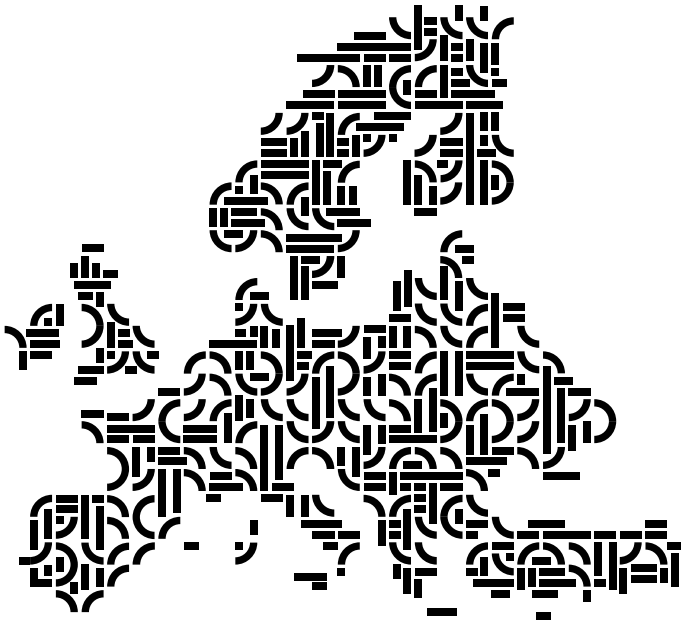

European University

INNOCORE OPEN SCIENCE METHODOLOGICAL TOOLKIT

Deliverable 3.1

Date: March, 2022

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101035811

Open Science Methodological Toolkit

- for the use of EELISA InnoCore partners-
Version 1.0

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Executive Summary

The **Open Science Methodological Toolkit** aims to provide a concrete input to the task of stimulating the partner universities under the EELISA InnoCORE consortium to embrace Open Science, to cleverly design policies and strategies and to finally engage in open collaboration practices.

To ensure that the policies and practices already in place were joined up, and to avoid further fragmentation, the toolkit was built on an **action model** that leaves room for both joint actions and institutionally customised approaches.

The EELISA InnoCORE Open Science Toolkit is comprised of a **proposal for a common vision** for OS, a **survey** that assessed the state of play in the OS adoption and monitoring and corresponding **recommendations**, a **roadmap** and **impact pathways** for future developments and **additional resources** (e.g., examples of policies, courses, repositories).

After the **Introduction**, the need to put Open Science in the spotlight and to lay the groundwork for a common vision is approached in **Action 1- Create a vision for open science**.

Building upon the results of an EELISA InnoCORE internal survey, the current state of play of OS monitoring and implementation is discussed, and recommendations are made in **Action 2: Identify Open Sciences practices to inspire institutions and researchers**. Finally, **Action 3: Smart integration of Open Science in the EELISA InnoCORE ecosystem** designs a roadmap for further actions unfolding principles, mechanisms and pillars of action. With that, we try to explain how our activities are understood to produce a series of results that contribute to achieving the final intended impacts.

We are

EELISA

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Introduction

EELISA innoCORE (EELISA INNOvation and COmmon REsearch Strategy) pursues an unprecedented level of cooperation between the institutions already members of the **EELISA European University Alliance** and aims to offer a response to the specific call of the topic "Support for the Research and Innovation Dimension of European Universities" (Horizon 2020 – Science with and for Society program).

This time the focus is on the Research and Innovation area of our Higher Education Institutions.

One of the seven Institutional Transformation Modules proposed in the H2020 Program "Science with and for Society" (SwafS) - "Support for the research and innovation dimension of European Universities" addressed Open Science as a 'Comprehensive mainstreaming of Open Science practices'.

In line with the spirit of European policies on Research, Innovation and Education, EELISA innoCORE takes three steps to transform the R&I dimension of the alliance:

- Make our researchers and innovators know each other. We will take advantage of the spaces for dialogue between academics, citizens and industry that are created within the EELISA communities. Our goal is to allow our researchers and innovators to achieve a systemic transformation of the world through scientific and technological solutions. To support them in this ambitious endeavour, we will provide them with a portfolio of shared scientific infrastructures (the EELISA Multi-Labs) and a new networking platform that will give them access to the common research strategies of the alliance.
- Foster and support the development of specific joint R&I actions, as well as the creation of new structures (research groups, clusters, joint labs, start-ups, technological parks). Once our researchers and innovators decide to collaborate, we will support them in the creation of transnational structures and fundraising from private and public sources.
- Optimize the outreach of R&I actions, maximizing their impact and promoting the knowledge exchange.

In this context, Open Science (OS) is identified as a **shared fundamental value** in line with what the Council (2021) concluded on the global approach to research and innovation, 'Europe's strategy for international cooperation in a changing world'. Therefore, through frameworks and strategies focusing on open and free access to scientific publications, the structuring, preservation and, as far as possible, the opening or sharing of research data and software and source codes produced by research, access to networks, support to open science infrastructures, open participation of societal actors in the scientific process, and communication with the general public are key to promoting the reciprocal consolidation and dissemination of research results.

Aims and objectives

To bring OS to the next, more advanced, level across the EELISA InnoCORE consortium it is essential to build an ecosystem in which OS and open collaboration, can thrive. The necessary building blocks for an ecosystem for open collaboration are a shared vision for OS, practices and tools, and a challenging roadmap.

The goal of the **Open Science Methodological Toolkit** is to provide a concrete input to the task of stimulating the partner universities under the EELISA InnoCORE consortium to embrace Open Science, to cleverly design policies and strategies and to finally engage in open collaboration practices.

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To achieve this aim, an internal survey on Open Science practices was carried out. It has been designed to:

- **O1. Propose a multidimensional framework to allow the identification and selection of Open science practices aligned with a common vision for OS**
- **O2. Describe the practices to put forward their potential to be transferred or adapted to other institutional ecosystems**
- **O3. Develop a roadmap to support further activities within WP3.**

Structure of the Toolkit

Rather than listing the tools, principles, mechanisms or infrastructures, the deliverable considered the current level of Open Science performance of the EELISA InnoCORE members and created a roadmap for further developments.

To ensure that the policies and practices already in place were joined up, and to avoid further fragmentation, the toolkit was built on an **action model** that leaves room for both joint actions and institutionally customised approaches.

The EELISA InnoCORE Open Science Toolkit is comprised of a **proposal for a common vision** for OS, a **survey** that assessed the state of play in the OS adoption and monitoring and corresponding **recommendations**, a **roadmap** and **impact pathways** for future developments and **additional resources** (e.g., examples of policies, courses, repositories).

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The following symbols were used:

Recommendations

This symbol is associated with recommendations that are intended to reflect ambitions – understood as prospective actions at consortium level – and challenges – understood as needed actions primarily at institutional level and possibly at consortium level.

Idea Catalogue

Several Idea Catalogues were included in the toolkit being meant to offer examples of good practices in terms of OS policies, repositories, courses, etc. All the examples provided are already in place at the partner HEIs.

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Action 1. Create a vision for Open Science

1.1. Embracing a new research culture – the whys and the hows

Improving the research culture of an organization is a desirable change and but that raises a lot of challenges and barriers to be overcome. The effort of making changes is worth it if that leads to a fair and more rewarding and successful research environment capable to create, share and disseminate knowledge and strive advancement in science. Building a positive research culture is desirable in any research organization and it should be seen as a responsibility of all, researchers, students, managerial, and support staff. In this context, adopting Open Science is a real challenge. To be successful means a solid engagement that requires a holistic vision by the organizations/research communities, working together to deliver a set of goals in a complex and evolving mix of research themes and priorities, to which all members should contribute. The Open Science approach is offering not only challenges, such as culture change, but also a wide range of opportunities.

Nowadays, the cooperation between universities is vital, especially in the field of research. Universities contribute greatly through research and education to knowledge creation, sharing, and dissemination, being the pillars of society's knowledge advancement. The growing interest in research transformation supported by the EU Commission is visible in recent initiatives such as EELISA InnoCore.

EELISA InnoCORE proposed the development of Open Science through Work Package 3 on the main dimensions: **Open Access** and **Research Data Management**, **Open Science skills and education**, **Open Science incentives and rewards** and **Citizen Science**, and a corresponding set of activities:

- Develop a **common strategic framework of OS** practices on the main dimensions,
- Identify and propose **activities and tools** on these dimensions (at the level of each partner),
- Update / Develop by each partner of an **OS policy / strategy / action plan** integrated in the common strategic framework,
- Propose institutional **OS mechanisms** for coordinating the activity between OS groups based on networking collaborations (meetings, conferences, etc.)
- **OS Ambassadors**.

Nevertheless, the organisation's decision to adopt Open Science in their current research practices seems to be a complex change that needs to be adopted using appropriate methodologies and tools to incentivize researchers and practitioners and to raise research effectiveness.

While OS has the potential to close knowledge gaps and level the playing field for researchers in each country and globally, there are barriers to bringing it to scale for broader use, particularly for those who carry out research. Universities, funding agencies, societies, philanthropies, and industry all face varying challenges in implementing open science practices in support of a rigorous, transparent, and effective research culture.

Adhering to OS requires better coordination among stakeholders and increased awareness of current and future efforts of all research community members. Open Science represents a new approach to the scientific process based on different pillars than the classical research process. Collaborative research works using digital technologies new tools that make cooperation more efficient and productive.

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Moreover, OS needs to be perceived as a significant system change generating better science through new ways of producing and sharing knowledge and data, a system able to communicate research results better. This change affects research institutions and science practices in many ways: calling for new funding sources, evaluating and rewarding researchers, encouraging collaborative work, and making science work for society. Looking from a practical point of view, “open science does not refer to one set of specific rules; instead, it is a collection of several research practices that variously manifest themselves in different research contexts”. In what is called a **universal definition,** UNESCO (2021) defines open science as an inclusive construct that combines various movements and practices aiming to make multilingual scientific knowledge openly available, accessible, and reusable for everyone, to increase scientific collaborations and sharing of information for the benefits of science and society, and to open the processes of scientific knowledge creation, evaluation and communication to societal actors beyond the traditional scientific community .

Open Science enhances the quality and impact of science by fostering interdisciplinarity, engaging citizens in scientific activities, making science more efficient through better sharing of resources. Open Science practices are closely linked to the transition from linear knowledge transfer towards a more dynamic knowledge circulation, and experts agree that it is essential to create and support an open innovation ecosystem able to facilitate the conversion of knowledge into viable socio-economic values.

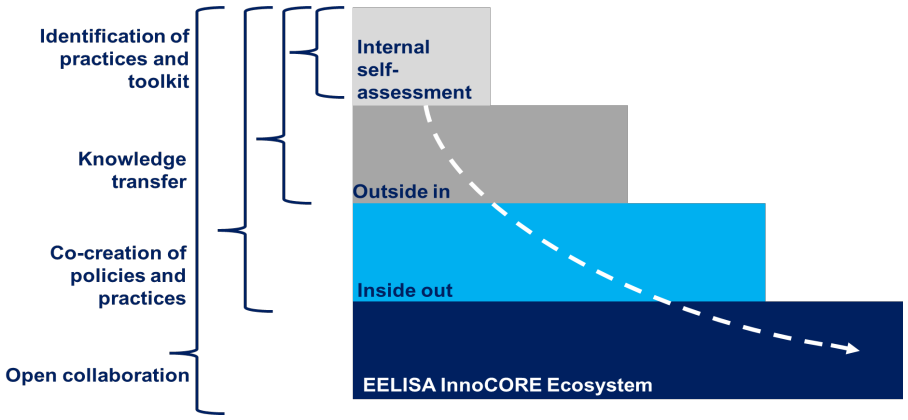
EELISA InnoCORE community should find its own pathway in fostering Open Science and attracting researchers to get engaged in open science practices. EELISA intends to create common action mechanisms at the educational level able to foster openness of everyone and enhance open collaboration. Each partner could have or could develop his own Open Science practices, but jointly develop and shared practices those ways of working which will consolidate the EELISA alliance and will foster Open Science.

In this endeavour, developing a **methodological toolkit for Open Science** was a first step towards a common vision of EELISA InnoCORE universities for open science.

1.2. The vision in action: An EELISA InnoCORE OS Toolkit

The EELISA InnoCORE consortium underpinning the OS toolkit is evolving rapidly into an ecosystem based on a ‘team’ approach that is needed to pool resources and practices to achieve progress in OS implementation. The toolkit is intended to help partners to find common ground and solutions at both institutional and consortium levels for OS to thrive. Its primary mission is to assist university leadership, policymakers but also stakeholders, academic department chairs, researchers, about how such a toolkit might be used to develop Open Science on what is identified as good practice within partners alliance or maybe, additional good practice from outside are needed (see Figure 1).

Figure 1. From institutional practice to open collaboration. The role of OS toolkit



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Because Open Science has a significant impact on the entire research life cycle and its organization, research-oriented organizations need to adopt a new strategic vision incorporating all aspects of Open Science. Building the Open Science eco-system can be considered a strategic objective and part of institutional strategic development for any interested research-performing organization. Integrating Open Science in the organizations' strategic vision involves a solid and long-term commitment to change which will impact the organizational culture, researchers' community, and various stakeholders.

Looking at the existing Open Science good practices in the EELISA community and other academic/research alliances at the EU level, it becomes clear that initial steps have been taken. Nevertheless, a more structured and *methodological approach* is needed to speed up the process and to take advantage of the collaboration opportunities in knowledge creation, sharing and dissemination. Fostering Open Science means engaging in cross-disciplinary discussions inside research communities since different disciplines generate are generate different kinds of knowledge or outputs.

Action 2: Identify Open Science practices to inspire institutions and researchers

2.1. Methodology and Participants

To develop the *Open Science Methodological Toolkit*, the EELISA InnoCORE partners conducted an internal survey to explore both established and emerging fields of Open Science.

The survey (see Annex 1: Survey on Open Science Practices) included 63 questions organized in six sections addressing concrete practices implemented by the members.

- Section I. General Information and the Open Science perspective
- Section II. Open Access practices
- Section III. Research Data Management Practices
- Section IV. Education Skills and Training
- Section V. Open Science Incentives and Rewards
- Section VI. Other points

Depending on the nature of the information requested, both closed and open-ended questions were formulated. The survey was self-administered by each partner's representative through the Survey Monkey platform. The results supporting further discussions came from all the nine members of the EELISA InnoCORE Consortium (see Figure 2).

The staff who completed the survey occupy a variety of positions, as shown in Figure 3: librarians (3 respondents), university leaders (vice-rector – 1 respondent), research support staff (2 respondents), research managers (2 respondents) and participants in the respective work package of the project (1 respondent). It is to be noted that the respondent categories below represented their respective institutions and thereby the **institutional perspective** on open science.

