Case studies of novel modalities for aligning national research strategies, programmes, and activities

Project no.	645782
Project acronym:	ERA-LEARN 2020
Project full title:	Strengthening joint programming in Europe
Funding scheme:	Coordination and support action
Start date of project:	1 January 2015
Duration:	36 months
Dissemination Level:	Public
Organisation name of lead contractor for this deliverable:	AIT – Austrian Institute of Technology

Contents

EXECUTIVE SUMMARY

In December 2008, the Council of the European Union adopted the concept of "Joint Programming" to promote the pooling of national research efforts in view of making better use of Europe's public R&D resources.[1] Joint programming is a strategic process whereby EU Member States agree on common visions and Strategic Research Agendas in order to address major societal challenges that cannot be tackled only at the national level in a coordinated and collective way. The practical implementation of joint programming mainly relies on the alignment of existing or planned national research strategies, programmes and activities in areas of mutual strategic interest. The European Research Area and Innovation Committee's High Level Group for Joint Programming indeed notes that "*alignment is the key to successful joint programming*".[2]

This publication contains seven case studies that examine novel alignment modalities of national research strategies, programmes and other activities. These case studies have been conducted in the framework of Task 4.3 of the ERA-LEARN2020 Project (2015-18), and build on the "Typology of Alignment" developed under the project's Task 4.1.

In our context, novelty refers to approaches, modalities and instruments that are new to the overall JPI community according to one of the following criteria:

- The approach/modality/instrument has only recently been implemented by single JPIs and is not a common policy across the majority of JPIs
- The approach/modality/instrument covers topics (e.g. open access, project selection criteria, stakeholder engagement) that have not yet been strongly emphasized by the majority of JPIs
- The approach/modality/instrument has not yet been utilized by the JPI community at all, but could be of potential interest for the JPI community

By 'novel' we mean modalities, instruments, or approaches that contribute to alignment of research activities at the strategic or operational level that are at a pilot stage or have been introduced in schemes or networks other than the JPI or ERA-NETs.

The case studies do not constitute in-depth evaluations of ongoing practices. Instead they aim to *illustrate* how select novel approaches have been used to promote alignment at strategic, operational and financial levels, and what the key "*lessons learned*" are from these experiences. The case studies outline the key benefits and challenges practitioners have faced when putting in place such approaches, and the key factors for their successful implementation.

Table 1. Overview of the case studies conducted under Task 4.2 of the ERA-LEARN2020 Project

Case study	Type of approach/ action
1 – European Energy Research Alliance (EERA) as a case for institutional alignment	Establishment of a network or alliance of research performing (and funding) organisations
2 – ERA-NET Cofund "The European network for observing our changing planet" (ERA-PLANET)	Establishment of a network or alliance of research performing organisations // Establishment of an integrated joint research programme
3 – ERA-NET Cofund EUROPEAN RESEARCH AREA FOR CLIMATE SERVICES (ERA4CS)	Establishment of an integrated joint research programme
4 – Process towards a Common Position on Alignment in Austria	Adoption of common strategic research and innovation priorities
5 – Alignment of national AAL Programmes – Practical Implementation from the Austrian Perspective	Organisation of a joint transnational call for research proposals
6 – New York University Center for Urban Science and Progress	Establishment of a new joint research infrastructure facility
7 – Electronic Components and Systems for European Leadership (ECSEL JU)	Alignment of different funding sources (national, industrial, EC, structural)

[1] COM(2008) 468 final

[2] ERAC-GPC 1305/1/14/REV1, 30 October 2014

Key lessons learned:

The case studies highlight the benefits of novel alignments approaches not yet (widely) in use in the European P2P community. These include: i) A more coherent European strategy and embeddedness in European policy-making (EERA, ERA-PLANET, and ECSEL); ii) fostering transnational trust-building, networking, and cooperation (EERA, ECSEL); and iii) promoting transnational alignment (ERA4CS, AAL). Novel alignment modalities analyzed include: i) innovative funding approaches within ERA-NET Cofund actions and Joint Technology Initiatives (ERA-PLANET, ERA4CS, ECSEL); ii) new approaches to alignment on national level, e.g., aligning national programmes to transnational ones and the development of a common national position on alignment (AAL, Common Position on Alignment in Austria); and iii) the establishment of research alliances and joint research infrastructures (EERA, CUSP).

The analysis identifies a number of key success factors that enable effective alignment activities and should serve as inspiration and lessons learned for the European P2P community. Some examples of success factors that are not tied to only one specific novel alignment modality include:

- **High levels of commitment** of participating organizations (EERA), political and financial commitment of member states and beneficiaries (ECSEL), and key policy makers (Common Position on Alignment in Austria). Commitment (including financial: cash and in-kind) seems to be especially important in the start-up phase of an initiative.
- **Strong leadership and engaged individuals** at national, European, programme coordinator, and beneficiary level is a key success factor in all cases. This could take the form of strong coordination teams, strong leadership of coordinators, motivated policy makers due to being owners of the process/programme, or engaging relevant individuals by involving them from the beginning.
- **Open-mindedness and flexibility** to new partners (ERA-PLANET) and experimentation and new instruments (AAL, Common Position on Alignment in Austria). Budget flexibility (ability to shift funding between national and transnational calls) is an advantage.
- **EC support**, whether political, strategic, or in terms of **top-up funding** is another very common factor. Especially in ERA-NET Cofunds, high indicated EC top-up funding triggers national budget allocation for a joint call. EC funding can also successfully attract considerable private industry investment (ECSEL). Receiving support from the EC and EC officials in the start-up phase is also very beneficial.
- Striking the correct **balance between ambition and realistic assessments** (EERA, AAL, CUSP), whether it is in the development of a multi-annual strategy or in establishing consensus on what can be coordinated and implemented in practice.

Nevertheless, the case studies reveal shared challenges and weaknesses of novel alignment approaches that can be generalized:

- **Limited use of alignment instruments:** Alignment actions can take place across the entire research programming cycle, whereas in many of the cases it is limited to the alignment of only one or two stages (e.g., research funding and implementation only as seen in ERA-PLANET and ERA4CS)
- **Different national rules and regulations** of R&D funding across participating states, making alignment efforts time consuming and overly complex. This includes the complex proposal preparation phase for new funding mechanisms; peer review mechanisms; and project management, monitoring, and reporting processes. This is a challenge that is shared by many of these novel alignment modalities, but is also a known weakness in existing approaches to alignment.
- **Need for better alignment of open data policies and knowledge dissemination and transfer** to move from exchanging knowledge (project results, planned projects, etc.) to using knowledge and data developed in other organizations. This would require the development of a repository or similar.
- **Need for more inclusiveness in alignment efforts**, whether it is in terms of the geographic distribution of members (Western Europe dominates in EERA) or in the participation rate of SMEs and other types of organizations (predominantly large industry participants in ECSEL).

Horizon 2020 Call: H2020-INSO-2014

Proposal number: SEP-210134170

Assessment of NOVEL Approaches to Alignment

Case Study No.1- European Energy Research Alliance (EERA) as a case for institutional alignment

Date: 13 June 2016

Dissemination level: Wider public

Lead contractor for this deliverable: AIT

Contributors: MIUR, UNIMAN, INRA

DEFINITION OF ALIGNMENT

"Alignment[3] is the strategic approach taken by Member States to modify their national programmes, priorities or activities as a consequence of the adoption of joint research priorities […] and improve the efficiency of investment in research at the level of Member States and the European Research Area." National research priorities and programmes are usually implemented via national research performing organisation and/or national research funding organisations. The approach to coordinate research in national research performing institutes in a European research alliance on all stages of the research programming cycle is called 'institutional alignment'.

ABSTRACT

This case study examines the key features, outputs and overall strengths and limitations of the **'European Energy Research Alliance' (EERA)** as a mean to support institutional alignment. The objective of EERA is to coordinate research activities in the field of energy. EERA brings together over 175 organisations from 28 countries.

The case shows the following **strengths of research alliances** as a tool for alignment:

- potential of a research alliance to align national research activities in public research organisations at all stages of the research programming cycle (research strategy, funding, implementation, evaluation, training, mobility of researchers, research infrastructure, and dissemination)
- Strong 'voice' of a European research alliance to define European research priorities , if it is connected to one of the European Union goals
- Joint outreach beyond Europe
- Promoting national research alliances to align the entire national research and innovation system

However, the EERA case also reveals **limitations of a research alliance**:

- influence on national research programmes (apart from organisations own research programme) is limited and takes a long time
- mobilisation of funding for joint research in a substantial and systematic way is challenging, overcoming this challenge will decide on the impact of a research alliance
- Moving from EXCHANGING knowledge to USING knowledge from other member organisations needs dedicated tools and willingness of research organisations
- Following a bottom-up approach in terms of membership causes geographical imbalance and divergence of competences

EERA demonstrates how a network of research organisations can turn in a professional and ambitious network over time, build strategic intelligence and generate commitment for 'Strategic and Implementations Plans' to address development needs. EERA has the potential to reduce research fragmentation and duplication, and achieve greater cost-efficiency in Europe.

The EERA case **provides lessons** how to develop and support institutional alignment to

- **Coordinators of JPIs** or coordinators of other research performing organisations networks to assess the potential of a research alliance to contribute to ERA and take lessons from EERA to develop the perspectives and tools to shape research alliances (e.g. JPI Urban Europe, JP Neurodegenerative Disease Research)
- **Scientific Directors of research performing organisations** to learn about the opportunities of institutional alignment and support institutional alignment with dedicated means (e.g. commitment to use of basic funding for joint research, sharing of research priorities with other European research organisations)
- **Coordinators of national research programmes at RTDI ministries and research funding organisations** to get aware of the potential of institutional alignment and support research alliances with tools in power of the ministries (e.g. research priority setting, basic funding) or the funding organisations (e.g. cross-border coordinated project funds)

[3] Definition of 'Alignment' provided by the Working Group on Alignment of High Level Group for Joint Programming

- **Policy makers at European Commission** to learn about the existing limitations of EERA and how to overcome barriers using tools in power of the EC (e.g. EC Top-Up funding for projects)

The case study builds on the ERA-LEARN 2020 "Definition and Typology of Alignment" and relies on a review of existing literature and targeted interviews. The case is part of a series of case studies investigating NOVEL approaches towards alignment.

ACKNOWLEDGEMENTS

The case study has been written by Susanne Meyer from the AIT Austrian Institute of Technology. The author is grateful to Salvatore Amico Roxas and Rachele Nocera (Coordinator of EERA Secretariat), Hans Martin Neumann (Manager of Joint Programme Smart Cities) and European Commission for their useful inputs. She would also like to thank the ERA-LEARN Consortium partners for their useful suggestions on earlier drafts of this case study.

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1. Introduction

The European Energy Research Alliance (EERA) brings together over 175 organisations from 28 countries (status 2016) and serves as a case for analysing types of institutional alignment. The objective of EERA is to coordinate research activities in the field of applied energy research in Europe. EERA works on a long-term vision and transition of the energy system with focus on 2030/2035 and therefore focus on Technology Readiness Levels (TRL) 2-5 (see Annex 1). EERA links to the EU Strategic Energy Technology Plan (SET-Plan) and will play a central role in delivering research and innovation to contribute to the Energy Union. EERA becomes operational by 17 Joint Programmes[4] dedicated to specific themes.

For the time being, EERA activities concentrate on establishing shared research priorities setting between research organisations, networking among research organisations and internal and external dissemination of research results. The main challenge for EERA is to actually integrate and implement joint research among the research organisations.

The 'Strategy and Implementation Plan 2015-2020' aims on developing the full potential of EERA with focuses on research collaboration in joint projects, moving from exchanging to using knowledge of other research organisations and wider knowledge transfer and engagement of industry. This makes EERA to a special case, because it shows the power of a research alliance as a tool to align national institutionalised research along the full research programming cycle (research strategy, funding, implementation, evaluation, training, mobility of researchers, research infrastructure, and dissemination). Considering the potential of institutional alignment, other public to public (P2P) networks can learn from the analysis of key features, outputs, strengths and limitations of EERA.

2. Key features of the EERA

2.1 Overview: Embeddedness of EERA in the European Research Area

The European Commission's Energy Union strategy, adopted in February 2015, dedicates one of its five dimensions to research, innovation and competitiveness. The integrated EU Strategic Energy Technology Plan (SET-Plan) will play a central role in delivering research and innovation designed to accelerate the energy system transformation to contribute to the Energy Union. In order to stimulate and integrate European research and innovation in the energy area, the following actors cooperate within the SET-Plan:

- SET-Plan Steering group comprising high-level national delegates appointed by national ministries,
- European Technology and Innovation Platforms (ETIPs) comprising industrial networks,
- **European Energy Research Alliance (EERA)** comprising national research performing organisations and
- SET-Plan Information System

Whereas the Steering group is a strategic steering group; EERA, ETIPs and SET-Plan Information Systems are responsible for implementation of research and innovation.

2.2. EERA Members and diversity

EERA is open to any entity or organisation (bottom-up approach) that is (1) public or (2) non-profit or (3) an "umbrella organisation" in the European Union or associated countries that can contribute with substantial research activities to one or more of the EERA Joint Programmes. Typically, public research performing organisations, universities, non-profit private research organisation or the respective networks are EERA members. Companies can join as industrial associate. This leads to a diversity of members.

- **Research performing organisations are embedded in different national research and innovation systems** and Member States organise their energy research in different ways. Research organisations differ in terms of size (employees and basic funding rate), type of research performed and their specific expertise in the concerned field. Diversity is given and should be considered in the configuration of alignment activities within EERA.
- **Size of research performing organisations**: Interested organisations must formally prove a specific expertise and critical mass of research measured in Full-Time-Equivalent in one or more of the themes of

[4] EERA 'Joint Programmes' do not correspond with the definition of Joint Programming in ERA (see COM(2008)468). In nature they are close to the Networks of Excellence in FP6 and FP7.

the Joint Programmes to become a member of EERA. This may cause difficulties for smaller research organisations. Additionally, organisations with lower basic funding from national level may have reduced opportunities to participate effectively in meetings as this works on pure in-kind basis although EERA follows a bottom-up approach and each member can benefit from the activities in equal terms.

- R&D activities of the members mainly meet **Technology Readiness Level (TRL) 2-5** (see Annex 1), but expertise involved in EERA spans the whole value chain.
- **Majority of members from the Western part of Europe**, Central and Eastern European country involvement is low, however EERA manages to actively involve and empower Poland and the Czech Republic.

2.3 Governance Structure and Re-organisation: moving from a club of friends to a professional network

EERA started in 2008 with ten organisations. In the beginning, no formal selection procedure and no membership fees were applied. However, with a growing number of member organisations it was challenging to ensure quality and suitability of research organisations, plan research strategies and activities in Joint Programmes (JPs), effectively implement projects and ensure coherent management. Therefore, in 2014 a process of re-organisation was started with an agreement of all members on the following changes (for details on the re-organisations and figure on governance structure see Annex 2):

a) **Introduction of two types of membership**: full and associated membership based on the engagement of members, engagement is measured in Full Time Equivalents (FTE), full-memberships asks for a minimum contribution of five FTE per year to at least one Joint Programme, industry can become associated member
b) **Re-organisation of the governance structure with new internal rules and establishment of a legal body EERA AISBL**: The General Assembly, composed of representatives of all the members, takes general decisions. Interestingly, decision making power has also been given to the Executive Committee – the strategic steering body of EERA. It provides guidance to the alliance, takes the decisions on its functioning and approves new Joint Programmes. The Executive Committee acts on consensus, which is considered as a crucial success factor.
c) **Introduction of a formal selection and quality assurance process for members**: Interesting organisations apply for membership in a specific Joint Programme. They must provide information on the research expertise, prove a critical number of staff in the field of expertise and commit personal-resources to the JP. The JP members will then assess whether added-value to the JP in terms of alignment is given by the interested organisation. If there is a positive decision, new organisations are appointed to the governance bodies of EERA and can participate in decision making. Affiliation and association to EERA does not follow a selection process.
d) **Introduction of membership fees to fund coordination and management activities**: Full Members pay a 3000€ fee on annual basis and are entitled to participate in all decision processes of the EERA. Associate members pay a reduced membership fee of 1000€. Some JPs raise additional fees as this is crucial in some JPs to get the activities started.
e) **Hiring professional staff**: Coordination and management of EERA is delegated to 6 member organisations working on institutional in-kind basis. It has reached agreement that EERA starts to hire staff on the pay-roll of EERA for the coordination and representation of the EERA in the future. A Secretary General and an Office Manager are first open positions.

The re-organisation process took about two years and was a challenging task to go through for all members. Finally, the members reached agreement and the re-organisation is perceived as one of the success factors by the majority of members.

3. Principal joint actions and outputs at the level of EERA Joint Programmes with respect to alignment

In this section, joint actions at the level of Joint Programmes are first described and analysed. Then joint actions are connected to the stages of research programming cycle to show the alignment power of research alliances as a tool to build ERA (see *Figure 1*).

EERA becomes operational in its 17 Joint Programmes, among which are Smart Grids, Photovoltaics, Wind Energy (Status April 2016). This is where alignment takes place. Each JP comprises 3-6 sub-programmes; which cover the

key areas in the field reflecting the priorities of the SET-Plan. Joint actions (overall coordination and management) taking place at EERA level are provided in Annex 3.

JPs coordinate the (1) strategic priority setting of research, (2) the implementation of research and (3) the knowledge transfer of research results mainly based on the participating organisations own resources. Common to all JPs is that progress depends on the active participation of all members. However, diversity of JPs is high: All JPs have successfully defined strategic research priorities and have established knowledge transfer activities but only a limited number of JPs actually jointly implement research projects.

From the European Commission perspective, EERA has not yet delivered to the level required and therefore has not reached its full potential. In the 'Strategy and Implementation Plan (SIP) 2015-2020', emphasis is on joint actions overcoming the existing weaknesses and increase alignment on specific stages: joint research implementation, strengthening of knowledge transfer, especially in an advisory role, and alignment of research priorities with industry.

The following list of activities includes all existing and planned activities within EERA JPs, but it should be considered that not all JPs perform the full list of joint actions.

(1) Strategic priority setting and sharing of resources

a) **Developing joint strategic research agenda for the alignment on programme level**
At the level of JPs a joint strategic research agenda, called 'Description of Work', has been developed. This agenda aims to align research objectives, deliverables and results of member organisations at programme level. Four out of 17 JPs benefit from 'Integrated Research Programmes', an FP7 project type, to receive EC support for the development and coordination of the joint research agendas.
Despite the existence of joint strategic research agendas in EERA JPs, the potential of EERA as a mean to align national research agendas, programmes and funding is not fulfilled yet. Although, research conducted in national research organisations is oriented towards national research priorities, substantial alignment of organisations own research strategy and/or national agendas usually calls for support and commitment from Scientific Directors and high-level representatives at national ministries.
In small countries with one or two large organisations at the national level (e.g. Norway, Finland, Cyprus) alignment of national research programmes towards EERA is fulfilled, once the organisations are involved. In larger countries or countries with a fragmented system, it takes more effort to align the national system at the European level.

b) **Collaborating with European industry**
Some JPs work together closely with European industrial platforms to align research and innovation priorities and to reduce the duration for the market launch of new technologies. These priorities are implemented through joint projects both within the framework of a JP and bilaterally between single institutions and industry. This activity has not reached its full potential yet and is therefore reinforced within the new EERA strategy.

c) **Realising of national alliances**
EERA promotes the establishment of national alliances as 'mirror' organisations of EERA (not of single JPs). The objective of EERA is to foster alignment at the national level, at least in terms of (mainly) institutional funding and institutional programmes. The national alliances are national coordination platforms on energy research. Those alliances can be softly "sponsored" and "promoted" by the EERA, but they are built up by national actors. The establishment of national alliances is ongoing in FR, IT, CZ, UK, NL, ES, BE. In the majority of countries the establishment of national alliances has not started.

d) **International collaboration with partners outside Europe**
JPs are important points of contact for collaboration outside Europe. EERA JP members regularly represent the EU scientific community at events in Asia, USA and Brazil. However, only a few JPs have strategically developed international cooperation activities, e.g. using the INCO projects instrument (Status April 2016). Moreover, an internationalisation strategy at EERA level will only be developed in the future. The implementation of this strategy will then become task of the JPs. So far bilateral activities dominate and joint international collaboration has only been achieved to a very low degree.

e) **Cooperation with other initiatives and networks in the field**
JP liaise with other initiatives and network in their respective field.

In the SIP 2015-2020 the following activities are envisaged:

- Developing '*Common research and innovation agenda*' is intended as a further step on the integration of research activities within JPs. In comparison to the existing joint research agendas called 'Description of Work' the 'Common research and innovation agendas' should go beyond the alignment of research programmes of research organisations, but aim on additional alignment with industrial stakeholders within the ETIPs to accelerate the delivery of the SET-Plan targets. Common priorities provide an important reference point for the EU research agenda.
- Developing *technology roadmaps* in the specific field of a JP in cooperation with industry and other relevant stakeholders is aimed for to express a common position and act jointly as policy advisors
- Increasing the *mobility* of researchers among JP members
- Providing input for *online-training courses*, in collaboration with university stakeholders (in particular the European University Association)
- *Building a data base on existing data and infrastructure and identifying gaps in data and infrastructure*, some JPs work already into this directions, but in many JPs infrastructure development or sharing will be crucial in the future

(2) Implementing Research Projects

f) **Joint research**

Ideally, joint research agendas should be implemented in joint projects funded by organisations own in-kind resources, which would lead to the alignment of institutional funding. Although EERA mainly aims on the alignment on programme level, the implementation of joint research is an essential part towards real integration. However, the implementation of joint projects is one of the main challenges within EERA, which is caused by a lack of external funding, difficulties to allocate national in-kind funding to joint projects, and major differences in availability of in-kind funding (basic funding) of member organisations. Four EERA JPs have successfully applied for research actions (Integrated Joint Programmes). Other JPs jointly scan the H2020 work programmes for suitable projects and develop joint proposals. A new opportunity have the H2020 calls for 'European Common Research and Innovation Agendas (ECRIAS)' which have been used by many JPs. Joint projects based on in-kind funding of the research organisations are rare. One reason is that EERA members have different national backgrounds in terms of basic funding and therefore different starting positions. As most organisations are applied research organisations, the basic funding is limited.

An option to enforce substantial commitment of institutional funding is the use EC instruments like ERA-NET Cofunds or European Joint Programme Cofunds, which provide EC Top-up funding on the basis of national in-kind funding. First examples (ERA4CS, ERA-Planet) show how ERA-NET Cofunds can work with in-kind instead of cash funding. For the time being, the integration on project level seems to be the most critical step for future development. Many JPs have already adopted an 'EERA label', acknowledging those project that are in line with its strategic research agenda.

(3) Knowledge Transfer and delivery of results

g) **Organisation of knowledge sharing events and publications**

Knowledge sharing and transfer activities are the focal point of many JPs at the moment, as this is easier to realise than joint research agendas and projects. JPs organise regularly workshops, conferences or participate in exhibitions to reach a wider audience. Additionally, JP members jointly publish scientific books and papers.

In the SIP 2015-2020 the following activities are foreseen to more strategically approach knowledge transfer internally and externally:

- Set-up a *Repository of Intellectual Property assets* as a tool to foster exchange and use of know-how between industry and JPs
- Developing a *Result Showcase tool* to promote the results generated by each JP member to the outer world

- Bringing experience and knowledge to *policy advisory role* (e.g. in expert workshops, consultation processes or issue papers)
- Development of *white papers*

Governance Structure of an EERA Joint Programme

The Joint Programme is led by a Joint Programme Coordinator. Together with the Sub-Programme leaders he or she forms the Joint Programme Management Board. The management board takes over the strategic steering and management of the JP. Leadership abilities and engagement of the Coordinator and the Sub-Programme leaders are crucial pre-requisites for the success of JPs. For the starting phase of a JP it is important to get the right people in the driving seat of the JP. Additionally, there is a JP Steering Committee installed, made up of all participants of the JP. It is formally responsible for: drafting the research programme of that JP, reviewing the progress of the JP, selecting the Coordinator of the JP and related sub-programmes and deciding on the admission of new members.

Monitoring and Evaluation of JPs

All JPs produce an annual management report (relationship with industry, strategic issues, joint projects, conferences, etc.). 4-5 JPs have formal assessments by external reviewers with 1 day site meeting and report of reviewers published on the website. In addition to the existing monitoring and evaluation measure, EERA has defined eight Key Performance Indicators in agreement with the EC in its SIP 2015-2020 to monitor EERA Progress (see Annex 4).

Alignment at different stages of the research programming cycle in EERA

The following figure shows the outputs of the EERA JPs with respect to alignment based on the described joint actions. An output is considered to be a line of joint actions, a tool or an instrument which EERA set in place to actually support institutional alignment. The left side of the figure reflects the various phases of the research programming cycle during which alignment activities can be implemented; they are based on the alignment typology developed in the project ERA-LEARN 2020[5].

The figure clearly shows that EERA JPs managed to set up alignment activities on all stages, however in reality not all EERA JPs cover all stages of the research programming cycle. There is a special weakness in the research funding and research implementation phase. Some activities are already well developed across all JPs (e.g. regular conferences and workshop for knowledge transfer), other activities have started in a few JPs (e.g. exchange of data, joint use of infrastructure, researchers mobility).

[5] https://www.era-learn.eu/alignment/definition-typology/D4.1_ReportontheDefinitionandTypologyofAlignment_INRA_final_Nov2015.pdf

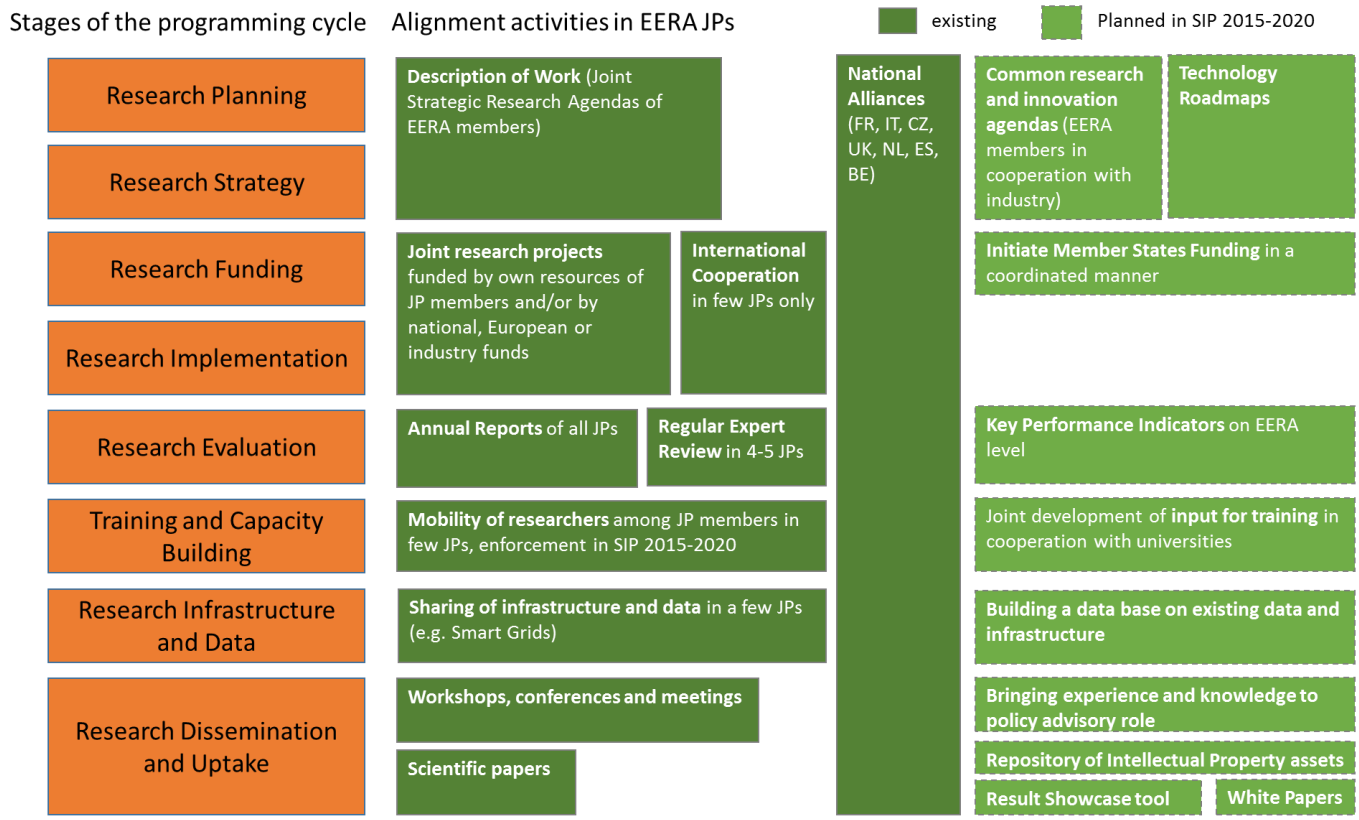

Figure 1 : Alignment at different stages of the research programming cycle in EERA, own compilation

4. Overall strengths and key achievements of this instrument with respect to institutional alignment

The overall strengths and achievements of the EERA as an example for institutional alignment can be summarised as follows:

Building critical mass - cooperation of 175 research organisations

EERA established itself as a research alliance for low carbon energy research, bringing together more than 175 organisations from 28 countries (status 2016). EERA started in 2008 as a network of ten research organisation. Within seven years, EERA managed to grow by 17 times.

Setting up Joint Programmes in dedicated topics and ensure manageability

The establishment of 17 Joint Programmes within EERA dedicated to specific research needs ensures that workability is kept within one Joint Programme due to reduced number of members. Additionally, JP topics are aligned with the SET-Plan priorities.

Trust-Building and networking at the level of researchers

Through EERA, individual researchers working on the same topics but within different countries get to know each other and can exchange their knowledge and experience. This is the foundation for any further step towards real knowledge sharing and using, implementation of joint projects or sharing of infrastructure.

Alignment at the programme level via joint research and innovation agendas

The joint research and innovation agendas ('Description of Work') in each JP is based on alignment of research priorities of public research organisations in Europe. This activity goes beyond the knowledge sharing of national agendas but on the development of a joint agenda at programme level. The identification of joint research priorities among EERA members is already one of the outputs and strengths of EERA. The future development of common research and innovation agendas in cooperation with industry is a further step towards alignment.

Motivating national research alliances

EERA promotes the set-up national alignment platforms as mirror organisations of EERA. This includes the establishment and coordination of research alliances at national level as not all active organisations in energy

research are EERA members. Such a tool like EERA can certainly be a driver to promote national alliances in specific topics, however EERA itself cannot become active

Potential to align activities along the entire research and innovation cycle

EERA shows that an institutional alliance has the potential to align activities along the entire research and innovation cycle: joint research planning, joint research strategy, joint research funding, joint research implementation, joint evaluation and reporting, training and capacity building of researchers, joint or shared research infrastructure and data and joint dissemination activities.

Embeddedness in European Policy setting

The EERA is an alliance of public research organisations set up to coordinate research activities in the field of energy**.** EERA is a cornerstone of the integrated European Strategic Energy Technology Plan (SET-Plan). The SET-Plan will play a central role as the Research & Innovation Pillar in the Energy Union strategy of the EC. The embeddedness and dedication of a research alliance towards a high level policy goal in Europe is certainly one of the drivers and strengths of the EERA and makes it relevant.

Joint outreach beyond Europe

A jointly developed research agendas and technology roadmaps enables EERA or the respective JPs to make them visible beyond Europe and become partner for international cooperation, e.g. for the US or China. Without joining forces and providing a structured joint research programme it would be challenging for some members to go international, especially for smaller size research organisations.

5. Overall limitations of this instrument with respect to institutional alignment

The main limitations and challenges of the EERA as an example for institutional alignment are:

Influence on national programmes is limited

The most challenging part for EERA members will be to agree on joint priority setting in EERA research agendas to a substantial extent on the one hand and make sure these priorities are mirrored and met in the organisations own strategy and/or the respective national research strategy on the other hand. Only if research priorities in EERA meet national and/or own organisations research strategies, alignment of national research strategies is fulfilled. For the time being, this level of alignment has not been reached. Scientific Directors of research organisations and/or programme owners at national ministry level must support and commit to alignment of research priorities and the joint implementation of projects.

