made manually from social media or portal feedback. Then, they are organised with bi-monthly Reports and Newsletter. In particular, specific attention is made to the "spikes" of any trends over the time considered, with a comparison of the whole timing for the events at issue. Furthermore, another focus is on the obtained information, on how people move themselves shifting from a website to another one.

Concerning data privacy management, being the whole set of data fully public, there is no particular issue to solve. However, it could be important to highlight which type of role social media will have into policymaking activities.

5. IDENTIFICATION OF INITIATIVES ELIGIBLE FOR FUTURE PILOTS ON SOCIAL MEDIA ANALYSIS FOR SUPPORTING POLICY AND DECISION-MAKING

As anticipated in Chapter 4, in order to identify initiatives/applications and/or only part/components of those initiatives eligible for future pilots and reuse, a selection of the aforementioned initiatives have been further investigated under qualitative and quantitative criteria defined within STEP 2 and based on the information detailed in the previous STEP 3.

In order to conduct the assessment, the weighting model described here below was applied. Further details on the comprehensive analytical/scoring model and its application in the context of this Study are provided in **Annex 6**.

5.1. WEIGHTING MODEL

In order to better align the in order to better align the assessment exercise with the priorities of the Commission in the context of Social Media Analysis initiatives, each criteria defined within STEP 2 was assigned a weight.

The following chart shows the weights assigned to each set of qualitative criteria.

*Figure 8 - Qualitative Criteria Weights*
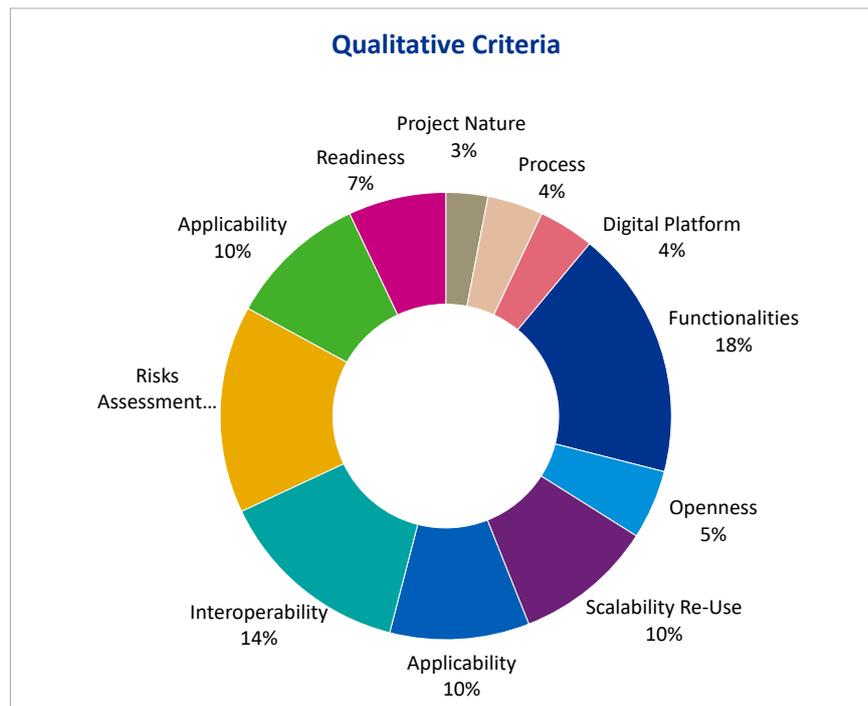
As it is clear from the representation, among qualitative criteria, the ones with the highest weights refer to:

- **"functionalities" (18%)**, referring to the technological tools and related features developed or used by the initiatives during the course of their social media initiative execution;

- **"risk assessment" (15%)**, referring to the presence of security and data reliability aspects;

- **"interoperability" (14%)**, referring to the compatibility of the initiative with other projects/initiatives.

The same exercise was carried out for quantitative criteria, as represented in the following chart.

