



SHERPA

# Evaluation and Validation Strategy

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Abstract	Deliverable 4.1 outlines an evaluation and validation strategy, including key elements of both the <b>process</b> and the <b>tools</b> to carry out the evaluation and validation tasks.
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## Revision History

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1	15/7/2019	Josephina Antoniou	K Iordanou	Basic QA by the leader of T4.2
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# Executive Summary

Deliverable 4.1 outlines an evaluation and validation strategy, including key elements of both the **process** and the **tools** to carry out the evaluation and validation tasks.

The strategy as it refers to the evaluation **process**, considers the following aspects:

- Format analysis (which recommendation formats suit project topics and main audiences)
- Approach to further feedback (collected from stakeholder peer groups)
- Approach to corrective action (activated after reviewing preliminary results)

The strategy as it refers to the evaluation **substance**, considers the following tools:

- Gap analysis (recommendations according to relevance for each specific stakeholder group)
- Skills match (how recommendations map best onto internal project and stakeholder expertise, considered from WP2 stakeholder categories)
- Impact maximisation (how recommendations map best onto prime dissemination outlets)

Since this WP aims to, eventually, **provide a prioritised list of recommendations**, the proposed strategy considers **individual stakeholders' perspectives** as well as **collective perspectives** of selected groups of stakeholders. These perspectives aim to provide insight into the ethical and human rights implications of using SIS as presented through WP3 recommendations. According to the strategy, evaluation will make use of **focus groups** as a means to provide an **in-depth understanding** of the recommendations by engaging a variety of opinions in this process. This process will further provide useful feedback and means for corrective action if necessary.

Moreover, the strategy as it refers to the **validation** of the evaluation process and findings, considers the following elements:

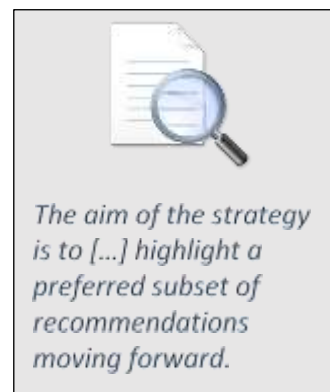
- Definition of targets (determine the accuracy of the recommendations for stakeholders)
- Measurement (evaluate this accuracy by exploring the adequacy of collected evidence)
- Quality control (consider process monitoring and quality assurance throughout)

Within the validation process, the strategy provides guidelines for T4.3 **towards prioritising a set of recommendations** for the responsible development of SIS.



# Objectives of this Deliverable

This document presents a strategy for the evaluation and validation of recommendations derived from WP3 relevant to the *responsible development of SIS*. Specifically, the **input** to the evaluation process consists of **a set of recommendations** on regulatory options, guidelines for research and innovation, including guidelines for SIS researchers and relevant grant review panels, technical options, e.g. prototypes of SIS algorithms, as well as Terms of Reference for a new European Regulator for SIS. The strategy aims, first to provide guidelines so that the evaluation process highlights a preferred subset of recommendations moving forward, and, second to provide tools that are used to validate the quality and accuracy of the evaluation process.



The significance of the strategy within the work of WP4 is that it will guide the completion of tasks 4.2 and 4.3. Task 4.2 aims to collect qualitative data from a series of organised focus groups, with participants from important stakeholder categories, and Task 4.3 aims to use the analysis of the evaluation findings to characterise the prioritisation of the recommendations proposed in WP3.

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*An effective evaluation and validation strategy [...] will ultimately lead to best practices.*

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The main objective of the document is thus to outline an effective strategy for characterising the **potential** for responsible implementation of the proposed recommendations. An effective evaluation and validation strategy will lead to a *community-relevant* set of recommendations, which also considers *business* and *research needs* and will ultimately **lead to best practices** in the design, development and use of SIS, benefitting the stakeholders involved in the implementation and use of SIS.

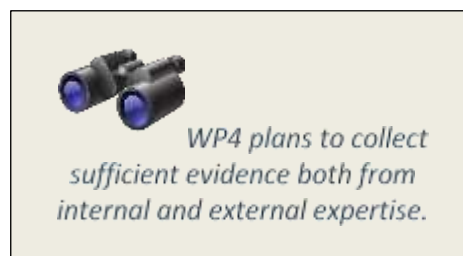
Additionally, the evaluation aims at motivating **effective collaborations between the different stakeholder categories**. In this respect, the design of the strategy attempts to show how well the different types of stakeholder groups receive the set of recommendations separately and in collaboration. Moreover, the evaluation and validation process will explore to what extent the intended SHERPA objectives towards responsible implementation are met by each of the recommended proposals and will investigate how well these proposals **align with relevant EU projects and policies** by incorporating relevant input into the evaluation and validation process.

The objectives are carefully mapped onto evaluation and validation tasks. The overall process outlined by the evaluation and validation strategy is summarised in Section 2. Section 2 also sets the scene by providing an overview of recent articles and reports that tackle existing policy and state-of-the-art research on responsible use of SIS.

# Process Overview

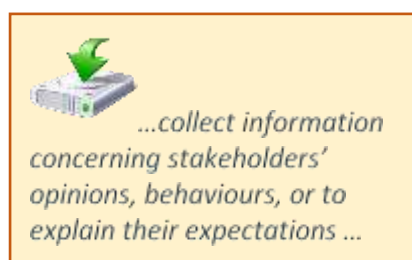
In order to evaluate recommendations for new policy guidelines, WP4 plans to collect sufficient evidence, both from **internal and external expertise**. The evidence must adequately characterize the responsible implementation of the proposed recommendations, in terms of **ethics, human rights and technology**. Specific indicators to characterise these recommendations include, but are not limited to:

- risk,
- community involvement,
- business engagement,
- potential of responsible use etc.



The evaluation and subsequent validation will draw on both the broad range of experience represented by the consortium, as well as invited experts representing different stakeholder groups, including experts from other relevant EU funded projects, e.g. SIENNA and PANELFIT, as well as members from the broader SHERPA stakeholders group. This information will be provided by WP2, which focuses on stakeholder identification, analysis and consultation through establishing links for the project with stakeholders from scientific, industrial, security and policy-making realms, as well as from research ethics committees and human rights experts.

