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WORKING PAPER

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WORKING DOCUMENT

From:	ERAC Secretariat
To:	ERAC (European Research Area and Innovation Committee)
Subject:	ERAC Plenary in Salzburg (Austria) on 17-18 September 2018 - Item 5.2 - Final report by the ERAC Ad-hoc Working Group on Partnerships on "Rationalising the EU R&I partnership landscape and optimising its coherence"

In view of item 5.2 of the agenda of the ERAC plenary in Salzburg on 17-18 September, delegations will find attached the final report by the ERAC Ad-hoc Working Group on Partnerships on "Rationalising the EU R&I partnership landscape and optimising its coherence".

RECOMMENDATIONS ON RATIONALISING THE EU R&I PARTNERSHIP LANDSCAPE AND OPTIMISING ITS COHERENCE

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

Rationalising the EU R&I partnership landscape and optimising its coherence

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

1. European R&I partnerships are making important contributions to strengthening the European Research Area and to achieving related EU policy objectives, in particular those supported by the EU R&I Framework Programmes (FP);

2. The rationalisation of the R&I partnership landscape is needed to ensure that future landscape of R&I partnerships is effectively improving the coherence, functioning and quality of Europe's R&I system and that the individual initiatives are able to fully achieve their potential in creating positive scientific and socio-economic impacts and/or in addressing societal challenges;

3. The successful rationalisation of the R&I partnership landscape is highly interrelated with the effective use of the future criteria framework and the envisaged strategic coordinating process for EU R&I partnerships;

4. To this end, the rationalisation of the landscape, supported through the strategic coordinating process for partnerships, should lead to more strategic, coherent and coordinated R&I partnerships with a clear and complementary position within the given intervention areas/thematic priorities and with significant impacts.

5. Rationalisation of the landscape can be pursued at three levels, notably

    a. the overall level of Europe's R&I policy framework;

    b. the level of the partnership approaches; and

    c. the level of thematic priority/intervention area.

6. On each of the three levels of rationalisation, distinct rationalisation strategies have been identified by the Working Group, which should form the basis of future action;

7. In this respect, the overall number of partnerships supported under the future Framework Programme and the budget allocated to them are crucial to minimise overlaps and ensure manageability of the R&I partnership landscape;

8. The existing R&I partnerships receiving Framework Programme support for research activities can be grouped in three distinct approaches, notably:

    a. **co-programmed partnerships** based on Memoranda of Understanding or contractual arrangements between the EU, MS/AC and other partners;

    b. **co-funded partnerships** for integrating EU and national public and/or other R&I funding sources and relevant activities;

    c. **institutionalised partnerships** established in accordance with Article 185 or 187 of TFEU, or by the European Innovation and Technology Institute (EIT).

    In addition, there is a recognised need to cover the costs of coordination without co-funding of research activities from the EU, which would allow for cooperation between

funding organizations from MS/ACs, private funding institutions and/or industry associations, including for the emergence of new networks.

9. To inform the process of rationalisation, the redesign of the partnership landscape and the selection of future initiatives, a mapping analysis between the partnerships that will still be operating at the beginning of the next Framework Programme and the priorities of the next FP is considered important;

10. The detailed analysis of the 'health' field revealed important findings that are of particular relevance for rationalisation strategies at the level of thematic priority/intervention area, in particular that:

   a. Publicly available information does not allow for a robust analysis of the R&I partnerships with respect to their overlaps and complementarity to other Horizon 2020 actions, so additional information needs emerge for the rationalisation at the level of the thematic priority / intervention area;

   b. While there are theme-specific networks, which are easy to identify, a number of more horizontal partnerships make important contributions to specific thematic areas, which are less easy to identify;

   c. The scale and scope of the topics differ strongly – from many partners and large budgets to fewer partners and smaller budgets, from very general topics to rather specific topics, presenting a challenge for ensuring the most appropriate level of analysis for rationalisation.

