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NOTE

From:	ERAC Secretariat
To:	ERAC Delegations
Subject:	Final report by the ERAC Ad-hoc Working Group on Partnerships on the "Recommendations on increasing the efficiency of implementation of partnerships"

Delegations will find annexed to this Note the final report by the ERAC Ad-hoc Working Group on Partnerships on the "Recommendations on increasing the efficiency of implementation of partnerships", as adopted at the ERAC plenary on 17-18 September 2018.

RECOMMENDATIONS ON INCREASING THE EFFICIENCY OF IMPLEMENTATION OF PARTNERSHIPS

Final report by the ERAC Ad-hoc Working Group on Partnerships

Conclusions from the ERAC Ad-hoc Working Group on Partnerships for the ERAC plenary on 17 September 2018:

1. The Horizon 2020 Interim Evaluation and the related Staff Working Documents on Article 185/187 initiatives, Knowledge and Innovation Communities of the European Innovation and Technology Institute (EIT KICs) and the underlying expert group reports allow for an identification of key issues to increase the efficiency of implementation of partnerships;
2. Concerning the current Public-Private Partnerships (PPPs), key efficiency issues that need to be addressed are strengthening the role of and interaction with Member States/Associated Countries, a broader participation / inclusion of more and other stakeholders, notably in relation to membership policies of Joint Undertakings (JUs), submitted proposals and selected projects, and improving the communication and dissemination of project outcomes and results.
3. CORDIS and eCORDA data is still incomplete regarding data on partnership initiatives, notably for the EIT-KICs and some of the Article 187 initiatives, despite the fact that these initiatives use the Horizon 2020 IT tools;
4. Based on the survey to the Public-Public Partnership (P2P) community, notably ERAC, funding agencies and beneficiaries, the following conclusions can be drawn:
    a. Relevance and impact of P2Ps depend highly on an increased political commitment at national level and stronger links with national policy priorities and end-users in the research and innovation (R&I) community;
    b. For the majority of the current P2Ps, substantial efficiency risks are seen in the mostly decentralised implementation via national funding bodies and their different funding rules that need to be accommodated by transnational proposals and projects;
    c. A more common and harmonised implementation framework for joint calls has the potential to increase the overall efficiency of implementation without compromising the needed flexibility of P2Ps;
    d. A common and harmonised data management system on proposals and projects, including financial data, and their results, outcomes and impacts can substantially improve the efficiency of monitoring and evaluation as part of the implementation of R&I partnerships;
    e. A common and harmonised management of national funds, notably a ‘real common pot’ for the funding of transnational R&I projects, is not supported.
5. For the openness at programme and project level, some good practice approaches have been identified for individual R&I partnerships in the annex. They are at least partially transferrable and should inspire a greater openness in the design and implementation of future initiatives and their implementation of joint actions, in particular joint calls;
6. The increased relevance of European Structural and Investment Funds (ESIF) for national and/or regional R&I policies, especially in low performing countries, calls for a better use of possible synergies between ESIF and Framework Programme (FP) funding, including for R&I partnerships, as appropriate. In this context, additional efforts should be considered to overcome the limits for the use of ESIF to co-fund R&I partnerships supported by the FP and the lack of the acknowledgement of these in the operational programmes;
7. More analysis on the technical and legal barriers for a better efficiency, in particular in relation to centralised data management and more centralised implementation in the case of P2Ps, is needed.

Recommendations from the ERAC Ad-hoc working Group on Partnerships for the ERAC plenary on 17 September 2018:

1. ERAC calls on the Commission to ensure that already identified opportunities to improve the efficiency of implementation are duly taken into account in preparing and implementing partnerships under the future Framework Programme, in particular:
    a. A broader use of non-binding forms, such as memorandum of understandings (MoU), to align activities of R&I partnerships, in particular Public-Private Partnerships (PPPs), with policies at EU, national and regional level;
    b. Introduce in all partnerships, measures to actively engage a broader set of relevant actors in their design and implementation, including revised membership policies in Joint Undertakings or the establishment of national 'mirror groups', and facilitating the access to research results, in particular for SMEs;
    c. A more targeted use of communication campaigns and other measures to improve participation rates of newcomers and smaller R&I players, including a more active portfolio management and communication role of the Commission in order to disseminate the R&I results from R&I partnerships.
2. In particular, ERAC calls on the Commission to ensure that Member States and Associated Countries are better involved in the preparation and implementation of Public-Private-Partnerships and the promotion of a wider use of good practices for removing barriers for newcomers and smaller R&I players at programme and project level;
3. ERAC calls on the Commission to monitor and report on the performance of initiatives, in particularly public-private ones, in engaging with the Member States / Associated Countries and involving new and smaller R&I players;
4. ERAC calls on the Member States / Associated Countries to take the necessary measures at national level ensuring that their future participation in partnerships is accompanied by appropriate commitment and resources for the life cycle of initiatives, and a governance establishing stronger links with national policy priorities and end-users;
5. For the future design and a more efficient implementation of Public-Public Partnerships, ERAC calls on the Commission and Member States /Associated Countries to:
    a. Acknowledge the broad support towards establishing a more common and harmonised system to manage the data related to proposals, selected projects and their follow-up, with respect to the preparation and implementation of joint calls up to the point of selection decisions,
    b. Assess if the systems of the Framework Programme for proposal submission and evaluation, as well as legal entity validation, can, from the next FP on, be made available for all partnerships receiving FP funding as one option for a common and harmonised system for project data management;
    c. Analyse further the possibilities and produce scenarios for such a system being available and functioning at the start of the next Framework Programme taking into account the experience of the P2P community.
    d. Explore scenarios for a more efficient grant management and reporting of funded projects, on the basis of commonly agreed rules, procedures and single grant agreements for transnational R&I projects, including the use of Framework Programme rules and practices whenever possible;
6. ERAC calls on the Commission to provide the necessary provisions in the relevant programmes ensuring meaningful synergies between different EU funding programmes for the support of R&I partnerships, i.e. by allowing the optional combination of ESIF funding and Framework Programme funding, in particular at the level of projects resulting from the calls of R&I partnerships;

7. ERAC calls on the Member States to ensure in the design of the programmes funded by the EU and implemented in delegation or in shared management (in particular ESIF) that these operational programmes can be designed from the very beginning in a way that adequately support their participation in EU R&I partnerships, provided that policy objectives at regional level are effectively and efficiently met by this participation.

ERAC Ad-hoc Working Group on Partnerships

Issue Paper

Topic: Increasing the efficiency of implementation

1. Introduction

The Council Conclusions of 1 December 2017 make reference to three of the four topics of the mandate of the ERAC Ad-hoc Working Group on Partnerships. The topic 'efficiency of implementation' was not explicitly mentioned in the Council Conclusions, but there is a widespread agreement between the EU and Member States (MS) / Associated Countries (AC) that the interim evaluation of Horizon 2020, including the Staff Working Documents (SWDs) on Article 185 and Article 187 and EIT/KICs provide robust evidence on the opportunities to increase the efficiency of implementation of R&I partnerships. More concretely, the mandate of the ERAC Working Group has the following focus:

"The Working Group on Partnerships will advise on possibilities for improving the efficiency of implementation and reducing the administrative burden, notably examining measures such as:

- *Broader use of a single set, or fewer sets, of rules (proposals, evaluations, funding);*
- *Removing entrance barriers for newcomers and smaller R&I players;*
- *Single/fewer implementation structure approaches;*
- *More centralised use of services (call set-up proposal submission and evaluation, grant management);*
- *Integration of project data in eCorda and Cordis."*

This mandate asks basically three questions:

a) What is the appropriate level of 'centralisation[1]/harmonisation' in the implementation of R&I partnerships? With 'appropriate' meaning the level of centralisation that is politically acceptable and which does not undermine the administrative efficiency and flexibility of R&I partnerships;

b) What are the technical and legal barriers for an integration/use of eCorda and Cordis for R&I partnership project data in order to allow for an integrated monitoring and evaluation of the partnerships within the broader framework of the next FP?

c) What are good practices in 'removing the barriers for newcomers and smaller R&I players', thus increasing the 'openness' of R&I partnerships at programme and project level and to what extent can they be transferred to other R&I partnerships and other 'funding approaches/instruments'?

The Working Group discussed which methodology to apply and agreed that desk research, including analysis of evaluation carried out would be sufficient for most of the partnership approaches, with focus on recommendations to improve the involvement of Member States and Associated Countries.

In addition, there was an agreement that further investigation would be necessary to better understand the main barriers for the Public-Public Partnerships, as well as the perception of the different stakeholders, for increasing the efficiency of implementation and the impacts of P2Ps. To this end, a dedicated survey, was prepared and implemented with the support of ERA-LEARN. This survey was addressed to ERAC members, research funders involved in P2Ps and researchers funded by P2Ps.

Chapter 2 provides a short overview on the efficiency related issues identified by the Horizon 2020 interim evaluation, including the SWDs on Article 185, Article 187 and EIT/KICs. Chapter 3 summarises the results of the ERA-LEARN surveys. Chapters 4 and 5 tackle the other two questions mentioned above.

[1] Based on the results of the ERA-LEARN Workshop on 21 June, the wording in the conclusions and recommendations has been adapted and the term 'centralisation' has been replaced by 'common and harmonised system'. The reason is the negative connotations associated with the term 'centralisation'. The wording in the issue paper has not been revised accordingly, however a definition of the term 'centralisation' is provided that aims at clarifying the use of this term here.

2. Overview of efficiency related conclusions/recommendations

'Efficiency' is one of the five evaluation criteria according to the better regulation guidelines. There is some variety in the definition of efficiency in the different Horizon 2020 related evaluations, in particular within the different expert group reports. For the remainder of the issue paper, the following definition of efficiency, taken from the Horizon 2020 interim evaluation, is used:

***"Efficiency**: The relationship between resources used by Horizon 2020 and the changes it is generating;" This question will consider the relation between the programme inputs (i.e. resources, budget, selection processes) and the outputs and impacts achieved. More concretely, the following question are addressed under efficiency*

- *How efficient are the programme management structures?*
- *How efficient are the communication and application processes?*
- *How efficient is the distribution of funding?*
- *To what extent is Horizon 2020 cost-effective?"*

While the main features of efficiency can be easily applied to R&I partnerships as well, it should be noted that efficiency here does not only refer to Horizon 2020 but also to the efficiency of partners, notably public administrations and/or Research Performing Organisations (RPOs) in the case of P2Ps, PPPs, Future and Emerging Technologies (FET) Flagships and EIT-KICs. The efficiency issue might be, in fact, often even more important for the 'partners' than for the EU, as usually substantial national and/or industry-internal coordination is needed. The annex to this paper includes overview tables on the efficiency related findings and recommendations (quotes) from the Horizon 2020 interim evaluation and all relevant and related documents, including the SWDs on Articles 185 and 187 and EIT/KICs.[2]:

During the 3rd meeting of the ERAC Ad-hoc Working Group, the Slovenian delegate summarised the main efficiency related challenges for Article 187 initiatives, Contractual Public-Private Partnerships (cPPPs), EIT-KICs and FET Flagships as follows:

1. Strengthen the role of MSs in the management of the partnerships and interaction with stakeholders;
2. Include more and relevant stakeholders in proposals and funded projects;
3. Improve communications and dissemination of results/knowledge;
4. Redefine Key Performance Indicators (KPIs);
5. Administrative simplifications are needed, reporting must be simplified, and MS funding should be committed before the partnership starts, to avoid year-to-year uncertainties.

The Working Group agreed to focus further elaboration on the first three issues (chapter 3.1), since the last two are sufficiently covered in the related evaluations.

On the Public-Public Partnerships, the group agreed that this would require a more detailed analysis (chapter 3.2), in particular on the efficiency related risks of the mostly decentralised implementation via national funding bodies with different national funding rules. This has been identified by the evaluations of all P2P related evaluations, notably ERA-NET Cofund, JPI/JPP, Article 185, EIT/KICs and FET-Flagships as main efficiency risk. Other efficiency related challenges identified during the Horizon 2020 interim evaluation have been the following (see also Annex 1):

1. Lack of national coordination structures/mechanisms in many MS/ACs that wold allow for a better and more coherent linkage between national programmes and partnerships, including knowledge sharing and mutual learning;
2. Administrative inefficiencies in the operational management of partnerships by the COM, including budget flexibility and multi-annual financial arrangements

The group decided to focus its further work on the main efficiency related risk for P2Ps, notably the decentralised implementation, as the other topics were only to a limited extent within the merit of the group.

[2] http://ec.europa.eu/research/evaluations/index.cfm?pg=input_studies

3. Efficiency issues for PPPs, EIT-KICs and FET Flagships

3.1 Strengthen the role of and interaction with Member States

Currently, the Member States and Associated Countries are not or only to a very limited extent involved in the preparation and/or implementation and governance/management of JUs, cPPPs, FET-Flagships and EIT-KICs[3]. In order to ensure a better mutual consistency and potential alignment between R&I policies at EU and national level, including on industry related topics, all corresponding evaluations in the context of the Horizon 2020 interim evaluation recommend a better involvement of MS and AC, and the setting and implementation of their respective R&I policy priorities. It is important to see, however, how this rather general quest can be translated into concrete actions that provides added value and increases the overall leverage, while not creating additional complexities. A stronger involvement of Member States should not be to the detriment of the current flexibility of the PPPs, as required by the industry.

Experts suggest mostly increasing the impact of States Representatives Group (SRG) on PPPs Governing Boards' strategic research decisions, such as the multi-annual action plan. The specific example of the Public-Private Partnership for Electronic Components and Systems (ECSEL JU), having a tri-partite funding structure, highlights both, the policy value (better alignment of national and EU R&I programming), but also the implementation challenges, notably complex administrative procedures, delayed funding decisions and double reporting. Some JUs rely on MoUs and other non-binding forms of joint planning to align their activities with policies at EU, national and regional level and to synchronise and develop synergies with national research strategies.

