# WORK PACKAGE 2

# Consensus-Building Phase Report

# Period 2: Month 12 - Month 15

19.04.2022

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# Executive Summary

The present report aims to provide an overview of the work carried out by the 6 Modules which compose RIS4CIVIS from the 12th to 15th months of the project during the Work Package 2 period. The purpose of WP2 – Consensus-building, was to reflect and identify the desired end-points for each Module (task 2.1) and then develop roadmaps determining the path to follow between the current status of CIVIS R&I Cooperation, and the desired end-points (task 2.2), developing recommendations to national and European policy-makers for the removal of legal or regulatory barriers (task 2.3).

In sum, based on the results from the Benchmarking phase (WP1) objectives of the Consensus-building phase (WP2) was:

- To identify the desired, short- to long-term end-points for each Module;
- To analyse the barriers to the achievement of the long-term goal;
- To identify roadmaps to overcome the barriers and reach the end-points; in the short-, medium- and longer-term;
- Where the removal of barriers is not in the power of the CIVIS Alliance members, to formulate recommendations concerning their removal, addressed to National and European policy-makers;
- To determine one or several case studies) that can be implemented within the project time frame to test the validity of the roadmaps.

In this report, the conclusions drawn, and the proposals developed originate from each Module and constitute the basis for further consideration. The consensus-building presented in this deliverable will be used as a baseline for the development of WP3 and for the validation of the roadmaps through the implementation of case studies.

# 1. Introduction

"RIS4CIVIS" is a 3-years project funded by the European Commission under the Horizon 2020 "SWAFS" programme. RIS4CIVIS aims to support the Research and Innovation dimension of the CIVIS European University in line with its shared, integrated, long-term strategy and synergy with its education dimension. The project aims to enable the CIVIS Alliance and other European Universities to pave the way and pool out their expertise to address the 21st-century challenges through world-class R&I.

RIS4CIVIS will develop an integrated, long-term R&I Strategy, based on the member Universities' complementary strengths, but also address obstacles that stand in the way of deeper R&I cooperation. RIS4CIVIS, therefore, focuses on developing a long-term Research and Innovation Strategy that will:

- Take into consideration the important roles that academia, industry, government, civil society, and the environment play in R&I (Quintuple Helix model);
- Be fully in line with the CIVIS Mission Statement, including our civic mission and educational dimension;
- Build on the cooperation and results that have so far been achieved within our Alliance;
- Address current societal challenges;
- Integrate the upcoming European Research Area cycle synergistically with the new cycle for the European Higher Education Area.

To meet its objectives, the project is structured in **six 'Transformational Modules'** such as:

(1) The development of a Common Research and Innovation Strategy;
(2) Sharing Infrastructures;
(3) Reinforcing Academia-Business R&I Cooperation;
(4) Strengthening Human Capital;
(5) Mainstreaming of Open Science;
(6) Embedding Citizens and Society.
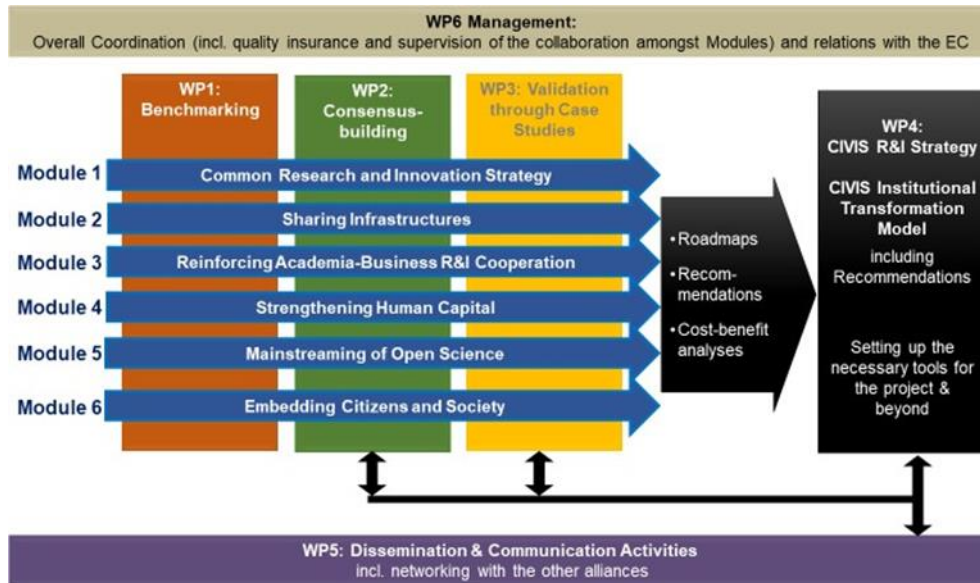
Figure 2. RIS4CIVIS Organizational Structure

In the first phase of the RIS4CIVIS, the WP1 has developed overview of:

- Current practices within each CIVIS Alliance member in regard to the topics covered in each Module (can be seen in Figure 1.);
- National situations (legal, regulatory, political, financial, procedural, systemic etc.) that affect each university-partner again in regard to the topics covered in each Module. This activity included the identification of legal and governance barriers as well as external funding sources.

Establishing a shared basis for the work carried out during the current Consensus-building Phase (WP2).

Therefore, based on the results from the Benchmarking phase, the objective of the Consensus-building phase is:

- To identify the desired, long-term end-point for each Module;
- To analyse the barriers to the achievement of the long-term goal;
- To identify roadmaps to overcome the barriers and reach the end-point; in the short-, medium- and longer-term;
- Where the removal of barriers is not in the power of the CIVIS Alliance members, to formulate Recommendations concerning their removal, addressed to national and European policy-makers;
- To determine a case study that can be implemented within the project time frame to test the validity of the roadmap.

During the early stage of the Consensus-Building phase, each Module Leader has led its committee (for recall, every Module committee gathers at least one representative/expert from each of the CIVIS Universities) through a reflection on the desired or ideal end-points of cooperation between the CIVIS Alliance members: what situation would need to exist for the Alliance to produce the best possible Research & Innovation?

Therefore, the Module committees have developed their roadmaps, determining the path to follow between the current status of CIVIS R&I Cooperation, and the desired end-points. Roadmaps refer to the Benchmarking including the information on barriers and obstacles. The roadmaps include, as relevant:

- Short-term 'minimal' actions/standards/procedures to be immediately implemented throughout the Alliance;
- Identification of obstacles that can be overcome in the medium-term, how they can be overcome, and what our R&I Cooperation should look like in the medium-term;
- Identification of long-term obstacles that need to be addressed in order for each Module to reach its desired end-points, and how these should be addressed.

During the Consensus-building phase the work was organized and discussed internal Modules meetings, as well as monthly meetings with the WP2 coordination group and the six Modules Leaders. Moreover, cross-Modules meetings have been organized in order to identify transversal aims and implement common actions. In addition, several meetings with the CIVIS IT team have been organized in order to solve technical issues regarding the implementation of the case studies. Furthermore, as convergence of the results of the previous meetings between IT team and each module groups, two meetings between Modules Leaders and CIVIS IT team have been organized in order to propose the organization of Common Platform to gather most of modules' case studies in a same virtual space. This initiative is still an ongoing process.

The meetings between the WP2 coordination team and Module Leaders are used as an essential channel of communication which completes the use of emails. In the first meetings, the WP2 coordination group presented the aims of WP2, the tasks and their timing, the reports to be prepared by the Modules Leaders, as well as the list of deliverables and their respective deadlines. Since the beginning, the WP2 coordination team has also emphasised the importance of cooperation across the Modules in order not to duplicate work, identify transversal aims and implement common actions. Therefore, the meetings between WP2 and Modules Leaders were used as "workspace", focused on identifying and defining cross-Module actions.

As result of the Consensus-Building phase, the six Modules have defined the desired end-points, their respective preliminary roadmaps, developed recommendations and defined their case studies. Each of them is presented in the next section of this deliverable.

In the next section, the presentation of the work carried out by each Module are organized in (1) Module objectives, (2) methodology and procedures applied to define the Roadmap and case studies, (3) Roadmap presentation, (5) the case studies identified to be implemented during the WP3 period,

and finally (4) recommendations for removing legal or regulatory barriers to cooperation, addressed to National and/or European policy makers.

The present deliverable concludes by describing the obstacles and barriers, providing recommendations and final remarks.

# 2. Overall overview per Module: Desired End-points, Final Roadmaps, Case Studies and Recommendations

## Module 1: Common Research and Innovation Strategy

Module 1 is focused on developing a long-term Strategy for CIVIS Research and Innovation cooperation. According to the Grant Agreement Annex 1, this Strategy can integrate the work of the five CIVIS Hubs, but will also have the vision and flexibility to include and integrate new societal challenges and research areas as these emerge.

The objectives of this Module are:

- To develop **a methodology for the definition of CIVIS R&I agendas** and strategies that enables CIVIS to anticipate and respond quickly and flexibly to emerging societal problems and new opportunities.
- Using this methodology, to develop a **CIVIS Strategy** that will guide its **long-term cooperation in terms of R&I**, and will also enable it to participate in European-level policy-making on R&I (for instance, for Horizon Europe: co-creation of future strategic programmes or work programmes).
- To **document the methodology** so that it can be used within CIVIS, by (and with) other European Universities or consortia of universities to develop their own high-quality, reactive R&I strategies and agendas.

### Methodology & Procedure applied to data collection during the Consensus Building phase

The decisions about desired end-points, the roadmap and case study used the conclusions about research and innovation strategies among the partner universities from WP1 as the point of departure. During WP2 these conclusions were discussed in a meeting within the module on October 8. In the call to this meeting all university partners were asked to gather information about what desired end-points their respective universities have concerning strategies for research and innovation. They were also asked to, at the same time, try to gather information about barriers to achieve these end-points and roadmaps to overcome the barriers. In a way, this is very general information, but also information that is of top strategic importance for the universities. To gather such information, therefore, requires dialogue with top university managers. How all partners have managed to gather their data may differ depending on how their respective universities are organized and where in the organization this information is available. Therefore, the members of the module were asked the following questions:

- What are the desired end-points for research and innovation at your university?
- What barriers to achieve these end points do you experience?
- Do you see any roadmaps to overcome these barriers?

In gathering this information we have not seen any use of collaborating with other modules, and since the results from WP1 in the module was that the relation to the CIVIS hubs in the central research and innovation strategies at most partners were not emphasized as their research profiles, or the end-points for their research, having a particular focus on what end-points for research and innovation the universities have in relation to the hubs at this next step did not seem to be the best way to cover what end points the partner universities have for research and innovation. Still, we asked the members of the module to take the hubs into consideration in gathering their data.

At the October 8 meeting it was decided that the most important desired end-point was to foster and support sustainable bottom-up research locally and also within the alliance collaboration, and to develop a roadmap for this purpose. In a second meeting we focused on discussing the roadmap. These discussions were summarized in a draft report distributed to all module participants for comments and discussions locally at all partner universities. Based on the feedback from this procedure a report including desired end-points and a roadmap was submitted to the WP2 leaders. Six partners were represented, but those who could not be present had provided us with their inputs to the meeting beforehand.

After discussions about the report with WP2 leaders and other module leaders, and more comments from participants in module 1, a suggestion of a case study following the intentions in the first report was presented by the Module 1 leaders and in a next step discussed at a meeting within the module March 9 2022 with 12 participants for taking decision about what case study to focus on during WP3.

In WP 2 the main methodology has been to start from conclusions from WP1 and then gather for joint discussions within the module, to in a next step send all participants back to their respective universities for local discussions about the conclusions from the joint discussions within the model. Next the respective participants were encouraged to come with feedback and comments to the module leaders. After considering the comments the drafts were modified and submitted to the WP2 leaders.

Two cross-module meetings took place. One before Christmas and initiated by the Module 2 leader, and one in February 2022 initiated by the WP2 leaders in order to discuss the possibilities of building digital platforms and possible collaborations.

One report covering both desired end-points and roadmaps were produced since these two dimensions are so closely related when it comes to research and innovation activities. A few drafts for this report, and also for the final case study have also been produced.

# Results: Module 1 -Final Roadmap, Case study and Recommendations

## 1. Module 1: Final Roadmap

### The final end-points defined

- Establish research collaboration based on emerging bottom-up excellent research generated in academic freedom;

- Establish systematic information about research profiles, researchers and research support unites at the partner universities in order to ease for researchers with similar interests to get in touch, and also for research support staff to establish a contact in order to develop joint projects and programs with the potential to support research collaboration across universities.

### The purpose of each end-point

- A central argument for why this is desirable is that areas for excellent research cannot be decided from outside academia;

- Moreover, achieving excellence in research and also establishing sustainable and creative research collaboration takes time and has to be based on research interests and trust between researchers in combination with the necessary funding;

- Research excellence is not automatically achieved by setting up collaborations between universities. Collaborations must add something otherwise it may be contra-productive and cause important results to be missed.

### Short-term actions to be immediately implemented throughout the Alliance

*Contact lists and communication about research profiles at the respective universities are essential for facilitating emerging collaboration between researchers.*

A starting point could be to gather general research profiles information from the participating universities, and if possible, link these areas to the CIVIS hubs if it is a relevant way to represent on-going research. With this as a general base a next step could be to establish a central platform where links to local research databases are published. Note that we do not suggest that RIS4CIVIS develops an own unique database where all single researchers should update their profiles regularly. The reason is that it is difficult enough to have researchers to update their research profiles at their home departments. Having them to update their profiles at several databases would, to be honest, not work and would also require lots of administration. As much automatic and linked information as possible is therefore what we see as most promising. When, and if, researchers find colleagues to collaborate

with the next step is to try to find funding. If they are successful it is likely that some form of research collaboration will be established cross universities.

## Long-term actions to be initiated during WP 3 throughout the Alliance;

*Establish support initiatives for emerging research collaboration and establish structures for funding of bottom-up collaboration initiatives*

- Research and innovation collaboration does not just happen. There is a great need for support for overcoming National and university specific regulation, traditions, cultures and bureaucracy. Therefore, local research and innovation offices at the partner universities need to develop meaningful and relevant collaboration in order to establish routes for researchers to meet. It is central that such work takes the practice of research in different disciplines into consideration, since there are differences in possible outcomes of research and innovation in different disciplines. During WP3, a structure for how to develop such collaboration can be established, but it is not likely that this will result in a system that will be up and running during WP 3.

- Establishing special funding for research collaboration within the Alliance will also take time. During WP3 it can be expected that a form for further strategic work in this direction can be established, but it will take time to have a system for research and innovation funding up and running within the Alliance.

## Obstacles that can be overcome in the medium-term, how they can be overcome, and what our R&I Cooperation should look like in the medium-term;

First, the willingness and interest from the respective universities to support research collaboration between researchers from particular universities is fundamental. If there are no barriers here the next level is if there are any joint research interests among the researchers at different universities. If there are, another barrier is if there is time for them to explore their joint interests. This is also tightly connected to their respective willingness to cooperate. Many researchers already have established networks of colleagues and might prefer to continue develop these relations. Finally, essential for progress is in the end funding. The first fundamental barrier is probably easiest to handle since it mainly has to do with central action from university managements, with pooling resources for collaboration or signaling in strategies the importance they see with cross university research collaboration within the Alliance. In the long run, and for sustainable success, the barriers listed in the next paragraph are essential, and they also need to be cultivated continuously.

## Identification of long-term obstacles that need to be addressed for the Module to reach its desired end-point, and how these should be addressed.

- Establish sustainable research collaboration takes time and could be followed up in three-year circles;

- HR and financial resources: Researchers may be occupied with teaching and other on-going research that make it difficult to engage in new research with researchers they do not know. Often research develops between researchers that know each other, and after having found people they like to collaborate with their will to change to new partners might not be so strong. Financial resources are also crucial. It will be difficult to build new research teams without funding;

- Academic freedom: Collaboration, especially around topics decided by central units or politicians, may interfere with the principle of academic freedom. This possible barrier is related to what role research is expected to have in society and if research topics are decided outside of Academia or by university boards. Consequently, academic freedom can be a barrier to collaboration;

- The view of how research excellence is achieved (top-down or bottom-up): The dominant view of how research excellence is best achieved among the partner universities is a bottom-up perspective. This can be a barrier to desired research focus on, for example the CIVIS hubs if this is not the kind of research the partner universities have their excellence in. The desired end-point of research to remain a bottom -up practice can therefore be a barrier for top-down desires about research areas;

- Differences between human, social and natural science: The practice of science looks different in different academic disciplines, which makes it difficult to define one single end-point for research and innovation. Some disciplines have, for instance, difficulties in relating to the meaning of the concept of innovation that may have a clearer meaning in some natural science disciplines. The fact that the practice of science, and also the role in the development of society that different academic disciplines play, can be a barrier to achieve too narrowly defined end-points for research and innovation;

- Competition (rankings, funding): Universities live in a competitive environment where their performance often is measured in rankings. Depending on what kind of ranking different universities consider as important collaboration with universities that may be ranked lower will not be prioritized;

- Existing research collaboration (why to develop new instead of investing in existing stable

collaboration): Much research is already conducted in different types of collaborations between researchers at different universities. Establishing well-performing research collaborations across disciplines and universities takes time, and potential unwillingness to give up well functioning teams and invest in establishing new research teams may therefore be a barrier;

- Research profiles (basic research versus applied research): Different universities may have different profiles in their view of what type of research they are engaged in, such as basic or applied research. Such different profiles can be a barrier for establishing research collaboration.

## Indicators defined and their purpose

- One first indicator is a list of research profiles at the partner universities. A second indicator is the completion of a platform for links to local databases of researchers and their research interests. A third indicator could be the implementation of a function of the platform to find a system for reporting, or announcing joint workshops, seminars and conferences that are organized between researchers within the alliance. A fourth indicator could be to, in a similar way as for the third indicator, a function to gather funded research projects between researchers in the alliance. A final indicator would be to visualize research and innovation results in the form of publications or other forms of outputs.

- The first step in the roadmap could be achieved quite rapidly. This is likely to be official material presented in the respective partners' websites. The second step requires some form if IT expertise to establish. A platform needs to be set up, and it should be on some kind of joint CIVIS or RIS4CIVIS central web platform where one site on it should be Research & Innovation, and under that there should be a place where links to the partners' local databases for researchers and research projects can be posted. This is part of WP4 to design it, with the inputs of several modules – included Module 1 – and is determinant in the success of this Module. Step three is a more long-term kind of indicator since it actually requires that some researchers have established a dialogue and have started to plan joint activities. Maybe this is something that possibly could be achieved within two years after the platform is up and running. Joint research funding normally takes long to establish, and maybe some results could be seen about three years from the launching of the platform. Once funding is established research and innovation activities can start, and maybe some results in the form of publications or other outputs could be seen after two or three years from the establishment of funding. This would mean about five or six years from the launching of the platform.

## Potential risks in the short-, medium, and long-term which could impede achieving each of the end-points defined.

- As seen below in the table there are some risks related to the possibilities of the success of the roadmap and reaching the end-points. The risk of that researchers may be occupied with teaching and conflicting research collaboration is estimated as average. Some will definitely be occupied in such engagements, but over time it will possible to develop new collaborations, especially if funding is provided;

- There is a risk that academic freedom will be challenged if initiatives for research are decided top-down. This is, however estimated as low since the end-point decided here is that sustainable research collaboration should emerge through bottom-up processes;

- That different views of research excellence between universities will risk to be a barrier for sustainable collaboration is estimated as high. This is based on a risk that too much focus in strategies and from funders will be put on short-term results and technical innovations. If this will be the dominating perspective of successful research, much research in the humanities and social sciences risk to be passed;

- The risk that there will be barriers in understandings of that different academic disciplines work in different modes and with different types of methods and theories is estimated as low, although there is a risk if the quality of research from different disciplines are measured by the same standard. A long as research is measured from disciplinary conditions the risk is, however, low.