Funding opportunities for joint research mainly depend on organisations own resources

The implementation of joint projects research needs funding. Ideally, the main source for project funding is are(?) members own resources. Without joint research projects the actual integration of research is very limited. In many JPs it is challenging to actually mobilise the members' own resources for projects, therefore the number of joint projects is rather low. Alternatives like funding from national level, transnational level, European level and industry is considered by all JPs, but it isthis type of funding is very competitive and limited. In some JPs the majority of funding comes from the European Commission (EC).

In the future, it will be crucial whether JPs really manage to mobilise in-kind contribution of member organisations in a substantial manner. Substantial in-kind from research organisations forFor establishing joint projects based upon in-kind funding, certainly needs support from the Scientific Directors of research organisations is certainly needed. Involving Scientific Directors or even responsible persons at programme owner level could be a way to mobilise in-kind recourses . Another way helping to overcome this barrier is to use or design a respective instrument at EC level which provides EC Top-Up Funding based on organisations in-kind contribution for projects (e.g. European Joint Programme Cofunds, ERA-NET Cofunds). Additionally, national ministries and funding agencies could support research alliances by strengthening their transnational coordination (e.g. Smart City Member States Initiative) and build funding alliances with other countries.

Moving from EXCHANGING knowledge to USING knowledge from other organisations

Sharing of knowledge at the level of information on planed research priorities, ongoing projects and project results is established. However, EERA aims to a higher level of knowledge integration, particularly the use of knowledge or data developed in one organisation by the other research organisations. It has been identified by EERA members that this needs a repository for on Intellectual Propertyassets to use Intellectual Properties within EERA, which

really enables member organisations to integrate their knowledge. At EERA level, agreement has reached that knowledge sharing policies will be developed in the future. The sustainability of the network depends on whether organisations manage to share their know-how effectively.

Bottom-up approach causes geographical imbalance and divergence of competences

EERA has established a pure bottom-up approach. Any interested public organisation, non-profit entity or umbrella organisation can apply for membership. This leads to a strong presence of members from Member States in Western Europe and an underrepresentation of organisations from New Member States. E.g. there is not a single member out of 175 organisations from Estonia, Lithuania, Hungary or Slovenia. The other countries in Eastern Europe are only presented by very few organisations. Taking the role of EERA as a reference network for energy research many organisations in the New Member States do not contribute with their competencies and do not benefit from joint capacity building. This causes the risk that the competence gap between participating and non-participating organisations is widening with the consequence that research organisations in the New Member States will lag behind in the future.

Dependency on leadership of JP coordinators

Leadership abilities and engagement of the individual coordinators are crucial pre-requisites for the success of JPs. Especially in the starting phase of a JP it is important to get the right people in the driving seat of the JP. Coordinators of the JP must ideally be outstanding scientists, excellent managers and well known in the scientific, industrial and policy community. Additionally they must have leadership skills in order to make the JP a success. It is challenging to find the right person for the coordination of a JP and if the right person is there, JP mainly depend on this person. With a growing number of members and growing commitment, EERA can and has already overcome this issue.

6. Conclusions: Key success factors of EERA and transferability to other P2Ps

This part summarises the success factors in developing the EERA (1) at strategic level and (2) at operational and funding level. The success factors are described in a way they can serve as lessons learnt and transferred to other P2P.

1) At strategic level:

Join forces to be relevant for RTDI policy makers in Europe

EERA clearly shows that research organisations joining forces in an alliance can have a "voice" at the European policy level. However, joining forces at the European level is more important for national research organisations in smaller than in larger countries. As EERA is one of the SET-Plan bodies, it is very well embedded in the European Policy landscape. However, it has the potential to grow to an advisory entity to EC/SET-Plan governance bodies to an even higher extent.

A trustful relationship to the EC to increase relevance for EERA, however it took some time for EERA to establish a good and stable working relationship with the EC. Lessons learnt for other research alliances is:

- embeddedness in European RTDI landscape and connection to a larger policy goal helps to become relevant and to be given a "voice" as a network
- a good working relationship with the EC and other relevant bodies should be established, mutual expectations should be defined and a realistic plan how to approach them should be developed

Develop an ambitious, but realistic strategy and implementation plan for a multiple year period

EERA has developed a 'Strategy and Implementation plan 2015-2020'. This includes an evaluation of the state of the art, identification of potential for improvement and the definition of the right joint actions. This helps JPs to define the next steps and ensures coherent development of JPs. Additionally this plan must be discussed with the connected bodies in the RDTI landscape (in EERA case the SET-Plan Steering Committee and EC), which ensures that mutual expectations are met. Lessons learnt for other research alliances is:

- develop a strategic AND implementation plan for multiple years that is ambitious and realistic
- ensure commitment by all members to implement the strategy
- discuss this plan with connected or neighbouring organisations to make mutual expectations clear

Strategic Steering on the basis of Consensus

One of the outlined success factors in EERA is the establishment of a strategic steering group with decision making power (Executive Committee). It is a body that acts between the Secretariat doing the operative work and the

General Assembly. EERA benefited from giving decision power to a group with a workable size, which acts on consensus making. Lessons learnt for other research alliances is:

- A strategic steering group of engaged and willing members contributes to the development of a research alliance (instead of discussions with all members)
- If the strategic steering group enjoys trust of all members, decision making power to a specific extent can be given to them
- The strategic steering group should act on consensus

Find the "right moment" for change management to become more professional

EERA managed to find the right moment to introduce changes and new developments. E.g. EERA successfully managed to grow fast, but at the same time it became more difficult to ensure coherent management at JP level, agree on research priorities and ensure commitment of organisations. EERA went through a two years process to introduce a new governance structure, new internal rules, a selection process and quality assurance criteria for members. This was a critical and essential step to move from a club of friends to a professional network. Lessons learnt for other research alliances is:

- although continuous development of a research alliance take place, there is a need for structural reforms or re-organisation at some time to move from a club of friends to a professional network
- creating agreement among members on the direction to move to takes a lot of time
- the network needs to balance the need of members at the one hand and be ambitious at the other hand

Agreement of members to move to a legal organisation and hire staff on the pay-roll of EERA

Management of EERA is shared responsibility of members, meaning EERA members delegate staff to overtake the EERA Office Management. In the cause of re-organisation, EERA members agreed to set-up an own legal entity and employ a Secretary General and an Office Manager on the pay-roll of EERA. The aim is to act more professionally in Brussels, but also ensure maintenance and sustainability of networks. Lessons learnt for other research alliances is

- continuity of management staff ensure continuous development of the research alliance and continuity of contacts
- pool resources to fund professional management staff and establishment of a legal entity might be an option to professionalise the network at some point

2) At financial and operational level:

Manage to gain commitment of organisations in the start-up phase

The most challenging period is the start-up phase, when only few organisations are involved and committed. It is essential to find the right incentives, priorities and tools for cooperation and alignment in the very beginning to ensure the first movers stay involved on the one hand and give room for growth on the other hand. The EERA has managed to grow from 10 organisations in 2008 to 175 organisations in 2016. Lessons learnt for other research alliances is

- finding the right incentives, priorities and tools and the right persons with leadership skills in the start-up phase of a research alliance is essential

Manage to gain cash and in-kind funding for coordination and management activities

Funding, either in-kind or cash, have been gained for coordination and management at EERA level and JP level. Some funding also came from the EC. This made the start of activities easier.

Ensuring added-value of new members

In order to keep the network manageable with a growing number of organisations and make sure all members align their research priorities and provide respective commitments, EERA has introduced an application and selection system for members. Before that, any organisation could become member of EERA. Within that application procedure, interested organisations need to prove that five FTE are working on this theme in organisation. This process leads to quality assurance at the level of (1) research and (2) engagement of organisations. This ensures that new members add value to the JP. Lessons learnt for other research alliances is

- research alliance should re-evaluate their system how to gain new members from time to time
- If selection criteria are introduced for new members, the criteria should be well-developed and suitable

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Interviews

- Salvatore Amico Roxas, ENEA, Coordinator of EERA Secretariat, interview 2016-04-25
- Rachele Nocera, ENEA, Coordinator of EERA Secretariat, written interview, 2016-05-27
- Hans-Martin Neumann, AIT-Austrian Institute of Technology, Manager of the Joint Programme Smart Cities, interview 2016-05-02

Annex 1: TRL - Technology Readiness Level

According to H2020 Work Programme 2016-2017

TRL	Description
1	basic principles observed
2	technology concept formulated
3	experimental proof of concept
4	technology validated in lab
5	technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)
6	technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)
7	system prototype demonstration in operational environment
8	system complete and qualified
9	actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

Annex 2: Re-organisation of EERA

a) Membership Types

EERA has introduced two membership categories:

- Full members: An organisation contributing a minimum of five FTE to at least one Joint Programme shall apply the full membership.
- Associate members: An organisation whose contribution does not reach five FTE in any of the Joint Programmes shall apply the associate membership. Industry can apply as associated member.

b) New Governance Structure and the establishment of a Legal Body

The EERA has evolved into a legal entity named "EERA AISBL" since April 2014. It is governed by the **General Assembly** composed of representatives of all the members and by the Executive Committee. The General Assembly is the decision making body (approval of the budget, the membership fees, the annual report of activities, the determination of the Executive Committee, the change of the Internal Rules, etc.). The **Executive Committee** is the strategic steering body of EERA. Any full member can be appointed to the Executive Committee. It provides guidance to the alliance, takes the decisions on its functioning and approves new Joint Programmes. The Executive Committee acts on consensus, which is considered as a crucial success factor. The Executive Committee is supported by the EERA secretariat. The **secretariat** takes over operative activities and serves as a point of contact between the Executive Committee and the EERA Joint Programmes.

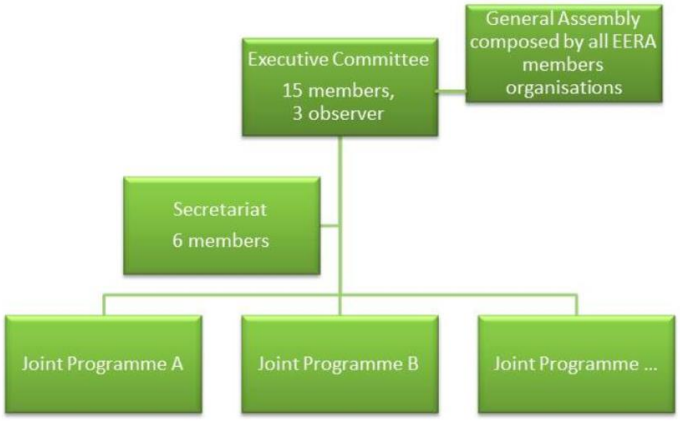

Figure 2 EERA Governance

c) Selection and Quality Assurance of Members

Previously, any organisation could become member of EERA. Within the re-organisation, as selection systems has been introduced for members who actively want to engage in the governance bodies of EERA and the decision making. Affiliation and association to EERA does not require a formal process.

Within that application procedure, interested organisations must prove that their internal research priorities meet the priorities theme set in the respective JP. Additionally, they need to prove that five FTE are working on this priority theme in the organisation. However, it is not mandatory that the five FTE work in research collaboration with other EERA JP members. An example of the step-wise process of applying for EERA JP Membership is presented in the following:

1. Interested members contact the Joint Programme Management Team and provide information in a systematic way on the organisations/departments research facilities, commitment of personal-resources to the JP and the total number of staff in the field your organisation etc. (standardized form).
2. The JP management team assesses whether the provided expertise can be aligned to the JPs existing strategic priorities and to EERA's aim.
3. If added-value to the JP in terms of alignment is given interested organisations will be invited for a presentation at the next meeting of all active members in the JP. Within that meeting it will be decided

whether or not to approve the membership application. The Executive Committee only finally confirms the membership.

4. If membership is accepted, organisations need to complete a Letter of intent (LoI) and a Declaration of Support (DoS) to confirm that the organisation adheres to EERA rules and governance. An organisation should sign the LoI for each JP it joins, but will only have to sign the DoS once, when it first joins an EERA JP.

d) **Membership Fees: Funding and Spending**

Full members pay a 3000€ fee on annual basis and are entitled to participate in all decision processes of the EERA. Associate members pay a reduced membership fee of 1000€. They cannot participate on decisions, but have the right to speak in the decision making body. EERA fees are used for the coordination and management of EERA level activities.

Some JPs raise additional fees for full participants and in some cases also for associate participants. The fee ranges from 7500€ to 500€ per year. JP fees are used for coordination and management of JP level activities, this is crucial in some JPs to get the activities started.

e) Hiring professional staff on the pay-roll of EERA

Coordination and management of EERA is shared responsibility, meaning EERA members temporarily delegate staff (nine persons) to overtake EERA Office Management. It has reached agreement that EERA starts to hire staff on the pay-roll of EERA for the coordination and representation of the EERA in the future. A Secretary General and an Office Manager are first open positions.

Annex 3: Joint Actions at the level of EERA

1. Strategic Activities
   - Overall strategic steering of the EERA, e.g. Development of the Strategy and Implementation Plan 2015-2020
   - Taking over an advisory role in specific bodies
   - Development of common guidelines, e.g. knowledge sharing via IP repository or internationalisation strategy
   - Support to the development of the Joint Programmes (e.g. on knowledge transfer and relation with industry, on financial sustainability etc.)

2. Coordination and Communication
   - Coordination with the other SET-Plan bodies
   - Link to the different JPs
   - Main contact point to the European Commission

3. Organisational and Administrational Work
   - Facilitation of meetings, e.g. meeting of General Assembly or Executive Committee
   - Communication material (website, flyer, etc.)
   - Contact point

Annex 4: Key Performance Indicators of EERA

1) Number of FTEs active in the energy sector employed by EERA members
2) Number of EERA members
3) Number of EERA members participating in each JP
4) Number of scientific high quality publications containing the “EERA” label
5) Number of EERA JPs systematically providing support for the implementation of structured student training
6) Number of months of mobility activities taking place at JP level
7) Number of exploitable EERA research results available on the EERA Result showcases
8) Number of expressions of interest triggered by the EERA research results

Horizon 2020 Call: H2020-INSO-2014

Proposal number: SEP-210134170

Assessment of NOVEL Approaches to Alignment

Case Study No.2 – ERA-NET Cofund 'The European network for observing our changing planet' (ERA-PLANET)

Date: 23 August 2016

Dissemination level: Wider public

Lead contractor for this deliverable: AIT

Contributors: MIUR, UNIMAN, INRA

ABSTRACT

This case study examines the key features, outputs as well as the overall strengths and limitations of the **ERA-NET Cofund action named 'The European network for observing our changing planet' (short: ERA-PLANET)**. The main activity within **ERA-NET Cofund actions** is the **implementation of a co-funded joint call** for proposals that leads to the funding of trans-national research and/or innovation projects. The ERA-Planet is supported by the European research organisations of the Copernicus network and the Group on Earth Observations. **The unique character of ERA-Planet is that national programmes and funding stems from institutional in-kind of 36 research performing organisations.** Together, they organise one joint call with a call budget of 61 Mill EUR.

The case shows the following **strengths** of this novel approach in ERA-NET Cofund actions:

- Pooling established research performers in earth observation within ERA-Planet to have an impact on European Environment Policies
- Within ERA-Planet, a partial alignment of the research strategy by research performers and binding commitment of funding joint projects could be reached
- ERA-Planet supports transnational alignment of institutional research funding and the implementation of joint research
- ERA-Planet demonstrates that the allocation of large budgets in in-kind ERA-NET Cofund actions are possible

However, limitations of this new approach could also be found based on the proposal phase and the starting phase of ERA-Planet:

- Proposal preparation for in-kind ERA-NET Cofund action was time-consuming as it was the first ERA-NET Cofund of this type and many framework conditions and processes within the research organisations had to be defined
- 67% of national institutional in-kind are difficult to guarantee for some research performing organisations
- Limited knowledge at the national ministries on in-kind ERA-NET Cofund actions hinders application process

ERA-Planet demonstrates that an in-kind ERA-NET Cofund can be applied for by research performing organisations. However, ERA-Planet has only started to become operational in 01/2016. A real assessment of strengths and weaknesses can only be done later. Even though ERA-Planet could serve as a showcase for research alliances that want to trigger joint research implementation (with or without Cofunds)

The ERA-Planet case is addressed to the following reader groups:

- **Coordinators of P2P** who aim to assess the potential of aligning national research funding at the level of research performers (Universities, Research and Technology Organisations) against the P2P aims
- **Scientific directors of research performing organisations** who aim to learn about the opportunities to align institutional in-kind funding on transnational level and receive EC Top-up funding
- **Coordinators of national research programmes at RTDI ministries** who aim to become aware of the potential of national research programmes alignment in research performing organisations
- **Policy makers at the European Commission** who aim to learn about how to support transnational alignment of institutional in-kind in the future

The case study builds on the ERA-LEARN 2020 "Definition and Typology of Alignment", and relies on a review of existing literature and targeted interviews. The case is part of a series investigating NOVEL approaches towards alignment of research performing organisations across Europe in research funding and research implementation.

ACKNOWLEDGEMENTS

The case study has been written by Susanne Meyer from the AIT Austrian Institute of Technology. The author is grateful to Nicola PIRRONE (Coordinator of ERA-Planet). She would also like to thank the ERA-LEARN Consortium partners for their useful suggestions on earlier drafts of this case study.

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1. Introduction

This case study examines the key features, outputs and overall strengths and weaknesses of a specific alignment modality, namely the ERA-Planet (Long Title: The European network for observing our changing planet). **ERA-Planet is an ERA-NET Cofund action** (for definition see Annex 1) **with a novel approach: it is an exceptional case because Member States contribution is institutional in-kind funding of national research performing organisations** (e.g. universities, Research and Technology Organisations) in the field of earth observation.

Facts
Title: ERA-NET Cofund 'The European network for observing our changing planet' (ERA-Planet)[6]
Partners: 35 research performing organisations from 16 countries, 3 new partners under evaluation (see Annex 2)
Coordination: Italian National Research Council (CNR), Institute of Atmospheric Pollution Research, IT
Call Budget: 61 Mill EUR (50 Mill EUR national in-kind contribution and 11 Mill EUR EC Top-up)
Call Management: One call with four topics, two-stage call, one project per topic will be funded
Duration: 01/01/2016 - 31/12/2020 (5 years)

ERA-Planet has only started its activities in 2016. This case study describes the preparation phase of the joint call. This includes the consortium building during the proposal phase, the development of a joint call management, the development of a suitable funding model and the establishment of an appropriate governance structure. Considering the potential of alignment of research funding available in research performing organisations, other P2P networks can learn from the analysis of key activities, first outputs, strengths and limitations of ERA-Planet.

2. Key features of the ERA-Planet

2.1 Objectives, activities and expected impact of ERA-Planet

ERA-Planet was initiated by two networks of the earth observation community: (1) the European members of the Group on Earth Observations (GEOs) and (2) the Copernicus network. The overarching objective of ERA-PLANET is to strengthen the European Research Area in the domain of earth observation in coherence with the participation to Group on Earth Observation and the Copernicus network.

The **specific objectives** of ERA-Planet with respect to alignment are:

- to **coordinate national research programmes for an effective transfer of knowledge** for the benefit of scientists, policy makers, business and society at national and European level
- to **align national and international research programmes** (e.g. contribute to the next Strategic Plan of the Group on Earth Observations 2016-2025)
- to **coordinate the European research performing organisations** in earth observation to reinforce the European role in international GEO network

Activities within ERA-PLANET are:

- to **prepare and launch a two-stage joint transnational call** structured along four call topics
- to **fund 4 projects** according to a priority list set by external experts
- to **monitor funded projects** and to report progress accordingly
- to **develop a strategic research agenda to reinforce the ERA** and to coordinate the cross- and inter-cooperation of European and national programmes in both key and selected earth observation domains.

Expected impacts of ERA-Planet are:

- **strengthen** the European leadership within the forthcoming GEO 2015-2025 Work Plan
- **coordinate and integrate** major European research and innovation programmes on earth observation
- **maximise** value and benefits of earth observation spending through the improvement of shared architectural components and related information infrastructures
- **foster** a wider exploitation and use of information derived from earth observation for the benefit of citizen´s daily life
- **support** effective implementation of environmental policies

[6] http://eraplanet.meteo.noa.gr

- **improve and select** effective environmental indicators for different end-users

2.2 Consortium building and proposal development for ERA-Planet

As ERA-Planet followed a novel approach using an ERA-NET Cofund action with Member States contribution in form of institutional in-kind, a critical step was to attract research performing organisations to join the ERA-Planet. According to the coordinators experience, it was quite problematic to attract and convince research performing organisations to participate in this new type of joint action. During the preparation phase of the proposal, **four main challenges** needed to be addressed:

1. **Agreement on four research topics**: The scientific directors of the research performing organisations needed to find agreement on four call topics, starting from eight topics. Already funded topics by H2020 or by other transnational networks were avoided. For the research performing organisations, the four research topics were essential to decide on their participation of the ERA-Planet. The final call topics had a broad scope to meet every partners expectations and needs (Smart Cities and Resilient Societies, Resources Efficiency and Environmental Management, Global Changes and Environmental Treaties, Polar Areas and Natural Resources). The discussion on call topics was intensive and time-consuming and took about one year.
2. **Understanding of the financial mechanisms** in ERA-NET Cofund actions: The active researchers and the scientific directors of research performing organisations needed to understand the functioning and the financial mechanisms of the in-kind ERA-NET Cofund action. This took time for the coordinator as well as for the partner.
3. **Receiving the mandate to participate in ERA-NET Cofund action**: The European Commission allows programme owners (mainly national ministries) and programme managers (mainly research funders) to participate in ERA-NET Cofund actions. If research performers are partners in an ERA-NET Cofund action, they are considered to be programme managers. ERA-NET Cofund rules define, that each programme manager who participates in an ERA-NET Cofund needs an official mandate of the respective programme owner. Research performers in ERA-Planet needed an official mandate letter from their respective national ministries (mainly national science ministries). According to the coordinators experience, some national ministries were not familiar with this novel approach in ERA-NET Cofund actions (although national contact points should be) and had difficulties to understand this approach and give an appropriate, correct and complete mandate to the research performing organisations. It was a tremendous effort of the participating research performers and the proposal coordination team to provide national ministries with the necessary information and finally provide the mandate letter. It took time to review mandates at the coordinators level and EC level, some mandates needed to be revised. Spending this time and effort was certainly one of the success factors to eventually develop a comprehensive proposal of 35 partners. However, some research performing organisations were still not able to participate because they were not able to get the mandate from their national authorities.
4. **Guarantee the national funding**: For some research performing organisations, e.g. universities, it was difficult to guarantee and demonstrate the national research budget (67% of the call budget is national research funding, only 33% come from the EC), e.g. due to annual budget plans. Internal process of research performers needed adaptation to participate in ERA-Planet. According to coordinators experience, especially smaller research performers had difficulties to guarantee the national Cofund. Large public research organisations were less affected by this problem.

The proposal preparation was started about a year before the submission deadline. Preparation time was suitable and needed. In the following, the steps and milestones in the proposal preparation phase are described.

- Three coordinating meetings took place targeting these aims:
    - 1. Meeting: Information meeting and collection of interested research performing organisations
    - 2. Meeting:
        - Preparation of communication material (website, leaflet) to publish the intention to have an in-kind ERA-NET Cofund action to the earth observation community and attract additional partners for the ERA-Planet
        - Building a ‘management and writing team’ of four experts for the proposal (coordinators+3 others)

    - 3. Meeting: Final consensus building on the four research topics
- Officials of the European Commission were present in all meetings, their presence was essential, because they provided clarification on the financial mechanisms
- Coordinator had a close look on all interested research performing organisations and only selected reliable partners

The governance structure and the management of ERA-Planet follow standard modes (for details see Annex 3 and Annex 4).

The ERA-Planet partners decided to open the possibility for new partners to get in because the goal is to assure a wide representation of European research performers, expertise and countries. For the time being (status June 2016), the eligibility of three new partners is checked. New partners are eligible to EU top up funding, these new partners are regular partners so have the same rights and possibilities of other partners.

2.3 Call Management and Project types

Main features of the Call Management in ERA-Planet (for details see Annex 5)

- One call text with four call topics
- Two-stage evaluation procedure
    - Stage 1: evaluation by Steering Committee of ERA-PLANET (which comprises all WP Leaders and the Coordinator) with support of External Experts
    - Stage 2: Independent expert evaluation managed by an independent evaluation agency
- The expert evaluation will be conducted by an independent evaluation agency, which will be selected by a tendering process (national or European research evaluation agency)
- Time to contract is 14,5 months

Insight: Selection of the Independent Evaluation Agency

- Preparation of the tender for the selection of the Independent Evaluation Agency (IEA) by the WP Leader in charge of the Call. The text of the Call has to be approved by the Steering Committee of ERA-PLANET (which comprises all WP Leaders and the Coordinator).
- Approval of the tender to be launched by the General Assembly (all ERA-Planet partners)
- Launch of the tender by one WP Leader following standard public rules for public procurement (budget indication about 40,000 EUR) and report to the General Assembly on the IEA candidates
- General Assembly will select the IEA
- WP Leader will prepare the contract for the IEA
- Tasks of the IEA:
    - Management of all tasks related to proposal submission during the two-stage submission and selection process
    - Selection of the reviewers' panels from the EC central data base for the evaluation of the proposals related to the four topics
    - Ensuring composition of the consortia is in line with the EU regulations (e.g., that at least two independent entities from two different EU Member States or Associated Countries are members)
    - Ranking of the proposals submitted for each topic
- Submission of the evaluation report for each submitted proposal to the Steering Committee.
- The process to launch a tender for an IEA takes at least 6 months

Projects in ERA-Planet

The aim of the transnational call is to fund one project per research topic, in total are four projects funded. Project size is expected to be 12-15 Mill EUR (including EC Top-up funding). Projects need to add value to the respective research topic, especially support the implementation of the GEO work plan, and need to be ambitious, high level, innovative, transnational and multi-disciplinary. Due to the specialties of the ERA-NET Cofund or transnational calls in general, proposal development will certainly be more difficult than in H2020 (e.g. limited choice of partners, limited funding for each partner, display of institutional in-kind in a specific form dedicated to EC requirements).

2.4 Funding Model and Common Pots

Call budget

The call budget is 61 Mill EUR (50 Mill EUR institutional in-kind contribution of the research performers and 11 Mill EUR EC Top-up). In the proposal for the ERA-NET Cofund action, the in-kind contribution was presented already, generally supported by the mandate of programme owners to the research performers. However, within the negotiation phase of the four selected projects, all partner need a certified statement that they are able to provide the in-kind contribution for the project.

Coordination and Management Costs

Coordination and management costs are not eligible in ERA-NET Cofund actions. Within the consortium agreement, all partner agreed to take 4% (440,000 EUR) from the EC-Top-up for coordination of the ERA-Planet.[7] However, the coordination and management costs in the proposal phase are not covered.

Common Pots

In all ERA-NET Cofund actions, the partners need to agree on a funding mode of the transnational call, meaning the way in which to fund the projects. At first, they must agree on the way national funding is distributed. Usually, each ERA-NET Cofund partner funds their own participant; this is called virtual common pot. Additionally, partners need to agree how to share the EC Top-up funding. Some ERA-NET Cofunds agree to a real common pot, others agree to distribute the EC Top-Up funding proportionally to the national funding (virtual common pot). In ERA-Planet, it is planned to work with a virtual common pot for EC Top-up funding: 100% of Top-up funding is distributed in proportion to national in-kind. For each project submitted to the 2. stage of the call, the national funding must be guaranteed, meaning it is not possible that a partner runs out of national funding. This allows EC Top-up funding to be best put in a virtual common pot.

Contracts

The ERA-Planet partners have concluded a regular H2020 grant agreement with the EC for the ERA-Planet. This grant agreement includes rules of project evaluation, reporting requirements and the maximal EC top-up funding for transnational projects. Apart from that, the ERA-Planet partners have concluded a Consortium Agreement regulating the activities in ERA-Planet. Winning projects will negotiate the grant agreement with the ERA-Planet. Additionally, consortium agreements have to be concluded within projects.

3. Principal joint actions and outputs of ERA-Planet with respect to alignment

The official start of ERA-Planet was January 2016. *Figure 3* illustrates the alignment outputs of ERA-Planet according to the stages of the research programming cycle (developed in the alignment typology in ERA-LEARN 2020[8]) and thereby shows that the ERA-Planet is a well-suited action to align transnational activities on the level of research funding and implementation.

Joint Actions and outputs in ERA-Planet with respect to alignment are:

- Identification of four call topic interesting for 35 research performers
- Development of a call management process for an in-kind ERA-NET Cofund and launch a two-stage joint transnational call structured along four call topics
- Development of funding model pooling national budgets from research performers with EC Top-up funding
- Funding and implementation of four transnational research projects according to a priority list set by external experts with a planned volume of 61 Mill EUR
- To monitor funded projects and to report project progress in a common mode
- To develop a strategic research agenda to reinforce the ERA and to coordinate the cross- and inter-cooperation of European and national programmes

[7] For administrative reason the amount of coordination cost taken away from the EC Top-Up will be replaced by national budget to meet the requirement of max. 33% reimbursement of project costs by the EC.

[8] ERA-LEARN 2020 (2015): Deliverable 4.1- Report on the Definition and Typology of Alignment. https://www.era-learn.eu/alignment/definition-typology/D4.1_ReportontheDefinitionandTypologyofAlignment_INRA_final_Nov2015.pdf

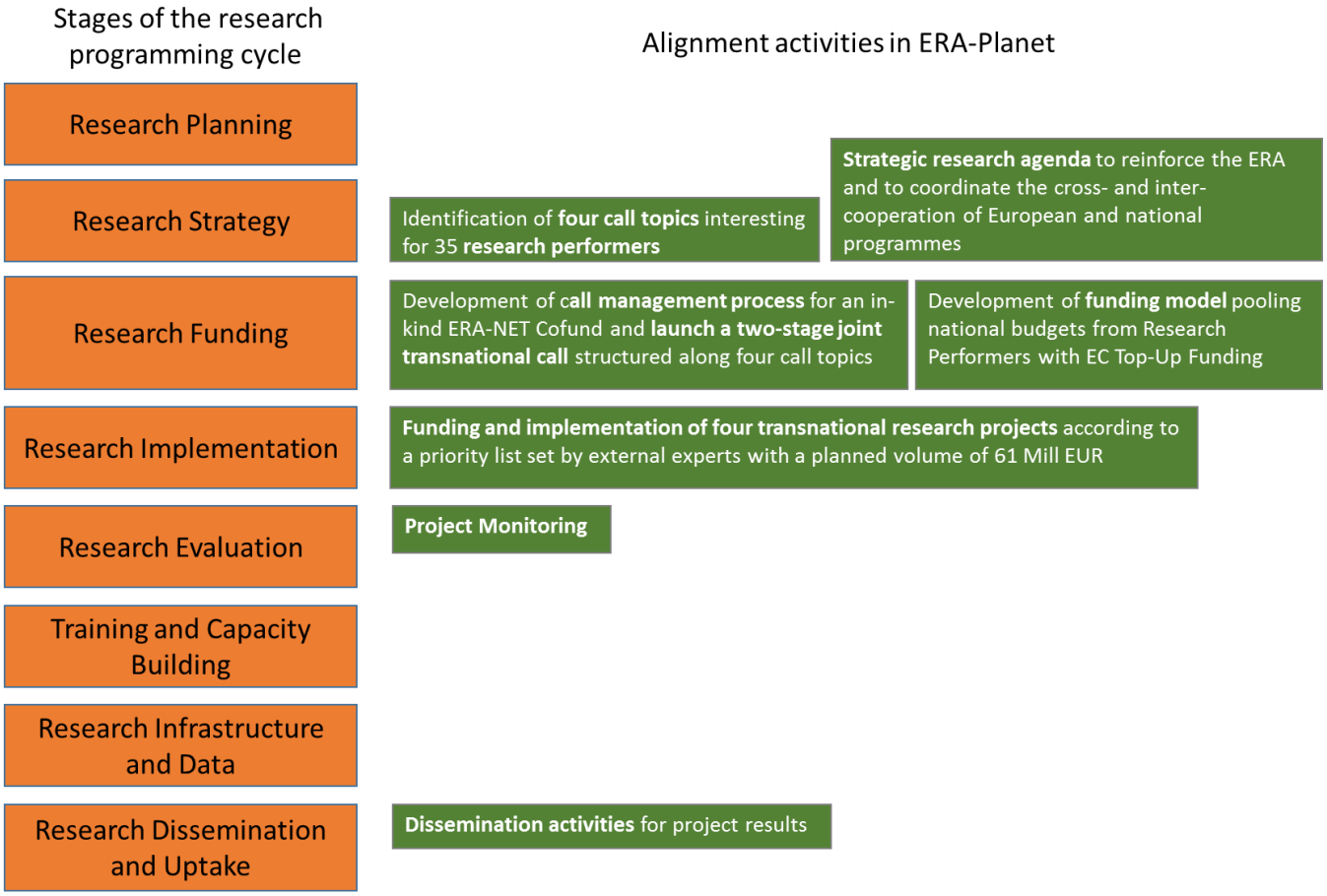

Figure 3 Alignment at different stages of the research programming cycle in ERA-Planet, own compilation

Beyond that, preliminary outputs of ERA-Planet can be described as follows:

- The EC was open to support this 'experiment' to provide EC Top-up funding under an ERA-NET Cofund action on the basis of national institutional in-kind, although the ERA-NET Cofund action is originally designed for a transnational call financed by research funding agencies. Additionally, the EC was supportive in the proposal development phase to make the mechanisms in ERA-NET Cofund actions understandable to the research performers.
- The establishment of the cooperation between high level scientific directors of large European research performers and the agreement on joint call topics is one step towards alignment. The partnership could be basis for the continuation of joint research activities or could be extended in the future towards other joint actions.
- The development of a sophisticated call management and evaluation process of projects in an in-kind ERA-NET Cofund action acceptable by the scientific directors could serve as an example for future calls (also within other networks).
- Reaching an agreement between scientific directors of the research performers to go through an external evaluation process for their internal projects to assure a high quality of projects is an achievement of ERA-Planet.
- Projects in ERA-Planet are intended to be large (12-15 Mill EUR), because only one project per call topic will be funded. Projects can go beyond pure joint research actions and integrate summer schools, training, mobility of researchers, share joint infrastructure, collect new data etc. The project design is up to the project consortium.

