

# **H2020 Partnership Landscape and its relevance for Horizon Europe – Cluster ‘Health’**

Description and Analysis

# Information

<b>Project no.</b>	811171
<b>Project acronym</b>	ERA-LEARN
<b>Project full title</b>	Strengthening partnership programmes in Europe
<b>Funding scheme</b>	CSA
<b>Start date of project</b>	1. July 2018
<b>Duration</b>	48 months
<b>Background</b>	<p>The description and analysis of networks follow the recommendation of the ERAC ad hoc Working Group on Partnerships to provide an analysis on the status-quo of partnerships in prospective areas of Horizon Europe. The individual Cluster Reports will inform a Synthesis Report which is based on the partnership analyses that have been performed in relation to the clusters under Pillar II “Global Challenges and Industrial Competitiveness” of Horizon Europe (Commission proposal).</p>

## Disclaimer

The Cluster Reports were elaborated by ERA-LEARN to support the coordination and cooperation among networks. They are work in progress and should be seen as a basis for starting discussions among the networks about the potential to adjust and streamline the partnership landscape in view of the challenges addressed by Horizon Europe. They are based on:

- a listing of networks provided by DG RTD, reviewed and partly modified by ERA-LEARN experts
- the ERA-LEARN database and
- desktop research and professional background knowledge of the ERA-LEARN authors of the individual Cluster Reports.

While due diligence was applied there are certain limitations that readers should bear in mind:

- The papers display and discuss existing partnerships, serving current framework priorities, and apply educated guesses about their relevance for the thematic clusters and (groups of) intervention areas sketched for Horizon Europe. They do not take into account the gradual thematic flexibility of networks or parts thereof, or the changes of research priorities that national ministries and funding initiatives may undertake. Nor do they consider the invaluable capacity of ministries to design and implement MS-based transnational funding initiatives across Europe across all innovation phases and aspects, and beyond their mere match with future thematic intervention areas of the clusters under Pillar II “Global Challenges and Industrial Competitiveness” of Horizon Europe (Commission proposal).
- The clustering of intervention areas to sub-clusters has been determined by the authors by means of expert assessment, for greater clarity of the connections displayed.
- The displayed connections are limited to formal connections and existing collaborations among partnerships.

Taking these limitations into account the parties involved in creating the databases and drafting the Cluster Reports would like to emphasize that references to networks and/or their relevance and/or their connections are not meant to be exhaustive nor judgemental but a preliminary input to the discussion process on the rationalisation and reform of the partnership landscape.

## Background

This report is part of a series of reports addressing the five suggested Clusters of Horizon Europe (EC Proposal from June 2018). General information about the scope and methodology applied as well as on the description of the network types, etc. is provided in the so-called “Synthesis Report” to avoid duplication. All reports focus on R&I related partnerships in the areas suggested for Horizon Europe. Other networks are not considered. The Synthesis Report also includes the definition of the different partnership types that are considered in the individual reports.

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# 1. Overview of Cluster, Actors and Activities

## 1.1. Overview

### A: Description of Cluster

In its proposal for *Horizon Europe*, the 9<sup>th</sup> European Framework Programme for Research and Innovation, the European Commission underlines its commitment to the UN's Sustainable Development Goals calling for universal health coverage for all at all ages by 2030, leaving no one behind, and ending preventable deaths. It points out that health research and related innovation actions have played a significant role in improving productivity and quality in health, health care systems and in the relevant industry. At the same time, it is emphasized that there is a continuous need to face persisting or novel challenges in science, society and policy.

The following major health challenges in the EU will be addressed within the next research and innovation framework programme, Horizon Europe (HE):

- the lack of effective health promotion and disease prevention;
- the rise of non-communicable diseases;
- the spread of antimicrobial drug resistance and the emergence of infectious epidemics;
- increased environmental pollution;
- the persistence of health inequalities among and within countries affecting disproportionately people that are disadvantaged or in vulnerable stages of life;
- the detection, understanding, control, prevention and mitigation of health risks in a rapidly changing social, urban and natural environment;
- the increasing costs for European health care systems and the progressive introduction of personalised medicine approaches and digitalisation in health and care;
- the increasing pressure on the European health and care industry to remain competitive in and by developing health innovation vis-a-vis new and emerging global players.

The Commission has defined six “Intervention Areas” to be addressed by the Health Cluster in HE. Within these six intervention areas, a number of relevant sub-topics have been identified (see Table 1).

The cluster has a proposed budget of 7,7 Bio € as provided in the proposal of the European Commission on Horizon Europe<sup>1</sup>.