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Figure 2: EELISA InnoCORE Universities

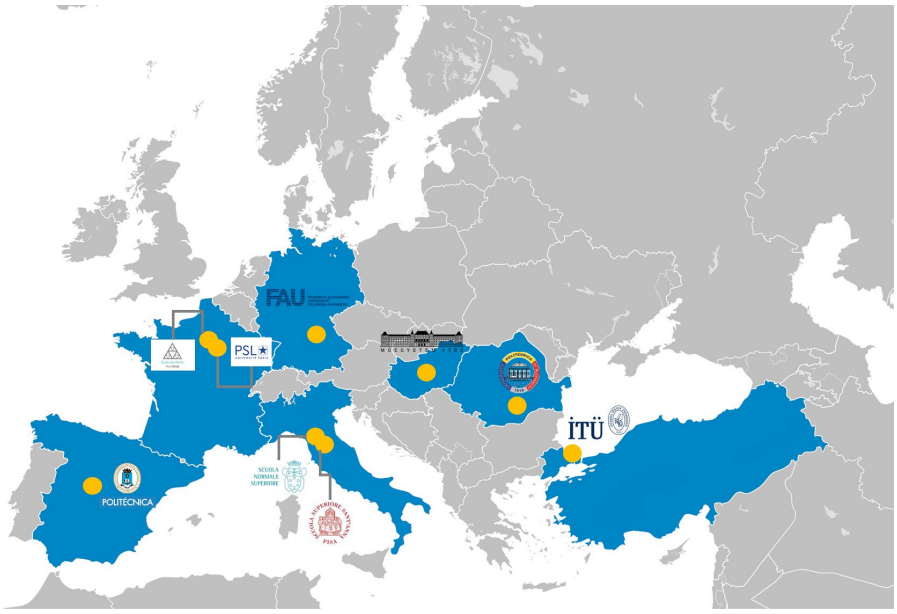
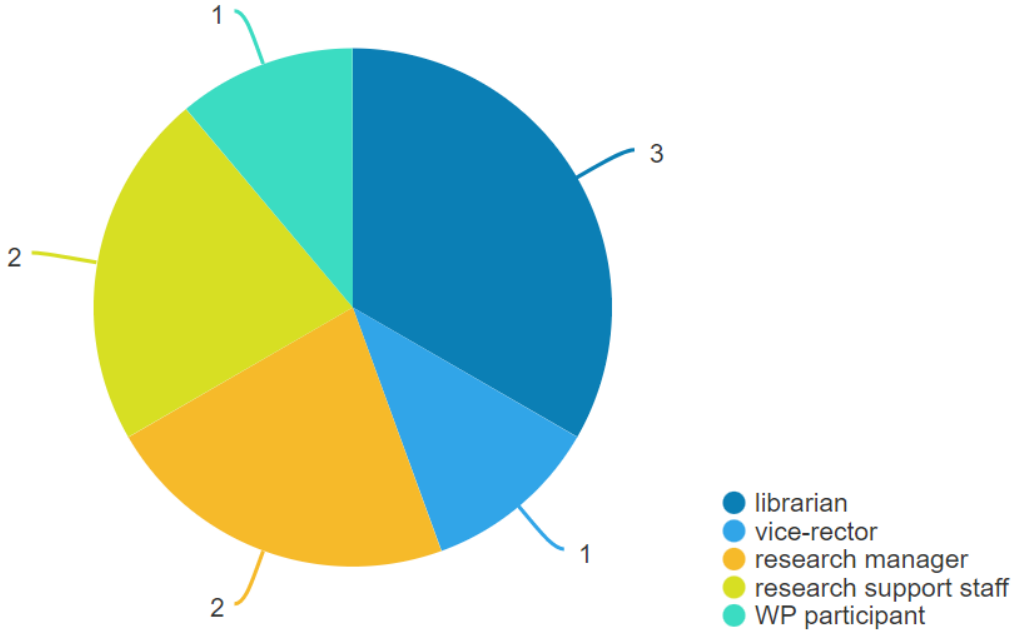


Figure 3: Profile of the staff surveyed



Note: Values represent absolute frequencies (n = 9)

Most of the EELISA InnoCORE Consortium members indicated being focused on both research and education (7 institutions out of 9), while only 1 indicated being mainly research-intensive. None of them characterized itself as primarily education oriented, as presented in Figure 4.

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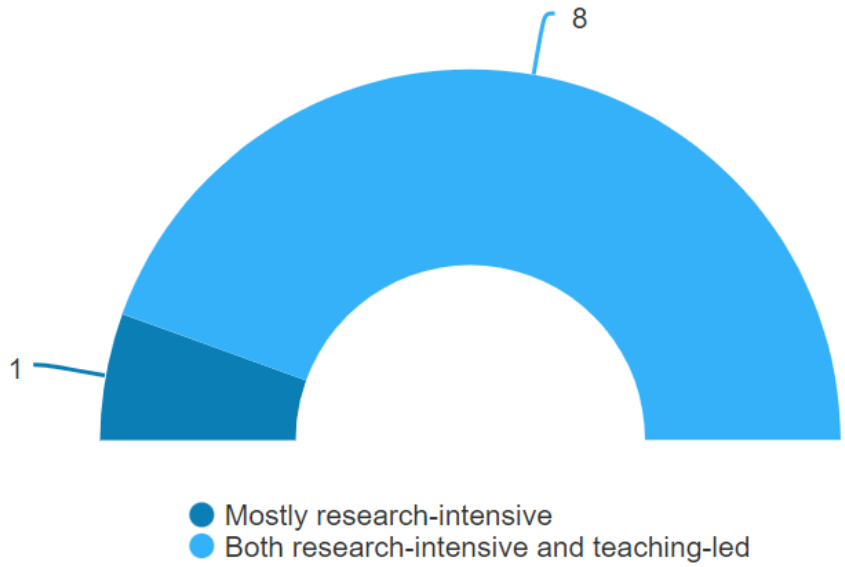
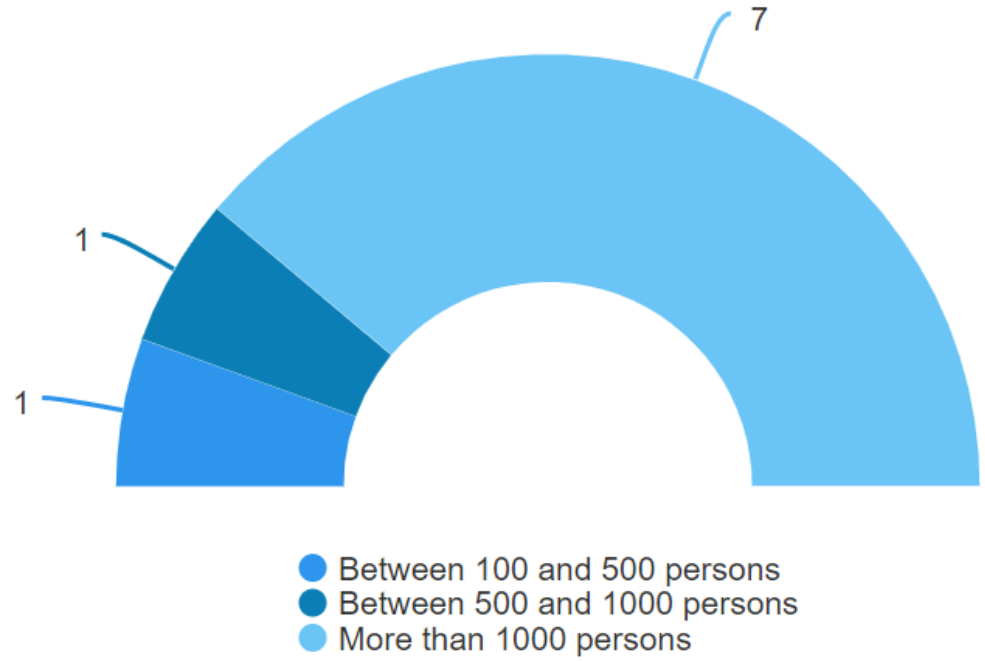
Figure 4: Profile of the EELISA InnoCORE members



Note: Values represent absolute frequencies (n = 9)

Figure 5 shows the number of researchers (full time equivalent) working at the member higher education institutions. The majority of institutions (7) have more than 1000 researchers.

Figure 5 : Number of researchers (in FTE) at the EELISA InnoCORE members



Note: Values represent absolute frequencies (n = 9)

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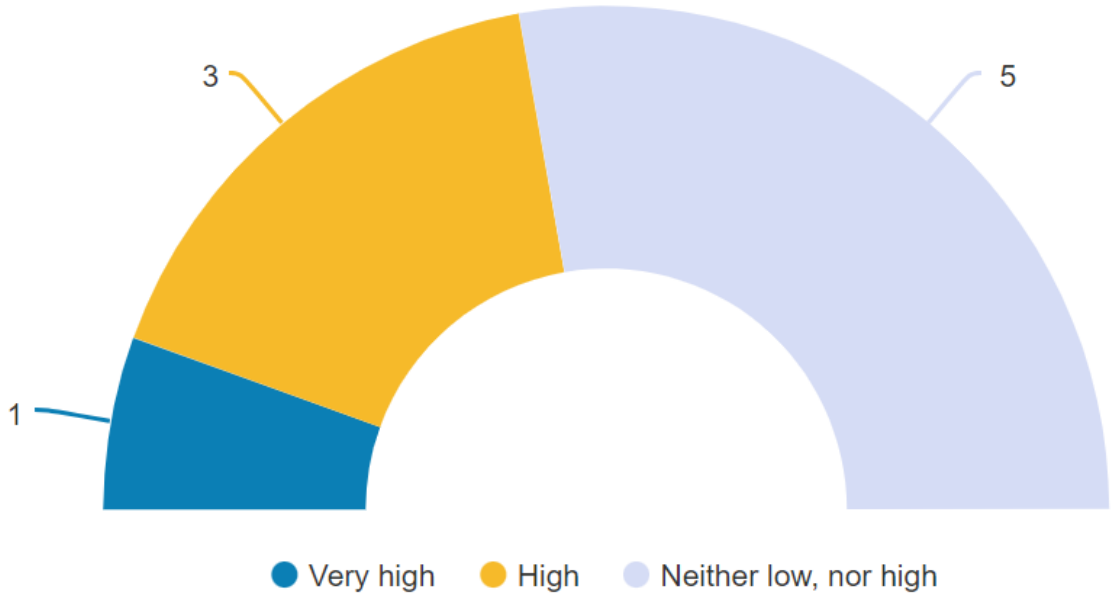
2.2. EELISA InnoCORE Institutional Perspective on Open Science

This section provides an overview of the strategic importance of Open Science, across EELISA InnoCORE universities. Key components of OS (open access, RDM, open education, incentives and rewards) are analysed and complemented with OS drivers and hurdles institutions identified in their endeavours to foster Open Science.

Importance and Implementation of Open Science at institutional level

One of the key questions asked in the survey referred to the level of strategic importance and implementation of various elements of open science. Four out of nine institutions reported that Open Science is of high and very high importance related to the institution's priority areas (see Figure 6). Five of the members considered OS of moderate importance.

Figure 6: Level of importance of Open Science in terms of the institution's strategic priority areas



Note: Values represent absolute frequencies (n = 9)

The results reported in the 2020-2021 EUA Open Science Survey suggest a general trend of integrating Open Science in universities' development strategies. Consistently, the EELISA InnoCORE members are aligned with this trend and have developed or are developing dedicated policies (Figure 7). Moreover, the existing policies could inspire and support the EELISA InnoCORE member that have not yet initiated the process of OS policy design.

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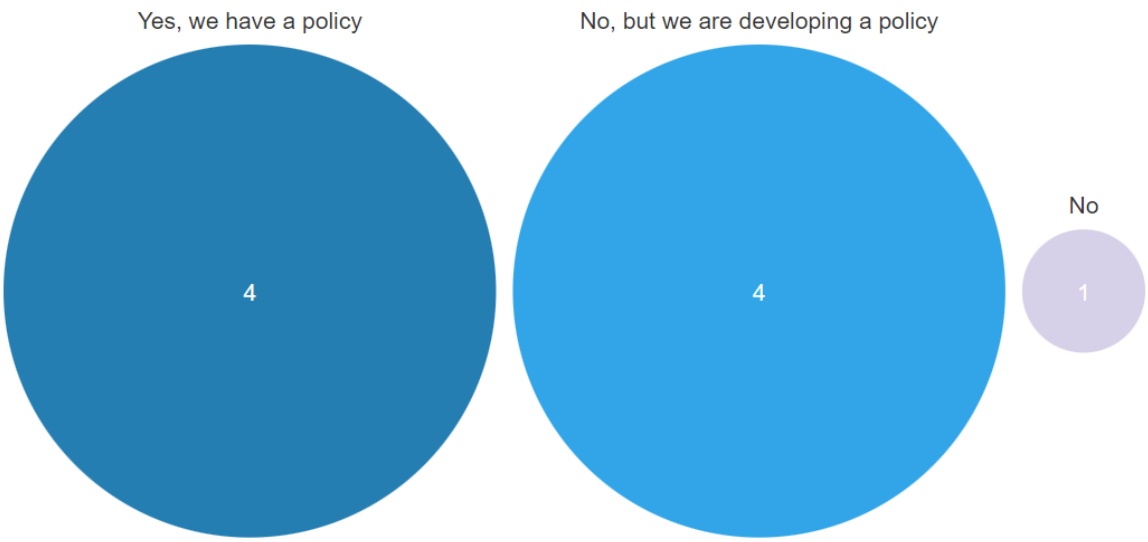
Figure 7 : Number of Institutions having an OS Policy



Note: Values represent absolute frequencies (n = 9)

IDEA CATALOGUE: EELISA InnoCORE OS Policies

Click on the tabs below to learn more about members' OS policies.

FAU **SNS**

ENPC **PSL**

To further explore the content of the members' OS policies, the topics and OS components were investigated. As shown in Figure 8, the future of scholarly publishing was unanimously given importance across the consortium. Fewer institutions – 3 – considered the field of next generation metrics. The shared interest in other OS components such as FAIR data, education and skills, research integrity, citizen science, revealed a great potential for the consortium to engage in a co-design process aiming to improve and inform the process of OS policy design with already existing, valuable practices.

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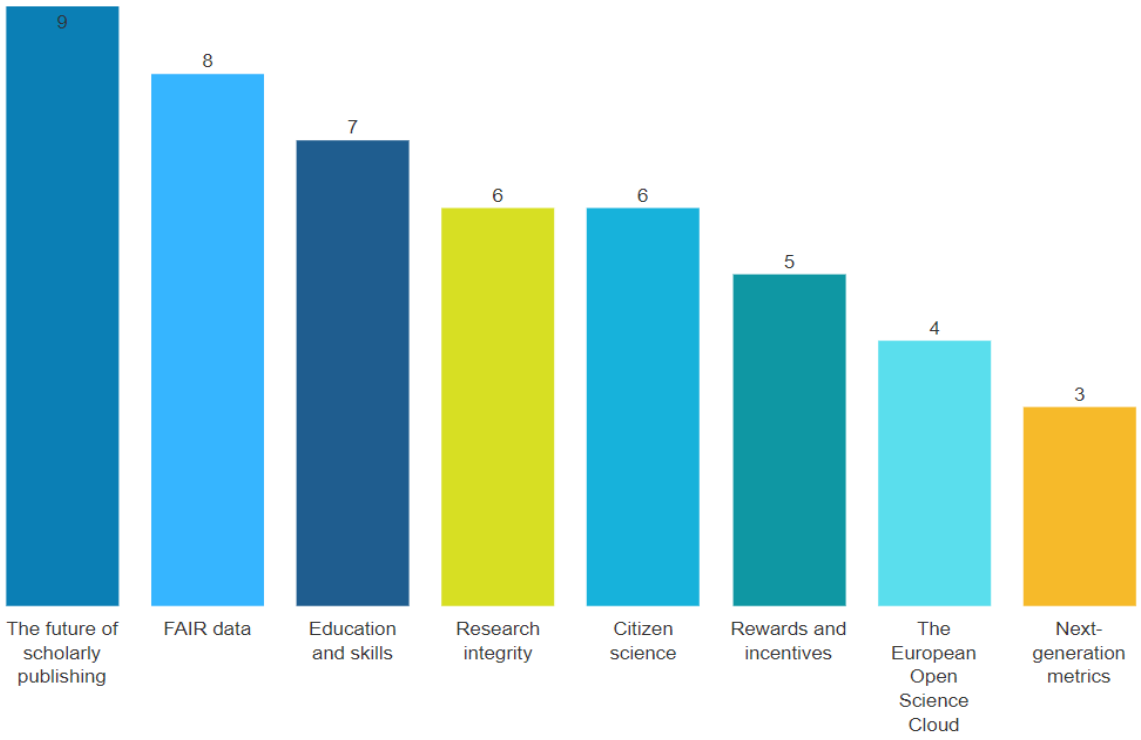
Figure 8. Topics covered in the OS institutional policies



Note: Values represent absolute frequencies (n = 9)

A more in-depth perspective on the approach of OS practices is presented in Figure 9. In relation to the strategic importance of OS, the partners were invited to self-assess both the level of importance and implementation of various specific OS components. Each component was assessed on a 5-point scale ranging from 1 – very low – to 5 – very high. The values reported in Figure 9 are mean scores for the consortium. It is to be noted that the level of importance is generally higher than the level of implementation. The highest score of importance and implementation was computed for open access (OA) to research publications ($Mean_{OA\_importance} = 4.44 > Mean_{OA_{implementation}} = 3.67$). Other components that have achieved higher levels of importance are research data management, FAIR data, and science outreach and communication, but their implementation leaves room for further developments within the consortium. As suggested by the EUA OS Study, areas related to research data appear to be sensitive in terms of implementation for most of the surveyed institutions. A notable feature of the EELISA InnoCORE consortium is the high level of importance reported for research data OS fields. Complemented with the institutional profile and the number of full-time employed researchers, it creates a common ground for the consortium to be strongly engaged with research data management practices, FAIR data and data sharing.

Open education (OE) was seen to be of moderate importance, but its implementation score tends to a moderate level as well $Mean_{OE\_importance} = 3.44 > Mean_{OE_{implementation}} = 2.67$).

Another area of potential joint developments is citizen science (CS) ($Mean_{CS\_importance} = 3.67 > Mean_{CS_{implementation}} = 2.22$), which seems to be weakly implemented despite its moderate to high importance.