4. Overall strengths and key achievements of this instrument with respect to alignment

This part summarises the strengths and achievements of the ERA-Planet with respect to alignment.

Alignment of research funding and joint research implementation

The ERA-NET Cofund action is a tool that supports alignment of research funding and joint research implementation. The ERA-Planet showed that the ERA-NET Cofund action can go beyond the alignment of research funding stemming from research funding organisations, but can also be used as a tool to align institutional research funding at research performers level. This experiment may stimulate other research alliances active in P2P to use this tool (e.g. European Energy Research Alliances or Urban Europe Research Alliance).

Large budgets in in-kind ERA-NET Cofund actions possible

National contribution of research performers in ERA-Planet is 50 Mill EUR. EC Top-up available is about 11 Mill EUR. The national budgets could release an even higher EC Top-up. ERA-Planet reveals that research performers are able to mobilise much more research funding for alignment than research funding organisations do in average (e.g. in comparison to the call budgets in Joint Programming Initiatives).

Alignment of parts of the research strategy of research performers and binding commitment of funding joint projects

Scientific directors of research performers agree on four joint research topics, which means they align part of their research strategy and interests in the future, which is already one of the outputs. Additionally, they commit to fund joint research based on institutional in-kind contributions.

Impact on European Environmental Policy and its Implementation

ERA-Planet intends to have an influence on the European Research Strategy on Earth Observation and an impact on European Environmental Policies, while joining forces on the transnational level and coordinate research and policy needs. Additionally, the aim of ERA-Planet is to increase the impact of European Environmental Policies on global level.

5. Overall limitations of this instrument with respect to alignment

This part summarises the limitations and challenges of the ERA-Planet with respect to alignment.

Proposal preparation for in-kind ERA-NET Cofund action is time-consuming

According to ERA-Planet coordinator, the preparation of an ERA-NET Cofund proposal takes time, because the research performing organisations need to understand the framework and functioning of the in-kind ERA-NET Cofund action as this is an exceptional case. Proposal development took about one year and needed an engaged coordinator and management team. However, the coordination costs for proposal development must be shared among partners.

ERA-NET Cofund is only one instrument for alignment and it is limited to alignment of research funding and implementation

Considering alignment actions of research performing organisations along the entire research programming cycle, the in-kind ERA-NET Cofund are only one of many tools to support alignment. It is focused on the alignment of research funding and joint research implementation, but it supports the development of research strategies or knowledge transfer activities only to a limited extent. The focus of an ERA-NET Cofund action is the funding of joint projects. Only in the context of so-called 'additional activities' strategic development or extended knowledge transfer activities can take place.

For some research performing organisations, 67% national institutional in-kind are difficult to guarantee

The ERA-NET Cofund offers a 33% reimbursement. However, for some research performers this share of reimbursement is not very attractive as national funding agencies or H2020 provides up to 100% reimbursement. Additionally, some performers, especially universities, have difficulties to guarantee the national funding (67%) due to internal administrative procedures and budget time-plans. Some research performers were not able to participate in ERA-Planet, because national processes were not supporting ERA-NET Cofund actions (see Section 2.2).

Limited knowledge of in-kind ERA-NET Cofund actions at the national ministries

The in-kind ERA-NET Cofund action is an exceptional case. During the proposal phase, it revealed that National Contact Points at national ministries were sometimes not aware of this exceptional case. Specific knowledge was not available and support for applications was very limited. Due to little national support, it was difficult for some research performers to join the ERA-Planet. In these cases, the coordinator of the ERA-Planet provided additional information and supported the research performers. However, support from external organisations is no substitute for the support of National Contact Points.

6. Conclusions: Key success factors of ERA-Planet and transferability to other P2Ps

This part summarises the success factors in developing the ERA-Planet. The success factors are described in a way they can serve as lessons learnt and transferred to other P2Ps.

Balancing openness to partners across Europe but also ensuring the selection of reliable partners

The preparation of communication material (leaflet, website, conferences, etc.) to publish and promote the in-kind ERA-NET Cofund action on earth observation helped to build a network of 35 research organisations with a national institutional budget of 50 Mill EUR. However, the coordinator of ERA-Planet was selective in the choice of partners. Only reliable partners could join the 'experiment'. Balancing openness towards additional partners on the one hand, and select reliable partners on the other hand, was a way towards a successful proposal for ERA-Planet within one year.

Support from EC officials in the proposal phase

The EC officials were very important in the preparation phase of the proposal, because they provided clarification on the financial mechanisms of ERA-NET Cofund actions. Especially research performers who had no strong support from their national ministries in understanding the ERA-NET Cofund actions benefited from the support of the EC (and the coordinator).

Building a strong coordination team

The ERA-Planet proposal could be developed within one year due to a strong and reliable coordination team. Moving from a coordinator to a coordination team was an essential step to manage the preparation work of the ERA-Planet. As the costs for proposal coordination are not covered, the coordination team had to ensure sufficient in-kind resources. Since the ERA-Planet become operational, coordination costs are covered by the consortium via EC Top-up funding.

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Presentations

Presentations at the Kick-Off Meeting: http://eraplanet.meteo.noa.gr/index.php/event/kickoff-meeting/

Consulted websites

ERA-Planet: http://eraplanet.meteo.noa.gr/

Group on Earth Observations https://www.earthobservations.org/index.php

Copernicus: http://www.copernicus.eu/

Interviews

PIRRONE, Nicola, CNR, ERA-Planet Coordinator, interview 2016-05-25

ANNEX 1: Description of ERA-NET Cofund actions

The European Commission (EC) supports the achievement and functioning of the European Research Area (ERA). ERA-NET Cofund actions under H2020 are designed to support public-public partnerships (P2Ps) in coordination of joint activities. The main and compulsory activity within **ERA-NET Cofund** actions is the **implementation of the co-funded joint call** for proposals that leads to the funding of trans-national research and/or innovation projects (one co-funded call per Grant Agreement). EC programme cofunds (also called EC Top-up funding) are given to enable Member States **to align their national funding to implement joint research**. The reimbursement rate for ERA-NET Cofund is 33%, meaning the EC provides 1 EURO EC Top-up funding for each 2 EURO provided on national level for transnational research and innovation projects. ERA-NET Cofund actions allow for national programme collaboration in any part of the entire research-innovation cycle.
For more information see:
http://ec.europa.eu/research/era/era-net-in-horizon-2020_en.htm
https://www.era-learn.eu/manuals-tools/p2p-in-h2020

ANNEX 2 Partners in ERA-Planet

Country	Affiliation	Acronym
AT	INTERNATIONALES INSTITUT FUER ANGEWANDTE SYSTEM ANALYSE	IIASA
CH	PAUL SCHERRER INSTITUT	PSI
CH	UNIVERSITE DE GENEVE	UNIGE
CZ	USTAV VYZKUMU GLOBALNI ZMENY AV CR VVI	UVGZ
CZ	MASARYKOVA UNIVERZITA - RESEARCH CENTRE FOR TOXIC COMPOUNDS IN THE ENVIRONMENT	MU
DE	ALFRED-WEGENER-INSTITUT HELMHOLTZ- ZENTRUM FUER POLAR- UND MEERESFORSCHUNG	AWI
DE	FRIEDRICH-ALEXANDER-UNIVERSITAT ERLANGEN NURNBERG	FAU
DE	FORSCHUNGSVERBUND BERLIN E.V.	FVB
DE	FORSCHUNGSZENTRUM JÜLICH GMBH	FZJ
DE	HELMHOLTZ-ZENTRUM POTSDAM DEUTSCHES GEOFORSCHUNGSZENTRUM	GFZ
DE	HELMHOLTZ-ZENTRUM GEESTHACHT ZENTRUM FUR MATERIAL- UND KÜSTENFORSCHUNG	HZG
DE	MUSEUM FUR NATURKUNDE - LEIBNIZ-INSTITUT FUR EVOLUTIONS- UND BIODIVERSITATSFORSCHUNG AN DER HUMBOLDT-UNIVERSITAT ZU BERLIN	MfN
DE	SENCKENBERG GESELLSCHAFT FUR NATURFORSCHUNG	SGN
DE	LEIBNIZ INSTITUT FUER TROPOSPHAERENFORSCHUNG e.V.	TROPOS
DE	HELMHOLTZ-ZENTRUM FUER UMWELTFORSCHUNG GMBH	UFZ
DK	AARHUS UNIVERSITET	AU
EE	EESTI MAAULIKOOL	EULS
ES	CENTRO NACIONAL DE INFORMACION GEOGRAFICA	CNIG
ES	CENTRO DE INVESTIGACION ECOLOGICA YAPLICACIONES FORESTALES	CREAF
FI	ILMATIETEEN LAITOS	FMI
FI	HELSINGIN YLIOPISTO	UHEL
FR	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE	CNRS
GR	IDRYMA IATROVIOLOGIKON EREUNON AKADIMIAS ATHINON	AoA
GR	ARISTOTELIO PANEPISTIMIO THESSALONIKIS	AUTH
GR	NATIONAL CENTER FOR SCIENTIFIC RESEARCH "DEMOKRITOS"	NCSR
GR	NATIONAL OBSERVATORY OF ATHENS	NOA
IT	CONSIGLIO NAZIONALE DELLE RICERCHE	CNR
IT	ISTITUTO SUPERIORE PER LA RICERCA AMBIENTALE	ISPRA
IT	UNIVERSITA DELLA CALABRIA	UNICAL
IT	UNIVERSITA' DEGLI STUDI DI PADOVA	UNIPD
RO	ROMANIAN SPACE AGENCY	ROSA
SE	CHALMERS TEKNISKA HOEGSKOLA AB	CHALMERS
SE	IVL SVENSKA MILJOEINSTITUTET AB	IVL
SE	STOCKHOLMS UNIVERSITET	SU
SI	JOŽEF STEFAN INSTITUT	JSI
UA	SPACE RESEARCH INSTITUTE	SRI

ANNEX 3 Governance Structure in ERA-Planet

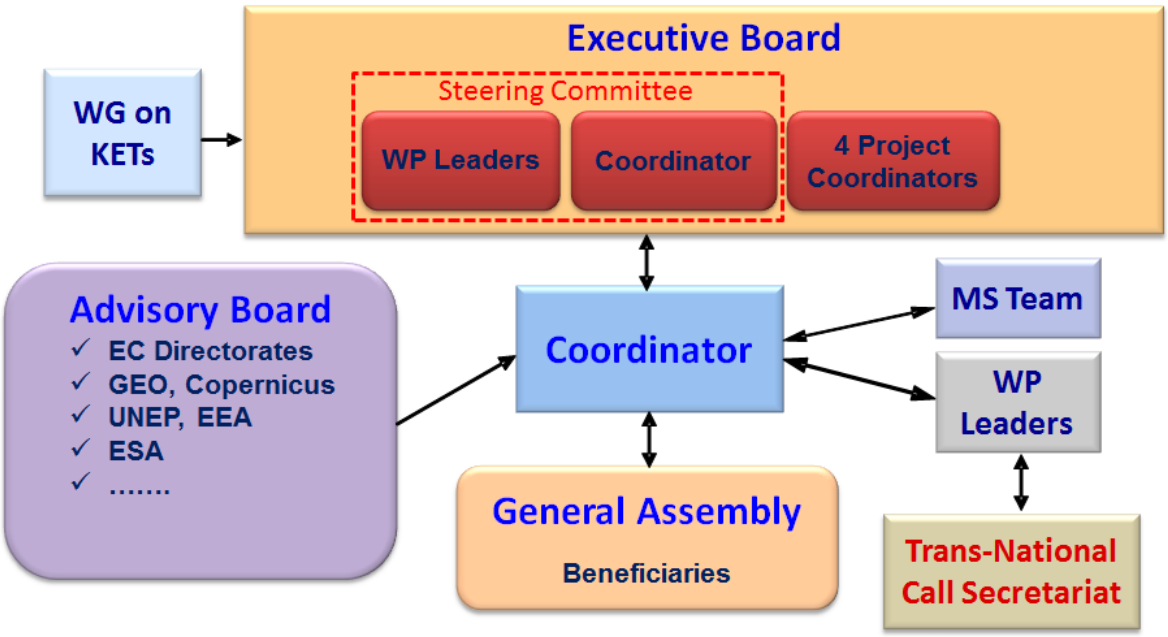

Figure 4 Governance Structure in ERA-Planet

Source : ERA-Planet Presentation at the Kick-Off Meeting

General Assembly

Shall consist of the Coordinator, a co-Coordinator and of one representative of each Party

Decision making body responsible for the overall direction and follow-up of the Consortium Agreement

Executive Board

Shall consist of the Coordinator, the co-Coordinator, the Work Package Leaders and co-Leaders, Programme Owners and, once approved, the Trans-national Project coordinators

Proposes on key issues on policy objectives, dissemination strategy and resource allocation.

Advisory Board

Shall consist of the Coordinator, a co-Coordinator and representatives of European Commission Directorates-General and services, of other European interest organisations

Shall provide non-binding strategic advice to the management of the project

- Review the quality and relevance of the scientific and technical information being used by the project;
- Review Trans-national Projects;
- Provide science advice as requested by the Project coordination.

Joint Call Secretariat

Is appointed and chaired by one Work Package Leader

Shall lead the coordination and management activities regarding the Joint Call

- Manage the Call for the selection of the Independent Evaluation Agency (IEA),
- Submit to and receive from the Executive Board a feedback on the IEA selection;
- Make sure that the IEA execute the management of the Joint Call for Projects,
- Prepare reports on its activity;
- Assist the four selected consortiums (and their coordinators) in the negotiation phase of the projects.

Coordinator

- Is the legal entity acting as the intermediary between the Parties and the European Commission
- Shall perform all tasks assigned to it as described in the Grant Agreement and in the Consortium Agreement

Management Support Team

- Is appointed and chaired by the Coordinator
- Shall manage day-by-day activity of the Consortium and maintain contacts with Work Package Leaders, European Commission, the Coordinators of the four funded projects

Work Package and Task Leaders

- Shall manage the whole Work Package in coordination with the different Task Leaders and ensure full coverage of the Work Package activities

ANNEX 4 Management of ERA-Planet in Work Packages

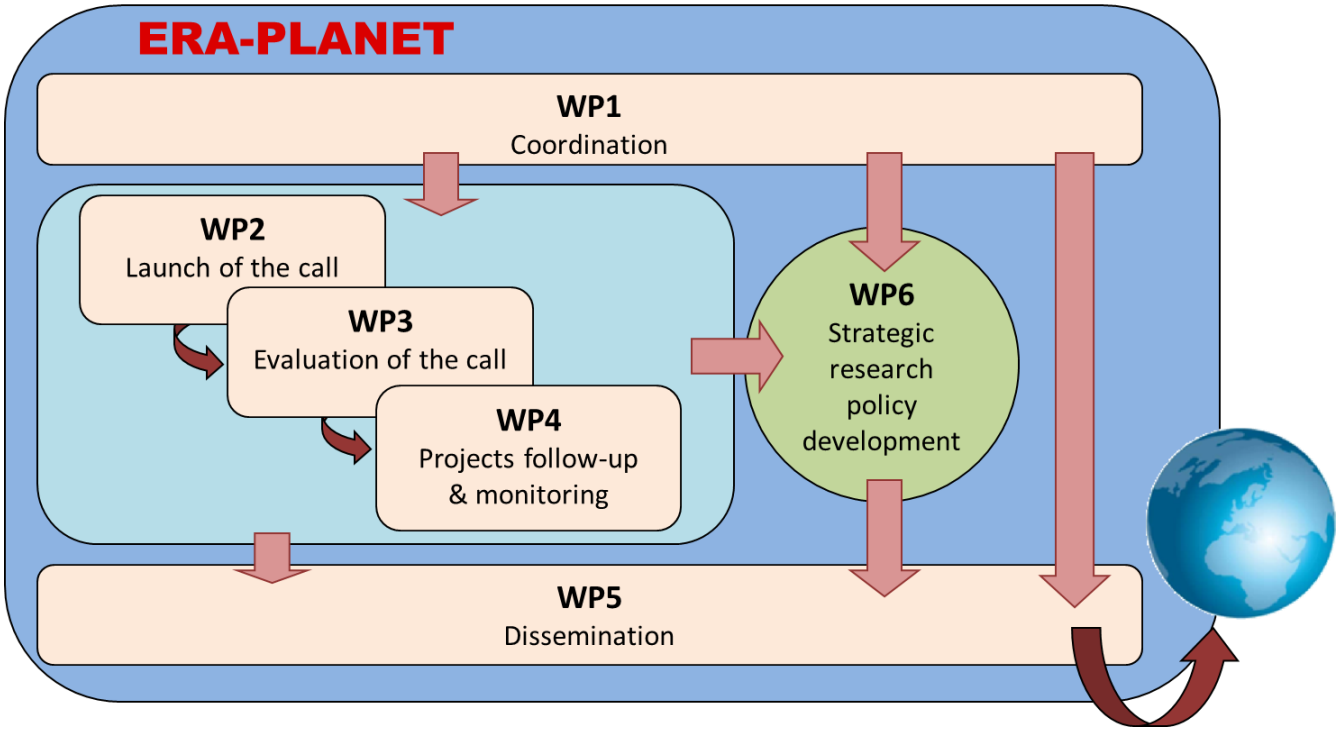

Figure 5 Management of ERA-Planet in Work Packages

Source : ERA-Planet Presentation at the Kick-Off Meeting

ANNEX 5 Call Management in ERA-Planet

Table 1 Call Management in ERA-Planet

	ERA-Planet call management
Call Text and documents	Call text is written by all WP leaders in ERA-Planet General Assembly approves the call text
	One WP Leader will prepare all relevant information on the evaluation
Call Opening and submission of Pre-Proposals	Call will be published on the website and promoted within the research performing organisations
	Pitch meeting for research performing organisations and special sessions at conferences
	Pre-proposals are a short mapping of ideas, 3-4 pages focusing on the expertise and major ideas and provide an overview of new topics emerging at the European level Preliminary budget indication
	Call is open for 3 months
Stage 1 Evaluation	Many proposals per topic are expected
	Pre-proposals will be reviewed and prioritised by ERA-Planet Coordinator + WP leaders+ external experts
	Evaluators favour partners to merge ideas Invitation to major consortia to prepare full-proposals, also new partners are allowed Only pre-proposals where all entities are eligible for funding under the national programmes involved are invited to Stage 2.
	Evaluation takes 3,5 months
	Only after evaluation of stage 1, budget availability per topic will be indicated
Cash-Call for full proposals	Call for full-proposal submission
	Call open for 4 months
Selection of external experts	A detailed guide for proposals evaluation will be prepared by the WP Leader in ERA-Planet for the Independent Evaluation Agency
	Independent Evaluation Agency selects external experts for evaluation
Stage 2 Evaluation	Only few, at least one proposal per topic is expected
	Eligibility check is shared responsibility of ERA-Planet coordinator and WP leader
	Full-proposals will be evaluated and ranked by three external experts, selected by the Independent Evaluation Agency Experts will be selected via the EU expert database Evaluation and ranking of proposals will be based on H2020 criteria
	Stage 2 evaluation takes 4 months
Funding Decision	Funding recommendation according to ranking list will be approved by the General Assembly 4 projects will be funded, one project per research topic

Horizon 2020 Call: H2020-INSO-2014

Proposal number: SEP-210134170

Assessment of NOVEL Approaches to Alignment

Case Study No.3 – ERA-NET Cofund EUROPEAN RESEARCH AREA FOR CLIMATE SERVICES (ERA4CS)

Date: 21 September 2016

Dissemination level: Wider public

Lead contractor for this deliverable: AIT

Contributors: MIUR, UNIMAN, INRA

ABSTRACT

This case study examines the key features, outputs and overall strengths and limitations of the **ERA-NET Cofund European Research Area for Climate Services (ERA4CS)**. The main activity within **ERA-NET Cofund actions** is the **implementation of a co-funded joint call** for proposals that leads to the funding of trans-national research and/or innovation projects. ERA4CS supports the Joint Programming Initiative Connecting Climate Change Knowledge for Europe (JPI Climate) in the implementation of a transnational joint call. **The novelty in ERA4CS is that 'national programmes and funding' stems from two different sources: Research Funding Organisations and Research Performing Organisations.** Together, they organise one joint call with one topic for each source and a call budget of 72 Mill EUR. ERA4CS has only officially started in January 2016. Described strengths and limitations are based on activities in the proposal phase and expected outcomes.

The case shows the following potential **strengths of this novel approach in ERA-NET Cofund actions**:

- ERA-NET Cofund actions support alignment at the level of research funding and joint research implementation
- Alignment of topics for research projects at research performers level across Europe and binding commitment of funding joint projects
- Alignment of topics for research projects at the level of research performers and research funders
- Engagement of Member States with limited competitive research funding in transnational research

However, the ERA4CS case also reveals **limitations of this novel approach in ERA-NET Cofund actions**:

- Setting up a novel approach in ERA-NET Cofund actions (combination of cash and in-kind funding) is time-consuming, but rewarding if effective alignment of research performing organisations is induced long term
- ERA-NET Cofund does not support long-term cooperation with multi-years co-funded calls, as one shot call is too administrative burden
- EC Top-up rate of 33% is not attractive enough for research performing organisations; others tools as European Joint Programme Cofunds should be investigated.

ERA4CS demonstrates the potential to contribute to an **European Research Area in Climate Services by a cooperative approach of research funders and research performers and the alignment of research funding**. ERA4CS also showed that the identification of joint interests of research performers, research funders and the respective national RTDI ministries helps to attract them for this kind of 'experiment'.

The ERA4CS case is addressed to the following reader groups:

- **Coordinators of P2P** to assess the potential of aligning national research funding on both levels – research funders and research performers
- **Scientific Directors of research performing organisations** to learn about the opportunities to align institutional in-kind funding on transnational level and receive EC Top-up funding
- **Directors of research funding organisations** to learn how to cooperatively work with research performing organisations and align funding
- **Coordinators of national research programmes at RTDI ministries** to get aware of the potential of alignment of national research programmes in RPO and RFO
- **Policy makers at European Commission** to learn about how to support transnational alignment of research funding in the future

The case study builds on the ERA-LEARN 2020 "Definition and Typology of Alignment"[9], and relies on a review of existing literature and targeted interviews. The case is part of a series investigating NOVEL approaches towards alignment.

ACKNOWLEDGEMENTS

The case study has been written by Susanne Meyer from the AIT Austrian Institute of Technology. The author is grateful to Patrick MONFRAY and Chloé DEYGOUT (Coordinator and manager of ERA4CS). She would also like to thank the ERA-LEARN Consortium partners for their useful suggestions on earlier drafts of this case study.

[9] https://www.era-learn.eu/alignment/definition-typology/D4.1_ReportontheDefinitionandTypologyofAlignment_INRA_final_Nov2015.pdf

Table of contents

1. Introduction

The European Commission (EC) supports the achievement and functioning of the European Research Area (ERA). ERA-NET Cofund actions under H2020 are designed to support public-public partnerships (P2Ps) in coordination of joint activities. The main and compulsory activity within **ERA-NET Cofund** actions is the **implementation of the co-funded joint call** for proposals that leads to the funding of trans-national research and/or innovation projects (one co-funded call per Grant Agreement). The EC tops-up the national contributions with 50% of the total national contributions, meaning that the EC provides 1 EURO on top of each 2 EURO spent by the participating national organisations to fund transnational research and innovation projects that will be selected through the joint co-funded call. This amount, the so-called EC Top-up funding is provided as a motivation for Member States **to safeguard and/or increase their national contributions to the joint co-funded call.** ERA-NET Cofund actions allow for national programme collaboration in any part of the entire research-innovation cycle.

The ERA-NET Cofund European Research Area for Climate Services (ERA4CS) supports the Joint Programming Initiative (JPI) Connecting Climate Knowledge for Europe (Climate) in the implementation of a transnational joint call. **The case study has been selected in order to explore how national research funding of research funders and institutional in-kind funding of research performers can be combined with each other at least to same extent, which can be considered as a novel approach to alignment.** The focus of the case study is on the alignment activities reached via the joint call in ERA4CS. ERA4CS also includes additional activities, which are no focus in this case study. The underlying aim of ERA4CS is a contribution to an ERA in climate services built by research funders and research performers together via their alignment of research priorities and research funding. Both type of organisations usually receive funding from national RDTI ministries and can coordinate this funding either cash (RFO Research funding organisations) or as institutional in-kind (RPO research performing organisations) on transnational level. As ERA is built by research funders and research performers together, ERA4CS organises one transnational joint call with two call topics on the basis of two different national funding sources. Using the ERA-NET Cofund actions in this way, reaches a higher level of alignment, because research funding from RFO and RPO is aligned towards one overall call topic.

Facts
Title: ERA-NET Cofund European Research Area for Climate Services (ERA4CS)[10]
Partners: 45 Partners from 18 countries, 15 Research Funding Organisations (RFO) and 30 Research Performing Organisations (RPO), see Annex 1
Coordination : Agence Nationale de la Recherche (ANR), FR
Partners in the call: 13 RFOs and 30 RPOs
Call Budget: 72 Mill EUR
One overall call topic 'Researching and Advancing Climate Services Development' developed in 2 sub-call topics: "Advanced co-development with users" for national cash funding (RFOs) and "Institutional integration" for in-kind support (RPOs)
EC Top-up is available for both call topics
Duration : 01/01/2016 - 31/12/2020 (5 years), call opening March 2016

ERA4CS has only started its activities in January 2016. This case study describes the preparation phase of the joint call. This includes the consortium building during the proposal phase, the development of a joint call management, the development of a suitable funding model and the establishment of an appropriate governance structure. Considering the potential of alignment of research funding available in RFOs and RPOs, other P2P networks can learn from the analysis of key activities, first outputs, strengths and limitations of ERA4CS.

2. Key features of ERA4CS

2.1 Strategy and objectives of ERA4CS

An ERA in climate research can only be built by cooperation of Research Funding Organisations (RFO) and Research Performing Organisations (RPO) according to the JPI Climate Chair. This ERA cannot be built by cooperation of national RFO only, because large parts of the national research funding goes as basic funding to RPO directly and cannot be aligned by RFO at transnational level. If Member States coordinate the research funding in RPO, they also contribute to build the ERA. Transnational cooperation by performers cannot only be stimulated by cash (e.g. in

[10] http://www.ERA4CS.eu

H2020 or transnational funding), but also needs to be addressed with strategic arguments to integrate research on the basis of projects funded by institutional in-kind.
RPOs are already interested in an exchange of know-how and may share joint research priorities (e.g. within European Energy Research Alliance[11]), but research collaboration is often limited due to a lack of funding opportunities.
The objective of ERA4CS is to

- establish a basis for discussion, cooperation and trust-building between both types of organisation – funders and performers
- agree on an overall research topic of joint interest (in this case "Researching and Advancing Climate Services Development")
- organise a joint call combining national cash and in-kind funding with EC Top-up funding using an ERA-NET Cofund action

JPI Climate uses ERA4CS as an instrument to boost the engagement of EU Member States and Associated Countries, especially from New Member States by involving both the RPOs and the RFOs. Some New Member States have little cash funding available but can use institutional in-kind funding to participate in joint research in ERA4CS.

Another reason to combine national cash and in-kind funding within one ERA-NET Cofund action was the available Top-up budget. The European Commission (EC) allocated 25 Mill EUR for this ERA-NET Cofund action in the H2020 Work Programme, which could not be released by RFOs only as the national commitments of RFO were too low. The joint partnership of RFO and RPO within one ERA-NET Cofund action made it possible to match the EC Top-up with national budgets as both RFO and RPO are eligible for EC Top-Up funding. A high total amount of EC Top-Up for one ERA-NET Cofund action can certainly be a driver for a combination of cash and in-kind funding, whether it was intended or not by the EC.

ERA4CS is an experiment and touches new ground in terms of alignment of research priorities and funding of two types of organisations. It remains to be seen what final lessons learnt will be after closure of ERA4CS in five years. However, for the time being, there are already interesting insights and lessons learnt to share with other P2Ps.

2.2 Strategic Arguments for Research Performers to become partners in ERA4CS

30 research performers and 13 research funders from 18 countries are partners in ERA4CS. 58% of the national funding contribution in ERA4CS stems from RPOs, 42% from the RFOs. RPOs contribute the largest share of the national funding contribution. Being partner of an ERA-NET Cofund action is not the typical form of projects, the RPOs usually join. According to the ERA4CS coordinator, RPOs were reluctant in the beginning to become partner of an ERA-NET Cofund action. For this reason, convincing strategic arguments had to be developed.

