



## Deliverable 2.3

### **ENJOI Manifesto for an Outstanding Open Science Communication for OOSC**

#### **Version 1.4**

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## REVISION HISTORY

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v1.3	12.12.2022	Michele Catanzaro, Raul Toran and Miriam Rivera-ACCC	New version, integration of contents, revision and editing
v1.4	23.12.2022	Elisabetta Tola, FB	Integration, revision and final layout
v1.4	31.12.2022	Elisabetta Tola, FB	Upload

## QUALITY ASSURANCE

To ensure the quality and correctness of this deliverable, we arranged an internal review and validation process. The deliverable was drafted by the work package leader ACCC. All partners contributed and reviewed the overall draft. Finally, the final version was submitted to the project coordinator for a final review and validation.

### DISCLAIMER

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## 1. SUMMARY

The Manifesto for an Outstanding Open Science Communication (hereafter OOSC) is a practical and easy-to-use tool targeted to people who are producing, consuming and sharing scientific information. Science communicators, journalists, researchers and citizens can use it as a guideline, a reference, a set of indications to evaluate their work when producing scientific content to be disseminated through a range of media platforms and channels. At the same time, the Manifesto is meant to be used to assess whether the information that one is consuming is high-quality or inaccurate, insufficient, unuseful, if not misleading and therefore unreliable.

This document encapsulates the results of a very complex process: a multi-step effort to identify, assemble and organise a set of Standards, Principles and Indicators for OOSC (SPIs) during various months of work and then to convey them in the current Manifesto. The SPIs result from in-depth desk research, consultation with key experts, exploratory research and, eventually, participatory research involving co-creation and engagement deployed during four Engagement Workshops (EWs) and then four Labs with key stakeholders. These steps have yielded results and insights reassessed in a series of internal ENJOI mutual learning meetings and one ENJOI consensus workshop, facilitated by design and visual tools set up expressly for this purpose.

The Manifesto is published on the ENJOI Observatory website, with materials and references allowing more in-depth fruition. While it is meant to be read and used as a stand-alone document, producers and consumers of science communication might have a specific interest in consulting background research documents, case studies and examples, and other references that practically inspire and guide journalists and communicators in applying it to their work. Moreover, the Manifesto is rooted in and complemented by all the research papers and reports currently published on the ENJOI SciComm community in Zenodo.



## 2. PROJECT OVERVIEW

ENJOI (ENgagement and JOurnalism Innovation for Outstanding Open Science Communication) explores and tests engagement as a key asset of innovation in science communication distributed via media platforms, with a strong focus on journalism. Through a combination of methodologies and collaboration with producers, target users and stakeholders of science communication, ENJOI is co-creating and selecting a set of standards, principles and indicators (SPIs) condensed into a Manifesto for Outstanding Open Science Communication (OOSC). This process results from research and co-creation developed through a series of Engagement Workshops (EWs), Labs, field and participatory research, evaluation and testing phases.

ENJOI is also building an online Observatory as its landmark product to make all results and outputs available to foster capacity building and collaboration of all actors in the field.

ENJOI's ultimate goal is to improve science communication by making it more reliable, truthful, open and engaging. Contextually, ENJOI will contribute to the active development of critical thinking, digital awareness and media literacy of all actors involved in the process.



### 3. THE ENJOI MANIFESTO FOR AN OUTSTANDING OPEN SCIENCE COMMUNICATION

Public debate on science is essential for present and future societies. It requires science communication to be reliable, truthful, open, and engaging. Currently, science communication is standing at a crossroad, facing challenges and opportunities. In this phase it needs to find ways to bear new fruits without losing its roots. This manifesto is aimed at helping with this effort.

The manifesto is addressed to all stakeholders involved in science communication, with a special focus on science journalism. We consider a broad definition of science journalism: from traditional channels to new means appearing in the media ecosystems. Most of the following can be applied also to other forms of science communication.

The manifesto sketches the philosophy of the ENJOI project: ENgagement and JOurnalism Innovation for Outstanding Open Science Communication. ENJOI has used scientific literature, original research, expert consultations, and co-creation processes with a variety of stakeholders, to build a matrix of Standards, Principles, and Indicators (SPIs) for outstanding science communication. The text that follows, summarizes the spirit of those SPIs, and is intended to be a window to ENJOI's more detailed documents aimed at practical applications.

We believe these ideas can help to foster critical thinking, media literacy, and digital awareness for all in society, and thus nurture the future public dialogue on science.

#### 1. Deepening the roots

The future growth of science communication depends on the strength of its roots, especially in contexts where they are challenged by the fragility of the media ecosystem.

Independence, honesty, integrity, transparency, rigour, and the use of independent and diverse sources are basic principles of high-quality communication that remain essential and non-negotiable.