**Table 1: Intervention areas and relevant sub-topics of the Cluster ‘Health’ in Horizon Europe**

Relevant Sub-Topics	Intervention Areas					
	Health throughout the Life Course	Environmental and Social Health Determinants	Non-Communicable and Rare Diseases	Infectious Diseases	Tools, Technologies and Digital Solutions for Health and Care	Health Care Systems
	Early development and the aging process	Technologies for assessing hazards, exposures and health impact of chemicals, pollutants and other stressors	Diagnostics	Drivers for the emergence or re-emergence of infectious diseases and their spread	Applications across the health spectrum and any relevant medical indication	Reforms in public health systems and policies
	Maternal, paternal, infant and child health	Environmental, occupational, social and behavioural factors impacting physical and mental health and well-being	Prevention and screening programmes	Prediction, early detection and surveillance of infectious diseases	Digital solutions for human health, including mobile and telehealth	New models and approaches for health and care and their transferability or adaptation
	Health needs of adolescents	Risk assessment, management and communication	Integrated solutions for self-monitoring, health promotion disease prevention, and management	Vaccines, diagnostics, treatments and cures	Piloting, large-scale deployment, optimisation, and innovation procurement in real-life settings	Improving health technology assessment
	Health consequences of disabilities and injuries	Capacity and infrastructures to collect, share and combine data on all health determinants	Treatments or cures	Effective health emergency preparedness, response and recovery measures and strategies	Rapid delivery for health and care	Health inequality and effective policy response
	Independent and active life for the elderly and/or disabled people	Health promotion and primary prevention interventions	Palliative care	Barriers to the implementation and uptake of medical interventions	The safety, efficacy and quality	Future health workforce and its needs

<sup>1</sup> [https://ec.europa.eu/commission/sites/beta-political/files/budget-may2018-horizon-europe-regulation\\_en.pdf](https://ec.europa.eu/commission/sites/beta-political/files/budget-may2018-horizon-europe-regulation_en.pdf) (p.32)

Health throughout the Life Course	Environmental and Social Health Determinants	Non-Communicable and Rare Diseases	Infectious Diseases	Tools, Technologies and Digital Solutions for Health and Care	Health Care Systems
Health education and digital health literacy		Assessment of comparative effectiveness of interventions and solutions	Trans-border aspects	Regulatory science	Data, information, knowledge and best practice
		Implementation research to scale up health interventions			Health systems resilience
					Citizen and patient empowerment, self-monitoring, and interaction

Source: COM(2018) 436 final Annexes: [https://eur-lex.europa.eu/resource.html?uri=cellar:7cc790e8-6a33-11e8-9483-01aa75ed71a1.0002.01/DOC\\_2&format=DOC](https://eur-lex.europa.eu/resource.html?uri=cellar:7cc790e8-6a33-11e8-9483-01aa75ed71a1.0002.01/DOC_2&format=DOC)

## B: Description of partnership programmes related to the intervention areas

Currently, there are 36 partnership initiatives active in the health research area (with full and partial relevance). The majority of these initiatives (23) are public-public partnerships. Besides, there are four PPPs (three Joint Undertakings under Art. 187; one contractual public private partnership), and nine “other networks”: ETP (1), EIT-KIC (1), EIP (1), FET Flagship (1), ERICs (5).<sup>2</sup>

Please note:

- We consider initiatives as fully relevant if the initiative and its research and innovation programme and/or activities deals with the thematic content of the specific intervention area to a large extent. For example, Electronics in Health is one of the top priorities of large PPP ECSEL, it is therefore considered to be fully relevant for the intervention area “Tools, Technologies and Digital Solutions for Health and Care” in the Cluster Health.
- We consider initiatives as partly relevant, if certain parts of the research and innovation programme and/or activities of a partnership initiative are relevant for the intervention area. For example, the JPI MYBL launched a call on “Welfare, Wellbeing and Demographic Change: Understanding Welfare Models” in 2016. It is therefore deemed to be partly relevant for the intervention area “Social and Economic Transformation” as the results of this action could provide some

<sup>2</sup> See the list of initiatives in Annex



knowledge base for “policy advice” and related studies concerning “changes in the labour market”.

- A network can also be partly relevant to a specific area of intervention in case the focus of the network serves as the application area for the respective technologies or services to be developed in the intervention area. For instance, EIP on Active and Health Ageing is partly relevant to the intervention area of 'Digital Technologies' as digital technologies can be applied to improve healthy ageing of people. In a similar line, EIP on Smart Cities and Communities is partly relevant for the areas "Next Generation Internet" or "High-performance Computing and Big Data" as the respective technologies or services can find various application opportunities in the framework of smart cities.