The FET Flagships on Human Brain and Graphene set-up a dedicated ERA-NET (FLAG ERA) with the main objective to create mechanisms to facilitate and encourage integration of nationally/regionally funded research into the Flagship work plans by, in particular, launching dedicated transnational initiatives, for instance joint calls, and disseminate project information to relevant stakeholders. It needs to be seen, however, whether this is an effective approach for achieving a long-lasting structuring effect on research efforts in Europe and creating synergies and coordinated planning among European, national and regional activities. So far, the level of (cash based) funding committed by MS in the FLAG ERA falls far short of the initial intended amounts, and the 50-50% level of Flagship financing from EU and MS/AC has not been achieved[4].

As a good practice, the case of mature cPPPs, like Factories of the Future (FoF) can be mentioned. There is a clear impact of these initiatives on national policies in a few countries through the creation of dedicated mirror groups related to FoF. This is promoted by the EFFRA membership, which actively establishes a dedicated forum for contributing to national policies and research programmes, mainly through National Technology Platforms. More direct ways of including MS and AC in cPPPs' governance should also be devised.

In Article 187 initiatives, the participation of MS/AC is carried out through the State Representatives Group. However, this group has only an advisory role. In some cases the information received by the group is not relevant and shared only when it is already public, so the input given has no influence on the JUs decisions. To promote a better involvement of MS and AC the SRG should have a stronger role within the JTI.

All PPPs' interim evaluation reports claim the urgency for a better and more coherent KPI evaluation framework, within which it seems pertinent to include KPIs common to all initiatives within the same instrument measuring their performance in engaging with the Member States.

3.2 Include more & other stakeholders in proposals

It seems that most of the time, only a rather limited group of R&I actors, play a pivotal role in the implementation of current R&I partnerships with an industrial orientation. Often, these actors are based

[3] As elaborated in the Issue Paper on the Requirements for the set-up of a strategic coordinating process for the selection, implementation, monitoring and phasing out of R&I partnerships.

[4] It should be noted, however that the use of the indicator 'cash contribution to joint calls' is clearly underestimating the real national level contributions to the FET-Flagships, which includes as well substantive in-kind contributions.

in limited number of countries. R&I partnerships have not been as open as 'classic' open calls for proposals, and there is a widespread perception and evidence that still a number of barriers exist for the participation of smaller and excellent R&I players outside the Central European R&I networks. The 'closed clubs' system poses a risk that R&I partnerships do not fully exploit their potential and beneficial societal impacts, including on competitiveness.

The current R&I partnerships apply a number of good practices on how to best achieve an appropriate 'openness'. Some cPPPs have engaged national stakeholders in Member States during the preparation of the multiannual roadmaps through involvement of national multipliers. As a consequence, some Member States and regions have taken inspiration from the multiannual roadmaps when defining local priorities within the smart specialisation strategy.

In the case of the JUs, most of them should apply a system where a request for membership can be submitted at any given time and is evaluated on a case by case basis. Some organise competitive calls for membership on a periodic basis. Members are asked to contribute financially and /or provide in-kind contributions to the JUs in exchange of important benefits such as direct involvement in JU governance, voice on the definition of the research agenda and call topics, etc. In order to overcome some of the entry barriers and to demonstrate openness towards newcomers and players like SMEs, universities and research organisations, some of the JUs (CS2 JU, S2R JU) introduced different levels of membership (e.g. full members vs. associated partners) corresponding to different levels of financial contributions. In the case of S2R JU, smaller stakeholders have the possibility of participating in different ways, as members (in this case a long-term commitment and financial contribution is expected) or as beneficiaries participating in open calls.

It needs to be examined, however, if these practices, in particularly entry or annual fees, still represent a significant barrier to participation of smaller players. In addition, partnerships should be implemented via open calls on a much broader scale to maximise impact, while ensuring that there are no requirements in the call topics acting as barriers to participation. Also, the processes for the selection of future R&I topics must be open to all stakeholders.

Again, the evaluations call for appropriate KPIs which are capable to fully grasp the current openness of partnerships and identify existing barriers. While some general 'openness' KPIs should address the partnership landscape at large, specific ones are needed as well on the level of the individual initiatives (see also 'Criteria' issue paper).

3.3 Improve communications & dissemination of results and knowledge

A special emphasis on dissemination and communication is needed in order to ensure that results stemming from the R&I partnerships are available to other actors outside the partnership. In turn, better communication and dissemination might also attract more, outstanding stakeholders in the R&I partnerships. Better communication and dissemination will also increase the overall recognition of R&I partnerships at all levels, national, regional, EU, as well as industry and foundation level.

The current R&I partnerships apply a number of good practices on how to best communicate and disseminate results. For example, the Innovative Medicines Initiative (IMI) JU has set up a highly interactive website, providing a number of opportunities to gain access to research results and to get in contact with project participants. Some associations representing the industry side of the active cPPPs are managing very efficient platforms disseminating projects' outcomes, including marketable results, details on contributions to standardisation, information on spin-offs, etc. Such platforms have been observed, notably in the more mature cPPPs such as FoF, EeB and SPIRE. Nevertheless, the evaluation reports stress the need for more and better targeted communication campaigns and other measures to improve EU-13 participation rates in PPPs, in particularly the institutionalised ones.

Finally, it is not only the JUs that must disseminate their results, the Commission should also organise a portfolio management of the results in order to have a clearer idea of where and how to better exploit the various results.

4. Efficiency issues for Public-Public Partnerships: The ERA-LEARN survey

The ERAC Ad-hoc Working Group developed a survey jointly with ERA-LEARN that was addressed to ERAC members, research funders implementing P2Ps and researchers funded by P2Ps. The survey has been implemented by ERA-LEARN (University of Manchester and OPTIMAT). The detailed results of the survey are annexed to this issue paper. The following section only includes the main conclusions. As the survey to ERAC members and research funders included the same questions, the main findings are presented together, while the second section presents the main findings from the survey to beneficiaries.

The discussions in the group and thus of the survey were strongly oriented towards the notion of centralisation, based on the assumption that the current non-harmonised, highly individual and decentralised system of joint call implementation and project data management poses a significant 'efficiency' risk.

As a 'counter-term' for decentralisation, the term 'centralisation' has been used without necessarily considering the many rather critical connotations the term is associated with. As a working definition here, centralisation of joint call implementation and the project data management system should be understood as ***"the action or process of bringing these activities together in one business process [software] system or common interface. That minimises/avoids the existing efficiency risks while allowing seamless access for all required programme owners and programme managers"***

This working definition of the term 'centralisation' should be kept in mind when reading the following sections.

4.1 ERAC Members and Research Funders

The results of the survey to ERAC members (32 replies) and research funders (213 replies) led to the following conclusions:

1. Securing commitment and funding continue to be the main challenges for successful participation in P2P activities;
2. Further centralisation of activities related to implementation of joint calls are considered key in increasing the efficiency of their implementation, but there is significantly less support for centralising the management of funds;
3. A centralised management of data on proposals, projects including financial data, and their results, outcomes and impacts under CORDIS / eCORDA or ERA-LEARN is strongly supported;
4. Policy makers are by the majority in favour of centralised implementation structures, whereas research funders are more reluctant to transfer part of their activities to centralised service providers among the agencies, or dedicated structures. Moreover, this has to be seen against the background of national legislation and privacy data protection, and necessary arrangements to allow data transfer to centralised structures;
5. Relevance and impact of P2P depend highly on an increased political commitment at national level and stronger links with national policy priorities and end-users in the R&I community.

4.2 Researchers funded by P2Ps

The main findings from the survey responses of researchers funded by P2Ps (216 replies) can be summarised as follows:

1. The overall experience with the different stages from proposal submission to funding is very positive;
2. Negative experiences relate to the submission of applications to both national and central platforms, and double evaluations;
3. The following issues are considered major or moderate from the applicant's point of view:
    a. Different rules for research funding between participating countries resulting in complex management of grants (80%);
    b. Different timing in securing all national funding contributions for selected projects resulting in delays/cancellation of project start (74%);
    c. Different grant management and reporting procedures resulting in double reporting (59%);
    d. Different proposal submission or evaluation procedures resulting in double submission and/or evaluation (57%).

These findings clearly support further centralisation in terms of harmonisation and synchronisation of the joint call preparation and implementation as a main element to substantially improve the efficiency of implementation. It should be noted that these findings were reached with the current funding model for the vast majority of partnerships ('virtual common pot') and they do not entail a change to a 'real common pot' model.

In order to better understand the technical and legal barriers of different options for implementing a more common and harmonised data policy, a workshop was organised by ERA-LEARN and the Commission on 21 June in Brussels.

From the survey and the discussion at the workshop, the following conclusions for further work can be drawn:

1. Avoid the term 'centralisation' because it is associated by most stakeholders with a heavy, bureaucratic and inflexible system;
2. Clarify better the objectives of a more 'common and harmonised' data management system (operational efficiency, improved comparability with Framework Programme data, better evaluation and impact analysis);
3. Acknowledge further the existing approaches to overcome the efficiency risks of the de-centralised implementation of joint calls (one agency as 'call secretariat', only a few agencies that actually perform this task for many networks, etc.)

Clearly, additional work beyond the scope of this working group is needed to specify the requirements and objectives of such a common and harmonised data management system in more detail. ERA-LEARN could play a key role in facilitating further work on that issue.

5. Removing entrance barriers for newcomers and smaller R&I players: Approaches for project level 'openness' of R&I partnerships

While the issue of openness of R&I partnerships in general is covered in other Issue Papers of the ERAC Ad-hoc Working Group (notably on 'Criteria' and 'Process'), the overall openness needs to be translated to the level of the joint actions, currently mainly joint R&I projects stemming from transnational joint calls. The purpose of the analysis of openness here is to identify and describe existing good practices to ensure efficient openness at project level as the main measure to remove entrance barriers for newcomers and smaller R&I players.

The openness at project level can be addressed from different perspectives, in particular the following:

- Geographical composition of consortia;
- Composition with respect to newcomers /smaller R&I players;
- Eligibility for funding of legal entities from countries not participating at programme level in the initiative;
- Eligibility for participation of legal entities which are not eligible for funding;
- Communication, dissemination and outreach measures.

Eventually, potential future requirements towards R&I partnerships with respect to openness at the project level will need to be addressed in their initial design and monitored in their implementation.

The following paragraphs describe more concretely some good practices currently applied in the EU R&I partnerships to achieve more openness:

a) ERA-NET Cofund

The ERA-NET Cofunds apply a number of actions aiming at improving the overall 'openness'. These actions address in particular:

- **Targeted issues**: The standard approach for ERA-NET Cofund is to use at least part of the top-up funding from the Union as a real common pot to fill gaps in the ranking list. In many cases, the top-up money is used to provide funding to participating countries that have excellent partners on the agreed ranking list but no more national funding available. It allows maximising the number of projects that can be funded and results often in a better geographical balance of the project consortia funded. Other actions include targeted calls for research proposals of EU-13 countries on research topics that are highly relevant for EU-13 areas of interest and taking also into consideration their smart specialisation strategies;
- **Outreach and communication issues**: While not exclusively targeted on less R&D intensive partners, a number of ERA-Nets are offering partnering tools through matchmaking and brokerage events. Also, they offer dedicated measures to integrate new members through training and guidance on how to get actively involved in ERA-NET Cofund and to perform capacity building activities (e.g. development of competences for Work Package / task leadership roles). This is the case for instance of BiodivERsA 3 and TRANSCAN 2.

c) Article 185 initiatives

Under the EDCTP2 (European and Developing Countries Clinical Trials Partnership) initiative the calls are open for participation and funding for legal entities from EU Member States, countries associated to the Horizon 2020 programme, including those that are not European Participating States and not contributing to the programme, and sub-Saharan African countries. The EDCTP2 has targeted calls for proposals for capacity-building and networking, but these are targeted to sub-Saharan African countries.

The Article 185 initiative on metrology (EMPIR) is mainly targeting national metrology institutes (NMIs) based on contributions from their institutional funding. EMPIR has a targeted set of measures to open the programme to relevant research communities, raise awareness and involvement of non-NMI researchers in the programme, and support capacity building in countries with low level of metrology capacity. The programme has set a goal to grant 30% of the available EU funding for external participants. Capacity-building measures include mobility grants and specific research potential projects that enable new/smaller Member States or candidate countries to collaborate with more experienced

ones to develop their metrology capacity. EMPIR is the only Article 185 initiative that provides the same conditions as Horizon 2020 concerning eligibility for participation and funding.

The PRIMA (Partnership on Research and Innovation in the Mediterranean Area) initiative has included in the legal provisions the obligation to include members from the south side of the Mediterranean Sea in the project consortia.

d) Article 187 initiatives

Joint Undertakings have different approaches for project level openness to non-members. In some JUs there is a mixed approach where some calls are restricted to members only, and some open to non-members (SESAR JU, S2R JU, CSA2 JU). In two Joint Undertakings – CS2 JU and S2R JU – a minimum percentage of the EU contribution is reserved to open calls, but this share (30%) is considered too low. Finally, in some JUs calls are open to all, members and non-members (BBI JU, IMI2 JU, FCH2 JU, ECSEL JU), which can be considered as the most effective approach for ensuring project level openness.

