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Transform4European Research and Innovation – T4ERI

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D4.2. T4E JOINT STRATEGY "SCIENCE4ALL"

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Contents

List of acronyms

OS – Open Science
PERI – Public engagement in research and innovation
SC – Science communication
T4ERI - Transform 4 European Research and Innovation
T4EU - Transform 4 Europe

Executive summary

This paper presents the second deliverable of the WP4 “Science4All” of the project “Transform4European Research and Innovation” (further – T4ERI), D4.2 T4EU Joint Strategy “Science4All”. The T4EU Joint Strategy “Science4All” includes three different strategies:

1. T4EU joint strategy “Public Engagement in Research and Innovation”,
2. T4EU joint strategy “Science Communication”,
3. T4EU joint strategy “Open Science”.

1. T4EU JOINT STRATEGY “PUBLIC ENGAGEMENT IN RESEARCH AND INNOVATION”

VISION. By the end of the T4ERI project, the T4EU Alliance will have become a cemented community of partners & stakeholders which has internalised and nurtured common recognition, acceptance and understanding of the social importance and relevance of PERI, which is reflected by: (1) exposition of its commitments and involvements to/in PERI; (2) existence of the administrative resources and support mechanisms for PERI; (3) organisation (past, ongoing and planned) of PERI knowledge & competence building and awareness raising activities. By 2030, the T4EU Alliance will have turned into a recognised hub of expertise & excellence in PERI which is reflected by: (1) the Alliance being contacted by other corresponding hubs for reciprocal competence building and change of experiences; (2) the entrenchment of the fields of science in which PERI is particularly promoted and implemented (the scientific focus of expertise); (3) the implementation of concrete activities in PERI, especially those of pan-Alliance coverage and those that can serve as examples of the good practice in this field throughout Europe.

MISSION. In light of the facts that, at the European level, the significance of PERI is not entrenched in the mentality of neither the academic community nor society, that work has still to be done to prepare an adequate environment (including financial, institutional and other support) for making PERI widespread, and that, on the other hand, PERI has clear and important social benefits as raising scholarly literacy of citizens, increasing trust in science, making it more effective, the T4EU Alliance aims to contribute substantially to improving this situation, raising corresponding awareness, preparing the environment and making PERI work in Europe.

Aims and tasks:

Aim No. 1: To create a T4EU PERI Network that combines the Alliance’s partners & stakeholders committed to mutual collaboration.

Tasks:

1) Create a T4EU Alliance initiative group for Network building activities.
2) Investigate fields of science which should be focused on by the Network.
3) Identify stakeholders that could commit to collaboration in PERI.
4) Align selected stakeholders and T4EU partners to synergetic collaboration in PERI.
5) Formalise the Network’s commitment to collaboration in PERI.

Aim No. 2: To develop and facilitate the cooperation and involvement of partners in the T4EU PERI Network.

Tasks:

1) Collect, foster, share and spread information about the Network's involvement in PERI.
2) Access other PERI competence centres (especially intending to implement Task 3).
3) Organise PERI knowledge & competence building and awareness-raising activities.
4) Incentivise researchers of the T4EU Alliance universities to participate in PERI, especially through formal recognition of their involvement in PERI.
5) Initiate concrete collaborations in PERI inside the Network.

2. T4EU JOINT STRATEGY "SCIENCE COMMUNICATION"

VISION. We see a future where every scientist, researcher, or scholar of the partner universities has excellent knowledge and skills of Science Communication, understands the benefits of it, and feels the motivation for it as they have access to more information in case of any further interest. Therefore, scientists will have access to science communication training material. The outcome of the Science Communication activities is an increased public trust and positive attitude toward science and scientists as well as a narrowed gap between the public and scientists.

MISSION. To develop and implement an advanced and integrated science communication training programme for researchers at partner universities in order to implement our vision: the knowledge, skills, and motivation of scientists in science communication.

Aims and tasks:

Aim No. 1: To improve scientists' skills in science communication.

Tasks:

1) Create an integrated training programme for scientists and researchers to improve their skills in Science Communication.
2) Encourage the applicability of the acquired knowledge and competencies of science communication in practice.
3) Build a network of communication specialists and scientists who will collaborate in raising awareness and interest in scientific knowledge.
4) Create a user-friendly instrument of science communication recommendations and guidelines for scientists.