**Table 1. Module 1: Final Roadmap**

| End-point | Rationale | Actions | People involved | Timing | Barriers Obstacles | Risks | Indicators |
|---|---|---|---|---|---|---|---|
| Establish research collaboration based on emerging bottom-up excellent research generated in academic freedom<br><br>Establish systematic information about research profiles, researchers and research support unites at the partner universities in order to ease for researchers with similar interests to get in touch, and also for research support staff to establish a contact | A central argument for why this is desirable is that areas for excellent research cannot be decided from outside academia;<br><br>Moreover, achieving excellence in research and also establishing sustainable and creative research collaboration take time and have to be based on research interests and trust between researchers in combination with the necessary funding;<br>• Research excellence is not automatically achieved by setting up collaborations between universities. Collaborations must add something otherwise it may be contra-productive | Contact lists and communication about research profiles at the respective universities are essential for facilitating emerging collaboration between researchers;<br><br>Support initiatives for emerging research collaboration;<br><br>Funding for bottom-up collaboration initiatives. | Research support staff<br><br><br><br><br>Research support staff<br><br><br><br>University management Professors and | Followed up in three-year circles. | HR and financial resources: Researchers may be occupied with teaching and other on-going research that make it difficult to engage in new research with researchers they do not know. Often research develops between researchers that know each other and after having found people they like to collaborate with their will to change to new partners might not be so strong. Financial resources are also crucial. It will be difficult to build new research teams without funding;<br>Academic freedom: Collaboration, especially around topics decided by central units or politicians, may interfere with the principle of academic freedom. This possible barrier is related to what role research is expected to have in society and if research topics are decided outside of academia or by university boards. Consequently, academic freedom can be a barrier to collaboration;<br>The view of how research excellence is achieved (top-down or bottom-up): The dominant view of how research excellence is best achieved among the partner universities is a bottom-up perspective. This can be a barrier to desired research focus on, for example the CIVIS Hubs if this is not the kind of research the partner universities have their excellence in. The desired end-point of research to remain a bottom -up practice can therefore be a barrier for top-down desires about research areas;<br>Differences between human, social and natural science: The practice of science looks different in different academic disciplines, which makes it difficult to define one single end-point for research and innovation. Some disciplines have, for instance, difficulties in relating to the meaning of the | Average<br><br><br><br><br><br><br><br><br>Low<br><br><br><br><br><br>High | Establish systems for following up attempts for research collaboration taken, such as registering jointly authored publications between scholars from different universities; arranged workshops and conferences<br><br>Follow up if research collaborations are |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| in order to develop joint projects and programs with the potential to support research collaboration across universities. | and cause important results to be missed. | | research directors | | concept innovation that may have a clearer meaning in some natural science disciplines. The fact that the practice of science, and also the role in the development of society that different academic disciplines play, can be a barrier to achieve too narrowly defined end-points for research and innovation; | Average | established in submitted applications and funded projects |
| | | | | | Competition (rankings, funding): Universities live in a competitive environment where their performance is often measured in rankings. Depending on what kind of ranking different universities consider as important collaboration with universities that may be ranked lower will not be prioritized; | | |
| | | | | | Existing research collaboration (why develop new instead of invest in existing stable collaboration): Much research is already conducted in different types of collaborations between researchers at different universities. Establishing well-performing research collaborations across disciplines and universities takes time, and potential unwillingness to give up well functioning teams and invest in establishing new research teams may therefore be a barrier; | High | |
| | | | | | Different universities may have different profiles in their view of what type of research they are engaged in, such as basic or applied research. Such different profiles can be a barrier for establishing research collaboration | High | |
| | | | | | | average | |

## 2. Module 1: Case Study

The case study decided at the module 1 meeting on March 9, 2022 to be completed during WP3 focuses on the development of categories and contents to these categories to be included at a joint digital platform for CIVIS or RIS4CIVIS. The case will not have ambitions to develop the technical solution for this, but to focus on providing meaningful and useful information about on-going research and innovation at the partner universities in the Alliance, to develop support for engaging in and establishing research and innovation collaboration within the Alliance, and to establish a form for further development of funding for research and innovation activities within the alliance.

The information presented on the platform should be able to be used for and stimulate collaborations among research support, and scholars in the Alliance. Technical details for how such a platform should be designed must be developed by external IT experts, but with close relation to the users of such information in order to be able to make the platform useful for its purpose.

The vision is that RIS4CIVIS (but with a more tangible name) will have some form of joint platform, maybe as a tab at a general CIVIS platform, and that there under this tab will be another tab for research and innovation. Other related modules could be gathered under the same tab.

The text presenting the content under the tab should be generic in order to avoid a need for constant and active cultivation and updating of the text. The detailed information about ongoing research should then take the form of links to local systems at the partner universities for presentation of general research profiles, researchers' profiles, publications, research centers and institutes etc. The main reason to this is to avoid the need for individual researchers to update the same information at several places. If the information at the platform should not be automatically updated through local systems at the universities, it is a great risk that the information at the platform should not be complete and not updated. It is a great challenge to keep this information updated locally. In general, researchers are not very good at keeping their profiles updated although there are good exceptions.

If possible, an interactive chat forum could be useful, where researchers could add research interests, calls for workshops and conferences, or establish groups of interests free to join for anyone who is interested like groups at Facebook, for example, work.

Most universities have some form of general information about their general research profiles, or at least some profile areas of research in general terms. This information should be quite easy to gather, and it could maybe be represented in the general introductory text to the tab. Other form of information should take the form of references and links to local systems. Thus, the Research and Innovation tab at the RIS4CIVIS platform should not be a database to which individual researchers need to report information. The task to work with during the WP3 case will be to find solutions regarding how to push local data to a common platform. The goal with such a system is to make it easier for researchers to get in contact with each other. There are, however, regulation and judicial concerns to be aware of here that need to be considered.

The case will divide information into four main categories:

- Research profiles of each university;
- Information on individual researchers from each university;
- Support for research collaboration initiatives;

- Funding opportunities for bottom-up collaborative projects.

At this stage it is not decided what local, or possible national or international systems for automatically updated researchers' profiles that should be used in order to provide information about researchers and their research interests. One possibility could be to compare excellent research areas of the different universities, but this comes with problems of defining what excellences means. If this will be a dimension to sort research, this needs to be cleared out. Another possibility could be to refer to information gathered through Research gate, ORCID or other similar services. If so, the platform could possibly be used to encourage researchers to use these third-party services to a larger extent. There might also be possibilities to use bibliometrics to identify overlapping research areas and interests. Joint horizon grants are other entities that could be registered somehow.

**Other** Alliances have used bibliometrics to identify already ongoing collaborations within their respective alliance. To look at what other Alliances are planning can maybe be useful.

To find reasonable, relevant, and useful ways to collect this information will be the main focus for the work with WP3.

## 3. Module 1: Recommendations addressed to National and/or European policy-makers

GDPR and possible legal obstacles concerning sharing information need to be discussed with judicial experts.

## 4. Module 1. Conclusions & Next steps

Next step will be to start working with the identified case and how to gather relevant and useful information to the four categories of research and innovation information. Since we are now entering a more technical phase, it is probably important to reach out to colleagues within the group but also outside at our respective universities with special knowledge and experience of how to work with the kind of information from our respective universities we want to melt together.

Concerning the first two categories, research profiles of our universities and researchers, it will most likely be possible to come up with suggestions of about how to gather, melt together and present such information. Regarding the categories 3 and 4, research support and funding for research collaboration, results during WP3 will most likely be to suggest forms for how to continue developing these core dimensions for research and innovation collaboration within the Alliance.

# Module 2. Sharing Infrastructures

The main goal of Module 2 is to establish a strategy that would allow for joint use of the RIs that are available in all CIVIS Alliance institutions. To achieve this goal, Module 2 is focused on the following aims:

1. **Identification and mapping of the RIs** (including e-infrastructures) that are available in the CIVIS Alliance Members;
2. **Design of methods that would allow sharing of the RIs** both within the CIVIS Alliance and with relevant external stakeholders. For this activity, two distinct approaches were followed: i. first the creation of a common information access point of RIs managed by each CIVIS Alliance member that would address financial, legal, regulatory, logistical and other barriers and ii. second is the establishment of a joint strategy for RIs development and usage that would address the aforementioned obstacles and would also propose an economic model.

## Methodology & Procedure applied to data collection

### Background

The end-point defined and proposed within the previous sub-phase of Module 2 includes a model consisting of the two following main components:

a. **IT tool/online interactive platform**, showing all CIVIS open RIs;

b. **Definition of a joint strategy for the creation of a CIVIS Research Infrastructure Network** (for the **short-term**) and a **CIVIS Research Label** (**at a long-term:** possible implementation of the label **after the end of RIS4CIVIS project onwards**).

This means that RIS4CIVIS has to face a new phase concerning to a major definition of the joint strategy to the implementation of a CIVIS Research Infrastructure Label, but also - and which is more relevant to RIS4CIVIS - the project has to open a way/path to easily share CIVIS Alliance RIs as remarked in the proposal aim.

### Roadmap sub phase tasks and methodology

During the current **Roadmap sub-phase (M8-M12)** Module 2 work team has been committed with the following **tasks**:

1. As for the **IT tool**, an **in-depth analysis of the updated and additional information collected on each RI** has been performed. Moreover, activities aimed at supporting the **technical design of the IT tool** by CIVIS IT staff have been started.

2. As for the **joint strategy for the creation of a CIVIS Research Infrastructure label (firstly to refer to a common network to be set up)**, during this sub -phase a procedure to apply for the label has been defined and the opportunity to elaborate a CIVIS RI charter linked to the awarding of a label has been deeply analyzed.

The present sub phase (Consensus building and Recommendations, M9-M15) **objectives** are:
1. Defining the case study, including the RI labeling model and the drafting of the RI common Charter;
2. Elaborating medium and long-term recommendations, also taking into account the cross-cutting cooperation and exchange with other RIS4CIVIS modules.

This sub-phase started in November with a range of meetings aimed at defining a common methodology with other RIS4CIVIS modules, at sharing the respective results and at possibly integrate some achievements, so enriching the results emerged from Module 2 as well as integrating them as much as possible with other modules in the common framework of the RIS4CIVIS project. These meetings demonstrated how work group interconnections are useful during these phases of the project, especially in view to the drafting of recommendations.

In this regard, Module 2 leader participated in the meeting of 15th November on transferable skills with Modules 3, 4, 5 and 6. Another meeting has been organized on the 16th November (morning) with leader of Modules 1 and 3. Moreover Module 2 leader participated, on the 16th November (afternoon), in the Module leader meeting organized by WP2 leader.

The discussions during the module leader meetings allowed to identify some concrete interactions and possible joint recommendations, as evident in the recommendation section of the present document.

Learning from other experiences and good practice represents a fundamental aim of this project. For this reason, a connection with another project recently started and related to the sharing of RIs, has been created. Indeed, the scientists in charge of MOSBRI project (Molecular Scale Biophysics Research Infrastructure) has been invited to share their experience, the aims and the activities of their project, during the Module 2 meeting held on 22nd November 2021. Another meeting has been held on the 16th of December 2021 with the aim of sharing the state of the art of the work performed so far as well as the draft of the Consensus Building-Recommendations report.

**MOSBRI project** (https://www.mosbri.eu/) aims at improving, further integrating and widening the transnational access (TNA) to research instruments and expertise as well as at defining common standards for data archiving and exploitation, in the field of Molecular Scale Biophysics. More in details, its objectives are:

- To provide a "one-stop-shop" access to a wide range of world-class instruments and expertise in molecular-scale biophysics for the European academic and industrial scientific communities;
- To build a wide and interactive community of users and molecular-scale biophysics scientists and to create awareness of the full potential of integrative molecular-scale biophysical approaches among the scientific community;
- To establish and disseminate high quality standards and best practices in multi-technological data generation, analysis and archiving;
- To generate and disseminate cutting-edge knowledge allowing to improve the quality and quantity of MOSBRI's services;
- To engage in synergies with a wide variety of European industrial and academic stakeholders.

The project includes 2 industrial partners and 13 academic centers of excellence from 11 different countries, among which 3 institutions belonging to CIVIS Alliance (AMU, Sapienza, and ULB).

**Meeting of 22nd November 2021**

The overall aim of the meeting was to share the state of the art of the ongoing activities of Module 2 and next steps, so more specifically at:

- **Providing for an overview of the context, where we are;**
- **Analyzing a good practice relevant to RIS4CIVIS Module 2 activities: MOSBRI project;**
- **Defining Module 2 next steps: sub phase "Consensus building and recommendations".**

**Participants:**

- Université Libre de Bruxelles: Anthony Leroy
- National and Kapodistrian University of Athens: Konstantina Skolariki
- Universidad Autónoma de Madrid: Gastón García
- Stockholm University: Anna-Karin Tidén
- University of Bucharest: Mihnea Dobre, Iulia Nitescu
- Sapienza University of Rome: Ciro Franco, Emanuele Gennuso
- Aix-Marseille Université: Julien Favier.

**Hosted participants:**
- Sapienza Università di Roma: Francesca Cutruzzola (MOSBRI project)
- Aix-Marseille Université: Pierre Dorlet (MOSBRI project)

**Main information and inputs gained from the exchange with MOSBRI representatives**

MOSBRI project is mainly aimed at:
- **Enhancing the quantity and the quality of RI TNA** (Trans National Access) by the establishment of a single-entry point for applications;
- **Defining common standards for data repository** as well as for exploitation of R&I results emerged from the use of RI's;
- Identifying a **common methodology** (with the aim of improving quality and transparency in the access and use of RI's);
- Defining and implementing **joint communication and dissemination strategy** as well as educational activities related to the use of RI's.

The project objectives are ambitious and their achievement requires time. The path began with a COST Action started in 2016.

**Aspects in common with RIS4CIVIS project (Sharing Infrastructure Module):**
- Identification of a **shared methodology, based on common standards**
- Definition of a **Code of Conduct**
- Focus on the use of **RI for training scope.**

The main difference between MOSBRI and RIS4CIVIS projects lies on the multidisciplinary context of the latter.

**Recommendations and suggestions from MOSBRI representatives**:

- A major number of applications for **TNA should come from Industry** (MOSBRI target is +6%). This aspect demonstrates the open approach towards external stakeholders;
- Need for **involving researchers** in the process (necessary bottom-up approach);
- Need for **focusing on European thematic challenges**, as set up from the European Commission;
- Promote as much as possible **easy procedures** for RI access and staff exchange;
- Absolute need for recruiting **specialized personnel, such as technologist;**
- Fundamental role of **Technology Transfer Office** as key support if it is decided to open RIs to Industry;
- Make **evident the benefit/advantages** of additional services coming from joining the network.

**Meeting of 16th December 2021**

The overall aim of the meeting was to share the state of the art of the ongoing activities of Module 2 and next steps, so more specifically at:

- **Providing for an overview of the Recommendations Report;**
- **Analyzing the state of the art, with particular reference to the interactive platform;**
- **Discussing the proposal for CIVIS Charter for RI access and use;**
- **Defining Module 2 next steps.**

**Participants:**

- Université Libre de Bruxelles: Anthony Leroy
- National and Kapodistrian University of Athens: Konstantina Skolariki
- Universidad Autónoma de Madrid: Gastón García
- Stockholm University: Anna-Karin Tidén, Christian Vöringer
- University of Tübingen: Thibault Scheppers de Bergstein
- University of Bucharest: Mihnea Dobre, Iulia Nitescu
- Sapienza University of Rome: Ciro Franco, Emanuele Gennuso
- Aix-Marseille Université: Julien Favier, David Touzot, Amina Laanab, Alice Novello.

## Results: Module 2 -Final Roadmap, Case studies and Recommendations

## 1. Module 2: Final Roadmap

The Module 2 has selected **two main end-points**:

**1. IT tool/online interactive platform, showing all CIVIS open RIs**

The first component includes the establishment of one single information access point to CIVIS RIs by the use of a joint online interactive platform. This access point will include RIs available to joint use, even if only partially, by any user belonging to CIVIS institutions and eventually to external users, i.e. users not belonging to CIVIS Alliance, including CIVIS partner organizations and most of all businesses.

The online info point platform is configured as an online showcase of infrastructural resources and competencies for the benefit of the entire CIVIS community. The main aims of the tool are the following ones: 1) to promote awareness by the CIVIS scientific community about the RIs available for R&I activity; 2) to foster efficient use of RIs; 3) to strengthen R&I capacities by CIVIS institutions; 4) to

enhance RI visibility towards possible non CIVIS external users. The info point will include the following information:

- Acronym of the RI;
- Extended name of the RI;
- Scientist in charge;
- Contacts for information on the access;
- Key words identifying specificity of the RI;
- RI description;
- Belonging CIVIS Institution;
- Services provided;
- RI web page;
- Link to usage regulations (if available);
- Link to access fee regulation (if available);
- Research activities implemented by the RI;
- Technology Transfer and Innovation activities implemented by the RI;
- Third Mission activities implemented by the RI;
- Educational/Training activities to be implemented by the RI.

The tool will also include a "search" field by key words identifying the scientific specificity of each RI. It will be possible to cluster the available RIs by the 3 ERC sectors: Social Sciences and Humanities (SH); Physics and Engineering (PE); Life sciences (LS).

Moreover, the platform will have a dynamic character, meaning that it will allow to update the information already shown and to add additional RI files.

2. **Definition of a joint strategy for the creation of a CIVIS Research Infrastructure Network (for the short-term) and a CIVIS Research Label (at a long-term: possible implementation of the label after the end of RIS4CIVIS project onwards).**

The second component will include the definition of a long-term joint strategy for the creation of a CIVIS RI label. The creation of a CIVIS label will be preceded from a pilot procedure - aimed at creating a CIVIS Research Infrastructure Network and corresponding to RIS4CIVIS project duration. The label can be used by all RIs identified in the Alliance member institutions as open to a shared use (complete or partial) and to adopt the same general principles in terms of use regulation. The label – to be concretely implemented in a medium-long-term, i.e. after the end of the project duration - would be valid for a limited number of years (eventually renewable). So, the RI label should in the long-term identify a CIVIS Research Infrastructure, capable of ensuring high-quality and openness of services provided from the labelled RIs.

The benefits of using this label would be:

- Increased awareness regarding RI availability throughout CIVIS community;
- Visibility of RIs also towards non CIVIS users;
- Facilitating the use of RIs;
- Efficient use of RIs;
- Transparent access within a common framework and shared principles;
- Benefiting from different services supporting RI development;
- Sharing of competencies and expertise;
- RI Networking.

Its main objectives are:
- To clearly identify RIs open to access by researchers of other CIVIS institutions;
- To promote and disseminate high-level technologies to the academic and industrial sector, as well as provide relevant services to research laboratories and, eventually, external stakeholders' needs;
- To foster S&T collaborations among CIVIS partners;
- To create a critical mass of resources and competencies capable of fostering joint participation in international calls for proposals aimed at funding RIs;
- To share scientific and technical skills and expertise;
- To provide a certified regulation framework for greater efficiency and responsiveness (transparency and quality management assurance);
- To organize dissemination, information, networking events, as well as advanced training activities related to the use/maintenance of RIs, targeted to internal users and stakeholders;
- To eventually foster the potential of SSH RIs, especially in view of the current developments of EIT.

As for the label application model, three main elements have been analyzed and discussed in the Roadmap phase:
1) Definition of a set of principles, able to guarantee the optimal quality of RI services, to be incorporated in a common Charter;
2) Establishment of a scientific board (including a representative from each CIVIS Partner);
3) Timing for the implementation of the labelling procedure.

To be noted, as for the management aspects, that each RI would be managed in a decentralized way.

The achievement of the desired end-points proposed will mean that RIS4CIVIS has to face not just a new phase concerning a major definition of the joint strategy to the implementation of the CIVIS Research Infrastructure Label, but also - and which is more relevant to RIS4CIVIS - the project has to open a way/path to easily share CIVIS Alliance RIs as remarked in the proposal aim.

The table below shows the main information related to the identified end-points, the reasons for achieving the end-points, some possible indicators to measure the effectiveness of the actions put in place to achieve the end-points, the timing to reach it, potential barriers/risks which could impede reaching the end-points.

## Table 2. Module 2: Desired end-points & Final Roadmap

| Desired end-points | Reasons | Timing | Indicators | Possible Barriers/Risks |
|---|---|---|---|---|
| 1) Establishment of one single information access point to CIVIS open RIs by the use of a joint online interactive platform | ● To increase awareness regarding RI availability throughout CIVIS community<br>● To increase efficiency in the use of RIs<br>● To enhance visibility of RIs also towards non CIVIS users<br>● To foster cooperation with private sector/Industry, as desired user of RI | Month 15: release of a prototype of the online interactive platform | ● Number of CIVIS RIs open to the entire CIVIS community<br>● Number of CIVIS RIs open to non CIVIS external users<br>Openness degree (in terms of time %) of each RI | The creation and the release of the IT tool to be used as a showcase of CIVIS RIs depends on the work to be implemented by IT technicians |
| 2) Proposal of a Joint Strategy for the creation of a CIVIS RI network (in the short-term) and of a CIVIS RI label (in the long-term)<br><br>The label system would be in fact concretely implemented from the end of the project onwards | ● To guarantee RI access within a common framework and shared principles<br>● To benefit from different services supporting RI development<br>● To share competencies and expertise at a CIVIS level<br>● To foster Networking between RIs<br>● To define in a clearer and more transparent way RI usage regulation in order to make the RI access smoother<br>● To clearly address IPR management principles<br>● To foster cooperation with private sector/Industry, as desired user of RI | Month 15 | Definition of the RI network/label strategy proposal | The willingness to apply for the label depends on political decisions at each RI level and at each CIVIS institution level |
| | | From Month 16 (Case study phase) | Number of RIs applying for the label test (RI networking) | |

## 2. Module 2: Case Studies

The case study identified by Module 2 includes the following main aspects:

a. First release of the **RI interactive platform** collecting all CIVIS open Research Infrastructures

b. Definition of a **Joint Strategy for the creation of a CIVIS RI network and of a CIVIS RI label**, based on the identification of a set of common and shared principles for the access and the use of CIVIS open Research Infrastructures (i.e., CIVIS RI Charter).

**a- Establishment of one single information access point to CIVIS open RIs by the use of RI interactive platform**

The **first component** of the model proposed by the Module 2 team includes the **establishment of one single information access point to CIVIS RIs** by the use of a joint online interactive platform. This access point will include RIs available to joint use, even if only partially, by any user belonging to CIVIS institutions and eventually to external users, i.e. users not belonging to CIVIS Alliance, including CIVIS partner organizations and most of all businesses.