WP4 aims to support a better planning, organizing, and monitoring of the overall project outcomes on the responsible implementation of SIS. Initially, preliminary evaluation of WP3 recommendations can be achieved through the use of multiple tools that consider both internal and external expertise, e.g. literature review, internal SHERPA documentation, and review of existing policy. Section 2.2 provides a preliminary literature review to set the scene with regards to existing policy and research on responsible use of SIS. Existing policy, e.g. the **AI Strategy**, put forward by the European Commission in April 2018<sup>1</sup>, will be considered when evaluating and prioritising the project's recommendations. Specifically, the new EU policy proposes seven (7) essential items that are necessary to achieve a *trustworthy* deployment of AI technologies. The policy highlights the need of such technologies to enable equitable societies that support fundamental rights, to be secure, reliable and robust, to be traceable, to allow for users' control of their own data, to be *diverse*, to enhance positive social change, and to ensure responsibility and accountability.



The preliminary research is followed by a data collection process of carefully designed and facilitated focus group sessions. Through the use of focus groups as an instrument, the evaluation strategy plans to support the integration of external expertise into the evaluation process. The focus group sessions aim to collect information concerning stakeholders' opinions, behaviours, and to identify and explain the stakeholders' expectations from the proposed recommendations. A focus

group as a research instrument is characterised by a defined scope and objectives. The moderator or facilitator of the group is responsible to keep the discussion of the focus group *on track*. Towards that, **trainings** by the T4.2 task leader will take place to inform the SHERPA partners of these characteristics for the partners that can assist with the facilitation of the focus group sessions. Given these specific objectives, each focus group will serve as a **result-driven qualitative survey tool**.

Specifically, the set of recommendations will be evaluated through the use of **two (2) sets of five (5) specific focus group sessions with ten (10) members each**, with participants from *industry, policy,*

<sup>1</sup> <https://ec.europa.eu/digital-single-market/en/artificial-intelligence>

*funding bodies, research, civil society and SIS consumers and users.* Given the existence of other EU funded projects that look at AI, specifically, SIENNA and PANELFIT, the focus groups will aim to make use of input from the consortia of SIENNA and PANELFIT, in an attempt to consider, and moreover, to inform the SHERPA evaluation process of emerging perspectives on AI in Europe. Therefore, consortia members of these projects will be invited to participate in some of the focus groups. Finally, the evaluation data will be analysed and validated in order **to propose the preferred subset of recommendations**, which will be prioritised in Task 4.3. *Figure 1* illustrates the process in terms of the order of individual evaluation and validation steps of the strategy, presented next.



*Figure 1: Evaluation process steps*

## Preparatory Evaluation Phase

The focus groups' task will be preceded by a **preparatory phase**, which will include **preliminary data collection through internal project outputs supported by literature review, focus group design** with necessary **ethics approvals**, and **invitation of participants**.

Specifically, the four steps of the preparatory evaluation phase are elaborated next:

### *Step 1: Preliminary Data Collection Phase*

The first step is to identify the basic project outputs and recommendations that will be evaluated. Specifically, the step includes identifying the *sectors, themes* and *cross-issues* as they relate to the project objectives. Once these are identified, the next task will be to consider additional relevant documents that can support the preliminary analysis. These documents may include public deliverables of the SIS-relevant EU projects, and related policy. Section 2.2 sets the scene by providing a brief literature review.

### Step 2: Focus Group Design and Ethics Approval

The second step is to specify the stakeholder *groups, numbers and demographics* of stakeholders of each group, as well as *geographical location*, where each focus group will take place. The preliminary focus group design may affect the feedback on recommendations so that *different but relevant* audiences can be considered. Moreover, appropriate *thematic areas* for the questions will be finalised. Once the design is completed, the task team will obtain the necessary Ethics Approvals. A template of a relevant *consent form* is provided in *Appendix A* at the end of this deliverable.

### Step 3: Training workshops

The third step in the preparatory evaluation phase is the organisation of a workshop by the leader of T4.2 to train the interviewers of the focus groups in order to ensure consistency among the focus group sessions. This training is scheduled to take place alongside a general assembly to save costs and air miles.

### Step 4: Invitation of Participants

The fourth step and final step of the preparatory phase is to develop and distribute informative material, consent forms and interview guides to potential participants, and secure a final list of participants per focus group session.

## Setting the Scene: Preliminary Literature Review

By considering the responsible use of smart information systems, the project considers the responsible use of a variety of emerging technologies including Artificial Intelligence (AI) powered products, Big Data analytics, smart context-awareness using the Internet of Things (IoT), etc.

Even prior to the extensive use of AI and Big Data in industry, the idea of *smart* technologies and how these were used, e.g. with the enhancement in context-awareness capabilities of devices and enabling of sensor devices in user environments, were prominent. The 2017 article by Mesko et. al.<sup>2</sup> elaborates on the idea of ethical issues arising from smart technology usage, while Davies et. al.<sup>3</sup>, highlight the ethical issues of considering context-awareness for ubiquitous computing in a 2016 article.

Concerning AI, 'responsible use' raises the issue of trustworthy technology because of the *learning* and decision-making abilities of such products. The European Commission has appointed 52 experts to form the **High-Level Expert Group (HLEG) on Artificial Intelligence** in 2018, which has released *A European Approach to Artificial Intelligence*<sup>4</sup> in April



<sup>2</sup> Meško, Maja & Roblek, Vasja & Pejic Bach, Mirjana. (2017). Social Responsibility and Ethical Issues about Smart Technology Usage.

<sup>3</sup> Davies, P., Newell, D., Sharma, M., & Boothby, O. (2016). Ethical Issues in Context Aware Ubiquitous Computing for Wireless Asset Management.

<sup>4</sup> <https://ec.europa.eu/digital-single-market/en/artificial-intelligence#A-European-approach-to-Artificial-Intelligence>

2018, and a revised set of guidelines on *Building Trust in Human-Centric AI*<sup>5</sup> in April 2019. The future plans of the AI HLEG is to launch a pilot *European AI Alliance*<sup>6</sup> that will involve a wide range of stakeholders and will engage in open discussion of ‘AI development and its impacts’.