Table 2 shows the numbers of the partnership initiatives that can be assigned to the intervention areas of the Health cluster in Horizon Europe. The assignment shows that fully and partially relevant networks exist in all intervention areas of Horizon Europe. P2Ps are more frequently represented than non-P2P networks in most intervention areas. The intervention area “Non-communicable and rare diseases” includes the highest number of fully relevant assignments (23 assignments, 15 with full relevance). The area “Health care systems” also includes a very high number of assignments (22), of which only 4 are fully relevant.

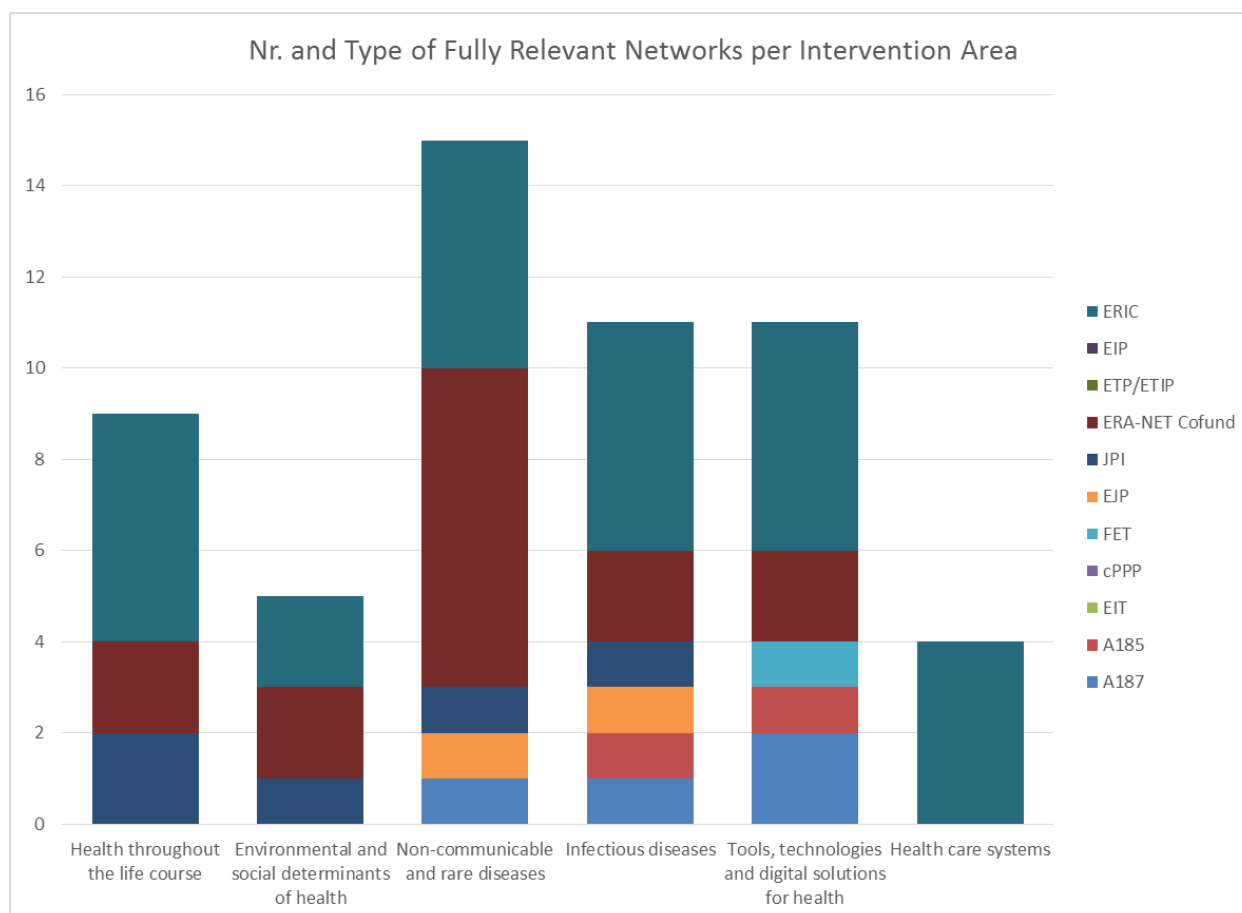
**Table 2: Intervention areas of the ‘Health’ Cluster and number of relevant ongoing partnerships and networks (a partnership/ network may be relevant to a number of different intervention areas)**

<i>Intervention areas in Horizon Europe</i>	<i>Fully relevant</i>	<i>Partially relevant</i>	<i>P2P</i>	<i>PPP</i>
Health throughout the Life Course	9	14	14	9
Environmental and Social Health Determinants	5	11	9	7
Non-Communicable and Rare Diseases	15	8	15	8
Infectious Diseases	11	4	8	7
Tools, Technologies and Digital Solutions for Health and Care	11	9	9	11
Health Care Systems	4	18	15	7

Source: ERA-LEARN

In order to allow for an analysis of synergies between the partnership initiatives, the figure below provides the distribution of the type of partnership initiatives with **full relevance** among the intervention areas of the cluster Health.