On top of that, good science communication needs to convey the full complexity of science. This implies focusing not only on scientific results, but also on the process behind them, and unravelling the connection of science with society. Ultimately, science communication should respond to the rights and needs of citizens, and not to other interests.

Citizenship is fragmented into a variety of niches. It is crucial to understand these niches and tailor communication through a variety of strategies suitable to each one of them. It is especially important to make science accessible to audiences unfamiliar with it and to disadvantaged groups.

Citizens are not mere receivers of information. Real engagement goes beyond sporadic feedback. It requires building a true collaborative framework, and ultimately, a community that takes part in a two-way dialogue.

Science communication is relevant if it generates an impact, which can range from awareness to action. Tools to gauge and improve this impact are increasingly important in the craft.

## **2. Bearing new fruits**

ENJOI envisions a set of trends that are likely to shape the future of science communication. These trends open up new spaces and require a critical stand, because they pose both challenges and opportunities.

Science communication happens increasingly in digital platforms, especially in social media. The enormous opportunities of this digital agora are balanced by the challenges posed by algorithms, artificial intelligence, virality, and metrics. Responsible innovation takes into account social, philosophical, ethical, and legal aspects, and not only technological ones.

Engagement is becoming ever deeper. Rather than being a single step, it plays a role in the whole life cycle of information. This is already affecting the information agenda and the way communication is designed. Engagement provides the opportunity of meaningful two-way dialogue, but should avoid the risk of bending science communication to populism.



Rampant polarisation is affecting science communication. Partisanship and false balance are two risks of this situation. Science communication has the opportunity to shape its messages in such a way as to bridge the gaps between opposing factions. But this should not result in self-censorship to avoid backlashes.

Inclusion is cutting through all aspects of science communication. In sharp contrast with the past homogeneity, diversity is set to become a guiding principle, not just in formal and linguistic terms, but at deeper levels, from the choice of sources to the ways contents are distributed.

The urgency of health and environmental crises is pushing science communication to focus on solutions. Beyond portraying facts, science communication is likely to explore more often the possible courses of action.

The spirit of open science is impregnating science communication too, not only with special attention to open access sources, but also with a broader commitment towards making science communication itself open.

### **3. A living document**

The ideas outlined in this manifesto are expanded into ENJOI's SPIs and reports and represent the foundations of the future ENJOI Observatory. These tools are aimed at applying the concepts of the manifesto in the teaching, research, and practice of science communication.

The manifesto is not written in stone: it is an open-ended, living document that will be tested with our advisory board, experts, and engaged communities.

We hope this text will provide a solid and fertile ground for the growth of the science communication of the future.

### **The ENJOI project\***



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\*ENJOI (ENgagement and JOurnalism Innovation for Outstanding Open Science Communication) is a European Union's Horizon2020 project that explores and tests engagement as a key asset of innovation in science communication distributed via media platforms, with a strong focus on journalism. Through a combination of methodologies and in collaboration with producers, target users and stakeholders of science communication, ENJOI has co-created and selected a set of standards, principles and indicators (SPIs) condensed to a Manifesto for an Outstanding Open Science Communication. ENJOI deploys a series of actions via Engagement Workshops, Labs, field and participatory research, evaluation and testing phases. It will also build an Observatory as its landmark product to make all results and outputs available to foster capacity building and collaboration of all actors in the field. ENJOI works in four countries: Belgium, Italy, Portugal and Spain, taking into account different cultural contexts. ENJOI's ultimate goal is to improve science communication by making it more consistently reliable, truthful, open and engaging. Contextually, ENJOI will contribute to the active development of critical thinking, digital awareness and media literacy of all actors involved in the process. The members of ENJOI are Formicablu, Science For Change, the Catalan Association for Science Communication, FCIències.ID, the University of Twente, and Stickydot.



## 4. THE ROAD TO THE MANIFESTO

### 4.1 Starting point: the current crisis of the media ecosystem

The relationship between media and society has been facing a general crisis of trust and accountability for the last decade at least. The ecosystem has changed dramatically in the last years, and barriers between traditional producers and users of information are now much lower and blurred: everyone can produce and share content, actively participating in the creation and reinforcement of different narratives. The dynamics and the mechanisms behind the circulation of information in the digital environment are not always clear. Many players in the communication arena, both in traditional media and in institutions, lack the competence and technical skills and a full appreciation of the scale of change associated with digital transformation. Improvisation and lower awareness of the mechanisms ruling the digital ecosystem may enhance confusion and even worsen the situation. Although the problem is much wider than that pertaining to the science sector, misinformation, disinformation, and overt false content pollute the communication ecosystem with negative effects for citizens at large and their relationship with science and its outputs and outcomes. The results can even be very dangerous if different stakeholders reject scientific contributions due to their lack of trust or, even worse, to the belief that science is working against their well-being.