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

1. ERAC calls on the Commission, Member States and Associated Countries to ensure consistency and coordination of ongoing and new partnership initiatives with overlapping objectives and their complementarity, avoiding all unnecessary duplications;

2. ERAC calls on the Commission to ensure clear intervention logics for partnership initiatives under FP9, on the basis of the three forms of partnerships (co-programmed, co-funded and institutional) and to ensure that all future partnerships under the Framework Programme are based on clear objectives and significant impacts for agreed Union policies;

3. ERAC calls on the Commission to ensure coordination support for partnerships between programmes of Member States / Associated Countries and civil society organisations, such as foundations and/or industry associations on common priorities of their choice, including regular bottom-up and competitive calls for proposals aiming at the continuation of existing and the emergence of new networks across Europe (on the basis of Coordination and Support Actions);

4. ERAC calls on the Commission and Member States to limit the number of labels/instruments[1] for partnerships under the three distinctive forms and the possible variations of the same instrument to the necessary minimum, and in this context explore discontinuing some of the existing ones. Member States and Associated Countries should be consulted before any new partnership label or variation of instrument is introduced during the implementation of the Framework Programme;

5. ERAC calls on the Commission, the Member States and Associated Countries to monitor and report on their respective budget allocation to partnership initiatives and take this into account in the decisions on new or renewed initiatives;

6. ERAC calls on the Commission to elaborate an overall mapping of the partnerships that will still be operating at the beginning of the next FP against the priorities of the future FP, informing any decision of the selection and design of future partnerships;

7. ERAC calls on the Commission and Member States / Associated Countries to jointly apply the identified rationalisation strategies, so that from the beginning of the next Framework Programme onwards, fewer, more coherent and strategic R&I partnerships with significant impacts will be achieved. These strategies include:

    a. Make a 'counterfactual' and ensure that the planned R&I partnership fits to the nature of the EU Framework Programme;

    b. Ensure that the set-up of partnerships is limited to cases, where the (potential) future benefits clearly outweigh the added complexity of cooperation;

    c. Ensure that R&I partnerships fit to the intervention logics of the underlying partnership form and identify partnerships that no longer meet their requirements;

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[1] Such as PPPs, P2Ps, cPPPs, ERA-NETs, ERA-NET Cofund, FET-Flagships, EIT/KICs, EJP-Cofund

    d. Avoid many R&I partnerships in one FP intervention area, ensure that there will remain room for a significant portion of traditional collaborative projects in each area, and always use the 'lightest' approach to achieve the objectives.

8. ERAC calls on the Commission, in cooperation with Member States / Associated Countries and ERA-LEARN, to identify relevant information needs concerning existing partnerships allowing for a better analysis of rationalisation potential, without increasing the reporting and administrative burden for partners.

ERAC ad hoc WG on Partnerships

Issue Paper

Topic: Rationalising the EU R&I partnership landscape and optimising its coherence

1.   Introduction

The Council Conclusion of 1 December 2017[2] recalls its conclusions of 6 December 2011 on partnering in research and innovation[3] in which the Council emphasised the need to create a transparent and accessible overall landscape of partnership initiatives and instruments[4] for all parties involved and noted the need for rationalisation to avoid unnecessary duplication and overlapping. The R&I partnership landscape is very highly populated. The number of different forms of partnerships has increased over the years – while new ones have been created since the Seventh Framework Programme (FP7), old ones were not discontinued. Instruments such as the European Institute of Innovation & Technology (EIT) Knowledge and Innovation Communities (KICs), the Contractual Public-Private Partnerships (cPPPs), the FET Flagships and the European Joint Programme (EJP) Co-Fund were entering the scene, alongside existing partnership forms, such as Article 185, Article 187 initiatives and ERA-NETs. This has resulted in a complex landscape of partnership approaches, many with the same fundamental rationale. Despite some specificities of each partnership form, which are also mentioned in the interim evaluation reports, the question remains whether we need so many of them.