**Figure 1: Number of current networks that are considered fully relevant for Cluster 'Health'**<sup>3</sup>



Source: ERA-LEARN

Figure 1 shows that health relevant partnership initiatives and other networks of Horizon 2020 can be allocated with one or more assignments of full relevance to all six intervention areas of the Health cluster of Horizon Europe, whereas P2Ps are represented within five intervention areas and PPPs within three areas.

From all 36 initiatives, 28 partnership initiatives can be listed with full relevance to the health cluster of Horizon Europe. These 28 initiatives comprise 20 P2Ps, 2 PPPs and 6 other networks.<sup>4</sup> The highest number of partnership initiatives can be assigned to the intervention area “non-communicable and rare diseases (15). Eleven partnership initiatives can be assigned to the intervention areas “Infectious diseases” and “Tools, technologies and technical solutions for health”. The area “Health throughout the life course” includes nine partnership initiatives, five

<sup>3</sup> A specific note is pertinent here. Some ERA-NET Cofund Actions may be serving the needs of JPIs or FET Flagships in terms of implementing the joint calls and possibly other joint activities. In these cases the ERA-NET Cofunds can be regarded as integral parts of the wider initiatives (the respective JPIs or FET Flagships). However, they are considered as individual partnerships as they consist of separate H2020 contracts with their own scope, objectives, timeline and expected impacts. More details in section C below.

<sup>4</sup> See the list of partnerships in Annex

initiatives can be assigned to “Environmental and social determinants” and four can be located at “Health care systems”.

Whereas the area “Infectious diseases” implies six different kinds of partnerships, the area “Health care systems” includes four ERICS but no P2Ps or PPPs with full relevance. “Non-communicable and rare diseases” include five different types of partnership initiatives, the areas “Health throughout the life course” and “Environmental and social determinants involve” three types of partnership initiatives with full relevance.

Figure 2 shows a network analysis of the existing H2020 partnerships that are fully or partly relevant to the intervention areas within the Cluster ‘Health’ in Horizon Europe. Intervention areas are red dots, networks grey ones. The connections are black lines when the network is fully relevant to the intervention area and grey if the network is only partly relevant. The more connections a dot has, i.e. the more networks are relevant (either fully or partly) to an intervention area, the larger the dot is. The algorithm places those networks/intervention areas with more connections closer to the centre. The illustration only shows how many intervention areas a specific network is relevant to. The larger grey dots indicate that the respective networks are relevant to more intervention areas than other networks. However, this cannot be considered to imply that they are in any respect more important than other networks, nor that their connections to the specific areas are in any way stronger than those of other networks.

Figure 2 shows the connections of all 36 initiatives relevant to the health cluster to the future areas of intervention in Health cluster of Horizon Europe.

The figure includes the following partnership initiatives and other networks:

- 23 P2Ps,
- 4 PPPs (three Joint Undertakings under Art. 187; one contractual public private partnership),
- 9 initiatives from other networks: ETP (1), EIT-KIC (1), EIP (1), FET Flagship (1), ERICs (5).<sup>5</sup>