Media often contribute to amplifying alarmism, polarization, or even disinformation instead of working to nurture a healthy information environment. It does not help that, due to economic difficulties, many media outlets have outsourced their science coverage, treating science as a niche topic of interest for a few ones or as a source of just curious facts. The eruption of the Covid19 pandemic and the worsening of the climate crisis has only amplified this already difficult frame, leading to a situation defined by the WHO as infodemics. At a moment when the need and demand for reliable and high-quality scientific content reached a peak, the lack of preparedness in risk and emergency communication, in understanding the way science works and in reading data and facts for what they can say and not more or less than that, became dramatically evident. In the effort to oversimplify the messages, institutions and media have often failed to communicate the uncertainty innate to science. On the contrary, much evidence shows that communicating uncertainty does not translate into undermining credibility. Transparency and openness are seen even by a non-specialist audience as a sign of trust and respect. What can make the difference in how the information is framed, conveyed and shared.



## 4.2 Why we need a new framework: the SPIs

To fully comply with their due role in society, media need to translate to the digital ecosystem without losing their ethical and deontological standards. They have to innovate their practices, workflows and processes to meet the new needs expressed by citizens without compromising the value and rigour of science communication.

Innovation should be interpreted not merely at the technological level and not only as a marketing move but as a comprehensive force that could help reshape the media environment. There is a need for information that comes from a more inclusive and competent approach that involves citizens, scientists and journalists in the discussion and assessment of the integrity and usability of contents. By adopting innovative and diverse approaches and practices, journalism and communication can actively contribute to evolving critical thinking and a more widespread comprehension of the role of science in contemporary society.

Standardisation is paramount to innovation. Translating scientific knowledge into standards provides a very effective way to transfer research results into the development of technologies, services, practical actions and disseminating innovation. Standardisation has been supported by the Horizon 2020 Work Programme as the right pathway to harmonise the development of technologies, services and policies in different sectors. Application of standards ensures the removal of barriers at the cultural and social level, and the establishment of common development patterns. Standards provide people, institutions and organisations in the public and private sector with a basis for mutual understanding and facilitate communication, measurement and the development of effective products.

Standards are regularly applied in key areas such as digitalisation, environmental regulations, green transport and mobility or climate actions. Examples are the FSCs applied to forest management or the principles and rights based on the standards outlined as part of Europe's digital decade 2030.

ENJOI recommends a similar approach concerning science communication, particularly in the case of risk communication or when very complex, highly impactful science topics are dealt with, such as health, technology and environment. To reach the set standards, media, organisations and individuals acting in the science communication field have to act based on a set of principles. These principles are built around core concepts such as usefulness, inclusiveness, rigour,



transparency and openness, collaboration and innovation, and other dimensions that emerged in the co-creation phase and from the literature search.

Finally, a series of indicators, both qualitative and quantitative, help measure and monitor the road towards the application of the principles and the standards. Once again, the chosen indicators are the result of a combination of approaches coming from the published literature, the suggestions and recommendations of experts and the needs and ideas co-created by users and producers during the EWs and, later on in 2022, during the Labs.

### 4.3 Mapping the available resources

If a systematic compilation of standards for the field of science communication is not yet available in the literature, there is no doubt that many efforts have been put into establishing indicators and guidelines to improve the quality of science communication. Building on both published literature and outputs and outcomes from the other SwafS-19 projects funded under the “Taking stock and re-examining the role of science communication” Research Action since 2018, ENJOI aims to systematise those results and add to them through a process of co-design and co-creation with a very diverse community of stakeholders.

In order not to reinvent the wheel, therefore, the work ENJOI has done in the definition of the SPIs and then in their condensation into the Manifesto is that of mapping what is there and identifying those issues and concepts that need further developments.

Having kicked off as a project in early 2021, ENJOI arrived in the middle of the pandemic crisis and had to deal with its multiple effects and impacts. It was immediately clear that the most widespread public health crisis of the modern era made it mandatory to reflect and consider the effects associated with the rapid and unprecedented need for a constant flow of reliable information between all involved and impacted stakeholders in a moment highly marked by uncertainty, fear and doubts.

To launch its co-creation process, ENJOI had to map, organise and consider what had already been achieved by previous research efforts in the field. Some of the key points are summarised in the table below.

Further literature has been published in the past few months that will be included in



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this table as a contribution to the final version of the Manifesto.