Aim No. 2: To inspire society to seek scientific knowledge and enlarge its understanding.

Tasks:

1) Facilitate the process of seeking scientific information for the public.
2) Suggest communication tools to minimise the gap between scientists and the public.
3) Include the media in the science communication process.

3. T4EU JOINT STRATEGY “OPEN SCIENCE”

VISION. The vision of Open Science (OS) for the alliance partners comprises motivated researchers, skilful staff, and an overall consciousness and support for opening multiple areas of research activities and sharing codes, resources, data, publications, etc., for the sake of networking and joint academic activities.

MISSION. The Alliance’s mission is to raise awareness among its partners, align their policies, and share good practices to develop an overall framework for fruitful cooperation.

Aims and tasks:

Aim No. 1: To raise awareness and motivation of researchers for OS.

Tasks:

1) Initiate an alliance group for OS networking activities.
2) Organise OS awareness-raising campaigns.
3) Include Open Science indicators in institutional self-assessment.
4) Create and share a digital document repositorium “How to Open Science”.
5) Incentivise researchers for OS via assessment and promotion.

Aim No. 2: To include fair and open data into staff reskilling and basic university education.

Tasks:

1) Promote a common understanding of FAIR and Open Data.
2) Ensure sharing of best practice experiences and recommendations.
3) Include data-related skills in staff capacity-building programmes.
4) Train new data-related professions: data stewards, data curators, data managers, and data librarians.

INTRODUCTION

This paper presents the second deliverable of the T4EU Joint Strategy "Science4All" of WP4 Science4All of the project "Transform 4 European Research and Innovation". The T4EU Joint Strategy "Science4All" includes three different strategies:

1. T4EU joint strategy "Public Engagement in Research and Innovation",
2. T4EU joint strategy "Science Communication",
3. T4EU joint strategy "Open Science".

The leading partner of WP4 Science4All is Vytautas Magnus University. In order to ensure the alignment of the interests of all partners, six meetings were held with partners regarding the preparation of the strategy from December 2022 to April 2023. All partner universities contributed to the development of the deliverable "T4EU Joint Strategy "Science4All". They are:

1. Saarland University (Germany),
2. University of Alicante (Spain),
3. Estonian Academy of Arts (Estonia),
4. University of Silesia in Katowice (Poland),
5. Sofia University St. Kliment Ohridski (Bulgaria),
6. University of Trieste (Italy).

WP4 "Science4All" of the project T4ERI consists of three tasks with different aims:

1. Task 4.1. Public Engagement in Research and Innovation (PERI) aims to create and harness a Transform4Europe Network for public engagement in research and innovation.
2. Task 4.2. Science Communication (SC) aims to develop a training programme for T4E scientists to improve their skills in Science Communication.
3. Task 4.3. Open Science (OS) aims to develop a joint strategy and common standards to be at the forefront of Open Science.

Despite different aims, all three tasks include the same three phases of development:

1. Strategy development,
2. Action plan,
3. The pilot phase, including evaluation.

The T4EU Joint Strategy "Science4All" is developed in close cooperation with the partners and based on the outcomes of the Map of Opportunities for "Science4All" in T4EU. The T4EU Joint Strategy "Science4All" was developed through three main phases:

1. Selecting opportunities that should become the strategic aims from the Map of Opportunities for "Science4All" in T4EU.
2. Identifying vision, mission, aims, and tasks for three strategies: Public Engagement in Research and Innovation, Science Communication, and Open Science.
3. Developing the T4EU joint strategies "Public Engagement in Research and Innovation", "Science Communication", and "Open Science".

The strategy will be disseminated in line with the alliance-wide communication plan. Quality assurance and evaluation will align with the T4EU quality assurance plan. KPIs for evaluating the pilot phases will be identified in the Action plan.