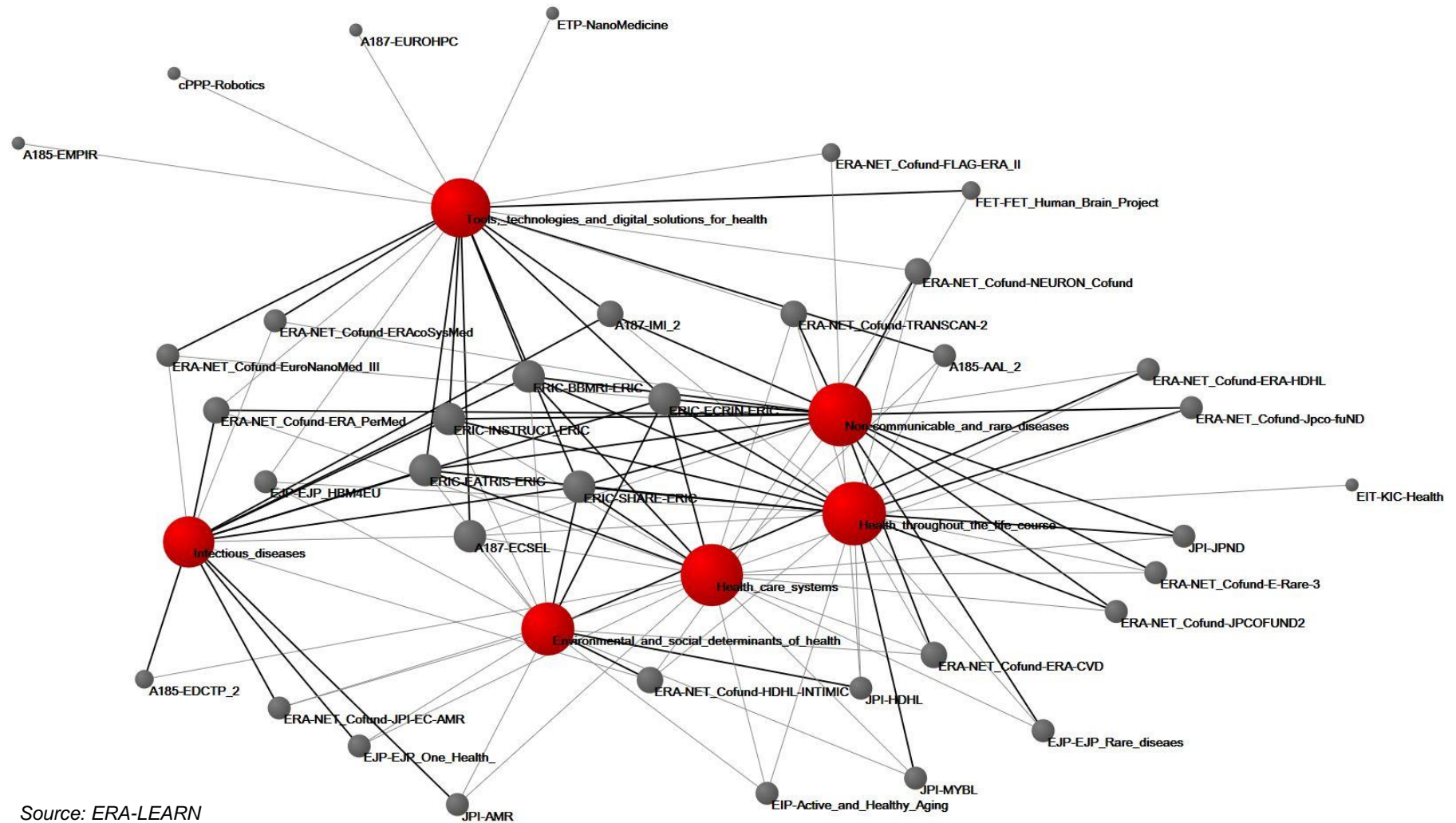
28 of these initiatives can be listed with full relevance (20 P2Ps, 2 PPPs and 6 other networks).

The central position of the ERICS and IMI can be noted as they are considered fully or partly relevant to all the areas of intervention in the cluster. Considering the size of the red dots we see, that there are no large differences between the amounts of partnership initiatives of each intervention area.

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<sup>5</sup> See the list of initiatives in Annex

**Figure 2: Illustration of partnerships (grey spheres) related to the 6 interventions areas (red spheres) of Cluster 'Health' in Horizon Europe**



Source: ERA-LEARN

## C: Networks working under a common roof

The current report considers all networks that have a separate Horizon 2020 contract. This means that even in the cases where certain ERA-NET Cofunds are implementing parts of the research and innovation programmes of other networks such as JPIs or FET Flagships, these are considered as separate initiatives in our analysis.

## D: Main observations

The following main observations can be made in relation to the cluster 'Health':

- All types of partnerships occur in the Health sector, the majority of these initiatives are public-public partnerships.
- From all 36 initiatives, 28 partnership initiatives can be listed with full relevance to the health cluster of Horizon Europe.
- Fully and partially relevant networks exist in all intervention areas of Horizon Europe with a slight dominance for the intervention areas 'Health throughout the Life Course', 'Non-Communicable and Rare Diseases' and 'Health Care Systems' for P2Ps and 'Tools, Technologies and Digital Solutions for Health and Care' for non-P2Ps.
- The highest number of partnership initiatives (P2P and PPP) can be assigned to the intervention area "non-communicable and rare diseases (15). Eleven partnership initiatives can be assigned to the intervention areas "Infectious diseases" and "Tools, technologies and technical solutions for health". The area "Health throughout the life course" includes nine partnership initiatives, five initiatives can be assigned to "Environmental and social determinants" and four can be located at "Health care systems".
- The themes of current partnership initiatives (P2Ps, PPPs and other networks) seem to be in compliance also with the topics of the Health cluster in Horizon Europe.
- There are several cross-cutting partnerships that can be assigned to more than one intervention area.

## 1.2. Actors and activities

In general, the actors and activities for the different types of partnerships are not cluster-specific. The ERA-NET Cofunds involve national funding agencies, the JPIs involve research ministries and the non-P2Ps are dominated by the research community and industry.