With the proliferation of forms of partnerships, the number and the corresponding global budget of initiatives funded through these has increased as well. The current policy has resulted in a non-transparent set of partnership initiatives with different rationales, funding rules, and geometries and a rather large number of partly overlapping initiatives addressing similar topics that are insufficiently coordinated, both thematically and across technology readiness levels (TRL). In addition, the current dispersed selection and implementation procedures entail evident risks with respect to openness and transparency, leading to 'closed club' and undermining their potential to achieve their policy objectives. However, the Council Conclusions underline also the continued relevance and added value of R&I partnerships for EU and national R&I policies.

The rationalisation process proposed here entails three levels:

    a.   the overall EU R&I policy framework;
    b.   the level of partnership approaches; and
    c.   the level of thematic priority/intervention area.

The following section 2 gives an overview of the key issues that make the current partnership landscape overly complex. Section 3 will address the different levels for rationalisation, while section 4 will propose a number of rationalisation strategies at the proposed three levels.

2.   Overview of key issues regarding the current partnership landscape

The fragmented and complex partnership landscape should be revised and rationalised in order to allow for R&I partnerships to have a clear position in the overall European R&I landscape and to achieve the desired significant impacts in an efficient and effective manner. Obviously, the complex partnership landscape leads to potential inefficiencies, unnecessary administrative burden for the partners and the end beneficiaries, and large transaction costs. For example, the management and governance of the complex landscape of partnership approaches and initiatives creates a high burden on the EU and national research and innovation authorities, particularly for small countries. Also, it undermines the desired coherence and complementarity between national and EU level R&I policies and actions. In addition, a complex landscape is a major barrier for a more effective communication on R&I

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[2] Doc. 15320/17

[3] Doc. 18349/11

[4] For the remainder of the document, the terms 'partnership approaches' and 'forms of partnerships' instead of 'instruments' will be used in order to avoid misunderstandings.

achievements towards national policy-makers, stakeholders and citizens. This overall view on the partnership landscape does not contradict the positive impacts of the individual initiatives and their achievements of objectives. Figure 1 summarises these negative side effects pinpointing to a number of issues.

Figure 1: The need for rationalisation of landscape of R&I partnerships
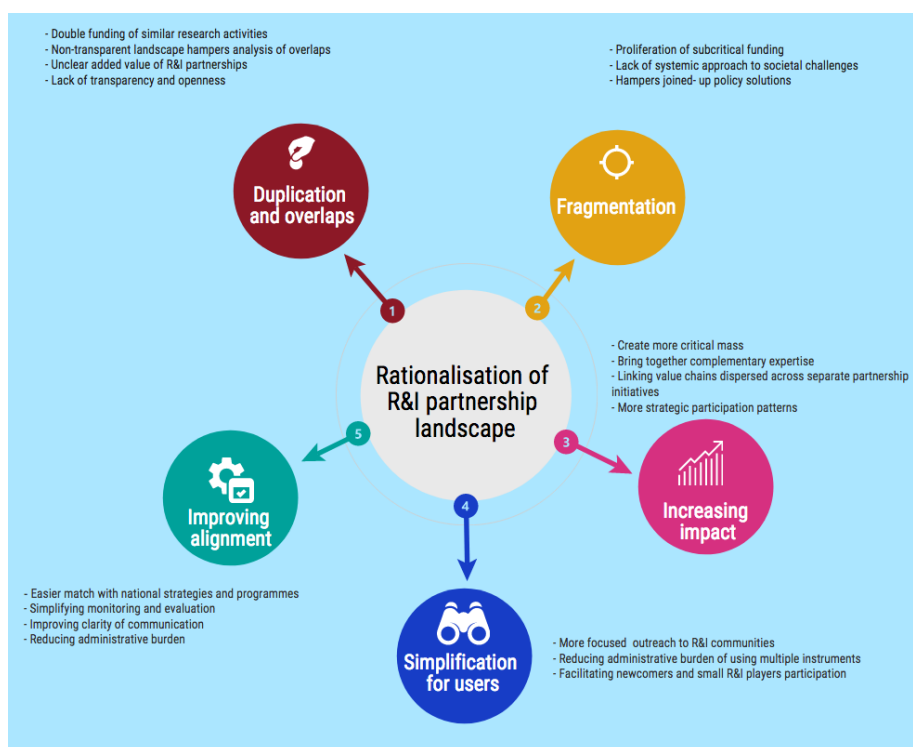
3   Rationalisation approaches

