IDIH

INTERNATIONAL COLLABORATION
DIGITAL TRANSFORMATION
HEALTHY AGEING

D2.1
Guidebook for RDI stakeholders

APRE – AGENZIA PER LA PROMOZIONE DELLA RICERCA EUROPEA

(VERSION 1.0)

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Abstract

This Guidebook aims to introduce - to RDI stakeholders in the EU and in 5 Strategic Partner Countries (Canada, China, Japan, South Korea, and USA) - the funding schemes that are supporting international cooperation in Digital Health and AHA (Active and Healthy Ageing), for the time being and for the next future. Starting from the background findings of D2.4, the *Guidebook for RDI stakeholders* focuses on international cooperation opportunities by offering two reading options: a first part dedicated to RDI stakeholders from the 5 Strategic Partner Countries (providing information on relevant programmes and policies in the EU which are open to international cooperation); a second part dedicated to RDI stakeholders from the EU (providing information on relevant programmes and policies in Canada, China, Japan, South Korea, and USA, which are open to international cooperation). An introduction on the R&I landscape, especially around Digital Health and AHA, is provided for each country or region, in order to better contextualize the information on policies and programmes. Boxes and graphic highlights help to better orient the RDI stakeholders and bring to their attention some key-aspects that may allow them to find the most suitable opportunity for international cooperation. This technical deliverable will be updated and restyled in an even more user-friendly guide for researchers and innovators that will soon follow as a separated document freely available online.

Keywords

International Cooperation, Digital Health, Active and Healthy Ageing, Funding Agencies, Funding Programmes, Policy

Disclaimer

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Abbreviations and Acronyms

Abbreviation, Acronym	Description
AAI	Active Ageing Index
AAL	Active and Assisted Living
AHA	Active and Healthy Ageing
AI	Aging Institute (CIHR)
AI	Artificial Intelligence
AMED	Japan Agency for Medical Research and Development
APRE	Agenzia per la Promozione della Ricerca Europea (project partner)
ATC	Athens Technology Center S.A. (project partner)
Catalyst	Catalyst @Health 2.0 (project partner)
CBTC	China-Belgium Science and Technology Park
CEF	Connecting Europe Facility
CF	Cohesion Fund
CHAFEA	Consumers, Health, Agriculture and Food Executive Agency
CIHR	Canadian Institutes of Health Research (project partner)
COST	Cooperation in Science and Technology
CRCC	Canada Research Coordinating Committee (Canada)
CSA	Coordination and Support Action
CSO	Civil Society Organization
DG	Directorate-General of the European Commission
DGMIF	Daegu-Gyeongbuk Medical Innovation Foundation
DNA	Data, Network and AI
DSM	Digital Single Market
EaSI	Employment and Social Innovation
ECDC	European Centre for Disease Prevention and Control
ECHA	European Chemicals Agency
EEN	Enterprises Europe Network
EEPC	Eastern European Partner Countries
EFP	European Framework Programme
EFSA	European Food Safety Authority
EG	Expert Group
EIC	European Innovation Council

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Abbreviation, Acronym	Description
EIS	European Innovation Scoreboard
EIT	European Institute of Innovation and Technology
EMA	European Medicines Agency
EMR	Electronic Medical Records
ERA	European Research Area
ERDF	European Regional Development Fund
ERNs	European Reference Networks
ESF+	European Social Fund +
ETRI	Electronics and Telecommunications Research Institute
EU	European Union
FEAD	Fund for Aid to the Most Deprived
FDA	Food and Drug Administration (US)
FP	Framework Programme
FP9	9th (EU) Framework Programme
FTA	Free Trade Agreement
GAC	GAC Group (project partner)
GCC	Global Commercialization Center
GDHP	Global Digital Health Partnership
GDP	Gross Domestic Product
GERD	Gross Domestic Expenditure in R&D
GSBC	Global SMEs Business Council (project partner)
HCO	Health Care Organization
H2020	Horizon 2020
IA	Innovation Action
ICT	Information and communications technology
IDIH	International Digital Health Cooperation for Preventive, Integrated, Independent and Inclusive Living (IDIH project)
IPR	Intellectual Property Rights
IRAP	Industrial Research Assistance Program
JAICA	Japan International Cooperation Agency
JRC	Join Research Centre
JSPS	Japan Society for the Promotion of Science
JST	Japan Science and Technology Agency