Strategic arguments to convince RPOs to join ERA4CS

- Call topic is defined by the Scientific Directors of the RPOs to ensure that call topic is rooted in the organisations research strategies and plans for the next years
- Cooperating in ERA4CS means to align some part (not all) of the strategic research interests of the future
- Research teams of RPOs respond to the research topics defined by the board of Scientific Directors and which corresponds to the research strategy of the RPOs
- High quality of projects can be ensured, as projects will be evaluated by an independent expert panel
- EC Top-Up funding will be received for research topics that are already foreseen in the research strategies of the PROs, however the following requirements of ERA-NET Cofund actions are most likely to lead to changes in the RPOs implementation of their research strategy:
    - Projects need to be transnational (at least two independent entities from two different EU Member States or associated countries)
    - Projects need to be selected following a joint transnational call for proposals, two-step procedure

[11] case study no 1 on novel alignment actions in ERA-LEARN 2020

    - Projects need to be evaluated in step 2, with the assistance of at least three independent experts, on the basis of excellence, impact, quality and efficiency of the implementation
- Some Member States have little cash funding available, but institutional in-kind funding via RPOs gives them the opportunity to join transnational research cooperation and receive funding from the EC

Some insights how French RPOs became partners of ERA4CS

In order to contribute to JPI Climate in a coordinated and cooperative manner, France established a so-called mirror group at national level, where French RPOs with focus on climate and environmental research became active. The discussion on the possibility of French RPOs to join an ERA-NET Cofund has started in 2014. The argument to receive EC Top-Up funding for internally funded projects when implementing them together with partners outside France did not seem to be attractive for French RPOs in the beginning. They argued that 33% reimbursement of project costs would be very little in comparison to projects funded by H2020 or national agencies with 100% reimbursement. Moreover, they were wondering how to justify the in-kind contributions to projects. For the next 6-9 months there was no change of mind in the French RPOs. Meanwhile, RPOs in United Kingdom, Italy and Germany were interested in the idea to participate in an ERA-NET Cofund action in cooperation with RFOs. A turn in the strategic argumentation finally convinced the French RPOs. Whereas the outlook to receive EC Top-Up funding was interesting, but not sufficiently attractive, the following argument was convincing: Scientific Directors define the content of the call based on the research organisations own strategy. Making the argument strategic in combination with other countries' interests in this new model, finally created a positive approach of French RPOs to join ERA4CS. One after the other RPO agreed to join ERA4CS, together French RPOs provide 6 Mill EUR institutional in-kind.

Selection and diversity of RPOs

RPOs that were interested to become partner of ERA4CS needed a mandate from their national RTDI ministries. Many of these ministries are already active in the JPI Climate Governing Board.

Diversity of RPOs is given due to the following reasons:

- Some RPOs represent more or less all research performers within one country, because there is only one central research organisation (especially in smaller countries), in other countries 4-6 different RPOs exists who work on the same research topic (e.g. national and regional organisations)
- There is a difference in size of RPOs.
- The relationship between the Scientific Directors and the researchers varies. There are large organisations (e.g. CNRS in France) with a very large number of researchers in the field of climate issues and with a relatively weak relationship to the Scientific Director; there are medium-sized RPOs with a closer relationship to the Scientific Director and there are small RPOs with a close relationship to the Scientific Director, e.g. Director is still active researcher.

2.3 Call Management and Projects types

Most RFOs are familiar with ERA-NET Cofund actions. However, the cooperation with RPOs within an ERA-NET Cofund calls for a review of call management and a common approach.

Main features of the Call Management in ERA4CS

- 1 call text, 1 overall topic 'Researching and advancing climate services development', but 2 sub-call topics: "Advanced co-development with users" for cash topic and "Institutional integration" for in-kind topic
- 2-step evaluation procedure (see Annex 2)
- Establishment of the following relevant bodies in the governance structure (for more see Annex 3)
    - Cash-Management Board (cash-MB) comprising the representatives of the RFOs to refine the cash-topic of the call and collect the national specifications
    - In-kind Management Board (in-kind MB) comprising the Scientific Directors of all RPOs to refine the in-kind-topic of the call and collect the organisation specific requirements
    - Call Secretariat as a joint body caring for overall call management
- One independent expert panel for all proposals (cash and in-kind) named by RFOs
- Different types of projects are expected (see Table 2)

Critical milestones in ERA4CS

- Agreement of all Scientific Directors of the RPOs on one call topic for the in-kind part of the call in the preparation phase of the proposal (important personal Scoping meeting of all Scientific Directors facilitated by the ERA4CS coordinator)
- Agreement of the Scientific Directors to transfer evaluation of project proposal for the in-kind topic in step 2 to an independent Expert Panel, named by RFOs
- Solving compliance issues (Scientific Directors are not allowed to participate in a proposal)
- Establish « Firewall »[12] between the cash and in-kind topic and avoid redundancies by checking the content proposals by the Call Secretariat and the Expert Panel
- Agreement of all Scientific Directors (in-kind MB) of the RPOs on key consortia/projects in the in-kind part of the call and commitment to guaranteed funding if the projects are selected by the Expert Panel (important Screening meeting in September 2016)
- Spending the maximal national funding and release the full EC Top-up

Type of Projects in ERA4CS

Partners in ERA4CS have agreed to one overall call topic, but two sub-call topics, one for the cash part of the call and one for the in-kind part of the call. Table 2 shows the differences and similarities of projects expected for these two sub-call topics.

Table 2 Type of projects in ERA4CS

	Cash-Topic	In-kind Topic
Overall call topic	Researching and Advancing Climate Services Development	
Topics	Advanced co-development with users with 3 sub-topics	Realisation of institutional integration with 3 sub-topics
Consortium composition	open to all applicants from the countries with participating 13 RFOs	open only to applicants from the 30 mandated RPOs. This means it is not open to external applicants outside of these organisations
	Partners from at least three countries	
Proposal topics	Address either the cash OR in-kind topic	
Project size	0,5-5 Mill EUR	>1 Mill EUR
other partners/countries	Can join on own costs	Can join on own costs
Projects duration	3 years project for both topics (cash and in-kind)	
Reporting	Common reporting using common templates for scientific / technical reporting	
	Financial reporting will follow rules of research funding organisations	Financial reporting will done towards the EC, following the H2020 rules
Monitoring	Same monitoring activities are applied for both topics	
Dissemination	Participation in joint events etc.	

2.4 Funding Model and Common Pots

Funding Model

National contribution of RFOs is ~20 Mill EUR and national contribution of RPOs is ~28 Mill EUR in ERA4CS. The total national contribution to transnational projects sums up to ~48 Mill EUR and allows to release a EC Top-up of 24 Mill EUR (see Section 1 on the principle of ERA-NET Cofund actions). Therefore, the announced call budget is 72 Mill EUR. However, in order to finally contract 48 Mill EUR national budgets, higher national budgets have been reserved to have some flexibility (see paragraph below).

Figure 6 shows the allocation of the EC Top-Up funding of 24 Mill EUR to the transnational projects. Projects selected for the cash-topic are funded by the national RFO. The budget for these projects increases from originally

[12] To allow RPOs from the consortium to contribute to both topics, they must not be aware of the cash content before it is published and thus not create any imbalance compared to other RPOs eligible to the cash topic and not members of the consortium. The "firewall" covers a number of mechanisms enabling this separation between cash and in-kind topics, while preserving the overall coherence and impact of the action.

20 Mill EUR national budgets plus 10 Mill EUR EC Top-Up to 30 Mill EUR. The budget for in-kind projects changes from 28 Mill EUR provided by the RPO plus 14 Mill EUR EC Top-Up funding to 42 Mill EUR. This funding model is only a simplified model as it does not consider the coordination costs for the joint call[13], the unit costs for the additional activities and the reservation of additional national budget of RFO and RPO.

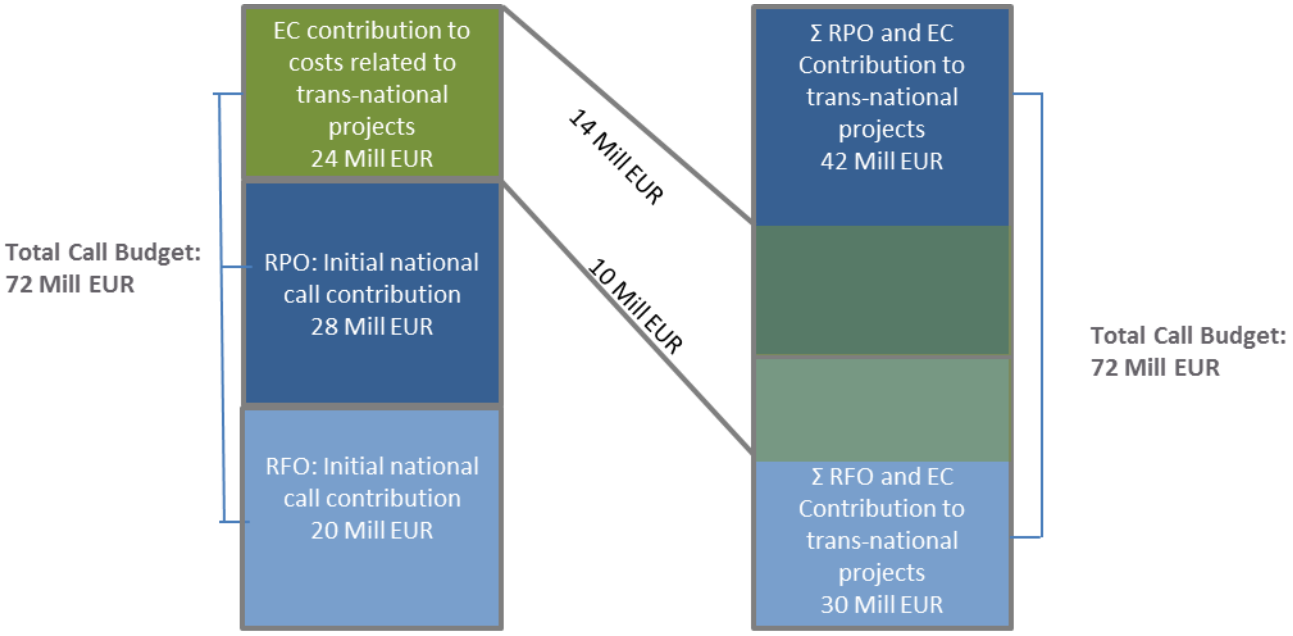

Figure 6 Simplified funding model of transnational projects within ERA4CS

Common Pots and the distribution of EC Top-up Funding

In all ERA-NET Cofund actions, the partners need to agree on a funding mode of the transnational call, meaning the way in which to fund the projects. They first must agree on the way national funding is distributed. Usually, each ERA-NET Cofund partner funds its own participants, this is called virtual common pot. Additionally, partners need to agree how to share the EC Top-Up funding. Some ERA-NET Cofunds agree to a real common pot other agree to distribute the EC Top-Up funding proportionally to the national funding (virtual common pot). The following common pot models are intended to be used in ERA4CS:

- Cash topic: Mixed mode common pot for EC Top-Up funding:
  - Real common pot for 50% of EC Top-up funding
  - Virtual common pot for 50% of EC Top-up funding based on the proportion of national cash
- In-kind topic: Virtual common pot for EC Top-up funding: 100% of Top-up funding is distributed in proportion to national in-kind

However, during the step 1 and step 2 evaluation and the final funding decisions, deviations and exceptions from the original model are common in order to fund the maximal number of projects.

One of the main features in ERA4CS is budget flexibility in order to maximise the output and impact of the entire ERA4CS. Budget flexibility is ensured by the following:

- Safeguard: RFO (Cash funders) have tried to align their initial commitments with their research community. If an RFO receives in step 1 more than 10 times its commitment, the RFO will strive to bring in additional funding.
- Safeguard: RFO (Cash funders) aim to limit oversubscription between step 1 and step 2 to 3 times their commitment.
- Flexibility: RFO (Cash funders) have reserved about 20% higher national budgets than needed to release the EC Top-up

[13] Coordination costs of 1 Mill EUR will be taken from the EC Cofunds (in total 25 Mill EUR) and will be replaced by national funding.

- Flexibility: (for both) using no decimals in the grades for the Expert Panel
- RPO (in-kind funders) plan to invite projects to step 2 with a 50% higher budget than available, which results in 2 out of 3 projects to be funded in step 2. Their overcommitment (50%) will directly lead to the selection rate, provided there are enough proposals proposed for funding by the Expert Panel.
- Safeguard: RPO (in-kind funders) will commit to funding all proposals invited to step 2 to ensure no gap in funding the ranking list.

- EC allows a shift of EC Top-up funding between the cash and in-kind topic
- The EC Top-up funding will be divided between the cash and in-kind in the end.

3. Principal joint actions and outputs of ERA4CS with respect to alignment

The official start of ERA4CS was January 2016. Figure 2 illustrates the alignment outputs of ERA4CS with respect to the call according to the stages of the research programming cycle and thereby shows that ERA4CS is a well-suited action to align transnational activities on the level of research funding and implementation. ERA4CS managed to align research funding from RFO of several European Member States and additionally align research funding from several European research performers. However, there is no alignment of research funding of RFO and RPO as there are two different call topics for each organisation type. Even though, the both organisations agreed to a call management with a few common steps, most importantly the joint expert evaluation of projects.

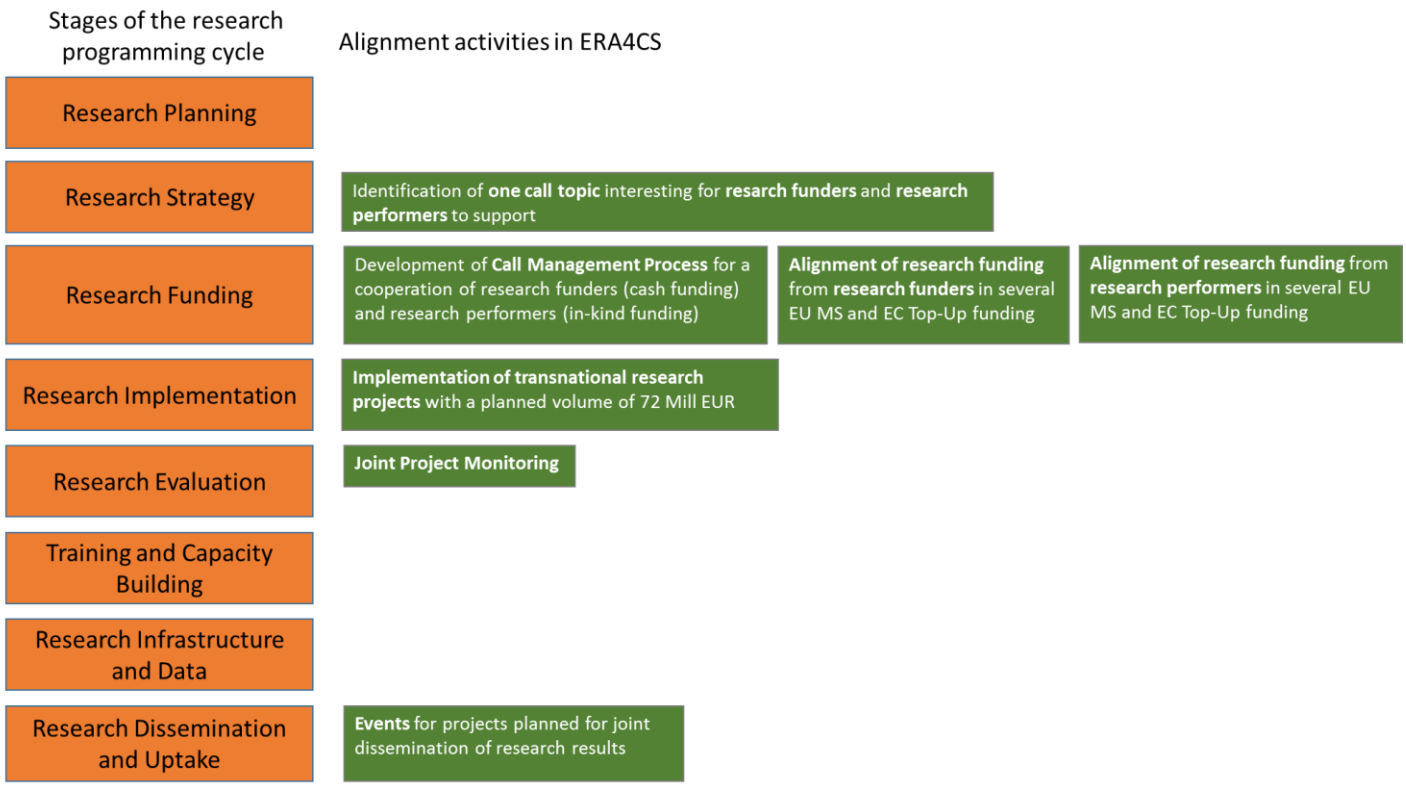

Figure 7 : Alignment at different stages of the research programming cycle in ERA4CS, own compilation

Beyond that, preliminary outputs of ERA4CS can be described as follows:

- The EC was open to support this 'experiment' to combine national cash and in-kind in one call, although the ERA-NET Cofund action was initially designed for a transnational call funded supported by RFOs. The EC responded to the need of the JPI Climate and supported the set-up of the proposal with expert knowledge on the understanding and use of the ERA-NET Cofund instrument.
- Establishing cooperation and agreement on one call topic between high level Scientific Directors of large European RPOs
- Establishing cooperation between Scientific Directors of RPOs and high level representatives of RFOs

- Reaching agreement of all RPOs and RFOs in ERA4CS to have one call and one overall call topic
- Development of a sophisticated call management and evaluation process with interaction and cooperation between RPOs and RFOs
- Reaching agreement between Scientific Directors of the RPOs to go through an external evaluation process for their internal projects to assure quality of projects
- Development of a funding model to combine national cash and in-kind funding with EC Cofunds

4. Overall strengths and key achievements of this instrument with respect to alignment

This part summarises the strengths and achievements of ERA4CS with respect to alignment via the joint call. However, the described strengths are based on activities in the proposal phase and expected outcomes as ERA4CS has only started in January 2016.

Support of alignment actions at the level of research funding and joint research implementation

The ERA-NET Cofund action is a tool that supports coordination of research funding and joint research implementation. Although, ERA4CS has just started and it is too early to say anything about the implementation of the joint call, it must be emphasised that it is already a success to submit a proposal as this includes relevant discussions and agreement of partners to the joint actions. The ERA4CS proposal showed that the ERA-NET Cofund action can go beyond the alignment of research funding stemming from research funding organisations, but can also be used as a tool to align institutional research funding at research performers level. This experiment shows the power of this ERA-NET Cofund action and may stimulate other research alliances active in P2P to use this tool (e.g. European Energy Research Alliances or Urban Europe Research Alliance).

Alignment of topics for research projects at research performers level across Europe and binding commitment of funding joint projects

Scientific Directors of RPOs agree on joint research topics. Assuming that commonly agreed research topics are rooted in the research strategy of the research performers, it could be argued that an ERA-NET Cofund actions enables the alignment of a little part of their research strategy and interests in the future, which is already one of the outputs. Additionally, they commit to fund joint research based on institutional in-kind contributions.

Alignment of topics for research projects at the level of research performers and research funders

The agreement of one joint overall research topic "climate service" for a joint call aligns part of the research interests in national research performers and research funders. However, the specific sub-topics are different for the cash and in-kind part of the call. If the agreed research topics are part of the organisations' strategy, a little part of the research strategy may be aligned. In many countries research performers and research funders do not have a common strategy and approach. The two different communities hardly work together. This experiment shows that an alignment of research priorities across different type of organisations is possible and certainly contributes to build an ERA.

Engagement of Member States with limited competitive research funding in transnational research

In JPI Climate, the number of actively participating New Member States is limited. With the new model of combining national cash and in-kind funding in ERA4CS, JPI Climate attracted research organisations from Romania, Greece and the Czech Republic. Hence, pooling national resources on in-kind basis seems to be an effective way to engage New Member States to the P2P.

5. Overall limitations with this instrument with respect to alignment

This part summarises the limitations and challenges of ERA4CS with respect to alignment. However, the described limitations are based on activities in the proposal phase and expected outcomes as ERA4CS has only started in January 2016.

Setting up a novel approach in ERA-NET Cofund actions (combination of cash and in-kind funding) is time-consuming

It took about one year from the start of discussion how to combine cash and in-kind in an ERA-NET Cofund until the final proposal for an ERA-NET Cofund action was submitted. It was especially time consuming to attract and convince the RPOs to this new model. Coordinators of JPIs need to invest a lot of time for elaborating a convincing model and discussion with RPOs. Apart from that 'standard' discussions in ERA-NET Cofunds, e.g. incompatible

national rules and regulations in RTDI funding, use of EC Top-up funding, additionally lead to time delays. Strong, strategic partnerships in the coordination team are needed to share the work with. The reward of this time investment should be analysed on the long term and will depend on capacity to establish a multi-years alignment strategy between RFOs, RPOs and EC with more flexible co-funding instruments.

ERA-NET Cofund is only one instrument for alignment and it is limited to coordinate of research funding and implementation

The ERA-NET Cofund can only be used to a limited extent to align research planning and strategies. Only research for specific call topics will be aligned, but it is no instrument to align substantial parts of a national research strategy. It has also only limited power to align monitoring, reporting and dissemination activities. Joint Programming Initiatives (JPI) or Article 185 are much more relevant to establish a Strategic Research & Innovation Agenda (SRIA) beyond one shot call as ERA-NET; conversely ERA-NETs should gain from such SRIA adopted by countries.

ERA-NET Cofund does not support long-term cooperation

The ERA-NET Cofund actions can be used to stimulate cooperation of research performers and/or research funders and support one joint call. It is a suitable instrument to start cooperation or support existing cooperation between research performers and/or research funders, but it is not designed to support long-term cooperation. However, if efforts to set up a cooperation among research performers and between researcher performers and research funders should pay off, an instrument supporting cooperation for multiple years would be more suitable.

EC Top-up rate of 33% is not attractive for all research performing organisations

The ERA-NET Cofund actions offers a 33% reimbursement. Together with the national budget share, participants of joint projects finally receive up to 100% reimbursement. If RPOs apply for projects, it seems more attractive to them to apply for projects funded by their national research funding organisations, than receiving 33% reimbursement on the basis of their national institutional in-kind. A higher reimbursement rate for RPOs pooling their national in-kind would certainly attract more RPO to join an ERA-NET Cofund action. However, ERA4CS also showed, that a combination of strategic interests and EC Top-Up funding is attractive for RPOs to join an ERA-NET Cofund action. It might also be relevant what type of research activities are funded. Others instruments as European Joint Programme Cofund should be also investigated to analyse pros and cons.

6. Conclusions: Key success factors of ERA4CS and transferability to other P2Ps

This part summarises the success factors in developing ERA4CS. The success factors are described in a way they can serve as lessons learnt and transferred to other P2P.

Coordinator of the ERA-NET Cofund is interested in combination of cash and in-kind funding

It needs a knowledgeable and engaged coordinator of the ERA-NET Cofund, who breaks new grounds and finds new models to set up an ERA-NET Cofund. The coordinator must have excellent access to the research funding as well as research performing organisations community and convincing arguments for both communities working together. Excellence also could be propagated on both RPOs and RFOs by using a same independent Panel of Experts.

Find the right arguments to especially convince the RPOs to join the ERA-NET Cofund

ERA4CS shows that many research performers are only willing and enthusiastic to join ERA4CS if their strategic interests are addressed. Sespite a real success with 30 RPOs involved in the ERA4CS consortium, the pure stimulation with 33% EC Top-up funding was not convincing for all. The same can be observed at the RFO level in some other ERA-NET Cofunds. Lessons learnt is that arguments need to be convincing and well prepared when compiling a competitive consortium. Thinking along the level of joint interests of RFO, RPOs and national governments may help to find the right arguments. For this, long term Strategic Research & Innovation Agenda (SRIA) from JPI could really help.

High indicated EC Top-up funding triggers the combination of cash and in-kind funding in an ERA-NET Cofund

The EC indicated a Cofund of about 25 Mill EUR for ERA4CS. In order to meet the full EC Cofund a national budget twice as much as the Cofund is needed (rule: for 2 EUR national funding, 1 EUR EC funding is available). The RFO

active in JPI Climate had not the potential to allocate the amount requested to a joint call. Only a joint effort of RPO (in-kind funding) and RFO (cash funding) led to the national budgets requested. The EC may or may not have intended this development, but it certainly was a driver towards this new model for ERA-NET Cofunds. In the future, it could be that less incentive are needed as the procedures have already been outlined. Again, initiation at level of a JPI, with long term background and vision, is a key for success.

Budget Flexibility

Budget flexibility in terms of (1) additional national budgets and (2) agreement to shift EC Top-up funding between the cash and in-kind topics leaves room to manoeuvre. How relevant budget flexibility will finally be and what type of flexibility is the most important, can only be answered after the final funding decision (to be expected in beginning of 2017).

Successful first meeting of the Scientific Directors of the RPO

In the proposal preparation phase was a first scoping meeting between the Scientific Directors of the RPO with the aim to agree on joint research priorities within ERA4CS. This was a critical meeting as it was not clear, whether Scientific Directors develop a cooperative approach and think alike. ERA4CS showed that engagement and commitment of high-level representatives with budget responsibility of research performers is key to a successful cooperation within ERA-NET Cofund action.

7. Outlook

The ERA-NET Cofund is one tool to support transnational research funding and joint research implementation. ERA4CS showed that it has the power to combine funding available at two different types of organisations, research funders and research performers. However, the ERA-NET Cofund is only one tool and needs to be embedded in a box of tools in order to actually work towards alignment in ERA along on the entire research programming cycle. Furthermore, it should be encapsulated within a long term vision and implementation strategy that could be provided only at level of JPI or Art. 185, binding Members States and Associated Countries.

The functionality of the ERA-NET Cofund actions has been stretched and ERA4CS clearly demonstrated that there is potential to combine cash and in-kind funding. However, it was initially designed for cash funders and is limited to one call with EC Top-up funding. The EC promotes 'European Joint Programme Cofunds (EJPs)' as an instrument initially designed for alignment of national institutional in-kind funding. EJPs have the advantage that it is designed for multiple years. However, experience in JPI Climate shows that working with two different instruments for the alignment of cash and in-kind funding is considered burdensome, therefore JPI Climate decided for a combination of both within one instrument. There is a clear call here to revise and refine existing instruments under H2020 for the next European Framework Programme (FP9) having the following needs in mind:

- The instrument should support alignment of research funding and research implementation for multiple years and should be coherent with SRIA developed between countries (i.e. Joint Programming Process of ERAC)
- Unique the instrument supports the alignment of research strategies, research funding and implementation for both programme owners and programme managers at research funding organisations and research performing organisations at the same time (i.e. merging the best of ERA-NET Cofund and the best of European Joint Programme Cofund)
- The rates for EC Top-up funding in Cofund instruments should be re-considered: 50% EC Top-up for national institutional in-kind (RPOs) would be attractive, while 33% EC Top-up for national contribution from research funders (RFOs) is manageable
- Instrument should be suitable to support actions from research to innovation for effective implementation.

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Niehoff, Jörg (2016): ERA-NET Cofund underHorizon 2020. https://www.era-learn.eu/manuals-tools/p2p-in-h2020/practical-documentation/ERANETCofundtraining.pdf

Consulted websites

ERA4CS website: http://www.jpi-climate.eu/aboutERA4CS

Governance Structure : http://www.jpi-climate.eu/aboutERA4CS/governance

Consortium : http://www.jpi-climate.eu/aboutERA4CS/consortium

CALL FOR PROPOSALS (Call Text): http://www.jpi-climate.eu/media/default.aspx/emma/org/10869130/ERA4CS_joint+call_04march.pdf

GUIDELINES FOR APPLICANTS : http://www.jpi-climate.eu/ERA4CS.activities/jointcall/application.guidelines

Guidelines for Applicants (cash-topic) : http://www.jpi-climate.eu/ERA4CS.activities/jointcall/topicA/annex

Guidelines for Applicants (in-kind topic) http://www.jpi-climate.eu/ERA4CS.activities/jointcall/topicB/annex

ASSESSMENT Criteria : http://www.jpi-climate.eu/ERA4CS.activities/jointcall/assessment

Interviews

MONFRAY, Patrick, ANR, JPI Climate Chair and ERA4CS Coordinator, interview 2016-04-28

DEYGOUT, Chloé, ANR, ERA4CS Executive Manager, interview 2016-04-28

ANNEX 1 Partners in ERA4CS

Research Performing Organisations (RPOs)

- Universitaet Graz (Uni Graz), Austria
- Institut Royal Météorologique de Belgique (RMI), Belgium
- Global Change Research Centre CAS (CzechGlobe), Czech Republic
- Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung (AWI), Germany
- Helmholtz-Zentrum Geesthacht Zentrum für Material- und Kustenforschung GMBH (HZG), Germany
- Danmarks Meteorologiske Institut (DMI), Denmark
- Agencia Estatal de Meteorologia (AEMET), Spain
- Barcelona Supercomputing Center - Centro Nacional de Supercomputacion (BSC), Spain
- Agencia Estatal Consejo Superior de Investigaciones Cientificas (CSIC), Spain
- Universidad de Cantabria (UC-IHC), Spain
- Universitat Rovira i Virgili (URV-C3), Spain
- Ilmatieteen Laitos (FMI), Finland
- Suomen ymparistokeskus (SYKE), Finland
- Bureau de Recherches Géologiques et Minières (BRGM), France
- Commissariat à l'Energie Atomique et aux Energies Alternatives (CEA), France
- Centre National de la Recherche Scientifique (CNRS), France
- Institut national de l'information géographique et forestière (IGN), France
- Institut national de la recherche agronomique (INRA), France
- Météo-France (Météo-France), France
- National Center for Scientific Research "Demokritos" (NCSRD), Greece
- Department of the environment, community and local government (Met Eireann), Ireland
- Fondazione Centro euro-mediterraneo sui cambiamenti climatici (CMCC), Italy
- Consiglio Nazionale delle Ricerche (CNR-DTA), Italy
- Koninklijk Nederlands Meteorologisch Instituut-KNMI (KNMI), the Netherlands
- Meteorologisk institutt (Met Norway), Norway
- Fundacao da Faculdade de Ciencias da Universidade de Lisboa (FFCUL), Portugal
- Administratia nationala de meteorologie R.A. (Meteo-Ro), Romania
- Sveriges Meteorologiska och Hydrologiska Institut (SMHI), Sweden
- The University of Reading (UREAD), United Kingdom
- Met Office (Met Office), United Kingdom

Research Funding Organisations (RFOs)

- Agence Nationale de la Recherche (ANR), France
- Bundesministerium für Wissenschaft, Forschung und Wirtschaft (BMWFW), Austria
- Service public fédéral de programmation politique scientifique (BELSPO), Belgium
- Deutsches Zentrum für Luft- und Raumfahrt EV (DLR), Germany
- Innovationsfonden (IFD), Denmark
- Ministerio de Economia y Competitividad (MINECO), Spain
- Environmental Protection Agency of Ireland (EPA), Ireland
- Nederlandse organisatie voor wetenschappelijk onderzoek (NWO), the Netherlands

- Norges forskningsrad (RCN), Norway
- Fundacao para a Ciencia e a Tecnologia (FCT), Portugal
- Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI), Romania
- Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (Formas), Sweden
- Slovak Academy of Sciences (SAS), Slovakia
- Natural Environment Research Council (NERC), United Kingdom
- Ministero dell'Istruzione, dell'Università e della Ricerca (MIUR), Italy

ANNEX 2 Call Management in ERA4CS

Table 3 Planned Call Management in ERA4CS

	Cash-Topic	In-kind Topic
Call Text and documents	Written by Cash-MB	Written by In-Kind-MB
	Interaction with Call Secretariat to avoid redundancies between the call topics	
	General documents provided by the Call Secretariat	
	Call specificities and submission guidelines (national requirements of RFO) developed by the Cash-MB	Call specificities and submission guidelines (organisation-specific requirements) developed by the In-Kind-MB
Call Opening and submission of Pre-Proposals	One joint Call text available at JPI Climate/ERA4CS website	
		Brokerage meeting for RPO
	Preparation of pre-proposals	Preparation of pre-proposals, which are close to full proposals in terms of content
	Call is open for 3.5 months	Call is open for 4.5 months
	Submission at JPI Climate/ERA4CS Website	
Establishment of Expert Panel	Independent Expert Panel is established by Call Secretariat and Cash-MB	
Step 1 Evaluation	Eligibility check by Call Secretariat and Cash-MB	Eligibility check by Call Secretariat and In-Kind-MB
	Evaluation of pre-proposals and development of ranking list by independent Expert Panel	Redundancy Check by Expert Panel between cash and in-kind proposals to avoid conflict of interests
	Decision on projects to be invited for step 2 by Cash-MB	Internal evaluation of proposals and decision on key consortia to be invited for step 2 by In-Kind MB (Scientific Directors), no external experts; Decision on key consortia includes effective commitment to fund successful proposals by RPO if they are selected in step 2
Cash-Call for full proposals	Call open for 2 months	
Step 2 Evaluation	Eligibility check by Call Secretariat and Cash-MB	Eligibility check by Call Secretariat and In-Kind-MB
	• Evaluation by Expert Panel and ranking list (same Expert Panel for cash and in-kind projects) • Each project is evaluated by 5 experts, 3 from the Expert Panel and 2 external evaluators • Experts from scientific and stakeholder community • Evaluation time 3 months • Evaluation Criteria oriented towards H2020 evaluation criteria	
Funding Decision	Decided by Cash-MB to maximise budget use	Decision how many projects on the ranking list can be funded limited by EC Top-up funding available or by reaching the end of the list (decisions that RPO fund selected projects is taken in Step 1); Supervised by Call Sec.