The online platform is configured as an **online showcase of infrastructural resources and competencies** for the benefit of the entire CIVIS community. The main aims of the tool are the following ones: 1) to promote awareness by the CIVIS scientific community about the RIs available for R&I activity; 2) to foster an efficient use of RIs; 3) to strengthen R&I capacities by CIVIS institutions; 4) to enhance RI visibility towards possible non CIVIS external users. The info point will include the following information:

- Acronym of the RI
- Extended name of the RI
- Scientist in charge
- Contacts for information on the access
- Key words identifying specificity of the RI
- RI description.
- Belonging CIVIS Institution
- Services provided
- RI web page
- Link to usage regulations (if available)
- Link to access fee regulation (if available)
- Research activities implemented by the RI
- Technology Transfer and Innovation activities implemented by the RI
- Third Mission activities implemented by the RI
- Educational/Training activities to be implemented by the RI.

The IT tool, called **Opendatasoft,** will provide a first step to achieve the objective of sharing research infrastructures at the Alliance level.

This platform will present information collected on each RI presented in a format of table with possibility **to filter using different categories** (by university or ERC Sectors) or simply by keyword. It will also be possible in this platform to present RI on a map.

Moreover, the platform will have a **dynamic character**, meaning that it will allow to update the information already shown and to add additional RI files.

The IT Tools selected to publish Research Infrastructure is also almost compliant with FAIR principle and can offer a possibility to propose a first Open data dataset for RIS4CIVIS.

This publication platform will be automatically linked with another Database Tool that will be used to update the list of RI available in the Alliance.

The release of a prototype of the interactive platform is planned for **Month 15 (March 2022)**.

At the following link it is already possible to view a demo of the IT tool: https://civis.trial.opendatasoft.com/explore/dataset/module-2-research-infrastructure/table/?disjunctive.keywords

**b- Joint Strategy for the creation of a CIVIS RI network and of a CIVIS RI label**

The **second component of the Model** includes **a Joint Strategy for the creation of a CIVIS RI network,** at a short-term, and of **a CIVIS RI label**, at a medium-long term. This label can be used by all CIVIS open RIs and committed to adopt the same general principles in terms of use regulation. In any case, as for the **management aspects, each RI would be managed in a decentralized way**, i.e. locally by the scientist in charge of the RI. This means that each labelled RI will:
- Maintain organizational autonomy from a technical-scientific point of view;
- Assume management responsibility and define specific methods of use.

The proposed labelling model is based on:

1) **A common set of principles**, as defined in the **CIVIS Charter for RI access and use (attached to the present report);**

2) **A procedure** leading to the awarding of CIVIS RI label, as following.

The application for the Label will be started after the end of the RIS4CIVIS project and of course will be on a **volunteer basis**. In this regard, it is also worthy to underline that also the RIs not interested in the label awarding will have the possibility to be visible within the RI on-line interactive platform.

The label is awarded for **3 years**.

In order to receive the label, the applying **RI shall accept the principles and the requirements set in the CIVIS RI Charter**. A Scientific board, as below described, will receive the applications but the label will be **automatically awarded**. This means that the first application will be based on a self-assessment by the same applying RI and on a volunteer commitment to match all the requirements during the following 3 years.

The label is **renewable**:

- after the first 3 years, each labeled RI, if interested to maintain the label, shall submit a renewal request;

- at this stage, the scientific board will monitor the state of the art in terms of accomplishment of RI to the Charter principles and requirements.

**The above described procedure will apply from the end of the RIS4CIVIS project onwards (medium-to long-term perspective).**

**A pilot procedure – aimed at creating a CIVIS Research Infrastructure Network, will apply within the project duration (short-term perspective)**; once the procedure is approved by the CIVIS Vice-Rectors, the label procedure will be concretely tested during the Case study phase as following:

- RIs interested to apply for the label test will be awarded with a 1-year duration;
- Renewal procedure in this phase will be monitored by a temporary scientific/management board (to be identified). The aim is to test the procedure and to eventually adjust it in view of its formal adoption and the implementation after the end of the RIS4CIVIS project.

In order to monitor the label procedure, once the process will be started, **a scientific board** will be established.

More into details, the board will include one scientific representative by each CIVIS Partner. Each scientific representative of the Board will be supported by one management/administrative unit belonging to the respective institution and appointed by the same institution.

The Board will be in charge of the following **tasks**:

- evaluation of the applications for label renewal;
- monitoring the overall effectiveness, efficiency and impact of CIVIS Label model every 3 years;
- possibly identifying CIVIS alliance priorities in term of research infrastructures;
- eventually proposing strategic actions for the development of a CIVIS Research Infrastructure.

## 3. Module 2: Recommendations addressed to national and/or European policy-makers
### To External stakeholders (businesses)

- *(Related to Valorization of Human Capital Resources)* To contribute to the implementation of high skilled/technical staff exchange programs.

### To Policymakers

- *(Related to the management of the CIVIS RI Labelling Model)* Proposal for a set of indicators capable to measure the degree of RI openness and effectiveness (as described in the following section) (at medium-term – every 3 years from the end of the project and onwards).
- *(Related to Valorization of Human Capital Resources)* To officially recognize the professional profile of high skilled/technical personnel supporting the management and the use of RIs (at long-term - during 3 years after the end of the project).

## Proposal of indicators « Sharing capacity, infrastructure and resources »

A set of indicators concerning openness and sharing of RIs, clustered by **input, activity, output, outcome and impact and to be used at a short, medium and long term,** is proposed below. The indicators reported in green will be used at a short term, i.e. during the Case study phase.

**Input – The financial, human, and material resources used for the development of the intervention.**

- Number of RIs open to the entire Alliance community;
- Number of RIs open to non-Alliance external users;
- Number of HR involved in the RIs activities;

- Investments for RIs maintenance;
- Existence of common planning processes (such as in MOSBRI project) for future infrastructures to be jointly developed between different Institutions of the Alliance and/or with external stakeholders;
- Existence of explicit incentives for sharing infrastructures within the Alliance.

**Activities - Actions taken or work performed through which inputs, such as funds, technical assistance and other types of resources, are mobilized to produce specific outputs**

- Openness degree (in term of machine-time ratio) of each RI;
- Number of RIs applying for the Alliance RI labelling model (Number of applications to the Alliance RI access and usage Charter).

**Outputs - The products, capital goods, and services that result from a development intervention**

- Annual requests for access to research infrastructure, classified for: internal, other CIVIS users, extra-CIVIS users, businesses;
- Number of research collaborations implemented with external stakeholders (in particular businesses) by the use of the Alliance shared RIs;
- Annual umber of dissemination actions concerning CIVIS collaborations (involving the use of CVIS RIs);
- Annual number of training courses implemented by the use of RI and open to external users.

**Outcomes - The likely or achieved short-term and medium-term effects of an intervention's outputs.**

- Number of research projects submitted to Horizon Europe by Alliance members and explicitly mentioning the use of one (at least) CIVIS RI in their work plan;
- Number of patents emerged from R&I activities performed in collaboration with one or multiple CIVIS RIs.

**Impact - Positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended.**

- Number and share of peer reviewed publications based on the research supported by the RI that are core contribution to scientific fields;
- Number of licensed patents emerged from R&I activities performed in collaboration by different CIVIS RIs.

Finally, a proper combination of some of above-mentioned indicators will allow to identify the degree of the following aspects:

- Strengthened sense of belonging to a European Alliance;
- Strengthened sense of belonging to the European Research Area;
- Increased opportunities for researchers, companies, civil society.

## 4. Module 2: Conclusions and next steps

The work performed within Module 2 and the related outputs, such as the definition of a CIVIS RI label awarding procedure as well as the release of an interactive platform aimed at showing available open CIVIS Research Infrastructures, require the definition of an appropriate communication strategy capable to:

- **Make evident advantages/benefits deriving from CIVIS RI label** both for applying RIs and for RI users, in term of transparency, quality of procedures, openness of access, etc.;
- **Enhance the visibility of CIVIS open RIs** not only throughout the Alliance scientific community but also towards external stakeholders, in particular businesses, with the aim of fostering public-private interactions and technology-transfer practices;
- **Promote CIVIS Alliance critical** mass and potential in term of RIs;
- **Enhance the networking potential** of CIVIS with other Alliances and R&I poles of excellence at a global level.

Another communication issue linked to the label awarding is represented by the **design of an appropriate brand of the label.**

The definition of this strategy is a common priority that requires a joint action to be developed in cooperation with **WP5 (dedicated to communication in RIS4CIVIS) leader** within the frame of CIVIS and RIS4CIVIS projects.

Finally, further activities should be implemented during the Case Study phase of RIS4CIVIS, as following:

- **Presentation of CIVIS RI long-term label strategy and of the Charter** to/approval by RIS4CIVIS and CIVIS Board of Rectors;
- Possible planning and organisation of a **CIVIS RI Open Day (likely online)** including the official launch of the Strategy;
- **"Call for testing" the label awarding procedure**, on a voluntary basis, by some CIVIS Research Infrastructures.

## Module 3: Reinforcing Academia-Business R&I Cooperation

Module 3 is focused on setting out systems and practices to maximise the Alliance's ability to foster interactions with the non-academic sector – through cooperation and bi-directional transfer of knowledge, but also by increasing the innovation capacities of each of our institutions as well as that of actors in their regional research ecosystems, aiming to improve support to the whole innovation chain.

Module 3 objectives are:

- To develop a joint process to detect, assess and accompany innovation within the CIVIS Alliance, that is based on exploiting the added value of the Alliance:
    - Interconnecting our innovation ecosystems: CIVIS innovators will have access to the combined regional and national innovation ecosystems (and Regional Smart Specialisation Strategies) of *all* Alliance members, in addition to the European innovation ecosystem;
    - We will interconnect our competencies: CIVIS innovators will be able to obtain personalised assistance and mentoring from the most appropriate specialist in the Alliance.

- To further develop University-Business Cooperation by assisting CIVIS members to develop innovation capacity where they have none.

### Methodology & Procedure applied to data collection

During the Benchmarking phase, complementary skills of all CIVIS partner universities have been identified. A transferable skills scheme has been created referred to the Innovation Accompaniment Program of the Grant Agreement (page 109).

In accordance with all representatives of Module 3 the methodology of knowledge transfer within learning pairs, the so-called tandems, was applied. Therefore, a Module meeting with an open discussion of the next steps during the Consensus-building phase took place.

The tandem matching is based on the results of the first questionnaire and specific mapping of barriers and best practices collected during the Benchmarking phase. First, the availabilities of all representatives within Module 3 were queried and project guidelines were prepared for each tandem. In total four tandems were set: AMU & SUR, NKUA & SU, UAM & UT, UB & ULB.

As a basis, the mapping of complementary skills of the Benchmarking phase has been used. In addition, guidelines, action plans and key questions for each tandem meeting were prepared by the Module leader.

Through the tandem meetings held online, specific Innovation Management best practices, activities, tools and approaches have been exchanged. In the first two-hour tandem meetings, each tandem partner asked targeted questions related to essential Innovation Management activities. The format of the tandem guaranteed a detailed look behind the scenes and goal-oriented discussions took place. The tandem partners identified the specific topics they wanted to focus on.

The tandem of AMU & SUR discussed the topics of the knowledge triangle, regional ecosystems and TTO offices. Both representatives of the universities prepared presentations for the tandem meetings. SUR presented an extension of the knowledge triangle, the quadruple helix model. An expert, the head of the technology transfer office of SUR, participated in the second meeting; thus, question could be directly addressed. The representative of AMU explained in detail the innovation ecosystem of AMU.

Different actors and their functions of AMU`s one-stop shop CISAM were shown to all participants in the meeting. As a need the representatives defined linking fundamental research with applied-oriented approaches.

NKUA & SUR focused on training measures in terms of innovation and regional ecosystems within the tandem meetings. New approaches of accelerating technology transfer were presented to each other. Barriers in terms of intellectual property, commercialization of research and grey zones in terms of patenting ideas were discussed. In the second tandem meeting an exchange of end-points took place. The representatives found similarities in terms of their end-points and gave each other advice on how to raise awareness about the importance of IP.

UAM & UT focused on the Innovation Strategy and identified the development of an Innovation Culture as an important milestone. Creative approaches for raising awareness of innovation management themes, such as podcasts and innovation talks, were presented by UAM. In addition, Innovation Ecosystems were explained to each other.

UB & ULB focused on the exchange of the activities of the technology transfer office, the innovation ecosystems, raising awareness of Innovation-Related Measures and increasing the acceptance of innovation by students & researchers. Therefore, an expert of ULB joined the first tandem meeting and directly answered questions of UB. An important advice was the identification of clusters in applied-oriented technologies and innovation. In addition, starting with one best practice could help UB to strengthen the regional innovation ecosystem. Furthermore, the representatives of UB & ULB discussed that the exploitation of more research results could be a way to raise awareness for innovation activities. The RIS4CIVIS network and the European Union are assessed as essential frames; thus, more projects should be realized in future.

A first alignment was made between the current situation and relevant end-points to be reached. Each university has chosen about 3 main end-points that should be addressed on a short-, mid- and long-terms. After the first meeting each representative of every university screened the own end-points and filled in the action plan. The end-points were discussed internally by the representatives of the university and relevant functions and units.

The second tandem meetings can be seen as follow-up meetings of the first tandem meetings. Within these meetings it was further discussed how specific end-points can be reached and which types of activities are necessary to reach these defined goals. Presentations on different topics were prepared and held within the meetings. Therefore, the university representatives identified relevant representatives and experts that joined the meetings and could reply directly to specific questions.

Innovation-management tools were shared within the tandem working groups and tandem partners gave advice to each other, how the situation can be improved in the future and which tools, trainings might be necessary. Fruitful discussions took place, and a direct exchange of feedback gave detailed insights about the current situation and next approaches.

The methodology of the tandem meetings encouraged representatives of all universities to participate actively, and themes could be edited deeply. Relevant innovation-management topics could be discussed precisely. Within the work in small groups certain and chosen topics of the universities could be addressed directly, synergies could be encouraged, and authorities and responsibilities were clearly distributed. It was possible to analyze the end-points and themes in-depth that should be focused during the next months.

**Meetings in total:**

**Number of Tandem Meetings within Module 3:** 8 meetings, each two hours

**Number of Cross-Module Meetings:** 2 meetings, each ~ 1 hour
**Number of Module 3 Meetings:** 1 meeting, 1,5 hours
**Other meetings:** 1 physical meeting staff exchange UB-UT, 2-3 days with insights on specific themes in administration and research
**Meeting with Open Lab coordinators & Module 6:** 1 meeting, ~ 1 hour

The following table details the Module 3 meetings and tandem meetings which took place during the first period of the Consensus-building phase.

| Date | Type of Meeting | Participants | Key Points | Documents produced |
|---|---|---|---|---|
| 18/07/2021 09:30 – 11:00 | Module 3 Meeting | All representatives of every CIVIS university | • Feedback of Benchmarking report<br>• Acknowledgment to all representatives<br>• Presentation of Consensus-building phase<br>• Timeline and organization of work (Tandem Meetings) | • Presentation<br>• Schedule Tandems |
| 26/09/2021 15:00 - 17:00 | 1st Tandem Meeting UAM – UT | José Luis Pau (UAM), Elena Dornheim (UT) | • Exchange of best-practices regarding the Innovation Strategy<br>• Exchange of best-practices regarding the Innovation Culture | • Presentation Tandem<br>• Minutes |
| 26/09/2021 15:00 - 17:00 | 1st Tandem Meeting NKUA – SU | Antonis Livieratos (NKUA)<br>Katerina Kadena (NKUA)<br>Konstantina Skolariki (NKUA)<br>Mats Danielson (SU)<br>Tor Regberg (SU)<br>Elena Dornheim (M3, UT) | • Exchange of knowledge and best-practices in terms of IP and technology transfer | • Presentation<br>• Minutes,<br>• Paper of Accelerating technology transfer (NKUA)<br>• Paper in Innovation Studies (SU) |
| 01/09/2021 15:00 - 17:00 | 1st Tandem Meeting UB – ULB | Mihnea Dobre (UB)<br>Filuta Ionita (UB)<br>Leticia Martinez Garcia (ULB)<br>Isabelle Lefebvre (ULB)<br>Elena Dornheim (M3, UT) | • Exchange of knowledge in terms of the technology transfer office | • Presentation<br>• Minutes<br>• Presentation of Solvey school (ULB) |

| Date | Type of Meeting | Participants | Key Points | Documents produced |
|---|---|---|---|---|
| 02/09/2021 15:00 - 17:00 | 2nd Tandem Meeting NKUA – SU | Antonis Livieratos (NKUA) Konstantina Skolariki (NKUA Tor Regberg (SU) Elena Dornheim (M3, UT) | • Discussion of end-point goals | • Minutes • Table with End-points and necessary activities |
| 08/09/2021 09:00 – 11:00 | 1st Tandem Meeting SUR – AMU | Charlie Barla (AMU) Alice Novello (AMU) Maria Cristina Di Giovancarlo (SUR) | • Exchange of regional innovation ecosystems and TTOs | • Minutes • Presentation |
| 08/09/2021 15:00 – 17:00 | 2nd Tandem Meeting UB – ULB | Mihnea Dobre (UB) Filuta Ionita (UB) Leticia Martinez Garcia (ULB) Elena Dornheim (M3, UT) | • Exchange of knowledge in terms of innovation ecosystems and innovation training | • Minutes • Presentation |
| 10/09/2021 15:00 – 17:00 | 2nd Tandem Meeting UAM – UT | Jochen Hirsch (UT) Jorge Álvarez (UAM) José Luis Pau (UAM), Elena Dornheim (UT) | • Exchange about innovation networks and regional ecosystems • presentation of the Industry Liaison Office & Innovation Grant (UT) | • Minutes • Presentation Innormadrid, k-node • Presentation Innovation structures University of Tübingen • End-points |
| 17/09/2021 12:00 – 14:00 | 2nd Tandem Meeting AMU – SUR | Charlie Barla (AMU) Alice Novello (AMU) Maria Cristina Di Giovancarlo (SUR) Daniele Riccioni (SUR) | • Exchange about knowledge triangle • Exchange about innovation ecosystems | • Presentation knowledge triangle & quadruple helix, TTO (SUR) • Presentation CISAM (AMU) |

It is planned to share the outcomes of the tandem meetings within Module 3 and in the upcoming cross-Module meetings. Expert meetings are organized for all interested representatives within Module 3. The topics identified are: Intellectual Property, Innovation Grants, Industry Liaison Office, Knowledge Transfer, Start-up Support in a university context and development of an innovative, collaborative workshop.

The documents produced within the tandem meetings will be available in the RIS4CIVIS folder of Module 3. Representatives of Module 3 will be asked to add further amendments.

Regarding the definition of the desired end-points, initially, they were identified by each single university itself. The key questions were formulated to give the Module 3 representatives a definition of the terms: current situation, input, activities, barriers, desired end-points and time frame. The representatives prepared an initial list of the endpoints and filled out first parts of the table on their

own. In the follow-up tandem meeting short-term, mid-term and long-term end-points referred to improving the main innovation management activities were discussed together with the tandem partner and Module 3 leader. After the meetings the list was refined by each representative.

## Results: Module 3 -Final Roadmap, Case studies and Recommendations

## 1. Module 3 - Desired End-points & Final Roadmap

The preliminary roadmap is based on the results of the benchmarking phase and in-depth mapping of end-points during the consensus-building phase. In addition, a consensus was built to focus on the key objectives of Module 3. The work carried out in those two phases helped to gain insight into the individual situation and understand the needs of each single university related to innovation management activities. It was the first critical step to gain transparency about the desired outcomes, possibilities and the current state.

During the last months in the consensus-building phase, necessary activities could be identified to achieve the desired end-points. It is recommended to constantly track the activities that feed that preliminary roadmap and adjust them where it is needed. It should be taken into consideration that not all universities have one common starting point and the same desired endpoints in each of the innovation management activities. The common goal can be seen in improving the innovation capabilities. High correspondences can be found in many of the innovation activities, common interests and challenges.

### Key objectives of Module 3 Consensus-building phase

The following steps were discussed within the Module 3 meeting together with all representatives.

- Development of "Innovation Reference Points" through the mapping of Innovation Management activities in the tandem meetings,
  - o Results of the benchmarking phase about the current status of each university;
  - o Results and discussions within the tandem meetings during the consensus-building phase.
- Design of a common Innovation Accompaniment Programme,
  - o Knowledge transfer during the consensus-building phase within the tandem meetings;
  - o Identification of innovation management topics of common interest during the consensus-building phase;
  - o Dynamic Glossary of Innovation Management terms, initiated during the benchmarking phase;
  - o Innovation Management Handbook (in progress).
- Development and proposal of an approach to IPR for innovations of Innovation Accompaniment Programme,
  - o Finding common approaches together with M5;
  - o Identifying similar CIVIS activities and learning from it;
  - o Organizing expert meetings.
- Development of a catalogue of "innovation training", based on current CIVIS offer and developing additional courses as required,

- o Library of Best-Practices of Module 3 initiated online within the benchmarking phase;
- o Guidelines developed within consensus-building phase: use of indicators in innovation management, guideline for fostering a positive innovation culture, guideline for formulating & implementing an innovation strategy;
- o Presentations of representatives of Module 3;
- o Cross-Module activities (M3, M4, M5 & M6);
- o First RIS4CIVIS Staff exchange planned: UB-UT, had to be postponed due to regional pandemic situation.