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Abbreviation, Acronym	Description
JSTCC	Joint Science and Technology Cooperation Committee
KCDC	Centres for Disease Control and Prevention
KET	Key Enabling Technology
KIAT	Korea Institute for Advanced Technology
KOITA	Korea Industrial Technology Association
KSO	Key Strategic Orientations (Horizon Europe)
MAFF	Ministry of Agriculture, Forestry and Fisheries
METI	Ministry of Economy, Trade and Industry
MEXT	Ministry of Education, Culture, Sports, Science And Technology
MFF	(EU) Multiannual Financial Framework
MGA	Model Grant Agreement
MHLW	Ministry of Health, Labour And Welfare
MIST	Ministry of Science and Technology (South Korea)
MOHW	Ministry of Health And Welfare
MOST	Ministry of Science and Technology
MOTIE	Ministry of Trade, Industry and Energy (Korea)
MoU	Memorandum of Understanding
MSIT	Ministry of Science and ICT (Korea)
NCP	National Contact Point
NGEU	Next Generation EU
NIA	National Institute on Aging
NIH	National Institute of Health
NRC	National Research Council Canada
NRF	National Research Foundation of Korea
NSF	National Natural Science Foundation of China
OECD	Organisation for Economic Co-operation and Development
PHAC	Public Health Agency of Canada
PIC	Participant Identification Code
QoL	Quality of Life
R&D	Research & Development
R&I	Research and Innovation
RDI	Research, Development and Innovation
RIA	Research and Innovation Action

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Abbreviation, Acronym	Description
S&T	Science & Technology
S2i	Steinbeis 2i GmbH (project partner)
Sawarabi	Sawarabi Group (project partner)
SC1	Societal Challenge 1
SDGs	Sustainable Development Goals
SMEs	Small and Medium Enterprises
SPS	School of Pharmaceutical Science Tsinghua University (project partner)
SRIA	Strategic Research and Innovation Agenda
SSHRC	Social Sciences and Humanities Research Council (Canada)
STI	Science, Technology and Innovation
TRL	Technology Readiness Level
UN	United Nations
WHA	World Health Assembly (WHO)
WHO	World Health Organization
WP	Work Programme
YEI	Youth Employment Initiative

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Executive Summary

IDIH - funded under the European Union Horizon 2020 Research and Innovation Programme – pursues to foster collaboration in the field of digital health for Active and Healthy Ageing (AHA) between the European Union and five Strategic Partner Countries (USA, Canada, China, Japan and South Korea) and it focuses on four key areas that embrace common priorities of all countries/regions involved: *Preventive care, Integrated care, Inclusive living, Independent and connected living,.*

By establishing a Digital Health Transformation Forum, an expert-driven and a long lasting and umbrella mechanism to foster international collaboration in these fields, the project takes the context of society, technology and industry, but also the policy framework into account for the development of joint activities in the digital transformation of the health and care for the elderly.

In order to facilitate cooperation between RTI stakeholders from Europe and the 5 IDIH Strategic Partner Countries, this guidebook presents funding schemes and opportunities for researches and innovators supporting various forms of international collaboration in the field of Digital Health for AHA.

This Guidebook is the result of partners' desk research that allowed the IDIH consortium to identify – where possible in synergy with the funding agencies involved in the project - the funding schemes supporting international cooperation in research and innovation in the target countries and Europe, their thematic scope and potential applicants.

The first part of the Guidebook is dedicated to researchers and innovators from USA, China, Japan, Canada, and South Korea. Opportunities for international cooperation under the EU Funding Programmes for the benefit of such stakeholders from the IDIH Strategic Partner Countries, are presented in this first part of the Guidebook.

The second part of the Guidebook is dedicated to researchers and innovators from the EU. Opportunities for international cooperation under the Funding Programme of the IDIH Strategic Partner Countries are depicted in that dedicated section.