TASK 4.1. T4EU JOINT STRATEGY "PUBLIC ENGAGEMENT IN RESEARCH AND INNOVATION"

VISION. By the end of the T4ERI project, T4EU Alliance will have become a cemented community of partners & stakeholders which has internalised and nurtured common recognition, acceptance and understanding of the social importance and relevance of PERI, which is reflected by: (1) exposition of its commitments and involvements to/in PERI; (2) existence of the administrative resources and support mechanisms for PERI; (3) organisation (past, ongoing and planned) of PERI knowledge & competence building and awareness raising activities. By 2030, T4EU Alliance will have turned into a recognised hub of expertise & excellence in PERI which is reflected by: (1) the Alliance being contacted by other corresponding hubs for reciprocal competence building and change of experiences; (2) the entrenchment of the fields of science in which PERI is particularly promoted and implemented (the scientific focus of expertise); (3) implementation of the concrete activities in PERI, especially those of pan-Alliance coverage and those that can serve as examples of the good practice in this field for the whole Europe.

MISSION. In light of the facts that, at the European level, the significance of PERI is not entrenched in the mentality of both – the academic community and society, that work has still to be done to prepare an adequate environment (including financial, institutional and other support) for making PERI widespread, and that, on the other hand, PERI has clear and important social benefits as raising scholarly literacy of citizens, increasing trust in science, making it more effective, T4EU Alliance aims to contribute substantially to improving this situation, raising corresponding awareness, preparing the environment and making PERI work in Europe.

INTRODUCTION TO THE DEVELOPMENT OF THE PERI STRATEGY

As regards the content, the Public Engagement in Research and Innovation (PERI) component of the "Science4All" strategy is partially based on the findings of the Map of Opportunities and Priorities given by the partners to specific opportunities. Namely, the partners particularly emphasised the importance of sharing the best PERI practices/experiences, PERI competence building (a programme for researchers), and approaching or inviting the existing PERI expert centres/networks. Also, special importance was given to planning and implementing concrete PERI activities, stepping into synergy with T4EU Alliance activities and joining or cooperating in joint development of already implemented or being implemented activities inside the Alliance.

On the other hand, the least emphasised by the partners was the possibility of stepping into the regulatory activities in the PERI field by proposing coordinated legislative/ regulatory initiatives. Also, despite the opportunity to provide a unified PERI definition that received certain attention from the partners, the concern and cautiousness about the conceptual unclarities related to the understanding of PERI and its context were expressed. Notably, while preparing the Map of Opportunities, the decision was taken to initially regard PERI as being close to "Citizen Science", generally covering engagement (or involvement, participation) of non-professional people in the research process either autonomously or in cooperation with professionals, but with certain conceptual clarifications and/or reservations (for the details, see Introduction of the Map of Opportunities related to PERI). This decision

could be considered the setting of the conceptual tone for the rest of the project as related to the understanding of PERI, and no other attempts to [re]define "PERI" are expected.

As for the structure, the "Science4All" strategy PERI component involves two aims, each divided into five tasks. Below each aim is (1) defined, (2) described in detail, and (3) divided/structured into tasks.

AIM NO. 1: TO CREATE A T4EU PERI NETWORK THAT COMBINES THE ALLIANCE'S PARTNERS & STAKEHOLDERS COMMITTED TO MUTUAL COLLABORATION

AIM NO. 1 TASKS:

1. Create a T4EU Alliance initiative group for the Network building activities.
2. Investigate science fields on which the Network should focus.
3. Identify stakeholders that could commit to collaboration in PERI.
4. Align selected stakeholders and T4EU partners to synergetic collaboration in PERI.
5. Formalise the Network's commitment to collaboration in PERI.

AIM NO. 1 DESCRIPTION:

First, it should be noted that the order of tasks in relation to this aim presupposes that each task should be implemented after the previous task has been at least partially accomplished. On the other hand, this does not mean that activities related to the tasks may not be continued or changed in the future if deemed necessary (for example, partners may decide to add another field of science as covered by Task no. 2, further develop stakeholders & partners alignment activities and so on). This approach is generally invalid for the tasks concerning aim No. 2, where more simultaneous implementation is presupposed.

To achieve aim No. 1, the first task should be to create an initiative group from the representatives of T4EU Alliance partner universities which could devote itself to the PERI Network building and, later, development and facilitation of partner involvement in PERI. The group's core should consist of the representatives of the co-lead partners already involved in PERI development; however, all project partner institutions should delegate at least one representative to this group.