Figure 9 - Quantitative Criteria Weights
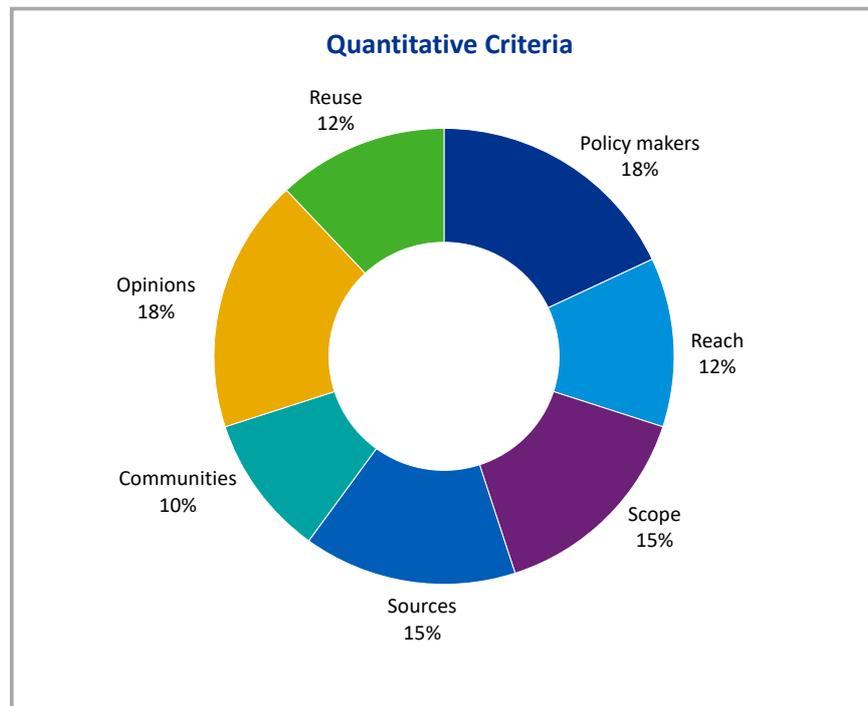
Among quantitative criteria, the most important for the evaluation are:

- **"Policy makers" (18%)**, mainly referring to the number of policy makers involved and reached;
- **"Opinions" (18%)**, mainly referring to the number of opinions scouted and analysed;
- **"Sources" (15%)**, related to the number of sources scouted;
- **"Scope" (15%)**, referring to the number of topics/policies addressed.

5.2.   OUTCOME OF THE IMPLEMENTATION OF THE ASSESSMENT MODEL

The definition of qualitative and quantitative criteria - together with the Weighting Model described above - allowed performing an effective analysis of the shortlisted initiatives.

More in detail each initiative selected under the selection criteria identified within STEP 2 (namely, Scope, Nature of the analysis, Technological content, Degree of success) has been then described in accordance to the assessment criteria in order to identify initiatives (or parts/components of them) eligible for future application/piloting across European PAs.

Thus should happen through the selection of re-usable technologies and replicable practices that could allow the spread Social Media Analytics as a mean to support a more participatory type of government and to enhance a democratic participation of stakeholders in policy- and decision-making.

According to the goals of the European Commission, the application of the Assessment Model led to the identification of a sub-set initiatives eligible for future pilots, in line with the main goals of this Study that are:

- the development of business and technology guidelines on the use of social media for PAs;

- the identification of re-usable tools and processes.

To this end, after the application of the Assessment Model, selected initiatives have allowed to identify good practices related to the following:

- **Overall vision and strategy**, attaining at how the overall concept and strategy of the initiative, it main goals and purposes and how they have been communicated and disseminated both through the political stakeholders and the wider public. This includes also stakeholders' engagement strategies, when developed;

- **Implementation process**, in terms of definition of clear steps for the effective and successful start-up and execution of the initiative. Implementation processes mainly refer to the identification of phases and/or steps that a PAs should follow when implementing a Social Media Analytics initiative;

- **Data analytics**, referring to the methodology and tools utilized to collect/cleanse/analyse/process information available on Social Media in order to obtain relevant result for policy- and/or decision-making purposes;

- **Technology and tools**, in terms of main features and functionalities of the technology application developed (or purchased) to support the initiative, with special regard to re-usability, openness and modularity of the technology.