Source of knowledge	Methodology	Outputs
Project QUEST (SwafS19 - 2018-21)	Analysis of the materials produced by the project and interview with the coordinator	<ul style="list-style-type: none"> <li>- Analysis of dynamics through 3 strands: social media, journalism and science museums</li> <li>- Tools, kits and checklists for stakeholders (museums communicators, scientists and professional science communicators)</li> <li>- 12 Indicators of quality</li> <li>- AI tool to monitor science information in the digital environment</li> </ul>
Project RETHINK (SwafS19 - 2018-21)	Analysis of the materials produced by the project. ENJOI coordinator is part of the Sounding board testing the project outputs, and another FB team member was actively involved as a stakeholder in the research	<ul style="list-style-type: none"> <li>- Understanding the digital SC landscape and how to make it more inclusive, open, and adaptive.</li> <li>- Established communities of practices in 7 countries (Rethinkerspaces).</li> <li>- Examination of the ecology of digital SC.</li> <li>- Study on the scholars involved in SC.</li> <li>- Quality criteria for SC and training materials for science communicators.</li> </ul>
Project CONCISE (SwafS19 - 2018-21)	Analysis of the materials produced by the project. ENJOI coordinator took part in one of the research activities and to the assessment and final discussion over their final policy brief.	<ul style="list-style-type: none"> <li>- The role of SC in shaping public perceptions and opinions.</li> <li>- Assess citizens' trust in institutional sources</li> <li>Perspectives from 500 citizens from 5 EU cities.</li> <li>- Very substantial and detailed Policy Brief.</li> </ul>
Project TRESCA (SwafS19 - 2019-22)	Analysis of website, of the course online and the materials produced by the project	<ul style="list-style-type: none"> <li>- Social science, exploring the impact of dis/misinformation on public perception and trust.</li> <li>- Survey, qualitative and deliberative research.</li> <li>- Development of a MOOC to include outcomes on the effect of increased health information on public trust in SC.</li> </ul>
Project ParCos (SwafS19 - 2019-22)	Analysis of the materials produced by the project	<ul style="list-style-type: none"> <li>- Arts-based methods to transform scientific data in stories and narratives.</li> <li>- Main aim is to convert SC into an accessible cultural activity.</li> <li>- Having to convert data drama and other practices online, it created fully immersive theatre experiences streamed live.</li> </ul>
Project NEWSERA (SwafS19 -	There are 3 common partners among the 2 projects (FB; FC.ID; Sfc)	<ul style="list-style-type: none"> <li>- Analysis, evaluation and improvement of SC in citizen science projects in relation to 4-helix stakeholders.</li> </ul>



2019-22)		<ul style="list-style-type: none"> <li>- Co-creation of communication plans and activities and of transversal sessions on cutting edge issues (data ethics; misinformation; policy).</li> <li>- Co-creation of a new approach to data journalism with the intent to kick off a new citizen science data journalism concept.</li> <li>- Production of blueprints ongoing.</li> </ul>
Project PERCIENEX (Spain-LatAm 2016-current)	ACCC was involved in the initiation and development of the 2 editions of the project; SfC contributed the latest edition and in a workshop on the indicators	<ul style="list-style-type: none"> <li>- Involvement of a sample audience.</li> <li>- Analysis and discussion of selected products.</li> <li>- Identification and analysis of excellence prescriptors.</li> <li>- Creation of a database for inspiring other journalists/communicators.</li> </ul>
Literature review on criteria to judge quality in SC/SJ (2022)	- Searching for previous indicators and detailing the analysis in D2.1	<ul style="list-style-type: none"> <li>- Keyword search analysis.</li> <li>- Scientific literature.</li> <li>- Grey literature.</li> <li>- Expert insights (interviews).</li> <li>- Found ca. 58 criteria (not distinguished among principles, standards and indicators).</li> <li>- Classification of the criteria depending on the key source of information: science communicator; journalist; scientist; institution; social media content creator.</li> </ul>
Literature review on science-media interactions (2022)	- Analysis detailed in D5.1	<ul style="list-style-type: none"> <li>- Keyword search and identification of over 80 articles. Second round of search resulting in 20 articles.</li> <li>- Overall selection of the 37 best fit for the analysis.</li> <li>- Most research looks into motives for scientists to engage in SC and few on relationships with journalists.</li> <li>- SC motivated by educational and normative reasons (role of science knowledge within a democratic system).</li> <li>- Role of scientists usually identified with experts</li> <li>- Digital transition has pushed disintermediation lowering the role of media in SC.</li> <li>- Mediatization (linked to the need of public legitimation).</li> <li>- Complex relationship between independent information and 'friends of science' one.</li> <li>- Challenges: lack of skills, lack of resources, structural difficulties.</li> </ul>
Focus reports (2022)	Detailed in D7.1; D7.2; D7.3; D7.4	<p>Collection of 4 different sets of case studies, interview and expert insights on</p> <ul style="list-style-type: none"> <li>- Engagement journalism;</li> <li>- On the use of data and open science results;</li> <li>- Innovative digital formats;</li> <li>- Constructive and solution journalism.</li> </ul>