While the JUs have in principle an open access policy towards membership, eligibility conditions and entry or annual fees apply. These conditions in itself may constitute a significant barrier, especially when significant amounts are required to join, as this is a *de facto* barrier to small players like SMEs and higher education institutions. To address some of the entry barriers and to demonstrate openness towards newcomers and players like SMEs, universities and research organisations, some of the JUs have introduced different levels of membership (e.g. full members vs. associated partners) corresponding to different levels of financial contributions. Bio-Based Industries (BBI) Partnership is one example of a JU that has made an effort to spread its geographical scope, and has developed an action plan for widening participation.

e) Contractual Public-Private-Partnerships

The cPPP evaluation highlights a set of measures to increase the openness of the project consortia to newcomers and smaller R&I players, notably efficient communication measures. Member States with lower rates of participation often need a more targeted awareness raising and communication strategy, including. local workshops, brokerage events, mentoring, sharing of best practices and success stories. In communicating funding opportunities for new projects, channels used for regular calls, such as National Contact Point networks, could be used more efficiently and improve the visibility of cPPPs activities.

Since cPPPs are fully embedded in Horizon 2020 Work programmes and their calls are managed following regular rules of procedure of H2020 calls from proposal submission to project finalisation, openness at project level is similar to H2020 calls. However, it has been highlighted that more efforts to reach the participation of newcomers and smaller R&I players have to be made.

The calls launched by the cPPPs are based on a beforehand agreed multiannual roadmap. These roadmaps are publicly consulted and approved by the representative of the industrial association. In this respect, transparency needs to be ensured. Some of the cPPPs have an efficient stakeholder communication involving national multipliers, like national technology platforms and participation mechanism in place, which could serve as good practice.

In addition, some associations are managing efficient platforms disseminating projects' outcomes, including marketable results, details on contributions to standardisation, information on spin-offs, etc. Such platforms have been observed notably in the more mature cPPPs such as Factories of the Future (FoF), Energy Efficient Buildings (EeB) and Sustainable process Industry (SPIRE). As a more concrete example, the EeB has launched a Coordination and Support Action to promote the entry of newcomers and SMEs, including some targeted work on EU-13 countries. In the 7th Framework Programme, EeB put in place a National Liaison Points network to liaise with Member States and other related national initiatives, but this network did not continue under Horizon 2020[5].

f) The European Institute of Innovation and Technology

To balance the high geographical concentration of KICs partners to a limited number of EU Member States, the EIT Regional Innovation Scheme (EIT RIS) was introduced in 2014. It is the EIT

[5] https://publications.europa.eu/en/publication-detail/-/publication/ee68731e-4a34-4f2a-aa10-40fe3451b296/language-en pp 19

Community's outreach scheme to involve more countries in the EIT's activities. Since 2016, 10% of the annual competitive EIT contribution to the KICs has been allocated in support of EIT RIS.

The EIT Digital, for example organises regular summer schools in Member States without an EIT Digital node, as part of their efforts to attract participants from these countries to the EIT Digital Masters programme. Another focus of the EIT RIS scheme is the Business Ideas Competition, jointly organized by EIT Health, EIT Raw Materials and EIT Food in cooperation with Climate-KIC. Here, applicants from the eligible countries are trained with the aim of delivering fundamental business planning skills, and further tips and tricks on how to talk with potential customers and investors. After a number of regional 'bootcamps', the participants will enter into a competition, where the top 5 teams in selected thematic areas will be selected and will have the opportunity to receive further training and mentoring and eventually compete at the Joint Pitch Finals and have the chance to win a money prize of €10,000.

The interim evaluation of the EIT, however, points out the fairly limited budgets of the scheme (based on the ARISE Network Programme case study).

6. Integration of R&I partnership project data in Cordis and eCORDA

As part of the 'Criteria' Issue Paper, the ERAC Working Group recommended that the future monitoring and evaluation of R&I partnerships should be included in the overall FP monitoring and evaluation framework.

As the core activity of R&I partnerships is the set-up and implementation of joint calls for proposals, resulting in transnational R&I projects, the corresponding project data need to be collected and analysed at European level, if possible within the existing EU level data warehouses of Horizon 2020, notably Cordis and eCorda.

Currently, project data from the cPPPs, the FET-Flagships and partly the Article 187 are included in eCorda, but not for other types of R&I partnerships. However, it should be noted that only the EU (cash) funded projects are included but not the (in-kind) partner-funded projects and/or activities, undermining an overall view on the different R&I partnerships. For P2Ps, project data are collected regularly by the ERA-LEARN consortium, however on a voluntary basis and in a different format. Data on the EIT/KICs are not included in the two systems.

The results of the ERA-LEARN survey (see chapter 4) underlined among all (public) core stakeholders the willingness to establish a central information hub for the collection and analysis of project/activity related data stemming from R&I partnerships.

Assuming an overall political willingness for such a central information hub, there will be the need to establish a roadmap to translate the political request into concrete implementation action. In principle, one can distinguish two broad phases in project funding, one phase before the funding decision and the second phase after the funding decision.

While the centralisation before the funding decision seems to be technically and legally quite straightforward (by using the tested FP tools), the centralisation after the funding decision appears challenging as here different legal systems and accounting systems will need to become, at least, compatible. This applies as well to the general issue of privacy and data protection.

A number of scenarios can be identified that will be further developed, including based on the discussion at the follow-up workshop in June 2018 (see chapter 6.1):

a) Use of individual IT solutions per network for proposal submission and evaluation, with subsequent transmission of data to national/regional research funders for grant management, and to the Commission for integration in eCORDA and CORDIS;
b) Agreement between MS/AC and a single or few standardised IT solutions for proposal submission and evaluation, with subsequent transmission of data to national/regional research funders for grant management, and to the Commission for integration in eCORDA and CORDIS;
c) Use of Commission IT tools for proposal submission and evaluation, and Commission services for legal entity validation, with subsequent transmission of data to national/regional research funders for grant management;

The grant management of selected projects is typically organised in a decentralised way, at national level, with few exceptions, EMPIR, EDCTP, and two ERA-NETs. In the latter case the national programmes participating agreed on one of the participating research funders acting as a ‘handling agency’ and managing the grant agreements for all consortia, including the management of national funds that were transferred to them (after the evaluation and once the respective national contributions had been identified). This results in a one set of funding rules, single grant agreement, identical start dates for all partners, and a single reporting. Beneficiaries consider this as a major simplification. The survey and the discussion in the working group have shown once more that a 'real common pot' approach seems still confronted with too many legal, administrative and political barriers. Member States and Associated Countries should explore other scenarios for a more efficient grant management and reporting of funded projects, on the basis of commonly agreed rules and procedures and single grant agreements for transnational R&I projects.

Annex 1

Efficiency related findings and recommendations from the Horizon 2020 interim evaluation and associated reports and documents

Table 1: ERA-NET Cofund - 'efficiency related' findings and recommendations

ERA-NET Cofund
Improve efficiency of implementation by stepping-up the learning curve and sharing knowledge, experience and good practices ▪ DG RTD should ***continue the communication and training activities*** addressing the relevant Commission services with a particular focus on the policy objectives and the use of ERA-NETs in the context of thematic strategies. At the same time, they should ensure the coherent implementation of actions across services including executive agencies. Particular attention should be paid to the ***financial issues*** consortia have to take into account. ▪ ***Guidance on preparing and implementing ERA-NET Cofund actions*** should be further improved, notably within the ERA-LEARN 2020 context, serving both the needs of newcomers and those of more experienced ERA-NET partners. This should cover the entire cycle from proposal preparation, grant agreement preparation, organisation and implementation of the co-funded call and other activities, monitoring and impact assessment. ▪ Particular attention should be paid to ***exploiting synergies with European Structural and Investment Funds (ESIF)*** with a view to better aligning operational practicalities in the next programming cycle. ▪ ***ERA-LEARN 2020***, the common support platform for public-public partnerships, should play a ***central role in organising the knowledge sharing process and documenting good practices*** in close collaboration with users. The aim should be to establish standard practices that can be implemented across all ERA-NETs. The visibility of ERA-LEARN 2020 and the important services it provides needs to be improved. ERA-LEARN could also expand its role to that of a supplier of professional services on demand by ERA-NETs, especially in tasks related to managing calls and disseminating results.
Ensure efficient management of the EU contribution and national contributions ▪ Participants should ensure that calls' financial management aim at ***maximising the number of proposals evaluated above threshold that can be funded***. This requires sufficient and balanced national financial commitments and a relationship of trust between the participants as well as dissemination of good practices. ▪ Complete absorption of the financial commitment from the EU to the ERA-NET Cofund actions is a major concern for Commission services and requires participating states to make national commitments to the co-funded calls in excess of the minimum amounts necessary to justify the requested EU contribution. ***Any funded actions should include a minimum of 25 % reserve in order to reduce the risk of not fully using the EU contribution***. ▪ Participating states and their funding agencies should consider ***standard practices that can be implemented across all ERA-NETs to simplify implementation and minimise wasteful use of resources,*** e.g. common funding rules with the possibility to centralise grant management, common reporting procedures, common starting dates of projects, etc., abiding by Framework Programme standards.

Table 2: Joint Programming Process and JPIs - 'efficiency related' findings and recommendations

Joint Programming Process, Joint Programming Initiatives
National structures for coordination, funding and management of JPIs: the situation on development of national inter-ministerial structures to support the joint programming process is rather mixed. Some have mirror groups, or have already embraced societal challenge research, and therefore demonstrate high level commitment but too many have not really made any progress.
Role of the Commission: the provision of financial support through CSAs and the ERA-NET instruments has clearly been vital to the development of the JPIs. Perhaps more important has been the role of the Commission in helping the JPIs to position themselves within both the European and international societal challenge landscape but some feel that "the Commission does not support the JPIs equally". There is a general feeling that the MS-led joint programming process is not sustainable, especially during times of severe economic austerity in many countries, without a stronger role for the Commission.
Operational bureaucracy: it is obvious that there is a high degree of operational inertia that is affecting the progress and potential impact of the JPIs. Too much of the scarce executive resource seems to be devoted to securing financial support from the Commission, supporting the GPC and dealing with national delegates that do not have sufficient decision making authority.

Table 3: Article 185 initiatives – 'efficiency related' findings and recommendations

Article 185 (SWD – Staff Working Document)
The implementation structures of the Article 185 initiatives are in general efficient, independently of the applied management model, when considering the challenge to accommodate the multitude of different national practices and cultures in R&I programming;
The work of the individual Dedicated Implementation Structures (DIS) is efficient, with all initiatives respecting the thresholds of the Union contribution foreseen for administrative expenditures;
Individual assessments find administrative requirements from the Commission for the adoption of annual work plans, annual reporting and its approval rather heavy;
The fully decentralised implementation modes of AAL2 and Eurostars2 bear the risk of additional administrative burden for beneficiaries;
The central evaluation system of Article 185 initiatives is considered as major achievement to improve efficiency of transnational programming;
All Article 185 initiatives appear to be on good track to meet eventually their efficiency related objectives until the end of the programme.
A185 meta-evaluation
The governance of the Dedicated Implementation Structure appears heavy It is clear, however, that there are a number of inefficiencies that are inherent in either the way that the legal framework is interpreted by the Commission or the political realities of committing national funding to joint programming. For example, the delegation agreements between the Commission and the DIS appear to be very procedure-based rather than outcome/impact-based. This includes Commission approval of the annual work plans.
There is a lack of flexibility or harmonisation of national co-funding models The political realities of joint programming are such that, in most cases, national funding organisations are only able, or willing, to co-invest through a well-proven model known as the 'virtual common pot' in spite of its inherent inefficiencies. This ensures that they only fund successful applicants from their own country. While the central evaluation system established in all Article 185 initiatives is perceived as a major strength, there is only limited evidence about further harmonisation of funding rules across the participating states.
The creation of a separate DIS for each individual Article 185 initiative is not mandatory One of the major criticism concerning Article 185 initiatives is that, until now, the Art. 185 TFEU was interpreted by the Commission in such a way that each initiative had to create an ad hoc execution structure. Setting up such a structure (created each time anew) is a burdensome and time consuming activity, which has led to considerable time lags and delay in starting initiatives financed under Article 185.
Relevant recommendations (no 4): Substantially improve efficiency of the Article 185 instrument within the existing legal and administrative framework. There is scope to realise substantial efficiency gains by creating a single structure, preferably a public body, to serve all of the active Article 185 initiatives. Decisions concerning the Annual Work Programmes and the Delegation Agreements should be delegated to the level of Directorate General.

Table 4: Contractual Public-Private Partnerships (cPPP) – 'efficiency related' findings and recommendations

Contractual Public-Private Partnerships (cPPP)
Overall the management of cPPPs has been efficient. In terms of time to grant and success rates they have performed better than the average of Horizon 2020, although there is still room for improvement. Areas remarked in many of the interviews include more focused, challenging and dynamically updated roadmaps and more alignment between roadmaps and calls.
Nevertheless, the implementation of cPPPs and their management do not represent additional public financial burden as this is supported by the private side. The cPPPs have benefited from the overall simplification approach of Horizon 2020. The fact that cPPPs are sharing common Horizon 2020 rules represents a driver towards implementation and cost efficiency for all stakeholders.
Participation of non-association members of the association is measured as a function of number of participations as well as a percentage of EU funding. This is a reasonable approach for high participation rates of non-members throughout all the cPPPs, which can be considered as an indicator of efficient implementation also in terms of openness and representativeness of the roadmap for the whole industry.
On the other hand, to reduce the risk of widening the technological gap in Europe, more effort should be made to involve as many relevant stakeholders as possible, including EU-13 based participants. Collaborative work with Member States and national/regional initiatives could be used for this purpose.
The governance of cPPPs should be revised. Associations and the Commission should enhance the transparency of the management processes, widen the debate and regularly update reference roadmaps focussing on reaching the highest number of stakeholders and the broader society. Furthermore, the systematic dissemination of results, the development of studies of exploitation and the transferability of technical solutions within the same sector and along the supply chain are strongly encouraged. Participation of SMEs and EU-13 countries should be fostered.