Within this context, all analysed initiatives allowed to identify useful elements that contributed to the purposes of this Study and will be further elaborated for the development of Guidelines for the implementation of Social Media initiatives by PAs.

To this end, the initiatives were classified based on their potential priority ("A"/"B"/"C", with "A" representing the highest priority and "C" the lowest) to be selected for the development of future pilot projects involving the ISA Unit and MSs' PAs.

The following table shows the level of re-use associated to each initiative (and associated processes and or tools) and the related priority for future implementations and possible piloting by DIGIT ISA Unit.

Table 5 – Level of re-use and priority of the initiatives

INITIATIVE	PRIORITY FOR PILOTING
NOMAD	A
STEP FOR YOUTH	A
NVWA	A
Health Canada	A
SENSEI	C
WeGov	C

6. SUMMARY OF MAIN EVIDENCES

This paragraph briefly summarises the main evidences that have emerged during the whole delivery of this study phase for the identification of the current landscape of social media initiatives.

- **Challenges in scouting social media initiatives across European Public Administrations (PAs) and research institutes,** mainly due to the actual overall limited number of initiatives in this area and to the preference of PAs to use social media for e-Participation or dissemination initiatives.

- **The identified initiatives have been mainly funded through EU funding programme (FP7, H2020)**, thus the involvement of PAs is in the context of the Consortia that applied for the funding. Those multinational Consortia usually includes businesses, research institutes or academia and then PAs. In relation to the initiatives identified in the context of this study, some additional evidences are listed below:

  o Initiatives run from January 2010 to present times, while some of them (namely 3) have already ended achieving significant results. It is important to note that, due to the fact that those initiatives have been supported by public funds, their sustainability and continuation is not always automatically ensured;

  o Not all the initiatives have defined well structured and documented implementation processes and procedures in order to start-up the initiatives/communicate/disseminate/engage stakeholders;

  o Most of initiatives can be considered cross-field but have been applied to specific domains of public interest (mainly linked to energy, environmental issues, youth engagement, etc.). Nevertheless, some of the initiatives are sector-specific as the implementing bodies refer to specific areas such has the Health sector (NVWA + Health Canada);

  o Geographical coverage has been limited to the areas (national/regional) where the policy-making initiatives were launched. In some cases, initiatives were pan-European, mainly depending on the generality of the topic to be addressed (e.g. engagement of young people on environmental topics).

- **Custom developed Software platforms** (often the implementation was in charge to some Consortium members) including some COTS modules for specific capabilities. This approach can ensure the possibility to reuse the implemented platform and to adapt it to the needs of the European Commission to offer a generalised platform.

  o As described in the detailed analysis, usually those initiatives foresee the organisation and execution of Pilot/Use Cases involving PAs and citizens, mainly to test the effectiveness of the implemented tools;

  o The exceptions to the aforementioned "make" approach are the cases of Health Canada and NVWA that are the only bodies using COTS only ("buy" approach). This is due to the fact that those public authorities preferred not to develop/implement the SW themselves and also had enough funds to acquire SW for those initiatives.

- Among **challenges** highlighted by stakeholders during the interviews, the main ones are related to:

- o The **data privacy/restriction** issues;

- o Proprietary external data sources (LinkedIn, Facebook, etc.) have a q**uick timeframe in changing their APIs** to share data, thus requiring continuous maintenance of the SW platform that crawls those data;

- o **Cultural barriers and lack of specialised resources/skills** in the public administrations in the context of social media analysis.

- **Initiatives' owners have expressed their willingness to support the implementation of a Social Media Analysis infrastructure** to be used by EU institutions and EU Public Administrations to launch pilot projects on Social Media Analysis.

  - o At a general level, stakeholders of identified initiatives showed willingness to contribute to future developments, e.g. making available to the European Commission DIGIT re-usable platforms/IT components or sharing good practices and lessons learnt.

7. LIST OF ANNEXES

Annex 1: Data set (Stakeholder list, Sources list, Initiatives Long List)

Annex 2: Interview minutes

Annex 3: Questionnaire

Annex 4: Initiatives sheets

Annex 5: Assessment Model Tool & Initiatives scoring sheet

Annex 6: Analytical Scoring Model