		<p>Results:</p> <ul style="list-style-type: none"> <li>- Innovative formats are not common in SC and SJ.</li> <li>- Use of data is often traditional and non interactive.</li> <li>- SJ could benefit more from interaction with audiences/public.</li> <li>- Engagement is not merely dialogue, it is a more complex and articulated practice that takes the lead from the audience's needs.</li> <li>- Solution is an interesting 'scientific' form of journalism - not always applicable to any situation.</li> </ul>
Exploratory study (2022)	Detailed in D2.5	<ul style="list-style-type: none"> <li>- Analysis of samples of published works in 4 languages.</li> <li>- Variety of ways to present content by different media and content producers.</li> <li>- Identification of narratives and storytelling and use of innovative elements.</li> <li>- Correspondence with some of the initial ENJOI criteria.</li> <li>- Highlight lack of other criteria: the what (aim of the story) and the where (geographical contextualisation).</li> </ul>
<p>A small collection of special reports and new publications (all subsequent to 2020 and related either to the Covid impact or the climate crisis impact on journalism and communication) is currently being reviewed by WP7 and is also used to nurture the final list of SPIs and the Manifesto.</p>		

## 4.4 The co-creation process

The broad research process detailed above was the basis for producing the materials and the research questions that were then going to be discussed in a co-creation participatory process during the Engagement workshops. The main objective of these sessions was to engage people from various backgrounds in the joint creation process and to overcome the barriers between experts and non-experts, producers and users. Local, geographical, linguistic and socio-economical differences have been considered while planning and implementing the workshops, held in Italy, Belgium, Spain and Portugal from March to May 2022. More than **50 citizens and professionals** from different fields participated in the EWs, and actively contributed to the SPIs definition and the building of the Manifesto. EWs participants included: journalists, science communicators, researchers, science museum experts, teachers, activists, social media experts, editors, entrepreneurs, local institutions, funders, and designers.

The methodology adopted during the EWs (described in subsequent steps in D3.1,





D3.2 and D4.1) was designed to allow maximum participation and cooperation in a process leading from a basic definition of SPIs to examples, new ideas, original concepts, and insights on the future direction.

The results were finally analysed and discussed during an interactive ENJOI consensus workshop meeting on June 21<sup>st</sup> 2022, with the participation of all partners. The workshop led to the re-organisation and further distillation of a list of principles, with corresponding standards and suggested indicators, as listed in D2.2, [published and available](#) also on the Zenodo platform.

## 4.5 Further investigation and the contribution of the Labs

Although the work done to this point allows for an initial draft of the Manifesto to be compiled, a more careful analysis indicates that there were still **some blind spots** to be looked into. A further cycle of co-creation and deliberative discussion with involved stakeholders could thus greatly improve the strength and relevance of the proposed SPIs and, therefore, the Manifesto built around them.

The **blind spots** identified in the process up to now are the following ones:

1. **in-depth dimension of engagement** and its double significance: while the word engagement fills any recommendation on communication, its concrete realisation is often limited to an invitation **to keep the dialogue open** between scientists, communicators and society. Real engagement, as explored in some of the most advanced experiments in journalism (see [D7.1](#)), could and should reach **a more structural dimension**. There is scope to develop engagement technologies and approaches to improve the quality of science communication, enhance trust and interest in its contents and messages, and create a permanent supportive community. This community could nurture journalistic work by making it better matched with people's interests and needs. It could also represent an alternative source of revenue, allowing the producers more independence in their work. Similar experiences are to be found more in the field of investigative journalism which has, in recent years, seen strong development in this direction.
2. a **braver digital transition** and a **more open attitude toward experimentation**: while many media, big and small, even in low-income countries, are exploring innovative formats to improve the quality of their work and interact with their audiences, science journalism tends to remain, with few notable exceptions, **quite traditional in its formats, languages and channels of distribution**, and





often not tailored to reach a wide range of audiences, in terms of ages, background and cultural or geographical origin. Science journalism and communication are often designed to reach those who already have an interest in the field. The real challenge is to try and connect with people and communities **who are not already engaged with science** but need it, as everybody does, in their daily lives.

3. a **more open and less euro-centric perspective**: science has traditionally been told from a euro-centred or Western perspective. The current geopolitical asset shows that science history and its trustworthiness would greatly benefit from **an honest recognition of its true foundations**. Neglect of other people and cultures' contributions to its making and of the role colonialism has played in the **development of scientific knowledge** pose a concrete risk of **science being seen as a neo-colonial enterprise, contributing to inequalities and injustice**. This is not only a third-country perspective. Currently, in Europe, 5% of the citizens come officially and originally from a non-EU state. This percentage is bound to grow, and the same definition of European culture is changing. A science narrative that considers **needs and expectations from a non-exclusive EU perspective** is long overdue.