Table 5: Article 187 Initiatives – 'efficiency related' findings and recommendations

Article 187 (SWD)
All expert groups concluded that the JUs carry out their operations in an efficient manner. The Commission shares the positive views of all expert groups on the operational efficiency of the JUs, even though it is unfortunate that the current lack of Horizon 2020 project outputs limits the possibility for an in-depth comparative assessment of inputs invested against outputs/impact acquired.
Most experts consider the JUs to be lean and efficient organisations operating with low administrative costs (5 out of 7 JUs function below 5% of their operational budget) given the complexity, spectrum and volume of operations that they are called to carry out by respecting and following EU rules and procedures.
Basic performance indicators such as time-to-grant, time-to-inform and time-to-pay are all shown to be within the set targets and have shown improvement in comparison to the first generation JUs under FP7.
To a certain extent the improved operational efficiency can be attributed to the uniform application of the H2020 Rules for Participation and the accompanying simplification measures and to the corporate IT support tools that have grown to maturity since FP7. While this is true for many of the JUs, the SESAR JU experts consider that enforcing the application of the H2020 rules that were developed specifically for carrying out traditional R&I activities, may not be the most appropriate approach for PPPs such as the SESAR JU, which carries out activities beyond R&I. They also express concern on the cumbersome reporting imposed to each JU member by the above-mentioned rules, which may lead in some cases to double reporting requirements.
Overall, it is concluded that public funds have been managed through transparent processes and competitive calls, even though complaints are voiced with regard to the process of defining call topics in some JUs and the share of the budget reserved for open calls in others. An added complication that impacts efficiency is reported by the ECSEL JU experts on the need for projects to report both to the JUs and the funding national authorities.

Table 6: FET-Flagships 'efficiency related' findings and recommendations

FET-Flagships
It is still too early in the history of the Flagships to be assessing this aspect in detail. Measuring efficiency in terms of share of management cost compared to overall cost, and showing better indicators in the Flagships in comparison to smaller-scale programs, may not be fully satisfactory. This matter needs to be considered in more detail as the Flagships develop, particularly in respect to factors that may affect efficiency in the longer term. The most important matters are those that relate to the efficiency of strategic and operational management, and the efficiency of the mechanisms that link the Flagships to national initiatives.
The operational management aspect of the implementation model is a key to effectiveness. The Flagship operational management model is however, very similar to that used for smaller scale Research and Innovation projects. This is potentially problematic in terms of the flexibility to manage activity and associated budgets.
Representatives of the Graphene Flagship noted that, as a consequence of the two-year funding cycle for Core Projects, consortia are involved in a constant bidding process. This is complicated by the need to navigate the interests of 100+ partners, which is without doubt an unwieldy exercise. This could however be avoided if the funding window were much longer, with appropriate checks initiated to verify the continued relevance of funded work.
Funding rules should be looked at in the context of, for example, providing opportunities to pursue activities that cannot otherwise be undertaken. Such a situation might be investments in strategically important equipment on a different basis to that established for smaller (in terms of size and duration) research projects.
Regulations and procedures required by the Commission, which may well work when overseeing small-scale projects, also do not necessarily scale up to the Flagship level. They can result in an enormous overhead, as well as much reporting (which itself is a burden that ultimately will affect efficiency) out of proportion with the value of such grants to individual members of the Flagships.
Efficiency is also linked to the extent to which the single Core Project model, with external Partnering Projects, allows the best and most relevant research to be undertaken within the Flagship. Given the complexities and challenges that have arisen, linking the two in an efficient manner remains an issue to address. Because of this the synergies expected under the model of Core and Partner Projects have yet to be fully realized. The relationship between Partnering Projects and the Core Projects of the Flagships must therefore be improved.
Relevant recommendations: Improve operational management to enhance the budget flexibility and reduce administrative overhead Funding models and funding time-scales should be changed to reflect the special nature of the Flagships. A longer funding cycle should be implemented to improve the flexibility needed to respond to changing circumstances and opportunities. This will also help further increase administrative efficiency. National and EU level schemes should be examined to see which good practices could be transferred across to the Flagships. A relevant example at national level is the Innovate UK's funding for Catapult Centres.

Table 6: EIT and its KICs 'efficiency related' findings and recommendations

EIT/KICs
The EIT administrative costs are low and in line with those of the H2020 Executive Agencies. The EIT spent 2.4% of its 2015 annual budget on administrative costs, which is significantly below the 5% threshold set out in the H2020 legal base. It should also be noted that the incidence of administrative expenditure on the overall EIT budget has been steadily decreasing over time, thanks to falling overhead costs and a higher productivity of EIT officers.
The focus of the KICs' business model on the integration of the Knowledge Triangle limits the possibility of an analysis of the KICs' expenditure per unit of output.
The KICs' management costs have improved over time following the EIT's efforts to limit their weight within the KICs' accounts.
Cross-KICs interactions contributed to mutual learning and to a sound evolution of the KICs' governance and management model.
Among other factors affecting efficiency, the KICs partners indicated the annual funding agreement as a prominent one.
It is still too early to draw conclusions on the KICs´ capacity to achieve financial sustainability. A number of sources of income have been identified so far, however more time is still needed to generate a steady flow of external financial resources. EIT carefully monitors the progress of KICs in implementing their financial strategies.
Areas for improvement: There is still room for KICs to improve the efficiency of the central management of their partnerships. The adoption of an approach and a cost categorisation able to assess the cost effectiveness with which KICs achieve their results is desirable. A shift to a multi-annual financing arrangement between the EIT and the KICs, by granting a higher degree of flexibility, would have a positive impact on the KICs´ efficiency.

Annex 2

Results of the survey of the ERAC Ad-hoc Working Group on Partnerships (with the support of ERA-LEARN)

Contents

1. Introduction

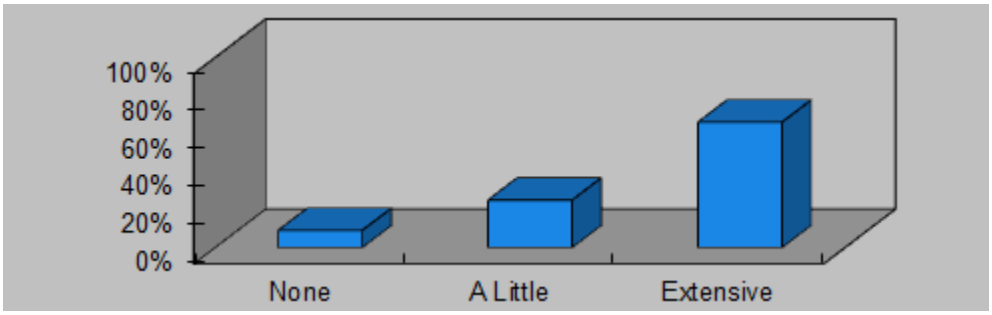
The ERAC Ad-hoc Working Group on Partnerships has developed the concept of a survey, addressed to ERAC members, research funders implementing P2Ps and researchers funded by P2Ps. This has been further developed and implemented with the support of the Commission Services and ERA-LEARN (University of Manchester and OPTIMAT).

The final extraction of results took place in mid-March 2018. The following figures show the full results and conclusions for the questionnaires responses submitted by ERA members, research funders and researchers funded by P2Ps. Also responses not fully completed have been included in the analysis.

2. Descriptive statistics

32 responses were received from ERAC Members, out of which 23 were complete. The replies cover 18 countries (Austria, Belgium, Switzerland, Cyprus, Czech Republic, Germany, Denmark, France, Greece, Croatia, Hungary, Ireland, Lithuania, Norway, Portugal, Sweden, Slovenia and Slovakia. Two thirds of the respondents from ERAC Members possess extensive experience with P2Ps, while 25% declare they had some level of experience in dealing with P2Ps.

Figure 2: Extent of experience of participation in P2Ps for ERA Members



213 responses were received from funding organisations, out of which 153 were complete. The majority of them come from Germany, France, Netherlands, Italy and Austria, representing 43%. Over a third (34%) of respondents from funding organisations had coordination experience in P2P networks, while 60% participated only as a network partner, thus validating the relevance of the survey results (figure 4).

Figure 3: Geographical distribution of respondents from funding organisations

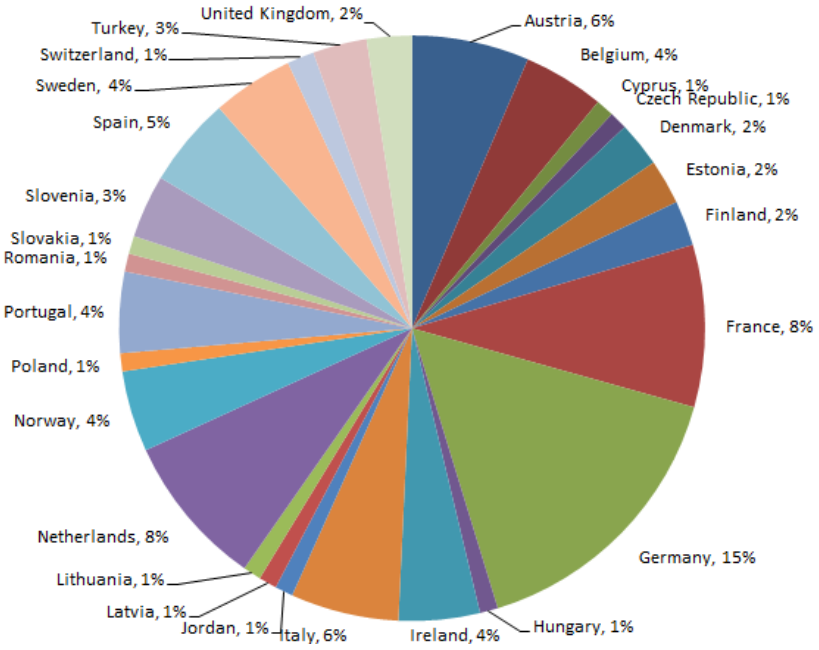
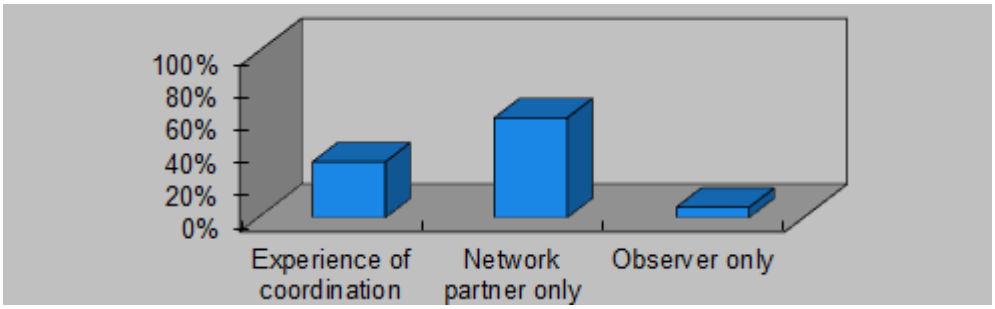


Figure 4: Type of participation in P2P networks for respondents from funding organisations



216 responses were received from funding organisations, out of which 182 were complete. The majority of respondents are found in Germany, Spain, Netherlands, Norway, Portugal and Switzerland, representing 48% of replies. Almost half of the respondents from beneficiaries (47%) possess coordination experience in research projects, whereas the other half (53%) participate in the P2P networks only in the capacity of a partner.