Both sections are introduced by an overview of the R&I policies that support Digital Health and Active and Healthy Ageing at regional and country level, highlighting where possible and relevant trends in the 4 IDIH strategic topics: *Preventive care, Integrated care, Independent and connected living, Inclusive living.*

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1 Opportunities for researchers and innovators from IDIH Strategic Partner Countries under EU Funding Programmes

In times of Covid-19 pandemic, research and innovation are becoming more and more crucial. COVID-19 has shown the vulnerability of our societies, especially impacting on the economy and on the health and care systems, that are now called to become more *resilient*. Collaboration at research and policy level has increased as never happened in the last 50 years, working with and for the citizens, who progressively changed their perception towards science in society and now seem to trust researchers more.

Many initiatives have been put in place by the European Commission to facilitate research activities through dedicated funding opportunities, the sharing of research data in the framework of the "ERAvs Corona Action Plan", and a huge Pan-EU Hackathon to mobilize European Innovators and civil society.

We assisted to an extraordinary coordination effect, and a fast reaction from the Member States of the EU, that was very much necessary at the time of first wave of the pandemic, and now is needed again to recover and build a better future around a *well performing* R&I landscape, based on international cooperation and, therefore, capable of facing global challenges.

Indeed, in order to overcome this global crisis and its social and economic impact on society, R&I needs to be the very best fertile ground for cooperation at international level.

Knowledge and capacities are the main assets of the European Union that represents the 7 % of the world population and the 20 % of world R&D, with one third of the scientific publications. However, despite boasting world-class research and strong industries, Europe still does not transform its leadership in science into leadership in innovation and entrepreneurship.

Therefore, a paradigm shift is currently leading the path towards the adoption of the new European Framework Programme for Research and Innovation "Horizon Europe" that will be particularly oriented to Innovation in order to better meet the challenges of the future and to fast deliver prosperity to citizens, more effectively and more inclusively.

Thus, in order to maintain and extend its world leadership, the EU is now also focusing on **international cooperation** and partnerships with third countries and other international partners, in a way that could **enable Europe to tap the best expertise and know-how available worldwide, to leverage a critical scale of resources and, finally, to tackle global societal challenges.**

While the *Horizon 2020* framework programme for research and innovation has been mainstreamed as an open-to-the-world programme, the new EC orientations for the period 2021- 2027 is now balancing this principle with the need of the Union to keep its technology sovereignty.

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This perspective is currently at the base of the revision of the EU strategy for the international cooperation in R&I of 2012[1], that also guides the discussion of EU institutions for the adoption of the next framework programme for research and innovation, highlighting the need to focus on strategic sectors and partner countries, with which the EU intends to cooperate more, while maintaining an *open* approach to the rest of the world.

While we are expected to reach approximately 8.6 billion people in the world in 2030, and 9.8 billion in 2050[2], populations are also ageing overall. Among the global challenges that identify **strategic areas for international cooperation** for the EU, **demographic change and ageing** represent, therefore, a key driver for transformation in the region, that shapes major social, economic, political, environmental, and technological changes. Climate change, labour markets, migration, health- and long-term care and public spending are all issues that are affected by these drivers.

The project IDIH - International Digital Health Cooperation for Preventive, Integrated, Independent and Inclusive Living is a Coordination and Support Action funded by the European Union (EU) within the framework of the Horizon 2020 research and innovation programme. The purpose of IDIH project is to promote and increase international cooperation between the EU and **5 partner countries considered as *strategic* to advance innovation in digital health for active and healthy aging**, which are: Canada, China, Japan, South Korea, and USA.

As part of the IDIH project, the current Guidebook introduces to the researchers and innovators coming from IDIH international strategic countries, the funding opportunities for international cooperation that are currently offered by the EU programmes and policies in the fields of Digital Health and AHA.

To better contextualize these information, readers can skip to part 2 of this Guidebook, where we provide an overview of the relations between the EU and these partner countries in the field of science and technology cooperation , based on the strategy of international cooperation for R&I of the EC[3].