Finally, all the interviews and discussions that WP7 held to build its four focus reports insist **on one point**. Science should always be **communicated coherently** within a political, sociological, economical and cultural framework. Science is **not a niche interest nor a side activity**. It is a **central asset to the current strategies of economic development**, as well as to the possibilities to curb the climate crisis or contain the epidemiological risk or develop Artificial Intelligence (AI) and other technological systems that work together with society and not against it. But to make sure that **both basic research and its applications** are supported and developed within a frame of **interest and acceptance**, science needs to be told, communicated and represented as **one key component of a much more complex reality**, one that entails **politics, sociology, philosophy, economics, and cultural issues**. A Manifesto for OOSC cannot fail to include this much **broader and bolder perspective**.

These points were thus integrated within the preliminary list of the SPIs analysed during the EWs and a round of consolidation and further co-creation process took place during the **four Labs organised and implemented in Autumn 2022**. The ENJOI Labs were built on the intention to exploit the experience done in the NEWSERA project and thus to involve the quadruple helix stakeholders in order to specifically assess the contributions, views, needs and ideas coming from the citizens, industry&SME (in this case, the media industry), career scientists and policymakers.



The four Labs were organised in four countries and each one focused **on one specific stakeholder**: Italy involved civil society, citizens and activists; Portugal was focusing on career scientists; Spain invited journalists, editors and publishers; finally, Belgium saw the participation of policymakers, institutions and funders.

The Labs participants further refined the SPIs, besides proceeding onto the co-design of a second round of innovative tools to be developed within WP6.

## 4.6 The final list of SPIs resulting from the EWs and the Labs

After all the preliminary work done by the ENJOI consortium, the co-creation process implemented during the Engagement Workshops (EWs) and the validation and further improvement undertaken during the Labs (these processes are detailed in D4.2 and D4.3, available on the project website and on the ENJOI SciComm Community in Zenodo), the SPIs were organised in **three thematic clusters** since they pertain to **different dimensions** of the communication process:

- **Ethics and deontology**
- **Methodology and practice**
- **Relationship with the public**

Each cluster states a series of **Principles** - the main concepts that should guide the science communication. Each principle is translated into one or more **Standard** - a reference model, to be used as a general rule to measure quantity, extent, value or quality in science communication. And for each principle and its standards, there are diverse **Indicators** - specific, observable and measurable characteristic that can be used to achieve a particular outcome in science communication.

**Indicators** are a practical way to measure the accomplishment or at least the development in the right direction, and therefore they will be continuously assessed, evaluated and updated when needed.

The SPIs are detailed in the following figures, with the layout that was used during the Labs and that is described within D4.3.



## Ethics and deontology

Principles	Standards	Indicators
<p><b>Integrity</b></p> <p>Journalism and communication must be <b>transparent, honest, and upright</b>. <b>Full and truthful independence</b> needs to be granted both to the journalist and communicator and to his/her sources</p>	<p><b>Standards</b></p> <p>Need to nurture and adopt a critical and sceptical attitude towards all sources and information</p> <p>The methodology used in the work process should always be explained</p>	<p><b>Indicators</b></p> <p>Clear description of the sources, in order for the reader to be able to find them</p> <p>Clear and explicit statement both on the relationship with the sources or in case of any conflicts of interest</p>
<p><b>Rigour</b></p> <p><b>Rigour and accuracy</b> are two key assets of science and should also characterise any science communication, from the quick post on social media to the more articulate long-form article or interactive cross-media. To be <b>rigorous, SC should focus on the process of science making</b> and not only on the results and should <b>never be presented as an immutable piece of truth</b></p>	<p>Have the information reviewed by at least two independent fact-checkers, peers and/or experts and specialists</p> <p>Try to adopt an impartial and objective language, although it should still be representative of the current debate, also in terms of proportions and weights of the diverse positions within the scientific community</p> <p>Objectivity is relevant, but transparency it is even more so</p>	<p>The information is based on facts and data with references, links, sources for each piece of data/fact</p> <p>Adjectives and other forms of evaluative language are used only when necessary</p> <p>The editor or reviewer (explicitly mentioned in the content) has a declared relationship of proximity (cultural, geographical, etc.) with the subject to be dealt with</p>
<p><b>Relevance</b></p> <p>The priority of science communication is to <b>respond to the needs of the audience</b> and enable the target users to fully incorporate their scientific citizenship rights. In other words, SC should aim to <b>give people the correct information to make a decision</b>, discern among alternatives, choose the appropriate sources of knowledge and embrace those scientific outputs that can contribute to their well-being</p>	<p>Context and needs are presented in a correct diachronic perspective</p> <p>Connections with the historical, political, social and economical framework are clear, explicit and clearly described</p> <p>Complexity is embraced, and uncertainty is dealt with and incorporated into the information. The focus of the story should be on the science process and not solely on the results</p>	<p>The subject is of ascertained international/ national/ local interest (depending on the platform)</p> <p>The content explicitly explains why the topic is of public interest and what is the novelty compared to previous knowledge</p> <p>There is an explicit link between the story and the piece of research (basic/local/national) behind it</p> <p>80% of the bibliographic sources should not be more than five years old (risk of obsolescence)</p>