Figure 5: Geographical distribution of respondents from beneficiaries of research projects

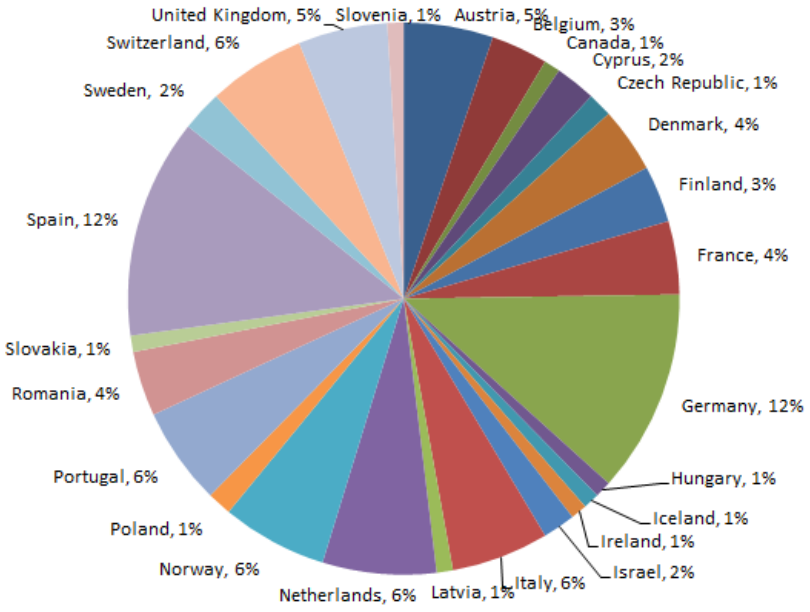
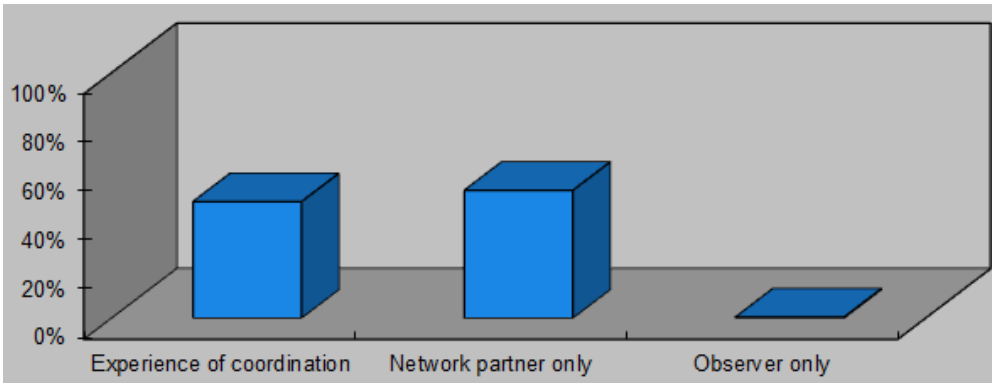


Figure 6: Type of participation in P2P networks for beneficiaries of research projects



3. Main findings of the survey

With respect to survey responses of ERAC Members and research funders, the main findings can be summarised accordingly:

- Financial commitments to the joint calls and resulting projects, as well as providing resources for participation in networks and activities are regarded as the main challenges for the implementation of P2Ps
- Further centralisation of activities related to joint calls are considered highly desirable, but there is significantly less support for centralising the management of funds. While policy makers are in general in favour of centralised implementation structures, the research funders are more reluctant to transfer part of their activities to centralised structures.
- There is strong support for full centralisation of all proposal and project related data, as a centralised data management is considered key in improving the efficiency of implementation for P2P calls and resulting projects.
- Increased political long-term commitment at national level, increased budgets for Joint Calls and establishing stronger links and cooperation with end users of research (industry, public services, policy) and with national policies and priorities (e.g. sectoral ministries) are regarded as the top measures for improving the relevance and impact of P2Ps

The main findings from the survey responses of researchers funded by P2Ps can be summarised as follows:

- The overall experience with the different stages from proposal submission to funding is very positive;
- Negative experiences relate to the submission of applications to both national and central platforms, double evaluations and getting through the red tape
- Standardisation is very much requested, beneficiaries considering it very useful to have common rules (funding, reporting, etc) and timelines among funding agencies, with a single platform and single management like Horizon 2020 standard projects
- The following issues are considered major or moderate challenges from the applicants point of view:
  - Different rules for research funding between participating countries resulting in complex management of grants (80%);
  - Different timing in securing all national funding contributions for selected projects resulting in delays/cancellation of project start (74%);
  - Different grant management and reporting procedures resulting in double reporting (59%)
  - Different proposal submission or evaluation procedures resulting in double submission and/or evaluation (57%).

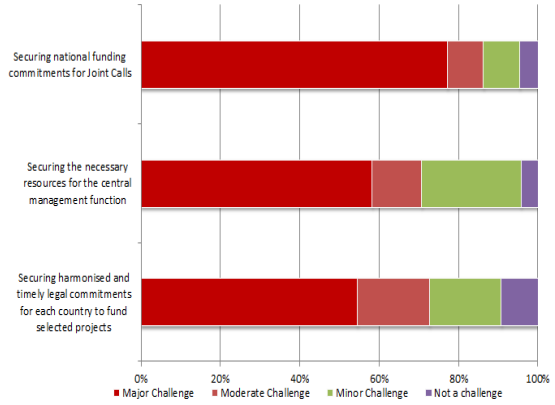
4. Full survey results

4.1 Challenges for implementation of P2Ps

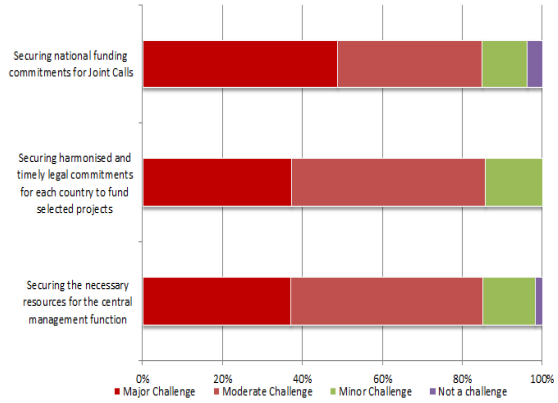
Figure 7: Main challenges for the implementation of P2Ps

Main challenges for the implementation of P2Ps

ERAC members



Research funders



Survey results

The chart shows that the three main challenges for the implementation of P2P identified by the ERAC members and the research funders are the same, with a certain variation in order and absolute values:

- Securing national funding commitments for Joint Calls;
- Securing the necessary resources for the central management function;
- Securing harmonised and timely legal commitments for each country to fund selected projects.

Other noteworthy challenges include developing consensus on priorities for Joint Calls for R&I projects and organising the management and distribution of funding for each beneficiary

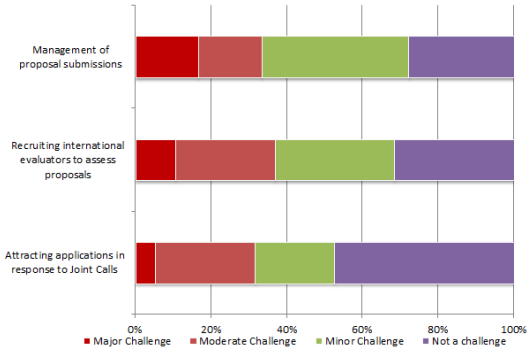
Conclusions

From a national perspective the main issues for a successful participation on P2P activities remain to be the financial commitments to the joint calls and resulting projects, as well as providing resources for participation in networks and activities.

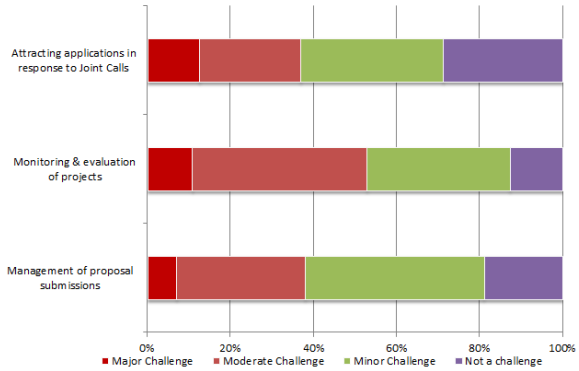
Figure 8: Least burdensome issues for the implementation of P2Ps

Least burdensome issues for the implementation of P2Ps

ERAC members



Research funders



Survey results

The chart shows the three least burdensome issues for the implementation of P2P identified by the ERAC members and the research funders are almost the same, with various fluctuations:

- Management of proposal submissions
- Attracting applications in response to Joint Calls
- Recruiting international evaluators to assess proposals
- Monitoring & evaluation of projects

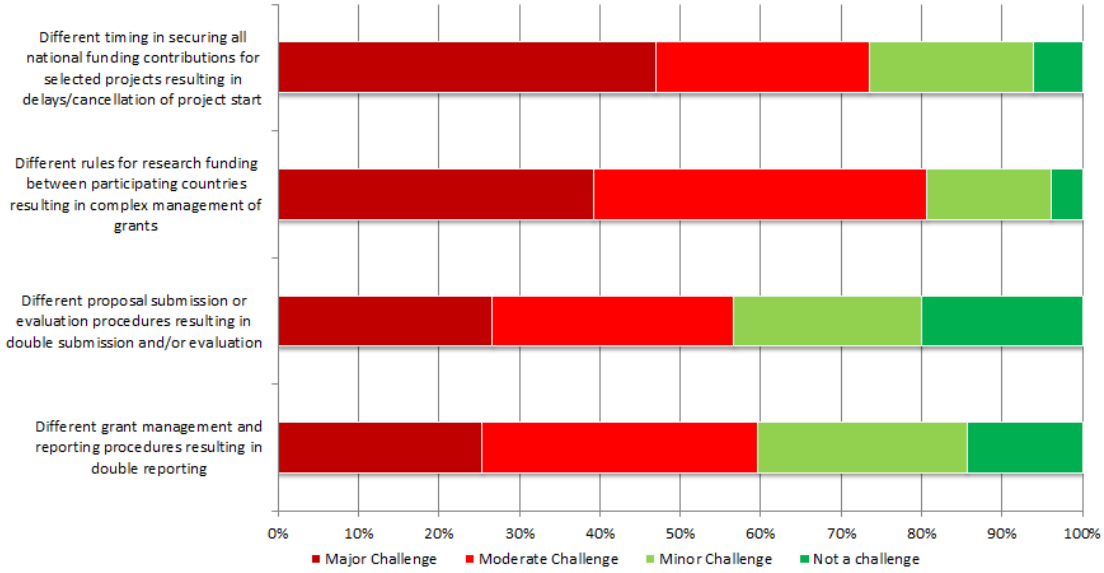
Among other issues which do not pose major challenges, the contractual reporting of project progress and deliverables and developing other joint activities are noteworthy.

Conclusions

Member States do not seem to encounter major issues for a successful participation on P2P activities with respect to attracting applications and managing their submission and follow-up

Figure 9: Main challenges for the participants/beneficiaries in transnational research projects

Main challenges for the participants/beneficiaries in transnational research projects



Survey results

Differences in timeline, in rules for participation, in procedures for proposal submission and evaluation and in grant management and reporting procedures are regarded as the main challenges for beneficiaries in transnational research projects. The biggest challenges are constituted by delays and cancellations of project start due to different timing in securing all national funding contributions and by complex management grants due to different rules for research funding between participating countries.

Additionally, beneficiaries of transnational research project were asked to offer comments concerning other challenges encountered as well as ways to improve the selection and/or management procedures for transnational research projects. The most relevant concerns are found in the following conclusion section.

Conclusions

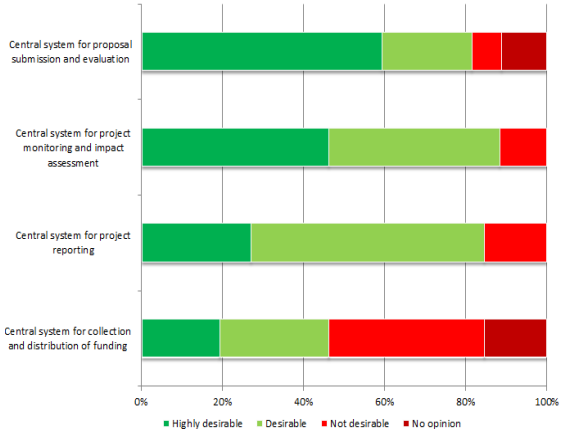
- Participants consider the burdensome administrative procedures as an extreme challenge
- Standardization is seen as a necessary measure to avoid duplication of efforts
- Beneficiaries consider it very useful to have common rules (funding, reporting, etc) and timelines among funding agencies
- Notwithstanding whether the project is funded nationally or not, participants consider it should be submitted in a unique platform and managed as a single project, instead of several partner-national funding projects, where each partner has its own management and different ways to report and to validate the investment
- A single platform and single management like Horizon 2020 standard projects are thus highly recommended

4.2 Improving efficiency of implementation for P2Ps

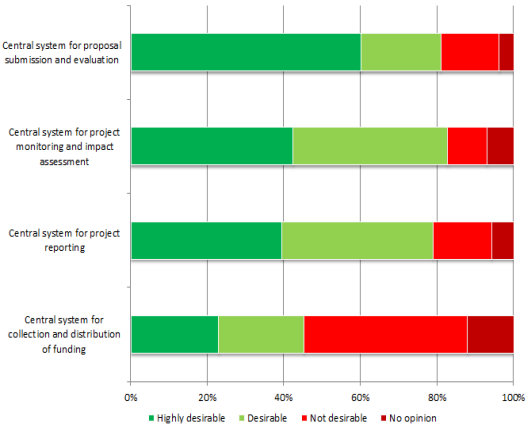
Figure 10: Desirable measures to improve the efficiency of implementing Joint Calls of P2Ps

Desirable measures to improve the efficiency of implementing Joint Calls of P2Ps

ERAC members



Research funders



Survey results

The chart shows that both ERAC Members and research funders are in favour of more centralisation in order to improve the efficiency of implementing Joint Calls. Strong support for centralisation is manifested by both parties with close to 80% or more of respondents from both groups considering highly desirable or desirable central systems for proposal submission and evaluation, project reporting and project monitoring and impact assessment. Only a minority of respondents from both groups consider a central system for collection and distribution of funding desirable.

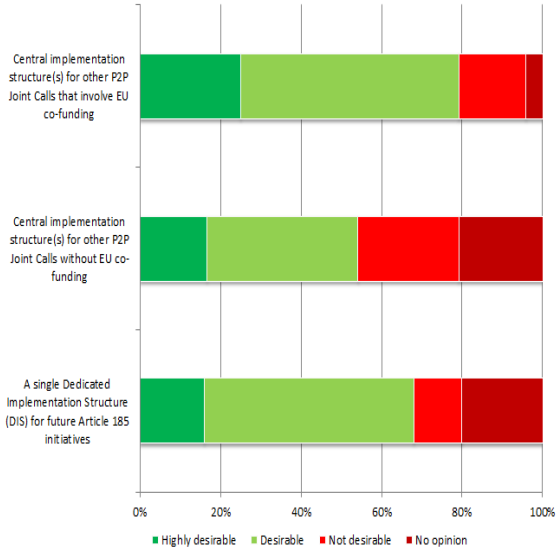
Conclusions

Further centralisation of activities related to joint calls are considered highly desirable, but there is significantly less support for centralising the management of funds.