As PERI could be applied in almost all science domains, it makes a general commitment to PERI a vague and presumably overambitious aim, and the group's first task should be to narrow down the scope of science fields, which should be the focus of the Network activities. This should be done considering (1) institutional priorities, taking into account expertise fields/profiles, experiences and future plans of partner institutions; and (2) societal priorities, taking into account what would be relevant for society (including public and private institutions) from a PERI perspective that the partner institutions and the Alliance as a whole could offer. Narrowing down the scholarly scope should be done simultaneously with identifying possible stakeholders joining the Network by committing to collaboration in PERI. Some potential non-academic stakeholders related to certain partner institutions have already been identified in the Map of Opportunities (e.g. municipalities, museums, or hospitals); however, the goal would be to involve each project partner with at least one stakeholder in a corresponding collaboration.

Afterwards, steps should be taken to align and harmonise stakeholders and T4EU partners to synergetic collaboration in PERI. This could be done by incorporating these tasks into a regular framework of alliance activities, for example, by organising special seminars, roundtables, conferences, etc., during regular alliance meetings, or, if possible, by organising separate similar activities. Also, as much as possible, the group should involve young researchers in the collaborative activities of the stakeholders & partners. Generally, the group should investigate all possibilities and take all steps possible/available to enable and incentivise this collaboration. The institution of a Network should be finalised by signing a corresponding document (such as a Memorandum of Understanding or Letter of Intent) confirming the commitment of partners & stakeholders to mutual collaboration in PERI.

AIM NO. 2: TO DEVELOP AND FACILITATE COOPERATION AND INVOLVEMENT OF PARTNERS IN THE T4EU PERI NETWORK

AIM NO. 2 TASKS:

1. Collect, foster, share, and spread information about the Network's involvement in PERI.
2. Access other PERI competence centres (especially intending to implement Task 3).
3. Organise PERI knowledge & competence building and awareness-raising activities.
4. Incentivise researchers of T4EU Alliance universities to participate in PERI, especially through formal recognition of their involvement in PERI.
5. Initiate concrete collaborations in PERI inside the Network.

AIM NO. 2 DESCRIPTION:

To achieve aim No. 2, first of all, partners & stakeholders should [re]present / make known themselves to the external audience as a Network involved in PERI and as a [developing] competence centre in this field. The corresponding information should be collected, fostered, and made available either in the Alliance's media platforms (starting from the T4EU general webpage) or in the external platforms devoted to the representation of the citizen science initiatives (for example, https://eu-citizen.science/). All other tools to spread this information should be explored and used whenever possible (e.g., in conferences, publications, public media, etc.).

Aiming at broader cooperation and reciprocity, the Network should make attempts to access other PERI-related hubs, networks, projects or initiatives (as, for example, YouCount project https://www.youcountproject.eu/; for other possibilities, see https://eu-citizen.science/projects), share information and experience with them, involve itself in their corresponding activities or, on the other hand, invite their representatives to the Network's events, also with the intent to implement some aspects of the following task (i.e., to organise PERI knowledge & competence building activities).

As the information collected while drafting the Map of Opportunities disclosed different levels of involvement and competence in PERI among the Alliance partners, it is crucial to organise PERI knowledge & competence building (including sharing of experiences) and awareness-raising activities among researchers working in partner institutions. It is obvious that researchers are still not well aware of the possibilities that PERI opens up for them. They may not know what impact PERI may have on the effectiveness and social relevance of their research. Researchers should be introduced to the levels of public engagement, starting from the mainstream PERI/citizen science, when the public is engaged mainly for the data

collection and processing activities, up to more radical approaches related to, for example, co-creation (scholars and citizens) or even direct innovation by public/citizens correspondingly supervised by scholars. The Network should make all attempts possible to change the mindset of its researchers to the one in which the importance and relevance of PERI are correspondingly internalised.

The latter task is closely related to the necessity to incentivise researchers to participate in PERI as much as possible. A particular focus in this respect should be given to young researchers as (1) they, as a 'new generation' of researchers, are the ones at the forefront of changing the mindset as described; however, (2) they still are required to devote most of their time and effort to preparing scholarly publications and corresponding results, this way leaving no or not enough time for involvement in PERI. From this perspective, the Network's academic partners should aim at a more balanced approach to the research environment inside them, making it less publications-centred, giving more weight to other scholarly activities, specifically involvement in PERI. Partners should explore possibilities to formally recognise researchers' involvement in PERI, such as giving them specific bonuses or awards, 'cross-crediting' them for publications and offering them other benefits to help their future careers.