A detailed overview of the actors and activities for each type of partnership is included within the overall synthesis report of all the clusters. Some specific observations for this cluster would include:

- Partnerships in the health research area differ substantially concerning their scale, scope, actors and activities.
- P2P partnerships are made up by a coherent group of (national/regional) funding organisations, with the same goal of funding European (health-related) research and the same set of funders in many of the existing P2Ps.
- Taking a closer look at the list of participants in the Health P2P Cofund networks, it can be seen that there are only one or two main funding organisations for each country engaged in most health Cofunds (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. ([A list of actors can be found in the ERA-LEARN database](#)).
- In terms of topics addressed by the public to public partnership initiatives, a wide range of topics can be determined within the health area (disease specific, horizontal, different TRLs etc.), as well as some thematic overlaps of different networks.
- There is an inherent difference between P2P and PPP partnerships or other networks with regard to: actors, goals and activities.

### A: Public-to-Public Partnerships – P2P

The activities of most P2Ps in the Health area 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, since out of 11 ERA-NET Cofunds under the health theme, four are part of JPI implementation.

The planning and implementing of calls by P2Ps, including between 20 and 30 funding organisations from 15 to 20 countries has shown a large degree of coherence. 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 million € EC funding while the funders will launch five annual joint calls (in the EJP runtime of five years) with an expected spent budget of about 60 million €.

In addition, Health P2Ps implement other activities of high importance: e.g., the coordination of research, mapping national and transnational funding activities; improving the participation of funders from central and eastern European countries (widening); internationalisation; open access practises; interaction with infrastructures, industry and other stakeholders; 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), 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 (ERAcSysMed), 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, which suggests an adequate degree of coordination and exchange in between networks to assure coherence and mutual uptake of research outcomes and policy changes.

## B: Public-Private Partnerships – PPP

The **Joint Undertaking IMI2 (Innovative Medicines Initiative II)** 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.

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. According to it 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.

The **Joint Undertaking ECSEL** started with the merge of the previous ARTEMIS-JU and the ENIAC-JU in June 2014 and will finish in 2024. The ECSEL-JU programme features innovation and competitive projects in several key application areas and crucial key enabling technology areas (essential capabilities). The seven-year programme 7-year R&I programme (2014-2020) includes the following five topics: Smart Mobility, Smart Society, Smart Energy, Smart Health, Smart Manufacturing.

The **contractual public-private partnership (cPPP) Robotics** brings together the European robotics industry, research, academia and the European Commission. They have joined to launch a new research, development and innovation programme with the aim to strengthen the European robotics industry and to foster the excellence of its science base. The outcomes of the consultations between the different parties within the PPP resulted in a Strategic Research Agenda for Robotics in Europe, integrated into the Horizon 2020 work programme.

The objective of the PPP is to provide a platform for the industrial and academic community to develop a common roadmap for robotics in Europe and to identify the means to realise this roadmap with public support. Related to health sector robotics offers new solutions from ageing to health as well as to health care systems.

## C: Other networks

In the other networks that are part of the partnership landscape, 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.”<sup>6</sup>

The **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 is set together of knowledge and innovation communities of educational institutions, research organisations, 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 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.

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.

**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 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.

The **HBP Flagship** addresses the development of understanding of the human brain. It also deals with the development of the supporting infrastructures needed by brain researchers to adopt big-science approaches based on the use, for example, of large data sets. The work of the Human Brain Project Flagship is expected to provide profound insights into what makes us human, to enable the building of revolutionary computing technologies, and to provide knowledge that will lead to the development of new treatments for brain disorders.



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<sup>6</sup> Evaluation on the European Institute of Innovation and Technology, Final Report, European Commission, 2017