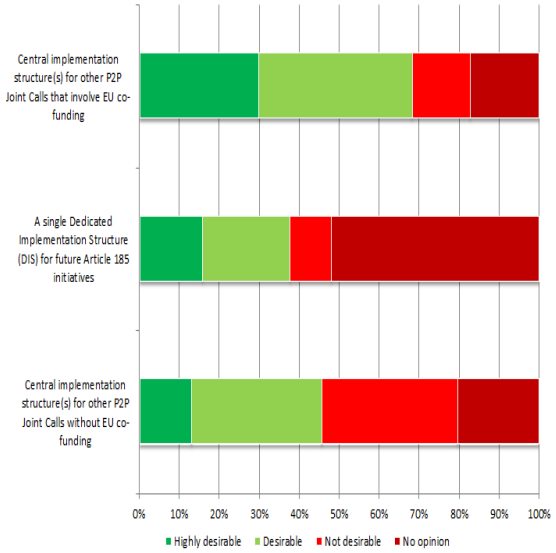
Figure 11: Central implementation structures

Central implementation structures

ERAC members



Research funders



Survey results

ERAC respondents favour central implementation structures, with close to 80% considering a central implementation structure for other P2P Joint Calls with EU cofunding as desirable or highly desirable in comparison, and still 70% positive concerning a single Dedicated Implementation Structure (DIS) for future Article 185 initiatives. The research funders show in general less support for centralised structures, with those supporting Joint Calls with EU cofunding receiving the strongest support.

Conclusions

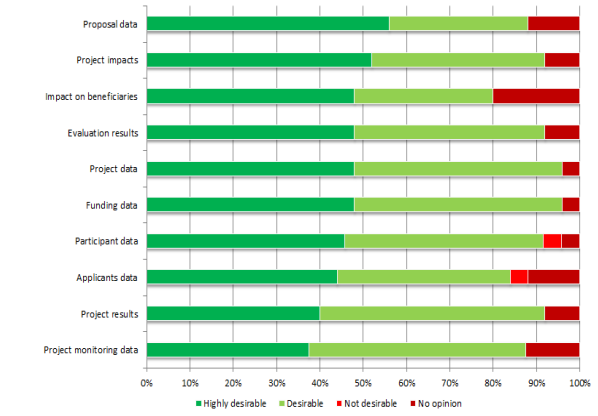
Policy makers are in general in favour of centralised implementation structures, whereas the research funders are more reluctant to transfer part of their activities to centralised structures.

4.3 Data management

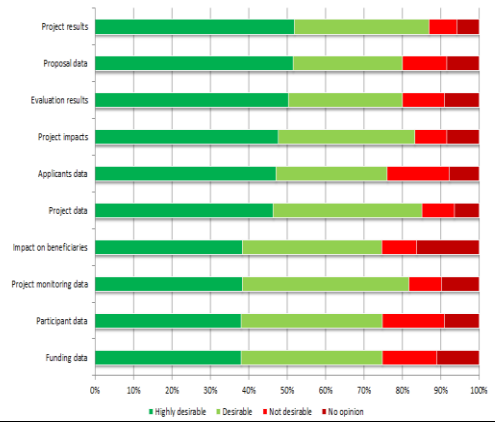
Figure 12: Centralisation of data management functions

Centralisation of data management functions

ERAC members



Research funders



Survey results

The chart shows both groups consider central management of data for the entire lifecycle from proposal submission to impacts as desirable or highly desirable (min.75% for all elements). Funding organisations place more emphasis on the centralisation of project results, while respondents from ERAC view the centralisation of funding data as the most desirable centralised data management system.

For the technical realisation very strong support is expressed for eCORDA and Cordis, still very high well as for ERA-LEARN and considerable support for a combination. A new, customised data management system developed by Member States receives little support only.

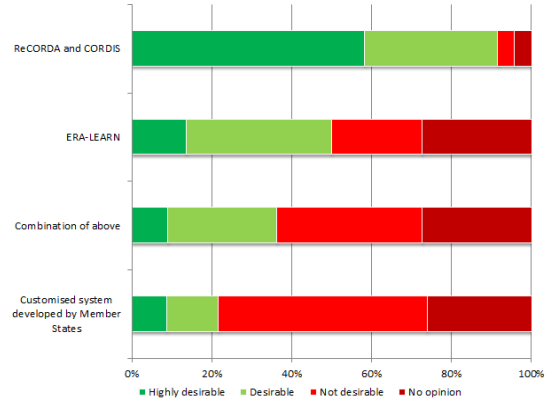
Conclusions

A centralised data management is considered key in improving the efficiency of implementation for P2P calls and resulting projects. There is strong support for full centralisation of all proposal and project related data. For the technical realisation a number of options are considered valid, which will need to be further analysed in terms of feasibility.

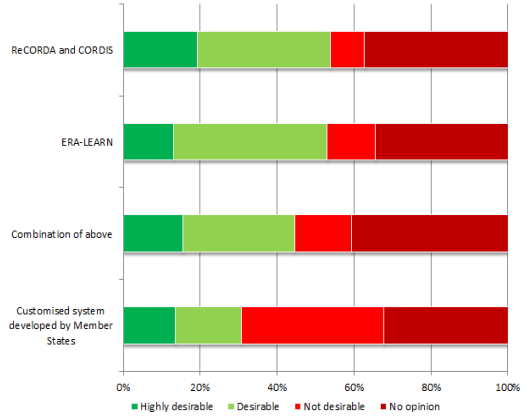
Figure 13: Options for data management platforms

Options for data management platforms

ERAC members



Research funders



Survey results

The chart shows strong homogenous support for using both the eCORDA and Cordis databases and ERA-LEARN as the main data management platforms for the implementation of EU partnership initiatives. The former platform has a slightly higher support than ERA-LEARN but considerable support is expressed for a combination of the two as well. This is in stark contrast to a customised data management system developed by Member States, where less than 30% of respondents consider such a system developed by Member States as desirable or highly desirable.

Conclusions

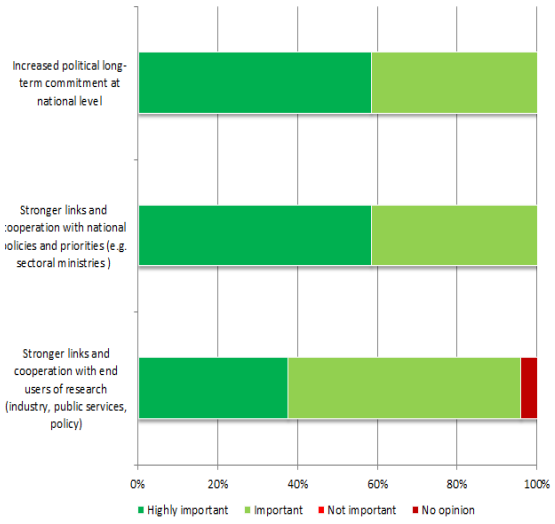
A centralised data management platform to improve the efficiency of implementation for partnership initiatives is considered highly desirable by the majority of participants

4.4 Improving the relevance and impact of P2Ps

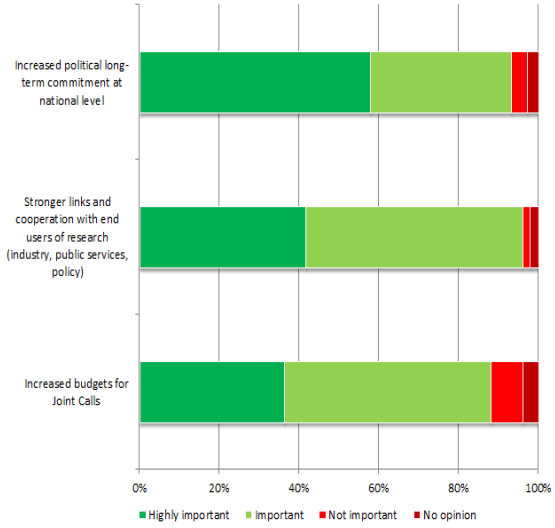
Figure 14: Measures to improve the relevance and impact of P2Ps (ERA-LEARN Survey)

Measures to improve the relevance and impact of P2Ps

ERAC members



Research funders



Survey results

Increased political long-term commitment at national level, increased budgets for Joint Calls and establishing stronger links and cooperation with end users of research (industry, public services, policy) and with national policies and priorities (e.g. sectoral ministries) are regarded as the top measures for improving the relevance and impact of P2Ps. Increased political long-term commitment at national level stands out as the most highly desirable measure across all stakeholders. Training & mobility activities, public procurement and financial instruments are considered the least important.

Conclusions

The main areas of improvement clearly identified are linked to the national R&I system and its positioning towards P2P participation.

Partnership Landscape related to Health Research

Description and Analysis

(March 29, 2018)

Introduction

ERA-LEARN 2020 is a support action (CSA) funded by Horizon 2020. It started in January 2015 as a support platform for the Public-Public-Partnerships (P2P) community. ERA-LEARN 2020 involves the main stakeholders engaged in designing and deploying the broad structures and functions for the coordination and cooperation of national and/or regional research programmes. It provides support to the P2P community in investigating what has been learned and achieved by existing networks, if expectations have been met, and which positive effects have been observed by participating organisations or countries.

The following document intends to support the work of the ERAC ad hoc Working Group on Partnerships by giving an overview on the partnership landscape in the health area. Due to the nature of the ERA-Learn consortium and activities, this overview, description and analysis is more detailed for the P2P-landscape for which the consortium has expert knowledge. For the PPPs and other networks, information available in interim evaluations, websites and by exchange with experts was the basis for the respective descriptions.

1. Definition of partnerships (P2P, PPP) and networks

According to the European Commission's definition, partnerships (public-public: P2P, public-private: PPP) are understood as joint endeavours of the Union with the public (P2P) or private (PPP) sector in order to **develop and implement a research and innovation programme**.

Article 2[1]:

(4) "Public-private partnership" means a partnership where private sector partners, the Union and, where appropriate, other partners, such as public sector bodies, commit to jointly support the ***development and implementation of a research and innovation programme*** *or activities.*

(5) "Public-public partnership" means a partnership where public sector bodies or bodies with a public service mission at local, regional, national or international level commit with the Union to jointly support the ***development and implementation of a research and innovation programme*** *or activities.*

However, in current discussions on partnerships, a broader definition has been used, including also the EIT-KICs and the FET Flagships. Throughout this document, we follow the EC's definition of partnerships; moreover, we use the term "network" " in order to describe groups of actors working together towards common goals (other than preparing and implementing R & I programmes), but P2P and PPP only as defined by the EU regulation.

[1] Article 2, REGULATION (EU) No 1291/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2013 establishing Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020) and repealing Decision No 1982/2006/EC

2. Partnerships and networks: description and analysis of main characteristics

Figure 1 is the result of an attempt to summarize all initiatives contributing to the European Research Area. Specifically, the figure shows an overview of all **currently active** partnerships and networks related to health research (from https://www.era-learn.eu/network-information/thematic-clustering/health-1). The columns represent public-public partnerships (P2Ps), networks of public and private actors, public-private partnerships (PPP), and also EC funding instruments. Examples of P2P types: ERA-Net, JPI, Article 169/185 initiatives; example of PPP: JTI; examples of public-private networks: EIP, KIC, ETP, FET flagship; examples of EC funding instrument: CSA, ERA-Net Cofund.

As seen in figure 1, there are individual networks or partnerships for almost each column, and there is an overall large number of networks or partnerships yielding a seemingly complex overview. Figure 2 illustrates the same content but in a more schematic fashion.

In order to reduce this complexity, as a first step of an analysis, it is important to characterize and distinguish between **P2P, PPP, and other networks**.

2.1 Public-public partnerships – P2P

The main actors in P2Ps (left side of figure 2) are national and/or regional funding organisations (ministerial, agencies) from Member States and Associated or Third Countries.

The main P2P actors for EU and associated countries are listed in table 1. As can be seen, there are only one or two main funding organisations for each country engaged in most health P2Ps (e.g. ANR/France, BMBF/Germany, FWF/Austria, ISCIII/Spain, MoH/Italy) per country. Thus, the P2P landscape is rather coherent in terms of actors.

The main goal is the joint preparation and implementation of a research programme of common European interest. Many of the P2Ps' activities are related to reach this goal: definition of strategic research (and innovation) agendas; preparing the necessary call documents; setting up of a proposal submission system; checking the eligibility of received proposals; organizing the evaluation meetings; agreeing to a final funding decision within the group of involved funding organisations. P2Ps in health research (as in other research areas) are funding small- to mid-sized research consortia with national/regional funds, thereby **complementing the EC's funding** of larger research consortia through it's framework programmes. In general, health ERA-Nets and JPIs have implemented annual joint calls with between 10 and 20 Mio € spent national/regional budget per call. The article 185 initiative EDCTP has already launched 20 calls in only three years, with partially larger budgets (up to about 40 Mio € per call) shared by the EC and the Member States and Associated Countries.

The large interest of researchers in response to the health P2P calls (oversubscription usually about 10) demonstrates the **gap of** (disease-specific, horizontal theme) funding opportunities for **small- to midsized European research consortia**. This has been true during FP7, but much more so during H2020; the reason is that the EC has switched from disease-specific topics for research proposals in FP7 to open (horizontal) topics in H2020 (e.g. "clinical trials in paediatric cancer" in FP7 vs. "clinical

trials" in H2020), resulting in extremely small success rates (down to 2 or 3%) and plenty of frustrated applicants.