## Endpoints selected

**Transfer of knowledge and knowhow** was prioritized by most of the representatives of Module 3. This transfer of knowledge affects all four key areas of innovation management: innovation strategy, innovation culture, innovation capabilities and innovation structures. This endpoint can be seen as one part of the key objectives of Module 3: The Innovation Accompaniment Programme.

The representatives want to build strengths and reduce weaknesses by the exchange of knowhow and knowledge. Information and support should be easily accessible. Individual exchanges of innovation topics have been already addressed during the consensus-building phase within the first tandem meetings. The following innovation management topics were discussed: *Knowledge triangle (Quadruple Helix Model), Regional Innovation Ecosystems, TTO Offices, Accelerating the technology transfer, grey zones in terms of patenting & IP, Training Measures, Innovation Strategy, Creation of a guideline for the Innovation Strategy, Development of an Innovation Culture and Raising awareness of Innovation Management activities*

Innovation management themes should be incorporated in the working sessions together with all Module 3 representatives and further interested parties. Topics of common interests identified are: *Intellectual Property Rights, Innovation Grants, Industry Liaison Office, Knowledge Transfer, Start-up support, development of creative, collaborative workshops (Identification of possible topics for the case study)*

Essential activities to reach this endpoint have already taken place and will play a major role in future. Because of this "Transfer of knowledge and knowhow" is a short-to-long-term goal.

**Exploitation of the results & improvement of outcomes of research** is also highly ranked. This endpoint includes two essential innovation management activities that have already been identified during the benchmarking phase and can be allocated to one key element of innovation: The Innovation Capabilities.

The purpose of this goal is mainly to enhance interactions with industry and implement results of fundamental research into practice. This endpoint requires major changes such as awareness raising or hiring people with innovation management background. For this reason, it can be categorized as a mid- to long-term goal.

**Develop & foster an innovation culture** was selected by the majority of CIVIS partners, because no (or little) innovation culture is existing. Developing and fostering an innovation culture is clearly a long-term goal. An orchestra of many wisely selected activities is necessary to nudge a positive innovation culture. A checklist for promoting a lively culture of innovation can be found within Annexes **Erreur ! Source du renvoi introuvable.**.

Necessary activities collected within the CIVIS network are the accessibility of innovation spaces and hubs, the development and implementation of the innovation strategy, fostering innovation programs, involving the top management, sharing experiences with other universities and sharing successful innovation projects in other departments/ campuses.

**Participation in a bigger EU project** is also one of the end-points considered as important during the consensus-building phase. The incentives behind are to improve the university`s network and the opportunities for funding. Possible activities to reach that goal are to create a roadmap of 3$^{rd}$ party funding and a database of existing initiatives and future plans.

The creation of both a database and roadmap require the coordination with many experts and the development of a user-friendly digital platform; thus, it can be only implemented in the long run.

**Start-up support** is an innovation topic most of the representatives are interested in. Positive effects are targeted by this action in strengthening innovation ecosystems and building functional structures. It is assessed as a mid-to long-term goal, because an alignment with different stakeholders has to take place, pilot projects should be provided and new models of collaborative innovation developed. Furthermore, awareness has to be raised that students and researchers participate actively.

**Develop and formulate an innovation strategy** is chosen by several representatives of Module 3, because those particular universities feel that the current innovation strategy is not coherent, poor or non-existent. The strategy should describe how an organization will reach its set goals. For the development and formulation of an innovation strategy the involvement of experts that are familiar with the overall strategy of the institution is necessary as well as the alignment with various departments. A guideline elaborated during the consensus-building phase within Module 3 (see Annexes **Erreur ! Source du renvoi introuvable.**) can be supportive for that purpose.

**Implementation and adaptation of an innovation strategy**. As soon as the innovation strategy is formulated and aligned with all identified stakeholders, the implementation can be initiated. Therefore, an improvement of the right innovation capabilities might be necessary and regular meetings with experts of the institution should be held. Due to the pre-planning and alignment with many different entities this goal is allocated on a mid- to long-term scale.

**Patent portfolio & portfolio of market-oriented innovations** is an endpoint that is partly related to the "exploitation of the results & improvement of outcomes of research". Representatives of the universities focus on this goal since they want to build more licence patents or establish a patent portfolio.

Many activities which may run simultaneously are crucial such as identifying common interests of partner universities and excellent skills, identifying common patterns within the CIVIS network, implementing IP and research processes, awareness raising through showcases and best-practices in the academic environment.

Due to the challenges such as finding common domains and the complexity of this topic it should be seen as a mid- to long-term goal.

**Awareness raising using innovation measures** was selected by Module 3 participants to increase the

interest of students, Ph.D. students, researchers and professors to take advantage of innovation support and the use of innovation measures.

Activities planned to reach this end-point are arranging seminars for the target group and involving the TTO and professionals on innovation training. The challenge of awareness raising is also a longer process and for that reason this end-point is declared as a mid-to-long-term goal.

### Selection and use of indicators

The use of valuable indicators in terms of innovation management activities is combined with high complexity. Effects of activities can often not be seen on a short-term. In fact, many influences of innovation management activities are only noticeable on the long scale. Quality is one of the most important criteria for the assessment of the results of the activities.

In addition, the indicators should be carefully chosen since they influence the staff and members of an institution or organisation tremendously. Within the CIVIS network each institution has its individual background; thus, the indicators should be tailored to the corresponding situation by experts or head offices of each university.

### Recommendation for the use of indicators in innovation management at one glance:

- The indicators should be balanced between input and output indicators;

- They should equally include the four key elements of innovation management: capabilities, structures, strategy and culture;

- Less indicators as possible should be used;
- The indicators should be aligned with the overall strategy, innovation strategy and progress of each institution (Isomäki, Kylliäinen, Nieminen, Prof. Dr. Hirsch, & Dornheim, 2021, S. 177).

It is planned to provide a more detailed list of indicators and innovation metrics after further experts, entities and the representatives of Module 3 have agreed to the selection.

## Table 3. Module 3: Desired End-points & Final Roadmap

A summary of the end-points of all CIVIS partner universities can be seen in the table below. Similar interests and common endpoints targeted could be found in the following innovation management activities: Transfer of knowledge and knowhow (7), Exploitation of the results & improvement of outcomes of research (6), Development & promotion of an innovation culture (5), Participation in a bigger EU project (4), Start-up support (4), Development and formulation of an innovation strategy (3), Implementation and adaptation of an innovation strategy (3), Patent portfolio & portfolio of market-oriented innovations (3), Awareness raising using innovation measures (3). A first priority of the essential desired endpoints could be carved out by the frequency of responses. The numbers in parentheses associated with each end-point refer to the numbers of partners who had shared their interests in the given end-point.

All contributions for possible activities, potential barriers are listed. This table together with the results of the benchmarking phase, objectives of Module 3 in general and discussions within the consensus-building phase serves as a basis for the Preliminary Roadmap of Module 3. The table is ranked according to the time frame from short – to long term. Some of the short-term activities have been already initiated by the universities and during the consensus-building phase within Module 3.

| Desired end-points | Reasons | Actions | Timing | Indicators | Possible Barriers/Risks |
|---|---|---|---|---|---|
| Transfer of knowledge and knowhow (7) | • Build strengths & reduce<br>• Build synergies & networks weaknesses<br>• Acquire support<br>• Form a dedicated team at the CIVIS level<br>• Reach clear information when it is needed | • Workshops & trainings (e.g., tandem trainings, expert meetings & staff exchange based on: individual strengths, weaknesses, needs, interests)<br>• Catalogue of transferable skills (innovation management, entrepreneurship)<br>• Digital exchange<br>  o CIVIS box<br>  o Expert data base | Short- to long-term | • Creation of a webpage that is user-friendly<br>• Need of test runs of the webpage<br>• Continuous maintenance<br>• Creation of leads to raise awareness<br>• Administration of funding and grants<br>• Timeframe of training offer and course programs<br>• Registration and actual participation | • Creation of a webpage that is user-friendly<br>• Need of test runs of the webpage<br>• Continuous maintenance<br>• Creation of leads to raise awareness<br>• Administration of funding and grants<br>• Timeframe of training offer and course programs<br>• Registration and actual participation<br>• Format of the training dependent on number of participants |

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| | | | | Format of the training dependent on number of participants | |
|---|---|---|---|---|---|
| Development and formulation of an innovation strategy (3) | No existing and no coherent innovation strategy | • Involving experts who are familiar with the overall strategy<br>• Deep-dive into SWOT analysis<br>• Define the type of innovation strategy<br>• Involving various departments<br>Using the guideline to create an innovation strategy (developed within Module 3, RIS4CIVIS) | Short-to mid-term | • Identifying the right people<br>• Finding alignment and covering all participants' needs<br>• Identifying all values and management principles of the university<br>Having a common vision | • Identifying the right people<br>• Finding alignment and covering all participants' needs<br>• Identifying all values and management principles of the university<br>• Having a common vision |
| Exploitation of the results & improvement of outcomes of research (6) | • Implementation of results of fundamental research should be improved<br>• Need for more alternatives to develop innovations<br>• Enhance interactions with industry<br>• Build more start-ups and licensed patents | • Hiring people with innovation management background<br>• Raise awareness & incentives for researchers<br>Training in marketing economics market research | Mid- to long-term | • Risk to lose strength in fundamental research<br>• Lack of capacities<br>Interest of researchers and fundamental research | • Risk to lose strength in fundamental research<br>• Lack of capacities<br>• Interest of researchers and fundamental research |
| Implementation and adaptation of an innovation strategy (3) | No established or no coherent innovation strategy | • Fostering the right innovation capabilities and innovation structures<br>• Exchange of knowledge<br>• Innovation via the CIVIS network<br>Innovation round tables of internal university departments | Mid- to long-term | • Finding the right timing<br>• Implementing the right type of strategy (functional or meta strategy)<br>• Adapting the innovation strategy to the individual needs of the university | • Finding the right timing<br>• Implementing the right type of strategy (functional or meta strategy)<br>• Adapting the innovation strategy to the individual needs of the university |
| Patent portfolio & portfolio of market-oriented innovations (3) | • No patent portfolio<br>• Building more license patents | • Identifying common patterns of CIVIS universities<br>• Finding one activity where partner universities have interest and excellent skills<br>• Promotion and dissemination<br>• Implementation of IP and the research process<br>• Information for researchers | Mid- to long-term | • Finding a common domain<br>• Compatibility with fundamental research<br>• Barriers especially in fields that are not practice-orientated | • Finding a common domain<br>• Compatibility with fundamental research<br>• Barriers especially in fields that are not practice-orientated<br>• IP: complex topic who had the initial idea? Legal issues |

| | | Build showcases/ reference cases of best-practices in the academic environment | | IP: complex topic who had the initial idea? Legal issues | |
|---|---|---|---|---|---|
| Start-up support (4) | • Strengthening innovation eco systems<br>• Building functional structures<br>• Coordination of innovation eco systems with local authorities | • Experience exchange with representatives of the industry<br>• Dissemination of start-up opportunities in faculties and research centres<br>• Providing pilot projects to showcase<br>• Development of new models of collaborative innovation | Mid- to long-term | • Finding common spaces for large companies, start-ups and researchers<br>• Covid-19 pandemic makes it difficult to interconnect people<br>• Low interest of students | • Finding common spaces for large companies, start-ups and researchers<br>• Covid-19 pandemic makes it difficult to interconnect people<br>Low interest of students |
| Awareness raising using innovation measures (3) | Interest for more innovation support | • Arranging seminars for students and PhD students, professors and researchers<br>Involvement of university technology transfer office and professionals on innovation training | Mid- to long-term | • Lack of certification as credits on the CV<br>Organizational costs | • Lack of certification as credits on the CV<br>• Organizational costs |
| Development & promotion of an innovation culture (5) | • Increase innovation cultures and innovation activities<br>• No existing innovation culture | • Accessibility of innovation spaces and hubs<br>• Development and implementation of the innovation strategy<br>• Fostering innovation programs<br>• Involving the top management<br>• Sharing experiences with other universities<br>Sharing successful innovation projects in other departments/ campuses | Long-term | • No coherent or existing innovation strategy<br>• Coordination with other university buddies | • No coherent or existing innovation strategy<br>• Coordination with other university buddies |
| Participation in a bigger EU project (4) | • Improving the network<br>• Improving the funding | • 3rd party funding<br>• Create a roadmap of 3rd party funding programs<br>• Database of existing initiatives and future plans | Long-term | • Data protection<br>• Bureaucratic efforts<br>• Dynamic situation of each university | • Data protection<br>• Bureaucratic efforts<br>• Dynamic situation of each university |

## 2. Module 3 - Case Studies

In order to get the best output from the comprehensive preliminary work during the implementation of WP1 & 2, consensus was reached on defining topics widely in a way that each partner can contribute and learn at the same time. Furthermore, the alliance agreed on following a systematic approach to assure close interaction among all partners and a high level of quality of the results.

Based on results of the benchmarking phase (WP1) and the results of the tandems initiated during the consensus building phase (WP2) a call for potential case studies was launched. On the 21st of February 2022, the partners consensually agreed on a cases study consisting of two cases.

The two cases are:

**1. Building a start-up environment;**

**2. Defining an Innovation Strategy.**

The cases were proposed by the University of Bucharest (Case 1) and the University of Tübingen (Case 2). Both cases cover topics that have been identified as topics of common interest in the summarized roadmap (compare section 2). Furthermore, the cases are highly suitable as they cover topics of macro and micro level. Thus, we are able to test and validate the approach on both levels within one case study. The proposed approach consists of two on-site visits at the proposing institutions. To allow an in-depth discussion and thus raise the quality of the results, the module 3 members will split up into two groups. To secure participation of each member on both cases there will be two visiting phases organized by UB and UT.

Phase 1:

As a first step, UB and UT will prepare and organize on-site visits at their universities for their group members and guest (2-3 days' meetings) to understand the specific challenge (deep dive). The dates should not overlap to make sure that UB and UT can participate in the meeting of the other group as well.

As a second step, knowledge and experiences within the groups will be exchanged, possible solutions will be elaborated.

Phase 2:

UB and UT switch their positions, so that UB joins ULB, SUR, SU and UT joins AMU, UAM, NKUA.

The procedure of phase 1 is being repeated.

The two real cases will build the framework for a structured, in-depth discussion on the specific topic. In the course of this process, all M3-members will interact, discuss more cases and share knowledge.

In the end, not only the real case shall be covered, but the activities will systematically build upon the preliminary work in WP 1 & 2. The case study will prove measures in areas where the need for improvement has been identified and where we will be able to show better what works well and which barriers still remain challenging. In the course of this process, all M3-members will interact, discuss more cases and share knowledge.

Furthermore, this set of measures is feasible within the given time frame.

## 3. Module 3: Recommendations addressed to national and/or European policy-makers

So far, no regulatory barriers could be identified. Barriers may exist due to internal structures, organizational shortcomings or similar. In the course of the case study potential barriers will be further observed.

## 4. Module 3: Conclusions & Next steps

The CIVIS-partners jointly agreed on a preliminary approach for addressing the cases within the case study. The main components of the approach are two on-site visits to each of the partners who proposed the case. In order to ensure the highest possible quality of exchange, it was agreed to divide the CIVIS partners into two groups. The groups will rotate to ensure a knowledge transfer on both cases. Thus, all partners are able to contribute, to address their questions and to receive knowledge on the given topic.

In the next steps, the approach must be finally agreed among the partners involved. Furthermore, the timeline has to be determined. In addition, the University of Bucharest and the University of Tübingen as hosting partners will prepare the visits in close cooperation with the module partners.

## Module 4: Strengthening Human Capital

Module 4 is focused on offering high quality and sustainable standards across CIVIS regarding the recruitment, mobility, training and working conditions of researchers, in full respect of the National legislations and of each university policy regarding its HR management.

The objectives are to identify and develop where possible high- and common standards, in conformity with the principles of the European Charter for Researchers and Code of conduct and the Human Resource Strategy for Researchers (HRS4R) Label, in the following areas:

- **OTM-Recruitment** (Open, Transparent and Merit-based), including non-discrimination and gender balance strategies,
    o Promotion and facilitation of **triple-I Mobility:** international, intersectoral, and interdisciplinary;
    o Facilitating access to research position offers throughout the CIVIS Alliance by widely publishing them within the Alliance;
    o Also addressing virtual mobility, the hosting of international researchers and the issue of brain drain.
- Access to **Training and Continuous Development** – providing a range of courses and learning resources on transferable skills (*inter alia* to equip researchers to transfer the knowledge generated to other sectors – business, society, other academia through Open Science etc.), with a special emphasis on early-stage researchers;
- **Working conditions** to make CIVIS universities more attractive to researchers including female researchers.

### Methodology & Procedure applied to data collection

The objectives of Module 4 are to set up high quality and sustainable standards across the CIVIS Alliance on recruitment, mobility, training and working conditions. The Benchmarking phase provided an overview of the practices to promote tripe-I mobility, hosting international researchers, training and career development support, etc. The partner Universities had different organisational structures and differed on the level of development of certain domains, but shared, in fact, similar obstacles and desired reinforcements for their institutions. The Consensus Building phase comes then as a practical exercise where partners can take common actions to address common objectives. In Module 4 there were two meetings during the month of July in which the results of the Benchmarking were presented and next steps were discussed. During the month of September there was a wrap-up meeting in which the desired objectives were also talked through. Nevertheless, having in consideration that during this phase thematic meetings to encourage transfer of knowledge have been set up, it is possible that some objectives are reshaped or new ones arise.

For the time being, Module 4 will concentrate efforts on practical actions for mobility and training and will promote brainstorming on working conditions and recruitment, which require further reflexion. In this context, the Module leader will be in touch with the other Modules to learn on possible joint projects and collaborations, i.e. training on OS and Citizen Engagement, career development platform having academia and business in mind. Module 4 has also tied with several Task Forces within CIVIS: Doctorate, Open Science, Fundraising, Erasmus +, etc.

Objectives, methodological approaches and results have been shared and discussed among Module 4 team members during the meetings held on June 30th June 15th July, 23rd September, 13th October, and 24th November.

In the meantime, Cross-Module Meetings have been carried out in order to define transversal aims and potential collaborative actions to be put into practice. These meetings were held on 29th June and 9th September.

- **Internal Meetings Module 4**: 4th June 30th June 15th July, 23rd September, 13th October, 24th November; 17th January;
- **Cross Module meetings**: 29th June and 9th September;
- **Representatives**: between 7 and 10 (in the Modules), thematic meetings: 16;
- **Documents**: 6 minutes documents, one per meeting, whether Module meeting or cross-Module meeting, three PowerPoint presentations, one report for the roadmaps.

## Results: Module 4 -Final Roadmap, Case studies and Recommendations

### 1. Module 4 - Desired End-points & Preliminary Roadmap

As a result of the work carried out during the Consensus-building phase, a list of desired end-points, as well as a roadmap to reach those aims, have been elaborated.

The following sub-sections present the desired end-points and roadmaps created according to each dimension defined during the benchmark phase.

Please note that **short-term goals** refer to the objectives to be set within the upcoming 3-5 months, that is to say, by March/April 2022; **medium-term goals** refer to the objectives to be set between April 2022 and April 2023; **long-term** goals refer to the objectives to be set last year of the project and beyond.

**1. International, intersectoral and interdisciplinary mobility**

The Benchmarking report confirmed mobility as one of the main fields where CIVIS common initiatives can take place. In general, all universities are well equipped to welcome researchers, benefit from a good range of programs and national legislation does not hamper mobility extensively. Interdisciplinary and intersectoral mobilities were less developed than international mobility and most universities clearly rely on external funds before internal ones to enhance it. At the same time this information was analysed during the Benchmarking phase, CIVIS3i was launched.

The CIVIS COFUND Programme for International, Interdisciplinary, Intersectoral Research and Training for Experienced Researchers (CIVIS3i, Granted under Horizon 2020 MSCA COFUND Programme, coordinated by AMU, with UAM, ULB and SUR as co-funded partners; NKUA, UT, SU and UB being associated universities), is an EU co-funded project for postdoctoral researchers that aims at offering researchers a comprehensive training and networking programme, integrating interdisciplinarity and intersectionality in research. Given this circumstance, Module 4 will focus on providing a solid base to researchers through a short and long-term mobility opportunities database from where other initiatives or projects could arise. This type of mobility will also be addressed to staff, through a train-the-trainer mobility program and other initiatives such as mentors or staff weeks, where transfer of knowledge and exchange of practices can take place.

The selected desired end-points for 3i Mobility are:
1. Collection of universities opportunities for outgoing and incoming researchers and development of a train-the-trainer program;
2. Encourage collaboration and development of European mobility programs within CIVIS, i.e. HE

MSCA, Cost Actions, CIVIS3i, Erasmus+ STA;

3. Awareness raising on the value of mobility;
4. Increase the number of tools available for researchers to travel, i.e. flexibility, welcome packages, contracts, incentives, etc. (HRS4R);
5. Advocate reduction of bureaucracy, internationalisation of administrative support, centralisation of certain services (support for research departments).