ANNEX 3 Governance structure ERA4CS

The governance structure of ERA4CS (*Figure 8*) corresponds to common standards. Most interesting are the governance bodies introduced to manage the cash and in-kind part of the call.

Cash Management Board (cash MB)

- The cash MB is composed of one representative from each partner organisation participating in the cash topic of the joint call.
- The cash MB is the decision-making body for the cash topic of the joint call. Members of the CMB cannot apply to the joint call.
- The cash MB will propose experts for the evaluation process of the joint call.

In-kind Management Board (in-kind MB)

- The in-kind MB is composed of one representative from each partner organisation participating in the in-kind topic of the joint call.
- The in-kind MB is the decision-making body for the in-kind topic of the joint call.
- Full members of the KMB, involved in the build-up of the topic and the eligibility process, cannot apply to the in-kind topic of the joint call. Deputy members not involved in these particular processes can still apply.
- The in-kind MB will not take part in the evaluation process of the joint call, to avoid conflicts of interest.

Call Secretariat

- The Call Secretariat, part of the Coordination Unit at ANR, is in charge of coordinating the preparation and evaluation of the joint call.

General Assembly (GA)

- The General Assembly is composed of one representative from each partner organisation participating in the ERA4CS Consortium.
- The General Assembly is the decision-making body.

Executive Board

- The Executive Board is composed of the Coordinator and the Work Package (WP) leaders.

Coordination unit

- The Coordination Unit is based at ANR and composed of the coordinator, the executive manager, the Joint Call Secretariat (JCS) and the financial & administrative officer.

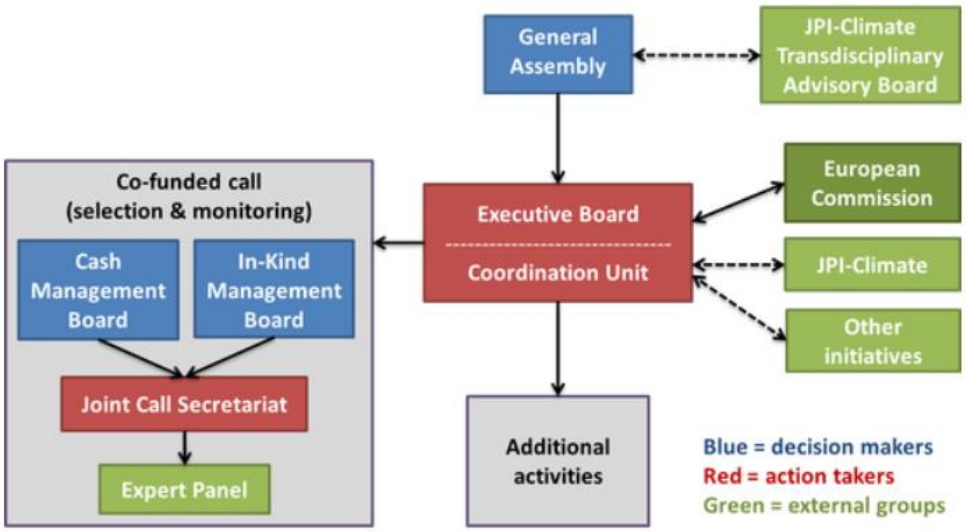


Figure 8 Governance Structure of ERA4CS, source : ERA4CS website

Horizon 2020 Call: H2020-INSO-2014

Proposal number: SEP-210134170

Assessment of NOVEL Approaches to Alignment

Case Study No.4 – Process towards a Common Position on Alignment in Austria

Date: 2 November 2016

Dissemination level: Wider public

Lead contractor for this deliverable: AIT

Contributors: MIUR, UNIMAN, INRA

ABSTRACT

This case study examines the key features, outputs and overall strengths and limitations of the **process towards finding a common position on alignment in Austria among the mayor R&D Stakeholders**. The Austrian Ministry for Transport, Innovation and Technology, together with the Austrian Ministry for Science, Research and Economy set up a collaborative process bringing together the relevant Austrian research stakeholders to work towards a common national agreement on transnational alignment in research strategy, planning and funding. In the course of this process, awareness for the alignment topic is raised and commitment for future alignment activities in P2Ps is built. This case study reveals that a main pre-condition for a common position on alignment is national coordination among all RTI key players.

The case shows the following **strengths** of this novel approach towards a common position on alignment in Austria:

- **Raise visibility of, awareness on and mobilisation for transnational alignment activities at national level:** The process did not only raise visibility of and awareness on the alignment topic as such but also build commitment at the level of national key RTI stakeholders towards transnational alignment in P2P. This provides the foundation for their future mobilisation of key RTI stakeholders in this respect and the implementation of necessary pre-conditions for transnational alignment at national level.
- **Position paper as a means to an end:** Besides the legitimating effect of the document, a RTI policy process was set up for the development of the paper. The policy process focused on the development of a common position of national key RTI stakeholders on the importance of alignment to implement ERA and on national pre-conditions for transnational alignment.
- **Appropriate means and few resources needed**: The whole process was relatively inexpensive and fast regarding the already realised and the expected future output.

However, this novel approach also reveals **limitations**:

- **Definitional problem:** The first challenging step was to agree on a common understanding of the term 'alignment' and its implications for all RTI stakeholders at national level. This was based on the previous work of the GPC, which gave a first definition of alignment at strategic/policy level.
- **Commitment for implementation of next steps is voluntary**: The position paper includes a collection of useful steps to be taken in the future. However, the position paper does not include an implementation plan with clear commitments of the different key stakeholders for implementation of next steps. This is also due to the nature of the process design.

This novel approach towards a common alignment position demonstrates that the process itself **raised awareness of and built commitment to alignment activities among national RTI stakeholders**. The initial process to develop a common position on alignment and the transferability of this process is assessed very high.

This case study is addressing the following **reader groups**:

- **Coordinators of national research programmes at RTI ministries** to become aware of possibilities of national coordination for alignment
- **Coordinators of P2Ps** to be conscious about the national coordination processes on alignment in place, which are essential for future activities within P2P
- **Policy makers of the European Commission** to learn about how to support national coordination on alignment in the future as this is a necessary pre-condition.

The case study builds on the ERA-LEARN 2020 "Definition and Typology of Alignment" and relies on a review of existing literature and a targeted interview. The case is part of a series investigating NOVEL approaches towards alignment.

ACKNOWLEDGEMENTS

The case study has been written by Anja Köngeter and Susanne Meyer from the AIT Austrian Institute of Technology. The authors are grateful to Brigitte Weiss (Ministry for Transport, Innovation and Technology) who was coordinating the process towards an Austrian position on alignment and who acted as interview partner for the case study. The authors would also like to thank the ERA-LEARN Consortium partners for their useful suggestions on earlier drafts of this case study.

Table of contents

1. Introduction

The internationalisation and the consequently growing necessity for connectedness of national research on transnational level leads to higher demands towards member states to align and coordinate their national RTI strategies and programmes. The European Commission states: "The crux is to enable transnational research and innovation by exploiting synergies between national and international programmes, strategically aligning different sources of national and other funds at EU level [....]. The **level of alignment is presently too low** to make a serious impression on big and complex challenges"[14]. Therefore, the European Commission started to initiate dedicated processes and instruments to push for transnational alignment, e.g. Joint Programming Initiatives or ERA-NETs. These developments call **member states to seek a common position on alignment** in order to set-up appropriate framework conditions on national level to become operational and active on transnational level and ensure transnational research activities benefit the national RTI system.

This case study examines a process aiming at developing a common position of national key RTI stakeholders on alignment that was recently initiated by the Austrian Federal Ministry of Transport, Innovation and Technology in cooperation with the Austrian Federal Ministry for Science, Research and the Economy. This **demand-driven process resulted in a position paper** summarising the perspectives of relevant RTI stakeholders as a first step. The process itself **raised awareness and built commitment among the national RTI stakeholders,** including policy makers, funding agencies and other intermediaries, universities and other public research (and technology) organisations. The developed position will serve as a **starting point for implementing future activities** to support transnational alignment on national level. Building up on this process, a Working Group of the Austrian RTI-Task Force dedicated to Alignment has been established. This Group is jointly chaired by the Austrian Federal Ministry of Transport, Innovation and Technology in cooperation with the Austrian Federal Ministry for Science, Research and the Economy. Furthermore, the **dissemination** of this process' good practices is planned at European and transnational level.

Addressing alignment issues at national level via a high-level initiative draws on the results of the Austrian Federal Government's RTI strategy (Republik Österreich 2011). For the national coordination and implementation of the Austrian RTI strategy a RTI Task Force was set up comprising high-level policy actors of the five Austrian ministries involved in RTI. Additionally, there have been working groups established for RTI areas of specific interests for more than one ministry with the aim to increase inter-ministerial coordination and information exchange and engage with dedicated stakeholders on the specific issue. One of these working groups focusses on the development of the European Research Area 2020 and the Austrian engagement (**Working Group (WG) 7b 'Europe' of the RTI Task Force**). In 2013, the WG 7b 'Europe' published the **'Austrian EU Action Plan'** (Working Group 7b 2013). This EU Action Plan includes on the one hand the positions Austria should support with regard to European RTI policy, and on the other hand measures which Austria should take forward, in order to be as well prepared and adjusted as possible with regard to these current developments in the field of European RTI policy. Six priority areas with respective measures have been identified. One of the six priority areas is **'Strengthening multilateral cooperation'** in order to support and enable multilateral cooperation, the openness towards transnational alignment of national programmes, funding rules and regulations and the corresponding instruments. As a result of this process the WG 7b 'Europe' has been replaced by a WG 'Alignment' of the RTI Task Force.

In order to strengthen multilateral cooperation, a stakeholder group (MULLAT Working Group) was established in 2014 comprising Austrian stakeholders (representatives of ministries, funding agencies or research organisations) involved in the coordination of multilateral initiatives (e.g. JPIs, JTIs, Art. 185, ERA-NETs etc.). The MULLAT

[14] European Commission: Optimal transnational co-operation and competition - Jointly addressing grand challenges: http://ec.europa.eu/research/era/optimal-transnational-co-operation-and-competition_en.htm

Working Group aims on the exchange of experience in transnational cooperation, the identification of problems and development of solutions. Within the **MULLAT Working Group** the original idea was born that the development of a joint position of Austrian key RTI stakeholders on alignment is useful to provide common ground for the establishment of appropriate changes and pre-conditions in Austria.

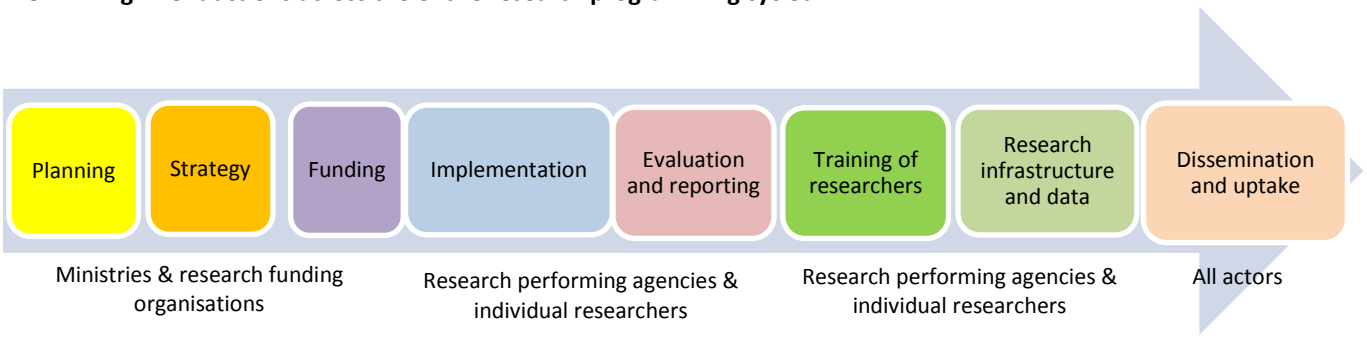
The Austrian Ministry for Transport, Innovation and Technology in cooperation with the Austrian Federal Ministry for Science, Research and the Economy responded to these demands and initiated a process towards the development of a common position in Austria on alignment. The published **"Report on Definition and Typology of Alignment"** in 2015 (ERA-Learn 2020 2015) served as a critical and strategic input for the process, because its strength is twofold: (1) the concrete definition of alignment developed by the GPC and adopted by ERA-LEARN 2020 (Box 1) and (2) identification of concrete alignment actions and modalities (Box 2).

Box 1: Definition of Alignment and the Role of Member States

"Alignment is the strategic approach taken by Member States to modify their national programmes, priorities or activities as a consequence of the adoption of joint research priorities in the context of Joint Programming, with a view to implement changes to improve the efficiency of investment in research at the level of Member States and the European Research Area".

Source: GPC Definition of alignment adopted by ERA-LEARN 2020 in ERA-LEARN 2020 (2015): Deliverable 4.1 Report on the Definition and Typology of Alignment.

Box 2: Alignment actions across the entire research programming cycled



Source: ERA-LEARN 2020 (2015): Deliverable 4.1 Report on the Definition and Typology of Alignment.

2. Key features of the process towards a common position on alignment in Austria

2.1 Methodology and objectives of the process

The **process 'towards a common position on alignment'** was initiated by the Austrian Ministry for Transport, Innovation and Technology in cooperation with the Austrian Federal Ministry for Science, Research and the Economy. Methodology and objectives of the process drew on ERA-LEARN 2020 "Report on the Definition and Typology of Alignment", in particular on the key barriers and key factors for successful alignment.

The **process design and methodology** considered the following recommendations:

- **Trust and consensus building:** Consultation and dialogue are key to integrate all positions, reach consensus and build political commitment. Thus, collaborative formats were applied.

- **Open process design:** Accounting for the explorative proceeding and the lack of common understanding, an open step-by-step design accounts for the necessity to react to contingent output of each phase and adapt the next step.
- **'Soft' policy coordination:** Integration of relevant RTI stakeholders through 'soft' policy coordination; in comparison with top-down mechanisms, this approach has a faster proceeding and a higher probability of commitment of stakeholders.

This **process** aims at achieving the following **objectives**:

- **Raise awareness among Austrian RTI stakeholders and ministries on alignment issues:** The objective is to put the topic 'alignment' on the agenda of Austrian key RTI stakeholders and develop a common understanding of the terminology.
- **Reach consensus among key Austrian RTI stakeholders on a common alignment position:** To achieve this overarching objective, the process aims at building commitment among Austrian Stakeholders for future alignment activities by involving them from the start. The first phase (see below) prepares key actors for future alignment activities and the latter's implementation.
- Develop a **Report called 'Austrian position paper on alignment':** Simply said, the report summarises the findings of the process (for description of the process see Section 2.2). More specifically, the report analysis and report writing phase served as a 'mean' to reach agreement between the participating stakeholders via multiple rounds of feedback. In the end this report can be seen as a common position and commitment of Austrian RTI Stakeholders on transnational alignment.
- **Disseminate Austrian experience on the development of a common position on alignment at European level:** Share Austrian experience on the development of a common position on alignment and the results of the process in dedicated working groups at European level.

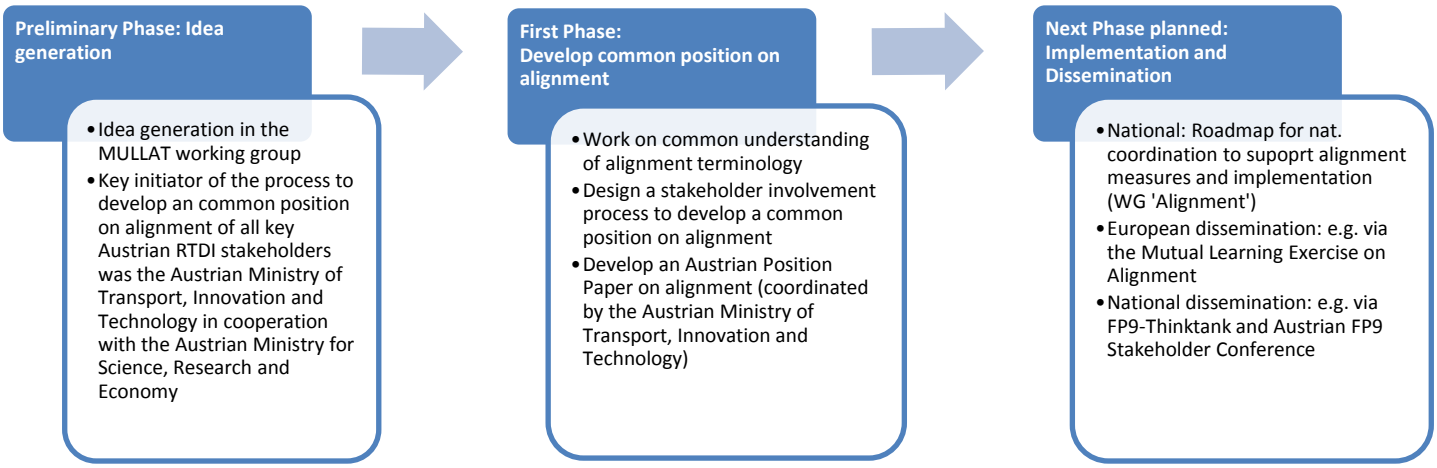
2.2 Description of the process

In the following the process will be described in three phases. The current state of the multi-step process (mid of 2016) features an accomplished first phase (with the position paper as a tangible output). The next phase is at planning stage and will start in the third quarter of the year 2016. In this section, the first phase is described in detail and the future steps are sketched including plans of dissemination (see Figure 1). Figure 1 provides an overview of the whole process.

Preliminary Phase: Idea generation

The idea for this process originated from P2P representatives engaged in MULLAT Working Group. Additionally, the process is based on the Austrian RTI Strategy (2011) and its Austrian EU Action Plan (2013) which identified the strengthening of multilateral cooperation as one of the key priorities (see Section 1). Based on the Austrian EU Action Plan the MULLAT Working Group was established and the need for a common position on alignment in Austria identified. The Austrian Ministry of Transport, Innovation and Technology took the initiative and started the process towards a common position on alignment of all key Austrian RTDI stakeholders (First Phase).

Figure 1: Overview of a Process towards a Common Position on Alignment in Austria



Source: Own presentation

The First Phase: Common understanding of alignment terminology, raise awareness and build commitment

A steering group under the direction of the Austrian Ministry for Transport, Innovation and Technology was set-up. Prominent partners involved were the Federal Ministry of Science, Research and Economy and the Austrian Research Promotion Agency (FFG). The Institute for Economic and Innovation Research (POLICIES) of JOANNEUM RESEARCH that is specialised in research and innovation policies analysis supported the core group during the process. JOANNEUM RESEARCH Forschungsgesellschaft mbH is a research and technology organisation in Austria. The Institute for Economic and Innovation Research supported the process by providing knowledge in research policy analysis, by supporting the organisation of dedicated workshops and by drafting the position paper being the agreed view on alignment by the mayor Austrian R&D stakeholders. As a basic first task, the core group elaborated a **common understanding of the alignment** definition and typology drawing on the definitional document provided by the GPC and adopted by ERA-LEARN 2020 (2015). This common understanding was the foundation for the **interviews with Austrian RTI stakeholders** (conducted by the Institute for Economic and Innovation Research of JOANNEUM RESEARCH) from the national research ministries, research funding agencies, universities and research institutions. On the basis of qualitative and quantitative analyses, hypotheses were derived with respect to current state, meaning, and need for action of alignment.

These hypotheses were discussed and adapted within two collaborative **stakeholder workshops**. The workshop participants were representatives of the ministries (Austrian Ministry for Transport, Innovation and Technology, Federal Ministry of Science, Research and Economy, the Federal Ministry of Health and Women's Affairs, the Federal Ministry for Agriculture), research funding agencies (Austrian Research Promotion Agency [FFG], Austrian Science Fund [FWF]), large research institutes, and the universities (re-presented by the UNIKO - Universities Austria). Supported by the Institute for Economic and Innovation Research of JOANNEUM RESEARCH, collaborative methods were applied for the workshop with focus on reaching consensus on the collected statements of Austrian RTI Stakeholders on the common position on alignment including core messages and recommendations. For clarifications, **additional interviews** were conducted.

The consensus reached is described in a **position paper** recently published (Polt et al. 2016) (main points see Section 3 and Annex 1) reflecting the Austrian demand for and potential involvement in transnational alignment activities. It is noteworthy that the document **does not depict the official Austrian position but is a collection of commonly agreed national RTI stakeholder positions**. As emphasized by the interview partner, the development

of the position paper by collaborative workshops worked as a **means to an end**: This process **raised awareness** and **built commitment** by the collaborative development of a common position. This trust building and the introduction of a common aim represents the groundwork for future steps. The result can also be seen as a commitment towards alignment and a mandate for continued further effort, where appropriate.

Next Phase planned: Implementation and Dissemination

The aim of the next steps will not be limited to awareness and consensus building but focuses on the mobilisation of RTI actors by designing a roadmap for implementation of concrete measures on national level for transnational alignment, where appropriate. Furthermore, European and trans-national dissemination is intended.

- **WG 7b 'Europe' has completed its mandate. A new WG 'Alignment' of the RTI Task Force** has been set up. As a **high level initiative** it will **identify policies and concrete measures on national level to support trans-national alignment** which will be derived from the First Phase's position paper. The **dissemination** of the process results and design is planned **at European level** in the **Mutual Learning Exercise on Alignment.** As the representatives in the core group are also active in the Mutual Learning Exercise on Alignment knowledge transfer can be ensured.
- Findings of the process will also be disseminated to **national level initiatives that are in the process of developing positions regarding FP9** (e.g. Austrian FP9 Stakeholder Conference in October 2016 and the national FP9-Thinktank).

3. Outputs of the process with respect to alignment

Outputs of this process are manifold and directed towards the entire research programming cycle (see Box 2). As this process started recently, the major outputs are limited to its first phase. Besides the concrete output of the position paper, also intangible outputs are presented in the following.

Concrete outputs:

- **Position Paper:** The most prominent output of the initial phase is the position paper enclosing 18 "Key Messages and Hypotheses" which all involved RTI stakeholders agreed upon (see Annex 1). Main points relevant for this case study's audience are sketched hereinafter:
    - **Summary of positions of national key RTI stakeholders:** By collecting positions of Austrian key RTI stakeholders, discussing them and finding consensus, the process uncovered the diversity of Austrian perspectives in general. It potentially introduces convergence of these perspectives in the next steps.
    - **National Coordination:** National Alignment activities are a key prerequisite for the successful participation in the EU Framework Programmes.
    - **Thematic priorities setting on national level supports transnational alignment**: Clear thematic priorities on national level are key for alignment. A strong cooperation and communication between the involved ministries in one thematic priority or an inter-ministerial group responsible for one thematic priority supports alignment, especially if institutional coordination will be followed (universities and research organisations)
    - **Operational level:** On operational level national programmes and instruments exist that can be used for alignment and support national pre-conditions for alignment.
    - **Interoperability:** In order to achieve better compatibility between applied national and transnational funding mechanisms and minimise transaction costs, *all actors* involved shall work on interoperability regulations. The position paper gives detailed pragmatic suggestions (details see Annex, No 18).

- **Benefits from transnational alignment for Austrian stakeholders:** If alignment is followed on strategic and operational level, Austria actors would benefit from alignment e.g. by financial returns from the EC to the Austrian community, new know-how, integration of national actors in European networks. Additionally common engagement and continuity of activities would provide better ground for finding solutions for societal challenges.
- **Trade-offs caused by alignment:** The evaluation and analysis of potential trade-offs of alignment should be investigated for specific programmes.

Intangible outputs:

- **Raise awareness among policy-makers:** In the course of this first phase, national efforts towards alignment gained attention making it a key issue at high level policy making. This is reflected by the fact that WG 7b 'Europe' of the RTI Task Force will be replaced by the WG 'Alignment' in the future.
- **Raise awareness among Austrian RTI stakeholders who have not been involved in the alignment discussion:** The topic 'alignment' is put on the agenda of Austrian RTI stakeholders who have not been involved in alignment issues before and discussions about this issue were successfully stimulated.
- **Reaching consensus among Austrian RTI stakeholders on the importance of alignment:** Another consequent process output is that a certain degree of convergence was introduced among the diverse Austrian representatives of P2Ps with respect to their position on alignment. The workshops presented a common goal to them and committed them to own alignment efforts.
- **National coordination as pre-condition for transnational alignment**: National coordination among all RTI key players (i.e. the process you describe) is a pre-requisite in order to develop a national common position on alignment and the development of specific dedicated actions toward implementation of alignment.
- **Identification of support from the EC for alignment:** The EC needs to establish specific support measures for alignment (e.g. continuity of P2P instruments/processes to enable planning in Member States). The EC should also acknowledge that alignment needs time on national level.

4. Overall strengths and key achievements of this instrument with respect to alignment

This part summarises the strengths and achievements of this process towards a common position on alignment in Austria.

- **Position paper as a means to an end:** Besides the legitimating effect of the document, it has relied on an approach that has allowed to coordinate and integrate key RTI actors at national level in discussions on alignment, and, in doing so, that has laid the foundation at national level for future Austrian participation in alignment activities (e.g. development of transnational research strategies and implementation of transnational research activities with other countries).
- **Raise visibility of, awareness on and mobilisation for transnational alignment activities at national level:** The process did not only raise visibility and awareness but also build commitment of national key RTI actors and provides the foundation for their future mobilisation and national involvement in transnational alignment activities.
- **'Soft' policy coordination with high effect:** The process was initiated by two ministries (out of five ministries dealing with RTI). It was set-up as a 'soft' policy coordination process, driven by the stakeholders involved. The results will now take on to a higher level policy debate.
- **Appropriate means and few resources needed**: The whole process was relatively inexpensive and fast regarding the already realised and the expected future output.

5. Overall limitations and challenges of this process

This part summarises the limitations and challenges of the process. As this process is still in its initial phase, this section focuses on challenges and lessons learnt.

- **Definitional problem:** The first challenging step was to agree on a common understanding of the term 'alignment' and its implications for all RTI stakeholders at national level. This might remain a challenge in future.
- **No official national position on alignment:** The process was set-up as a soft policy coordination mechanism and was open in terms of results, the document does not represent an official Austrian position by the national government, but a common agreement by Austrian RTI stakeholders, including the Ministries responsible for R&D.

6. Conclusions: Key success factors of the process and transferability

The initial process to develop a common position on alignment was very successful so far and will provide the foundation for further steps. It revealed that the main pre-condition for a common position at national level on alignment issues is national coordination among all RTI key players.

The transferability of this process is assessed very high. The described first phase of this process is regarded as a good practice example, the positive experiences call for an adjusted adoption by other member states. This section summarises the most relevant success factors of developing a common position on alignment serving as recommendations for other member states and provide information for policy-makers in other European countries.

Key success factors:

- **Soft policy coordination approach and multi-phase approach:** This approach ensured the participants' commitment and mobilisation for further action according to the interviewee. The multi-phased design was highly appropriate in order a) to agree on a common understanding of alignment, b) to collect the perspectives of key RTI stakeholders and c) to decide after each phase on the next step – treating the process' objective as a 'moving target'.
- **Expert support from the Institute for Economic and Innovation Research of JOANNEUM RESEARCH in Austria**: The Austrian Ministry of Transport, Innovation and Technology contracted an Austrian research organisation specialised in research policies to support it for this process. The Institute for Economic and Innovation Research of JOANNEUM RESEARCH supported the process by providing knowledge in research policy analysis, by supporting the organisation of dedicated workshops and by drafting the position paper representing the agreed view on alignment by the mayor Austrian R&D stakeholders. The support of such an Institute for Economic and Innovation Research is vital for a professional set-up and legitimacy of the process.
- **Interactive formats and scientific guidance:** Interactive and collaborative methods applied in workshops facilitated interaction among diverse actors and helped to reach consensus despite different agendas.
- **Key RTDI policy makers are owner of the process:** The two RTDI ministries driving the process towards a common position of alignment are at the same time in power for the implementation of respective activities on national level to support transnational alignment. This 'double' role increases the impact of the process.
- **Apply alignment definition and typology:** The availability of a proper definition and typology of alignment as entry point for discussion enables efficient communication among diverse actors in the first place.

Outlook and requirements

The Austrian case provides valuable insights and lessons learnt how a process towards a common position on alignment can be initiated. Other member states and actors at European level can benefit from these experiences gained. The initiators and the participating stakeholders identified the **following requirements facilitating future work on alignment at national level.**

- **Extension of the alignment typology:** During the process and interaction with P2Ps, it became clear that further development of the alignment typology is required as the current framework proved too narrow. An extension is needed with respect to two dimensions:
    - **Research programming cycle is too narrow**: Currently, the alignment typology is only connected to the research programming cycle (see Box 2). According to the interviewee's experience in the process, the alignment typology should also consider the **innovation cycle**, including the alignment of applied research and pilot/demo/implementation undertakings, which are funded by public means. Parts of the P2Ps focus on the development of concrete solutions for societal challenges and want to initiate transition, which includes implementation and on-site transition.
    - **Alignment of public innovation funds:** The alignment typology should also be extended by alignment modalities aiming on the alignment of innovation strategies and investments of practitioners, e.g. firms, cities, public utilities. When public innovation funds or investment funds support firms or cities in implementation of their innovation strategies, there is room to align at least the public innovation funds hoping that indirectly practitioners' strategies will follow.
- **Alignment as a continuous process:** When initialising such a multi-phased process, national initiators and EC representatives shall be aware of its long duration. Building trust and commitment among relevant actors takes time and needs continuous cultivation.
- **Concrete examples as learning material:** Besides the alignment definition and typology, it is important to improve understanding of alignment among member states' RTI stakeholders by concrete examples. Case studies on measures and success stories are considered valuable to understand and design alignment processes.

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ANNEX 1

Key messages and hypothesis of the Position Paper on alignment in Austria

(short translation by the Institute for Economic and Innovation Research of JOANNEUM RESEARCH)

1. National Alignment activities are a key prerequisite for the successful participation in ERA and in the EU Framework Programmes.
2. In relation to national public funding for R&D, Austria shows a strong engagement in transnationally coordinated R&D activities compared to other EU member states
3. Compared to generic funding for R&D, thematic prioritisation via competitive funding modes is low in Austria.
4. Austrian R&D-performers have in general a positive attitude towards alignment. The participation in the definition of joint research agendas, transnational networks, R&D projects and infrastructures are seen to be the most important alignment tools.
5. Positive impacts of alignment especially comprise access to transnational technological trends and scientific developments. Alignment via joint activities allows for large and complex projects that might not be realisable on national level solely.
6. Regarding research management, especially for basic research, alignment towards transnational standards helps to professionalise project management.
7. Alignment activities have to be assessed against systemic features of the respective RTI system and may help to improve national coordination of actors.
8. Participation in transnational activities increases Austria‘s visibility in Europe and its impact on agenda setting in European programmes.
9. Hence, Alignment is a key driver for the competitiveness of national R&D.
10. Often high administrative efforts for the participation in transnational activities compared to sometimes only limited actual budgets for research are seen as a challenge.
11. Hence, alignment activities require targeted resources, both in public administrations as well as in RFOs and universities.
12. An explicit national budget for the co-financing of transnational R&D was suggested to overcome the fragmentation of resources among several ministries and RFOs.
13. Alignment is not self-sufficient objective. Transnational R&D activities should be part of national programme planning and complement it where potential benefits are expected. This calls also for an improvement of empirical evidence on the impacts of transnational R&D initiatives.
14. A catalogue of criteria to strategically decide upon the future participation in transnational R&D activities should be developed.
15. Regional agenda setting according to Smart Specialisation and the related allocation of structural funds are an important component of alignment.
16. A Pre-requisite for successful alignment via transnational activities is the existence of national R&D programmes and priorities in respective areas.
17. Institutional alignment requires visible benefits for the respective actors. These could be both financial or immaterial, like access to new partners.
18. Efforts to improve interoperability by further aligning funding rules between national and transnational programmes should be intensified.