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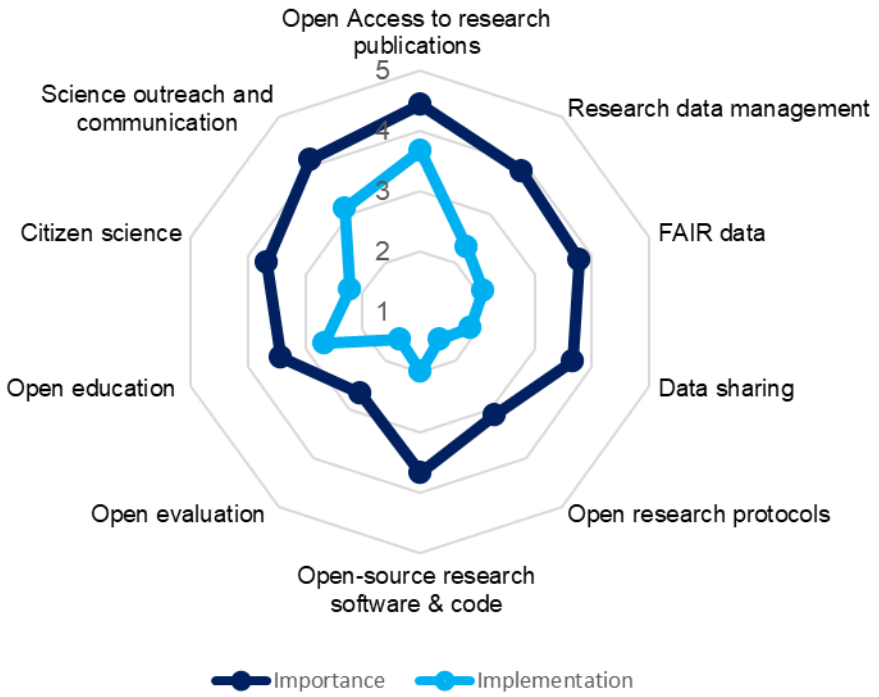
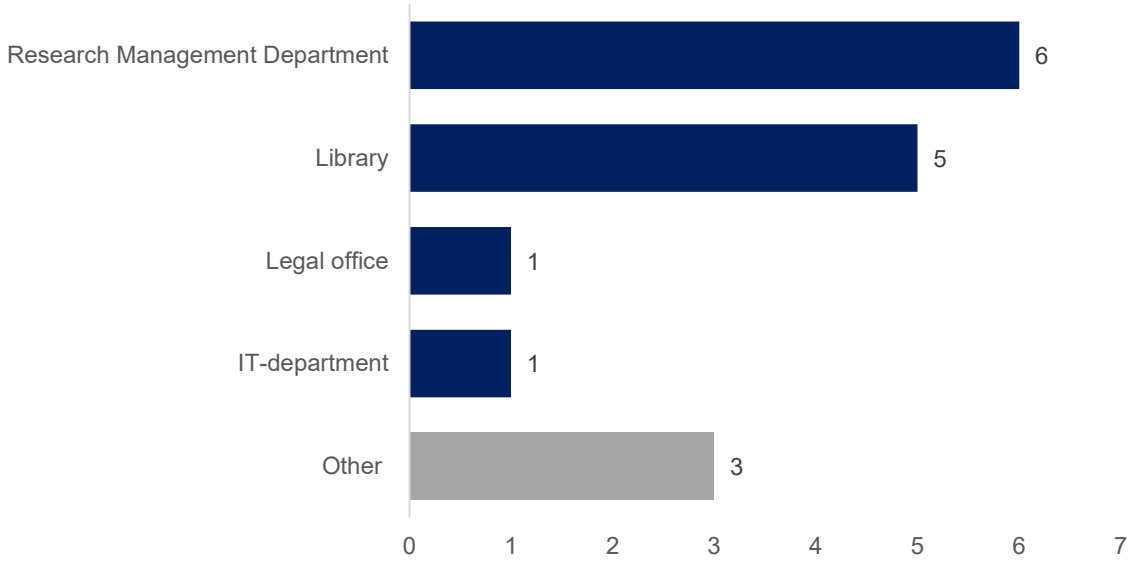
Figure 9: Levels of importance and implementation of OS components



Note: Scores represented are mean values ranging from 1 – very low to 5 – very high (n = 9)

Figure 10. Staff categories responsible for overseeing Open Science policy implementation



Note: Values represent absolute frequencies (n = 9)

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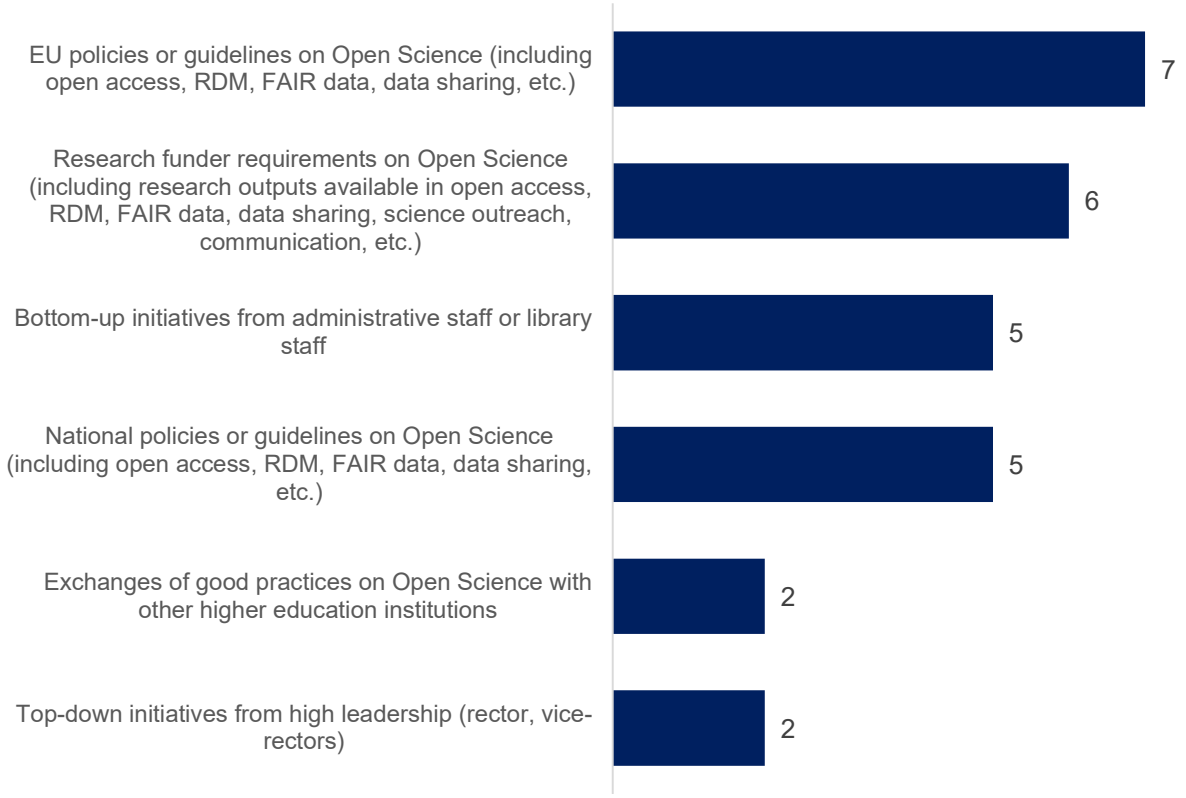
Drivers and hampering factors in implementing Open Science

The EELISA InnoCORE Survey enabled our team to identify the major drivers and barriers towards Open Science as they were perceived by the partners (Figure 11, Figure 13).

Most of the responses referred to the external factors as the most powerful drivers to support the institutional transition to Open science. Transnational frameworks and policies, funding criteria or national regulations have been chosen by 2/3 of respondents, national policies and institutional initiatives being considered to support the transition. It is to be noted that the exchange of good practices with other higher education institutions was considered effective by two of the partners. In designing upcoming OS activities, knowledge transfer is significant, therefore identifying effective models of knowledge transfer is crucial.

Figure 11. Drivers of institutional transition to Open Science



Note: Values represent absolute frequencies (n = 9)

Aligned with **Action 1: Create a vision for open science,** three drivers were identified: the existence of EU and national policies or guidelines and top-down initiatives from high leadership**.** Therefore, as it is argued in **Action 3: Smart integration of Open Science in the EELISA InnoCORE ecosystem,** a strong commitment to implementing OS policies and practices is expected to make an impact at the EELISA InnoCORE consortium level and beyond. To complement top-down initiatives, the involvement of faculty and administrative staff is a game-changer, as reported by 5 of the partners (see Figure 12). Nevertheless, the involvement of researchers was not perceived as a driver. To mitigate possible low levels of responsiveness, concrete initiatives are included in the roadmap proposed in **Action 3: Smart integration of Open Science in the EELISA InnoCORE ecosystem.** Those actions are precisely intended to strengthen the 'team' approach that stands for a commonly shared vision for OS, overall coherence of practices and coordination of efforts, notably at partner university level.

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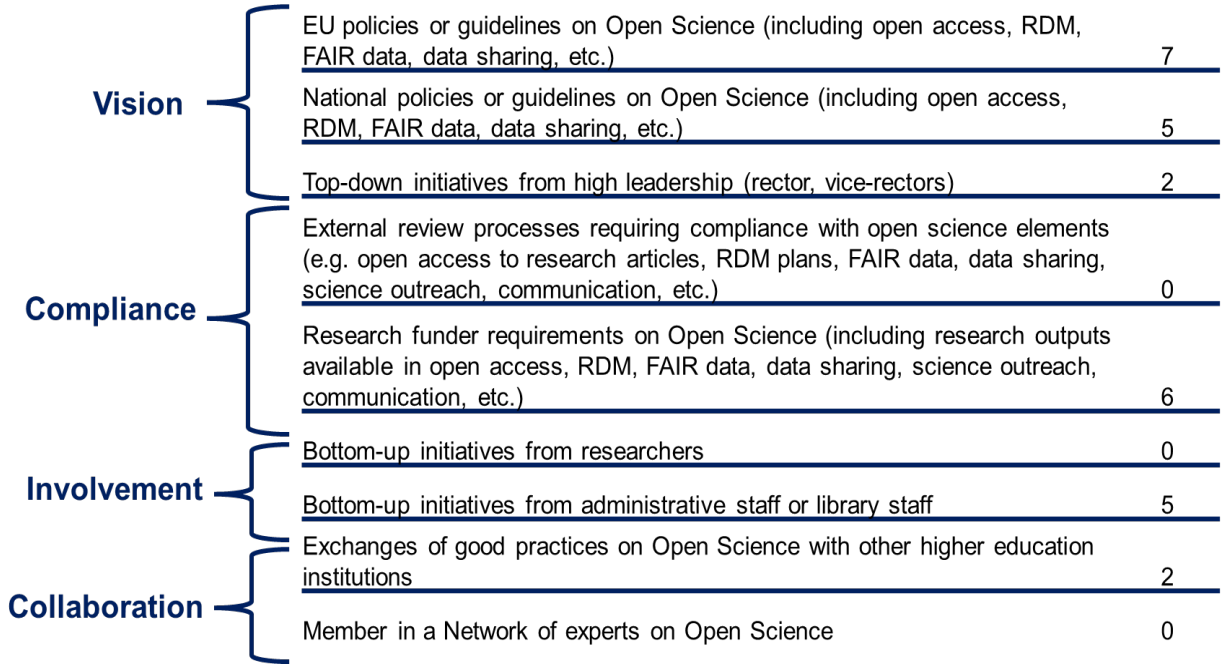
Figure 12. Categories of OS drivers



Note: Values represent absolute frequencies (n = 9)

Relating to the need to achieve researcher centricity in OS implementation, a unanimously acknowledged hampering factor is the **absence of incentives** to promote OS activities (Figure 13). Additionally, the partners have identified several **institutional vulnerabilities** such as the lack of expertise, lack of skilled staff, lack of institutional capabilities and opportunities, but also resistance to the Open Science values, principles and practices. The **complexity** of the OS-related regulation and practices was seen as a barrier to the transition to OS. In some of the cases, the initiatives implied **major challenges** in the work progress that were not always echoed by national or institutional policies or guidelines.

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Figure 13. Main barriers in Open Science implementation

Note: Values represent absolute frequencies (n = 9)

As reflected in Figure 14, the need for developing a common EELISA InnoCORE vision for OS and offering adequate support through incentives, policies and guidelines are key initiatives to mitigate the impact of the hurdles to the individual and institutional transition to OS.

Figure 14. Categories of hampering factors

Confusion	Limited awareness at the institutional level of the benefits of open science	3
	Absence of policies or guidelines at the national level	2
	Misconceptions of open science from the part of senior faculty or high leadership of the institution	2
Complexity	Concerns over the legal framework	6
	Technical complexity	3
	Different disciplinary practices	3
Resistance	Concerns over increased costs	4
	Absence of incentives to promote open science activities	9
	Resistance to making data available or to sharing data	4
	Lack of expertise and skilled staff in different areas of open science at the institutional level	4
Shortage	Lack of awareness-raising, including training opportunities, at the institutional level for both early-stage researchers and senior faculty	2
	Lack of coordination among the relevant actors within the university	0
	Lack of support structures at institutional level for researchers interested in open science activities	3

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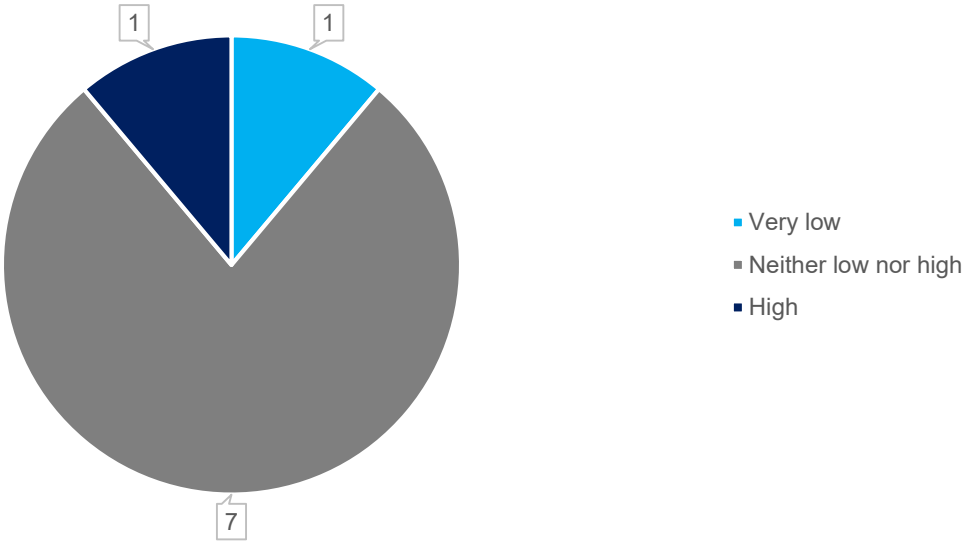
Level of engagement in Open Science

Institutions were also asked about their perceptions of institutional engagement to OS practices (see Figure 15). Most of the responses (7) indicated a moderate attitude, and only 1 response pointed out a high level of engagement.

Figure 15. Level of institutional engagement



Note: Values represent absolute frequencies (n = 9)

In addition, the partners indicated specific activities or actions taken in the last three years related to the transition to OS. **Training** and **awareness raising** activities were mentioned by four of the partners. Secondly, **policy** and **strategy design** along with appointing **dedicated staff** to monitor and support OS were other common activities. Mentions were also recorded for OS **infrastructure** development. In some of the cases, **projects** were implemented to support OS.

IDEA CATALOGUE: Actions and projects in support of OS

Read more about members' initiatives.

Deep Green Project aims to transfer scientific publications, which can be made freely available after the end of their embargo periods, automatically from publishers into open access repositories. Approx. 1 staff position within the university library (plus additional personnel at the external project partners). Rationale: 'enlivening' and automatic filling of the repository, and thus easing the workload for authors on the green road of Open Access.

Open Access Publishing and **Open Access Publication Costs**: the projects aim at the central establishment of Open Access publication funds at the university. Approx. 2 staff positions within the university library. Reason: financial support for authors who want to publish Open Access but do not have third-party funding to do so.

Open Source Academic Publishing Suite (OS-APS) enables XML-based workflows for media-neutral publishing (e.g. Open Access) without technical expertise and cost-intensive XML editing and content management systems. Corporate design can be controlled via existing typesetting templates or in detail with a template development kit. OS-APS will thus be of benefit to open access university publishers in Germany and beyond. Approx. 1 staff position within the university library (plus additional personnel at the external project partners). Rationale: University publishers, such as the local FAU

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University Press, usually do not have the resources to create media-neutral e.g., EPUB e-books.

eHumanities: RDM in Digital Humanities and Social Sciences. The project develops best practices, training material and workflows for research data management as well as software tools to support these workflows. 1.25 staff positions in the university library are involved in the FAU part in the project.