These end-points were selected having into consideration the Benchmarking report and also based on the objectives set up at the beginning of the project. Indeed, the purpose behind the end-points is to encourage mobility between the CIVIS scientific communities, provide an extended offer of mobility opportunities and raise awareness on the benefits of mobility through info days, workshops, training, etc.

Even though discussion is and should be continuous, four actions have been looked at in order to achieve the desired ends.

**1.1 Identification of national/regional/internal mobility opportunities** from each university with views to include them in the database of the CIVIS Digital Campus. The work of the Fundraising Task Force (Transversal Task Force of CIVIS) would also help to complete the database with the private foundations opportunities.

The aim of this activity is to facilitate the visibility of mobility opportunities within CIVIS, whether short-term or long-term, including fellowships, funds for secondments, short visits or conference/events attendance. All Universities will be able to put their opportunities on display through the Digital Campus and the CIVIS website.

   a) *Barriers and roadmap*
   - **Burdensome data collection** (short-term). Mobility opportunities can be difficult to identify if we take into account the number of bodies providing funds for mobility at different scales and purposes. Flexibility for researching the calls could be provided. If after analysis, further efforts should be made to complete the list a second deadline could be set up. The Fundraising TF is also collecting private sector mobility opportunities;
   - **Eligibility criteria of the funds** (short-term). All mobility opportunities that have nationality as a condition are not suitable in the spirit of the project. It will be possible to address gaps that are not covered by the opportunities collected. If there are none, it may be possible to consider the organisation of mobility opportunities addressing certain scientific domains or specific types of mobility such as interdisciplinary or intersectoral mobility;
   - **Monitoring and update of mobility opportunities available**. Calls for proposals or funds for short-term mobility may not be constant in time. Therefore, a monitoring of the calls collected should happen once or twice a year. In such a case, a mobility working group could be envisaged to address this issue, also after the project is finished;
   - **Communication strategy** (long-term). Even if mobility opportunities are listed in the Digital Campus and the CIVIS website, it may be possible that this is not greatly used, thus a communication strategy should also take place. Perhaps, an Info day on the opportunities coming or a note in the newsletter or a short catalogue where the calls are specified. This could also be a task for the Mobility working group. Mediterranean and African partners should be included here.

   b) *Indicators*
   1. **Percentage of mobile researchers within CIVIS**. This could give a hint on whether the initiatives

put in place are working. An annual or biannual measurement would be helpful;

2. **Number of mobility grants used for short mobility and long-term mobility, including trainers within CIVIS**. This indicator can help to discern whether networking activities are being developed within CIVIS;

3. **Number of external researchers arriving to CIVIS Universities**. Our aim is to make our universities more attractive, hence, knowing the mobility towards our respective universities could give us an idea of whether the initiatives taken place in CIVIS work.

*c) Timing*

Mid-/long-terms. The analysis and starting of the Digital Campus may take up some time. The analysis of the opportunities in the Alliance also needs a careful look.

**1.2 Use of Erasmus+ STA, funds for short-term mobility**, especially with views to set up a train-the-trainer program.

At the same time mobility opportunities are being identified, a common transferable skills training catalogue will be developed. Presumably, courses which evoke a greater interest could be opened to the Alliance or jointly developed to increase recurrence, however this approach is not sustainable for the whole catalogue as it may be unnecessary. Individual interest on dedicated courses should be then considered through a more precise approach, that is, the mobility of trainers. Whether a particular university seeks to integrate courses in-house or provide yearly recurrence in their own official language, a trainers' network could be helpful to extend not only the training offer but also the mobility opportunities and the transfer of knowledge in CIVIS. Short-term mobility is also envisaged to address collaborations among the scientific communities.

*a) Barriers and roadmap*

- **Interest measurement** (mid-term). It would be pertinent to first know the interest of universities in developing a course in particular, then, to decide which trainer would be responsible for teaching that course, how would she/him will acquire the relevant knowledge and for how long would their training be necessary;

- **Not enough awareness of this program** (mid-term). Communication on the possibilities provided by the program should be well targeted;

- **Grants insufficient to cover costs** (mid-term). Sometimes the funds available are not enough to cover the expenses of the costs and therefore this could limit the number of trainers interested in such program. A top-up funding for these cases could be envisaged if this issue arises;

- **Organisation between the universities**. The paperwork linked to this program will be mostly up to the sending universities, however, it would be perhaps ideal to find out a method to ease the process if necessary;

- **Trainings may be specific to a country**, i.e. intellectual property rights copyrights, etc. This will make difficult transfer of knowledge at European level. Points in common must be addressed to see if there is any possibility of exchange trainers.

*b) Indicators*

1. **Percentage of mobile researchers within CIVIS**. This could give a hint on whether the initiatives put in place are working. An annual or biannual measurement would be helpful;

2. **Number of mobility grants used for short mobility and long-term mobility, including trainers within CIVIS**. This indicator can help to discern whether networking activities are being developed within CIVIS.

*c) Timing*

Mid-/long-terms. First the transferable skills collected have to be taken into consideration as well

as the interest of the universities. Setting up a program may require one-to-one meetings with the interested universities and careful organisation of schedule and paperwork processes.

**1. Thematic meetings** on mobility opportunities to help identify areas where common development could be valuable, i.e. how to encourage mobility within CIVIS, project proposal development, etc.

The aim of the meetings under the cloud of one single domain help to identify the need of discussion around more specialised topics within the field, i.e. Ph.D. mobility, post-docs mobility, intersectoral/interdisciplinary mobility, etc. Follow-up meetings stemming from the main thematic meeting help to not only define a particular framework but also to identify key people at CIVIS universities that could support the development of such domain by taking smaller steps in the particular

*a) Barriers and roadmap*
- **Measurement of meeting impact** (short-term/long-term). Up to now, just one thematic meeting has taken place. The participants were interested in two follow up meetings with a more targeted content. However, whether the good practices presented are later on implemented or not is yet to be analysed;
- **Difficulties in finding common projects/approach to encourage mobility.** For example, creating initiatives together such as info-days or Q&A sessions have been proved useful in the case of MSCA-IF. Perhaps this can be extended to other calls. This helps to raise awareness on mobility opportunities and funding. The costs-benefits of this initiative have to be however well analysed. The thematic meeting on mobility will be useful to found out about this issue;
- **Overlapping of tasks with Horizon Europe Task Force (CIVIS).** Module 4 leader is part of the HEUR TF and would therefore propose the initiatives taken place within the Module to the TF members. It is possible to work on initiatives together;
- **Difficulties to implicate administrative staff from universities.** RIS4CIVIS as a whole may be considered extra work for representatives. A good work plan should be set up in order to avoid high peaks of work.

*b) Indicators*
1. **Number of follow up meetings organised after the thematic ones.** It could show the interest in one or several topics and the will to implement those in the respective universities;
2. **Number of initiatives to encourage mobility, i.e. info-days.** It would signal evidence of joint working and organisation.

*c) Timing*
Short-/mid-terms. The thematic meetings are already on-going. The meetings however will be extended throughout the project.

**1.4. Support on HEUR and other funding calls** via information sessions, supervisor and collaboration searching, and similar initiatives. COST Actions may also be studied. It is possible that within CIVIS a platform for collaboration is developed, with contribution and support from M1 and WP4 of the RIS4CIVIS project. This added to Info-sessions and workshops on project writing may help CIVIS to boost its researcher's mobility opportunities

*a) Barriers and roadmap*
- **Common strategy to enhance joint project submission.** Info-days and other types of initiatives as trainings and Q&A sessions have been proven useful. Universities may agree to push forward these for certain European calls that require further collaboration among the universities. So far only MSCA-Post-Docs has been targeted through the HEUR TF.

RIS4CIVIS

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 101016691.

- **Collaboration with several other Task Forces and Module 1.** The on-going work of certain TF may overlap some of the work done by Module 4, thus, the Module leader will be in direct contact with the representatives at her university to follow up on this work. The work of the TF Doctorate, Fundraising and HEUR are of interest for the Module.
- **Establishment of collaboration links between the universities.** If the CIVIS Alliance intends to encourage the submission of mobility projects perhaps further efforts must be made to establish collaborations between the universities. The Cups&Cakes initiative, the CIVIS Call for projects for Supporting workshop plus the trainings and possible info-days could support the development of links between the universities. A collaboration board could be made available as well through the CIVIS website or digital campus.
- **Degree of interest in developing such projects.** Universities may already have these types of initiatives in place. A costs-benefits analysis should be done before starting any initiative that could be just considered burdensome.
- **Joint organisation and monitoring of the project.** As for the organisation of joint project such as CIVIS3i and such, these have to be looked at in the long-term to not overlap too many projects at the same time. The greater obstacles lie in the organisation of said projects.

*b) Indicators*
1. **Percentage of mobile researchers within CIVIS**. This could give a hint on whether the initiatives put in place are working. An annual or biannual measurement would be helpful;
2. **Number of external researchers arriving at CIVIS universities.** Our aim is to make our universities more attractive, hence, knowing the mobility towards our respective universities could give us an idea of whether the initiatives taken place in CIVIS work;
3. **Number of initiatives to encourage mobility, i.e. info-days**. It would signal evidence of joint working and organisation;
4. **Number of project proposals submitted with at least 3 CIVIS partners.** This could mean that collaborations are better organised and more productive and that the research environment within CIVIS will be improved by other projects arising from it.

*c) Timing*
Long-term. The Universities may need to do a need analysis first and prioritize in case the initiative goes forward.

**2. Training and career development**

**2.1 Training**

The fields of training and career development, equally to mobility, did not have big national or legal barriers to sort out, hence, collaboration among CIVIS universities could be easily envisaged. Nonetheless, career development programs are not as developed as the training offer in many universities due to a lack of a centralised research strategy but mostly due to lack of resources, whether financial and/or human. In this context, it should be noted that two approaches will be taken for the different fields: transfer of knowledge for career development schemes and course compilation, sharing and development to enhance the training offer.

The setup of the training catalogue will be divided into several phases:
1. Identification of transferable skills courses in all languages of the Alliance;
2. Classification of courses by field/domains;
3. Opening of English courses and planning of communication strategy (catalogue);
4. Analysis of global and individual gaps;
5. Study the possibility of joint organisation of training;

6. Mobility of trainers to support in-house training at CIVIS universities;
7. Setting up and adapted platform for the Digital Campus.

Further collaboration with other Modules, especially Modules 3, 5 and 6 is expected in regards to the setup of further trainings development at European level.

*a) Barriers and roadmap to build a common catalogue*

- **Universities may not have the complete training courses available for the next academic year**. Even this has been proven wrong, it is worth noting that dates are not yet confirmed in many cases. A living platform where trainings could be listed on permanent basis has been therefore put in place. The questionnaire to collect these trainings has also been kept open;

- **Courses without a date and means to monitor the organisation.** For the moment, Universities are opening courses at their own will. If in the future other trainings are decided to be open but no dates are available it may be possible to set up some reminder mechanism through which interested researchers could register. However, these courses may not be targeted first;

- **Valid means to collect individual and collective interest.** The organisation of joint trainings has to be based on common interests, how will the interest be collected is something to be discussed further. In the meantime, after collecting the trainings, the database will be shared among the experts of CIVIS universities. The experts will be asked to not only analyse the trainings, but to also express their interest, select trainings to share in the future and to propose other innovative trainings that could be tested within the Alliance;

- **Gaps at global and individual level.** The recognition of gaps can be difficult if these are happening at global level, however, the experts at the universities may have an idea of the trends and possible trainings that are not represented in the transferable skills database. At individual level, the recognition of gaps can be done by comparing the trainings courses offered at the other universities. The interest in developing in-house training enters here. The program train-the-trainers – although not being selected as proper case study in WP3, may be tested along with the preparation and implementation of the actual Module 4 case study that is presented after;

- **Lack of expertise in one/several gap domains for the Alliance.** If gaps at global level appear, the question on where and how to get the necessary expertise remains. Addressing the global gaps are however not a priority as for now it seems all universities have a great number of transferable skills trainings;

- **Funding for joint training** (long-term). If joint training is organised, looking for expertise and other resources may require some additional funding;

- **Funding for individual training** (mid-term/long-term). If Universities decide to open courses for the Alliance it would be necessary to analyse whether funding is necessary since many courses count with trainers external to the universities;

- **Timeframe and available tools**. The schedule is constrained as dates are difficult to gather in advance, therefore it hampers the launch of the catalogue too, although its release should be set for the beginning of the academic year, i.e. September 2022. Arguably, at least the courses open this year may be open the next; however, this remains unknown as it depends on the experience of each university. The availability of tools and resources is also a difficulty to be addressed. The means to organise and follow up a training course may be difficult depending on the course. The CIVIS Alliance could support this, but the best way to do so is still in discussion.

*b) Indicators*

1. **Transferable Skills catalogue available for all CIVIS**. The release of the catalogue for the next academic course is a milestone. The below indicators would give information on its actual use by the universities;

2. **Number of courses individually opened within the Alliance.** It shows the good will of universities as well as their interest in extending the offer for their own scientific community**;**
3. **Number of courses organised as an Alliance.** Shows the Alliance can work and be useful while maximising training recurrence and providing solutions for its gap at global level;
4. **Number of courses individually offered within the respective universities**. The indicator shows that the train-the-trainer program works and that inspiration to open new courses in-house is working;
5. **Number of trainers/researchers mobilised in the Alliance for training purposes.** This number addresses not only the train-the-trainer program but also the interest of researchers in following up training programs at the other universities (perhaps to divide in two indicators?).

*c) Timing*
Course compilation and course openings in the short term. Up a running catalogue mid/long term, organisation of courses as an Alliance and therefore at European level long-term.


## 2.2 Career Development

In terms of career development transfer of knowledge is key. The desired end-points for this domain lie in:
1. Standardized strategies/practices on career development (to be determined: if the Module focuses on Ph.D., post-docs, academics, etc.);
2. Raise awareness of the importance of career monitoring, supervision and mentoring;
3. Running working group/hub/platform on career development that could touch upon 3i mobility and training (i.e., CIVIS3i).

These initiatives aim to clear the path in the field, reflect on researchers needs and improve the HRS4R in all CIVIS Universities. The possibilities of carrying out such initiative are varied and must be discussed in the future with the representatives from the other relevant Modules. In fact, this could be a pilot case study in which a strategy comprising both career development and training dedicated for the fellows hired under the CIVIS3i program could be envisaged.

*a) Barriers and roadmap*
- **Agreement on common practices**. Standardization would be difficult since the organisation of the universities is different as well as the contract of researchers. Perhaps Ph.D. and post-docs could be targeted instead of academics since their contracts are more unstable. Training and coaching sessions could be dedicated to them. This can be put into test through a case study with the post-docs hired through the CIVIS3i project. The thematic meeting dedicated to career development could enlighten the objectives more precisely;
- **Funding** may be necessary to produce dedicated training or coaching sessions;
- **Difficulties to implicate administrative staff from universities.** RIS4CIVIS as a whole may be considered extra work for representatives. A good work plan should be set up in order to avoid high peaks of work;
- **Timing and organisation** not only with the other Modules but with the domains of Module 4 and their corresponding thematic meetings as career development comprises mobility and training as well. The Module representatives will have to prioritise on the relevant initiative to take place.

*b) Indicators*
1. **Platform/ library on career development available (i.e. for CIVIS3i post-docs).** It will show the

actual implementation of career development practices agreed at European level, plus will be a test for some universities which do not have active initiatives in the field;

2. **Number of mentorship programs within the Alliance.** The thematic meeting could serve as an inspiration for some universities to put in place a mentorship program;
3. **Number of career tools used in each CIVIS university.** If there is an increment of these tools, the impact of the Module would be more visible;
4. **Number of tandems meetings to address a specific strategy or tool.** It quantifies the interest of the universities.

*c) Timing*

Mid-/Long-terms. The collaborations with CIVIS3i must be set up if there is an agreement over this initiative. The needs of the researchers hired or to be hired must be taken in consideration as well as the training to be provided to them. The partners involved would have to agree on how to organise it.

## 3. Working Conditions

Working conditions are subject to many limitations due to national legislation, regulations of the universities themselves and sometimes even faculties due to decentralisation. It would be worthy, however, to address the domains in which change is not so much dependent on law and rights, but on the will of the universities and their policy strategies, i.e. gender, career development, training, research incentives, etc. In this context, it is possible to find those domains in HR strategy for researchers (HRS4R) which in general deems to set up good working conditions for researchers. Therefore, the main objective of addressing the different domains of Module 4 is to reinforce these strategies in all CIVIS universities, facilitating in this way the obtention/renewal of the HR Excellence Award, for which another thematic meeting took place on the 13th October 2021.

1. HRS4R and HR Excellence Award – 13th October (Done)
2. Training meetings – tbd
3. Mobility and research incentives – tbd
4. Gender and Diversity meeting – tbd (in line with CIVIS)
5. Mentorship and career development tools meeting – tbd
6. Environmental sustainability meeting - tbd
7. Welcome practices – tbd
8. Valorisation of research – tbd

One action will take place in the short-term, the **collection of research incentives**, whether financial or from HR at regional and institutional levels. It may provide information on:
- Possible gaps within the Alliance and on individual basis that could be perhaps covered by CIVIS (i.e. Module 5 would be interested in developing a recognition & reward scheme for Open Science for example),
- Ideas to be developed on individual basis based on incentives at other universities,
- Publication of incentives could be difficult as they may change, but to be discussed.

*a) Barriers and roadmap*
- **Different organisation systems** not only at university level but also at national level may hamper a greater harmonisation of the working conditions of researchers. That is the reason why transfer of knowledge on practices should be firstly addressed. Universities could afterwards choose among those practices/ideas/initiatives that better fit the organisation of their university;
- **Difficulties in standardising practices.** Some domains are not developed at the same level in all

universities as is the case of career development, thus a standardising process can only be based on recommendations. Its real application will be therefore up for the universities themselves;

- **Institutional strategies differ and compromise degree within the initiatives.** The priorities for the universities are very different, finding a common space may be difficult. Further conversations within the universities are necessary to decide upon the next steps;

- **Monitoring impact. The results of the RIS4CIVIS project** must be clear and measurable, the number of initiatives happening at the same time may be a burden, and therefore special working groups could be envisaged depending on the domain. Priorities will also be taken into consideration.

*b) Indicators*

1. **Number of universities with the HR Excellence Award.** Indicates good implementation of the HRS4R;

2. **Number of universities with an action plan for HRS4R, i.e. training and career development for researchers.** Indicates the compromise of the universities to improve the research environment, facilitates access to EU funding and shows the transfer of knowledge meeting work;

3. **Number of universities with a Gender Equality Plan.** It shows the dedication of the universities to improve the working environment and the working conditions of female researchers;

4. **Number of universities with balanced numbers of female and male researchers.** The indicator helps to identify whether more work should be done in certain areas of the universities, i.e. STEM domains;

5. **Number of universities with a Sustainable Development Plan.** This number will also provide evidence on the working environment surrounding research and will help to comply with the Horizon Europe goals on sustainability.

*c) Timing*

Mid-/long-terms. The thematic meetings have already begun but there is still a long way to implement all the necessary processes described above.

**4. Recruitment**

The field of recruitment is also constrained by national law and universities regulations. The number of actions to be pursued together is then somehow limited. However, new ideas and initiatives can originate from the thematic meetings that will take place in the Module. Some of the objectives identified have to do with the HR Excellence Award in particular, as mentioned above, and with the HRS4R in general.

Several actions have been discussed:

1. **Transfer of knowledge to obtain the HR Excellence Award**. Indeed, sharing our different ways of achieving the HR Excellence Award and the action plans designed to improve the strategy can serve as a guide for those universities willing to apply. A meeting will take place next 13th October;

2. **Branding job opportunities with the Alliance logo in EURAXESS**. In this regard, the Module leader contacted the EURAXESS management and for the moment no branding is possible, although in the future and for the revamping of the website the management team will have the Alliances in consideration. Since this is not possible, universities can agree to share their EURAXESS job opportunities link in the CIVIS website;

3. **Training for staff on recruitment practices**, i.e. anti-discrimination, gender-bias. For the moment the Module will focus on pushing forward the transferable skills catalogue. The collection of this training will not be discarded for the future if there is a demand and

representatives agree on it;

4. **Announcement board for research projects collaboration/submission.** Until now, CIVIS relied on sharing this kind of search through mailing lists. This initiative would depend on the Digital Campus and the degree of awareness within the different universities.

*a) Barriers and roadmap*

- **Different organisation systems** not only at university level but also at national level may hamper a greater harmonisation of the working conditions of researchers. That is the reason why transfer of knowledge on practices should be firstly addressed. Universities could afterwards choose among those practices/ideas/initiatives that better fit the organisation of their university;
- **Difficulties in standardising practices.** Some domains are not developed at the same level in all universities as is the case of career development, thus a standardising process can only be based on recommendations. Its real application will be therefore up for the universities themselves;
- **Institutional strategies differ and compromise degree within the initiatives.** The priorities for the universities are very different, finding a common space may be difficult. Further conversations within the universities are necessary to decide upon the next steps;
- **Monitoring impact. The results of the RIS4CIVIS project** must be clear and measurable, the number of initiatives happening at the same time may be a burden, and therefore special working groups could be envisaged depending on the domain. Priorities will also be taken into consideration.