Finally, the Network should make attempts to initiate [or plan] concrete collaborations in PERI [either in a closer or more distant time/period], based on all preparatory work as related to aim No. 1 and aim No. 2. Notably, certain activities/experiences of T4EU Alliance & its partners already provide with certain exceptional opportunities in this respect (for example, Transformation Labs, WP' T4EU Common Heritage and Multilingualism' in a new project proposal, previous or present involvements in PERI by certain Alliance partners).

TASK 4.2. T4EU JOINT STRATEGY "SCIENCE COMMUNICATION"

This strategy document outlines the main communication objectives, identified target groups, aims, and assignments for joining Science Communication tasks among partner universities and stakeholders in the T4EU countries/regions. This section presents the aims and tasks for joining science communication (SC) activities.

The structure of the Science Communication component of the joint strategy is based on the following principle: it consists of two aims, divided into smaller units – tasks. The document ends with an overview of the roles, responsibilities and methods for evaluating the strategy. The implementation of all the below-listed tasks will be outlined further in the document of an action plan for SC.

SITUATION ANALYSIS

The detailed Map of Opportunities for Science Communication in the T4EU countries/regions and institutions offers an intense discussion of SC definitions used by partner universities, strategic aims of SC, sources of the financial support for SC activities, stakeholders participating in SC activities as well as issues of human resources, public awareness, and support of SC. The joint strategy of SC does not present an overview of the subjects and issues already discussed in the previously mentioned document.

Nowadays, society has become increasingly distanced from the academic world, science, and scientific knowledge. *The main problem* is that scientists predominantly do not have the time, skills, and motivation to communicate scientific news to the public. SC may not be adequately valued and rewarded, yet communication with multiple audiences is crucial to promote and popularise science in modern society.

However, effective evidence-based SC informs people about the benefits, risks, and other costs of their decisions, allowing them to make sound choices (Fischhoff, 2013).

Moreover, the stakeholders of the SC processes are the primary target audiences of the strategy.

There are six groups of stakeholders operating in the SC field:

1. Non-academic institutions,
2. Academic institutions,
3. Units and departments at partner universities,
4. Media,
5. Science communication professionals,
6. Researchers.

VISION OF SCIENCE COMMUNICATION STRATEGY

We see a future where every scientist, researcher, or scholar of the partner universities has excellent knowledge and skills of Science Communication, understands the benefits of it, and feels the motivation for it as well as has access to more information in case of any further interest. Therefore, scientists will have access to science communication training material.

The outcome of the Science Communication activities is an increased public trust and positive attitude toward science and scientists as well as a narrowed gap between the public and scientists.

MISSION OF SCIENCE COMMUNICATION STRATEGY

To develop and implement an advanced and integrated science communication training programme for researchers at partner universities in order to implement our vision: the knowledge, skills, and motivation of scientists in science communication.

AIMS AND OBJECTIVES

The overall objective of the strategy of Science Communication is to develop an integrated training programme for T4EU partner universities scientists to improve their skills in Science Communication and motivate researchers to engage in science communication activities by understanding the benefits of the SC processes.

The aims and tasks of the Science Communication strategy are described and specified as tasks below, which is necessary to achieve the goals of the joint strategy.

The strategy will suggest specific training activities for scientists, young researchers and other representatives of the academic world in order to improve their skills in Science Communication. It will describe potential activities to increase society's creative thinking skills and resilience to changes.

Science Communication could help integrate communication and decision-making. Communication influences the change in society's behaviour and knowledge, which is crucial to make the most appropriate decisions based on scientific comprehension.

The aims and tasks of the Science Communication component of the joint strategy are further discussed in the sections below. The first aim has four tasks, while the second is divided into three interrelated tasks.

AIM NO. 1: TO IMPROVE SCIENTISTS' SKILLS IN SCIENCE COMMUNICATION

Aim No. 1 could be achieved by implementing the four tasks presented below.