Developing an Open Science Community

PhD teaching on Open Science and Scientific Integrity - VIRT2UE certification

Setting up of the Research Assessment and Open Science Office to support the research staff

This leads to the following recommendations:

1 - New ambition: Publish an EELISA InnoCORE declaration on OS to reaffirm the potential of OS to support excellence in research. The *Declaration* would focus on a common vision for OS to ensure a sustainable and effective long-term implementation of OS policies and practices. Additionally, an OS committee to supervise the implementation of OS practices could be created.

2 - New challenge: Design policies and instruments to incentivize researchers to commit to OS. This process could be based on knowledge transfer and mutual learning (at institutional level) and co-creation (at consortium level). To navigate changes and OS complexity, researchers need clear guidelines, administrative support and training, regardless their career level.

3 - New ambition: Achieve researcher centricity in OS implementation. Through the implementation of well-designed policies and incentives, OS can become more attractive and relevant for EELISA InnoCORE researchers. Thus, the academic staff gain centrality. In order to be researcher-centred, the policies are designed around academics' needs and build upon their learning patterns.

2.3. Open Access Publishing

This section addresses Open Access to research publications. It presents existing regulations and initiatives, discusses targets and monitoring activities and mechanisms, and describes publishing deals and types of OA.

Open Access policies and regulations

The EU's policy on Open Science integrates 8 ambitions: the future of scholarly communication, open and FAIR data, the European Open Science Cloud (EOSC), education and skills, new generation metrics, mutual learning exercise on open science - altimetric and rewards, rewards, research integrity & reproducibility of scientific results, education and skills and citizen science.

Open Access (OA) refers to a publishing model for scholarly communication aiming to make research results available to readers at no cost. Moreover, Open Access becomes an

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international movement that seeks to grant open online access for free to research information, such as publications and data.

IDEA CATALOGUE: Types of Open Access

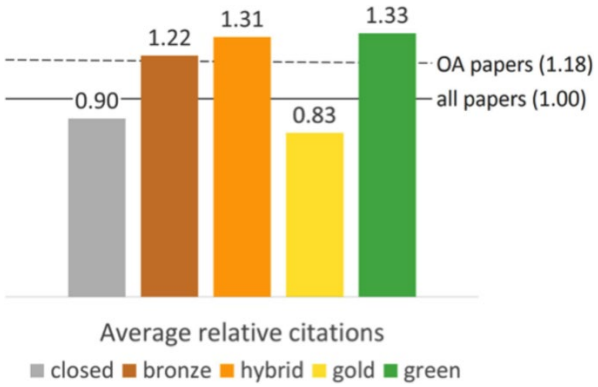
Read more on OA types and their impact.

Piwowar et al. (2018) have identified the following types of OA:

- **Gold**: Published in an open-access journal that is indexed by the DOAJ.
- **Green**: Toll-access on the publisher page, but there is a free copy in an OA repository.
- **Hybrid**: Free under an open license in a toll-access journal.
- **Bronze**: Free to read on the publisher page, but without an identifiable license.
- **Closed**: All other articles, including those shared only on an ASN or in Sci-Hub

The cited authors demonstrated that the average number of citations for OA articles is higher than the others (Figure 16).

Figure 16. The average relative citation of different access types of a random sample of WoS articles and reviews with a DOI published from 2009-2015



Source: Piwowar et al. (2018)

EU Commission supports OA publishing offering to the research community the Open Access Europe – an open access publishing platform for Horizon 2020 ad Horizon Europe research results. Open access means the possibility to freely access research publications, and it has been divided into the following categories

- Gold Open Access: research outputs that are publications in an open-access journal,
- Green Open Access: research outputs that are publications in a journal that are also available in an open access repository,
- Hybrid Open Access: research outputs that are publications in a subscription journal that are open access with a clear license,
- Bronze Open Access: research outputs that are published in a subscription journal that are open access without a license.

It has been argued that OA increases the visibility of researchers' work, contributing to the world knowledge flow. A white paper authored by Draux, Lucraft, Walker (2018) explored the impact advantage of open access (OA), looking specifically at Springer Nature hybrid journals. The study revealed that OA articles have been downloaded 1.6 times more than non-OA articles and attracted 2.4 times more Altimetric attention with 1.9 times new mentions.

EELISA InnoCORE members support OA and they have developed regulations or initiatives to actively support OA. The Idea Catalogue below offers such examples.

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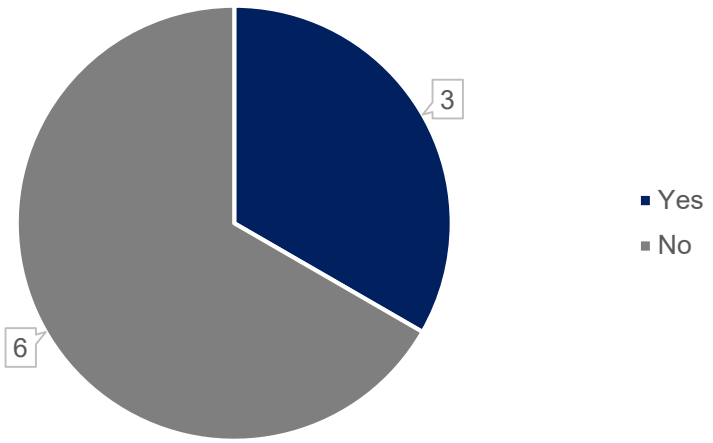
IDEA CATALOGUE: EELISA InnoCORE OA Regulations & Initiatives

Click on the tabs below to learn more about members' OA regulations.

FAU | SSSA | ENPC | PSL | UPM | BME | SNS | UPB

Three of the members pointed out that their policies favour exclusively OA journals, as presented in Figure 17. More precisely, they want to support publication in Open Access gold publications. There is also a strong commitment to encouraging the publication in Open Access diamond publications. Nonetheless, the publication in hybrid journals is not excluded, but for some of the partners complying with cOAlition S' policies and national regulations is of great importance.

Figure 17. OA policy exclusively favours OA journals



Note: Values represent absolute frequencies (n = 9)

Open Access targets and monitoring mechanisms

The survey included questions assessing the existence of institutional targets and monitoring mechanisms for OA, as synthesized in Figure 18. A common feature of all EELISA InnoCORE members is that they monitor the number of publications deposited by researchers in the institution's own or shared repository. Similarly, the cost of publications in OS journals are

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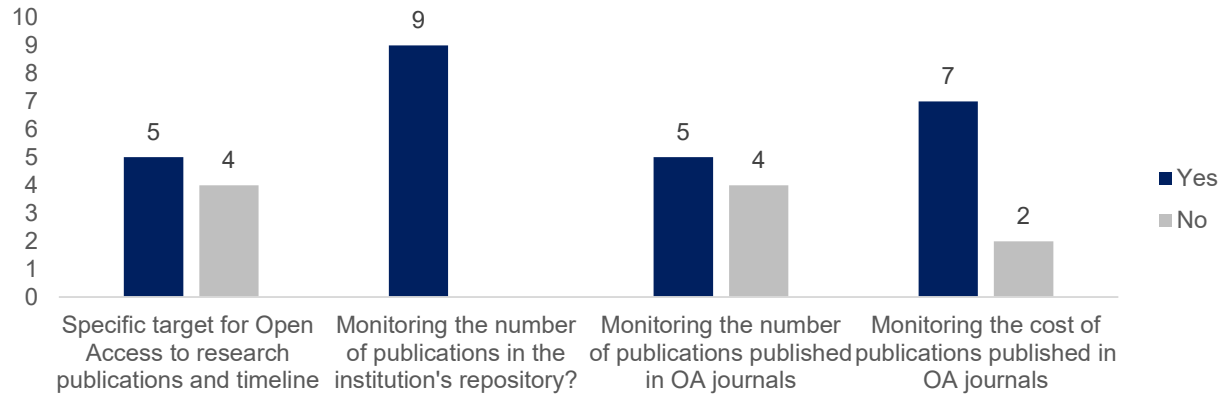
monitored by 7 partners. Fewer universities (5 out of 9) monitor the number of publications in OA journals. A similar interest has been reported for setting specific targets.

Figure 18. Existence of targets and monitoring activity for Open Access



Note: Values represent absolute frequencies (n = 9)

IDEA CATALOGUE: CWTS Open Access Ranking 2021 (data from 2016-2019): EELISA member institutions

Institution	CWTS Leiden Ranking 2021					
	P	P(OA)	PP(OA)	PP(gold OA)	PP(hybrid OA)	PP(green OA)
UPM	6982	3841	55.00%	23.00%	4.50%	23.20%
BME	3073	1776	57.80%	18.50%	8.90%	27.30%
PSL	15718	11491	73.10%	17.20%	9.10%	32.70%
ENPC						
FAU	13121	7053	53.80%	19.40%	8.20%	16.40%
ITU	4619	1477	32.00%	17.00%	4.70%	7.70%
SNS Italy						
SSSA Italy						
UPB	2297	1051	45.80%	31.60%	6.90%	5.60%

Institution	SSSA[1]	
	Peer reviewed journal papers	Articles in international conference and workshop
Total	479	74
Deposited	95	24
%	19,83	32,43

[1] The data are related to open publications deposited on SSSA's institutional database (IRIS).

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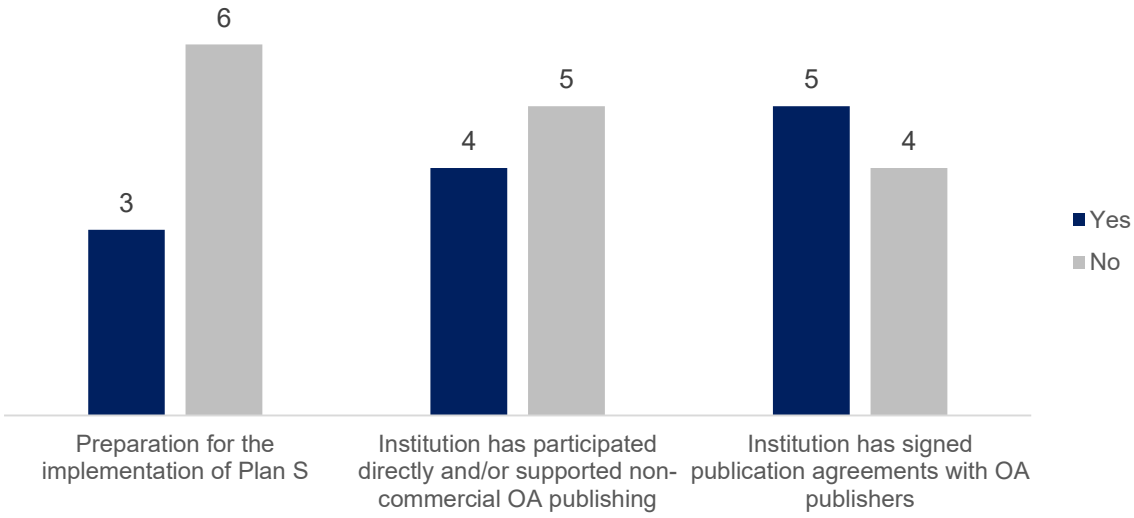
Scholarly communication

Questions about the preparations for the implementation of **Plan S** and other scholarly communication developments were asked in the survey. The responses are represented in Figure 19 and in Annex 4: Responsible research assessment and open science initiative and declarations. Three partners have reported that the preparations for the implementation of Plan S are underway, opening a pathway for mutual learning exercises with partners which might want to engage in a similar process. Moreover, five institutions have already signed publication agreements with OA publishers. Synthetic definitions of the **types of deals** are presented in Annex 3: Categories of OA publishing deals).

Figure 19. Developments in scholarly communication



Note: Values represent absolute frequencies (n = 9)

As other studies pointed out (see EUA's Big Deals Survey in 2018 and 2019), 'open access to research publications, is a multifaceted area evolving at high speed' (EUA, 2018).

The analysis of the existing deals within the EELISA consortium revealed several possible models consisting of nationally- or institutionally driven approaches, a mix of them or alternative models aiming to converting subscription journals to open access (subscribe-to-open – S2O).

As regards the nationally negotiated deals, there are usually consortia of universities and other research performing entities (e.g. Couperin), consortia of libraries (e.g., Anatolian University Libraries Consortium – ANKOS) or consortia bringing together the government, universities, research institutes and libraries (e.g. Anelis). These consortia are usually responsible for negotiating big deals and universities are involved in the process or even responsible for small parts of the deals.

Some partners reported they have negotiated **transformative agreements** with publishers such as Elsevier, Springer and Wiley as part of national consortia or institutionally driven.

IDEA CATALOGUE: Subscribe-to-open alternative and transformative agreements

Subscribe-to-Open (S2O) is an alternative, transformative model that aims to transition subscription journals to open access in a fair and sustainable way without Article Processing Charges (APCs). First introduced by Annual Reviews and later endorsed by cOAlition S, S2O has been embraced by a number of publishers who have come together in the S2O Community of

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Practice. This innovative model has quickly become an accepted approach for achieving open access and builds on collaborative initiatives such as SCOAP3 and Knowledge Unlatched (Source: EDP Sciences)

Click on the tabs below to learn more about partners' publishing agreements.

FAU **UPM** **SNS**

This leads to the following recommendations

1 – New challenge: Design guiding principles to support EELISA members with the process of OA policy development. Similar to the *Knowledge Bites* initiative, a series of sharing sessions could be organised to discuss specific components of publishing deals: costs, copyright, transparency, the process of transition from payment to read to payment to publish.

2 – Adjust existing ambition: Develop monitoring systems (e.g. https://monitor.openaire.eu/), metrics and career assessment procedures fully acknowledging OS practices. Although Open Access publications and related costs are relatively well established at some of the partners, these indicators are not always used to establish or inform specific Open Access targets at the institutional strategy level.

3 – New challenge: Engage in mutual learning exercises to share experiences related to publishing deals and their components. Similar to the *Knowledge Bites* initiative, a series of sharing sessions could be organised to discuss specific components of publishing deals: costs, copyright, transparency, the process of transition from payment to read to payment to publish.

4 – New challenge: Integrate institutional practices and tools with OA tools funded by EC such as OpenAire, Zenodo, Open Research Portal, etc.

2.4. Research Data Management

This section presents partner's practices and experiences related to research data management. Similar to previous sections, the existence and nature of RDM policies are approached. Furthermore, practical aspects are explored: tools and infrastructures and support services, respectively. More importantly, challenges and solutions to hosting research data are analysed.

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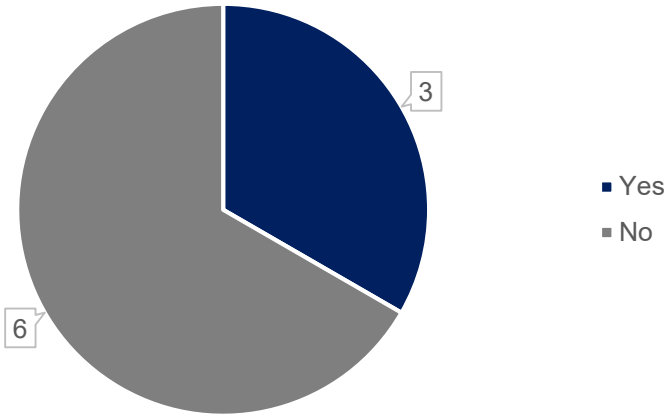
RDM-related policies

As it can be seen in Figure 20, 3 out of 9 EELISA members have developed RDM policies. This finding supports the need for strategic framework to approach RDM and other OS components, as argued in Action 3: Smart integration of Open Science in the EELISA InnoCORE ecosystem. Some of the partners are currently in the process of preparing a policy or it is to be included in a broader OS policy.

Figure 20. Existence of a dedicated RDM Policy



Note: Values represent absolute frequencies (n = 9)

The IDEA CATALOGUE below presents the existing RDM policies. It can be noted that the structure of the documents/web pages varies largely, but the content is aligned. Following CESAER's recommendations, the RDM model policy developed by the EU-funded LEARN project could be of inspiration for the EELISA member institutions (CESAER, 2020).

The survey has not inquired for the content and the RDM topics covered by the existing policies, but, as suggested by EUA (2021) and CESAER (2020), a multidimensional, comprehensive approach is highly advised.