*b) Indicators*

1. **Number of universities with the HR Excellence Award.** Indicates good implementation of the HRS4R;
2. **Number of universities with an action plan for HRS4R, i.e. training and career development for researchers.** Indicates the compromise of the universities to improve the research environment, facilitates access to EU funding and shows the transfer of knowledge meeting work;
3. **Number of CIVIS collaboration projects.** If the number of collaborative projects arise it means recruitment of post-docs/Ph.D. is also increasing;
4. **Number of trainings dedicated for HR.** Trainings dedicated to HR represent the will of universities to address recruitment better.

*c) Timing*

Mid-/long-terms.

The following table illustrates the desired end-points selected as well as their preliminary roadmap elaborated, including rationale, actions and preliminary list of indicators.

## Table 4. Module 4: Desired End-points & Final Roadmaps

### Mobility

| End-point | Rationale | Actions | People involved | Timing | Barriers Obstacles | Risks | Indicators |
|---|---|---|---|---|---|---|---|
| Collection of universities opportunities for outgoing and incoming researchers and development of a train the trainer program | • Encourage mobility between CIVIS scientific communities and support internationalisation<br>• Raise awareness on mobility benefits, that is, networking, transfer of knowledge, funding possibilities, etc.<br>• Provide an extended offer of mobility opportunities<br>• Render CIVIS universities and the Alliance itself as an attractive | 1. Launch of call for proposal for networking activities for researchers<br>2. Collection of mobility opportunities for researchers (short term)<br>3. Compilation of mobility opportunities available in the Digital Campus/website plus private opportunities for fellowships and other types of mobility (medium term)<br>4. Support HEUR and similar | Module 4 representatives<br><br>TF Fundraising<br>TF HEUR | May 2023<br><br><br><br><br>Continuous<br>MSCA Initiative from HEUR ITN May/ June 2023<br><br><br>Continuous<br><br>Mid-term | • Burdensome data collection<br>• Eligibility criteria of the mobility/research funds<br>• Monitoring and update of mobility opportunities available<br>• Communication strategy | • Insufficient time to measure progress<br>• Insufficient means to monitor | 1. Percentage of mobile researchers within CIVIS<br>2. Number of mobility grants used for short mobility and long-term mobility, including trainers within CIVIS<br>3. Number of external researchers arriving to CIVIS Universities |
| Encourage collaboration and development of European mobility programs within CIVIS, i.e., MSCA, cost Actions, CIVIS3i, Erasmus+ STA, | | | | | | | |
| Awareness raising on the value of mobility | | | | | | | |
| Increase the number of tools available for researchers to | | | | | | | |

| travel, i.e., flexibility, welcome packages, contracts, incentives, etc. (HRS4R) | environment to develop research • Transfer of knowledge between universities in the mobility field | calls for project submission 5. Train the trainer program linked with training (medium/long term) based on **Erasmus +STA** or MSCA (long term) | | | | | |
|---|---|---|---|---|---|---|---|
| Advocate reduction of bureaucracy, internationalisation of admin. support, centralisation of services (support for research departments) | | | | Mid-term | | | |

## Training

| End-point | Rationale | Actions | People involved | Timing | Barriers Obstacles | Risks | Indicators |
|---|---|---|---|---|---|---|---|
| Up and running transferable skills program/catalogue for the different research stages, also contributing to the CIVIS3i post-docs' individual training plan | • Extend the training offer of all the CIVIS universities • Address possible gaps within the Alliance and also within each individual university | 1. Collection of transferable skills training (short term) 2. Make available open courses (short term) | Module 4 representatives and Module leaders | Long/ medium terms | • Interest measurement of trainings • Not enough awareness of the train the trainer program • Grants insufficient to cover costs for trainers' mobility and development of trainings | Insufficient financial and human resources to put in place a train the trainer program  Insufficient interest on training development if no | Transferable Skills catalogue available for all CIVIS  % Participation of each university in the courses commonly developed as an Alliance once a monitoring system is established |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Knowledge of individual gaps at individual and alliance level | • Competences and knowledge sharing | 3. Study gaps and competences (medium-term) | | Medium term | • Organisation between the universities<br>• Trainings may be specific to a country or provided by external trainers | incentives are provided | |
| Knowledge of competences available within the Alliance | • Produce a comprehensive catalogue for the CIVIS3i post-docs | 4. In-house development and alliance created courses (long term) | | Medium term | | | Number of courses individually opened within the Alliance<br><br>Number of courses organised as an Alliance |
| Extended offer of training on transferable skills for all CIVIS universities | • Provide support to close gaps in an individual manner for universities that intend to acquire competences to organise trainings on certain topics | 5. Running program (long term) | | Long term | | | Number of courses individually offered within the respective universities<br><br>Number of trainers mobilised in the Alliance |
| Replication of this initiative for administrative staff | • Share know-how<br><br>• Develop material together helps to support different departments Improve the working conditions of the researchers in terms of career opportunities | 6. Funding for training development (EU, Alliance calls) | | Long term | | | |

## Career Development

| End-point | Rationale | Actions | People involved | Timing | Barriers Obstacles | Risks | Indicators |
|---|---|---|---|---|---|---|---|
| Standardized strategies/practices on career development (tbd if the Module focus on Ph.D. candidates, post-docs, academics, etc.) Raise awareness of the importance of career monitoring, supervision and mentoring Running working group/hub/platform on career development that could touch upon 3i mobility and training. | • Level up the strategies at all universities. • Share knowledge and know-how on mentorship programs, supervision strategies, etc. • Extend the tools for career follow-up • Reflection on researchers' needs to access academic and non-academic fields Increase the level of interest in developing individual plans for career development Improved HRS4R | 1. Collection material (short-term) 2. Set up of library (short-term) 3. Standardisation of tools and programs for career development (medium-term) 4. In-house development of tools (long-term) 5. Running tandems/working | Module 4 | Mid/ long terms, depends on case study | Agreement on common practices Funding Difficulties to implicate administrative staff from universities Timing and organisation | | Platform/ library on career development available Number of mentorship programs within the Alliance Number of career tools used in each CIVIS university Number of tandems meetings to address a specific strategy or tool |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | groups/hub for improving career development (long-term) 6. Funding for training/career development (EU, Alliance calls) | | | | | |

## Working Conditions

| End-point | Rationale | Actions | People involved | Timing | Barriers Obstacles | Risks | Indicators |
|---|---|---|---|---|---|---|---|
| HRS4R present in all CIVIS universities<br><br>HR Excellence Award achieved by all universities<br><br>Transfer of knowledge on welcoming practices (tbd) | • Having an HRS4R and the HR Award to attract researchers and better position universities to acquire EU funding<br>• The HRS4R emphasizes the Alliance compromise with the well-being of researchers<br>• The HRS4R addresses | 1. Transfer of knowledge on working conditions, i.e. gender, welcome practices (short-term)<br><br>2. Collection of incentives for transfer | Module 4 representatives and experts at other Universities | Mid/ long terms | Different organisation systems<br>Difficulties in standardising practices<br>Institutional strategies differ and compromise degree within the initiatives<br>Monitoring impact | | Number of universities with the HR Excellence Award<br><br>Number of universities with an action plan for HRS4R, i.e. training and career development for researchers |

| gender equality and sustainable development | practical needs of researchers and administrative staff in charge of research, i.e. welcome practices, training, incentives etc. | of knowledge | | | | | Number of universities with a Gender Equality Plan |
| Raise awareness of gender and diversity issues as well as sustainable development in the field of research | • All universities in Europe must have a Gender Equality Plan to apply for EU funding. Transfer of knowledge is key | 3. Setting up extended training and mobility programs for researchers (medium/long-term) | | | | | Number of universities with balanced numbers of female and male researchers |
| Advocate for a researcher status within the EU (tbd) | | 4. Address status of researchers in the RIS4CIVIS event at Brussels in March 2022 (tbd) | | | | | Number of universities with a Sustainable Development Plan |
| | | HRS4R and HR Excellence Award meeting - 11th October+ more specific upcoming meetings | | | | | |

## Recruitment

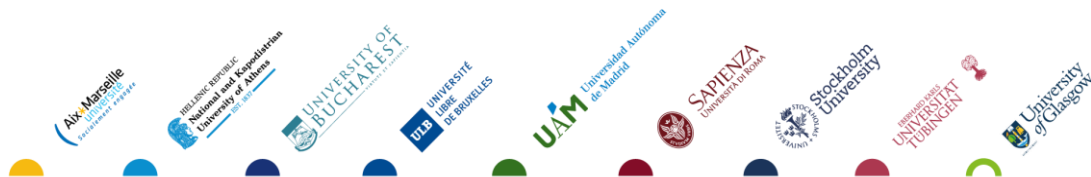| End-point | Rationale | Actions | People involved | Timing | Barriers Obstacles | Risks | Indicators |
|---|---|---|---|---|---|---|---|
| HRS4R present in all CIVIS universities<br><br>HR Excellence Award achieved by all universities<br><br>Platform/announcement board to push forward research groups collaborations (M1)<br><br>Make job opportunities visible through the Alliance (tbd)<br><br>Training for staff on recruitment practices (tbd) | • Having an HRS4R and the HR Award attracts researchers and better position universities to acquire EU funding<br>• The HRS4R emphasizes the Alliance comprise with the well-being of researchers<br>• Collaboration between universities could give way to enhance the recruitment of researchers and funds acquisition<br>• Having also a transfer of knowledge on welcome practices could also help to understand how universities address integration and other relevant services for newly recruited staff | 1. Transfer of knowledge regarding recruitment and best practices from CIVIS3i calls (two rounds, one is in progress)<br>2. Set up the corresponding EURAXESS job opportunities link per university in CIVIS website<br>3. Platform to publish collaboration for EU project proposals, supervisors database, job opportunities (long-term) links with Module 1 and TF HEUR | Module 1 Module 4 Experts from universities | Mid/long term | Different organisation systems<br><br>Difficulties in standardising practices<br>Institutional strategies differ and compromise degree within the initiatives<br><br>Monitoring impact. | Timing and priorities may risk the development of certain actions | Number of Universities with the HR Excellence Award<br><br>Number of universities with an action plan for HRS4R i.e. training and career development for researchers<br><br>Number of collaborative EU projects within CIVIS<br><br>Number of trainings dedicated for personnel involved in recruitment committees |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 4. Meeting on HRS4R and HR Excellence Award – 13th October<br>5. Gender and diversity meeting | | | | | |
| Welcome practices transfer of knowledge (tbd) | | | | | | | |

## 2. Module 4: Case Study

**A Career Development and Mentorship Programme pilot project**

During the first phase of RIS4CIVIS, the benchmarking period, the data collected showed that further efforts could be placed in advancing career development strategies for researchers. Most of the Universities did not count with a defined career development program or provided little orientation of early stage researchers or post-docs. On the other hand, one of the objectives within RIS4CIVIS is the development of training in each of the Modules, i.e. infrastructures, open access, citizen science, innovation, etc. It would be therefore logical to have these trainings under a common umbrella from where CIVIS universities could not only define a common career development strategy but to also identify researchers' needs. The trainings could be supported by a structure of mentors from in and out of the academia system and from an international perspective that could help researchers, either PhDs or post-docs, to have a clearer vision of their career opportunities (link with CIVIS TF Doctorate and European projects to make when necessary).

The details of the case study must be further examined, although given the timeframe for its implementation, that is, 17 months, the programme would run for a maximum of 6 months, allowing a minimum of 12 months to coordinate the pilot program and 1 month to evaluate the results. The target group could be decided considering the needs of each university. The CIVIS3i team have shown interest in becoming a one of the main target groups. Each university would decide the amount of 'pairs' (mentee-mentor) to monitor according to their resources. The activities program will be decided beforehand to avoid any obstacle regarding the monitoring of the meetings.

The activities comprised within the program would entitle:

- Open call for mentors (academic and non-academic). A strategy should be defined here to attract business, public administration, third sector, etc. (to link with Module 3);
- Open call for researchers as mentees;
- Pairing by interest and scientific background;
- Definition of number of meetings and subjects to discuss between the pairs;
- Content development: guides/training for mentors and mentees, career development plan, meetings instructions and topics;
- Monitoring and evaluation of the program;
- Coordination of trainings from all the modules within one year and other support activities, i.e. Open Labs, link with Module 6;
- Communication strategy: logo, branding, leaflet, webpage, etc. (to link with WP5).

The pilot program would reinforce career support as well as peer support, will help with networking and mobility purposes and would boost the HRS4R in all CIVIS universities.

## 3. Module 4: Recommendations addressed to national and/or European policy-makers

- Create a status for researchers that allows quick expedition of visa and other arrangements, as well as common standards on the recognition of studies;
- Provide funding to develop the research environment in the Alliances, i.e. training and allocation of funds dedicated to research and incentives to promote new research assessment metrics;

- Incentivize research in higher education;
- Promote stability of researchers' careers.

## 4. Module 4: Conclusions & Next steps

In general, mobility and training have a clearer roadmap in the upcoming months. It is possible that for recruitment and working conditions more end-points or actions arise after the thematic meetings and also through the cross-module meetings. For the moment, the collection of research incentives, mobility opportunities and training courses have a priority, however, other initiatives will be built with time together with the other modules, i.e., research assessment of Open Science, Citizen Science practises.

# Module 5: Mainstreaming of Open Science

Module 5 focuses on implementing the strategy that is agreed upon, and will complement it by addressing the tension between Open Science and IPR and other issues that may emerge subsequent to the establishment of the Open Science Policy Platform (OSPP).

Therefore, Module 5 objectives are:
- To complete the work achieved on Open Science with an IPR perspective;
- To develop relevant systems and procedures to support Open Science within CIVIS Alliance members;
- To provide practical support to researchers to implement Open Science including through for example trainings, and guidelines.

## Methodology & Procedure applied to data collection

The key objective of Module 5 within the RIS4CIVIS project is to implement a common CIVIS approach to Open Science (OS). It builds on the activities of the CIVIS OS TF developed in 2020, including early surveys of OS practices and policies in CIVIS universities. Prior work on OS topics comprises the following documents:

- An early survey of OS policies and practices (January-March 2020);
- A second survey form (March 2020);
- The CIVIS Open Science Strategy (September 2020);
- The CIVIS Open Science Statement (Dec. 2020-January 2021; later approved in the steering committee in March 2021);
- The Report for the Benchmarking phase of the RIS4CIVIS (June 2021), which covers the work being done in the first 6 months of the project (WP1);
- Report 1 in WP2 (Desired Endpoints);
- Report 2 in WP2 (Roadmap).

During the Benchmarking phase (WP1) of the RIS4CIVIS, Module 5 has conducted a survey, based on a questionnaire developed by LERU, with 83 questions, which maps the following OS categories: Cultural Change; Future of Scholarly Communication; FAIR Data and RDM; EOSC; Education & Skills; Recognition & Rewards, Next Generation Metrics; Research Integrity; Citizen Science, Open Education.

In WP2, the work of the module was carried mostly asynchronously (July-September). We started from the results of the benchmarking phase, which were analysed according to the questions/ tasks of the WP2. Thus, we collected comments and suggestions on each OS category included in the Benchmark report. The process was carried out with online tools (a shared folder in the cloud, emails, an online form to collect comments) and it was concluded with a meeting in September. The meeting of 24 September was intended to establish consensus upon the OS categories to focus in the timeframe of the RIS4CIVIS, in general, and WP2, in particular. We decided to prioritize the work on the following categories from the above: Cultural Change; Future of Scholarly Communication; Research Data Management; Education & Skills; Recognition and Rewards & Next Generation Metrics; Research Integrity. Other categories are left to be developed later (EOSC), in collaboration with other modules

(M6: Citizen Science) or as part of the TF OS in CIVIS (Open Education Resources). Several shorter versions of the working documents were produced in order to facilitate the completion of Tasks 2.1.a. Identify the desired, long-term end-point for each Module, Task 2.1.b. Analyse the barriers to the achievement of the long-term goal, and Task. 2.2. Develop Roadmaps of the WP2. The current report is an expanded version of Reports 1 and 2 and includes large parts of the text of the former reports.

Meetings: 3 Cross Module meetings (29.06.; 09.09.; 15.11.), several module meetings (24.09., 10.11., 14-17.12., 03.02.), and 3 shorter meetings (11.10., 12.10., 13.10.). Most of the work was done through email exchanges, work on the shared files, and online forms.

Participants: 9 (representing all the CIVIS member universities).

Documents produced: 16 (1. A table with answers gathered through the online form; 2. A summary of the answers in a new working document; 3-6. The slides of the module meeting (24.09.; 16.11.; 14-17.12.; 20.01.); 7. The minutes of the module meeting in September; 8. A document with OS topics postponed; 9. A document with OS topics to be discussed for Tasks 2.1.a. and 2.1.b.; 10. A document with OS topics to be discussed for Task 2.2.; 11. The first draft report for Tasks 2.1.a. & 2.1.b.; 12. The final version of the report for Tasks 2.1.a. & 2.1.b.; 13. The first draft report for Task 2.2.; 14. The final version of the report for Tasks 2.2. Roadmap; 15. The draft version of Report 3, Recommendations; 16. The final version of Report 3, in WP2).

## Results: Module 5 -Final Roadmap, Case studies and Recommendations

### 1. Module 5 - Desired End-points & Final Roadmap

The main goal of Module 5 is to mainstream Open Science (OS) in CIVIS. This is reflected in the list of desired Endpoints and the Roadmap, which made the object of previous reports in WP2. Our team identified the following desired endpoints, corresponding to diverse Open Science categories (listed in front of each endpoint, in bold):

1. **Cultural change.** All the CIVIS universities have an OS policy: a common framework for OS policy for all the participant Universities and each university will develop an OS strategy;
2. **Cultural change.** One common OS Service, supported by OS coordination groups in each university of the Alliance. Each OS group will have an academic OS leader, to foster OS actions within the CIVIS universities;
3. **Future of scholarly communication.** Make publications open by default and provide a gateway to all CIVIS research outcomes (e.g., local repositories harvested by OpenAIRE). Encourage the transformation of institutional presses into open access publishing houses (monographs and journals);
4. **Research Data Management.** Mapping institutional repositories managing Research Data according to FAIR principles;
5. **Research Data Management.** CIVIS training programs on RDM;
6. **Education and Skills.** Creation of a common knowledge base on OS and raising awareness about open science practices;
7. **Education and Skills.** Creation of common courses to develop OS skills;

8. **Recognition and Rewards & Next Generation Metrics.** Establish an award for CIVIS Best Practices in OS;
9. **Recognition and Rewards & Next Generation Metrics.** Common table of indicators to measure research activity and scientific production, from the OS perspective. CIVIS universities include OS practices in their research evaluation and career assessment processes (link this to the HRS4R in Module 4);
10. **Recognition and Rewards & Next Generation Metrics.** Participation in international activities for the development of New Generation Metrics that take into account the whole research lifecycle and all the types of research outputs (e.g., DORA);
11. **Research Integrity.** Raise the awareness of the CIVIS community on all aspects related to Research Integrity, including the use of Open research practices (ethics included). Reproducible Research and Innovation (RRI) training for all PhDs and researchers.

The list reflects the ambition of the CIVIS alliance to take action in promoting and implementing OS practices. The desired endpoints can be subsumed to two general goals: (1) to raise the awareness of the CIVIS community about OS practices; (2) to enhance the collaboration between CIVIS universities on OS projects. Two types of actions are foreseen: trainings and recognition of OS practices through the implementation of the CIVIS OS Award.

The priority is to contribute towards the OS category of **Cultural Change** and to make all the relevant actors aware of the wide scope of the OS landscape (points 1 and 2 in the list). For this reason, we aim to transfer the best OS practices to all CVIS universities and to learn from successful implementations of OS projects. A series of networking activities (e.g., workshops, webinars, trainings, summer schools etc.) – organized together with the OS TF in CIVIS – are foreseen in the framework of the RIS4CIVIS project. Collecting the expertise of our colleagues is essential to act upon the first two endpoints. This will contribute to the elaboration of a common framework for OS policy and will help each university to develop an OS strategy or to consolidate the existing ones. A common effort will strengthen and/ or will contribute to the creation of OS working groups at institutional level. These are important actions, and they might take long time for implementation – e.g., putting them into practice depends on national legislation, institutional policies and strategies – and it is difficult to assess the required timeframe. However, the suggested indicators will map the existence of OS policies and OS structures in our universities, so they will reflect the degree of implementing OS in all CIVIS universities.

For **Future of scholarly communication** category, we aim to focus on training and guidance for our researchers into Open Access practices (point 3 in the list). We have the ambitious goal to make all research results open by default, which can be achieved through a common strategy and training. Acting towards this goal might require a very long timeframe, but it can be assessed by the existence of CIVIS/ institutional guidelines on OA publications and the percentage of academic publications in open access.

One of the emerging areas of OS landscape is the category of **Research Data Management (RDM)** – points 4 and 5 on the list. Our module aims to chart the existing institutional repositories and to create a CIVIS training program on RDM. As in other cases which involve training, the envisaged approach is to first develop train-the-trainer program (link to Module 4). Implementing a training program is possible on the mid-(to long-)term period, and the success of this action can be measured by the existence of a common catalogue of institutional repositories and the existence of a common training program.