More practical approaches to the responsible use of AI systems, include proposals such as **Ethics by Design**<sup>7</sup>, or, **Bias Detection**<sup>8</sup>. However, Responsible Research & Innovation (RRI) must engage several dimensions for a successful solution according to the RRI thematic elements published by the European Commission<sup>9</sup>, namely: public engagement, open access, gender equality and diversity, ethics and science education.

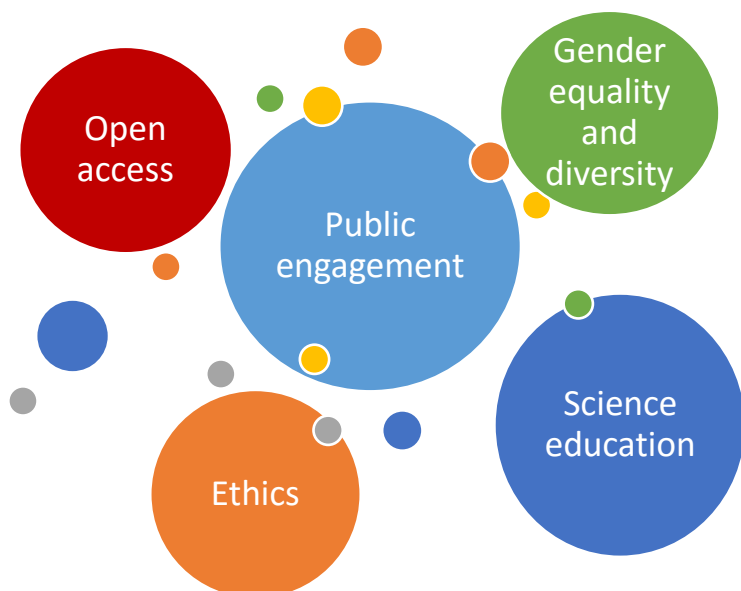


Figure 2 – RRI Dimensions

Nevertheless, to highlight the need for responsible use of AI and SIS, is the aim of publications such as *Ethics and Privacy in AI and Big Data: Implementing RRI*<sup>10</sup> and articles like the Forbes’ *A Rising Crescendo Demands Data Ethics and Data Responsibility*<sup>11</sup>.

The responsible use of data, has been the topic of the *Computer Law and Security Review* journal on *Guidelines for the responsible application of data analytics*<sup>12</sup>, which is a cautionary guide for avoiding the ill-advised uses of data in SIS and extract the achievable benefits instead.

Such guidelines for the responsible use of SIS have not only featured in academic sources but have made their way into industry, by being adopted by important industry players in the deployment of SIS. For instance, Google released a set of *General Recommended Practices for AI*<sup>13</sup> under their *responsible practices* list, which includes in addition to AI responsibility, practices such as **fairness, interpretability, privacy and security**. Moreover, Accenture LLP, published *An Ethical Framework for Responsible AI and Robotics*<sup>14</sup> that addresses the challenges of decision making and liability, as well as transparency, bias and human values.

<sup>5</sup> <https://ec.europa.eu/futurium/en/ai-alliance-consultation/guidelines#Top>

<sup>6</sup> <https://ec.europa.eu/digital-single-market/en/european-ai-alliance>

<sup>7</sup> D’ Aquin, M., et. al. (2018). *Towards an “Ethics in Design” methodology for AI Research Projects*, ACM/AAAI AI Ethics in Society 2018 conference.

<sup>8</sup> Tan, S., et. al. (2018). *Detecting Bias in Black-Box Models Using Transparent Model Distillation*, ACM/AAAI AI Ethics in Society 2018 conference.

<sup>9</sup> <https://ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovation>

<sup>10</sup> Stahl, B., C., and, Wright, D. (2018). *Ethics and Privacy in AI and Big Data: Implementing Responsible Research and Innovation*, AI Ethics, May/June 2018, co-published by the IEEE Computer and Reliability Societies.

<sup>11</sup> <https://www.forbes.com/sites/ciocentral/2018/10/29/a-rising-crescendo-demands-data-ethics-and-data-responsibility/#9fd8cf5b5d5d>

<sup>12</sup> Clarke, R., (2017)

<sup>13</sup> <https://ai.google/responsibilities/responsible-ai-practices/>

<sup>14</sup> <https://www.accenture.com/gb-en/company-responsible-ai-robotics>

The topic has further been introduced in several public discussions related to SIS, e.g. at Siemens AI Lab in February 2019<sup>15</sup>, or at the Harvard Kennedy School's Belfer Centre for Science and International Affairs, in January 2019<sup>16</sup>. As emerging technologies become more popular the discussion on their responsible use uncovers additional risks and concerns, such as the *appropriate protection of personal information* and other rights such as the *rights of access, rectification, opposition or deletion* as highlighted by banking multi-national corporation BBVA<sup>17</sup>.

## Evaluation Strategy

The following separates process and substance elements of the evaluation strategy and deals with them successively.

### Process: Format Analysis

The concept of format analysis addresses the idea of matching specific messages to specific audiences in terms of adjusting the proposal format and the stakeholders' expertise and expectations. Thus, the evaluation process needs to make a decision about **which recommendation format suits project topics and main audiences**. This becomes a challenging task because the main inputs into this task are recommendations from WP3 that address the responsible implementation of SIS, but they are not finalised by the start of the evaluation process. Therefore, the evaluation process must **draw conclusions from** WP1 and WP2 outputs, presented in **different formats**, e.g. *case studies, scenarios, survey results*, and attempt a format analysis such that the messages in the focus group topics of discussion appropriately address the characteristics of the different stakeholder groups.

Consider the timing of significant SHERPA deliverables, relevant to the evaluation and validation process, as these are presented in *Table 1*.