[1] To see the Strategy Implementation Reports, visit: https://ec.europa.eu/research/iscp/index.cfm?pg=strategy
[2] See World Population Prospects 2017 by UN at https://www.un.org/development/desa/en/news/population/world-population-prospects-2017.html
[3] See: https://ec.europa.eu/research/iscp/index.cfm?pg=home

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1.1 Understanding the landscape for Research and Innovation in the EU

"The European visionaries decided that difference is not a threat, difference is natural. Difference is the essence of humanity"

John Hume, at the European Parliament in 1998

Diversity is one of the most challenging issues facing Europe since its origins. However, in 2000, this challenge turned in a *motto* - "United in diversity" - a very simple expression that indicates how, through the EU, Europeans have managed to work together for peace and prosperity, while maintaining the richness of the continent's diverse cultures, traditions and languages.

What began as a purely economic union is now evolving into an organization spanning policy areas, from climate, environment and health to external relations and security, justice and migration.

In her speech on the State of the Union of September 16th 2020 at the European Parliament Plenary, the President of the European Commission Ursula von der Leyen stated how COVID-19 "has simultaneously shown both the fragility of the global system and the importance of cooperation to tackle collective challenges". Thanks to the EU unique social market economy, the President of the EC now calls for a "human economy", capable of protecting citizens against the great risks of life, offering stability and an exit-strategy to absorbs shock by the means of innovation, growth and fair competition. These are the principles laying at the foundations of the Recovery Plan for Europe that will leverage on the challenges that the EU is now facing, actually conceived as powerful enablers of the progress of the Union.

Starting from this ambition, the EU is now at work for building a stronger European "Health" Union in which to support the EU capacity and readiness to respond to cross-border health threats and emergencies[4].

Health systems | They are a key asset of the EU social systems, accounting for 24 million employees in the health and social work sector in 2017. It is a main priority of Member States to render health systems safe and secure, accessible for all, integrated, cost-effective, resilient, sustainable and trusted with timely and relevant services, as well as to reduce inequalities, including by unleashing the potential of data-driven and digital innovation for better health and person-centred care building on open and safe European data infrastructures. New opportunities such as 5G deployment, the concept of 'digital twins' and the Internet of Things will advance the digital transformation of health and care[5].

This is part of the first proposal of the EC based on a two-fold response through:

[4] The President of the EC has proposed to establish a new agency for biomedical advanced research and development based on the model of the US BARDA.

[5] Extract from the *Proposal for a Decision of the Council on establishing the specific programme implementing Horizon Europe - the Framework Programme for Research and Innovation.*

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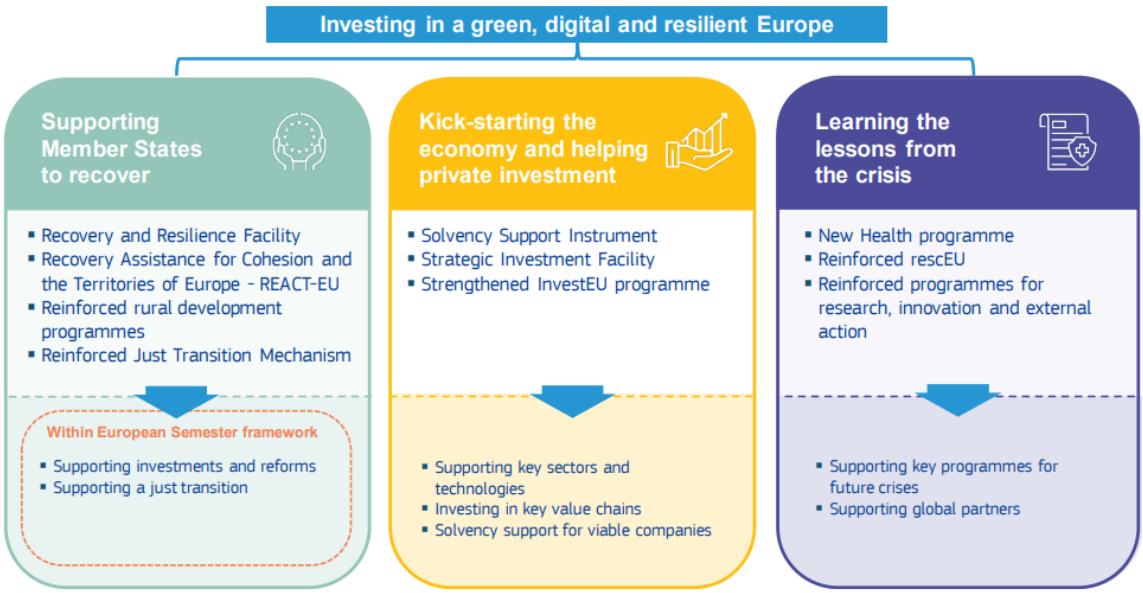
1. **NextGenerationEU**: a new recovery instrument of €750 billion which will boost the EU budget with new financing raised on the financial markets for 2021-2024;
2. **A reinforced long-term budget of the EU**: for 2021-2027 (€ 1 100 billion)