Source: Polt et al. 2016

Horizon 2020 Call: H2020-INSO-2014

Proposal number: SEP-210134170

Assessment of NOVEL Approaches to Alignment

Case Study No.5– Alignment of national AAL Programmes – Practical Implementation from the Austrian Perspective

Date: 15 November 2016

Dissemination level: Wider public

Lead contractor for this deliverable: AIT

Contributors: MIUR, UNIMAN, INRA

ABSTRACT

The focus of this case study is on the **practical implementation of alignment of national AAL programmes from an Austrian perspective**. AAL can by understood as a synonym for ICT-supported technologies for older adults to increase their quality of life. Since 2008, there exists a **transnational Article 185 Initiative dedicated to AAL**. In order to participate in Article 185 Initiatives a dedicated national programme is mandatory. Austria is founding member of the transnational AAL Programme. As a necessary pre-condition Austria has established a **national programme BENEFIT** dedicated to AAL in 2007.

Austria commits about 5.0 Mio EUR annually for research and development activities to both AAL programmes. About 50% of the budget are dedicated to the transnational AAL Programme and another 50% are dedicated to the national AAL programme BENEFIT. In practical terms, **Austria follows two aspects of alignment**:

(1) **'Taking joint actions' aspect**: Within the transnational AAL Programme, Austria aligns its activities at strategic, operational and financial level with other countries in Europe, meaning all countries follow jointly agreed research priorities and funding procedures.
(2) **'Building complementarities and synergies' aspect**: Within the national programme BENEFIT, Austria aligns its activities by building complementarities to the transnational AAL Programme and looks for synergies.

The case study will reveal how Austria in practical terms aligns its national programme on transnational level considering the two aspects. Thereby different alignment levels are focussed on: strategic coordination, operational call management, financial coordination, coordination in the development of new instruments, communication and dissemination activities.

The case shows the following **strengths of programme alignment from the Austrian perspective**:

- Create synergies between the national and transnational AAL Programme and projects
- Test new instruments where added value is highest (at national or transnational level)
- Community service of the transnational AAL Programme are open to the national and European Community
- Transnational alignment allows for easy coordination with other AAL related initiatives and networks

However, the case also reveals **limitations of programme alignment from the Austrian perspective**:

- Trade-Off between progressive coordinated development of transnational programmes and support by as many countries as possible
- National coordination between ministries with competences in research, innovation, economy, health and social affairs would benefit the demand side of AAL solutions
- Ex-Post evaluation and Impact Assessment needs priorisation

This case addresses the following reader groups:

- **Coordinators of P2P** to assess the potential of aligning national programmes taking into account the two different aspects: taking joint actions and building complementarities
- **Managers and Coordinators of national RTDI programmes in RTDI ministries and funding organisations** to learn how to practically align national programmes on transnational level
- **Policy makers at European Commission** to learn about how to support the practical alignment of national RTDI programmes in the future

The case study builds on the ERA-LEARN 2020 "Definition and Typology of Alignment", and relies on a review of existing literature and targeted interviews. The case is part of a series investigating NOVEL approaches towards alignment.

ACKNOWLEDGEMENTS

The case study has been written by Susanne Meyer from the AIT Austrian Institute of Technology. The author is grateful to Kerstin ZIMMERMANN and Gerda GEYER (Austrian coordinators of the transnational and national AAL Programme). She would also like to thank the ERA-LEARN Consortium partners for their useful suggestions on earlier drafts of this case study.

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1. Introduction

AAL stands for 'ambient assisted living' and focuses on the development of ICT-supported technologies for older adults to increase their quality of life. Since 2008, there exists a transnational Article 185 Initiative dedicated to AAL. Many European countries support the transnational AAL Programme. In order to participate in Article 185 Initiatives a dedicated national programme is mandatory. Austria is founding member of the transnational AAL Programme. As a necessary pre-condition Austria has established a national programme BENEFIT dedicated to AAL in 2007. The focus of this case study is on the practical implementation of alignment of national AAL programmes from an Austrian perspective.

In the transnational as well as the national AAL programme Austria is represented by the Austrian Ministry of Transport, Innovation and Technology at the strategic level and by the Austrian Promotion Agency at operational level. The Austrian Ministry of Transport, Innovation and Technology commits about 5.0 Mio EUR annually for research and development activities in both AAL programmes. About 2.5 Mio EUR are dedicated to the transnational AAL Programme and the other 2.5 Mio EUR are dedicated to the national AAL programme BENEFIT.

The case study will show that alignment of national programmes can include two aspects:

(1) **'Taking joint actions' aspect**: Within the transnational AAL Programme, Austria aligns strategies, call management, new instruments and communication and dissemination activities with other European countries.
(2) **'Building complementarities and synergies' aspect**: Within the national programme BENEFIT, Austria builds complementarities and synergies to the transnational AAL Programme. This can also be considered as one aspect of alignment.

In practical terms, Austria aligns its full national AAL budget when taking joint and complementary actions into account. However, taking the EC understanding of transnational alignment only the funding for joint actions is taken into account to measure alignment. This case study will reveal how useful 'complementary' alignment can be.

The case study will reveal how Austria in practical terms aligns its national programme on transnational level considering the two aspects. Thereby different alignment levels are focussed on based on the alignment typology (ERA-LEARN 2020 2015): strategic coordination, operational call management, financial coordination, coordination in the development of new instruments, communication and dissemination activities.

The case study is organised as follows: Section 2 will introduce the transnational and national AAL Programme in detail. Section 3 focuses on the practical implementation of alignment. Section 4, Section 5 and Section 6 reveal the strengths, limitations and success factors of programme alignment and Section 7 gives a short reflection and outlook.

2. Key features of the transnational and national AAL Programme

In the following, the development and the key features of the transnational and national AAL Programme will be introduced.

2.1 Transnational AAL Programme - ACTIVE AND ASSISTED LIVING PROGRAMME[15] (Art. 185 Initiative)

Development and aims of the AAL Programme

The AAL Programme, a transnational research and development programme, is an Article 185 Initiative supported by 17 Member States and the European Commission (duration: 2014-2020). The AAL Programme is a transnational funding initiative. The aim is to stimulate market-orientated research and development for technology products and ICT-supported services for ambient assisted living. The programme should lead to new business models, marketing concepts and value chains with improved usability and functionalities for end users. The AAL Programme carries out its mandate through the funding of transnational projects (at least three countries involved) that involve small and medium enterprises (SME), research bodies and user's organisations

[15] http://www.aal-europe.eu/

(representing the older adults). Participating Member States and the European Commission agree on annual working programmes, which are the basis for the annual calls.

The EC contribution for the AAL Programme is 175 Mio. EUR for the period 2014-2020. The majority of the EC contribution is used to fund transnational projects; a small part is dedicated to management costs. Additional funds for transnational projects come from national sources as well as from participating organisation within the project team.

The AAL Programme is a development based on the "Ambient Assisted Living Joint Programme" (also Article 185 Initiative) running from 2008-2013 (EC Cofund 150 Mio. EUR). For readability, but also distinction between the programmes in this case study, we will refer to AAL Programme I (2008-2013) and AAL Programme II (2014-2020). Within AAL Programme I an annual thematic call for transnational projects have been conducted and about 145 projects could be funded. Based on successful results of the AAL Programme I, the AAL Programme II has been established as follower programme.

Austrian participation in AAL Programme I and II

Austria was already involved in the 'specific support action' dedicated to demographic change, which was a preparation action for the AAL Programme I. The result of the specific support action was that the AAL theme is important for a substantial number of countries in Europe and it has the potential to boost economic capacity. It also became clear that it needs a national programme in Austria dedicated to the AAL topic to be capable acting on national level in strategic and operational terms and build a national community. Additionally, a national programme is mandatory to join an Article 185 initiative. In 2007, the national programme BENEFIT was set-up. In 2008, Austria became founding member of the AAL Programme I. Within AAL Programme I and II Austria is represented by the Austrian Federal Ministry of Transport, Innovation and Technology on strategic level and by the Austrian Promotion Agency on operational level. The Austrian Federal Ministry of Transport, Innovation and Technology commits about 2.5 Mio. EUR annually for transnational projects. 55 out of the 145 funded projects in AAL Programme I are with Austrian participation.

The evaluation of the Austrian participation in AAL Programme I (Technopolis 2016) revealed that the programme was successful in strengthen the national and European networks of Austrian companies, research organisations and end user organisations. The involvement of end user organisations in the funded projects was instrumental to gain access to and to ensure the participation of older people, (informal) carers and other stakeholders. The participants consider successful end user involvement being the most important achievement of the AAL Programme I. However, only parts of the projects with Austrian participation were successfully developing products and services within the envisaged period of two to three years after project completion. Most AAL Programme I projects were research-focused or technology-driven, with rather little attention being paid to new business models, marketing concepts and value chains.

The general positive evaluation findings of the Austrian participation in AAL Programme I were one basis for the decision in Austria to participate in the AAL Programme II. One of the main changes between AAL Programme I and II is the shift from topic oriented calls to calls following a challenge driven approach. This gives a stronger role to stakeholders who demand solutions, meaning regional and local authorities, public utilities (hospitals, elderly care organisations, etc.) and social insurances.

Governance and Organisation

The AAL Programme II has established on governance structure for the administrative and financial organisation of calls. The AAL Association is an international not-for-profit legal association that is responsible for leading the AAL Programme II. The supreme body of the AAL Association is the General Assembly, which composes representatives of all partner countries. The AAL Association is co-managed by national coordinators and a central management unit that is headquartered in Brussels. The national coordinators are the first reference of the AAL Programme in their countries. The central management' main responsible is the management of the overall programme in the interests of all countries, it coordinates the calls for proposals and it manages the budget. The coordination and management of the AAL Programme II is financed by 6% of the EC Cofund, national financial contribution and national in-kind contribution.

2.2 National AAL Programme - BENEFIT

The national programme BENEFIT is the AAL programme on national level to participate on the transnational AAL Programme I and II (Article 185 Initiative). The preparation of BENEFIT started in 2007 with the aim to also prepare and mobilise the Austrian community.

BENEFIT was set-up as amission-oriented programme with the objective to fund technology development (ICT-related) for products and services aiming at maintaining and improving the quality of life for older adults . This also included that end-users, e.g. health care service, hospitals, etc. were important stakeholder and partners in the projects. For this programme the Austrian Ministry of Transport, Innovation and Technology commits about 2.5 Mio. EUR annually. The BENEFIT programme was set-up in 2007 and launched 10 calls so far (2008-2016). BENEFIT started with thematically broad calls to be open to all national stakeholders. Later calls become more topic oriented. In 2011, Austria introduced a new focus on 'test-regions' to even boost the projects towards solution generation. Austria funds AAL test-regions, meaning at least 50 households needed to commit to test and evaluate new technology. Between 2008-2013 about 70 projects have been funded.

3. Principal joint actions and outputs of programme alignment

This section describes in detail how the two programmes are coordinated and aligned. Thereby it will become clear that alignment does not only mean 'joint actions', but also 'complementary actions'.

3.1 Alignment in the establishment of the national and transnational AAL programme

A necessary pre-condition for the AAL Programme I was the establishment of the national programme BENEFIT. At that time the Nordic countries already had RTDI programmes on AAL established. The Nordic countries shared their experience within in the 2-years preparation phase. A specificity in the Nordic programmes was the support of interdisciplinary project teams and integration of end-users as partners in the project. The AAL Programme I as well as Austria decided to follow these programme specificities in the establishment of the two programmes. Austria 'aligned' a part of their national programme BENEFIT with the Nordic countries programmes with respect to some programme specificities from the very beginning.

3.2 Strategic coordination of the national and transnational AAL programme

Coordination of national and transnational AAL strategies

Austria decided in 2007 to give emphasis to the AAL topic by establishing a national programme BENEFIT and participate in the corresponding transnational AAL programme. Although at that time, AAL (or related topics) were no priority in the Austrian RTDI-Strategy, several individuals in the Austrian Ministry of Transport, Innovation and Technology supported this action, therefore the decision was taken. In 2011, a new Austrian RTDI-Strategy was developed (Republik Österreich 2011), which gave priority to grand challenges. "Ensuring quality of life in the midst demographic change" was one of the three identified grand challenges which was given priority in research in the future. This step ensured political commitment towards this topic for the future. As the same individuals have been involved in Austrian RTDI-Strategy and the strategy of the AAL Programme I, strategic coordination could be ensured. For the AAL Programme II (2014-2020) a new strategy was developed. In comparison to the strategy of AAL Programme I a strategic re-orientation took place from topic-oriented calls to challenge driven calls in AAL Programme II. This was challenging for some member countries, as they need to assess whether this re-orientation fits their national strategies and programmes. A common strategic development and re-orientation on transnational level supported by all countries with their national orientation is one of the main challenges experienced by the AAL Programme.

Experience of the AAL Programme showed that some countries dropped out in the AAL Programme II and new countries entered the network. However, there is a trade-off between progressive development of transnational programmes and the support of transnational programmes by as many countries as possible. Austria support the strategic re-orientation in the AAL Programme II. Moreover, in Austria an 'AAL Vision Austria' was developed, which can be considered as a national strategy dedicated to AAL (however, this is no strategy for the national programme BENEFIT) (AAL AUSTRIA 2015). Again, Austria ensured coordination of all strategy (AAL Programme II, Austrian RTDI-Strategy and AAL Vision Austria) by having the same individuals at ministry and funding agency level involved in the

strategy processes. In all strategies the overall framework and idea is the same, however the sub-topics differ from each other. This is also to ensure complementarity of national and transnational activities.

3.3 Coordination of Call Management and Projects

Call Management

The first call of the national programme BENEFIT was launched before the first call of the AAL Programme was out. The aim was to start building the community, approach end-users and prepare them for projects on transnational level. Since 2008, calls are launched annually within the national and transnational AAL Programme. The Austrian community can apply for projects twice per year. The national programme BENEFIT opens call in autumn, the transnational AAL Programme in spring. BENEFIT projects in autumn could be preparatory projects for AAL projects in spring.

Within the AAL Programme a call manual has been developed caring for all steps in call management and project administration. Whereas it was some effort in the beginning to agree on the expert evaluation process, the mid-term review and reporting requirements, the AAL Programme benefits now from the joint agreements and experiences. What turned out to be a true lessons learnt for all is the joint monitoring of project progress if this is seriously performed as it give insights from different perspectives on the progress and it opens eyes for new controlling mechanisms for the involved funding agencies.

However, there is limited alignment between national and transnational call management. Because call management in both programmes follows national rules and regulations, there are differences. BENEFIT for example has a different peer review, monitoring and reporting process than the AAL Programme.

On the one hand, this makes it more complex for people administering the programmes at funding agency level and for potential applicants, because they need to know both systems, on the other hand the differences also accommodate the different types of projects and the complementarity of the programmes.

Selection of Call Topics

On transnational level the discussion on call topics is joined by many countries delegates and additional stakeholders. Every year the discussion on call topics is established. Basis for discussion is a pre-defined framework of research priorities for AAL Programme I and II. The aim of Austria is to complement national and transnational call topics. In an ideal case, the call topics build on each other and complement each other, but they are not the same.

In the beginning the BENEFIT Programme was thematically open, in the last years, it focusses on smart homes and smart services. The aim is to fund large projects in test-regions to support implementation and to initiate demand. However, BENEFIT is still thematically open for small projects. Consultations of experts and other stakeholders are established before priorities of the call are set.

Austria reported that there are years with high synergies between the national and the transnational AAL call topic. However, there are also years when the majority of countries gives priority to other topics. However, Austria is open to all and new topics for smaller projects for each transnational call. However, Austria can adopt budget commitment according to their own interest.

Although, these discussions at transnational level on the annual call topic consumes a lot of time, Austrian participants could learn from discussion at European level and transfer good approaches and suitable call topics to Austria and implement them in BENEFIT on short term. Austrian experience can be shared on European level.

Eligibility of stakeholders

The AAL Programme should stimulate market-orientated research and development for technology products and ICT-supported services for ambient assisted living. From the very beginning, market orientation and end-user involvement played a vital role. Evidently, end-users like care services, health organisations or insurance companies were welcome to the projects, also as partners. However, not all countries were able to fund these type of organisations, but due to their participation in the AAL Programme, they made such organisation eligible for funding (e.g. Luxembourg). However, they are still difference in the national funding system, some perceive care organisations as companies, others have an own category for those with relatively high funding share. Austria could fund end-users from the very beginning. The participating countries in the AAL Programme worked towards similar eligibility criteria for their main stakeholders, which can also be considered as alignment.

Projects

The size of projects differs between BENEFIT and AAL Programme. It can be said that the national share of a project in the AAL Programme is similar to the project size in BENEFIT. The duration of BENEFIT projects is shorter (1-3 years) in comparison to AAL projects (2.5-3 years). BENEFIT projects are much more concrete, whereas AAL projects have a broader scope. BENEFIT projects often aim on testing products and service on the local market. It turned out that many AAL products need to be adopted to local or national needs, regulations and requirements, which is often realised in BENEFIT projects. Complementary AAL projects focus then on the development of common guidelines based on national testing of products. The projects as well as the programmes create synergies.

3.4 Coordinated testing of new instruments

During programme running time of BENEFIT and AAL Programme, new instruments have been tested in both programmes. In the BENEFIT programme the focus on 'test-regions' have been established as it turned out that products and services need to adopted to local needs to find their market. Having 'test-regions' in Austria increased the impact of the BENEFIT programme. The focus on 'test-regions' can hardly be transnational, but needs a local environment and was therefore best to test within the national programme. The 'test-regions' work complementary to the instruments in the AAL Programme. Within the AAL Programme 'Hackathons' and 'AAL challenge prizes' have been established as new instruments. Hackathons are two-day events geared towards the creation of new ICT applications to improve the quality of life of older adults. The AAL challenge prize (50.000 EUR) is given to ideas to improve social life, health, home life, mobility and work life. Both instruments have higher added value on European than national level, but at the same time Austrian participants are welcome.

In Art. 185 Initiatives, the maximal EC contribution for the AAL Programme is based on national commitments for the call, but not on the results of the call. There is regularly remaining funding, because not all countries manage to spend their national budgets and therefore the full EC contribution is hardly released. The AAL Programme decided to use this remaining funding for experiments with the new instruments: Hackathons or AAL challenge prizes.

3.5 National budget coordination

According to participation and success of projects in the national and respectively transnational AAL Programme, the national indicative planed budget can shift between the transnational and national call. For national budgets spend in the AAL Programme, Austria received an EC Cofund of about 40% (Art. 185 framework condition). Although, the EC Cofund is appealing for Austria (to reduce oversubscription), Austria still may decide to shift budgets from the transnational to the national programme if this fits their demand better.

Experience in Austria in the last years shows that there is a tendency to shift budgets to the national level because call planning on transnational level is only done year by year. There exists a strategic framework for the calls, but the topics are discussed and decided on annual basis.

3.6 Community building and community services

National community building and AAL Platform

In the very beginning, the national community had to be mobilised. Different target-group oriented means had been used to address the community. Especially, same stakeholders like building constructors or insurance companies, did not feel attached to the community. The community also needed to be trained. In the very beginning BENEFIT projects were technology rather than demand-driven, but the community learned to follow an integrative approach and quality of projects increased.

In 2012, a national AAL Platform was established to be the entry point for any AAL related topic and stakeholder. The community grows and is successful in realising projects. However, the national AAL budget did not grow accordingly and many projects need to be declined.

Gateway to Europe and testing at home

National community in Austria can expand their networks on European level via the transnational AAL Programme to gain expertise, but also to share knowledge generated on national level with the European

community. The Austrian community can profit from knowledge on new trends and developments. However, the closer project findings, newly developed products or services, are to the market, the more important are national/regional markets to test and adopt products to user needs in the own region or country (Austrian seniors, Austrian care services, Austrian insurances). Whereas the testing is mainly organised within national projects, the testing results may later be communicated via guidelines for the German or European community in transnational projects.

Some end-users (e.g. Johanniter or Caritas) that have a European network, profit from the chance to apply solutions across Europe. For other end-users (e.g. local hospitals or insurances) only work on national level benefits their activities.

Programme Events

Both programmes have a kick-off event, but for result presentation, BENEFIT projects are often active at events of the AAL Programme and the other way around. The so called AAL Forum, which is the annual event of the AAL Programme, can be considered as a common event. The AAL Forum is aimed primarily at decision-makers, experts and interested people from politics, research and development, health, business and industry. Projects have the chance to present their findings to a broader European demand side. Additionally, Austria organised national AAL summits in 2014 and 2015 to showcase research results and AAL products. For these events international audience was invited as well.

Joint support services

Within the AAL Programme specific services for projects have been established, e.g. coaching to develop a business plan. This service is not only open for AAL project partners, but also partners of the national BENEFIT projects.

Another support service was the development of a classification model for the large variety of innovative ICT-based products and services that have been designed in recent years to increase the quality of life of the older adults. This project classification was developed in a project funded by BENEFIT, but the classification model is now used at national and transnational level.

3.7 Strategic coordination with other networks and initiatives

The national actors in Austria responsible for BENEFIT and the AAL Programme (Austrian Ministry of Transport, Innovation and Technology and Austrian Promotion Agency) decided that the strategic coordination with other European AAL related initiatives (EIP AHA, EIP AHA, AAL KIC, JPI MYBL, JPND) should take place via the AAL Programme. This task has been transferred to the AAL Programme, no additional national efforts are needed for coordination. There only exists an exception when it comes to the coordination with JPI MYBL as a transnational programme. It also needs coordination effort at national level between the national representatives of JPI MYBL and the representatives of BENEFIT/AAL Programme.

3.8 Interministerial coordination for national and transnational alignment

Already in the very beginning of the national and transnational AAL programme it turned out strategic interministerial coordination and cooperation at national level would benefit both programmes. A cooperation between ministries with competences in research, innovation, economy, health and social affairs would be a profound pre-condition for successful AAL Programmes as their stakeholders should be involved in AAL projects. In the transnational AAL Programme different types of ministries, funding agencies or networks are involved. The discussions within the AAL Programme benefits from the different perspectives of the variety of organisations involved. However, there the AAL Programme did not manage to mobilise all relevant stakeholder along the AAL value chain in each country. On national level, the Austrian Ministry of Transport, Innovation and Technology started to communicate with the respective other ministries from the very beginning of the national and transnational AAL programme. An interministerial working group on quality of life and demographic change was established to ensure exchange between the ministries.

However, the evaluation of the Austrian participation in the AAL Programme (Technopolis 2016) provides evidence that the demand side should be strengthening as the target group of the programme (health insurances, social care organisations, hospitals, etc.) and there is need for more intensive interministerial coordination

beyond “exchange”. The evaluation revealed that demand side factors like financing and regulations are hindering factors for AAL solutions to find their markets. Among the relevant actors who need to be mobilised to reduce market barriers are administrative units on local, regional and national level. These actors usually do not join an AAL project as a partner, but it needs other measures within the competence of other ministries (apart from RTDI ministries) to support the demand side processes.

The transnational and national AAL programme show that although the two programmes are very well aligned, coordination and alignment on national level is an important pre-condition for transnational alignment to encounter grand challenges.

However, although more intensive interministerial cooperation would be needed in Austria, it needs to be honoured that this group exists at all and communication is flowing. Setting up an effective interministerial cooperation takes long time. It was beneficial for this cooperation that the Austrian Ministry of Transport, Innovation and Technology has stamina and supports this topic already for a long time.

4. Overall strengths and key achievements of programme alignment

This part summarises the strengths of aligning national and transnational RTDI programmes in the AAL area.

Importance of the AAL theme increased

The parallel development of the two AAL programmes and establishment of the AAL theme in strategically highly relevant documents increased the overall importance of the AAL theme.

Made main AAL stakeholder eligible for funding in all participating countries in the AAL Programme

One of the specificities of the AAL Programme is the involvement of end-users in the projects. However, end-users are not always companies, but also care services, health organisations, insurances, sometimes also local authorities. During running time of AAL Programme I, all participating countries finally managed to made such end-users eligible for funding in AAL projects, which has not been the case before. This can also be considered as alignment.

Create synergies between the national and transnational AAL Programme and projects

Austria looks for real synergies between the national and transnational AAL Programme and the projects. Whereas the national programme focuses on smart homes and services and the support of test regions to test AAL products and services and learn how to adopt them to local requirements, transnational programme often supports wider scope projects elaborating on new trends or developing general guidelines. Austria really tries to support those projects with the BENEFIT programme that have national added value and projects with AAL Programmes that have European added value.

Test new instruments where added value is highest (at national or transnational level)

In both programmes, BENEFIT and AAL Programme, new instruments have been tested. It became obvious from the beginning, that some new instruments potentially have higher added value on transnational level (e.g. Hackathons, AAL Challenge Prize) and others on national level (test-regions). The Austrian community has access to all instruments, but there is no competition or duplication between the instruments as the testing of new instruments is well coordinated.

National commitment to fund each transnational call to build a European AAL Community

Although Austria always look for synergies of the national and transnational call topic, there are years, where synergies are lower than in other years. However, Austria is open to all and new topics for smaller projects for each transnational call. It can adopt budget commitment according to their own interest. Austrian stakeholders always have the chance to work on transnational level and be involved in the European Community.

Community service of the AAL Programme are open to the national and European Community

The tight coordination of both programmes allows for community services that are open to the Austrian community, e.g. the business-coaching run by the AAL Programme, annual event by the AAL Programme. This allows Austrian stakeholders to connect immediately to the European community or promote their project findings on European level, even thought they might not be active in AAL projects.

Transnational alignment allows for easy coordination with other AAL related initiatives and networks

On behalf of its members the transnational AAL Programme, it establishes links to all relevant other AAL related initiatives and networks. It needs no additional national effort for coordination.

5. Overall limitations of programme alignment

This part summarises the limitations and challenges of aligning national and transnational RTDI programmes in the AAL area.

Trade-Off between progressive coordinated development of transnational programmes and support by as many countries as possible

At transnational level, it became evident that moving from one strategy period to the next strategy period is challenging. A strategic re-orientation of the transnational programme causes dis-alignment with national strategies in some countries. The more progressive the new transnational strategy is, the more countries have difficulties to follow. Experience of the AAL Programme showed that some countries dropped out in the AAL Programme II and new countries entered the network. However, there is a trade-off between progressive coordinated development of Member States and a development, which is supported by as many countries as possible. This trade-off is also mirrored in the development of Key Performance Indicators. If the network is small and progressive they are able to agree on concrete performance indicators indicate also priorities, if the network is large performance indicators are often very vague.

Human and financial resources for coordination and management at transnational level are limited

More commitment of human and financial resources and capacities of member states are needed to even better align national programmes. Without resources for decent management of the network, only small steps towards alignment, but not radical change can be realised.

Strategic call planning is limited

Austria can follow a strategic call plan on national level. However, on transnational level the call topics are discussed and decided on annual basis. This make coordination and alignment of call topics in advance difficult and limits strategic call planning. Experience in Austria in the last years shows that there is a tendency to shift budgets to the national level because of the limited call planning on transnational level.

Limited alignment in call management

Although call management in BENEFIT and in the AAL Programme follow national rules and regulations, there are differences in the call management. BENEFIT for example has a different peer review, monitoring and reporting process than AAL Programme. On the one hand, this makes it more complex for people administering the programmes at funding agency level and for potential applicants, because they need to know both systems, on the other hand the differences also accommodate the different types of projects and the complementarity of the programmes.

Intensive national coordination between ministries with competences in research, innovation, economy, health and social affairs would benefit the demand side of AAL solutions

Interministerial cooperation benefits the demand side of the programme, because demand is generated by social care organisations, social insurances, hospital run by regional authorities etc. These stakeholders are not typical stakeholders or target group of RTDI programmes. To mobilise and integrate the demand side into the AAL Programme strategic national coordination among the ministries needed. Although Austria has established an interministerial coordination from the very beginning of the AAL Programmes, there is room for improvement to mobilise investment of the stakeholder groups of other ministries. This is one reason why it was difficult for project findings to be implemented and introduced to the market. There are only few success stories to tell for the moment and the impact of the programme could be higher.

Ex-Post evaluation and Impact Assessment needs priorisation

Transnational coordination of programme is no means to an end, but the impact and added value of the transnational coordination must be evident. Ex-Post evaluation and impact assessment should therefore have priority on transnational, but also national level to control for the added value.

Within the AAL Programme projects are approached three years after completion to ask them on the impact of project results. However, the management team of the AAL Programme has limited human and financial resources and priority to fulfil this task.

On national level, Austria decided to have an external evaluation on the added value of its participation in the AAL Programme I, before starting AAL Programme II.

6. Conclusions: Key success factors of programme alignment

This part summarises the success factors of programme alignment in the AAL area. The success factors are described in a way they can serve as lessons learnt and transferred to other P2P.

Consensus making on national levels that topic is important

There needs to be consensus at national level of all countries involved in a transnational programme, that the topic of the transnational programme is important. Additionally, a well-structured concept from the beginning for the alignment of national programmes on transnational level supports process.

Existence of national programmes and willingness of align programmes

Transnational programme alignment benefits from the existence of national programmes (not only national budgets). The willingness to really align the national programmes and shape them accordingly and make the national part complementary to the transnational part was one important success factor in this case.

Considering programme specificities in other countries or in transitional programmes when establishing or revising national programmes

Before the national programme BENEFIT was established, Austria was in intensive exchange with other countries to prepare the AAL Programme I. At the time when the national programme BENEFIT was established Austria BENEFIT could already profit from knowledge on similar programmes in other European countries and on the agreed framework conditions for the AAL Programme I. Austria had the chance to align parts of the national programme BENEFIT (e.g. the funding of inter- and transdisciplinary project teams) to the AAL Programme or other countries' programmes.

Consensus on realistic and concrete aims at transnational level supported by national programmes

Open minds in discussions on transnational level, but at the same time realistic assessment of what can be managed and coordinated on transnational level supported by national processes, preconditions and resources is one key issue for the development of a high quality transnational programme. Strong and concrete aims defined and agreed upon in advance helps to make programme alignment successful.

Flexibility of national budgets

According to participation and success of projects in the national and respectively transnational AAL Programme, the national indicative planed budget can shift between the transnational and national call. This budget flexibility allows Austria to follow national priorities and competences and at the same time be part of the transnational AAL Programme.

Open minds towards experiments with new instruments

The AAL example showed how alignment of national programmes developed over time. The AAL Programme as well as the corresponding national programme showed openness towards experiments with new RTDI instruments. Thereby, it was assessed what instruments to better test on national and what instruments to test on transnational level.

Keeping openness and creativity towards new ideas with maturity of the transnational programme

With maturity of the transnational programme, organisational structures (hierarchy and power) are set and defined. It is one of the challenges of the Management of the transnational programme to keep openness and creativity towards new ideas within all bodies by establishing a specific spirit and invite individuals to engage themselves. If one body decides and the other body executes, the interests and engagement of individuals will decrease. This is about people management.

Engaged individuals with responsibility

Success of the alignment also depends on the individuals who are responsible for shaping and ensuring alignment. In this case study, both individuals responsible for the national and transnational part of the programme on strategic (ministry) and operational level (funding agency) are involved and engaged in both programmes since the very beginning. Their effort, engagement and strategic intelligence was one of the key success factors to define joint and complementary actions on national level to realise programme alignment.

Evaluation of Austrian Participation in the AAL Programme I

An external evaluation of the Austrian participation in the AAL Programme I provided evidence to the Austrian Ministry of Transport, Innovation and Technology what to change in the Austrian participation and engagement in AAL Programme II. Additionally, the evaluation revealed issues, e.g. expansion of the target group (demand side), that are valid for the AAL Programme II as well as for the national programme BENEFIT.