The activities of all P2Ps are rather similar and focussed on preparing and implementing joint calls. It is important to note that the (earmarked and) spent budget of these calls is very similar between health ERA-Nets and health JPIs. While JPIs have been expected to have a stronger impact on national programmes, this has not always been the case. Conversely, the planning and implementing of calls by ERA-Nets, including between 20 and 30 funding organisations from 15 to 20 countries has shown a large degree of coherent programme planning. Over the years, each health P2P has established **efficient and effective procedures** for the preparation and implementation of joint calls for proposals. Of course, due to the fact that most funders are engaged in many of the health P2Ps, these procedures have evolved to be quite similar from P2P to P2P, and from call to call. Because they are directly involved (in the various Call Steering Committees), representatives of less research intensive countries can learn from these advanced processes underlying joint calls ("widening", "alignment"). Some mature ERA-Nets, existing since more than 10 years, have ambitious activities comparable to some JPIs. For instance, the E-Rare consortium is currently preparing a European Joint Programme Cofund for Rare Diseases, involving not only research funders but also research and care performers (institutes, researchers, European Reference Networks, Orphanet etc.) with a total of about 60 to 70 participants. It is planned that this EJP will receive 55 Mio € EC Cofund, while the funders will launch five annual joint calls (in the EJP runtime of five years) with an expected spent budget of about 60 Mio €.

In addition, there are other activities of high importance: e.g., mapping national and transnational funding activities; improving the participation of funders from central and eastern European countries (widening); internationalisation; support the mobility and training of young investigators.

Within the general area of health research, some of the P2Ps address specific disease areas: rare diseases (E-Rare-3), cardiovascular diseases (ERA-CVD), neurological diseases (NEURON), cancer (TRANSCAN), antimicrobial resistance (JPI AMR, JPI-EC-AMR), neurodegenerative diseases (JPND), malaria/aids/tuberculosis (in sub-Sahara Africa: EDCTP). Other P2Ps address horizontal research themes with relevance for the disease-specific P2Ps: personalized medicine (ERA PerMed), systems medicine (ERAcoSysMed), nanomedicine (EuroNanoMed), technology-assisted support for the ageing population (AAL 2). Obviously, there is a certain degree of thematic overlap between the disease-specific P2Ps and the horizontal P2Ps.

Table 2 is the result of assigning the currently active (H2020) P2Ps relevant for health research in relation to FP9 intervention areas currently emerging from ongoing discussion. As can be seen, most intervention areas would be addressed by at least one P2P (with the exception of "Health and Care Systems"; note, however, that an ERA-Net is planned for this intervention area by the TO-REACH project currently active as a CSA). Moreover, each P2P can be assigned to at least one intervention area. Finally, all health P2Ps are partially relevant for the intervention area "Health throughout the life course", but for clarity, we have abstained from listing them (in addition to the better fit AAL2).

Health intervention areas in FP9 (under internal discussion)	Active health P2Ps
Environmental and Social Determinants of Health and Well-being	JPI HDHL, HBM4EU
Health throughout the life course	AAL2
Non-communicable diseases, including rare diseases	JPND, NEURON, ERA-CVD, TRANSCAN, E-Rare 3, ERA PerMed, ERAcoSysMed
Infectious Diseases	JPI AMR, JPI-EC-AMR, EDCTP2, ERA PerMed, ERAcoSysMed, One Health EJP
Data-driven digital transformation of health and care	ERA PerMed, ERAcoSysMed
Development, regulation and uptake of breakthrough, medical products, technologies and research tools	EuroNanoMed, ERAcoSysMed, (ERA PerMed)
Health and Care Systems	

2.2 Public-private partnerships - PPP

The Joint Undertaking IMI (Innovative Medicines Initiative) has its seeds in the European Technology Platform INNOMED which was founded 2005 in FP6. IMI 1 was founded in 2007 (FP7) and was succeeded by IMI 2 in 2014 (H2020). It will end in 2024.

IMI is organized as a Public-Public Partnership between the European Union (represented by the European Commission) and the European Federation of Pharmaceutical Industries and Associations (EFPIA), i.e. they do not include national/regional funding organisations from the Member States and Associated Countries. In the governing board, where decisions on the strategic research agenda are taken, both actors are equally represented.

For both initiatives, IMI and IMI 2, there is a planned budget of 5 Billion €. In order to realise the projects initiated by IMI 2, 3.2 Billion € are needed. Half of the budget is financed by the EC. Member States do only have an advisory role in the States Representatives Group (SRG). IMI 2 so far has implemented one call. 98 projects were funded.

The specific objectives of IMI 2 are to support the development of pre-competitive research and innovation activities with the aim to strengthen Europe's competitiveness and industrial leadership and to address specific societal challenges, in particular those to improve European citizens' health and well-being.

The Council Regulation additionally specified thematic focus areas. IMI 2 should:

- focus on priority medicines identified by the World Health Organisation (WHO) and increase the success rates of clinical trials.
- lead to reduction of time to reach clinical proof of concept in medicine development, such as for cancer, respiratory, neurological and neurodegenerative diseases.
- develop new therapies for diseases with high unmet need, such as Alzheimer's disease or with limited market incentives, such as antimicrobial resistance.
- develop diagnostic and treatment biomarkers linked to clinical relevance in various diseases and seek their approval by regulators.
- Provide tools, standards and approaches to assess efficacy, safety and quality of regulated health products.

IMI 2 can be assigned to all the FP9 intervention areas except "Environmental and Social Determinants of Health and Well-being" and "Health and Care Systems".

2.3 Other networks

In the other networks listed on the right side of figure 2, the main actors are not funders, and the main goals are not the funding of research.

The European Institute for Innovation and Technology (EIT) integrates business, research and education with the goal to effectively strengthen innovation in a pan-European way. In the

Evaluation Report from 2017, experts generally valued the achievements of the EIT: "The EIT adds value beyond national innovation support initiatives, and is coherent with and complements EU, national and regional innovation policy. The KICs have the potential to act as repositories of knowledge and good practice, and have built relationships with regional and national policy-makers."[2]

The EIT KIC Health promotes entrepreneurship and develops innovations in healthy living and active ageing. This will be achieved through delivering products, concepts and services, including educational programmes that will nurture talents and train the workforce of tomorrow. EIT Health is set together of knowledge and innovation communities of educational institutions, research organizations, companies and other actors of the knowledge triangle, who come together in the long term (up to 15 years). The overall objective is to find common solutions to new societal challenges and to translate them into innovative products and services. The overall budget is defined within the Strategic Innovation Agenda (SIA) and provided a prospective budget for EIT Health of about 271 Mio. Euro within Horizon 2020. However, the budget will be based on annual business plans provided by EIT Health and linked to actions which are executed by the KIC partners. EIT Health is a consortium of more than 50 core partners and 90 associate partners from leading businesses, research centres and universities from across 14 EU countries. It has to guarantee that additionally 813 Mio. Euro will be acquired by these partners in order to carry out the potential activities.

The European Innovation Partnership (EIP) for Active and Healthy Ageing (AHA) supports SMEs and Start-Ups so that they can distribute their technological solutions across Europe. AHA is a communication and information hub for all actors involved in Active and Healthy Ageing through Europe. It is the place to encourage partner engagement, promote news and events, meet and exchange ideas with peers, and look for potential partners on innovative projects. With its activities and priority areas, the AHA EIP focuses on the prevention, screening and early diagnosis; care and cure; and active ageing and independent living. The AHA fact sheet in the EIT Evaluation Report lists actors and commitments: "Since spring 2012, almost 600 commitments have been submitted by groups of stakeholders bringing together public authorities, technology companies, health providers, industry and non-governmental organisations. The six Action Groups have made further detailed action plans, and implementation of projects and initiatives has started, gathering 1,000 regions, 3,000 engaged partners and 300 leading organisations with over 1 billion € of commitments. They are expected to have an impact on over 2 million patients and 30 million citizens by 2015."[3]

European Technology Platforms (ETPs) are industry-led stakeholder fora which develop research and innovation agendas and roadmaps for action at EU and national level to be supported by both private and public funding. ETPs are independent and self-financing entities with a strategic, mobilising and

[2] Evaluation on the European Institute of Innovation and Technology, Final Report, European Commission, 2017
[3] Outriders for European Competitiveness; European Innovation Partnerships (EIPs) as a Tool for Systemic Change, Report of the Independent Expert Group, 2014

disseminating function. The ETP on Innovative Medicines Initiative prepared the ground for the subsequent JTI IMI. Another ETP relevant for health is the ETP NanoMedicine.

Future and Emerging Technologies (FET) Flagships are part of the FET programme under the Excellent Science Pillar of Horizon 2020. Flagships are intended to be visionary, large-scale, science-driven research initiatives which tackle grand scientific and technological challenges across scientific disciplines. At the point of inception of the Flagships, the overall FET programme was primarily focused on supporting visionary science and technology projects related to Information and Communication Technologies (ICT). This was done within the context of existing traditional funding instruments. It is intended that each Flagship will mobilize funding to the level of 1 billion €, for up to ten years. The plan is for 500 million € of funding per Flagship to be provided through the European Commission's Framework Programmes for Research. Additional funding is expected to come from other partners including universities, national initiatives, and the private sector.

In the Interim Evaluation on FET flagships of 2017 the following issues concerning the work of the Flagships were stressed: "While the Flagships demonstrate their effectiveness in delivering excellent science, their future effectiveness in supporting innovation still needs to be demonstrated… there is a need for improved interaction across the programme in order to guarantee the Flagships are informed about decisions taken in other parts of the Horizon 2020 programme and Commission policy elsewhere."[4]

The FET flagship HBP could be relevant for the FP9 intervention area "Data-driven digital transformation of health and care" and "Development, regulation and uptake of breakthrough, medical products, technologies and research tools".

Thematically, there is some degree of overlap between the Human Brain FET Flagship and the P2Ps JPND and NEURON.

2.4 Observations

In conclusion, P2P partnerships are made up by a coherent group of (national/regional) funding organisations, with the same goal of funding European research and the same set of funders in many of the existing P2Ps. The research funded by P2Ps is characterized by lower technology readiness levels (up to TRL 4).

There is an **inherent difference** between P2P and PPP partnerships or other networks (with regard to: actors, goals, activities). When discussing the rationalization of partnerships/networks, these differences must be taken into account in order to define the landscape where rationalization is feasible.

[4] FET Flagship, Interim Evaluation; European Commission 2017

The PPP IMI is also funding European collaborative research, but is made up of the EC (public) and EFPIA (private), i.e. without additional contribution by the Member States funding organisations. In general, IMI funded research can be characterized by TRL 5 and higher.

Finally, the other networks differ from P2Ps and PPPs in terms of goals and their main activities. Due to limitations in available time for analysis, and also due to limitations of the desk research, the information provided about the other networks may well be incomplete.

2.5 Overlaps between P2Ps and PPPs or other networks

There are some examples of potential overlaps between P2P and other networks: for instance, JPND, NEURON and HBP all address diseases or mechanisms of the brain but the specific foci differ (JPND: neurodegeneration, NEURON: all other neurological and psychiatric diseases, HBP: ICT-based modelling of brain mechanisms). Another example is the PPP IMI, which supports the development of next-generation vaccines, medicines and treatments in all fields of health research; IMI thus overlaps thematically with most health P2Ps (NEURON, E-RARE, ERA-CVD, TRANSCAN, JPND, JPIAMR). Finally, JPI AAL, JPI MYBL and EIP AHA all address different aspects of ageing research: AAL supports projects using Information and Communication Technologies in order to enhance the quality of life of older people; MYBL supports multi-disciplinary projects related to demographic change (e.g. welfare models, lifestyle); and AHA supports the (further) development of businesses in the field of active and healthy ageing.

2.6 Overlaps between P2Ps

Within P2Ps, there is some thematic overlap; e.g. there are P2Ps on cancer (TRANSCAN) and on rare diseases (E-Rare), and some cancers are rare. Despite this overlap, there is good communication between the P2Ps regarding the preparation and implementation of calls in order to avoid duplication of efforts. For instance, E-Rare's call exclude (rare) cancer projects from funding, whereas TRANSCAN's current call focuses on these rare cancers. There is no appreciable thematic overlap between the health article 185 initiatives (e.g. EDCTP2, AAL2) and the health ERA-Nets or JPIs.

3. Communication and interaction between partnerships

Health P2Ps usually limit their interactions to other health P2Ps, addressing themes of common interest (e.g. patient involvement, clinical trials, open access, biomedical research infrastructures, quality of pre-clinical studies). These interactions are goal-directed: e.g. best-practices identified by one P2P are incorporated in the preparation and implementation procedures for joint calls in other P2Ps.

Based on our extensive experience in participating in health P2Ps for the last 15 years, we are aware of only little interactions between P2Ps and the PPP IMI and the other networks.

Since almost 10 years, the EC and the ERA-Learn partners have organised an Annual (ERA-Net, Joint Programming) Conference. About 300 to 400 representatives of ongoing P2P projects meet at this occasion in order to discuss strategic issues and generally exchange opinions on networking between

the different projects. In addition, some Member States have established regular national meetings, where all P2Ps are represented and discuss best practices and other issues of common interest. Up to now there has been little systematic communication between the P2P and PPP and other networks. However, in a national context, some funding organisations (e.g. Federal Ministry of Education and Research of Germany) hold regular meetings for both (German) P2P and PPP representatives, exchanging information about current issues of interest.

4. Distinction of P2P and EC funding instruments

A part of the complexity of figure 1 can be explained by distinguishing between entries that correspond to a partnership and other entries that correspond to FP6/FP7/H2020 funding instruments supporting these partnerships.

For instance, ERA-Nets are consortia of national/regional funding organisations (ministerial, agency), cooperating on important research issues in order to avoid duplication and fragmentation throughout Europe. The last three EC Framework Programmes for Research and Innovation have supported ERA-Nets with "Specific Support Actions" (SSA, in FP6), "Coordination and Support Actions" (CSA, in FP7), ERA-Net Cofund (in H2020). Nevertheless, the group of funding organisations, their cooperative activities, their inherent goals, the overall ERA-Net project has remained essentially the same (albeit in further developed ways).