*Table 1: Scheduling of WP4 relevant SHERPA deliverables*

<i>Project deliverables</i>	<i>When available</i>
D4.1 Evaluation and validation strategy	M15 (outline approach for T4.2 and T4.3)
D3.2 Guidelines for the development and use of SIS	M18
D3.3 Report on regulatory Options	M20
D2.3 Online survey report	M21
D3.5 Technical Options and interventions report	M24
D4.2 Evaluation report	M28 (consider T2.3, T3.2, T3.3, T3.5, T4.1)
D2.2 Report of interview analysis	M30 (consider outputs from T4.2)
D4.3 SHERPA final recommendations	M36 (consider T2.2, T4.1 and T4.2)

In ascending order, we list short descriptions of the tasks linked to the above project deliverables for ease of reference:

<sup>15</sup> <http://www.ulliwaltinger.de/meetup-responsible-use-of-ai/>

<sup>16</sup> <https://www.belfercenter.org/publication/belfer-center-convenes-council-responsible-use-artificial-intelligence>

<sup>17</sup> <https://www.bbva.com/en/responsible-use-data-and-algorithms/>

*T2.2 attempts to gain an in-depth understanding of stakeholder views, through interviews, by considering the different interests and perceptions of stakeholders regarding SIS applications.*

*T2.3 develops an online survey based on the interview analysis and preliminary outcomes of WP1 and WP3, aiming to collect feedback on the project workbook.*

*T3.2 aims to develop ethical guidelines for the design, development and use of SIS by the data science professionals, as well as for the R&I professionals.*

*T3.3 will explore various regulatory options to support the ethical and responsible development of SIS based on the analysis of existing regulatory gaps.*

*T3.5 includes investigations of technical options, e.g. evaluating alternative algorithmic approaches for minimising risk to privacy, and enhance attack-resistance features.*

*T4.1 develops a strategy for qualitatively evaluating the ethical, regulatory and technical options proposed by T3.2, T3.3 and T3.5.*

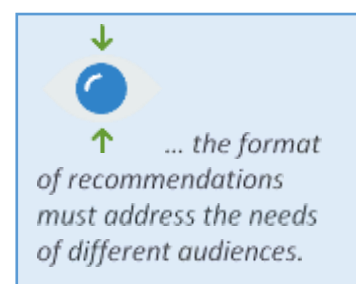
*T4.2, using T4.1 as guide, evaluates the WP3 recommendations by designing and carrying out 2 waves of focus group sessions and analysing the collected evidence.*

*T4.3, using T4.1 as a guide and T4.2 analysis results, prioritises the selected subset of WP3 recommendations, and finalises the criteria for the evaluation of project proposals.*

From the timeline presented in *Table 1*, the Evaluation Strategy considers appropriate outputs from relevant tasks as they are completed. For example, the strategy can outline that the process of planning for the focus groups that will take place as part of T4.2, *Stakeholder Evaluation and Validation*, must consider inputs from T2.3, T3.2, T3.3 and T3.5. Note that outputs from all these tasks, as well as outputs from T4.2 can be fed into the interviews as well (Task 2.2). Similarly, Task 4.3 will analyse input from T2.2 and T4.2.

Topic-wise, the format must be able to address the indicators relevant for recommendations as these fall under different categories or types, such as:

- Regulatory Options
- Guidelines for R & I
- Technical Options, e.g. prototypes of SIS Algorithms
- Terms of Reference for a new European regulator



The format analysis must be able to categorise the set of recommendations under these categories and highlight aspects that feed into indicators to be used in the prioritisation process, e.g. **risk, community involvement, business engagement, potential of responsible use, trustworthiness** etc.

Finally, the format of the recommendations must address the needs of different audiences. For example, the recommendations must be presented in such a way that audiences participating in the focus groups may easily understand them (including non-experts and members of different stakeholder groups). **The consortium will further decide on appropriate messages for the selected stakeholder groups.**

*Figure 3* presents the variety of stakeholder groups that the SHERPA project considered initially. WP2 outputs on stakeholder analysis have informed this process and *Figure 4* presents the refined set of stakeholder analysis according to the WP2 outputs; specifically the SHERPA stakeholder network and stakeholder board, which are the source for the refined set of stakeholder groups illustrated in *Figure 4*.