AAL related interministerial cooperation benefits from the driving power and stamina of one ministry

Interministerial cooperation is an important pre-condition at national level to align challenge-driven national AAL Programmes at transnational level. This is because demand side for ICT supported products and services for older adults is mirrored by stakeholder beyond RTDI (e.g. hospitals, insurances, regional authorities). The Austrian Ministry of Transport, Innovation and Technology supports the AAL topic for more than 10 years and is there actively engaged in an interministerial group on quality of life and demographic change to initiate learning processes for all participating ministries how to support and enable AAL solutions. This long lasting engagement of this ministry was one of the success factors for the learning and engagement of other ministries. Even though there is room for more learning and engagement, ensuring national coordination in the AAL topic is already a success.

7. Reflection and Outlook

The AAL Programme I and II revealed that ICT supported products and services for elderly people cannot only be developed by RTDI programmes as such, but there is also need for structural and legal changes. Therefore, alignment of RTDI programmes in the AAL area is not sufficient to tackle the challenges, but it also needs coordination on national, but also transnational level of social, health, economic and regional policies and their respective funding structures. Additionally, aspects like social innovation and open innovation need adequately addressed and integrated in the programme. This is out of scope of Art. 185 Initiatives and its framework conditions, but it would benefit the actual problem. Problem diagnoses revealed that only part of the demographic challenges can be solved by RTDI, but others might need structural and legal changes. If this is known at the very beginning of such a transnational initiatives, the respective national stakeholder in each countries need coordination at national and transnational level. Additionally, it needs to be clear what are tasks on national and what are tasks on transnational level and what are the well-suited instruments to support the tasks (also by Framework Programme 9 and other instruments of the European Commission).

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Horizon 2020 Call: H2020-INSO-2014

Proposal number: SEP-210134170

Assessment of NOVEL Approaches to Alignment

Case Study No.6 – New York University Center for Urban Science and Progress

Date: June 2017

Dissemination level: Wider public

Lead contractor for this deliverable: AIT

Contributors: MIUR, UNIMAN, INRA

ABSTRACT

This case study examines the key features, outputs and overall strengths and limitations of the **New York University Center for Urban Science and Progress** with respect to the coordination of policy challenges posed by modern cities and the research and education activities of a graduate school**.** In 2012, a New York University led consortium consisting of academic, industry, and city government partners won the bid to establish a **unique public-private research center specializing in urban informatics**. CUSP utilizes its big data capabilities to integrate, analyze, and model a variety of data from across city agencies, and develops innovative data tools and infrastructure in order to devise practical, impactful findings and solutions to real-world urban challenges. This case study demonstrates the effectiveness of a research infrastructure built by joint efforts of academia, city authorities and industry. Although CUSP showcases cooperation on city/state level only, it nevertheless is a good example of how a transdisciplinary research infrastructure could be developed. If this model is transferred to Europe, it would benefit from a transnational approach for most impact. Therefore, it serves as an interesting lesson for European P2Ps planning to set up a joint research and data infrastructure to address common challenges.

This case highlights the following **strengths** of such a coordinated approach:

- **Enhanced inter-institutional cooperation between academic institutions & academia and city government:** CUSP works closely with its academic partners and staff, building towards coordination of thematic priorities, while its close working relationship with public authorities promotes impactful research and solutions for policy making. Since CUSP's establishment coincided with a developing awareness at City government level about the importance of urban informatics and the integrated analysis of data from across agencies, it was able to align demand and supply of urban data and development.
- **Coordination and combination of urban data, developing data environments/data tools to treat and analyze data:** Since New York City provides selected open access to agency data, CUSP developed its competitive advantage in the innovative handling and treatment of existing data. It stores large data sets, integrates data sets from different sources to gain new information, cleans existing urban data sets to make them interoperable, provides tools to extract and treat data, and makes its tools and data infrastructure available to City agency staff. CUSP uses its data analysis capabilities to derive findings relevant for agency operations managers as well as policy makers and formulate strategic and practical recommendations.

However, the case study reveals the following **limitations** of this model:

- **Cost/Funding:** The funding model is one of the main challenges. Currently, the majority of funds come from tuition, sponsored research, and the core NYU budget. A better funding model for such a data infrastructure/center is needed, especially in view of transferability of the model to the European context.
- **Cooperation with academic and industrial partners:** The current cooperation with its partners in business and academia is in need of improvement. From the beginning, the strategy lacked mutually realistic expectations, a clearly defined role and strong commitment from its industry partners.
- **Personnel:** Since successful cooperation between CUSP and city authorities is dependent upon the right kind of staff, finding faculty and researchers that manage a suitable balance between scientific output and practical, real-world solutions is a challenge. On the one hand, CUSP needs its research staff to be interested in working with city authorities, understand urban problems, and be able to deliver pragmatic findings, solutions, and data tools to city authorities. On the other hand, faculty and other researchers must also be appropriately academically inclined and produce scientific results to satisfy traditional academic performance measures.

This case study builds on the ERA-LEARN 2020 "Definition and Typology of Alignment" and relies on a review of existing literature and a targeted interview. The case is part of a series investigating NOVEL approaches toward alignment.

ACKNOWLEDGEMENTS

This case study was written by Anna Wang and Susanne Meyer from the Austrian Institute of Technology (AIT). The authors are grateful to Michael Holland (Executive Director of CUSP). They would also like to thank the ERA-LEARN Consortium partners for their useful suggestions on earlier drafts of this case study.

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1. Introduction

This case study examines the key features, outputs, and overall strengths and weaknesses of New York University's Center for Urban Science and Progress (CUSP) with respect to the coordination of urban policy challenges and the research activities of a university. CUSP is a unique public-private research center, aiming to help municipal agencies meet increasing policy and service demands within highly constrained built and budgetary environments through academic research. CUSP's **approach of coordinating research, innovation, and policy interests of academia and city authority** to counter urban challenges is unprecedented and could serve as an inspiration for European P2Ps interested in setting up joint data and research infrastructures. CUSP utilizes its big data capabilities to integrate, analyze, and model a variety of data from across city agencies, and develops innovative data tools and infrastructure in order to devise practical, impactful findings and solutions to real-world urban challenges. The partnership between the CUSP and various city government agencies enables targeted, impactful research, while its industrial partners play a pivotal role in the commercialization and diffusion of solutions and technologies developed at CUSP.

2. Key features of CUSP

2.1 Overview

In order to expand New York City's research capacities in the applied sciences to diversify the local NYC economy, support the increasingly significant tech sector, and to maintain global competitiveness and job creation, the Bloomberg administration launched the Applied Sciences NYC program in December 2010. Its ultimate goal is to promote scientific research and the generation of innovative ideas that can be commercialized to increase the probability that the next Google will have its roots in the city. It issued a challenge to institutions worldwide to propose new or expanded applied sciences and engineering campuses in return for grants of city-owned land, development incentives from city capital, and the encouragement and partnership of the city government. In April 2012, New York University (NYU) and NYU-Poly's (renamed NYU Tandon School of Engineering in 2015) proposal for CUSP was the second bid to win approval to build a new applied sciences center in Downtown Brooklyn. CUSP is **a unique public-private research center and the proposal was the result of a consortium consisting of leading academic institutions, industry partners, and the City government**. These include, inter alia, Carnegie Mellon University, University of Toronto, City University of New York, IBM, Cisco, and Xerox[16].

For the first time in history, more than half of the world's population lives in cities. This number is expected to increase to 70 percent in the next decades. In this context, CUSP's **approach of coordinating research, innovation, and policy interests of academia and city authority** to address the challenges is quite unique. New York City's government generates a terabyte of data every day about everything from traffic flows to electricity. CUSP has therefore signed a Memorandum of Understanding with the city to establish the concept of New York as a "living laboratory" by facilitating its work with City agencies to identify targets for research, to collect data, and develop and apply CUSP technologies and solutions to real world urban challenges. Its research, demonstration, and education programs are based primarily in the emerging field of urban informatics - the collection, integration, and analysis of big data to improve the operation of urban systems and enhance the quality of life. Since cities around

[16] At the time of proposal, academic partners included Carnegie Mellon University, University of Toronto, University of Warwick UK, City University of New York, Indian Institute of Technology Bombay. Industrial partners included IBM, Xerox, Consolidated Edison, National Grid, Siemens, Arup, IDEO, AECOM. City government partners include Department of Transportation, Department of Buildings, Department of Sanitation, Department of Citywide Administrative Services, Department of Design and Construction, Department of City Planning, Department of Health and Mental Hygiene, Department of Environmental Protection, Department of Information Technology and Telecommunications, Department of Parks and Recreation, Police Department of NYC, NYC Fire Department, Metropolitan Transit Authority, Port Authority of New York and New Jersey. Microsoft, Lutron and the US Department of Energy Lawrence Livermore, Los Alamos, Sandia, Brookhaven National Laboratories were added later as partners.

the world face similar challenges regarding infrastructure, tech integration, energy efficiency, etc., results of CUSP research and development of technology will be relevant globally.

2.2 Mission and activities

The overall mission of CUSP is to help New York City and cities around the world to become more productive, livable, equitable, and resilient in the face of rapid urbanization and grow into the world's leading authority in the field of urban informatics.

- **Thematic Focus:** CUSP specializes in the field of urban informatics, the use of big data from a variety of sources to understand and address urban challenges. Although not part of a pre-defined strategy, it has a special focus and expertise in energy, environment, and transportation as a result of CUSP researchers and their relationships with specific City agencies and departments,
- **Embeddedness within NYU:** CUSP receives strong financial support from NYU. The university identified both urban and data science as principal themes in its strategy. Consequently, CUSP benefits from significant research budget allocations to develop this topic. It has access to resources of other schools and colleges within the NYU system, especially in terms of researchers and faculty. Faculty from other schools and disciplines teach at CUSP and are involved in CUSP projects. In return, the university expects CUSP to contribute to the overall performance improvement of NYU, measured with traditional indicators such as number of students enrolled, scientific publications, etc. It is also expected to contribute to increase the standing and reputation of the NYU Tandon School of Engineering.
- **Education and research:** In order for CUSP to achieve its goal of developing expertise and experts in the field of urban informatics, it is set up very much like a graduate school within NYU and offers Master's and certificate programs. Early on, CUSP was expected to grow to approximately 50 principal investigators (30 tenured and tenure-track faculty from NYU/NYU Tandon and other academic partners, and 20 research scientists from the industrial partners), 30 post-docs, over 400 Master's students, and 100 PhD students. More realistic growth targets are being evaluated.
- **Cooperation with city government:** CUSP is expected to produce impactful research and solutions for real-world city issues by scaling up tools for data treatment and utilization of urban data. Several factors contribute to the very good working relationship between CUSP and City agencies. 1) In 2013, New York City established the Mayor's Office of Data Analytics (MODA) to aggregate and analyze data from across City agencies. Additionally, the authorities established an internal data strategy for the City. This awareness of the importance of urban informatics on public authority level created an environment that facilitates the cooperation between CUSP and City agencies. NYU had a relatively easy time convincing the City of the importance and relevance of CUSP. 2) Local law and local actions are complementary to and supportive of CUSP strategy and activities. For example, local law requires the City to publish its data on an open data portal, allowing CUSP access to a variety of urban data. The City's very professionalized bureaucracy is experienced in working with academic institutions and many agencies have cooperated with researchers and PhD students before.
- **Funding model and budget:** By August 2017, CUSP will occupy two of thirteen floors of a city-owned building, 370 Jay Street, which NYU received as part of its award to create CUSP. NYU is responsible for the costs associated with relocating prior tenants, estimated to amount to $60 million, and for a complete renovation of the building, estimated in excess of $200 million. To offset a portion of the costs of implementation, the city has allocated up to $15 million in benefits to NYU, which includes development incentives and an abatement of amounts otherwise payable. Originally, CUSP's annual budget was projected to be approximately $70 million, from sources that include federal, state, and City agency funding, corporate partner support, philanthropic donation, and tuition. Each of CUSP's industry partners were intended to provide $150,000 in cash and up to $850,000 of in-kind support annually, but that

corporate membership model has not been realized successfully. Presently, CUSP's budget is approximately $15 million annually, which is comprised of competitively-awarded sponsored research from federal agencies and private philanthropies as well as tuition revenue and a declining NYU subsidy.

- **Privacy of data and exclusiveness of access by CUSP:** New York City agencies are required by law to publish their data on an open portal by 2018, making it free and accessible for everyone. Thus, CUSP does not have exclusive access to City data and must rely on building competitive advantage based on available data. This includes, but is not limited to:
    - Building data discovery, exploratory data analysis and spatio-temporal search tools to treat open data
    - Developing tools and methods to move from data to data infrastructure (data environments, data protection (safety and security), combination of data)
    - Making CUSP data environment free to use for City agency staff and train staff to use it

3. CUSP outputs

In order achieve its mission, CUSP develops expertise and experts through its research, technology, and education programs. Specific activities and outputs include:

- **Research and technology activities:** CUSP executes a number of projects on many different scales. These range from large projects with defined scope/schedule/budget in partnership with the City and/or industrial partners to student-initiated projects. The National Science Foundation (NSF) is an important source of ex-ante or ex-post funding for CUSP research projects. Research projects conducted at CUSP are most successful when there is a high degree of coordination between faculty and researcher interests and agency engagement driven by the city's demands and preferentially implemented in a transdisciplinary way. The research team is often interdisciplinary, bringing together experts with backgrounds in the physical sciences, computer science, engineering, or social and behavioral science to formulate the correct questions and to develop models and technology to inform those questions. Scholars and staff in the social and behavioral sciences from NYU and other academic partners, when appropriate, can become project team members. The following projects are successful examples of different types of CUSP research:
    - **CUSP Urban Observatory:** In 2014, CUSP unveiled its first Urban Observatory, a demonstration project that uses a camera situated atop a building to quantify the dynamics of New York City by taking a panoramic image of Lower and Midtown Manhattan every ten seconds. Inspired by the toolkit of astronomy, it is the first of its kind and employs technology developed by CUSP scientists. Researchers use collected data to better understand and improve energy efficiency, releases of hazardous material, pollution, electricity provision, and more. The observations markedly differ from data gathered with a satellite, due to its unchanging perspective and easy and low cost operations. Currently only in operation in New York City, CUSP hopes to share the technology with other major cities in the future.
    - **Sounds of New York City project (SONYC):** A 5-year comprehensive study on problems of urban noise to develop long-lasting policy and operational solutions in cooperation with researchers at NYU (Tandon, Steinhardt) and Ohio State University. By implementing SONYC, a cyber-physical system including a hybrid, distributed network of sensors and citizens armed with sound collecting and annotating apps, the project aims to monitor noise pollution, accurately describe acoustic environments, broaden citizen participation in noise reporting and mitigation, and enable city agencies to take effective action. Relying upon supervised machine-learning algorithms with processing at the edge of the network, SONYC analyzes, retrieves, and visualizes the data and

makes it available to decision makers at city agencies, thereby facilitating strategic deployment of resources.

- **Establishment of "Quantified Communities":** CUSP's ambition is to create three fully instrumented urban neighborhoods that measure and analyze key physical and environmental attributes such as pedestrian flows, air quality, and solid waste. The Quantified Community essentially creates an experimental environment and acts as testing ground for new physical and informatics technologies and analytics capabilities. The resulting data and studies are designed to help communities identify and solve problems and serve as a basis for future sustainable urban development. This is being realized through:
  - The Neighborhood Innovation Labs - a partnership between the Mayor's Office of Technology and Innovation, NYC Economic Development Corporation, CUSP, and neighborhood-based organizations. The purpose is to bring together public officials, citizens, educators, tech companies, and other stakeholders to solve local problems through data analysis, apps, sensors that monitor neighborhood resources, and Internet of Things devices.
  - Related Companies - Hudson Yards, a large-scale, multi-building residential and commercial project under construction over the next 10 years in midtown Manhattan.
  - Red Hook Initiative – Piggybacking on the WiFi network established by RHI in Red Hook, Brooklyn, CUSP has begun a pilot sensor deployment.

- **Education of Master's and certificate students:** CUSP offers a one-year Master of Science program in Applied Urban Science and Informatics as well as an Advanced Certificate option. These programs began operation in 2013, welcoming its first class of some 23 students. By July 2017, CUSP will have graduated more than 200 Master's students.
- **Training**: CUSP offers training for City agency staff, particularly in the use of its data infrastructure and tools.
- **Data capabilities and activities:** The acquisition, organization, integration, and analysis of large heterogeneous datasets (big data) is at the core of CUSP's functions as well as the emerging field of urban informatics. Examples include: creating an urban observatory to collect data, data modeling and simulation, etc. Since its establishment, CUSP has gathered and made available large amounts of data to other researchers, thus stimulating research and solutions in issues relating to urban infrastructure, mobility, urban engineering, urban systems operation, urban planning, etc. CUSP data and studies simultaneously act as a basis for informed decision making by city agency officials. Beyond the analysis of newly acquired data, CUSP also develops and scales up tools for data treatment and the utilization of urban data.
- **Impact on cities:** CUSP devises and demonstrates new technology through its research and educational programs. These technologies and tools for urban data treatment and storage could be scaled up and utilized by CUSP and/or city authorities (and commercialized, through CUSP's industrial partners and startups created on-site).
- **Coupling demand and supply side of urban development and create impact:** CUSP's work aims to not only be relevant but also impactful to urban challenges and problems. Above all, its research outputs and technology are based on understanding how to best promote the adoption of new technologies by city agencies. Its special relationship to many New York City government agencies facilitates impactful research and technology development.
- **Guidance and transfer of basic principle of CUSP to other countries**: NYU CUSP, King's College London, and the University of Warwick are establishing a Center for Urban Science and Progress London to be based at King's College London. It is scheduled to launch later this year and marks the first expansion of the CUSP model.

4. Overall strengths and key achievements of CUSP

CUSP employs its big data capabilities to tackle policy questions and demands posed by rapid urbanization from a new, integrated angle. In this process, it achieved success by managing to coordinate demand and supply of urban data science to produce impactful research findings, solutions, and tools. The following are key strengths and achievements of the CUSP approach:

- **Enhanced inter-institutional cooperation between academic institutions & academia and city government:** CUSP works closely with its academic partners worldwide, thus coordinating thematic priorities. Researchers from different institutions and different disciplines participate in research projects. CUSP also develops experts that can work inter- and transdisciplinary by having PhD students and post-docs from different disciplines work and study on-site and by conducting projects in close partnership with city agencies. CUSP has also proven to be a successful instrument to enhance the cooperation between academia and city authorities. Its close working relationship with public authorities promotes impactful research and solutions for policy making. Since CUSP's establishment coincided with the developing awareness at City government level of the importance of urban informatics and the integrated analysis of data from across agencies, it was able to match demand and supply of urban data and development. Beyond the official partnership between CUSP and City agencies, faculty and researchers also built a close relationship with certain agencies and departments.
- **Coordination and combination of urban data, developing data environments/data tools to treat and analyze data:** Since New York City provides open access to agency data, CUSP developed its competitive advantage in the innovative handling and treatment of existing data. It stores large data sets, integrates data sets from different sources to gain new information, cleans existing urban data sets to make them interoperable, and provides tools to extract and treat data. CUSP then makes its data tools and infrastructure free to use for City agency staff. It uses its data analysis capabilities to derive findings relevant for policy makers and formulate strategic and practical recommendations. A priority is the formulation of the right questions to target real urban problems at the beginning of a project.

5. Overall limitations and challenges

Although CUSP has experienced tremendous success in its innovative approach as a public-private research center, its model exhibits a number of weaknesses and limitations described in detail below:

- **Cost/Funding:** The funding model is one of the main challenges. While the city and industrial partners contribute marginally to CUSP's annual budget, the majority of funds come from tuition, sponsored research, and the NYU budget. The City has allocated up to $15 million to NYU in energy benefits, sales tax exemptions, and other tax benefits to assist with redevelopment of the building, leaving the financial responsibility for funding CUSP to the university. This funding structure is feasible only in the context of the US academic system and NYU's scale as the nation's largest private university. The scalability of the Masters' degree in urban informatics has also been a challenge. A better funding model for such a data infrastructure/center is needed, especially in view of transferability of the model to the European context.
- **Cooperation with academic and industrial partners:** CUSP was founded on the basis of a partnership between NYU and its government, academic, and industrial partners. However, the cooperation with its business partners could be strengthened in the future. From the beginning, the strategy lacked a clearly

defined role and strong commitment from its industry partners. Another challenge is the need to strengthen the cooperation with other universities within the CUSP consortium.

- **Personnel:** It is often the case that some faculty members perceive the tackling of problems of city agencies as work to be taken up by consultancies instead of CUSP. Since successful cooperation between CUSP and city authorities is dependent upon the right kind of staff, finding faculty and researchers that manage a suitable balance between scientific output and practical, real-world solutions is a challenge. On the one hand, CUSP needs its research staff to be interested in working with city authorities, understand urban problems, and be able to deliver pragmatic findings, solutions, and data tools to city authorities. On the other hand, faculty and other researchers must also be appropriately academically inclined and produce scientific results to satisfy traditional academic performance measures that determine career progression and success in competitions for sponsored research funding.

6. Conclusions: Key success factors of CUSP and transferability

CUSP has successfully established a model to enhance **cooperation between academia and city authorities.** It demonstrated that universities and faculty can contribute to practical solutions to urban policy challenges by developing interdisciplinary research and applying a transdisciplinary approach and innovative data analysis and modeling tools. CUSP's experience reveals that constant monitoring and evaluation is needed in the set-up phase to adjust to unforeseen or changed circumstances such as challenges to the funding model or evaluating more realistic growth targets due to challenges to the scalability of the Master's degree program. Its external advisory board generally meets twice a year where the board receives reports on overall strategy as well as progress on education, research, and financial matters. Each board meeting concludes in a closed session with representatives of the Provost's office. Coincident with the reappointment of all Deans and Directors at NYU, a 5-year external review charged and managed by the Provost's office took place at the beginning of May 2017. The external review committee spoke to the leadership of CUSP, faculty, students, and staff as well as other NYU and NYC agency stakeholders.

In the right context, the **transferability of the CUSP model is high**. However, introducing a research center based on the CUSP model in Europe would require a drastically adapted financing model as one European university on its own will most likely not have the funds required to support operations. Realistically, several European universities could join efforts in partnership with several regional and city authorities with clearly defined roles for other partners and strong commitment of industrial partners. Building such a research infrastructure could benefit from a transnational approach, therefore this example might be interesting for European P2Ps. The section below details other indispensable success factors for the establishment and operation of an impactful research center.

1) At university level

- **Strong institutional support of NYU to realize CUSP**. The university was fully committed, especially financially, from the beginning and set up CUSP as a Provostial unit within NYU.
- During the start-up phase, the **governance structure** was a strong Director model with strategic decision-making powers vested in the Director. As CUSP matured and built its faculty, it is now slowly moving towards a more traditional faculty governance model.
- **Connecting the research strategy of NYU, research budget allocation, and research infrastructure** at NYU to support the establishment and successful operation of CUSP.
- **CUSP's ability to draft faculty members from across NYU schools and disciplines** into CUSP research, teaching, and projects. The same applies to PhD students and post-docs, educating a generation of researchers with inter- and transdisciplinary skills.

- **Good working relationship between faculty members and staff in city government** primarily through finding and developing a **common language and establishing mutual interest.** Faculty must be interested in understanding and solving urban problems, and explaining and communicating findings to city authorities in a non-academic manner. City agency staff must also be interested and willing to invest time in elaborating their problems to researchers and understanding the findings and recommendations of CUSP. The city's very professional government bureaucracy contributes to the positive relationship. Many **city agencies already have significant experience in working with researchers** and graduate students.

2) *At city level*

- **Local NYC law and actions complement and support CUSP strategy and activities very well**. City authorities are required by law to provide **open access to a variety of urban data**. Around the time of CUSP establishment, data science was a hot topic among researchers and cities and NYU did not need to convince the city of the importance and relevance of urban informatics. NYC established the Mayor's Office of Data Analytics and an internal data strategy for the city. Thus, CUSP manages to **unite the two institutions, academic and city authorities, for whom data science was high on the agenda**.
- **Staff mobility between NYC government departments and CUSP**. Since the opening of CUSP, staff previously working in various city agencies have joined the CUSP team, including several city employees who have served as adjunct instructors. This ensures a deep, applied understanding of the city's problems at CUSP and fosters reliable, stable relationships between city authorities and CUSP.
- **High level of awareness about CUSP on government level** especially through substantial press coverage at the beginning. It helped raise attention and promote the existence of CUSP and encouraged agencies and staff to work with it.

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Proposal number: SEP-210134170

Assessment of NOVEL Approaches to Alignment

Case Study No.7 – Electronic Components and Systems for European Leadership (ECSEL Joint Undertaking)

Date: August 2017

Dissemination level: Wider public

Lead contractor for this deliverable: AIT

Contributors: MIUR, UNIMAN, INRA

ABSTRACT

This case study examines the **key features, outputs, and overall strengths and limitations of the Electronic Components and Systems for European Leadership Joint Undertaking (ECSEL)** and could serve as an inspiration for European P2Ps in the areas of thematic alignment and leveraging European / national / private investment. ECSEL's **unique tripartite funding model** financed by the Union, member states, and the private sector makes it an interesting case for European P2Ps planning to establish structures to support collaborative research and innovation. This case study will analyze the details of the funding model as well as examine the implementation and experience with tripartite funding in practice. ECSEL's success in attracting private investment and the challenges it faces regarding different national funding rates and procedures, no multi-annual budgetary commitments from member states, and need for more harmonization and alignment could serve as useful lessons learned for European P2Ps (and PPPs).

This case study highlights the following **strengths** of the ECSEL model:

- ECSEL's unique **tripartite funding and governance structure.** It leverages Union contributions, commensurate national funding, and private sector investment. According to an ECSEL-commissioned impact analysis, each euro contributed by the European Union resulted in EUR 6.40 worth of research and innovation activity in Europe.
- **Alignment of research agendas, priority setting, and implementation:** The MASP is a good example of thematic alignment. Thematic alignment levels across member states are very good and some countries that did not have national funding programmes for electronic components and systems before, now have established such systems upon joining ECSEL.
- **Projects as transnational cooperation & networking opportunity:** ECSEL encourages collaborative projects with multiple partners and types of partners (large corporations, SMEs, non-profit research and technology organizations). It allows for knowledge and experience transfer, significantly raises the visibility of national research capabilities, and may even be a first step to breaking into new markets.

However, the case study also reveals a number of limitations and challenges:

- **Lack of a unified EU strategy on the collaboration of the electronic components industry with other emerging technologies** that draws on various trans-national policies and strengths. ECSEL should be more flexible for market updates, and the inclusion and collaboration with other emerging technology areas in its annual strategy.
- **Lack of alignment with other EU funding instruments:** This is especially important considering the higher funding levels in the United States and China that make it very difficult for Europe to compete with these regions.
- **Insufficient alignment of applicable rules across member states and between member states and the European Union.** These include reducing the **complexity of the rules and procedures in the project proposal process**, as well as managing and reporting on projects. Moreover, **different funding rules across member** states remains a challenge.

This case study builds on the ERA-LEARN 2020 "Definition and Typology of Alignment" and relies on a review of existing literature and a targeted interview. The case is part of a series investigating NOVEL approaches toward alignment.

ACKNOWLEDGEMENTS

This case study was written by Anna Wang (Austrian Institute of Technology). The author is grateful to Thomas Zergoi and Doris Vierbauch (Austrian Research Promotion Agency). She would also like to thank the ERA-LEARN consortium partners for their useful suggestions on earlier drafts of this case study.

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1. Introduction

This case study examines the **key features, outputs, and overall strengths and limitations of the Electronic Components and Systems for European Leadership Joint Undertaking (ECSEL)** and could serve as an inspiration for European P2Ps in the areas of thematic alignment and leveraging European / national / private investment. ECSEL is a public-private partnership (PPP), established with Council Regulation (EU) No 561/2014 and is the product of the **merger of two previously existing Joint Undertakings,** the ENIAC and ARTEMIS JUs. It brings together large companies, research and technology organizations, SMEs, the European Union, and ECSEL participating states. ECSEL's **unique tripartite funding model** financed by the Union, member states, and the private sector makes it an interesting case for European P2Ps planning to establish structures to support collaborative research and innovation. This case study will analyze the details of the funding model as well as examine the implementation and experience with tripartite funding in practice. ECSEL's success in attracting private investment and the challenges it faces regarding different national funding rates and procedures, no multi-annual budgetary commitments from member states, and need for more harmonization and alignment could serve as useful lessons learned for European P2Ps (and PPPs).

Before the merger, the ENIAC and ARTEMIS Joint Undertakings were themselves public-private partnerships bringing together industry associations, research organizations, participating member states, and the European Union through the Commission. Since there was significant overlap in ENIAC/ARTEMIS membership and in order to deliver a more coherent European strategy and increase efficiency, it was decided that the two JUs should be merged to create ECSEL. On June 27, 2014, the founding Council Regulation entered into force and ECSEL came into being, making it the first ever merger of two European bodies. Along with taking up the activities of the EPoSS (European Technology Platform on Smart Systems Integration) initiative, ECSEL is tasked with stimulating the European electronic components and systems industry. It continues to provide support to already existing ENIAC and ARTEMIS projects, but has since also defined its own research agenda and work plans, and launches two calls for proposals a year.

Electronic components and systems form the basis for all information and communication technology and serve as main drivers for innovation, and therefore, job creation and economic growth. According to some estimates, the European semiconductor industry employs approximately 250,000 people, approximately 800,000 work on the integration of components into systems, and more than 2,500,000 people are employed in the complete components value chain. In view of "Industry 4.0" and the Internet of Things, the future importance of the electronic components and systems industry is expected to increase dramatically. With expanding capability and complexity in an increasingly competitive world, it is evident that collaboration across large parts of the value chain is necessary. ECSEL is supposed to re-establish European leadership in this systemically and strategically important industry by supporting collaborative and industrially relevant research, development, and innovation projects.

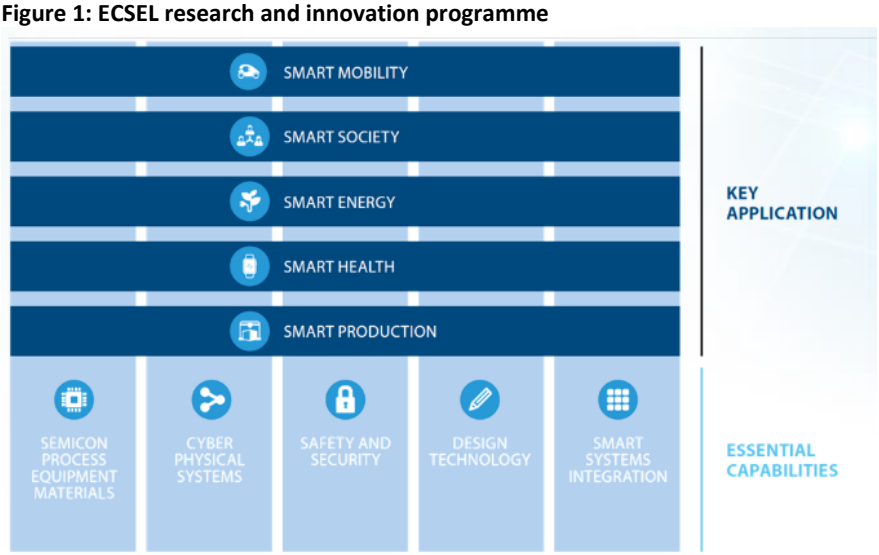
2. Key features of ECSEL

2.1 Mission and activities

ECSEL's mission statement reads as follows: *"Implement a public-private partnership in electronic components and systems, bridging the gap between research and exploitation, aligning strategies to increase European and national investments, building an advanced ecosystem."* It complements the full objectives as laid down in Article 2 of its establishing act (Annex 1).

To this end, ECSEL established its Multi-annual Strategic Plan, covering five key application areas and five essential capabilities that reflect the high-level priorities of its private members (see Figure 1).