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## Methodology and practice

### Principles



#### Sources of information

A good piece of science journalism should always have at least 2 or 3 **independent sources, clearly stated and traceable**. They should always be diverse and of proven identity to the journalist (who can keep them hidden in case of personal danger). Sources have the right to be protected in all situations of risk for their life and that of their family and friends. Diversity is the best pacific weapon against polarization and discrimination

### Standards



Personal verification (on the side of the journalist) of the sources is a must. If that is not possible, and yet the story relies on such a source and appears to be of public interest, the source can be mentioned as anonymous, and the story is told as one that has a degree of uncertainty and is not yet fully verified.



It is of paramount importance to hear diverse sources (age, sex, gender, origin, status and career stage): they bring diverse perspectives and diverse framing to a story. They might also enrich the story with nuances otherwise lost in a mainstream narrative



Sources should always declare their conflict of interest, whether it is toward an institution or a private industry



Diversity does not coincide with false balance: representation of opinions should always be commensurate to the actual discussion within the scientific community



When possible, give priority to open sources and open science in the coverage, to allow the readers/users to gain access to the original information



Use sources that have a good recognisable impact (the impact should be explicitly indicated or at least annotated in the journalist's notes)



Make use, when possible, of stakeholders related to the treated topic who can offer perspectives from the audience's and/or specialists' point of view

### Indicators



Sources must be clearly stated and accessible, at least to the point of being findable



Sources should be authoritative: official publications and institutions, with a proven track record of knowledge and experience in the subject treated in the story



Bibliographic sources are reliable and of quality, based on systematic reviews and original scientific articles



The use of a pre-print as a source in journalism should be handled with caution: always explicitly declared to the public and always discussed with an independent expert beforehand



When discussing new results and outcomes, sources should be at least 2 and independent. If the primary source has direct knowledge and involvement with the subject (i.e., author of research publication), a second, independent and specialised source should always be included, particularly in new or controversial issues

### Engagement



Engagement refers to the employment of diverse practices (building on the cultural and/or psychological dimension and the technological one) to enter into a true collaborative framework with one's audience and public. It should not be merely seen as a tool to collect feedback, comments and suggestions. It is of paramount importance to **take into account, understand and appreciate the needs**, to respond to expectations and demands for better information



Establishment of a loyal and engaged community around the communication work with a two-way dialogue



Make use of appropriate engagement tools and maintain a regular, periodical, correct conversation and collaboration, without ever abandoning the community with no explanation



Foster collaboration and not competitiveness with the potential sources



Conversion funnel: how many community members switch from the free version to the paid version to access the products



Response to the Call to Action (to receive feedback; to fill in surveys and questionnaires; to participate in a training course or a live activity; etc.)



Approval from the audiences to enter a participatory and collaborative community (subscription to a newsletter; response to invitations; the number leads or collaborative actions shared by the audience)



































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## Taking care of the relationship with the public