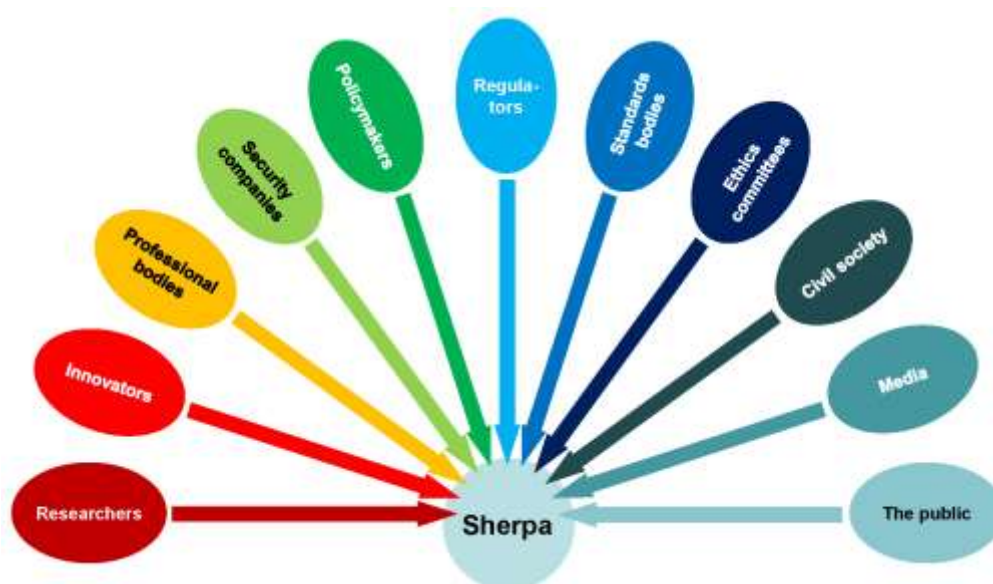


Figure 3: SHERPA indicative stakeholder groups

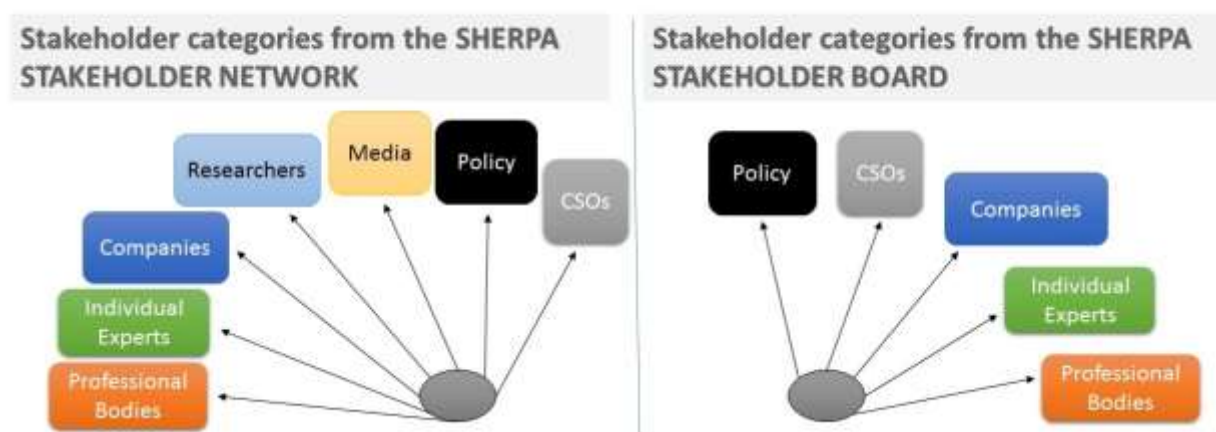


Figure 4: Refined set of stakeholder categories (WP2 outputs)

WP2 has also produced a more detailed categorisation of stakeholders to further support necessary stakeholder analysis that WP2 will undertake in subsequent tasks. This deliverable reproduces the list in Table 2, for consideration by the T4.2 leaders given that this will be useful in the finalisation of the focus groups.

Table 2: Stakeholder detailed categorisation for WP2 stakeholder analysis

Stakeholders	Description
Direct Users	Consumers; Citizens; Business; Government that uses SIS or is affected by the outcome of SIS; representatives of end users
Commissioning actors	Buyers (business, governmental), funds
Advisory Organisations	IT Advisory Services, CSR (Ethics) Advisory Services
Service Providers/Implementing organisations	Governmental, non-profit and commercial organisations that use SIS applications

Producers/ Suppliers of the main product	Producers/ suppliers of Big Data, AI or a combination of both
Producers/ Suppliers of related products and service	Producers/ suppliers of products related to Big Data, AI or a combination of both
Research/Knowledge institutes, universities	Universities and R&I organisations
Supervisory institutions	Data Protection Authorities
Legislative organisations	National, Local and International institutions that determine the rules for ethical SIS
Existing/ New initiators	EC, IEEE, HLEG, other individual organisations
Context Influencers	Banks, Investors
Media	Social Media, Traditional Media, Specialised media in digital technologies
NGOs	Privacy, Media Freedom, Human Rights organisations

The focus groups' tool that will be employed to deliver the T4.2 objectives, will consider how to engage a group, which is *culturally, linguistically* and *professionally* diverse, in order to discuss topics that may or may not fall under participants' expertise. Unlike for an interview, the success of a focus' group based evaluation depends highly on the skills and competences of the research team and more so on the **careful planning of the set of discussion questions**. To ensure this success, the leaders of T4.2 will provide **training** to all focus group facilitators. The trainings will include components that will ensure that appropriate messages are conveyed to appropriate stakeholder groups.

## Process: Approach to further Feedback

Feedback will be collected through the design and delivery of two (2) sets of focus groups. This is mainly the means to draw external expertise into the evaluation process of the WP3 set of recommendations. The **first wave of focus groups has the main objective of exploring the recommendations with the participating stakeholders**, drawing initial feedback from the discussion, and recording initial reactions.

To allow for further feedback, an action plan will be designed by the T4.2 leaders, to allow focus group participants to **take the recommendations back to their constituents and collect broader feedback**, which will be fed back into the evaluation process through the second wave of focus groups. *Figure 4* illustrates the process steps.



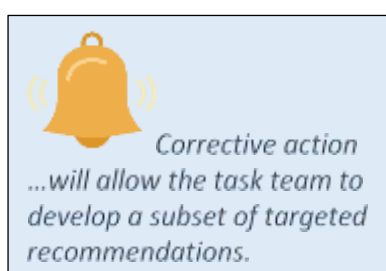
Figure 4: Approach to further feedback

Note that there will be **two (2) sets of five (5) focus groups, of ten (10) stakeholders each**. It is important to reiterate that the aim of the first (1<sup>st</sup>) round of focus group sessions is to explore the overall set of recommendations and **initial reactions** from the stakeholders. This process will define an action plan that focus group participants can use to take the recommendations back to their constituents and **collect broader feedback** that can be delivered in the second (2<sup>nd</sup>) set of focus group sessions. According to the evaluation protocol requirements, *multiple and different* stakeholder groups should be represented in each focus group. Moreover, the task leader expects the stakeholders to help disseminate recommendations to their peers and help the task team in acquiring further feedback from a variety of stakeholder groups.

The approach to further feedback aims to achieve even broader and in-depth perspectives into each stakeholder group. The *enhanced* recommendations can then be disseminated back to these participants and their peers.

## Process: Approach to Corrective Action

Both approaches, i.e. the internal evaluation of recommendations by SHERPA partners, and collecting the external perspective through the use of focus groups, will allow the SHERPA team to incorporate stakeholder views into the evaluation process of the project recommendations. **Stakeholder involvement** is one of the strengths of the SHERPA project and it is important for **credibility** of the recommendations. If stakeholders are involved in the evaluation of the recommendations through their participation in both sets of the focus groups, then the prospect of credible recommendations increases. Furthermore, by engaging stakeholders, the research team may gather perspectives that might otherwise be difficult to obtain.



The idea is to go through **multiple iterations** (more than one) of analysing the recommendations until the set of selected recommendations demonstrates a good potential of responsible implementation, evidenced by supportive feedback of the significant majority of stakeholders. Corrective action will be made possible through a second set of focus groups, where the set of suggestions concerning the formulation and implementation of the recommendations will be applied. This will allow the task team to

develop a subset of targeted recommendations, which the task team will then disseminate, communicate and put forward for implementation by the main stakeholder groups.