IDEA CATALOGUE: EELISA InnoCORE RDM Policies

Click on the tabs below to learn more about members' RDM policies

FAU **ENPC**

UPM

RDM tools and infrastructures

Almost all the members reported the existence of specialised RDM tools or infrastructure provided to researchers (Figure 21). Four of the institutions reported to have a CRIS and 5 indicated the existence of an institutional research data repository or archive. External repositories (e.g., Zenodo, OSF) are also used by the researchers. However, only 3 universities provide research data storage. Relating to this question, research data storage refers to

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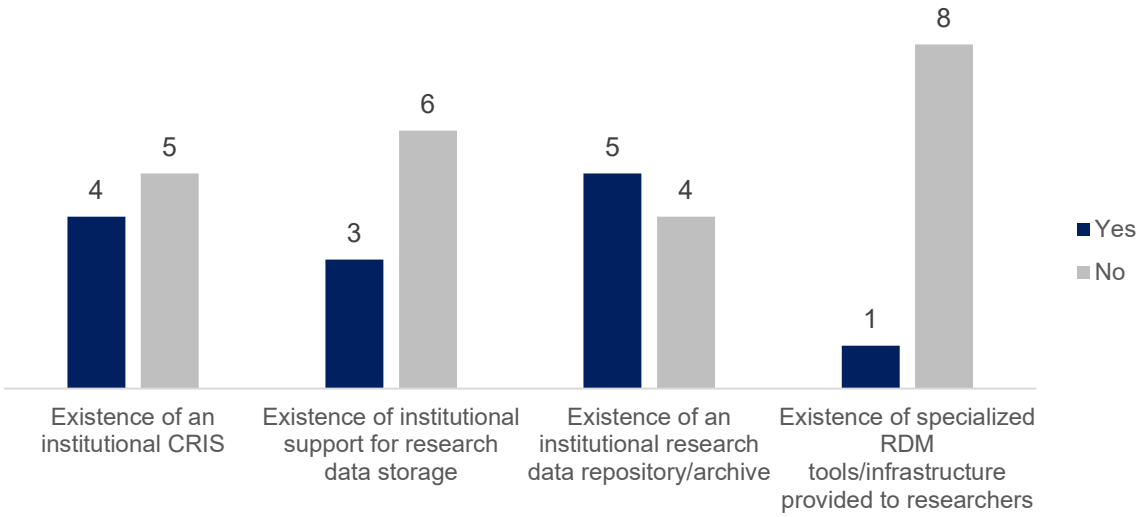
temporary/project-related storage and not long-term storage thus making a distinction with data repositories/archives.

Figure 21. Existence of institutional infrastructure for RDM



Note: Values represent absolute frequencies (n = 9)

IDEA CATALOGUE: EELISA InnoCORE CRIS infrastructures

Click on the tabs below to learn more about members' CRIS infrastructures.

UPB **SNS** **UPM**

IDEA CATALOGUE: EELISA InnoCORE institutional research data repositories/archives and external recommendations

Click on the tabs below to learn more about members' repositories and archives.

UPM **Recommendation 1** **Recommendation 2** **Recommendation 3** **Recommendation 4** **Recommendation 5**

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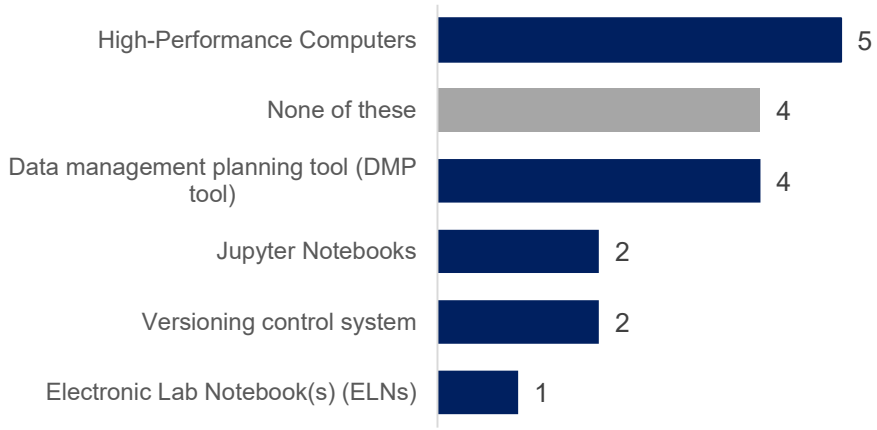
The main challenges in hosting research data produced in technical/engineering disciplines was also a topic addressed through an open-ended question. When analysing the answers, it was possible to identify several recurring themes: **large data volumes**, **data silos**, **high costs of infrastructures**, **missing metadata**, **interoperability**, **clear protocols for conditional access to data, heterogeneity** of data and **specific needs** of various disciplines, lack of human resources and **skills needed** for data curation, and **legal aspects** (i.e., GDPR, IPR).

The respondents were also asked to indicate if they found **solutions** for the challenges described in the previous question. As for **large data sets**, the partners indicated **technical solutions** (e.g., setting up a digital infrastructure for storing and managing FAIR data spaces). For other types of challenges, the **support services** providing guidance and specific workflows were pointed out to be effective.

'Providing tools for researchers in order to plan, document and analyse their data using best practices are as relevant as data storage, publication and preservation infrastructure to ensure rigorous and reproducible research' (CESAER, 2020). The members were asked to indicate which RDM tools[2] they provided to their researchers (Figure 22). Most of the responses referred to **HPC systems** (5 responses, e.g. CESVIMA), **DMP tools – e.g. DMP Opidor for Data Management Plans, RDMO, -** (4 responses). As for documentation tools, 2 of the institutions offer **Jupyter Notebooks** intended for sharing executable computer code enriched with text elements (e.g., paragraph, equations, links, etc.) and 1 offers **ELNs** (e.g. OpenBIS ELN) for documentation of experimental procedures and data.

These results reveal that the EELISA consortium has a pool of relevant experiences with RDM tools to build upon and generate new knowledge and practices.

Figure 22. RDM tools provided by the institution



Note: Values represent absolute frequencies (n = 9)

[2] The research data management concept, according to the University of Sheffield, refers to the organisation, storage, and preservation of data and it covers initial planning, day-to-day processes, and long-term archiving and sharing. Another perspective about RDM is provided by Jisc, and states the following 'RDM is simply the effective handling of information that is created in the course of research'. Examples of research data are the following: video and voice recordings, questionnaires and interview transcripts, test results held in text files and spreadsheets, archive materials and handwritten notes, code and software, photographs and slides, laboratory notebooks. Whilst tools such as Jupyter Notebooks, ELNS, and Versioning control systems can be used for code sharing and documentation, HPC can be used for processing large data volumes such as raw data from scientific equipment, video, and images, generated in different research fields. As an example of tools, please see all the tools that Berkley offers for RDM.

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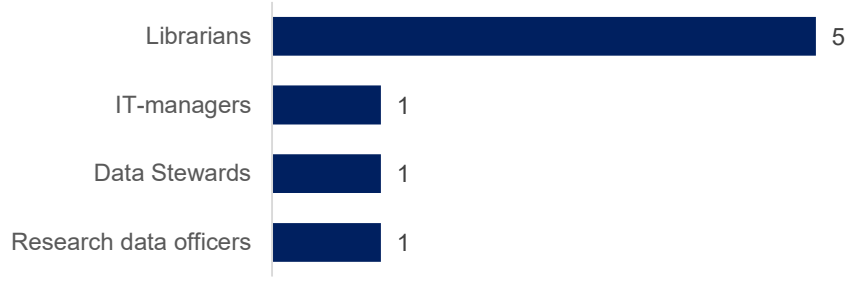
RDM support services

The respondents have a dedicated team to provide specific RDM services. RDM processes are mostly overseen by librarians, as it can be seen in Figure 23. IT managers, data stewards and research data officers are other staff categories being involved in RDM, but the librarians play a prominent role. One partner declared that there is an **Open Science community** driven by researchers with a long track record on FAIR data and protocols to give support to other researchers and train such researchers. Additionally, another partner mentioned that RDM support is offered by the **Research Assessment and Open Science Office.** In other cases, the institution does not have a dedicated team, but a data Protection Officer is responsible for offering RDM support. Finally, 4 of the partners indicated they in the process of appointing dedicated teams.

Figure 23. Support services for RDM activities

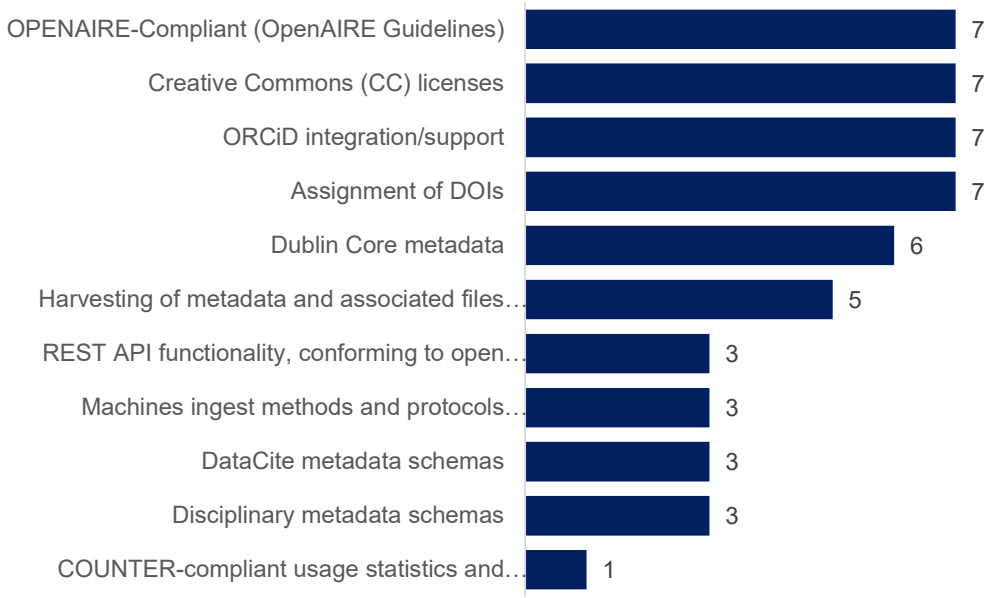


Note: Values represent absolute frequencies (n = 5)

Compliance with standards and protocols

The results in Figure 24 indicate that the EELISA members make considerable efforts to be compliant with various RDM-related standards.

Figure 24. Compliance with standards, guidelines and protocols



Note: Values represent absolute frequencies (n = 8)

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This leads to the following recommendations

1 – Adjust existing challenge: Design a model RDM policy to reflect EELISA's strategic orientation. The policy should specify activities and clearly indicate who is responsible for each activity. The model policy could thereby be customized according to members' organisational peculiarities. Additionally, a multidimensional approach to RDM topics is advised (i.e., data preservation, reproducibility, data sharing, data management plans, data ownership and data licenses, software and code, IPR, specific guidelines for sensitive data, FAIR data. A data office or a data officer position to support researchers could be created.

2 – New challenge: Train the RDM trainers and develop skills. There is a general lack of trainers in RDM practices with the needed discipline-specific background and knowledge. The EELISA members could co-create courses to mitigate this significant hampering factor, the lack of skills.

3 – New ambition: Build a community of data champions. EELISA InnoCORE already has an institutional Open Science community driven by researchers with a long track record on FAIR data and protocols. This new community of data champions would offer support to other researchers, share resources and practices, develop domain specific guidelines and workflows.

2.5. Open Science Skills and Training Needs

This section focuses on open science skills and training needs. Specifically, it analyses the available training and course offer and the profile of training participants. Open education practices are discussed.

The first question addressed in relation to OS training inquired about the existence of OS training at institutional level. The results are presented in Figure 25. All the partners declared that their institutions offer courses on **research publishing** and **dissemination**. In line with the new challenge launched in the RDM section, 6 universities reported that their OS training offer includes topics related to data storage and sharing, FAIR data, respectively.

Citizen science and **science communication**[3] play a pivotal role in the process of EELISA InnoCORE OS skillset development. As revealed by the scores computed for its strategic importance and the level of implementation (see Figure 9), citizen science is a vulnerable area. Five of the partners have already developed courses addressing the topic and this could be a starting point to bridge the gap between the level of importance and the current implementation level.

[3] Visit https://www.upm.es/Investigacion/innovacion/OTRI/UnidadCulturaCientifica to see an example from UPM.

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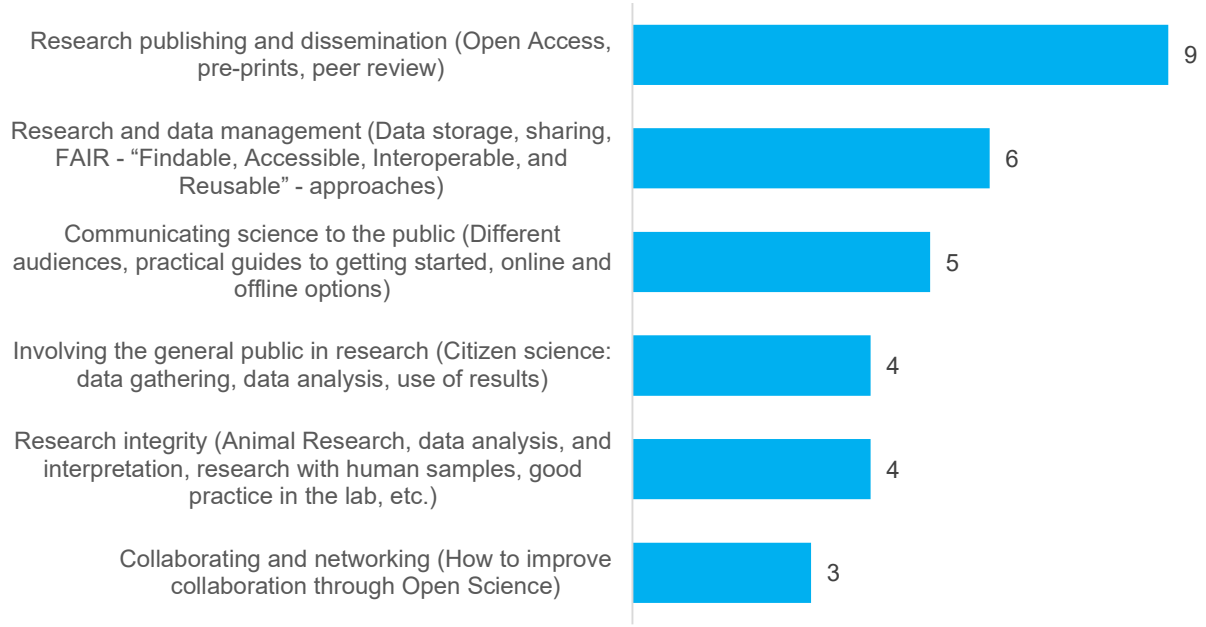
Figure 25. Provision of OS training at institutional level



Note: Values represent absolute frequencies (n = 9)

Complementarily, the partners were asked about specific learning courses on OS. The IDEA CATALOGUE below offers a perspective on what is available at the moment. A common characteristic is that most of the courses address PhD students.

IDEA CATALOGUE: EELISA InnoCORE Learning Courses about OS provided by the partners

Topic	Audience
Open up your research @ITU	PhD students
@SNS Open Science and RDM:10-hour course covering the following: • What is Open Science • Open Access and the Funders' strategy • Research Data Management e FAIR Data • How to write a Data Management Plan • How to use the institutional Repository IRIS SNS also organizes every year information webinars on Open Science dedicated to post-doc fellows and researchers	PhD students
Work in progress to develop a master's programme on OS and RDM @UPB	Master's students
Work in progress to introduce a compulsory Open Science course for all PhD programs @SSSA	PhD students
Research Software & Data Formats in the Humanities & Social Sciences @FAU Learn more	NA
Data Management Plans & RDMO @FAU Learn more	NA
Search & reuse research data @FAU Learn more	NA
Open Science and Scientific Integrity @ENPC	PhD students

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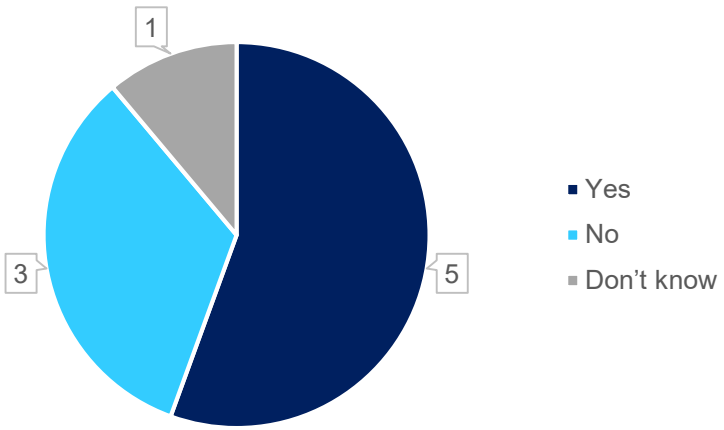
When asked if any disciplinary-tailored was given regularly, 5 out of nine institutions responded affirmatively (Figure 26). Within this, the partners offer training covering a wide range of topics and fields of study (see the IDEA CATALOGUE below).