AIM NO. 1 TASKS:

1. Create an integrated training programme for scientists and researchers to improve their skills in Science Communication.
2. Encourage the applicability of the acquired knowledge and competencies of science communication in practice.
3. Build a network of communication specialists and scientists who will collaborate in raising awareness and interest in scientific knowledge.
4. Create a user-friendly instrument of science communication recommendations and guidelines for scientists.

AIM NO. 1 DESCRIPTION:

Aim No.1 will help encourage scientists to share experiences and success stories that could benefit both partner universities and the Alliance as a whole. The Science Communication processes have benefits for different stakeholders. The primary beneficiaries are (1) s*cientists and researchers* and (2) the *society*.

The benefits for scientists and researchers (1) include widened professional network, improved reach of scientific research, and reduced barriers in the way of science. Also, the visibility of the research is expanded and academic results reach the societal level.

The growth of public literacy in scientific topics is increasing because of Science Communication. Scientists' involvement in public communication campaigns could influence public trust in science and encourage constant and patient dialogue with society. Also, interdisciplinary workshops can provide recommendations to enhance the science communication outputs.

The Science Communication strategy focuses on improving scientists' ability to constructively engage with multiple target audiences, including students, future researchers, the public, media, and others. Also, it will contribute to the evidence-based information spread into society in a logical way to address the needs of specific stakeholders or target audiences.

The main result of the strategy will be the integrated training programme for the representatives of the partner universities. It will be an interdisciplinary intensive training programme that will ground a solid basis for communicating with the public, thus raising the public's knowledge and interest in scientific news and covering both theoretical and practical approaches.

The training programme will show the complexity of science communication concepts and theories, key terms and experiences, scientific communication's foundation, and SC's challenges and perspectives in contemporary society. It will reveal the benefits, value, quality, and effectiveness of joining SC activities for all stakeholders in the process and how evidence-based scientific information could be presented to the general public without the fear of diminishing the value of science.

Partner universities could establish a network of science communication specialists, including communication specialists and researchers willing to participate in the SC processes. An existing network will have a huge potential to apply efficiently for grants for science communication activities and research in the activities of SC. The unified science communication activities database can allow the mapping of SC activities at the university and the whole alliance level. Also, partners could share information about regional activities.

During the implementation of the strategy, the science communication guidelines for scientists will be presented to the participants of the training programme. The guidelines will remain accessible to all partner universities and their members. The document of the guidelines will be based on the integrated training programme of SC.

AIM NO. 2: TO INSPIRE SOCIETY TO SEEK SCIENTIFIC KNOWLEDGE AND ENLARGE THE UNDERSTANDING OF IT

The study programme introduced above will achieve the second aim and implement the three tasks below.

AIM NO. 2 TASKS*:*

1. Facilitate the process of seeking scientific information for the public.
2. Suggest communication tools to minimise the gap between scientists and the public.
3. Include the media in the science communication process.

AIM NO. 2 DESCRIPTION*:*

Scientific knowledge, in principle, is intended to be applied to the well-being of society. Applying scientific knowledge helps meet people's basic needs and improve the quality of their life, safety, and other standards of everyday life. It is crucial that the audiences, in general, know this idea.

Science communication must contribute to public education and development. SC activities have to encourage society to seek scientific knowledge, increase awareness of science's origins, reveal how science is made, and show the benefits of its results for society. It also means understanding how scientific discoveries and news shape and change the world and human civilisation. The higher the public engagement and motivation to pursue and understand scientific knowledge, the more rational decision-making and the quality of public discussions in society.

The training programme will highlight the main methods of engagement in science communication activities, as well as the motivation of the public to seek an understanding of science and provide evidence. It will help society understand science's overall relevance in the modern world. Appropriate and fair use of scientific discoveries in practice will also be disclosed during the SC training programme for scientists.

In order to reduce the barriers between science and society, academics - especially those working in public institutions - need to be more open, active and voluntarily involved in everyday public communication.

Scientists should do more to inform the public about what science *is* and *is not*, how it is done, what the main results are, and how everyone benefits from it. This would be the best way to *demystify* science and open the horizon of future citizens in the same way as bringing society closer to science.