Another example are Joint Programming Initiatives: JPND, for instance, has been created within FP7, supported by a CSA. In H2020, the initial idea of the EC was to only support JPIs (and also ERA-Nets) with the ERA-Net Cofund instrument. Later, the EC modified this approach, and also allowed the support of JPIs by CSAs. Because of this, JPND applied for an ERA-Net Cofund first, then for a CSA, and is currently applying for another ERA-Net Cofund. Formally, all three are "projects" funded by the EC; but all three have been created by (almost) the same group of funding organisations (following the variable geometry principle), i.e. in a strict sense **all three are parts of the same JPI**. One problem of this is that all three have their specific governance and management structures, communication overall has increased drastically, likewise the complexity and the potential for misunderstandings or the lack of coherence (internally, externally).

A similar situation exists for the JPI AMR and the JPI HDHL, both being supported by CSA and two ERA-Net Cofunds.

5. Simplified illustration of partnerships and networks relevant for health research

Figure 3 summarizes ERA initiatives clearly relevant for health research in a more reduced schematic way. This figure is the result of (i) eliminating empty columns; (ii) eliminating P2Ps with less relevance for health research: initiatives illustrated by normal font in Figure 2, such as PhotonicSensing, ERA-Net Rus Plus, etc.); (iii) eliminating the CSA column (because the JPIs supported by CSAs are already shown in the column "JPI"). It is obvious that the impression of a complex landscape of initiatives is replaced by a more stringent landscape. In other words: when filtering out irrelevant information the landscape is simplified to a more coherent picture.

In a further step, figure 4 shows only the partnerships (P2P, PPP) as defined by the EC (see chapter 1), relevant for health research. Applying the EC definition of partnerships to the tables shown in figure 1 and 2, largely reduces the seeming complexity. When talking about possible rationalization of the partnership landscape it is of utmost importance to agree on a clearly defined basis of discussion.

6. Rationalization of health P2Ps

Figure 5 gives a temporal overview of all (past, present) versus present health P2Ps. There are some main observations:

- the number of all P2Ps since 2003 (n = 52) is much larger than the number of active (n = 27) P2Ps; this difference is entirely explained by the comparison between the number of all ERA-Nets (n = 40) and the number of currently active ERA-Nets (n = 15). That is, many ERA-Nets have existed for one or two project phases but have not been continued thereafter - due to changes of priorities taken by the national/regional funders and/or the EC. In other words, rationalization (in the sense of reducing) of P2Ps has taken place
- some ERA-Nets exist since the beginning of the ERA-Net scheme (NEURON/neurological diseases, E-Rare/rare diseases)
- some ERA-Nets currently develop into another P2P type: (not shown)e.g., the E-Rare ERA-Net (Cofund) consortium is currently building a new consortium based on the European Joint Programming Cofund mechanism, where the main actors are no longer funders only, but research institutions and researchers are included in addition)

Rationalization of health ERA-Nets has taken place, with the following elements:

- national/regional funders have prioritized their involvement in ERA-Nets. Some ERA-Nets, and their addressed research areas have been given up (cancer guidelines, HIV/aids, paediatric medicines) but important research areas have evolved from this process (e.g. neurological diseases: JPND, NEURON; cancer: TRANSCAN; cardiovascular diseases: ERA-CVD; rare diseases: E-Rare), with continuous support of national/regional funders and the EC
- a general restructuring of the ERA-Net selection (and prioritization) process by the EC, from FP6 (bottom-up) to FP7 (top-down, support for management) to H2020 (top-down, Cofund)
- in H2020, the EC has introduced defined criteria such as impact, leverage, EU added value, size of national/regional budgetary commitments which have to be met by a planned (new, to be continued) ERA-Net Cofund in order to be included in the EC's work programmes

No comparable rationalization has taken place for other P2P types such as JPI or Article 185 initiatives.

Figure 1: ERA initiatives relevant for health research as shown by the ERA-Learn database (https://www.era-learn.eu/network-information/thematic-clustering/health-1)

ERA-NET Cofund	ERA-NET (FP6/FP7)	ERA-NET+ (FP7)	EJP Cofund	Article 169/185	JPI	CSA	ETP	JTI	EUREKA	cPPP	EIT - KICS	EIP	FET - FLAGSHIPS
E-Rare-3		CORE Organic Plus	HBM4EU	AAL 2	JPI AMR	JPI MYBL support action	IMI (ETP)	IMI (2)			EIT Health	Active and Healthy Ageing	human brain project
ERA-CVD		ERA.Net RUS plus	One Health EJP	EDCTP2	JPI HDHL		NanoMedicine						
ERA-HDHL				EMPIR	JPI MYBL								
ERAcoSysMed				Eurostars 2	JPI Urban Europe								
EuroNanoMed III				PRIMA	JPND								
FLAG-ERA II													
HDHL-INTIMIC													
JPI-EC-AMR													
JPco-fuND													
NEURON Cofund													
PhotonicSensing													
TRANSCAN-2													

Figure 2: Schematic illustration of ERA initiatives (based on the ERA-Learn database) relevant for health research. Thick vertical line separates P2P (left side) from PPP (JTI) and other networks.

ERA-NET Cofund	**ERA-NET (FP6/FP7)**	**ERA-NET+ (FP7)**	**EJP Cofund**	**Article 169/185**	**JPI**	**CSA**	**ETP**	**JTI**	**EUREKA**	**cPPP**	**EIT - KICS**	**EIP**	**FET - FLAGSHIPS**
E-Rare-3		CORE Organic Plus	**HBM4EU**	**AAL 2**	**JPI AMR**	JPI MYBL	IMI	IMI 2			EIT Health	Active and Healthy Ageing	Human Brain Project
ERA PerMed		ERA.Net RUS plus	**One Health EJP**	**EDCTP2**	**JPI HDHL**		NanoMedicine						
ERA-CVD				EMPIR	**JPI MYBL**								
ERA-HDHL				Eurostars 2	JPI Urban Europe								
ERAcoSysMed				PRIMA	**JPND**								
EuroNanoMed III													
FLAG-ERA II													
HDHL-INTIMIC													
JPI-EC-AMR													
JPco-fuND													
NEURON Cofund													
PhotonicSensing													
TRANSCAN-2													

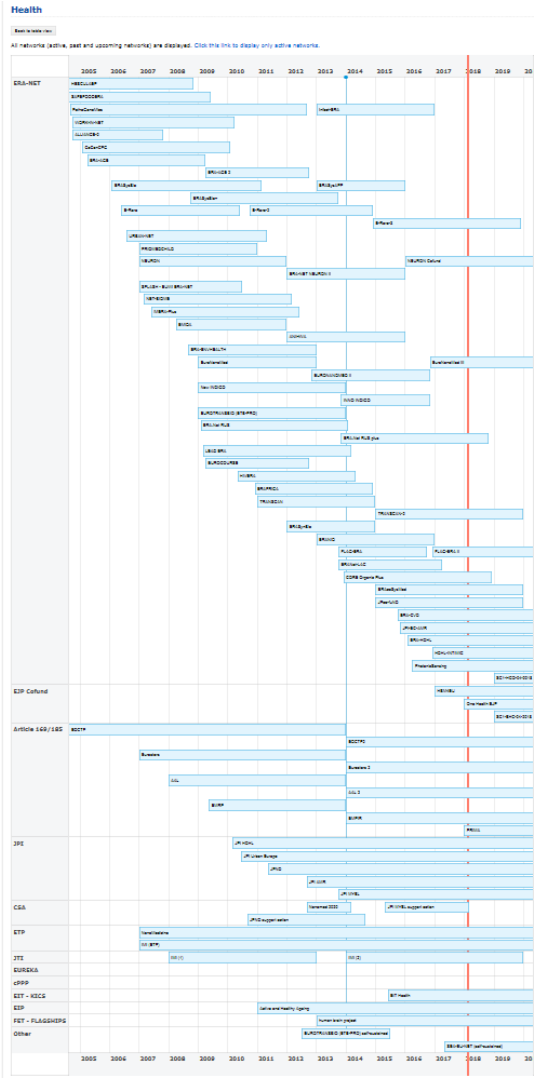
Figure 3: Schematic illustration of ERA health initiatives. For simplification, columns without entries (EUREKA, cPPP), column "CSA", P2Ps with less relevance for "health research" have been deleted

ERA-NET Cofund	EJP Cofund	Article 169/185	JPI	ETP	JTI	EIT - KICS	EIP	FET - FLAGSHIPS
E-Rare-3	HBM4EU	AAL 2	JPI AMR	IMI	IMI 2	EIT Health	Active and Healthy Ageing	Human Brain Project
ERA PerMed	One Health EJP	EDCTP2	JPI HDHL	NanoMedicine				
ERA-CVD			JPND					
ERA-HDHL								
ERAcoSysMed								
EuroNanoMed III								
HDHL-INTIMIC								
JPI-EC-AMR								
JPco-fuND								
NEURON Cofund								
TRANSCAN-2								

Figure 4: Schematic illustration of health P2Ps and PPP

ERA-NET Cofund	EJP Cofund	Article 169/185	JPI	JTI
E-Rare-3	HBM4EU	AAL 2	JPI AMR	IMI 2
ERA PerMed	One Health EJP	EDCTP2	JPI HDHL	
ERA-CVD			JPND	
ERA-HDHL				
ERAcoSysMed				
EuroNanoMed III				
HDHL-INTIMIC				
JPI-EC-AMR				
JPco-fuND				
NEURON Cofund				
TRANSCAN-2				

Figure 5: Temporal illustration of ERA initiatives since 2003. Left side: inactive + active; right side: active only. Red line depicts current timeline (March 2018)



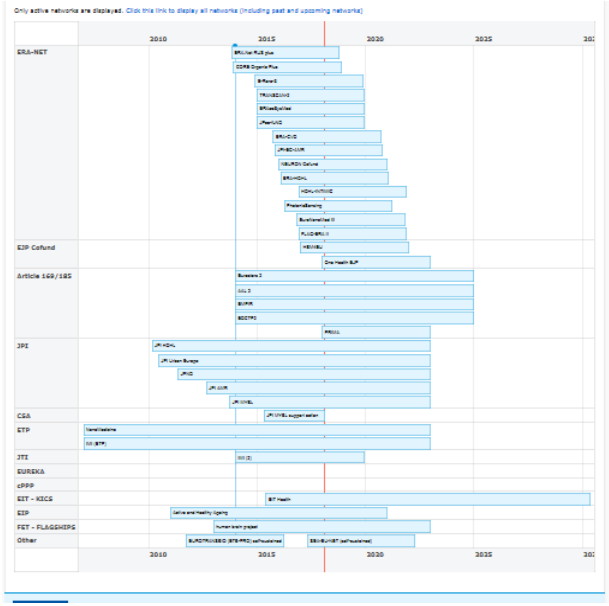


Table 1: Most active funding organizations in health P2Ps per country (equal or above 4 participations). Data extracted from eCORDA (12.03.2018).

Funding organisation	Country	Number of P2Ps
INSTITUTO DE SALUD CARLOS III	ES	14
AGENCE NATIONALE DE LA RECHERCHE	FR	13
FONDS NATIONAL DE LA RECHERCHE SCIENTIFIQUE	BE	12
DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV	DE	11
ZORGONDERZOEK NEDERLAND ZON	NL	11
FUNDACAO PARA A CIENCIA E A TECNOLOGIA	PT	11
TURKIYE BILIMSEL VE TEKNOLOJIK ARASTIRMA KURUMU	TR	11
BUNDESMINISTERIUM FUER BILDUNG UND FORSCHUNG	DE	10
MINISTRY OF HEALTH	IL	10
MINISTERO DELLA SALUTE	IT	10
VALSTS IZGLITIBAS ATTISTIBAS AGENTURA	LV	9
NARODOWE CENTRUM BADAN I ROZWOJU	PL	9
FONDS VOOR WETENSCHAPPELIJK ONDERZOEK-VLAANDEREN	BE	8
NORGES FORSKNINGSRAD	NO	8
MINISTERO DELL'ISTRUZIONE, DELL'UNIVERSITA' E DELLA RICERCA	IT	7
FONDS ZUR FÖRDERUNG DER WISSENSCHAFTLICHEN FORSCHUNG	AT	6
SLOVENSKA AKADEMIA VIED	SK	6
INNOVATIONSFONDEN	DK	5
MINISTERIO DE ECONOMIA, INDUSTRIA Y COMPETITIVIDAD	ES	5
OESTERREICHISCHE FORSCHUNGSFOERDERUNGSGESELLSCHAFT MBH	AT	4
BUNDESMINISTERIUM FÜR WISSENSCHAFT, FORSCHUNG UND WIRTSCHAFT	AT	4
Bundesanstalt für Landwirtschaft und Ernährung	DE	4
GENIKI GRAMMATIA EREVNAS KAI TECHNOLOGIAS	EL	4
MINISTERO DELLE POLITICHE AGRICOLE ALIMENTARI E FORESTALI	IT	4
Unitatea Executiva pentru Finantarea Invatamantului Superior, a Cercetarii, Dezvoltarii si Inovarii	RO	4
VETENSKAPSRADET - SWEDISH RESEARCH COUNCIL	SE	4
FORSKNINGSRÅDET FÖR MILJÖ, AREELLA NÄRINGAR OCH SAMHÄLLSBYGGANDE	SE	4
Ministrstvo za izobrazevanje, znanost in sport	SI	4
MEDICAL RESEARCH COUNCIL	UK	4