Figure 1: ECSEL research and innovation programme



Source: ECSEL Joint Undertaking website

In order to achieve its goals, ECSEL launches two calls for project proposals every year. Projects selected for funding are located within these Strategic Thrusts, however, they are not limited to covering only one of these key applications or essential capabilities. Multi- and cross-capability projects are encouraged. Of the two rounds of calls, one is dedicated to Research and Innovation Actions (RIA), the other to Innovation Actions (IA).

Research and Innovation Actions:

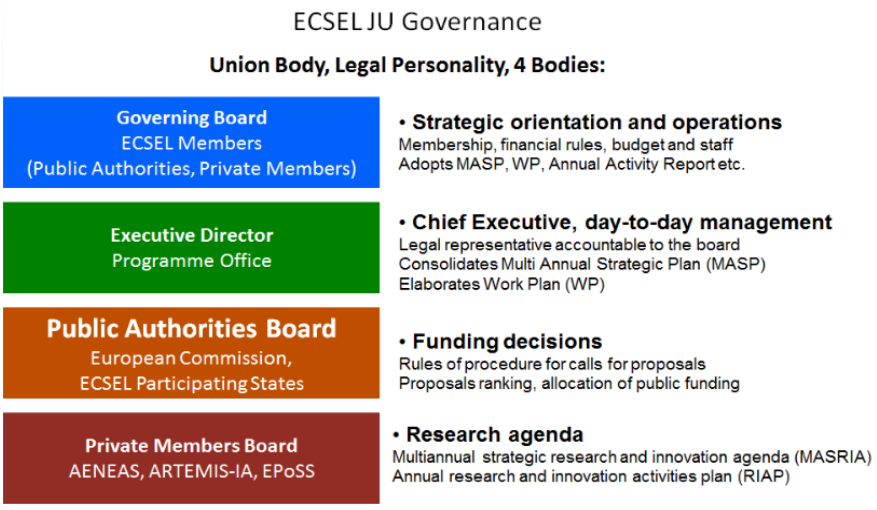
- Primarily aim to establish new knowledge or to explore the feasibility of a new technology, product, etc.
- Typically address lower technology readiness levels (TRLs of 2 to 5).
- Should not work in isolation but cluster with other ECSEL actions.

Innovation Actions:

- Large-scale, integrating projects that intend to bridge the "valley of death".
- Specifically geared toward higher TRLs (4 to 8).
- Typically pilot lines and test beds that involve large demonstrators and zones of full-scale testing.

2.2 Governance structure

Figure 2: ECSEL governance structure



Source: ECSEL Joint Undertaking website

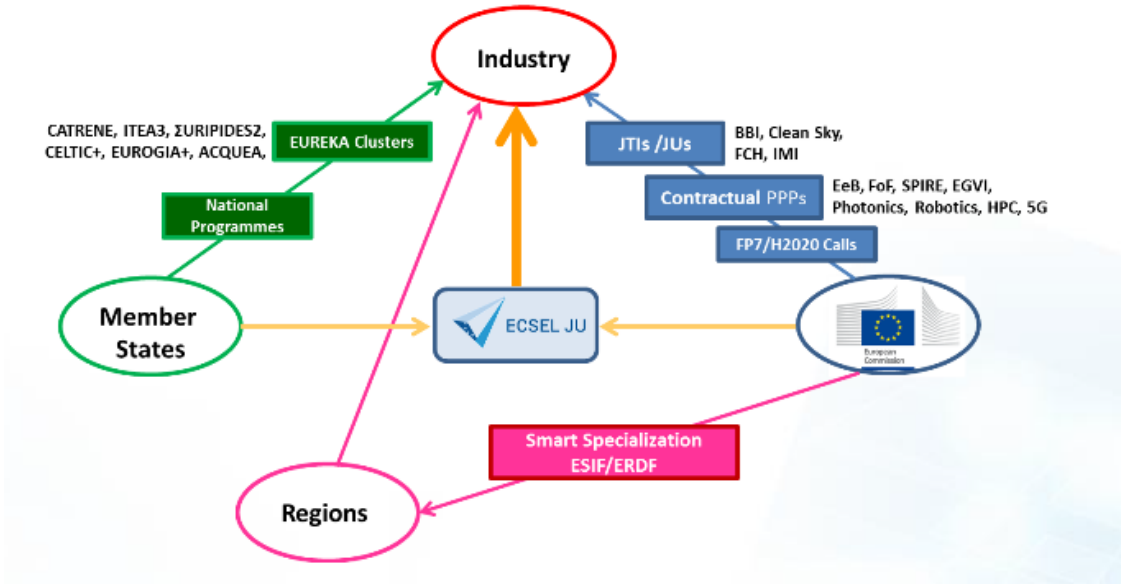
The **Governing Board** has overall responsibility for the strategic orientation and operations of ECSEL and supervises its activities. The Governing Board is composed of one delegation for the Commission, one for each private member,

and one for each ECSEL participating state. The **Executive Director** (ED) is the chief executive responsible for the day-to-day management of ECSEL. The Programme Office, under the ED's responsibility, is tasked with consolidating the MASP and WP to be submitted for adoption to the Governing Board. The **Public Authorities Board** (PAB) is composed of representatives of the participating states[17] and the European Commission. It is responsible for establishing the funding budget and the allocation of funding for project proposals. The **Private Members Board** (PMB) is composed of representatives of the private members of ECSEL, with each industry association appointing one delegation. The PMB represents the community of R&D&I actors and organizes supporting activities and events, including an annual stakeholder forum.

2.3 Funding model

ECSEL operates on a unique **tripartite funding model**, leveraging European Union, national, regional, and private investments in research, development, and innovation. It complements other European instruments for funding of R&D projects.

Figure 3: ECSEL's tripartite funding model

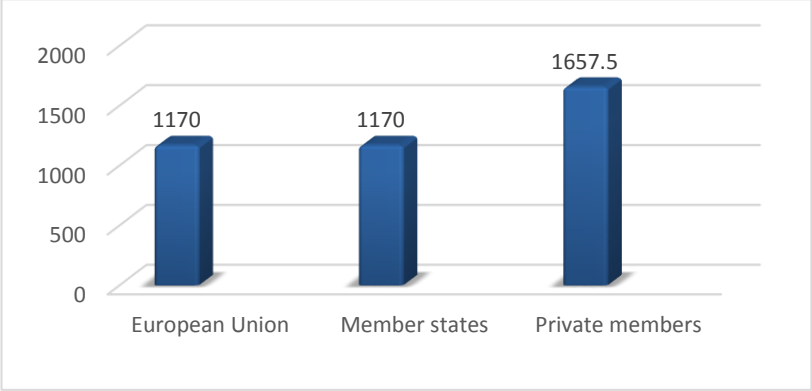


Source: ECSEL Joint Undertaking website

In addition to a market-facing programme, the ECSEL funding model provides combined funding from national and regional authorities and the EU (via Horizon 2020, with capability to include structural funds (ESIF/ERDF)). To augment Europe's industrial innovation capacity, ECSEL leverages matching investments from R&D actors.

[17] Currently, ECSEL participating states are: Austria, Belgium, Bulgaria, Czech Republic, Germany, Denmark, Estonia, Greece, Spain, Finland, France, Hungary, Ireland, Israel, Italy, Latvia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Sweden, Slovakia, Turkey, United Kingdom

Figure 4: Contributions by category (in M€)



Source: Council Regulation (EU) No 561/2014

- **European Union contribution**: For ECSEL's whole duration, 2014-2021, the Union is committed to contribute up to EUR 1,170,000,000 to cover administrative and operational costs.
- **ECSEL Participating States**: Member states are to make a financial contribution commensurate to that of the Union, amounting to at least EUR 1,170,000,000 over the period. Although this 1:1 ratio of contributions is foreseen in the founding of ECSEL, it has not yet been achieved in practice. There remains work to be done in this regard.
- **Private members**: The research and development actors are to contribute EUR 1,657,500,000, resulting in the target ratio of 1:1.42. Beneficiary contributions currently outperform the target at 2.22. Thus, total private contributions are expected to amount to 2,340,000,000, leveraging a total investment approaching EUR 5 billion for the whole programme.

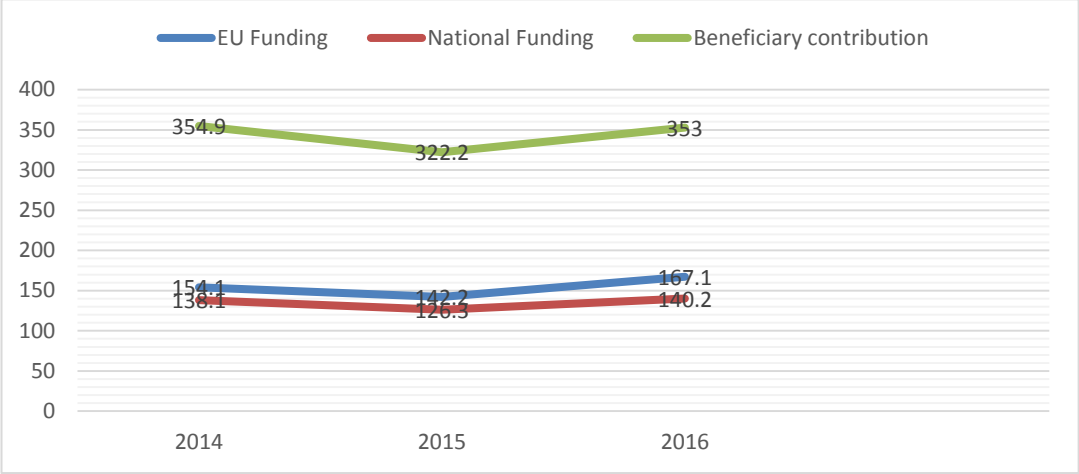
For 2017, the total EU contribution to the ECSEL project calls is expected to be EUR 160 million. An estimated EUR 92.5 million of which is expected to be allocated to IAs, and EUR 67.5 million to RIAs. Funding rates for approved IAs and RIAs follow Horizon 2020 rules (for a detailed decomposition see Annex 3). This EU expenditure is supposed to attract a commensurate amount of national funding, although each country has their own funding rules and reimbursement rates. In total, combined EU and member state expenditure for 2017 add up to an estimated EUR 185 million for IAs and EUR 135 million for RIAs.

ECSEL's 2017 running cost, including staff, infrastructure, and administrative expenditure, is expected to amount to EUR 5.2 million. Currently, ECSEL employs a relatively small team of a total of 30 statutory staff (see Annex 2 for the Programme Office organizational chart). EUR 3.2 million of the total running costs are budgeted for staff expenditure, including salaries, recruitment, mission expenses, and training. The remaining EUR 2 million shall cover infrastructure expenditure, including rental of buildings, information and communication technology, administrative costs, and R&D support.

The funding model in practice

Overall, the tripartite funding model works well, especially in terms of leveraging private investment. However, a few key challenges remain. The founding Council regulation lays down a vision to leverage member state contributions commensurate to Union contributions and industry contributions exceeding Union contributions. Nevertheless, the present funding model remains one of the main challenges of ECSEL. In terms of industry participation, the programme has been very successful in attracting private investment. Currently, the ratio of **beneficiary to Union contribution is 2.22**, by far outperforming the target ratio of 1.42. However, member state contributions remain a challenge. National funding has persistently remained below EU funding (see Figure 5).

Figure 5: Contributions over time (in M€)



Data: ECSEL Annual Activity Report 2016

In practice, the **contribution ratio of 1:1, Union and member states, has not been achieved even though member states committed an amount larger than that of the Union each year, leaving significant unused national budgets**[18]. A possible reason could be **different national funding rules and rates.** For ECSEL, member state contributions are not fixed and harmonized across countries, rather, each member state decides upon the amount of national funding to be made available for calls individually. This leads to wide variations in national funding rates. Moreover, eligibility criteria for national funding differ across countries. Effectively, these differing rules and rates have often led to the EU budget being the limiting factor in project selection, according to the annual activity report. *In all three past calls, member states committed an amount larger than the European Union. However, the proposals completely consumed the Union budget, but could not engage all member state commitments by the time the Union budget has been exhausted.* There were significant unused national budgets in all three years: EUR 24.7 million in 2014, EUR 36.0 million in 2015, and EUR 50.4 million in 2016. Although the high EU funding rates play a role, i.e., EU funding rates are often significantly higher than national funding rates due to national rules. But a more decisive role is the *specific allocation of certain types of budget to certain types of actions or partners*[19]. This restriction on the use of national funding hampers the proper use of it.[20] For example, in 2016, the unused budgets of France and Ireland stand out with EUR 29.6 million and EUR 13.4 million, respectively. In both cases the largest proportion of the budget was earmarked for specific projects that were above the approval threshold but could not be funded due to insufficient EU funding[21] or insufficient national funding of consortium partners[22]. Another factor is reserving a certain amount for specific regions only, as is the case in Germany where a part of the budget is specifically for one region (Saxony). If the partners of that region do not participate in funded projects, then their share of national funding remains left over. This restriction on the use of national funding is a crucial factor contributing to unused budgets. If these restrictions were lifted and funding rules harmonized, a larger part of the unused national budget could have been allocated to some other partners in selected projects.

[18] More about unused budgets, see annual activity reports: 2014: http://www.ecsel-ju.eu/web/downloads/Documents_GB/ecsel-gb-2015-39-aar_ecsel_2014-annex_1_final.pdf 2015: http://www.ecsel-ju.eu/web/downloads/Documents_GB/ecsel_annual_report_2015.pdf 2016: http://www.ecsel-ju.eu/web/downloads/Documents_GB/ecsel_rapportannuel_a4_2016.pdf

[19] ECSEL (2017): Annual Activity Report 2016, 20

[20] Ibid.

[21] Ibid.

[22] Project selection is based on a ranking of all proposals. Therefore, it is possible that higher ranked projects use up all EU funding (or national budgets, where projects cannot be funded if it has consortium partners from the concerned country), leaving no budget for proposals that are lower-ranked but still above the approval threshold.

Related to the previous point, there is a **lack of harmonization regarding funding practices and procedures** across member states and the EU[23], leading to an overly complex and burdensome administration. There is difficulty understanding the differences between EU and national funding rules and difficulty in submitting proposals when a project consortium includes members from different countries who have to adhere to different national rules. It also makes project management and reporting, especially financial reporting, difficult and cumbersome. Participants often identify the double/triple financial reporting as one of the biggest administrative burdens imposed on project consortia.[24] The high complexity and administrative burden of the system may be precluding SMEs and smaller research organizations from participation, as they lack the necessary financial and human resources. SME participation has dropped in the 2015 call (2015 call attracted 99 SMEs vs. 123 in 2014 call[25]) and encouraging participation remains a challenge.

Another frequent assessment is that ECSEL **lacks long-term financial commitment** by member states. Since member state contributions rely on a yearly budget, i.e., participating countries have to decide on the amount reserved for ECSEL calls each year, it lacks the long-term financial commitment that would reduce administrative delays caused by year-to-year uncertainties. Moreover, the lack of multi-annual budgetary commitments makes programme management very difficult and may expose the financing model to political and economic risks associated with, e.g., economic downturns and changes in political agendas.[26]

Some stakeholders have also noted a **lack of alignment between ECSEL and other EU funding instruments**. In the current model, beneficiaries may receive financing from structural funds (European Structural and Investment Funds ESIF), which has not been very successful until 2016. This is especially important considering that Europe faces competition from regions enjoying higher funding levels such as the United States and China.

Mobilizing European Structural and Investment Funds (ESIF)

- ESIF: Over half of EU funding is channeled through the 5 European Structural and Investment Funds which are jointly managed by the European Commission and the member states. The purpose is to invest in job creation and a sustainable and healthy European economy and environment.
- Although the possibility to leverage structural funds has been envisioned from the beginning, there is room for improvement in the actual mobilization of funds. Several stakeholders have noted that the ECSEL funding mechanism could be improved by better alignment with other EU funding instruments.
- The mobilization of ESIF was successful for the first time in the 2016 calls. 18 beneficiaries may receive their funding from the ESIF, requesting a total of EUR 11.1 million. RIAs could engage EUR 9.4 million and IAs EUR 1.6 million.

3. Outputs of ECSEL

Since its establishment in June 2014, ECSEL has successfully implemented the merger of two pre-existing Joint Undertakings. It has been fully operational, adopting its own MASPs, Work Plans, and launching two calls for proposals a year. Its outputs so far are:

[23] This is a challenge facing many P2P networks across Europe and has been identified in previous ERA-LEARN 2020 case studies (e.g., in the case study on the alignment of national AAl programmes). Reasons include national and Union legislation, etc.

[24] See: Impact Analysis study http://www.ecsel-ju.eu/web/downloads/Publications/ecsel_impact_analysis_study_website.pdf

[25] ECSEL (2016): Annual Activity Report 2015, 22

[26] The lack of member state commitment to a multi-annual funding system has been a long-standing criticism, mentioned in every evaluation of ECSEL and its predecessors. 1st Interim Evaluation ARTEMIS and ENIAC: https://publications.europa.eu/en/publication-detail/-/publication/56da8c38-7094-4ca3-8494-f832529b9d94
2nd Interim Evaluation ARTEMIS and ENIAC: https://ec.europa.eu/digital-single-market/en/news/second-interim-evaluation-artemis-and-eniac-joint-technology-initiatives
Support Study for the Evaluation of ENIAC/ARTEMIS/ECSEL JU

- **The consolidation of the merger** of the two preceding Joint Undertakings, ENIAC and ARTEMIS, and taking on board the EPoSS community. ECSEL is the product of the first ever merger of two European bodies. 2014 and 2015 were the main transition years – assuring continued support to the already existing ENIAC and ARTEMIS projects, while defining an ECSEL research agenda, work plan, and launching calls for proposals. There was significant overlap between these three platforms, but also fundamental differences, making the set-up phase very difficult. Some of the problems encountered were working out and agreeing on a MASP and Work Plan that satisfies all three platforms; ENIAC and ARTEMIS were familiar with the JU process before the merger (since both were also JUs), but EPoSS was not. Therefore, integration and cooperation was difficult in the beginning. It is an ongoing process, since there is still potential for improvement in the integration of these three platforms to make the work of ECSEL more impactful.
- **Funded projects:** Although established only in June 2014, ECSEL nevertheless managed to define a research agenda, a work plan, and launch and conclude two calls for proposals within the first year. Since then, it approved funding for a total of 39 projects, 17 IAs and 22 RIAs.
- **Adoption and selection of two Lighthouse Initiatives**, Mobility.E and Industry 4.E, that will achieve concrete socio-economic objectives to enhance the focus and impact of ECSEL. The intention is to promote additional cooperation to accelerate the impact of projects by engaging all needed actors in the supply/value chain. In conjunction, ECSEL will initiate a "Lighthouse Initiative Advisory Service" (LIASE) for each Lighthouse Initiative to develop, maintain, and implement the Lighthouse Initiative Roadmap. This initiative will be further refined and strengthened in 2017.

4. Overall strengths and key achievements of ECSEL with respect to alignment

As a product of the merger of two pre-existing Joint Undertakings, ECSEL has demonstrated how to successfully implement such a transition. Beyond the consolidation of such a merger, some of its other strengths and achievements are presented below.

- ECSEL's unique **tripartite funding and governance structure.** It leverages Union contributions, commensurate national funding, and private sector investment. According to an ECSEL-commissioned impact analysis[27], each euro contributed by the European Union resulted in EUR 6.40[28] worth of research and innovation activity in Europe. This model could serve as an interesting example for European P2Ps planning to implement support structures for public-private collaborative, trans-national research, development, and innovation. ECSEL demonstrates the effectiveness of public-private funding systems in promoting R&D&I activities in defined technology topics and essential capabilities. Furthermore, ECSEL's tripartite governance and decision-making, with the EC, member states, and industry involved in the approval and adoption of strategy and priorities through the Governing Board, promotes the alignment and communication between those three stakeholder groups. The public members contribute to the research agenda and priority-setting via a feedback process during the annual adoption of the MASP and the Work Plan, thereby ensuring a certain level of agreement between public and private interests.
- **Alignment of research agendas, priority setting, and implementation:** The MASP, based on input from both industry and representatives of the member states and the European Commission, is a good example of thematic alignment. Overall, ECSEL had a very positive impact on the alignment of research priorities across member states. Thematic alignment levels across member states are very good and some countries that did not have national funding programmes for electronic components and systems before, now have

[27] See Aspect Consulting (2016): ECSEL JU Impact analysis study, p1. http://www.ecsel-ju.eu/web/downloads/Publications/ecsel_impact_analysis_study_website.pdf
[28] Based on EU contributions vs. total eligible costs

established such systems upon joining ECSEL. Therefore, ECSEL manages to align public investment priorities and strategic orientation across Europe to leverage private investment.

- **Projects as transnational cooperation & networking opportunity:** ECSEL's explicit support for trans-national research and development across large parts of the value chain encourages collaborative projects with multiple partners and types of partners (large corporations, SMEs, non-profit research and technology organizations). For many call participants, the transnational cooperation and networking opportunity provided by ECSEL represents one of the main motivations and benefits of joining the proposal process. This is essential for smaller countries and firms where it would not be feasible to work domestically across the whole value chain and collaboration with the "big players" is especially beneficial. It allows for knowledge and experience transfer, significantly raises the visibility of national research capabilities, and may even be a first step to breaking into new markets. Moreover, it had a positive effect on the electronic components and systems community by providing the opportunity to build relationships and stronger networks of firms and researchers.
- **A more coherent European perspective:** The second interim evaluation of ENIAC and ARTEMIS revealed significant room for improvement regarding the efficiency of the Joint Undertakings. They were suffering from a rather heavy regulatory, administrative, and financial burden. Funding volumes in key areas were also insufficient to create a level playing field with international competitors and different programmes were in need of harmonization and lacked critical mass. ECSEL addressed and offered a solution to these issues by integrating ENIAC and ARTEMIS on a legal and operational level. It delivers a more coherent European strategy for the funding of electronic components and systems research, development, and innovation.

5. Overall limitations and challenges of ECSEL

Although ECSEL has achieved significant success in driving European electronic components and systems research and innovation, its current form faces several limitations and challenges. The following section discusses these in detail.

- **Lack of a unified EU strategy on the collaboration of the electronic components industry with other emerging technologies:** In view of the scheduled European Commission interim evaluation of the ECSEL programme by June 2017, ECSEL commissioned an impact analysis report to aid the Commission's subsequent research. Surveyed participants include call participants and other ECSEL stakeholders from large corporations, SMEs, non-profits, research organizations, public authorities, etc. Without being prompted, a number of respondents noted the necessity for a unified European strategy on electronic components and software industry that draws on various trans-national policies and strengths. Because of the speed of technology development, ECSEL should be more flexible for market updates. This involves the inclusion and collaboration with other emerging technology areas in its annual strategy.
- **Lack of alignment with other EU funding instruments:** Many stakeholders identified a lack of alignment in this structure with other EU funding instruments[29] and highlight the need for e.g., more harmonization of funding priorities and funding rules and procedures. This is especially important considering the higher funding levels in the United States and China that make it very difficult for Europe to compete with these regions.
- **Insufficient alignment of applicable rules across member states and between member states and the European Union:** Although ECSEL is already instrumental in achieving a certain level of harmonization, there is room for improvement to achieve higher alignment levels in terms of applicable rules across

[29] See: http://www.ecsel-ju.eu/web/downloads/Publications/ecsel_impact_analysis_study_website.pdf

member states and between member states and the Union. These include reducing the **complexity of the rules and procedures in the project proposal process**, as well as managing and reporting on projects. Presently, main challenges for call participants include the high administrative burden resulting from different project proposal rules and funding eligibility in member states and the often double/triple financial reporting. Similar challenges regarding limited alignment on a transnational level have already been identified in previous case studies, especially in case study 5 on the alignment of national AAL programmes. Moreover, **different funding rules across member** states remains a challenge. Different national funding rates and the national rules earmarking certain amounts for specific actions or partners led to significant unused budgets in a number of member states and made the EU budget the limiting factor in the selection of projects. Harmonizing reimbursement rates across member states would be highly beneficial.

6. Conclusion and key success factors

ECSEL, operating on a unique tripartite model, has achieved the first ever merger of two previously existing European bodies. It demonstrates the effectiveness of funding research and development in industries of key systemic and strategic importance by leveraging European, national, and private sector investment. The activities promoted a more coherent European perspective on electronic components and systems, alignment across member states, and international collaboration and network-building. A number of challenges remain, most importantly to the funding model, the necessity for more harmonization of reimbursement rates, rules, and procedures across member states, and the complexity and high administrative burden of project proposals, management, and financial reporting. Nevertheless, ECSEL's success in attracting private investment and participation could serve as an inspiration for European P2Ps working in other systemically and strategically important areas.

This case study identified the following **key success factors**:

- **Strong motivation and leadership**: The merger and establishment of such a PPP would likely not have been possible without the commitment and leadership of both public and private actors. The European Commission and the industry partners were particularly dedicated and enthusiastic to successfully establishing ECSEL.
- **A certain level of familiarity between members**: The overlapping membership between ARTEMIS and ENIAC was not only the reason for establishing ECSEL but also proved to be an advantage down the road. The countries and especially the industry members were able to build on a history of cooperation and coordination in a PPP setting, contributing to the success of the merger and of ECSEL.
- **Strong political and financial commitment:** ECSEL could not have been established without the political and financial commitment of member states in the set-up process and beyond. There is wide agreement on the value added of JU activities and its positive impact on thematic alignment, the research community, and industry. For some countries, membership in ECSEL was a "natural transition" from existing national funding programmes to increase international cooperation, mobilize more resources through EU contributions, and increase impact. These countries typically also face less budgetary challenges on national level, since funds were simply shifted from domestic programmes to ECSEL calls.
- **Well-established and smoothly functioning structures:** A complex tripartite system involving many and different types of stakeholders requires a carefully considered and planned programme design. The smooth operation of the governance structure fosters decision-making overall, the organization and process of joint calls, project selection, etc. A certain level of familiarity between stakeholders and with the process and functioning of PPPs (or P2Ps), in this case through ENIAC and ARTEMIS, may also be beneficial.

- **Clear overall legal framework and processes:** The high levels of participation in calls and success in funding industrially relevant, collaborative research are likely due to a clear overall legal framework and subsequent processes. The requirements and guidelines for proposals, reimbursement rates, deadlines, and the overall administrative process were clearly and effectively communicated to the target audience and stakeholders.

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ANNEX 1
ECSEL objectives

1. The ECSEL Joint Undertaking shall have the following objectives:

(a) to contribute to the implementation of Regulation (EU) No 1291/2013, and in particular part II of Decision 2013/742/EU;

(b) to contribute to the development of a strong and globally competitive electronic components and systems industry in the Union;

(c) to ensure the availability of electronic components and systems for key markets and for addressing societal challenges, aiming at keeping Europe at the forefront of technology development, bridging the gap between research and exploitation, strengthening innovation capabilities and creating economic and employment growth in the Union;

(d) to align strategies with Member States to attract private investment and to contribute to the effectiveness of public support by avoiding an unnecessary duplication and fragmentation of efforts and by facilitating the participation of actors involved in research and innovation;

(e) to maintain and grow semiconductor and smart system manufacturing capability in Europe, including leadership in manufacturing equipment and materials processing;

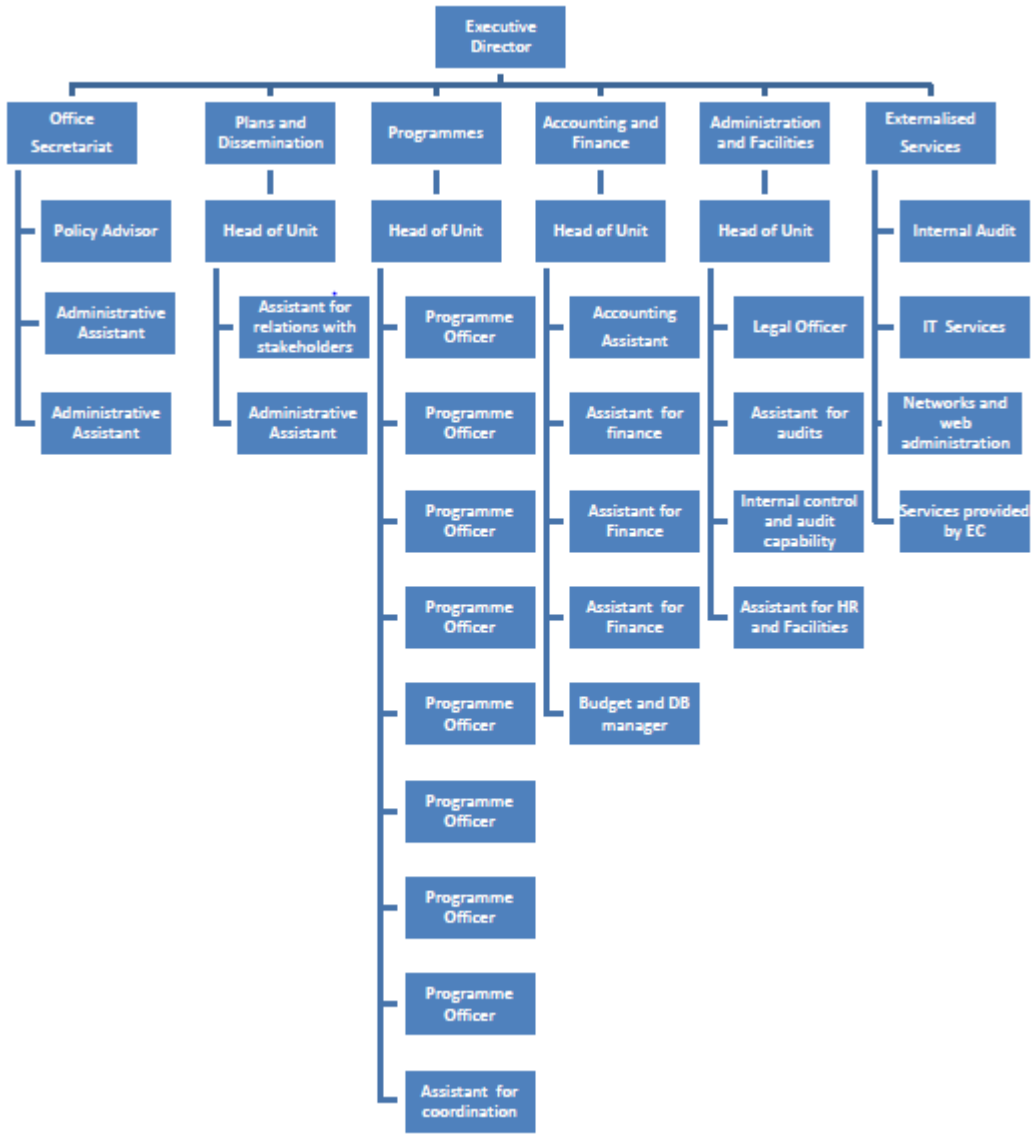
(f) to secure and strengthen a commanding position in design and systems engineering including embedded technologies;

(g) to provide access of all stakeholders to a world-class infrastructure for the design and manufacture of electronic components and embedded/cyber-physical and smart-systems; and

(h) to build a dynamic ecosystem involving Small and Medium-Sized Enterprises (SMEs), thereby strengthening existing clusters and nurturing the creation of new clusters in promising new areas."

Source: Council Regulation (EU) No 561/2014 of 6 May 2014, Article 2

ANNEX 2
ECSEL JU organization chart (2015)



Source: ECSEL JU Budget for 2015

ANNEX 3
EU reimbursement rates

	RIA			IA		
	LE	SME	Other	LE	SME	Other
ENIAC-ARTEMIS	16.7 %	16.7 %	16.7 %	16.7 %	16.7%	16.7 %
ECSEL JU 2014	50 %	50 %	50 %	25 %	35 %	50 %
ECSEL JU 2015	25 %	30 %	40 %	15 %	25 %	40 %
ECSEL JU 2016	**25 %**	**30 %**	**35 %**	**20 %**	**25 %**	**35 %**
ECSEL JU 2017 (1)	*25 %*	*30 %*	*35 %*	*20 %*	*25 %*	*35 %*

Source: ECSEL Annual Activity Report 2016