SC should transfer scientific knowledge and evidence-based information to society and raise different stakeholder responses. Journalists or communication specialists must carry out science communication in the same way. Task No. 2 will help create the conditions for closer science integration into society and improve public understanding of science.

TASK 4.3. T4EU JOINT STRATEGY "OPEN SCIENCE"

The VISION of Open Science for the alliance partners comprises motivated and skilful researchers, teaching staff and administrative staff for a change of culture towards more transparency, accessibility and reproducibility in research, teaching, and education. Implementing Open Science practices will profit from networking activities and foster joint academic activities.

The Alliance's MISSION is to raise awareness among its partners, align their policies, and share good practices to strengthen personal competencies and infrastructural capabilities and to develop an overall framework for fruitful cooperation.

The main aim of a joint strategy and common standards is to be at the forefront of OS. With that aim in mind, members of T4ERI WP4 prepared a survey of the OS status quo at T4EU Alliance universities. The survey was based on the answers to twenty questions covering six areas on the national and institutional level: *Policies and Financial Support, Participation and Networking Activities Related to OS, Open Access Publishing Culture, Open research data and FAIR Data, National Research Infrastructures (RIs) and Services they provide, People/Human Resources Involved.*

Based on the survey, a Map of Opportunities was designed. It highlighted the most relevant opportunities arising from the problems encountered and barriers to the implementation of the principles of the OS in all partner institutions. The Map of Opportunities was discussed with partners, and an additional survey was carried out to rate the opportunities so that the most urgent common issues and priorities could be identified. In the case of OS, the most highly ranked priorities were as follows:

1. Incentivise researchers via assessment and promotion.
2. Train new data-related professions: stewards, curators, and librarians.

Another two highly ranked priorities were:

1. Include data science in basic education.
2. Invest in staff capacity-building.

Based on the rating, specific aims were defined and specified (see below). The overarching aims of the current strategy are well aligned with the common issues and overall objectives of the alliance partners, such as:

1. Define the general framework for future cooperation that will enable the Alliance partners to share good practices,
2. Organise joint activities promoting OS in the context of their partnership.

Specific aims identified during the process of survey analyses, designing the Map of Opportunities, ranking opportunities and stating priorities are as follows:

1. AIM 1. To raise awareness and motivation of researchers for OS as well as teaching and administrative staff and university leaders.
2. AIM 2. To include FAIR and Open Data into staff reskilling and basic university education.

The above aims are further specified into tasks that are discussed below.

AIM NO. 1: TO RAISE AWARENESS AND MOTIVATION OF RESEARCHERS FOR OS

AIM NO. 1 TASKS:

1. Initiate the alliance group for OS networking activities.
2. Organise OS awareness-raising campaigns.
3. Include Open Science indicators in institutional self-assessment.
4. Create and share a digital document repositorium “How to Open Science”.
5. Incentivise researchers for OS via assessment and promotion.

AIM NO. 1 DESCRIPTION:

As OS has been a top-down endeavour, it comprises a wide range of stakeholders, starting with research policymakers, administrators of Research Performing Organizations (RPO), i.e., policy performers that carry out European, national, and institutional strategic agenda, stakeholders outside RPO (civil society included) who reap the fruits of OS, to mention a few. Therefore, university management must be convinced of OS’s importance and benefits and encourage the faculties and all university members to engage with OS and embrace OS principles. However, one of the most important conditions for a successful implementation of OS within the framework of T4EU is the availability of OS-conscious and highly motivated researchers, as their research and teaching results need to be more open and transparent. Therefore, they are the first to be approached and incentivised. The task can be successfully carried out if only it is delegated to authoritative people (authorised by institutions and well-versed in OS) from all the alliance institutions – a dedicated group – that communicates and coordinates their activities. Functions of such a group for OS networking activities should include but not be limited to

- the regular exchange of information concerning OS on national and institutional levels,
- the organisation of OS awareness-raising events and information dissemination activities at their own institutions and together with the alliance partners,
- promoting OS within their institutions and among their stakeholders,
- reporting about the results of their joint activities to the alliance.

People delegated to the group should be employed as institutional OS stewards in their permanent position or the T4EU project.