The identified objectives of the required rationalisation imply that different approaches for rationalisation are needed in order to address the dimensions described in figure 1. These different approaches need, to a certain extent, to follow the hierarchical criteria levels developed in the 'criteria' issue paper, as both parts are closely related.

The following three levels of rationalisation approaches can be identified:

  a. Rationalisation at the level of the overall European R&I policy framework;
  b. Rationalisation at the level of the partnership approaches;
  c. Rationalisation at the level of the thematic priority / intervention area.

The landscape of R&I partnerships at the beginning of the next FP will include both new and renewed partnerships. All partnerships funded under the next Framework Programme need to be adapted to the revised policy approach, notably being objective- and impact-driven and not instrument-driven. As a consequence, a comprehensive **mapping analysis** of the partnerships that will still be operating at the beginning of the next FP is required, against the clusters and intervention areas of the future FP, and against the three partnership approaches presented in chapter 3.2. This is considered as one important starting point for discussing rationalisation of the R&I partnership landscape at the three levels described above. The results and conclusions of the mapping analysis should also feed the strategic coordinating process.

The following sections will expand on the different levels before presenting some corresponding rationalisation strategies in the following chapter.

3.1   Rationalisation at the overall level of the European R&I policy framework

The rationalisation of the overall partnership landscape needs also to ensure coordination and coherence among initiatives and regular FP calls, and between initiatives and EU/national and regional priorities. This will result in a better complementarity between national and EU R&I policies. While the diversity between MS and ACs with respect to R&I policy governance, history and legal framework is well suited for the particular national socio-economic context, it becomes a substantial challenge when these diverse systems have to work together and achieve a higher degree of alignment /integration, as in the case of R&I partnerships. Consequently, the set-up of R&I partnerships should be limited to cases, where the (potential) future benefits clearly outweigh the added complexity of cooperation. The starting point at both levels, national/regional and EU, should always be the strategic policy objectives.

In addition, an overall 'umbrella' brand for R&I partnerships should be established and communicated in order to increase visibility of the partnership landscape and contribute to a better 'Corporate Identity' between the partnerships in Europe and thus increase the visibility of the ERA in policy debates.

3.2   Rationalising at the level of partnership approaches

The second level of rationalisation addresses the level of the partnership approaches. Figure 2 shows the current variety of forms of partnership and labels used in Horizon 2020.

Figure 2: The current landscape of R&I partnerships approaches and initiatives

Partnership approaches	Public-public partnerships (P2P)	Public-private partnerships (PPP)	EIT-KICs*	FET Flagships**
Implementation modes	ERA-NET-Cofund, EJP Cofund, Article 185, Joint Programming Initiative (JPI)	Contractual Arrangement (cPPP) Article 187	H2020 Grant agreements for different types of actions Framework Partnership Agreements (FPA)	
Currently active R&I Partnerships (Horizon 2020)	a) ERA-NETs: ~70 b) EJP Cofund: 5 c) Article 185: 6 d) JPIs***: 10	a) JUs: 7 (+HPC) b) cPPPs: 10	a) KICs: 6 (+ 2 until 2020)	a) FET-Flagships: 2 (+Quantum)
Financial contribution from H2020, estimated)	**2.500 M€** (3,1% of H2020 budget)	**13.450 M€** (17,5% of H2020 budget)	**2.400 M€** (3,1% of H2020 budget)	**1.000 M€** (1,3% of H2020 budget)