The OS category of **Education and Skills** is seen as a perfect development in the upcoming phase (mid-term, Case Study), and it consists in raising awareness about OS within our academic community and the creation of common courses to improve OS skills (points 6 and 7 in the list). It is a broad program grounded on the best OS practices recognised at the European level, which are aimed to support our activities for the **Cultural Change**, too. Offering introductory courses and workshops on OS practices, combined with applied trainings on particular techniques, practices, and OS skills will contribute to the development of OS in CIVIS. The indicators consist in the mapping of the existence of such training programs. The training program can be developed jointly with Module 4 as part of the career development actions for researchers in the CIVIS universities.

The recognition of good OS practices – see the **Recognition and Rewards & Next Generation Metrics** category (points 8-10, above) – will be done through the implementation of the CIVIS OS Award. This will raise the visibility of OS within the alliance. At the same time, it will contribute to the ongoing discussions at European level about implementing new forms of research assessment that take OS practices into consideration. For this reason, experts in our module and the experts of OS groups in our institutions will participate in international activities for the development of Next Generation Metrics. We plan to promote a pilot case study, jointly with Module 4 (in the framework of the HRS4R award), where new indicators will be tested. Depending on the allocation of resources and the consensus on the OS award, this collaborative action can be done on mid- to long-term; with the added note that continuous involvement in supporting OS practices is needed (i.e., CIVIS OS award announced each year).

Another important OS category included in our list of desired endpoints is **Research Integrity** (point 11). We take it as an overarching activity, promoting collaboration between OS projects and the activities of ethics and academic integrity offices in CIVIS. It is an activity meant to raise the awareness and, at the same time, to promote trainings within the alliance. We start from the already existing guidelines and recommendations at European level, which we plan to adapt as trainings within CIVIS. This is expected to be achieved within the timeframe of the RIS4CIVIS project, but involving more colleagues might require more time, as this type of action requires an organic growth of the training program. In any case, the indicator measures the existence of training modules in the broader issues of OS and research integrity.

In brief, the foreseen actions toward the implementation of the desired endpoints defined in module 5 are of two types: to raise the awareness about OS practices in CIVIS and to enhance collaboration between all CIVIS universities. The CIVIS OS Award is expected to highlight good practices in the field, such that it will increase the visibility of a wide-range of OS results and, at the same time, to give more weight to OS solutions in the recognition of research outcomes. Federating existing OS resources is another important course of action, which will be supplemented by common training programs and shared guidelines in OS practices.

The following table illustrates the desired end-points and their related motives, actions, time, barriers/risks and indicators, which compose the Module 5 Roadmap.
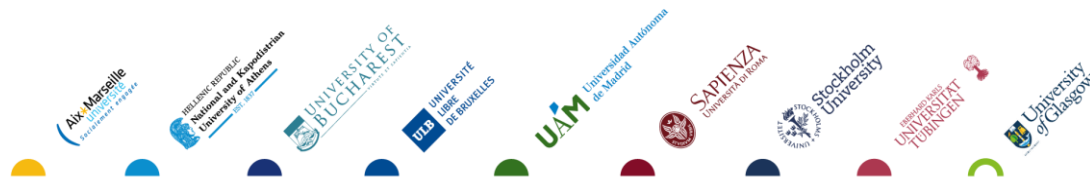
## Table – Module 5 Desired Endpoints & Final Roadmap

| End-point | Rationale | Actions | People involved | Timing | Barriers Obstacles | Risks | Indicators |
|---|---|---|---|---|---|---|---|
| **Cultural change.** All the CIVIS universities have an OS policy: a common framework for OS policy for all the participant Universities and each university will develop an OS strategy. | The OS landscape is very broad and working towards a common OS framework helps CIVIS to follow the most recent developments in terms of OS policies and practices. | Transfer of best practices from the universities with an OS policy to universities currently developing one. Organize workshops, webinars, trainings. Create a network of experts. | OS experts from CIVIS. CIVIS academic community, at large. | Long-term | Not all countries have a national OS policy, which might delay the adoption of institutional OS policies. | Possible delays in the implementation. | Existence of an OS policy (institutional). (in absence of an institutional OS policy) Existence of OA policy and Existence of open data policy. |
| **Cultural change.** One common OS Service, supported by OS coordination groups in each university of the Alliance. Each OS coordination group will have an academic OS leader, to foster OS actions within | Due to the diversity of OS, finding the relevant information is sometimes difficult, and a dedicated knowledge base operated by CIVIS OS experts would strengthen the | Create the CIVIS network of OS experts (linked with the above). Create a Virtual Contact Point - Single Contact Point for CIVIS OS. Establish a dedicated OS coordination group (structure/ unit) in each CIVIS university. Nominate an academic OS leader (per institution). | OS experts from CIVIS. CIVIS academic community, at large. | Mid-term (Case Study phase/ end of RIS4CIVIS) | Some of the actions might be postponed, depending on the adoption of the OS policy. Lack of awareness about the entire OS spectrum. | It might require a long timeframe to become fully operational. | Existence of a dedicated person responsible for promoting and supporting OS practices (OS academic leader). Existence of an OS working group for supporting OS practices. |

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|---|---|---|---|---|---|---|---|
| the CIVIS universities. | status of OS within the alliance. | | | | | | Existence of a virtual space dedicated to OS. |
| **Future of scholarly communication.** Make publications open by default and provide a gateway to all CIVIS research outcomes (e.g., local repositories harvested by OpenAIRE). Encourage the transformation of institutional presses into open access publishing houses (monographs and journals). | Making publication open by default is not only a clear statement of CIVIS for supporting OS, but it will also increase the visibility of the research output of alliance. | Provide trainings on OA and publication models. Develop/ adopt guidelines regarding OA. Organize webinars, workshops, trainings to raise the awareness of the academic community about OA publications and to encourage university presses to publish in OA. | OS experts from CIVIS. CIVIS researchers and the academic community, at large. | Long-term | All actions require a long timeframe. | The implementation might come in degrees, depending also on copyright issues and IPRs. | Existence of institutional guidelines for all researchers regarding open access and data management policies/ existence of a service for OA publications. Existence of training modules for young researchers as well as senior researchers on open access and open data management policies. % of academic publications published in open access (journal articles, monographs, |

| | | | | | | | datasets, code, etc.) |
|---|---|---|---|---|---|---|---|
| **Research Data Management.** Mapping institutional repositories managing Research Data according to FAIR principles. | A good knowledge of the available resources is essential in order to facilitate better cooperation. | Map the existing institutional data repositories. | Researchers, IT departments. | Mid-term to Long-term | Fragmentation of resources. | Interoperability issues. | Existence of a list with institutional data repositories. |
| **Research Data Management.** CIVIS training programs on RDM. | Most of the current calls require RDM plans for projects and a good training program on this topic can increase the success rates of the applications made by the CIVIS researchers. | Create a common training program in RDM. | Researchers applying for grants, researcher implementing projects. | Mid-term (Case Study phase/ end of RIS4CIVIS) | Already existing resources at European level (the risk of duplicating the effort). | Lack of awareness. | Existence of a common training program in research data management. |
| **Education and Skills.** Creation of a common knowledge base on OS and raising awareness about | Due to the diversity of OS, finding the relevant information is sometimes difficult, and a | Create a common knowledge base, including documentation and links to OS resources (e.g., webinars). | All the CIVIS academic community. | Mid-term (Case Study phase/ end of RIS4CIVIS) | Different development of OS practices in CIVIS universities might require | Difficult to implement, if not joined with the Cultural Change category. | Existence of a common knowledge base to introduce researchers and academics into |

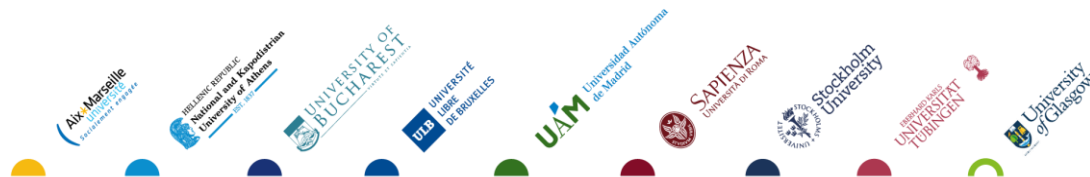| | | | | | | | |
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| open science practices. | dedicated knowledge base operated by CIVIS OS experts would strengthen the status of OS within the alliance. | | | | a variety of actions. | | the multiple dimensions of OS. The existence of activities (trainings, sharing good practices, networking) to consolidate and reinforce the common knowledge base. |
| **Education and Skills.** Creation of common courses to develop OS skills. | Provide courses/ training programs tailored to the needs of CIVIS academic staff. | Create a common training program. Adopt existing training programs and activities, such as FOSTER toolkit (https://www.fosteropenscience.eu/), which has been developed by EU and is applied by several European research institutions. | All the CIVIS academic community. | Mid-term (Case Study phase/ end of RIS4CIVIS) | Already existing resources at European level (the risk of duplicating the effort). | The long period of implementation. | Existence of a common training program. |
| **Recognition and Rewards & Next Generation Metrics.** Establish an award for CIVIS Best Practices in OS. | Showcasing good OS practices is sometimes difficult, but this can be corrected with a CIVIS award. | Map the OS practices in CIVIS and establish the OS award. | All the CIVIS academic community. | Mid-term (Case Study phase/ end of RIS4CIVIS) | A CIVIS consensus is needed. | There is no similar award at the CIVIS level. | Existence of an "Open Science Award" (or similar) at HEI level |
| **Recognition and Rewards & Next Generation Metrics.** Common table of indicators to measure | Take into account and adapt to the dynamic of the publication, dissemination, | Elaborate a common table of OS activity indicators for research assessment. Promote a pilot case study to use the new indicators. | All the CIVIS academic community. | Long-term | A CIVIS consensus is needed. Agreement and | Change in research assessment is difficult to make at the | Existence of recommendations for the use of innovative indicator-based |

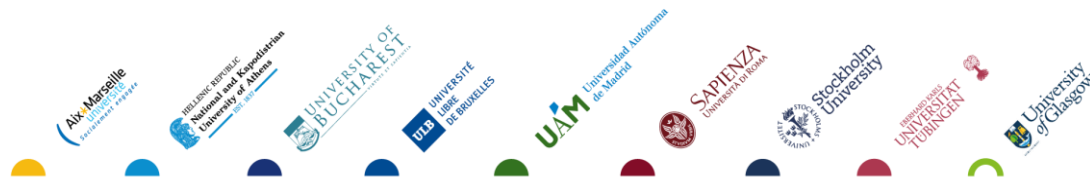| | | | | | | | |
|---|---|---|---|---|---|---|---|
| research activity and scientific production, from the OS perspective. CIVIS universities include OS practices in their research evaluation and career assessment processes (link this to the HRS4R in Module 4). | and communication of scientific results. | | | | involvement of relevant/ competent academic authorities are required. | institutional level. It needs to correlate with national and European initiatives. | approaches to assess "openness" or social impact in researcher performance reviews. Recommendation on the inclusion of criteria regarding OS approaches in selection processes for researchers at all levels. |
| **Recognition and Rewards & Next Generation Metrics.** Participation in international activities for the development of New Generation Metrics that take into account the whole research lifecycle and all the types of research outputs (e.g., DORA). | The need of CIVIS alliance to be involved in the current discussions about new evaluation systems. | Establish a list of international activities/ groups working on New Generation Metrics. Participate in other OS initiatives at international level. | The entire CIVIS community. | Mid-term to Long-term | The allocation of resources (time and expertise). | Lack of time. | Members of CIVIS participating in events related to the development of New Generation Metrics. |

| Research Integrity. Raise the awareness of the CIVIS community on all aspects related to Research Integrity, including the use of Open research practices (ethics included). RRI training for all PhDs and researchers. | The need to discuss broader issues in the academia and to find integrate solutions that promote research excellency. | Organize webinars, workshops, trainings to raise the awareness of the academic community about OS. Collaborate with ethics and academic integrity committees in all CIVIS universities. Adopt/customize (existing relevant) initiatives and recommendations. For instance LERU (League of European Research Universities, https://www.leru.org/), has developed a set of recommendations for the implementation of research integrity culture in Universities (https://www.leru.org/publications/towards-a-research-integrity-culture-at-universities-from-recommendations-to-implementation, January 2020). Moreover COPE (Committee on Publication Ethics, https://publicationethics.org/), has published Core Practices for all the stakeholders involved in the publication of research results (https://publicationethics.org/guidance/Guidelines, 2017). | All CIVIS academic community. | Mid-term (Case Study phase/ end of RIS4CIVIS) | Low participation rate. More time needed. | Not only it is time consuming and involves academic staff from different departments, but it also requires an interdisciplinary approach. | Existence of training modules for young researchers as well as senior researchers on the broad issues of OS and research integrity. |

## 2. Module 5: Case Studies

• Case studies to be implemented by Module 5 in the upcoming phase of the RIS4CIVIS:

1. **Common CIVIS OS knowledge base** – the creation of a CIVIS virtual space to include trusted information related to OS policies and practices (e.g., trainings, templates, case studies etc.);
2. **CIVIS training programs in OS** – adapting European recommendations and training programs on OS to the needs of the CIVIS academic community;
3. **The CIVIS OS Award** – constantly mapping the OS landscape in CIVIS needs to be joined with showcasing some of the best applications of OS, with an increased visibility in the case of a CIVIS OS award.

• Another case study can be implemented as a joint action with other modules:

**Pilot case study on research assessment** – testing the use of new metrics in research assessment process (possible link with Module 4 and the HRS4R award).

• We recommend to consider – on the long-term – the possibility of implementing a case study on the following topic:

**OS as research excellency** – connecting the discussions on OS with ethics and academic integrity topics to broaden the perspective upon outstanding research practices at the alliance level.

## 3. Module 5: Recommendations addressed to national and/or European policy-makers

Implementing OS practices is a long-time process. On one hand, the OS covers a broad range of topics and approaches. On the other hand, informing and engaging the academic community in debates about OS requires a constant effort on a long-time span. Depending on national legislation (e.g., national OS policies), some of these efforts can find support, while others require a still-wider set of actions. The best example is the topic of research assessment, which cannot be treated in isolation to the general practices of the scientific community. However, further allocation of resources (e.g., piloting case studies) and allowing alternative forms of evaluation to be carried out by individual institutions, might remove some of the barriers.

## 4. Module 5: Conclusions & Next steps

The roadmap of Module 5 expands the list of potential endpoints and reflects the key objective of our module to mainstream Open Science practices within CIVIS. As already explained, the recommended actions are very ambitious, and we are aware that some of the objectives require a long timeframe. Nevertheless, **federating OS resources and policies within CIVIS** and **developing common programs promoting OS practices**, are desired ends in themselves. For this reason, **pooling OS resources and providing a unique OS contact point at the alliance level** represent a first step in more collaborative work. The latter is expected to include **common training programs and joint participation in international discussions about OS**.

# Module 6 – Embedding Citizens and Society

The focus of Module 6 is to increase public participation in science, public perception of the relevance of science, and public acceptance of science, across all of the CIVIS local communities.

Our objectives are to develop and share common tools, practices, concepts, policies and trainings that open research to citizens and society, increasing the quality and efficacy of these three basic aspects:
- **Science Communication (SC)**
- **Citizen science (CS)**
- **Open Innovation (OI)**, social innovations, and challenge-driven innovations

## Methodology & Procedure applied to data collection

For the development of Consensus Building Phase, Module 6 has chosen to apply a similar methodology employed during Benchmark phase (WP1).

A first suggestion on objectives, methodological approaches, desired end-points and their respective roadmap have been shared and discussed among Module 6 representatives in order to find a consensus and then a final version end-points and roadmap contents. These discussions took place during virtual meetings held on **7th July** and **28th September, 10th November and 14th December**. Furthermore, the communication among Module 6 leader and representatives has also been made by email.

Up to now different documents have been produced:
- 4 versions of desired end-points;
- 2 Roadmap versions;
- A catalogue of all actions and infrastructures in CS, SD and OI already implemented in each university;
- A template to identify the best practices implemented in each university;
- A catalogue of best practices identified by each university.

Beyond Module 6 representative meetings, Module 6 leaders also developed meetings with other Modules leaders and CIVIS Open Labs in order to find transversal/common aims and define synergies and cooperation.

*Meetings*

**Internal Module 6 meetings:** 6

**Number of cross-Modules Meetings:** 3; Topics discussed were the following:

- **Transferable Skills Catalogue.** Together with coordinators of Module 4, 3 and 5, during July and September three meetings have been held to define a questionnaire to catalogue potential trainings to be open to the CIVIS community;
- **Module 4, Module 5, and Module 6** (15th November)**:** the purpose of the meeting was to identify possible interactions and ideas in view of the recommendation drafting.

**Number of other types of meetings:** 3; Topics discussed were the following:

- **Open Labs and Module 3.** A meeting with CIVIS WP3 leader and RIS4CIVIS Module 3 coordinator has been held on 30ᵗʰ September. The purpose of this meeting was to discuss citizens science practices and innovation processes, with the possibility to develop, as a further step, joint activities towards their harmonization at the Alliance scale. CIVIS/WP3 and RIS4CIVIS/Module 6 have in common the opening of the university to citizens, access to science and research and, as also dealt within Module 3, its anchoring in the local territory;
- **Virtual mobility common action** During this period several meetings (4 different group meetings and many individual virtual contacts and also emails) with representative members of the Module 4 and 5 have been produce in order to present a common action in the virtual mobility call under title « Micro-programme on Public Communication of Science and Scientific Dissemination». This project, used as a partial consensus building between the ULB, UB and UAM;
- **Database of Experts in CS, SD and OI**. A first meeting between Module 6 leaders and CIVIS IT Team has been organized to set up the technical aspects concerning the creation of the database of experts (one of the Module 6 case studies). During this meeting, the team discuss about a first version of a questionnaire to be send to the CS, SD and OI experts of the CIVIS Alliance as a first step to invite them and make up the database afterwards.

## Results: Module 6 -Final Roadmap, Case studies and Recommendations

## 1. Module 6: Desired End-points & Preliminary Roadmap

As result of the work carried out during Consensus-building phase, and the discussions made so far with Module 6 representatives as well as cross-Module leaders, a list of four desired end-points as well as a roadmap to reach those aims has been elaborated.

The Module 6 desired end-points are:
1. **Promoting Network of CS/SD/OI experts;**
2. **Developing Common training program at CIVIS level;**
3. **Promoting Embedding Citizens & Society Politics;**
4. **Designing strategies to engage citizens and society in science.**

The following sub-sections presents the desired end-points and roadmaps created.

Please note that, **short-term goals** refer to the objectives to be set within the upcoming 3-5 months, that is to say, by March/April 2022; **medium term goals** refer to the objectives to be set between April 2022 and April 2023; **long-term** goals refer to the objectives to be set last year of the project and beyond.

**1. Promoting Network of CS/SD/OI experts**

The purpose of this end-point is the generation of a network of CS, SD and OI experts. This network can start by the identification of a list of the experts and latter with the publication of this list in the CIVIS Digital Campus.

This network will promote new ideas on CS/SD/OI, exchange of good practices, as well as identify challenges on these fields. The creation of a network of experts will also allow a further brainstorming on common actions to regularly be implemented at the CIVIS level.

Furthermore, this network could also provide support to the researchers and students willing to develop citizen science actions, and to make available resources for other actions such as courses and training actions, best practice manuals, etc.

In order to carry out this end-point the following **actions** are planned:
- Identification of experts in each university;
- Creation of a best practise manual, integrating platforms of citizens consultation;
- Creation of platform of social participation in research projects.

The people involved in those actions will be, at universities level, experienced researchers, faculties' members, project officers in science communication/dissemination. At CIVIS and RIS4CIVIS levels, regarding the promotion/organization of those actions, WP5 could be implicated with respect to support the creation of a database. Moreover, CIVIS WP3 could be implicated in putting into practice this end-point taking advantage of the existence of different experts in the Open Labs projects.

To this end-point be achieved some of the following **barriers** could be found:

- Insufficient funding,
- Lack of interest from certain universities in implementing the actions,
- Work overload (lack of time) from the potential experts,
- Absence of response for the experts and asymmetric answers from the CIVIS members,
- Lack of motivation from the experts because of the current lack of incentives to support their participations to the RIS4CIVIS activities.

## 2. Developing Common training program at CIVIS level

The main objective of this end-point is to promote common courses between the members of the Alliance in the three pillars of the Module: SD/CS and OI. The achievement of this endpoint will provide enhancing CS/SD/OI activities in the framework of RIS4CIVIS, raising awareness, gaining competencies, and stimulating CS/SD/OI actions.

This will also contribute to more and better engaged researchers in science dissemination activities towards the general public.

So as to accomplish this end-point the following **actions** are envisaged:
- Create a training catalogue to be publicly available on the Digital Campus platform (link to Module 4),
- Promote courses, trainings, seminars, workshops in SC, CS and OI in order to attract participants (with support from WP5).

Modules 3, 4 and 5 are currently supporting to accomplish this end-point in respect to join forces to create a catalogue of trainings of all CIVIS universities (Transferable Skills Catalogue), this is part of the RIS4CIVIS WP4.

Furthermore, the target audience will be young and experienced researchers, administrative staff, PhD students, and faculty members.