A joint OS group should be responsible for the organisation of awareness-raising campaigns such as a yearly OS event and/or a newsletter, presentation of case studies and exchange of good OS practices among the alliance partners in all possible areas of OS given in the introduction above, and hands-on workshops on OS topics. Awareness-raising campaigns should include a wide range of stakeholders, especially policymakers, representatives of businesses, and local administrations.

Research funders, research-performing organisations and policymakers are expected to support the Open Science paradigm. Institutions should define their policies, guidelines, roadmaps, and mandates to foster and advocate OS. Therefore, the progress of OS should ideally be reflected in a kind of institutional self-assessment based on a predefined set of indicators compiled by all co-lead partners but chosen individually by institutions. Since institutional cultures differ, finding a common denominator for all alliance partners is hard.

Nevertheless, all institutions could provide regular progress reports (or any other genres of self-assessment) that could reflect their OS practices.

The T4EU Alliance group meant for OS networking activities presented above, should help to organise a regular exchange of information regarding OS. The activity could be carried out with the help of a shared digital document repositorium containing up-to-date information on multiple OS facets. The repositorium would serve as a means for exchanging information and mutual learning. It could include European, national, and institutional policy documents, guidelines, roadmaps, information about open research infrastructures and their services, data repositoria, open code software tools, open access journals, educational materials, or other relevant information.

As stated in SRIA for the EOSC, "current incentives for researchers, including career prospects, are not rewarding Open Science practices, with scientific credit and research impact for researchers. When it comes to rewards, policies, institutions, funders and initiatives focus almost solely on scientific articles". It is publicly admitted that the lack of due rewards for researchers to open their publications and data is a true challenge in implementing OS. Credits for OS taken in isolation cannot be expected to become a major criterion for assessment. Nevertheless, combined with or included in other rules of assessment (esp., for overarching conditions as presented in the Agreement on Reforming Research Assessment CoARA, e.g. consider adherence to Open Science principles in recruitment processes and promotion) credits for OS could become a powerful motivating push.

AIM NO 2. TO INCLUDE FAIR AND OPEN DATA INTO STAFF RESKILLING AND BASIC UNIVERSITY EDUCATION

AIM NO. 2 TASKS:

1. Promote a common understanding of FAIR and Open Data.
2. Ensure sharing of best practice experiences and recommendations.
3. Include data-related skills in staff capacity-building programmes.
4. Train new data-related professions: data stewards, data curators, data managers, and data librarians.

AIM NO. 2 DESCRIPTION:

The concepts of FAIR and Open Data, no matter how well-defined and frequently used, still need to be specified and negotiated when it comes to applying them. Both concepts partially overlap, therefore, have shared and different features. Open Data is not necessarily FAIR data, and vice versa. Moreover, the concepts differ in scope and the level of perfection. Requirements for minimum and maximum FAIRness of data differ considerably; therefore, it is crucial to share a common understanding of the concepts, especially when it comes to joint activities or documents. Discussions among alliance partners leading to the definitions that suit all should be organised at the initial stage of cooperation. Awareness-raising campaigns could be used for that aim.

The exchange of institutional OS status quo descriptions provided in the newsletter could lead to identifying best practices in different areas of OS among the alliance partners. Upon common agreement, best practices could serve as the basis for recommendations on improving the situation and making it comparable. Recommendations should be aimed at

joined activities such as the exchange of teaching staff and skilful practitioners as well as student exchange. Data science and opening data resources should be specified and adapted for different areas of research and types of data.

Data-driven research as the mainstream trend needs involvement not only of academic staff and students but also from other personnel: administration and specially trained auxiliary staff, especially librarians, IT people and personnel of data centres. In order to develop their data-related skills, capacity-building activities should be focused on FAIR data principles and the management of open data. As reskilling of people takes place parallel to their regular activities, a well-thought approach is necessary for the best result.

In addition to reskilling activities of staff members, specialised education should be organised to teach newcomers to the field of new professions like data stewards, data managers, data curators, data librarians and any others that might appear while obtaining, organising, and opening data based on FAIR principles. New data-related professions should be started at the bachelor level and higher, aligned with specific disciplines (like, for example, chemistry, linguistics, or sociology) that provide and use the data. Also, in cooperation with the university leadership, the provision of necessary infrastructure that allows for open and FAIR data routines even for scientific disciplines producing high volume data should be aimed for.