## 2. Connections between partnerships and networks

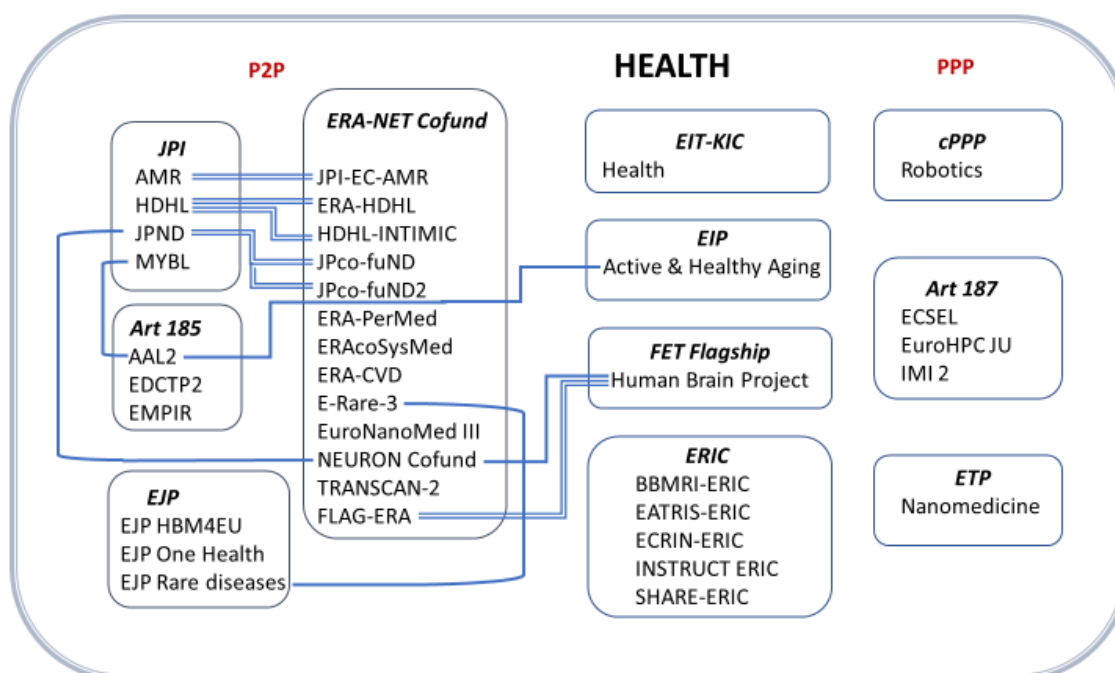
### 2.1. *Type of connections between the partnerships and networks*

The analysis below is an attempt to highlight the main connections that are apparent from desk research across the six main thematic areas of the Cluster 'Health'. It does not attempt to be comprehensive but provides an indication of the more obvious connections that are further discussed in the following sections. They include

-  Existing collaborations: e.g. joint calls or other joint activities (single, thick line). An example of existing collaboration is JPI MYBL working together with the Art. 185 Active and Assisted Living (AAL 2).
-  Formal connections: e.g. where one partnership is clearly linked to another (twin line). An example for a formal connection is JPI AMR and its Cofunds.

Please keep in mind that the lines do not show strength of connections but they just illustrate a certain type of collaboration as this was retrieved from the information of the networks' websites and expert knowledge available in the ERA-LEARN consortium.

**Figure 3-1: Description of connections between current partnerships and networks related to the Cluster ‘Health’ of Horizon Europe**



Source: ERA-LEARN

## 2.2. Examples of different types of interactions

A few selected examples are listed below to illustrate the different types of connections among the networks.

### Formal connections (e.g. one serves as continuation or implementation of the other's work-programme)

Most of the JPIs in the cluster ‘Health’ have received support for their implementation by means of an ERA-NET Cofund. For example JPND implemented two ERA-NET Cofunds (JPco-fuND and JPco-fuND2) and launched joint transnational calls for proposals aimed at supporting ambitious, innovative, multi-national and multi-disciplinary collaborative research projects. In the 2015 call, over 30 million euro with a EUR 10 million European Commission “topping up” fund was available for this call to support altogether 21 projects.

The ERA-NET Cofund FLAG-ERA is connected to the FET Flagships Human Brain Project and Graphene. It supported the implementation of the two Flagships with joint transnational calls.

Long-term collaboration within the ERA-NET Cofund E-Rare has evolved during H2020 into the broader initiative EJP Rare Diseases (European Joint Programme Cofund in Rare Diseases).

### **Existing collaborations (e.g. joint activities, some joint decision making through common membership in boards)**

There is good communication between the P2Ps regarding the preparation and implementation of calls in order to avoid duplication of efforts. For instance, there are P2Ps on cancer (TRANSCAN) and on rare diseases (E-Rare), and some cancers are rare. Despite this overlap, E-Rare's call exclude (rare) cancer projects from funding, whereas TRANSCAN's current call focuses on these rare cancers. Similarly, in the area of brain research, JPND and NEURON Cofund has made an explicit distinction between their call themes and actions, to clearly target separate fields.

One example of interactions between EC funded brain research networks has just recently been initiated. 1 November 2018 was launched The European Brain Research Area (EBRA) project, which was created as a catalysing platform for brain research stakeholders (researchers, clinicians, patients, governments, funders and public institutions) to streamline and better co-ordinate brain research across Europe while fostering global initiatives. This initiative called for the reduction of fragmentation and duplication of research efforts, fostering synergies through enhanced coordination of brain research efforts at EU and at global level. It is targeted to improve access to research infrastructures and data sources to optimise their use by the neuroscience research communities. EBRA is funded as a Coordination and Support Action from H2020 and the consortium consists of partners from JPND, NEURON and the FET Flagship Human Brain Project. It is coordinated by the European Brain Research Council.