IDEA CATALOGUE: EELISA InnoCORE disciplinary tailored OS courses

- Open data and big data @UPB;
- Scholarly communication: An introduction @SSSA
- From the traditional paradigm to Open Science @SSA;
- The Open Access publishing paradigm and FAIR (Open) Data @SSSA;
- Research Data Management @SSSA;
- Research Infrastructures @SSSA;
- the European Open Science Cloud and Open Science practices @SSSA;
- Data sharing policy @FAU;
- GIT & GitLab @FAU;
- data filing concept @FAU;
- metadata & data sharing for computational engineering @FAU;
- legal aspects of data management (sensitive data, copyright, anonymization) for medicine & social sciences @FAU;
- social media data (tools, legal aspects) for educational sciences @FAU;
- Working with IIIF & Mirador (for DH / history of arts) @FAU;
- Long-term archiving solutions (medicine) @FAU;
- RDM and research software management (mathematics) @FAU;
- UPM Seminars @UPM

Figure 26. Provision of OS training disciplinary tailored



Note: Values represent absolute frequencies (n = 9)

The survey results also showed that the participants in the training sessions are mostly **PhD candidates** and **postdoctoral researchers** and **engineers** (Figure 27). Six institutions declared that any interested member of staff can attend the course. Fewer institutions were able to engage principal investigators (4 universities).

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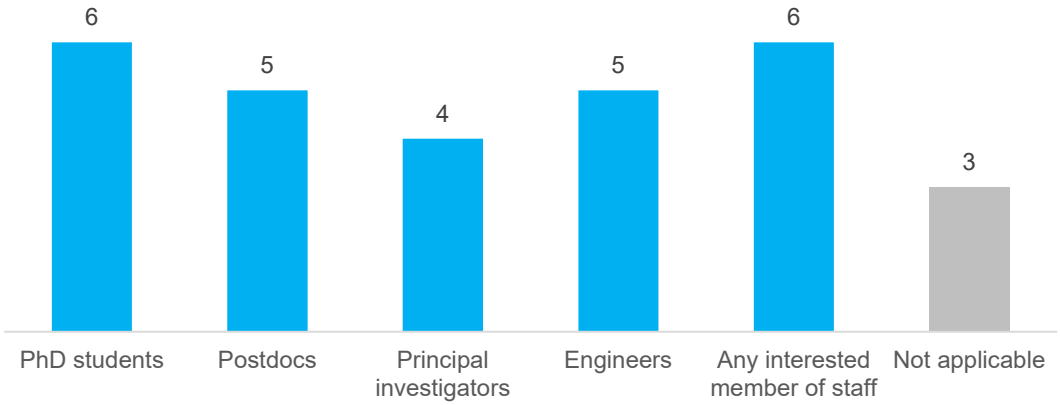
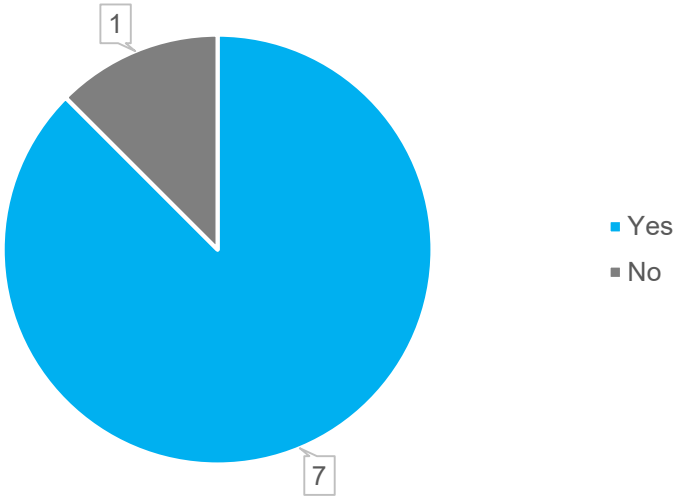
Figure 27. Profile of training participants



Note: Values represent absolute frequencies (n = 9)

As reflected in Figure 29, the use of Course Management systems is a common practice among the partners. Most of the universities use Moodle. One member indicated MiriadaX and one mention was recorded for Ilias.

Figure 28: Usage of Course Management Platforms



Note: Values represent absolute frequencies (n = 8)

Moreover, providing OS training is acknowledged to be a common form of support offered to researchers and PhD candidates (see Figure 29). Most institutions provide a dedicated website including relevant information (7 responses). Other types of support, namely guidelines, helpdesks, an open research strategy, are also available at the EELISA members. Dedicated funding for AFCs is available at 6 of the respondent institutions. Researchers interested in other types of OS activities (e.g., open education, citizen science) can benefit from additional support (i.e. OER platform and specific services, web magazines for science communication, staff support).

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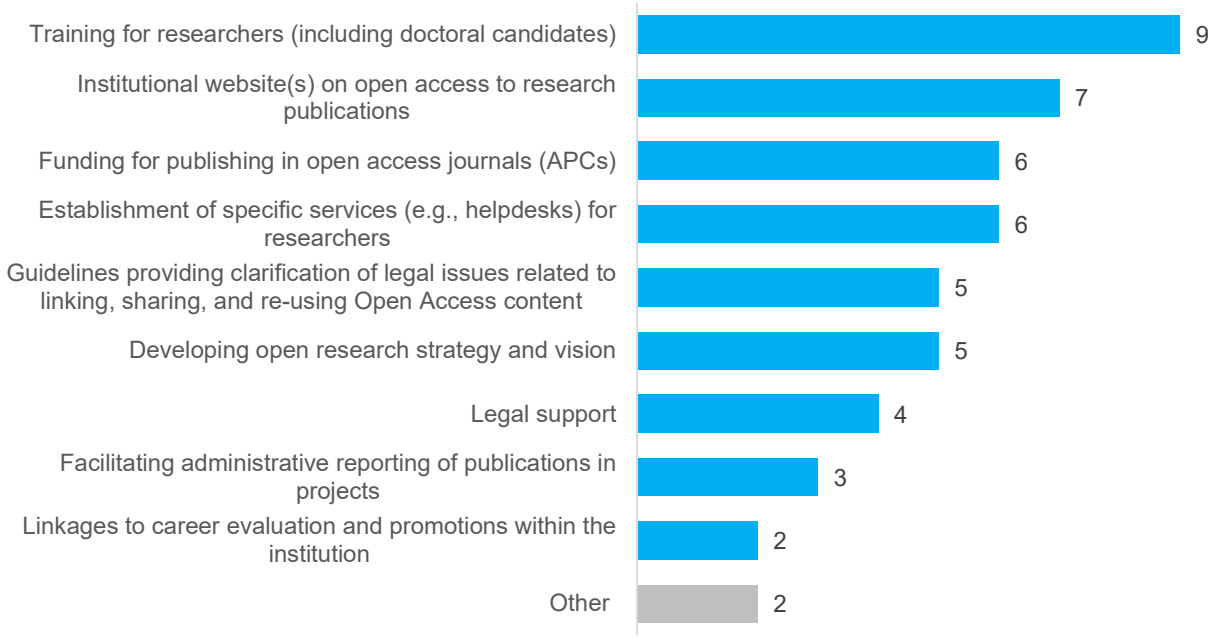
Figure 29. Support services for Open Access Publishing



Note: Values represent absolute frequencies (n = 9)

This leads to the following recommendations

1 – Adjust existing challenge: Design an OS Training Catalogue. Mapping and organizing the training offer in a course catalogue would support the 'team' approach, increase visibility and support knowledge transfer.

2 – New ambition: Involve PIs and other staff categories in training activities. The engagement of principal investigators and engineers should be considered as relevant as training students in an institution in order to ensure successful implementation of the OS policy.

3 – New ambition: Re-design curriculum and training offer for OS. Build a modular approach of courses to cover the different levels of knowledge needed in the different stages of a researcher's career and. Create and make available (through OER platforms) teaching materials that facilitate continuous and targeted (discipline-specific) learning for researchers to integrate RDM practices into their everyday workflows. Invest in training the support staff.

2.6 Open Science Incentives and Rewards

The transition towards OS is challenging especially when it is based on bottom-up approaches, aiming to create a culture and strong incentives to support researchers to achieve open science. The members were asked about the existence of incentives for open science activities. The results in Figure 30 show that 3 of the partners have in place specific measures. However, the practices seem to vary largely even within the institutions. Some of the contributions

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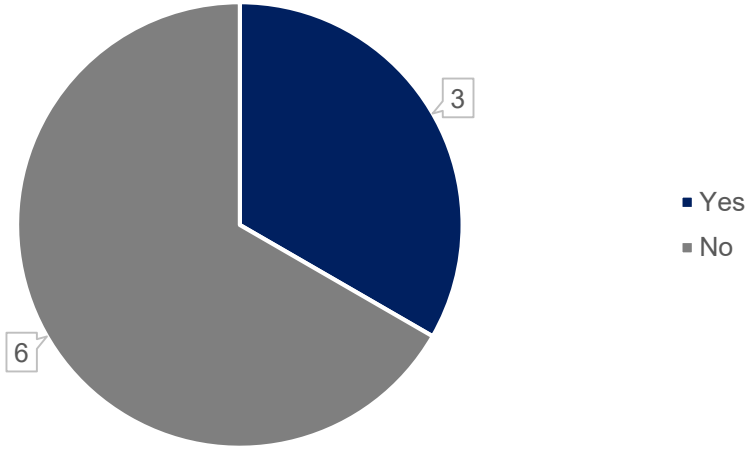
to the survey pointed out that they are working on implementing such measures (e.g., open Science Ambassador badges).

Figure 30. Existence of incentives for open science activities



Note: Values represent absolute frequencies (n = 9)

Institutions were asked about the use of different Open Science elements in their internal academic assessments (e.g., career progression, institutional evaluation and/or funding allocations within the institution) – see Figure 31. As the results show, 5 of the EELISA members reported not using any OS elements in their academic assessment. Other studies (e.g., EUA, 2021) revealed similar findings. Amongst the institutions that used some of these elements in their academic assessments, 4 consider article deposition in a repository as part of their assessment approaches, while 3 monitor the publication of articles in OS journals. Citizen science, research data management plans and OA books were also mentioned by two universities. Fewer reported having considered science outreach and communication, co-design of research projects and preprints.

There is a strong commitment to expand the range of elements considered in academic assessment (Figure 32). Six institutions declared that it is likely and very likely to reconsider their current practices. Six institutions declared that it is likely and very likely to reconsider their current practices.

The expected changes may not be entirely fuelled by internal willingness to re-shape the organisational culture to adopt OS. In 2017, the European Commission proposed a matrix (Open Science Career Evaluation Matrix – OS-CAM) for evaluation of research careers fully acknowledging Open Science practices. The approach was rooted firmly in the context of researcher career development and closely linked with ERA Priority 3, an open labour market for researchers. Strengthening the need for a new vision for talent development, CESAER published in 2020 two papers summarising methodological debates on next generation metrics and early-stage researchers' career development. A common recommendation highlights that it is crucial that the transition to open science is encouraged, and good academic leadership is recognised.

More recently, LERU (2022) published a new proposal calling for a multidimensional approach to the academic career development and assessment. As the paper argues, this development is in line with the cultural transformation that is part of the Open Science movement and with several national initiatives on reward and recognition.

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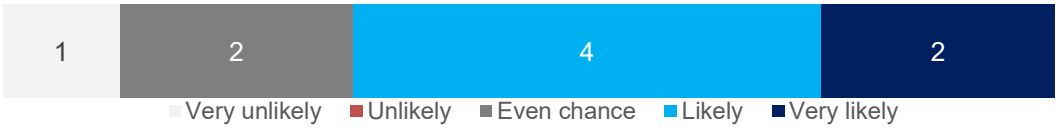
And finally, the universities are facing the analysis and adoption of a position on the European Agreement on Reforming Research Assessment, which will soon be proposed. EELISA partners will need to review and adapt their assessment research practices according with these reforms. Task 3.4 “Rewarding excellence in Open Science" is designed to propose, explore and pilot Open Science incentives and rewards, based on new peer review methodologies and Next Generation Metrics, for joint use by EELISA. The toolkit will help to lay the groundwork for new challenges.

Figure 31. Presence of research assessment criteria related to Open Science

Note: Values represent absolute frequencies (n = 9)

***Figure 32.* Likelihood that the range of Open Science elements considered in academic assessments will be expanded**



Note: Values represent absolute frequencies (n = 9)

This leads to the following recommendations

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	**1 – Adjust existing challenge: Design guidelines to reward and incentivise researchers to adopt OS.** Departmental evaluations should include progress towards implementing good practices in OS. Recruitment, career assessment and promotion of academic staff should consider and reward experience and usage of OS practices.

Action 3: Smart integration of Open Science in the EELISA InnoCORE ecosystem

This section aims to propose a roadmap for future developments of OS within the EELISA consortium. Consequently, it provides a concrete input to the WP3 by introducing a roadmap comprised of strategic objectives, impacts, outcomes, activities, macro challenges and inputs. With that, we try to explain how our activities can be understood and interconnected to produce a series of results that contribute to achieving the final intended impacts (Figure 33).

For our case the **strategic objectives** are to 1) Reinforce the values of OS and its multidimensionality, 2) Connect the existing knowledge and expertise across the consortium 3) Increase members' institutional capacity for fostering OS through policies, workflows, tools and infrastructures and training 4) Achieve researcher centricity in OS practices implementation

The **impacts** of our pathway are the long-term goals towards which everything is directed. For that, different **inputs** (human and material resources but also contextual like the overall cooperation climate) are available and can be used to address the four **macro-challenges** and to implement the formulated series of objectives and **activities**. The defined **outputs** represent the immediate effects, direct products or deliverables of the activities. The **outcomes** then describe the likely or achieved short-term and medium-term effects of the outputs.

It is important to mention that the achievement of the desired impacts depends on the progressive involvement of members in knowledge transfer and mutual learning exercises, co-creation and open collaboration practices.

Roadmap and impact pathways

Strategic objectives

1) Reinforce the values of OS and its multidimensionality

As seen in the previous section a change of culture is needed in order to effectively engage the academic community to support OS practices. Moreover, OS is a multidimensional concept and needs to be addressed accordingly through comprehensive and coherent policies. As pointed out by most of the consortium members, both EU and national policies and guidelines are powerful drivers to OS. In this line of thought, reaffirming the importance of OS at the consortium level could be echoed not only at institutional level, but also nationally.

2) Connect the existing knowledge and expertise across the consortium

The survey carried out revealed significant and impactful experiences and practices already implemented by the members. Connecting them would increase their effectiveness and conduct to more significant impacts. In order to do so, engaging in mutual learning exercises is pivotal.

3) Increase members' institutional capacity for fostering OS through policies, workflows, tools and infrastructures and training

The existence of policies and guidelines adapted to the institutional needs and contexts is paramount for implementing coherent activities. Additionally, monitoring, support and guidance

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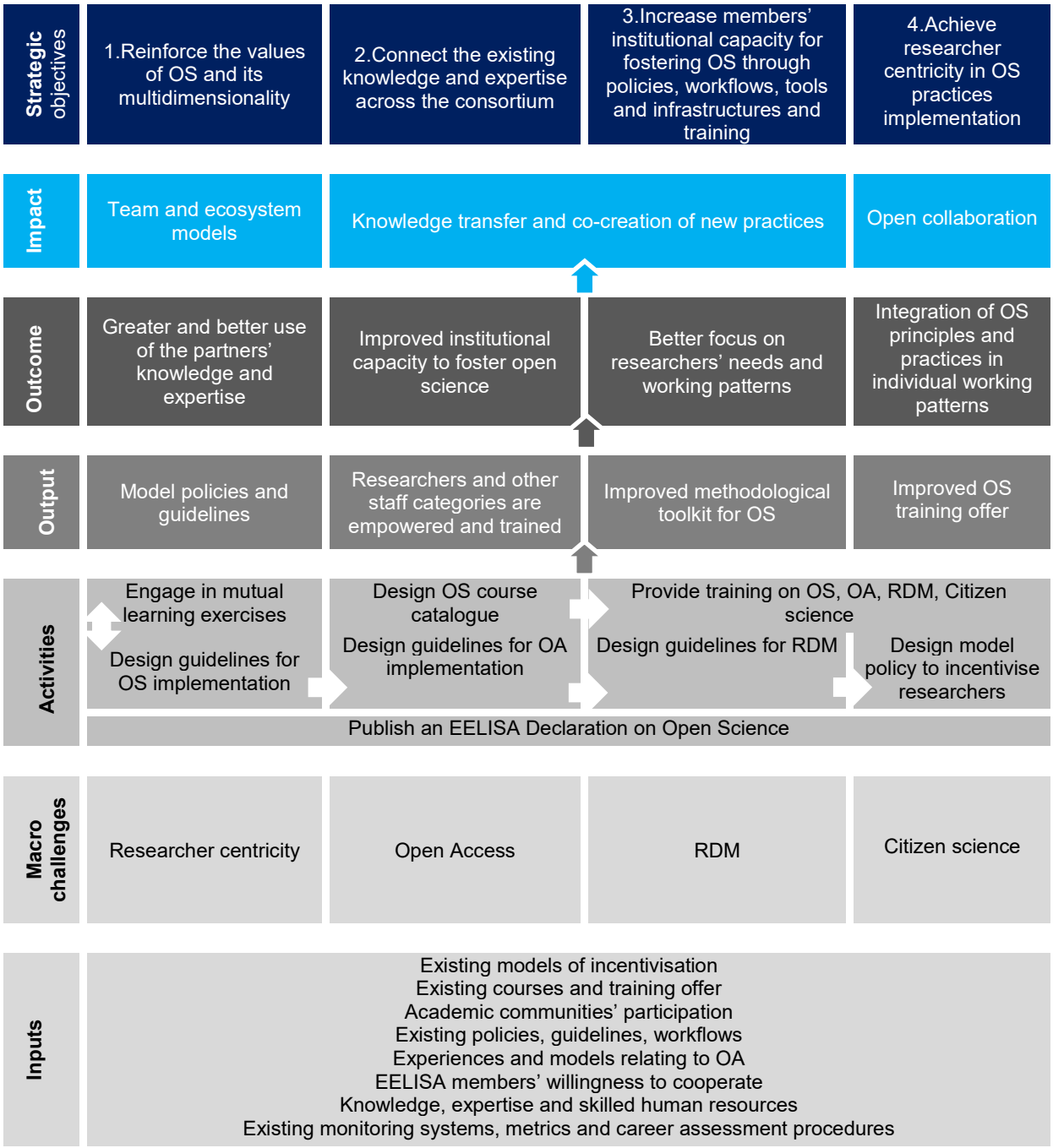
are required to measure the impact and make sure that the measure are in line with the needs and working patterns of the faculty members and administrative staff.