The following **potential barriers** to accomplish this goal are:

- Insufficient funding,
- Lack of deep knowledge,
- Lack of time,
- Lack of interest.

### 3. Promotion and Recognition of CS, SD and OI practices

The need for a complete recognition of the activities related with SD/CS and OI in the Curriculum Vitae of the staff and the academics and the adequate financial support for these activities could provide a correct citizen engagement and the grow of activities in the CIVIS Universities for that purpose. The Module members will make proposals to the Universities' and CIVIS governance, to implement these institutional changes.

The purpose of this promotion and recognition is to motivate researchers in society engagement, encourage engagement in the Citizens Science and Science Dissemination fields, provide benefits to researchers with meaningful achievements in social Innovation, increase mutual understanding and recognition of benefit for both science & society and contribute to a resilient society and democracy, and finally, support tackle SDGs by smart cooperation between science and society (e.g. behaviours, local / regional management decisions in the context of climate change etc.).

In order to carry out this end-point the following **actions** are planned:

- Implementing adequate recognition of the work undertakes within the SC/SD/OI including a convenient funding or rewarding scheme to promote and develop such actions (to link with the Research Assessment Reform EU-initiative, also addressed in Module 5);
- Creation of a CIVIS journal/magazine of SC/SD/OI actions. With the publication of those action and the interchange of information.

In achievement of these goals will include the involvement of Vice rectors, Researchers, Administrative staff, Faculties members. As a cross-cutting action, Module 6 could joint efforts with Module 5 in order to establish an award for CIVIS best practices in CS, SD, and OI, and also with CIVIS/WP3 which regards to civic engagement initiatives related to promotion of CS, SI, and OI practices.

Some of more meaningful **barriers** to achieve this end-point will be overcome insufficient funding, and difficulties to find a political/administrative consensus among the universities and limited support staff.

### 4. Designing strategies to engage citizens and society in science

The creation of useful tool for an adequate SD/ CS and OI is another fundamental aspect to be achieved within the Module 6. For that propose, we agreed to design a manual or documentation about best practise to be published on the Digital Campus targeting all the CIVIS community, to both academics and staff.

This should contribute to make science be more easily available and understood by the general public thought engaging society in CS, SD and OI actions, and supporting the translation of theory into practice in all CIVIS universities.

To do so, **actions** are planned such as meetings and public events with the co-creation with the citizens which aim to explore strategies in the social engagement, the creation of a best practice manual,

integrating platforms of citizens' consultation, as well as the creation of a platform of social participation in research projects.

At the same time, the design of new and creative strategies produced by experts and social actors for that propose will be integrated in courses and training actions related with the module, as well as in particular strategies for increasing citizen participation in the science generation.

Some of the **social actors involved** are young/experienced researchers, administrative staff, students, and faculties members and citizens. As cross-cutting actions Module 6 are planning to join forces with Module 5 concerning promoting citizen engagement actions, and with CIVIS Open Labs, take in advance their CIVIS participatory platform.

One of the relevant **barriers** to overcome is the existence of big asymmetries in the development of CS projects and its tradition among universities.

The following tables illustrates the roadmaps developed to achieve Module 6 end-points.

## Table 6. Module 6: Desired End-points & Final Roadmap

| End-point | Why to achieve it | Actions | People involved | Timing | Barriers / Risks | Indicators |
|---|---|---|---|---|---|---|
| **Network of CS/SD/OI experts** | New ideas of CS/SD/OI; Exchange of good / bad practices (Dos &DON'Ts); identify challenges<br><br>Brainstorming on common actions to regularly be implement at the CIVIS level<br><br>This network could provide support to the researchers and students willing to develop citizen science actions<br><br>This end-point would also provide an essential database for other actions included, such as courses and training actions, best practice manuals, etc. | Creating a Database of CS/SD/OI Experts<br><br>Meetings with CS/SD/OI experts<br><br>Creating Manuals of Best practices in CS/SD/OI | Experienced researchers<br><br>Faculties members<br><br>Project Managers in science communication<br><br>CIVIS WP3 - Open Labs: " taking advantage of the existence of different experts in the Open Labs projects" | Mid-term | Insufficient funding<br><br>Lack of interest from certain universities in implementing the actions<br><br>Work overload (lack of time) from the potential experts<br><br>Absence of response for the experts and asymmetric answers from the CIVIS members<br><br>Lack of motivation from the experts because of the current lack of incentives to support their participations to the RIS4CIVIS activities. | Number of participants<br><br>Number of researchers involved in CS actions<br><br>Knowledge areas implicated |
| End-point | Why to achieve it | Actions | People involved | Timing | Barriers / Risks | Indicators |

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| End-point | Why to achieve it | Actions | People involved | Timing | Barriers / Risks | Indicators |
|---|---|---|---|---|---|---|
| **Common training program at CIVIS level** | Enhance CS/SD/OI activities in the framework of RIS4CIVIS: raise awareness, gain competencies, stimulate action.<br><br>Get researchers more (and better) engaged in science dissemination activities towards the general public | Create a training catalogue<br><br>Promote courses, trainings, seminars, workshops in science communication, citizens science and open innovation in order to attract participants. | Young and experienced researchers<br><br>Administrative staff students, pupils<br><br>Faculty members<br><br>Module 3,4,5 – transferable skills catalogue (database of trainings)<br><br>CIVIS WP3-Open labs | Mid-term | Insufficient funding<br><br>Lack of deep knowledge<br><br>Lack of time<br><br>Lack of motivation | Receive feedback from participants<br><br>Monitor statistics of attendance<br><br>Disseminate a survey after the events |

| End-point | Why to achieve it | Actions | People involved | Timing | Barriers / Risks | Indicators |
|---|---|---|---|---|---|---|
| **Promotion and Recognition of CS, SD and OI practices** | Motivate researchers in society engagement.<br><br>Encourage work in the Citizens Science and Science Dissemination field.<br><br>Provide benefits to researchers with meaningful achievements in social Innovation.<br><br>On a more abstract level: increase mutual understanding and recognition of benefit for both science & society. | Adequate recognition of the work undertakes within the SC/SD/OI including a convenient funding to promote and develop such actions.<br><br>Creation of a CIVIS journal/magazine of SC/SD/OI actions | Vice rectors,<br><br>Researchers<br><br>Administrative staff<br><br>Faculties members<br><br>Module 2 – creation of "CIVIS label"<br><br>CIVIS – WP3 – civic engagement | Long-term | Insufficient funding<br><br>Difficulties to find a political/administrative consensus among the universities | Numbers of researchers involved in science dissemination and citizens science fields<br><br>Asymmetries in the recognition across CIVIS |

| | Contribute to a resilient society and democracy. Help tackle SDGs by smart cooperation between science and society (e.g. behaviours, local / regional management decisions in the context of climate change etc.) | | Module 5 - Establish an award for CIVIS Best Practices in OS | | | |
|---|---|---|---|---|---|---|

| End-point | Why to achieve it | Actions | People involved | Timing | Barriers / Risks | Indicators |
|---|---|---|---|---|---|---|
| **Strategies to engage citizens and society in science** | Make science more easily available and more easily understood by the general public. Increase the desire for knowledge (general knowledge). Help translation of theory into practice in all CIVIS universities. Engage society in research projects | Meetings and public events with the co-creations with the citizens which aim to explore strategies in the engagement. Creation of a best practise manual, integrating platforms of citizens consultation. Creation of platform of social participation in research projects | Young/experienced researchers Administrative staff Students, pupils Faculties members and citizens Module 5 – citizen engagement CIVIS WP3 - Open labs + civic engagement - CIVIS participatory platform | Mid-term | Existence of big asymmetries in the development of CS projects and its tradition | Number of participants from diverse society fields Numbers of researchers involved in science dissemination and citizens science fields |

## 2. Module 6: Case Studies

Based on the Roadmap the following case studies have been defined in order to test the validity of the Roadmap presented.

1. **To create a database of experts in Science Dissemination, Citizens Science and Open Innovation;**
2. **To elaborate manuals/documents about Best Practices in CS, SD and OI;**
3. **To promote and carry out common training programs at CIVIS level;**
4. **To set up an adequate common framework for the recognition of CS/SD/OI initiatives by universities**

Based on the Roadmap previously defined, the selection of the case studies presented has been carry out through several internal discussions during the Module 6 meetings.

The first case study to be implemented will be the expert database. The purpose of this database is to create a space to allow experts in SC, CS and OI to share their experiences, to organize meetings and workshops. The final aim of those experts' exchanges will be to create CS/SD/OI strategies in order to boost initiatives on these fields.

Furthermore, these exchanges between experts will be a first step to carry out the next two case studies, the Manuals of Best Practices and undertake common training programs.

Despite the training programs, it should be point out that Module 6 has already carried out a pilot for this case study that is the *Science Communication Micro-programme*, organized by researchers from ULB, UB, UAM. The program is designed to provide young researchers with the necessary concepts and tools to approach the dissemination of their current and future research activities and technical knowledge to the public, an activity that is increasingly in demand by society, research centers, universities, and public administrations. The course registration was very successful, 154 candidates for 25 vacancies.

Regarding the last case study, the purpose is to create a set of actions in the Alliance to recognize the efforts of researchers in carry out CS/SD/OI initiatives. The case study is still being discussed internally into Module 6. However, the recognition could be accomplished through creating an award (action that could be carried out together with Module 5, in the framework of the Research Assessment reforming process) and developing instruments in research assessment to stand out the research actions in CS, SC and OI.

## 3. Module 6: Recommendations addressed to national and/or European policy-makers

- To provide funding to develop the research environment in the Alliances, i.e. training and allocation of funds dedicated to research and incentives to promote new research assessment metrics;

- To give a stronger support to the existing structures responsible of SD, CS and OI and to promote their creation across CIVIS where these structures do not exist;

- To create incentives and reward strategies at EU/national level for these researchers working also on CS/OI/SD. Even if there can be different recognition criteria, we consider important to develop such strategies as a way to improve the relationship between University and the society across the researchers' work;

- To set up ways to encourage researchers to carry out initiatives in CS/SD/OI and to recognize their efforts (e.g.: creating awards at National /European level, and indicators in research assessment related to citizen science, and science dissemination);

- To improve training activities for staff in order to strengthen the strategies and give higher relevance to co-creation and participation of society.

## 4. Module 6: Conclusions & Next steps

Module 6 is a coherent group with excellent members who help finding common ideas and results. The asymmetries detected in each of the lines included in the Module among universities is a weak point; however, they can also provide help by taking advantage of the more experienced members. At the same time, it is pretty clear that the workload of the members makes the achievement of better efficiency in the meetings difficult.

As the result of the work done, some of the endpoints projected are focused on the creation of experts' networks in short/medium term and the creation of courses and training activities in each of the lines included in the Module in the long term. It is quite essential to achieve the short-term endpoints as soon as possible, as the long-term objectives depend on them. The consecution of the endpoints will also depend on the assistance of the management levels and the financial help from the CIVIS/Universities structures.

The equilibrium of the alliance will also be crucial by the consecution of the endpoints at the same level in all Universities.

# 3. Obstacles and barriers

## Module 1

Obstacles to achieve the Module 1's objectives are related to different dimensions, which are described below:

**HR and financial resources:** Researchers may be occupied with teaching and other on-going research that make it difficult to engage in new research with researchers they do not know. Often research developed between researchers they have already worked with and after having found people they like to collaborate with, they might not be willing to find new partners. Financial resources are also crucial. It will be difficult to build new research teams without funding.

**Academic freedom:** Collaboration, especially around topics decided by central units or politicians, may interfere with the principle of academic freedom. This possible barrier is related to what role research is expected to have in society and if research topics are decided outside of academia or by university boards. Consequently, academic freedom can be a barrier to collaboration within the Alliance specifically.

**The view of how research excellence is achieved (top-down or bottom-up):** The dominant view of how research excellence is best achieved among the partner universities is a bottom-up perspective. This can be a barrier to desired research focus on, for example, the CIVIS hubs if this is not the kind of research the partner universities have their excellence in. The desired end-point of research to remain a bottom -up practice can therefore be a barrier for top-down strategies about research areas.

**Differences between human, social and natural sciences:** The practice of science looks different in different academic disciplines, which makes it difficult to define one single end-point for research and innovation. Some disciplines have, for instance, difficulties in relating to the meaning of the concept innovation that may have a clearer meaning in some natural science disciplines. The fact that the practice of science, and also the role in the development of society that different academic disciplines play, can be a barrier to achieve too narrowly defined end-points for research and innovation.

**Competition (rankings, funding):** Universities live in a competitive environment where their performance often are measured in rankings. Depending on what kind of ranking is considered as important, collaboration with other universities that may be ranked lower will not be prioritized.

**Existing research collaboration (why develop new instead of investing in existing stable collaboration):** Much research is already conducted in different types of collaborations between researchers at different universities. Establishing well-performing research collaborations across disciplines and universities takes time, and potential unwillingness to give up well functioning teams and invest in establishing new research teams may therefore be a barrier.

**Research profiles (basic research versus applied research):** Different universities may have different profiles in their view of what type of research they are engaged in, such as basic or applied research. Such different profiles can be a barrier for establishing research collaboration.

# Module 2

With the aim to define a model for sharing and opening RIs among CIVIS Partners, as well as to have a clear and overall overview of the current barriers, the M2 team has analysed in depth data and results from the RI survey performed during the Benchmarking phase. The analysis provided evidence that most of the RIs mapped are in principle open to the academic community, at internal and external level, and to any kind of users or partners. The access could be free or, in the vast majority of cases, on demand and regulated on the basis of different rules and criteria such as:

- Scientific relevance and excellence of the research project;
- Mandatory training of users;
- Ethics authorization;
- Technical requirements;
- Availability of the RI;
- Mutual collaboration and reciprocity.

The access requirements are generally open. In fact, most of the examined RIs are already open to other universities, research centres, as well as private organisations. In addition, in a few cases RIs are even open to students as means for performing hands-on-training activities. In case of Digital infrastructure, free access is guaranteed.

Normally the access policies do not influence the access by external or non-national users. In this regard, it is also worthy to stress that no restrictions are generally applied to industrial users. Nevertheless, in some cases, for non-EU users, more stringent access conditions are applied, mostly linked to security reasons.

As a result, the policies governing the use of the RIs are generally open to academic, internal, external, as well as any additional third-party users. The general openness of RIs is also confirmed by the RI use promotion activities/tools. In fact, in most cases RI promotion activities are addressed to international users.

As a consequence, the obstacles in sharing some RIs that emerged from the survey are generally not considered as insurmountable.

# Module 3

In the beginning there was no common understanding for the term endpoint. This had to be discussed together with the representatives of Module 3 and a consensus had to be build. The recommendations of WP2 leader and RIS4CIVIS coordinators were supportive to find this alignment.

The collection of the end-points was time-consuming. A lot of entities, experts and different departments had to be involved. Some of the identified short-term end-points within the benchmarking phase have changed or have already been implemented. That shows the dynamic process related to the consolidation of endpoints.

For the creation and refinement of the roadmap in terms of innovation management activities and reinforcing academia-business R&I cooperation the biggest challenge was that the situation differs of each single university and changes can happen dynamically. The identification of the desired endpoints

of each single university and the arrangement of all endpoints within the CIVIS network was supportive to find common activities and goals.

## Module 4

Most of the obstacles to define end points are related to the higher or lower level of development reached within certain fields. For example, since training is well developed in one way or the other in the CIVIS Alliance, a training program on transferable skills can be more easily envisaged than the harmonisation of career development strategies, which are less advanced and should go under a more extensive reflection to establish a solid basis.

On the other hand, national, regional or institutional barriers may apply. These directly link to working conditions and the recruitment field, which must yield a thoughtful approach on what is feasible or not in terms of logistics, usefulness and compromise. Arguably, working conditions for researchers will generally improve thanks to the work of the Modules, i.e. extended training offer, infrastructure access, Open Science practices expertise, etc. It is worth mentioning too that individual efforts will play a large role in producing a successful transfer of knowledge. Thematic meetings will include as many experts from the universities as possible to support knowledge sharing and meaningful discussion.

Since RIS4CIVIS is based on 8 different universities, these meetings may suffer a loss of scope, thus a more targeted strategy should accompany thematic meetings, i.e. bilateral meetings, tandems, etc. For the time being, these will be ad hoc and based on the will or interest of the universities themselves. Monitoring is also a difficult task given the ample field of Module 4. The question on whether following and achieving all end goals or ideas along the project remains. It would be hard to maintain several initiatives at the same time and by the same appointed members, hence, it should be noted that time to build not only transfer of knowledge/monitoring strategies but also to develop real actions in CIVIS is fundamental.

## Module 5

The most important barriers in achieving all the aforementioned objectives are related to the allocation of resources and time. However, there are also other factors potentially impeding a smooth dissemination of OS practices within the alliance.

**Cultural change**
• Different stages of development (infrastructures, policies, training etc.) in implementing OS policies and practices in the CIVIS universities. Lack of global OS approach: OS strategies are limited to Open Access to publications and to RDM/FAIR data in most universities of the Alliance. The other aspects of OS have to be addressed in a global OS approach;
• Lack of common/ shared OS resources (e.g., a catalogue of OS services and resources);
• Lack of academic leadership: academic leadership is required to develop and support an OS strategy to the academic authorities;
• Lack of coordination in the development and the implementation of OS-related activities: all the relevant stakeholders have to join and work together in a coordinated manner.

**Future of scholarly communication**

• Funding is needed. Either for supporting diamond OA publications or to support a common approach to APCs;

• Training: raising awareness about differences about OA is needed, as currently these differences determine a variety of practices at the university level (e.g., Plan S compliance);

• Interoperability issues of the local repositories.

**Research Data Management**

• A variety of interoperability issues between the repositories of CIVIS members;

• Lack of skilled staff.

**Education and Skills**

• The current offer of OS-related courses is not known in other institutions, except from those in which they are offered;

• The courses/ trainings are most of the time in the local language. Need for translations and common/coordinated training events.

**Recognition and Rewards & Next Generation Metrics**

• The (apparent) lack of awareness of academic authorities about OS evaluation in research assessment. Hence, different developmental policies in each institution are expressed by the Rectors/Senates;

• No consensus (at the moment) for: (1) an OS award; (2) the need for specific open science indicators and what they should be; (3) how to implement the new indicators and how to conduct the research assessment in each university.

**Research Integrity**

• Different priorities and policies in each institution;

• Different relations between ethics committees in CIVIS universities, OS projects, administrative structures.

# Module 6

The short period to develop this second stage is one of the aspects that limit the capability of the working group added to the fact that there is an active participation of the Module members in other RIS4CIVIS and CIVIS activities. The overload of work always affects the production of results at each phase of the development of the project.

Even if members' attitude has been always excellent, the absence of previous experience in some of Module 6's main axes (Open Innovation, Science Dissemination, or Citizens Science), made difficult the final elaboration of the end-points and roadmaps.

Moreover, changes in the members taking part in the Module meetings have also introduced some difficulties in the working plan. In this direction, we consider that the continuity of the members would significantly help the progress of the project.

In terms of desired end-points selected, some potential obstacles are set up such as insufficient funding, lack of time, lack of motivation, work overload, and lack of time and motivation due to the absence of adequate recognition of the value of implementing actions in CS, SD, and OI.

# 5. General recommendations and Conclusions

Throughout the Consensus-building phase, interesting initiatives have been proposed and put into practice by the six Modules.

Interestingly, this second phase led to the identification of not only initiatives concerning only the scope of one module (CIVIS RI label and Career Development Program, for instance), but the work led also to the identification of transverse actions common to several/all modules. These should be implemented in the CIVIS Digital Campus; as for example the creation of a catalogue of trainings, covering most of the Module fields as well as the creation of common databases and platforms to share relevant information and strengthen collaborations amongst the research staff in one or several fields of the Modules. The work with the CIVIS IT team is already in place to help with its implementation (also as part of WP4).

It is worth mentioning that these initiatives not only emerge from the internal work in each Module but also from the effort of Module Leaders to find transversal aims and develop common actions defined during cross-Modules meetings. Certainly, these initiatives will enrich and strengthen the results from each Module and go beyond what was initially expected from RIS4CIVIS. In this context, to achieve these goals strong efforts have been carried out by all RIS4CIVIS teams and relies on a great adaptability and sense of initiatives of all the teams involved. The work has also been developed smoothly thanks to the technical support of the CIVIS IT team (David Touzot, Amina Laanab), and the WP6 (Overall Coordination) team.

Nonetheless, to settle on and implement the common actions, the Monitoring Committee will have a crucial role to prioritise future steps. Further, as a recommendation, we suggest to open the possibility to fund some of the actions through other sources of funding (e.g. HEUR calls, internal CIVIS calls etc.). One example of a successful intent has been the Microprogram in Science Communication proposal jointly carried out by ULB, UAM and UB; or the internal CIVIS call to support networking activities amongst our universities to elaborate HEUR proposals.

Furthermore, for the next phase (WP3), we recommend that we remain attentive and supportive of potential initiatives that will emerge from cross-module exchanges.

In next the phase of RIS4CIVIS, the six modules will focus on implementing the case studies that they have identified during the current Consensus-building phase, as the first step to validate their Roadmaps and draw conclusions for the WP4.