### **Other informal connections (e.g. sharing information, considering each other's priorities)**

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.

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### 2.3. *Summary on overall connectivity between the networks*

The overall impression from the analysis is that, with some notable exceptions, the level of connectivity between the various networks and partnerships still shows potential for improvement.

On the one hand, health P2Ps have interactions to other health P2Ps, addressing themes of common interest. (e.g. patient involvement, clinical trials, open access, biomedical research infra-structures, 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.

On the other hand, there is only little interaction between P2Ps, PPP and other networks even though in terms of common interest substantial networking could lead to added value for the partnerships involved. 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 IMI2 and the other networks.

### 3. Appendix

#### Summary of the various partnerships and networks that are relevant to the Cluster 'Health'

The black dots indicate 'full relevance' to the specific intervention area, whilst the white dots indicate 'partial relevance'.

		Fit with Intervention Areas of Cluster 'Health'								
Network type and name	Focus area	Health throughout the life course	Environmental and social determinants of health	Non-communicable and rare diseases	Infectious diseases	Tools, technologies and digital solutions for health	Health care systems	Start	End	
A187 Public-Private Partnership										
IMI 2 Joint Undertaking	Innovative Medicine	○		●	●	●	○	2014		
ECSEL Joint Undertaking	Electronic components and system	○	○	○	○	●	○	2014		
EuroHPC Joint Undertaking	High-Performance Computing					○		2018		
A185										
EDCTP 2	European & Developing Countries Clinical Trials Partnership				●		○	2014	2024	
AAL 2	Active and Assisted Living	○				●	○	2014	2024	
EMPIR	European Metrology Programme for Innovation and Research					○		2014	2024	
EIT-KIC										
Health	Health innovations	○						2008		
EIP - European Innovation Partnership										
Active and Healthy Aging	Active and healthy aging	●	○			●	●	2011		
ETP - European Technology Platform										
ETP NanoMedicine	Nanomedicine					○		2005		
cPPP - Public-Private Partnership										
eu-Robotics	Robotics					○		2013		
FET Flagship										
Human Brain Project	Neuroscience, Medicine, Computing			○		●		2013	2023	
EJP Cofund										
EJP HBM4EU	European Human Biomonitoring Initiative	○	○			○		2017	2021	
EJP One Health	Foodborne zoonoses, antimicrobial resistance, emerging microbiological		○		●		○	2018	2022	
EJP RD	Rare Diseases	○		●			○	2019	2023	
JPI - Joint Programming Initiative										
AMR	Antimicrobial Resistance		○		●		○	2012	2022	
HDHL	A Healthy Diet for a Healthy Life							2010	2022	
JPND	Neurodegenerative Diseases	●		●			○	2011	2022	
MYBL	More Years, Better Lives	●	○				○	2013	2022	
ERA-NET Cofund										
ERAcSysMed	Systems Medicine			○	○	●		2015	2019	
ERA-CVD	Cardiovascular Diseases	○	○	●			○	2015	2020	
ERA-HDHL	Healthy Diet Healthy Life	○	●	○				2016	2021	
ERA-PerMed	Personalized medicine			●	●	○	○	2017	2022	
E-Rare-3	Rare Diseases	○		●			○	2014	2019	
EuroNanoMed III	Nanomedicine			○	○	●		2016	2021	
FLAG-ERA II	Human Brain Project and Graphene Flagships			○		○		2016	2021	
FLAG-ERA III	Human Brain Project and Graphene Flagships			○		○		2019	2023	
HDHL-INTIMIC	Healthy Diet Healthy Life	○	●	○	○			2017	2022	
JPco-fuND	Neurodegenerative Diseases	●		●			○	2015	2019	
JPCOFUND2	Neurodegenerative Diseases	●		●			○	2019	2023	
JPI-EC-AMR	Antimicrobial Resistance		○		●		○	2015	2020	
NEURON Cofund	Disease related Neuroscience	○		●		○	○	2016	2020	
TRANSCAN-2	Translational Cancer Research	○		●		○	○	2015	2019	
ERIC - European Research Infrastructure Consortium										
BBMRI-ERIC	European research infrastructure for biobanking	●	○	●	●	●	●			
EATRIS-ERIC	European infrastructure for translational medicine	●	○	●	●	●	●			
ECRIN-ERIC	European Clinical Research Infrastructure Network	●	●	●	●	●	●			
SHARE-ERIC	The Survey of Health, Ageing and Retirement in Europe	●	●	●	●	●	●			

## *Imprint*

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