4) Achieve researcher centricity in OS practices implementation.

Out roadmap is built around the vision that effective policies and measures are drawn upon competence poles and skillsets. Since researcher focus is a macro-challenge, it needs to be addressed properly through bottom-up policies, training, and new perspectives on research career development and assessment.

Figure 33. Roadmap for an EELISA InnoCORE OS approach



Source: Adapted from the model proposed by the SFIC SCIENCE DIPLOMACY TASK FORCE for the implementation of the EU Science Diplomacy Agenda

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Impact

We aim at transforming the consortium into an ecosystem functioning in line with the 'team' principles. The EELISA ecosystem consists of the consortium and university leadership, as well as the academic and administrative staff and, equally important, the students and external stakeholders. Such a model is intended to strengthen cooperation and promote OS as a fundamental value of the consortium. Knowledge and expertise are the most important resources of the ecosystem and the willingness to cooperate will allow the members for engaging in a dynamic knowledge exchange and co-create new practices. It may not be achieved, but open collaboration would level-up the ecosystem overall impact and make it more resourceful.

Outcomes

As argued before, EELISA has a great potential based on their knowledge and expertise. Making use of these resources will impact the organisational capacity of the partners to foster OS. The already developed and tested policies and regulations will allow for tailoring more coherent approaches around researchers' needs and competence poles to achieve user centrality. By doing so, we hopefully will achieve a more effective integration of OS practices into working patterns.

Outputs

Understood as midterm results which are achieved after implementing targeted activities, our intended outputs focus on designing model policies and guidelines, based on the information and practices provided by the Toolkit. One of the challenges formulated in relation to Action 2 focuses on providing dedicated training. The resources in the toolkit allow for adopting already existing training models and developing new resources (e.g., the OS course catalogue) that will eventually lead to an improved methodological toolkit for OS.

Macro-challenges and activities

The ambitions formulated within **Action 2: Identify Open Science practices to inspire institutions and researchers** were translated into **cross-cutting challenges** or **macro-challenges**. These are echoed into the activities comprised in the roadmap. Reaffirming the EELISA commitment to implementing OS could increase visibility and OS awareness. The **EELISA Declaration on OS** is aimed at stating a congruent vision of the process of embedding Open Science in each partner organization and in the community itself, aiming to support the knowledge creation, sharing, and dissemination, building trust and ethical integrity based on transparency and collaboration. The document would reflect the EELISA's research community strategic way of action and express the strong commitment to fostering Open Science in their organizations to be able to take advantage of OS benefits individually and collectively. The unique strategic vision will allow EELISA members to coordinate their efforts to support Open Science and allocate adequate resources and generate mutual benefits through open partnership. It will hopefully **encourage deans, presidents, and provosts to signal that open science is a priority.**

The key components of the EELISA strategic approach to OS, as reflected in the actions, are people (researchers at the core of the strategic vision, education and OS skill development, incentives, and rewards to motivate researchers, etc.), research infrastructures adapted to Open Science and ensuring open access and collaborative relationships, policies promoting and encouraging Open Science practices at organizational, national and EELISA community. Moreover, a strategy needs adequate action mechanisms and resources allocation to be implemented successfully.

The current Toolkit will inform comprehensive guidelines to further support concrete measures, and, more importantly, they will be built **upon policies and processes already in place to support open science**. By designing these guidelines, the members will ensure researchers have the guidance, training, and resources to fully participate in open science practices.

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Annexes

Annex 1: Survey on Open Science Practices

Introduction

Welcome to the survey on Open Science Practices at EELISA InnoCORE partners. Its purpose is to gain a better understanding of the challenges faced by the Open Science support teams at the InnoCORE partners when providing services to researchers working in technical/engineering disciplines.

The results of this survey will reveal the Open Science best practices of partner-organizations and it will be the starting point in designing a OS Methodological Toolkit - useful instrument for organizations to better understand OS and to improve their OS support services.

The specific target group of this survey is represented by persons responsible for Open Science support and/or services at the project partners. However, in many institutions, Open Science services do not rely on one solely office. Therefore, you are encouraged to get in touch with the appropriate collaborative offices at your institution to get an accurate picture of the challenges when providing Open Science support for technical/engineering disciplines.

The survey contains a total of 58 questions organized in four main sections: *Open Access Practices*, *Research Data Management Practices*, *Education Skills and Training,* and *Open Science Incentives and Rewards*.

Data protection: All information provided will be carefully handled obeying the data protection rules in place at EU level, the purpose of collecting data is to identify the Open Science practices inside partners of EELISA InnoCore project, none of the collected data will be disclosed without prior partners' permission.

If you have any questions regarding this survey, please contact Dana Gheorghe (dana.gheorghe@upb.ro).

Note: Mandatory questions are indicated with the symbol (*)

Section I. General Information and the Open Science perspective

1. ***Country**:

2. **Name of the Institution**:

3. ***Your position at the institution**:

If you select the option 'Other' please specify/state double roles (e.g., scientist, PhD student, professor)

a. Data Curator / Steward
b. RDM Supervisor / Manager
c. IT Professional
d. Librarian
e. Other:

4. **How would you characterize your institution**?

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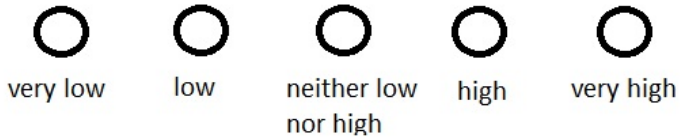
a. Mostly research-intensive
b. Mostly teaching-led
c. Both research-intensive and teaching- led

5. **What is the total number of researchers (full-time equivalent, FTE), including doctoral candidates, working at your institution?**
   a. Less than 100 persons
   b. Between 100 and 500 persons
   c. Between 500 and 1000 persons
   d. More than 1000 persons

6. ***What is the level of importance of Open Science related to your institution's strategic priority areas**?

Please consider the different elements of Open Science and their development in your institution (e.g., open access to research publications, FAIR data, research data management, open innovation, open education, citizen science, etc.).



Please elaborate if you'd like

- Free Text –

7. *** Does your institution have a policy on Open Science? This may include open access to research publications, RDM, academic career assessment, citizen science, open education, etc.**
   a. Yes
   b. No, but we are developing a policy
   c. No

8. **If there is a publicly available version of the OS policy of your institution, please provide the URL here**:

   -Free text-

9. *(Only if you answer with a) or b) at Q7)* **If your institution has or is currently developing a policy on Open Science, this policy includes which of the followings aspects?** *Click all that apply.*
   a. The future of scholarly publishing
   b. FAIR data
   c. The European Open Science Cloud (EOSC)
   d. Education and skills
   e. Rewards and incentives

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f. Next-generation metrics
g. Research integrity
h. Citizen science

10. ***For each Open Science element presented in the table below, please assess its level of importance at your institution's strategic level and the degree of implementation that has been achieved so far.**

Please use in your assessment the following scale items : 1= Very low; 2= Low; 3= Neither high nor low; 4= High; 5 = Very high

	Level on importance	Level of implementation
Open Access to research publications		
Research data management		
FAIR data		
Data sharing		
Open research protocols		
Open-source research software & code		
Open evaluation		
Open education		
Citizen science		
Science outreach and communication		

11. ***Which of the following factors have been primarily responsible for your institution's transition towards open science?** (*Please tick only the three most important drivers*)
    a. National policies or guidelines on Open Science (including open access, RDM, FAIR data, data sharing, etc.)
    b. EU policies or guidelines on Open Science (including open access, RDM, FAIR data, data sharing, etc.)
    c. External review processes requiring compliance with open science elements (e.g., open access to research articles, RDM plans, FAIR data, data sharing, science outreach, and communication, etc.)
    d. Research funder requirements on Open Science (including research outputs available in open access, RDM, FAIR data, data sharing, science outreach, and communication, etc.)
    e. Bottom-up initiatives from researchers
    f. Bottom-up initiatives from administrative staff or library staff
    g. Top-down initiatives from high leadership (rector, vice-rectors)
    h. Exchanges of good practices on Open Science with other higher education institutions,
    i. Member in a Network of experts on Open Science
    j. Other – please specify

12. ***From the perspective of your institution, what are the main barriers at the institutional level in the transition to open science?** (*Please tick only the five most important barriers*)
    a. Limited awareness at the institutional level of the benefits of open science
    b. Concerns over the legal framework (e.g., data privacy, copyright regulations, publishers' rules)
    c. Absence of policies or guidelines at the national level (e.g., from research funders)
    d. Technical complexity (e.g., lack of precise definitions, standards and procedures, variety of data formats)
    e. Different disciplinary practices

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f. Resistance to making data available or to sharing data
g. Misconceptions of open science from the part of senior faculty or high leadership of the institution
h. Concerns over increased costs (e.g., infrastructure, specialized staff, article processing charge)
i. Lack of expertise and skilled staff in different areas of open science at the institutional level
j. Lack of coordination among the relevant actors within the university
k. Lack of support structures at institutional level for researchers interested in open science activities
l. Lack of awareness-raising, including training opportunities, at the institutional level for both early-stage researchers (i.e., doctoral candidates and postdocs) and senior faculty
m. Absence of incentives to promote open science activities (e.g., absence of impact on academic career assessment and career progression)
n. Other – please specify

13. Who oversees the implementation of Open Science policies at your institution?

You can select more than one option. If you select the option 'Other' please specify the organization responsible for the implementation of RDM at your institution.

a. IT-department
b. Library
c. Legal office
d. Research Management Department
e. Business and development office
f. Graduate school
g. Other – please specify

- Free text -

Section II. Open Access practices

1. *__Has your institution defined a specific target for Open Access (OA) to research publications and a timeline for achieving this target?__
   a. Yes
   b. No

   If YES , please give additional details on the OA policy: – free text-

2. **Does your institution's OA policy exclusively favour OA journals (in other words, are OA publications in hybrid journals accepted as part of the policy**)?
   a. Yes
   b. No

   If YES please indicate your perspective: – free text-

3. ***Does your institution monitor the number of publications deposited by researchers in the institution's own or shared repository?**
   a. Yes
   b. No

   Please comment: – free text-

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4. ***Does your institution monitor the number of publications authored by researchers from your institution and published in open access journals (excluding hybrid journals)?**
   a. Yes
   b. No

   Please comment: – free text-

5. **Does your institution monitor the cost of publications authored by researchers from your institution and published in open access journals?**
   a. Yes
   b. No

   Please comment: – free text-

Plan S is an initiative for Open Access publishing that was launched in September 2018. The plan is supported by cOAlition S, an international consortium of research funding and performing organisations. Plan S requires that, from 2021, scientific publications that result from research funded by public grants must be published in compliant Open Access journals and platforms or made immediately available through Open Access Repositories without embargo.

6. **Is your institution preparing for the implementation of Plan S[4]?**
   a. Yes
   b. No

   Please comment how: – free text-

7. **Has your institution participated directly and/or supported non-commercial OA publishing (e.g., OA university press, funding for infrastructure (e.g., DOAJ, SCOSS, etc.))?**
   a. Yes
   b. No

   Please comment how: – free text-

8. ***Does your institution have any signed publication agreements with OA publishers (i.e., OA journals or publishing houses)?**
   a. Yes
   b. No

   Please indicate, if you know, which ones: – free text-

9. **Can you indicate the specifics of the OA signed publishing agreement your institution has put in place?**

   Please comment: – free text-

[4] https://www.coalition-s.org

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Section III. Research Data Management Practices

1. ***Has your institution a dedicated RDM policy?**
   a. Yes (please include a link where the policy is published)
   b. No

   Please comment: – free text-

2. ***Does your institution provide research data storage?**

   In this question, research data storage refers to temporary/project-related storage and not long-term storage.

   a. Yes
   b. No

   Please comment: – free text-

3. ***What are the main challenges in hosting research data produced in technical/engineering disciplines on your institutional storage?**

   Please use bullet points to answer. Please write 'Not applicable' if your institution does not provide research data storage.

   - *Free Text –*

4. **Have you identified technical solutions for those challenges (e.g., external services)? Which ones?**

   Please write 'Not applicable' if your institution does not provide research data storage.

   - Free Text -

A current research information system (CRIS) is a database or other information system to store, manage and exchange contextual metadata for the research activity funded by a research-performing organisation.

5. ***Have you an institutional Current Research Information Systems - CRIS?**
   a. Yes
   b. No

   Please comment: – free text-

An institutional repository is an archive for collecting, preserving, and disseminating digital copies of the intellectual output of an institution, particularly a research institution.

6. ***Does your institution provide an institutional research data repository/archive?**

   This question refers to long-term data storage as provided by the repository or archive system.

   a. Yes
   b. No
   c. Other: *(please indicate which one)*

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7. ***What are the main challenges for hosting research data produced in technical/engineering disciplines in your research data repository/archive?**

Please use bullet points to answer. Please write 'Not applicable' if your institution does not provide a research data repository/archive.

- *Free Text -*

8. **If your institution recommends specific technical/engineering-oriented research data repositories/archives, please detail which ones**:

Please provide your answer as a list

- *Free Text -*

9. ***Which RDM tools are provided by your institution?** *You can select more than one option*.
   a. Data management planning tool (DMP tool)
   b. Electronic Lab Notebook(s) (ELNs)
   c. High-Performance Computers
   d. Versioning control system
   e. Jupyter Notebooks
   f. Data anonymization tool
   g. None of these

Care to comment? - free text -

10. ***If you checked the boxes for DMP tool, ELNs, Versioning control system and/or Data anonymization tool in the previous question, please provide the names of the tools here:**

Please provide your answer as a list

- *Free Text -*

11. **Are there any specialized RDM tools/infrastructure provided to researchers working on technical/engineering disciplines by your institution? (e.g., product data management tools, processing standards, workflow standards)**
   a. Yes
   b. No

Care to comment? – free text-

12. **If yes, which ones:**

Please provide your answer as a list and the links, if possible.