*EIT-KICs: Knowledge and Innovation Communities (KICs) of the European Institute for Innovation and Technology (EIT)
**FET-Flagships: Flagships of the Future and Emerging Technologies programme (FET)
*** JPIs: Joint Programming Initiatives are no EU level instruments but included here as they receive EU support via ERA-NETs and/or CSAs

An overall analysis of the existing partnership landscape allows identifying three distinct forms of partnerships:

a) Co-programmed partnerships between the EU, Member States/ Associated Countries, and/or other stakeholders, based on Memoranda of Understanding or contractual arrangements with partners (current cPPP model);

b) Co-funded partnerships with a blending (more or less centralised) of EU and national public and/or other R&I funding sources [current ERA-NETs, JPIs (via ERA-NETs and CSAs) EJP, FET Flagships model];

c) Institutional partnerships (based on Art. 185 or 187 TFEU, and EIT regulation for KICs).

All currently active R&I partnerships can be grouped within these three forms of partnerships and thus a significant rationalisation with respect to the funding approaches can be achieved.

3.3   Rationalisation at the level of thematic priority/intervention area

As agreed at the second meeting of the ERAC Ad-hoc Working Group, the 'health' topic was analysed in more detail by ERA-LEARN, in order to identify potential rationalisation options. The analysis included the following dimensions (for more details please see Annex 1).

- Identification of all 'health' related R&I partnerships since FP6, including P2Ps, PPPs, EIT/KICs and FET Flagships;
- Analysis of joint actions undertaken by the R&I partnerships;
- Analysis of the stakeholder composition of the R&I partnerships;
- Analysis of 'rationalisation' in the 'health topic'.

The analysis of the Health challenge allows for a number of more general findings, which are the following:

1. Publicly available information does not, in many cases, allow for a robust analysis and comparison between the existing partnerships, notably because there has never been the intention and the requirements towards the partnerships to do so;
2. The scale and scope of the existing partnerships differ substantially, between 5 and 1638 Millon € Union contribution and between 15 and 150 partners;
3. A large number of partnership initiatives is very focussed on the Health challenge, there are however a substantial number of other 'horizontal' partnerships that also fund projects related to the health challenge (e.g. EMPIR, Eurostars).
4. The timing of the existing partnerships is not synchronised, notably because there has never been the intention or requirement for a better synchronisation;
5. The granularity of the topics differs wildly – from very general topics, e.g. KIC health, to rather specific topics such as Human Biomonitoring or cardiovascular diseases;
6. The core activity of the classical PPPs (IMI) and P2Ps (EDCTP, AAL, ERA-NETs) continues to be joint calls for proposals resulting in transnational R&I projects. However, additional and often complementary activities begin to appear that can be seen as inspiration;
7. The ERA-NET 'population' of R&I partnerships underwent some changes. Only very few networks have been constantly active since FP6. The overall number of active networks in the health area has been rather stable from FP6 to H2020, but some networks have been discontinued while other networks started on different thematic topics (however with, in general the same population of research funders and stakeholders in calls and projects, as well as similar TRLs). For other partnerships the population is too small to draw findings;
8. Joint activities between R&I partnerships remains very limited, with some notable exceptions, such as common joint calls between different partnerships and/or organisation of joint events.

These findings will support the development of rationalisation strategies also beyond the specific features of the 'health' field.

4. Strategies for rationalisation of the partnership landscape

The analysis presented earlier distinguished between rationalisation approaches at three distinct levels. This allows for the deduction of a number of rationalisation strategies at a more refined level. These strategies will need to be built on a robust mapping exercise according to the distinct levels of forms of partnerships identified earlier (co-programmed, co-funded, institutional) and typical R&I intervention models matching different policy objectives. As a result of the mapping exercise, all operational partnerships during the starting phase of the next FP, both new and renewed ones, should be assigned to one of the three forms of partnerships.