Principles	Standards	Indicators
 <p><b>Understanding one's audience</b></p> <p>There is no such thing as 'general public' anymore. Audiences are very diverse, fragmented, and connected by interests, needs, ages, languages and purposes that do not necessarily reflect those of a local/national community nor are easy to identify. Audiences can be niches that coalesce in a bigger community through the digital environment or might be physical communities united by one specific common local problem. <b>Studying, listening to and cultivating the audiences</b> is a key asset for journalists, media, communicators and institutions alike</p>	 <p>Canvas and other tools help to define and segment the audience, to describe the personas, and to detail their needs and expectations in order to adapt the message</p>  <p>Different formats, platforms and multimedia resources should be adjusted to the selected type of audience</p>  <p>A multidisciplinary diverse team (in terms of skills, backgrounds, gender and demographics) has a much better chance to craft appropriate content and formats for diverse audiences</p>  <p>Effective communication is tailored, taking into account the public's needs and their world of reference. Representative stories, examples of cognitive proximity and the conveyance of cognitive emotions enhance the audience's engagement</p>	 <p>Data analytics and other quantitative measurements (surveys, questionnaires) that define the demographics, psychographics, geographical and cultural segmentation of the users</p>  <p>Measurement of matchmaking between the declared profile of the audience and the content provided</p>  <p>Differentiation of content and distribution strategies depending on the algorithm of the different social networks</p>
 <p><b>Accessibility</b></p> <p>Science communication should not be aimed only at people with a previous passion and interest or knowledge of science. Science information is needed also and even more by those who might not be interested and attracted to it but nonetheless will have to take decisions based on science-related matters (health measures; energy policies; climate adaptation; etc). Special care should be put into <b>making the scientific information accessible</b> to people who might come from less science-educated or disadvantaged groups to people with very diverse backgrounds and needs</p>	 <p>Clear, simple and accessible language, particularly when discussing technical issues and data. Technical concepts are explained in clear language. Avoidance of oversimplification as well as jargon and over-technical definitions</p>  <p>Links and any other direct indications to access information directly are provided</p>  <p>Narrative is employed to convey the message to the target audience. There is a correct and appropriate use of metaphors and analogies</p>  <p>Data visualizations and infographics, as well as visual and cultural references are designed and crafted to foster engagement and resonance with the content</p>	 <p>Formal correctness. The text and graphs do not contain errors, including ortho typographical or syntax-grammatical errors</p>  <p>Surveys and other data collection to measure the audience's understanding and its ability to explain it to others</p>  <p>Digital distribution is made available and monitored with analytics</p>  <p>There is no use of stereotypes</p>  <p>Language takes into account diverse and non-binary gender perspectives and shows awareness and respect for differences</p>  <p>Number and diversification of sources in cultural, socio-economic, ethnic, geographic, gender, etc. terms</p>  <p>Inclusion of diverse perspectives and expertise in terms of voices and types of experts and non-experts included in the story</p>
 <p><b>Impact</b></p> <p>Science communication and journalism are <b>relevant and useful if and when they generate an impact on the public</b>, from a basic level of awareness to a more complex and proactive level of action. The impact can be enhanced with an appropriate strategy of distribution in terms of timing, channels and smart sharing.</p>	 <p>Reduce digital oblivion: relevant contents should remain available and findable also in the long term. Updates and integrations can increase the impact if properly highlighted</p>  <p>Communication should be a loudspeaker for a diverse range of stakeholders. Feeling represented is a key and a precondition to contribute to the use and sharing of the contents</p>  <p>Journalism and communication should consider an action-oriented problem-solving response</p>  <p>Open redistribution and ease of sharing are of paramount importance in the publication and communication strategy</p>	 <p>Use of selected target metrics or KPIs (depending on the media: number of followers, reach, interactions, likes, shares, number and quality of comments, number of visits, unique views, viewing or reading time)</p>  <p>Number of conversions from awareness to subscription</p>  <p>Number and quality of re-circulation of news/contents or, better, of new original products generated from a press release, a newsletter, a direct communication</p>  <p>Comprehension and persistence of the message in the public (surveys; questionnaires; etc)</p>  <p>Measurable change in behaviour and attitude as a result of the communication action (community behaviours; individual behaviours)</p>  <p>Social and political debate on the issue has been promoted</p>  <p>Change at policy, funding or legislative level, locally, nationally or even internationally, concretely connected with the publication</p>

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## 5. CONCLUSIONS AND FUTURE STEPS

At the end of the research and the co-creation and validation process, the ENJOI consortium adopted a collaborative approach to write the conclusive **version of the Manifesto**, detailed in **section 3** of this document, at page 6. The final list of SPIs was analysed, discussed, re-elaborated and then translated, converted, and finally integrated into a shared document. With the lead of WP2, the text was improved, edited and finally approved by the entire consortium. A specific tone, register and language were chosen to give the Manifesto its current identity and character.

The Manifesto for OOSC is a pillar of the ENJOI project and thus it is meant to be a **living document** in such a fast-changing communication ecosystem. If **principles** can be considered as **foundations** that will remain valid long term, **standards** and even more **indicators** will need **to be monitored and eventually updated** since they might evolve within the infosphere. Therefore, although the document is currently finalised and will be published on the website and on the Observatory, it will be still subject to editing and improvement should integrations, suggestions and contributions sound relevant, significant and useful for its overall purposes.

During the remaining months of ENJOI projects, the Manifesto **will be shared** with the ENJOI **Foresight advisory board**; with the **experts** involved in the D2.1, thus in the preliminary research step when the Inception report of the SPIs was produced; with the experts who have been interviewed and have contributed to the **landscape research** undertaken by WP7; with the **engaged communities** that took part to **the EWs** and then with the stakeholders involved in **the Labs**.

This process is meant to have a **2-fold impact**: that of acknowledging and rewarding all the people who have contributed, at different level, to the co-creation process, and that of making sure that the final text is deemed relevant and thus useful for each category of professionals and users who are active players within the science communication domain.

The dissemination of the Manifesto through the Observatory, as well as through practical activities, training, conferences and publications, will provide producers and consumers of science information at a different level, through different channels and in different formats, with **useful knowledge** and **practical guidelines** to judge the quality of that information and, ultimately, to enhance, improve and nurture critical thinking.