The subset of *preferred* recommendations will be **iteratively analysed** within T4.3 using a quantifiable approach towards **impact maximisation and skills match** to propose a prioritised list of recommendations. A three step process consisting of a gap analysis, skills matching and impact maximisation is outlined next as the process to better draw useful findings from the analysis of the data collected using the focus groups instrument.

## Substance: Gap Analysis, Skills Match and Impact Maximisation

The evaluation process considers the following specific evaluation goals:

**Identify and assess the level of feasibility of the specific items**

This will be addressed through the use of **gap analysis**, by taking advantage of the diversity of the stakeholders participating in the focus groups. In fact, the selection of the focus groups participants from diverse backgrounds and areas of expertise, will inevitably match to different

**of the proposed recommendations.**

types of proposals and this is the main requirement of such a gap analysis approach.

**Identify the cost in terms of effort to implement the proposed recommendations**

This will be addressed through the *skills match approach*. The categories of stakeholders targeted by the evaluation is another component to have in mind while choosing the members of the focus groups, knowing that the composition depends on the objectives of the evaluation. Specifically, the discussion of an in-depth objective can be done with a socially homogeneous group, whereas the testing of a theme can only be realised with a group of diverging points of view. Given that the main objective is how to develop SIS responsibly (a theme), the evaluation primarily focuses on including diverging points of view.

**Identify ways to improve the proposed set of recommendations**

The efficiency of the dissemination process of the proposed set of recommendations will be considered. The corresponding objective will be addressed by considering *impact maximisation*. The focus groups will identify the various groups of stakeholders involved in the focus group activity, and check their reactions towards a given proposal by highlighting the proposed discussion themes. To maximize impact, the team will consider the justification for the groups, and whether it would be beneficial to consider regrouping.

The evidence collected both during the preliminary phase and the focus groups phase will be further revised and refined by Task 4.3. Section 4 addresses this requirement as part of the validation phase.

# Validation Strategy

The use of a qualitative approach, as the main instrument of the evaluation process in terms of data collection and analysis, i.e. the use of focus groups, produces *subjective* results, which in turn may be used for decision-making. Thus, validation of these evaluation results is necessary to inform any subsequent decision making. In addition to validation methods that can be used **after** carrying out the focus groups, i.e. *using investigative questions to review the results*, the validation must be considered in terms of quality assurance (QA) **throughout** the evaluation process, from the preliminary phase to the actual evaluation phase, i.e. by selecting skilled moderators to facilitate the focus group sessions.

The purpose of the validation process is to **assess whether the evaluation process has produced findings that can sufficiently characterise the potential of implementation** for each recommended proposal. A useful and effective characterisation must ensure that the following aspects have been successfully considered:

- **Identification of usable, stakeholder-informed solutions;**
- **Identification of emerging challenges** through stakeholder engagement and feedback;
- **Identification of best practices**, benefiting stakeholders involved in the use of SIS;

For the achieving of best practices, the evaluation strategy aims to motivate effective collaboration between the different stakeholder groups and to align the *preferred* subset of recommendations with relevant EU funded projects and EU policy.

In particular, the validation process will **assess whether sufficient evidence has been collected, both from internal and external expertise**, in order to evaluate the set of recommendations. The findings should adequately characterise the set of dimensions relevant to each proposed recommendation, specifically, **ethics, human rights and technology**. The potential for responsible implementation of the set of recommendations can be further quantified through a set of key indicators, such as **risk, community involvement, business engagement, potential of responsible use, potential of trustworthiness**, etc. Figure 6 summarises the validation process:

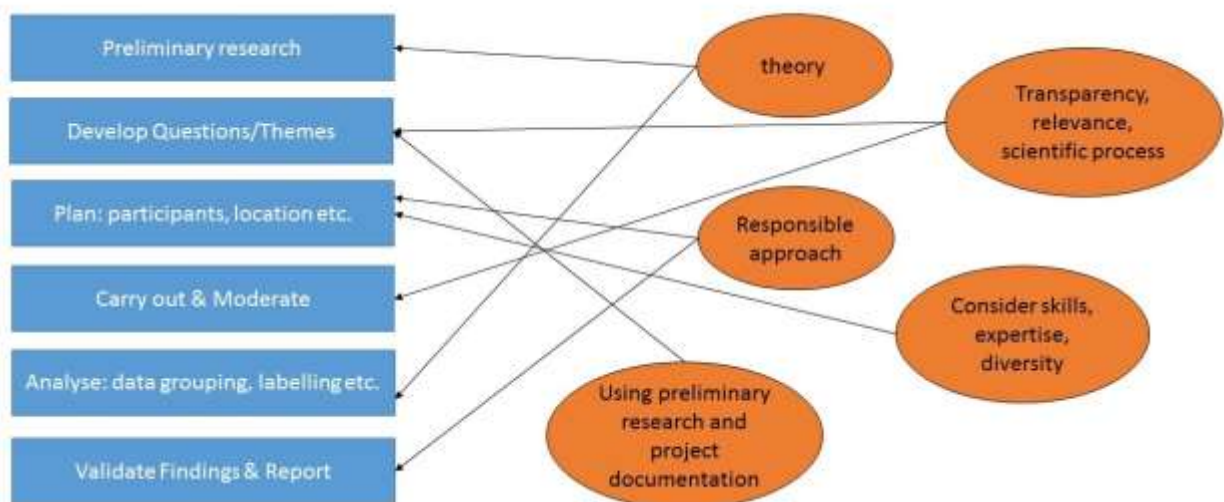


Figure 6: Validation of evaluation findings

## Definition of Targets

The section discusses how the final recommendations will be validated in terms of identifying the targets of the validation process. In particular, the evaluation findings will be validated for **clarity** in terms of how they were collected (scientific process and transparency behind the reasoning of the process) and **adequacy**, in terms of sufficient justification for conclusions.

### *Validate Clarity of Methodological Design and of Sample Selection*

Designing the evaluation process according to necessary guidelines, i.e. the guidelines outlined in this deliverable, will in turn support the validation process. The validation process will primarily verify that the evaluation was carried out according to a **clear methodological design**.