In line with the rationalisation approaches described in chapter 3, the following sections present some possible, more concrete, strategies on how the rationalisation approach can be addressed. The rationalisation strategies aim at substantially improving coherence, coordination and thus complementarity within the R&I partnership landscape and between the partnerships and other parts of the European R&I policy landscape, with distinct objectives:

- Rationalisation of the overall European R&I partnership landscape: ensure optimal coherence and coordination among the R&I partnerships and between R&I partnerships and the EU R&I policy framework, notably the FP, as well as national policies and priorities;
- Rationalisation of partnership approaches: ensure a simplified system of distinct forms of partnerships, with clear intervention logics, supporting the set-up and implementation of partnerships on the basis of the guiding principles defined in the 'criteria' paper;
- Rationalisation at the level of the thematic priority/intervention area: ensure a sufficient scale and scope of partnerships initiatives and limit the number and budget of partnership initiatives per intervention area (and identify potential for partnerships spanning across intervention areas and/or clusters), while ensure flexibility and complementarity between the R&I partnerships and the other FP actions in the respective field.

4.1 Rationalisation strategy on the level of the overall policy landscape

R&I partnerships represent only a part of the overall EU R&I policy framework and their 'function' differs from other elements such as indirect Research and Innovation Actions (RIA), European Innovation Council (EIC) or European Research Council (ERC) actions. Due to their direct link to other R&I stakeholders outside a narrowly framed science (and sometimes science/industry) community, notably national governments and industry associations, they have a different contribution to the ERA than other elements of the R&I policy framework. Moreover, R&I partnerships are not and will not be suited to all R&I related challenges and policy priorities. So rationalisation should also entail a continuous effort to ensure that R&I partnerships should be strictly limited to cases where other forms of public intervention for R&I (i.e. regular FP calls) would not be able to achieve similar results. Rationalisation should also entail ensuring relevant cooperation of existing partnerships with other connected initiatives beyond the classical partnerships, namely Research Infrastructures.

Consequently, the main rationalisation strategy at the level of the overall policy landscape is to ensure that R&I partnerships are really necessary as part of the intervention of the Framework Programme, and that other policy instruments with less additional complexity would not be able to achieve similar results. In other words, in case a partnership is considered, the additional complexity needs to be justified by the added benefits and impact.

In more concrete terms the strategy would be:

- Make a 'counterfactual' by assuming that the topic would be solely addressed via other FP action, notably classical calls for proposals under the Work programme or solely be handled at MS level (via e.g. EUREKA) and identify pros and cons;
- Demonstrate that the topic fits the nature of the FP – partnerships are not supposed to implement legal obligations nor become 'permanent' programmes, but instead need to ensure high-risk

R&I[5] and relevance during a specific, limited timeframe (otherwise they should rather be funded through other EU programmes);

▪ Ensure in the design and implementation of future partnerships coherence, coordination and complementarity with related initiatives and the Framework Programme, with clear interfaces between R&I partnerships, as well as between the partnerships and other FP actions within the cluster/intervention area, including Research Infrastructures. This should be done partly within the R&I partnerships, partly through additional coordination structures, which might need to be put in place, in particularly to encompass the existing initiatives as well.

The most important moment in time is the launch of the new FP at the beginning of the next MFF, as many R&I partnerships will have a duration which equals more or less the MFF. This is the time when the launch of new partnerships will be most intensive due to new emerging topics. The major phasing-out will most likely start only towards the end of the next FP. **Proposals for new partnerships after the launch of each FP, must always take into account the whole package of ongoing partnerships and cannot focus only on the new individual proposals.**

4.2 Rationalisation strategy at the level of partnership approaches

The main strategy for rationalisation at the level of the partnership approaches is the elaboration of clear intervention logics for future forms of partnerships and thus new and renewed partnerships, with a limited toolbox supporting their implementation. This aims to:

▪ Identify those partnerships that do not fit or only fit to a minor degree to the intervention logics of the form of partnerships and that should not be pursued as R&I partnership;
▪ Identify those partnerships that fit better to another form of partnerships (re-positioning);
▪ Achieve a more homogenous group of R&I partnerships within each form of partnerships.