– Free Text –

13. **Does your institution have a dedicated team to provide advice on RDM? If so, please check all that apply if the RDM team includes**:
   a. Librarians
   b. Research data officers

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c. Data Stewards
d. IT-managers
e. Research funding officers

Care to comment?: – free text-

14. **Which standards, guidelines, and protocols are used in your institution's own or shared repositories?** *(Tick all that apply)*
    a. Assignment of DOIs
    b. Disciplinary metadata schemas
    c. Dublin Core metadata
    d. DataCite metadata schemas
    e. ORCiD integration/support
    f. Machines ingest methods and protocols (REST API, SWORD, FTP)
    g. Creative Commons (CC) licenses
    h. COUNTER-compliant usage statistics and metrics
    i. Harvesting of metadata and associated files using established open standards (e.g., OAI-PMH, Resource-Sync)
    j. REST API functionality, conforming to open standards, with outputs in formats such as JSON/XML
    k. OPENAIRE-Compliant (OpenAIRE Guidelines)
    l. Other (please specify)

Section IV. Education Skills and Training

1. **Does your institution provide training related to Open Science?** *(Thick all that apply)*
    a. Research and data management (Data storage, sharing, FAIR - "Findable, Accessible, Interoperable, and Reusable" - approaches)
    b. Research integrity (Animal Research, data analysis, and interpretation, research with human samples, good practice in the lab, etc.)
    c. Research publishing and dissemination (Open Access, pre-prints, peer review)
    d. Collaborating and networking (How to improve collaboration through Open Science)
    e. Communicating science to the public (Different audiences, practical guides to getting started, online and offline options)
    f. Involving the general public in research (Citizen science: data gathering, data analysis, use of results)
    g. Other option

2. **Does your institution provide training tailored to technical/engineering or other disciplines?**
    a. Yes
    b. No
    c. Don't know

3. **If you answer Yes to the question above, please provide the topics of training that have been organized between 2019 - 2021:**
    - *Free Text -*

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4. **Who attends these specialized training sessions tailored to technical/ engineering or other disciplines?**

You can select more than one option. Please select 'Not applicable' if no tailored training is provided for technical/engineering disciplines.

a. PhD students
b. Postdocs
c. Principal investigators
d. Engineers
e. Any interested member of staff
f. Not applicable
g. Other: - comment -

5. **What type of support does your institution provide to researchers to make their research publications available in open access (both through repositories and open access publishing)?**

a. Training for researchers (including doctoral candidates)
b. Institutional website(s) on open access to research publications
c. Developing open research strategy and vision
d. Linkages to career evaluation and promotions within the institution
e. Facilitating administrative reporting of publications in projects
f. Funding for publishing in open access journals (APCs)
g. Guidelines providing clarification of legal issues related to linking, sharing, and re-using Open Access content
h. Establishment of specific services (e.g., helpdesks) for researchers
i. Legal support
j. Other (please specify)

6. **What type of support does your institution provide to researchers interested in other open science activities (e.g., open education, open peer-review, citizen science, co-creation platforms, crowdsource practices, open evaluation, science outreach, and communication, etc.)?**

Please consider all category of support available, e.g., staff support, availability of specific services, training, financial support, etc.

– Free text –

7. **Is your institution using an online learning platform or course management system (CMS) for teaching? If your answer is Yes, please tell us what platform is being used?**

a) Yes

b) No

Comments: - Free text-

8. ***Is your institution providing learning courses relevant to Open Science / Research Data Management? Can you give us three examples of such online/offline classes?**

- Free text -

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Section V. Open Science Incentives and Rewards

1. Does your institution provide incentives for researchers developing open science activities(e.g. open access to research publications, data sharing, open review, citizen science, open education, etc.)?

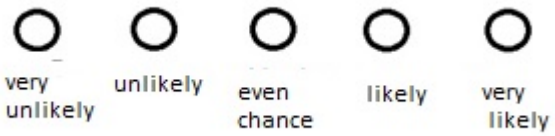
a) Yes
b) No

Free text

2. Which of the following open science elements are part of your university's approach to academic assessment? This may include your institution's assessment practices for the purpose of career progression, performance evaluation of academic units and/or allocating funding within the institution. (Tick all that apply)

a. Depositing of research articles in a repository
b. Open access publishing of research articles in open access journals (via payment of APCs)
c. Open access books
d. Open access archival or special collections
e. Preprints
f. Depositing of data in a repository
g. Research data management plans
h. Data sharing
i. Open research protocols
j. Open-source research software and code
k. Open education
l. Open evaluation
m. Open collaborative tools
n. Co-creation platforms
o. Transdisciplinary research platforms
p. Co-design of research projects
q. Citizen science
r. Crowdsource practices
s. Science outreach and communication
t. None of these elements are part of our approach to career assessment

3. In the future, does your institution plan to expand the range of open science elements taken into consideration for the academic assessment?



4. Which initiatives related to the transition to Open Science have been developed and implemented in your institution in the last 3 years?

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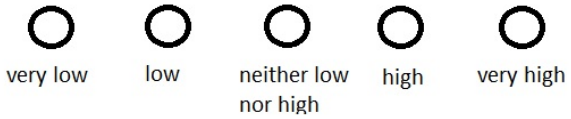
In addition to explaining the initiative itself, please indicate which staff and which levels at your institution are involved in these initiatives and what were the reasons behind starting them:

- *Free Text -*

5. *How would you assess the level of engagement and practice of open science areas in your institution amongst different academic stakeholders?



6. Has your institution developed good practices or specific initiatives to further implement open science practices? *Please explain:*

- *Free Text -*

7. Please indicate below the level of availability in your institution of different skills needed to further develop open science activities:

a. Support staff with knowledge of national and European policies on different open science areas (e.g., open access to publications, data sharing, academic career assessment, citizen science, etc.)
b. Support staff to provide advice to researchers on technical, organisational and operational matters related to open science
c. Legal skills (e.g., knowledge on copyright, licensing, data privacy, data protection)
d. Technical staff with skills in the area of data management (e.g. data experts or library staff with knowledge on metadata; data storage/management/curation; technical standards)
e. Technical skills in the area of e-infrastructures (e.g., IT experts)
f. Researchers' skills in research data management
g. Researchers' skills in research software engineering
h. Researchers' skills in data mining, analytics, data visualization
i. Researchers' skills on open education
j. Researchers' skills in science outreach and communication

8. Are you aware of initiatives related to Citizen Science at your university?

a. Yes

b. No

9. Are you aware of initiatives related to Open Education at your university?

a. Yes

b. No

Comments – free text -

10. *How would you assess the level of embeddedness of open science and its different areas in your institution?

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*Please consider the following **four levels** of development described below. Please note that these levels are formulated in general terms and that they may be reflected in many different ways across institutions, depending on their unique profile, mission, strategy and local/national/international context.*

Level 1: This area is not yet part of our institution's priorities, policies, or practices.

Level 2: This area is part of our institution's priorities, policies, or practices, but its use in our institution is still sporadic or on an ad-hoc basis. This may be reflected in its low awareness across the institution; or occasional use (e.g., only in some departments/faculties, only by some a small group of researchers/faculty/staff); or low level of engagement from most stakeholders; or unallocated or inexistent resources for further awareness, implementation, or monitoring; or a combination of the latter.

Level 3: This area is an important part of our institution's priorities, policies, or practices, and its use across the institution is gaining traction. This may be reflected in good awareness levels across the institution; or existent initiatives in several departments/faculties or by a sizable part of researchers/faculty/staff; or existence of basic monitoring mechanisms and review processes; or in the limited availability of technical and human resources dedicated to this area; or in the medium to a high level of engagement of most stakeholders in the institution; or a combination of the latter.

Level 4: This area is fully embedded in our institution's strategic priorities, policies, practices, structures, and workflows. This may be reflected in an articulated set of policies covering this area including complementarities with other policies in the institution; or streamlined activities across most departments/faculties and by most researchers/faculty/staff/students at all levels; or regular and comprehensive monitoring and review processes; or the allocation of sufficient technical and human resources to this area; or very high level of engagement from high leadership, management, support staff and researchers (senior and early career); or a combination of the latter.

	Level 1	Level 2	Level 3	Level 4
Open Access to research publications				
Research Data Management				
Data sharing/ FAIR Data				
Academic career assessment (i.e., considering open science contributions in the assessment of researchers)				

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Citizen science				
Open Education				
Science outreach and communication				
Open Science in general				

Section VI. Other points

1.Does your institution currently have an Open Science Monitor(OSM) and a set of metrics to assess the implementation of OS?

a. Yes
b. No

Care to comment?: - text -

2. Does your institution provide open registries of research equipment, facilities, and laboratories?

c. Yes
d. No

Care to comment?: - text -

3. Does your institution participate in equipment, facilities, and laboratory sharing initiatives?

a. Yes
b. No

Care to comment?: - text -

4. Does your institution currently have any dedicated research data support services in place?

a. Yes
b. No

Care to comment?: - text -

5. *Has your institution established specific research data support roles (e.g., data stewards, research data managers)?

a. Yes, at the institutional/central level
b. Yes, at the faculty/department level
c. No

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6. How is your institution dealing with the associated costs involved with the increasing need for data management infrastructure and services, e.g., staff costs, long-term storage, and archiving?

Please explain how your institution sees the sustainability of these costs and which type of funds are used for this purpose:

- *Free text-*

7. What type of funding sources are used in your institution for supporting the following open science areas? *(Thick all that apply*)

a. General institution budget
   i. Open access to research publications
   ii. Data management
   iii. Open Education
   iv. Citizen science
   v. Co-creation platforms
   vi. Science outreach and communications
b. National project-based funding
   i. Open access to research publications
   ii. Data management
   iii. Open Education
   iv. Citizen science
   v. Co-creation platforms
   vi. Science outreach and communications
c. National block grants
   i. Open access to research publications
   ii. Data management
   iii. Open Education
   iv. Citizen science
   v. Co-creation platforms
   vi. Science outreach and communications
d. EU project-based funding (e.g. Horizon 2020)
   i. Open access to research publications
   ii. Data management
   iii. Open Education
   iv. Citizen science
   v. Co-creation platforms
   vi. Science outreach and communications
e. Private/industrial project-based funding
   i. Open access to research publications
   ii. Data management
   iii. Open Education
   iv. Citizen science
   v. Co-creation platforms
   vi. Science outreach and communications
f. Public-private project-based funding
   i. Open access to research publications
   ii. Data management
   iii. Open Education
   iv. Citizen science
   v. Co-creation platforms

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vi. Science outreach and communications

g. Others (please specify)
   i. Open access to research publications
   ii. Data management
   iii. Open Education
   iv. Citizen science
   v. Co-creation platforms
   vi. Science outreach and communications

8. What kind of authorisation and authentication system is your institution using for user management?

- Free text-

9. Is there an official affiliation of your institution to EduGAIN? *Please let us know the details, for example, the name of the provider through which the access is provided.*

- Free text-

Thank you for taking the survey. The survey results will be provided to you on request.

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Annex 2: EELISA InnoCORE members' OS regulations and OS infrastructures

Institution	Open Access	Repository	CRIS	RDM training
Technical University of Madrid http://www.upm.es/internacional	http://www.upm.es/UPM?fmt=detail&prefmt=articulo&id=e3d30a06696ed210VgnVCM10000009c7648a____	EPrints 3.3.16 https://oa.upm.es		https://www.upm.es/internacional/Researchers/Research%20Activities%20and%20Publications/Courses
National School of Civil Engineering PONTS ParisTech https://www.ecoledesponts.fr/en/welcome-school	https://www.ecoledesponts.fr/en/documentation	HAL – in-house https://hal-enpc.archives-ouvertes.fr		https://www.ecoledesponts.fr/en/scientific-information-0
Friedrich-Alexander University Erlangen -FAU https://www.fau.eu	OPUS FAU https://www.fau.eu/research/services-for-researchers/publishing-and-open-access/open-access/	re3data https://ub.fau.de/en/research/opus-fau/#collapse_0		https://www.fau.eu/research/services-for-researchers/publishing-and-open-access/research-data-management/
Budapest University of Technology and Economics - BME https://www.bme.hu/?language=en	https://www.omikk.bme.hu/en/online-scientific-literature/open-access	DSpace https://repozitorium.omikk.bme.hu		
Istanbul Technical University - ITU https://www.itu.edu.tr/en	https://kutuphane.itu.edu.tr/docs/librariesprovider59/default-document-library/%C4%B1tuacademic-open-archieve-open-access-policy.pdf?sfvrsn=2	DSpace http://polen.itu.edu.tr		https://www.openaire.eu/blogs/turkey-research-data-and-open-data-task-force-established
Higher Normal School - SNS https://www.sns.it/en	https://www.sns.it/it/open-science-alla-scuola-normale	DSpace https://ricerca.sns.it	IRIS https://ricerca.sns.it	
Sant'Anna School of Advanced Studies - SSSA https://www.santannapisa.it/en	https://www.santannapisa.it/en/biblioteca/open-access-publishing-transformative-agreements	Ex Libris - WebOPAC https://www.santannapisa.it/en/library		

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Institution	Open Access	Repository	CRIS	RDM training
Politehnica University of Bucharest - UPB https://upb.ro/en/	PubArt programme to support the publication of scientific articles and communications in publications indexed in the Web of Science (WoS)	Ex Libris – WebOPAC https://www.library.pub.ro/	In-house CRIS https://crescdi.pub.ro	
Université Paris Sciences et Lettres Université - PSL https://psl.eu/en	https://www.psl.eu/sites/default/files/Charte_science_ouverte_Universite-psl_Mai_2020.pdf		PSL explore https://catalogue.explore.psl.eu/primo-explore/search?vid=33PSL_V1	https://psl.eu/en/research/documentation-and-outreach
National School of Chemical Engineering - CHIMIE ParisTech https://www.chimieparistech.psl.eu/en/			PSL explore https://www.chimieparistech.psl.eu/en/research-at-chimie-paristech/the-library/	
National School of Mining Engineering MINES ParisTech https://mines-paristech.eu	https://mines-paristech.eu/Researcher/Publications/	HAL – in-house https://hal-mines-paristech.archives-ouvertes.fr/index.php?langue=en&halsid=fjdjo51b8riu6efgvrt187vpa6		

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Annex 3: Categories of OA publishing deals

a) **Transformative agreements**: attempt to shift our spending on scholarly resources away from a subscription model of access towards open access publishing. Other names for them are read-and-publish deals, publish-and-read deals or transitional agreements
b) **Read-and-publish deal** - the publisher is paid so that one can read their articles and publish articles in their journals. Publishing costs are brought together in a single contract, which means authors don't have to pay article processing charges (APCs) in an ad hoc manner when choosing to publish open access
c) **Publish and read** deals -we pay the publisher to publish articles with them, and access to articles is included in that cost.
d) **Repository-based or "green" OA**- when the author accepted version of a published work is deposited into a subject-based repository or an institutional repository
e) **Journal-based or "gold" open access** - refers to publishing in a fully open access scholarly journal, one where the publisher of the journal provides free and immediate online access to the full content of the journal and the final published versions of articles in that journal are fully open access.
f) **"Diamond" open access** - refers to open access journals that are free for readers to access and for authors to publish in. These journals are often community-driven and supported by institutions or by national or regional infrastructure
g) **Hybrid open access** -an article processing charge is paid for an individual journal article to be made open access in an otherwise subscription journal. This type of open access always has an APC associated with it and these APCs are usually higher than for fully open access journals. Universities and research-performing organizations are their own policy regarding Hybrid open access, they may not be in favour or supportive of such an open access
h) "**Black open access**" - illegal open access
i) "**Bronze" open access** - refers to a freely available journal article that has no open license (and hence cannot be considered fully open access).

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Annex 4: Responsible research assessment and open science initiative and declarations

Is your institution signatory or is endorsing the following open science initiatives and declarations?

Nr	Name in English	Short name	Country	DORA[5]	Leiden M.[6]	Hong Kong Principles[7]	cOAlition S[8]	EOSC[9]	Eu Charter & Code[10]	H RS4R - HR Award[11]	ALLEA Eur Code for RI[12]	MCU 2020[13]	Pact for R&I[14]
1	Technical University of Madrid	UPM*	Spain	No	No	No	No	Yes (member)	Yes (HRS4R)	Yes (granted in 2019)	Yes (Summer 2020)	Signed 1988 MCU, not yet MCU 2020	No
2	Ecole nationale des ponts et chaussées	ENPC***	France	No	No	No	No	No (but we are represented)	No	No	No	No	No
3	Friedrich-Alexander University Erlangen-Nürnberg	FAU	Germany	Yes	No	No	No	No (not yet, but probably soon)	No	No	No	No	No
4	Istanbul Technical University	ITU	Turkey	No	No	No	No	No	No	No	No	No	No

[5] https://sfdora.org/

[6] https://www.leidenmadtrics.nl/tags/open%20science

[7] https://wcrif.org/guidance/hong-kong-principles

[8] https://www.coalition-s.org/responsible-research-assessment-and-evaluation/

[9] https://eosc-portal.eu/

[10] https://euraxess.ec.europa.eu/jobs/charter-code-researchers

[11] https://euraxess.ec.europa.eu/jobs/hrs4r

[12] https://allea.org/code-of-conduct/

[13] http://www.magna-charta.org/magna-charta-universitatum/mcu-2020

[14] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12960-Pact-for-research-&-innovation-in-Europe_en

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5	Scuola Normale Superiore	SNS**	Italy	No	No	No	No	Yes (member)	No	No	No	No	No
6	Sant'Anna School of Advanced Studies	SSSA	Italy	no	no	no	no	no	no	no	no	no	no
7	Politehnica University of Bucharest	UPB	Romania	Yes	No	No	No	Yes	Yes	Yes	No	Yes	No
8	Budapest University of Technology and Economics	BME	Hungary										
9	Université PSL	PSL	France	No		No			Yes	Yes (but not all institutions are involved)	No		

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