The preliminary desk research is necessary to contextualize the evaluation process and the recommendations themselves. Any relevant sources of data (policy documents, articles, reports, statistics) will be listed as instruments for the evaluation process. Contextualisation of the process will be followed by ensuring that the process was transparent.

To ensure transparency, the T4.2 team will check whether the overall evaluation process was carried out so that:

- a. the **selection and characterisation of the participants** (expertise, age, gender, etc), as well as the **reasoning behind the selection** (i.e. why these and not others?) is transparent and internally accessible by partners;
- b. the **selection and characterisation of the locations for the focus groups** and the **reasoning behind these selections** (i.e. why not other locations?) is transparent and internally accessible by partners;
- c. the **questions/themes of the focus groups** (justify why they are restrictive/open?) are transparent and internally accessible to partners;
- d. the **data analysis methodology** is transparent and internally accessible to partners.

The data analysis methodology is expected to provide access to raw data as well as access to preliminary data analysis results to support SHERPA's dissemination and communication activities.

### *Validate adequacy of data collected*

Qualitative research does not produce generalised results but adequacy of the data collected can be validated by the following steps given the responses collected for the different questions/themes. The subsequent steps are guidelines to consider when coding and analysing data collected from the focus group sessions, in order to determine whether the data collected can adequately address the identified themes

1. If possible **group** all answers a specific question or theme so that one has the view of the participants for each question
2. If possible **label** each group of answers in a descriptive way such that a label conveys the content of opinions per theme. If necessary form sub-groups such that different types of *answers* are labelled separately.

3. Given the groupings and labels, decide whether the information answers the objectives represented by each discussion theme. To facilitate this particular step of the validation process, consider the guidelines presented in Box 1.

**Box 1 - Guiding questions to validate the adequacy of the collected data from the evaluation process**

1. Can you briefly say what you have discovered?
2. Can you easily determine whether what you have discovered is something new or not?
3. Can you easily determine whether this confirms what you expected?
4. Is this important enough to pass the “so what” test?
5. Can you identify an emergent theme (or do you need to know more)?
6. Do you gain any insights to the topic?

The specific process of checking needs to be undertaken internally by project partners, who are involved in WP4. In particular two groups: the project team members who are going to develop and pursue the focus group activity as well as the project team members who will be using the outcomes from the focus group activity in order to prioritise the selected set of project recommendations. Therefore, to monitor the validation process, an internal team involving at least one member from T4.2 and one member from T4.3 will be created that will be responsible to ask and answer these guiding questions, inspect the collected dataset and report back to T4.2 leaders on the adequacy of data. This feedback may be included in the D4.2 deliverable.

## Measurement of Accuracy

The section focuses on the process of validating that the results of the evaluation process achieve their **transferability and applicability requirements**, showing consistency between data and interpretations. Since we are dealing with a qualitative approach, the data collected will not verify a generalizable truth, but instead present different perspectives to the topics under investigation. The

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*...the accuracy can be investigated in terms of whether the collected results provide the basis for better understanding ...*

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idea is to achieve in-depth perspectives on these topics. It is **expected that there will be diversity in interpretations** of such collected data but the accuracy can still be investigated in terms of whether the collected results provide the basis for better understanding of the various aspects of the topics, e.g. the subset of recommendation proposed by WP3.

In order to have more confidence in the findings, **a team of internal project experts will be engaged**, in order to collect more interpretative opinions and views such that the accuracy of the findings is enhanced. Since a measure of the accuracy is to ensure that the results are transferrable, T4.3 will be considered and planned for within the validation task. This exercise will further ensure that the findings are applicable for the prioritisation and finalisation of the recommendations by the T4.3 team.

The preliminary investigation followed by the focus group task will result in a set of collected data or evidence, which reflects both internal and external expertise. The evidence will consider both initial

sampling of data as well as further data collection, representing a refined evidence base (achieved by the different rounds of the focus group activity). Prior to the prioritisation task the parameters for assessing, (i) the validity of the collection process and (ii) the reliability of the obtained evidence, will be determined. Therefore, the analysis that will take place in T4.3 will consider only the task of prioritising the subset of recommendations as this is an outcome from the preliminary data collection and the analysis of the focus group activity.

To analyse all the accumulated evidence towards prioritisation, the SHERPA partners will consider further analysis of the preliminary recommendation subset. This analysis will aim to **quantify potential impact** and **necessary skills** for implementation of these recommendations. The quantification will result in a prioritised list, which will sort the recommendations in such a way that impact maximisation and skills matching are achieved, when implementing each **recommendation for each of the identified stakeholder groups**.

Specifically, the T4.3 task team will analyse the transcribed data primarily to determine the extent to which each recommendation satisfies the skills and impact requirements across the set of selected stakeholder groups. The task team will also analyse specific impact and skills of selected recommendations on individual stakeholder groups. It has to be noted that the specific stakeholder groups will only be available after step 3 of the preliminary evaluation phase, when participants will be invited to join the focus groups.

The insights gained from all activities of the project prior to this point will inform the final prioritised set of proposals. Specifically, activities relating to:

- the representation of the ethical and human rights issues of SIS in WP1,
- the broad range of stakeholder engagement of WP2,
- the proposals for responsible development of SIS in WP3,
- the earlier tasks of WP4

In addition to the criteria mentioned above, the prioritisation task will develop additional criteria for the evaluation of the recommendations. These additional criteria will include among others:

- potential to strengthen human rights
- reduction of ethical tensions
- enhancement of RRI
- coverage of stakeholders
- impacts on stakeholders
- impact on innovation
- ease of use
- likelihood of adoption
- value for money

The outcome of the task will be shared with all stakeholders involved in SIS. A means to achieve this dissemination could be, for example, via the SIS workbook.

## Quality Control

Quality control of the evaluation process must take place throughout the evaluation process. This includes both the preliminary research step and the focus group research step. Since, in terms of the preliminary research step, the evaluation team must consider the quality of the reviewed literature sources and the sufficient coverage of state of the art, the following paragraphs consider quality control during the evaluation process, and more specifically, the focus groups.