As presented in chapter 3.2, an overall analysis revealed three distinct forms of partnerships, notably 'co-programmed', 'co-funded' and 'institutional'. A corresponding toolbox entails consequently the following instruments:

a) An approach for Co-programmed R&I partnerships that would be based on MoUs and/or contractual arrangements specifying the partners' commitment to invest in the area and coordinate programmes and activities. The partners implement their programmes, activities and investments under their responsibility while the Commission implements its part in the Work Programme with calls for proposals, based on indicative commitments for ring-fenced budgets.

b) An instrument for Co-funded R&I partnerships, in cases where the implementation of the programme is better realised at the level of the R&I partnership with integration of all activities into a single programme. The co-fund instrument must be simple and flexible in order to allow catering the diverse needs and interest from R&I partnerships, from direct research activities, activities of networking, and of coordination between participating programmes. If required to achieve the objectives of the partnerships, it can include calls for proposals to provide financial support to third parties in the form of grants, prizes, as well as investments or loan guarantees;

c) Institutional R&I Partnerships, based on Article 185 and 187 of the TFEU, are the most complex in preparation and will be implemented in cases where a political validation outside the comitology is necessary via a Decision by Council (and the European Parliament for Art.185), and where other forms of R&I partnerships would not fulfil the objectives or would not generate the necessary impacts (due to e.g. long-term perspective, international visibility).

d) In addition, it is important to provide a **coordination support instrument for R&I partnership without co-funding** of research activities (CSA type), that would allow for a better coordination between funding organizations from MS/ACs, private funding institutions and/or industry associations. The objectives of such approach is to allow for:

▪ the emergence of new cooperation networks in Europe and beyond;

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[5] R&I related risks refer here to the justification of a public intervention.

- the survival of existing cooperation networks that do not reach sufficient size in order to be implemented as Co-funded R&I partnership, but that may continue to contribute to the ERA;
- strengthening joint actions and joint programme development and implementation between MS/ACs, private funding organizations and/or industry in a more flexible and tailor-made way than possible under the EU's legal framework;

4.3 Rationalisation strategies at the level of intervention area/thematic priority

Rationalisation strategies at this level include a number of opportunities, which are mirrored against the main findings of the analysis of the 'health' field and other examples that have been discussed in the Working Group, based on the landscape of initiatives against their lifetime already provided by ERA-LEARN for all areas. Some of the presented rationalisation strategies can be applied already during the implementation of the existing partnership, while other strategies can only be applied to new and/or to partnerships to be renewed. Consequently, the rationalisation effect might not occur immediately but over time.

In more concrete terms, the following strategies should be applied:

- 'Think Big': avoid many partnerships in one single FP intervention area to avoid the scattering of resources and thus ensure an appropriate reduced level of granularity for R&I partnerships in one intervention area/thematic priority and explore options to merge previous partnerships that may need to be renewed, but would result in a higher degree of granularity if all were to be continued by themselves (critical issue: trade-off between coherence and community building);
- Use always the easiest form of partnerships able to achieve the desired policy objectives. Easiest can be defined as lowest possible level of administrative burden for EU, countries, as well as beneficiaries and least possible weight in governance arrangements to manage the funding approach;
- Ensure that the next generation of R&I partnerships are well complementary to other FP actions with respect to target groups, participation patterns of low R&I intensive MS/ACs, envisaged socio-economic impacts and joint actions supported by EU funding.
- Finally, partnerships have the potential to play crucial role in implementing future Missions, which are meant to mobilise large resources in Europe and abroad with a view to fulfil their ambitious objectives.

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.

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[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 <u>main actors</u> 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 <u>main goal</u> is the joint preparation and implementation of a research programme of common European interest. Many of the P2Ps' <u>activities</u> 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

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[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.

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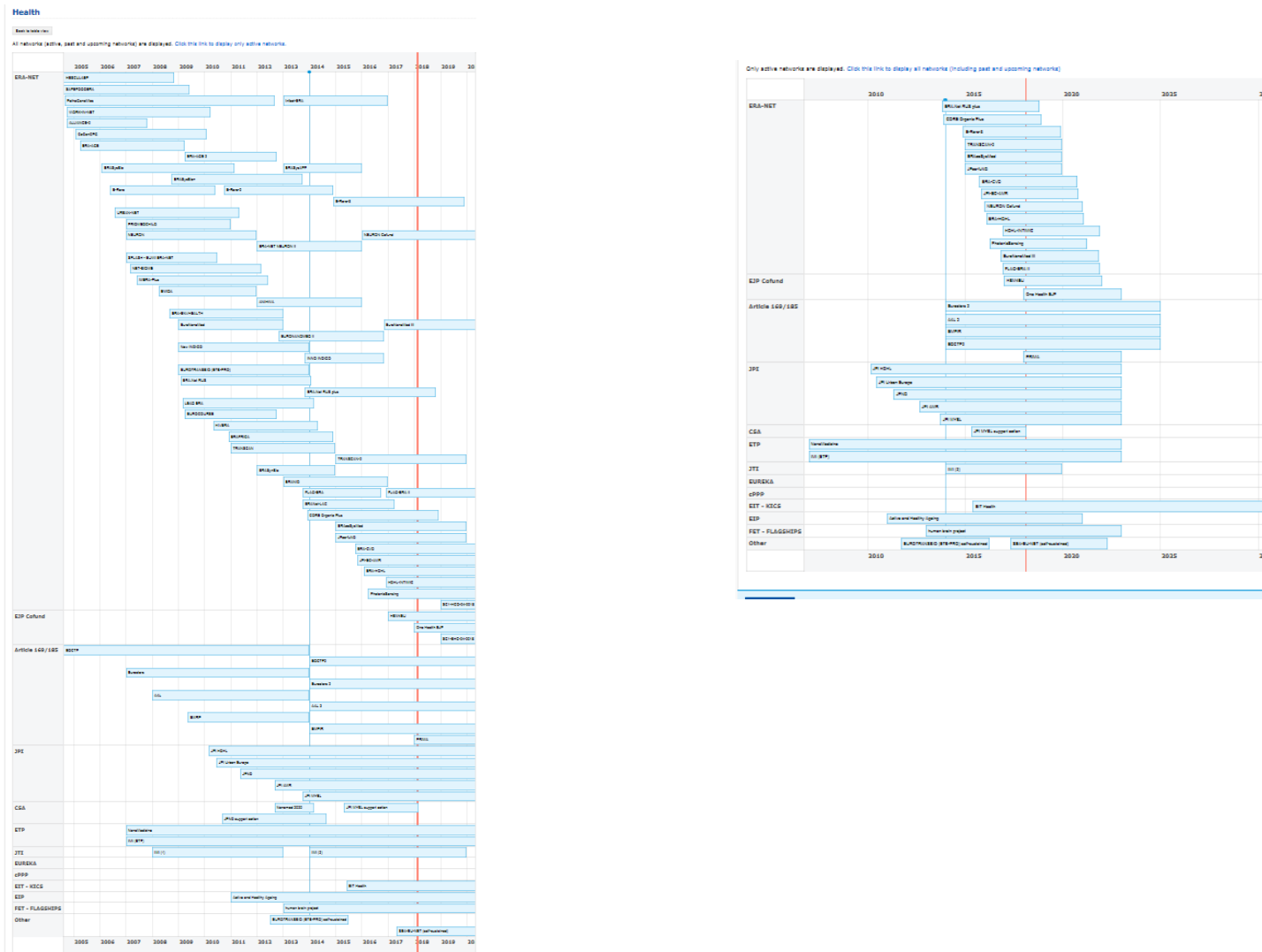
Table 1: Most active funding organizations in health P2Ps per country (equal or above 4 participations). Data extracted from eCORDA (12.03.2018).

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