In terms of the data collection process based on focus group sessions, the **quality control must begin at the design stage**. The quality of the focus group evaluation depends on the questions and themes that guide the focus group discussion. These must carefully consider necessary assumptions and contingencies. The overall focus group moderator will formulate the final set of questions such that they are clear and linked to an analysis method, so that the results of the analysis of the collected data can be reliable and externally valid (e.g. by using a well-accepted analysis methodology). Overall, the overall quality is defined by having a *defensible* design for the focus group sessions and focus group analysis stages.

Any potential challenges that may cause the practical side of the evaluation to deviate from a well-designed focus group process, will be documented. The team of internal experts, previously suggested to monitor the validation process, will assess and justify any deviations from the original design. As a checklist, the following is a set of items that will be checked throughout the focus group process:

#### *Consider the quality of the discussion questions/themes*

The process of selecting the topics must closely link back to the literature review of the preliminary research phase and the recommendation proposals but also consider the participants characteristics.

#### *Consider the quality of the overall research design*

The overall research design must consider more than the topics but also the data analysis methodology that is to be followed, making sure that it is *defensible*, in terms of the research community.

#### *Quality of the data collection process*

Ensure sufficient preparation and training to ensure that data collected is transparent and reflective of the participants' own perspectives and opinions. Document as many elements of the process as possible.

#### *Quality of the data analysis and findings*

Ensure analysis according to the selected methodology, and comparison with the supportive theory; ensure that discussion on the findings has identified limitations and verifiable conclusions.

Finally, the evaluation team will consider that in such collection data processes there are key ethical elements that must be considered in advance. These elements include: potential harm to the participants including issues of privacy, potential benefits to the participants, clear communication of research objectives to the participants, and clear communication to the participants of data processing details. All these elements will be clearly elaborated on the consent form. A proposed template for the consent form that can be used is provided in *Appendix A*.

# Conclusion

The deliverable explores the overall process and potential tools that will be used by SHERPA WP4 team to evaluate project WP3 outcomes. The evaluation aims to eventually provide a prioritised list of recommendations of WP3 outcomes, which represent different proposals for the responsible use of SIS. The proposed strategy considers both internal and external expertise through individual stakeholders' perspectives as well as collective perspectives of selected groups of stakeholders.

The preparatory stage of the evaluation, includes among others, the preparation of necessary material to run a series of focus groups that will help the SHERPA researchers obtain the stakeholders' input. It is important to ensure that the evaluation makes use of appropriate messages for appropriate audiences. Moreover, the use of focus groups is a means to provide an in-depth understanding of project recommendations by engaging a variety of opinions through the different types of stakeholder involved in the data collection process.

To ensure the accuracy of the data collected, the strategy outlines processes for further feedback and for corrective action. Another important aspect of the strategy, is the validation of the evaluation process and findings, discussed separately. Details for how to approach all these aspects are provided.



# Appendix A: Sample Consent Form

***\*\*Note that text in italics is for the information of the researchers and should be deleted from the final consent form.\*\****

*Prior to completing the following informed consent form, consider the following guidelines:*

- 1. Keep the language and vocabulary as basic and straightforward as possible.*
- 2. All sections of the consent form, except the "Consent" section at the end of the form, should be written in the second person, as they address the participants (e.g. "You are being asked...").*
- 3. In the header include two lines of text: 1<sup>st</sup> line should include the text "INFORMED CONSENT", 2<sup>nd</sup> line should include the text "Participation in SHERPA focus groups sessions" or a more descriptive title.*

**This form provides information about what is requested from you and about what will happen if you agree to join the project. You should not participate if you have any concerns about your participation. Note that you are free to withdraw your consent to participate in this project at any time during the session. If you agree to participate you should print your full name and sign all pages of this form.**

## **TITLE OF THE PROJECT YOUR ARE INVITED TO PARTICIPATE:**

[Insert title]

## **PRINCIPAL INVESTIGATOR OF THE PROJECT**

[Name]

[Department]

[Address]

[Phone]

[Email]

## **PROJECT DURATION**

[Duration of the project within which the current study takes place]

## **DESCRIPTION OF THE PROJECT AND THIS STUDY: PURPOSE AND PROCEDURES**

You are being asked to take part in a research study. Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. Please read the following information carefully. Please ask the researcher to explain anything that is not clear or if you need more information.

The purpose of this project is to [Briefly describe purpose of the project]

Procedures of the study you are asked to participate in:

[Briefly describe procedures of the specific study, preferably as a chronological list.]

*Make sure that you include the amount of time required of participants per session, if applicable, and for the total duration of the study.*

## **RISKS**

[Briefly list all reasonably foreseeable risks of the procedures to be used]

*Make sure that you also list any measures that will be used to minimize the risks.*

You may decline to answer any or all questions and you may terminate your involvement at any time if you choose.

## **BENEFITS**

[Briefly list all the benefits anticipated]

*Make sure that you include benefits to participants, others, or the body of knowledge. If there is no direct benefit to the participant, you should also mention it, e.g. "There will be no direct benefit to you for your participation in this study."*

## **DATA COLLECTION DETAILS**

[Briefly discuss the information and/or the materials that will be collected in the session]

*Make sure that you include information about who will have access to this information and for how long. Also, include description of procedures for handling data of the participants, who decide to withdraw at an earlier stage of the study.*

## **COMPENSATION**

*If there is no compensation, delete this section, otherwise indicate what participants will receive for their participation in this study, including credit or compensation.*

## **CONTACT INFORMATION**

If you have questions at any time about this study, you may contact the researcher whose contact information is provided on the first page.

If you have questions regarding your rights as a research participant, or if problems arise which you do not feel you can discuss with the Primary Investigator, please contact [Provide an independent officer that can handle general questions, complaints etc.]

## **VOLUNTARY PARTICIPATION**

Your participation in this study is voluntary. If you decide to take part in this study, you will be asked to sign this consent form. After you sign the consent form, you are still free to withdraw at any time. If you withdraw before data collection is completed, your data will be destroyed.

## CONSENT

I have read and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Participant's signature \_\_\_\_\_ Date \_\_\_\_\_

Investigator's signature \_\_\_\_\_ Date \_\_\_\_\_

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