In order to invest in a green, digital and resilient Europe, the NextGenerationEU will be rolled out under three pillars:



Source: European Commission

Figure 1: NextGenerationEU: three pillars to recovery and build a more sustainable and resilient Europe

The proposal of the EC of May 26, 2020 needs the agreement and approval of the Council of the Union and the European Parliament. To stay up to date, visit here.

The European Green Deal is the EU roadmap to build a sustainable economy, to be achieved by **transforming climate and environmental challenges into opportunities in all policy areas and making the transition fair and inclusive for all.**

37% of NextGenerationEU will be spent directly on the European Green Deal objectives addressing the challenge of Climate Change with the mission to become the first climate-neutral continent by 2050 and to increase the 2030 target for emission reduction to at least 55%, pulling the EU to fully embrace a circular economy.

Moreover, a real Data Economy capable to **orient the Digital Transformation in the sense of increased connectivity, skills and digital public services -** in a

Figure 2: Timeline towards the implementation of the Multiannual Financial Framework 2021 - 2027

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framework of fully respect of the rights to privacy, freedom of speech, and cybersecurity - is also a great opportunity for Europe, that intends to improve its infrastructures[6] and keep pace with the rapid speed of change.

Digitisation | it is a major driver in the EU that evolves at a rapid pace across all sectors.

Investing, producing and using digital technologies provides a major boost to EU economic growth, amounting to an increase of 30% between 2001 and 2011 alone. In this context, the role of SMEs remains fundamental in the EU, both in terms of growth and jobs[7].

Major and global new markets in health care, media, entertainment, communication and retail, quickly developed in the last decades, based on breakthrough innovations in ICT, biotech, green-tech, and internet. These market-creating innovations affected the EU economy through the scale-up of fast growing and often new companies.

Research and innovation remain the key drivers of sustainable and inclusive growth and technological and industrial competitiveness, capable of turning the challenges into new business opportunities and into rapid benefits for society.

"Innovation in all its forms is a key driver for the EU to continue delivering prosperity to its citizens and meeting challenges of the future[8]"

European Commission, 2019

The EU objective of investing 3% of its GDP in R&D was first set in the Lisbon Strategy with the aim of turning the EU into the most competitive and dynamic knowledge-based economy in the world by 2010. The ambition was reset in the Europe 2020 Strategy with a focus to "increase combined public and private investment in R&D to 3% of GDP by 2020".

With 2.19% of its GDP invested in R&D, to date the EU has not yet fulfilled its R&D investment ambition that, nevertheless, has proven to have had a clear mobilising effect, encouraging all Member States to set their own national targets.

Even if, in some EU countries, knowledge diffusion and technological transformation continues to be stimulated through foreign direct investment and foreign business research investment, **public R&D expenditure now accounts for one third of the total R&D performed in the EU**, and it is mostly represented – at EU level - by the EU Framework Programme (FP) for Research and Innovation. The FP is the European Commission's funding instrument that, between 2014 and 2020, has allocated almost 80 billion euros to scientific research and innovation under the name of "Horizon 2020" (H2020).

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[6] A European cloud is also part of NextGenerationEU, based on the GaiaX initiative: a federated data infrastructure for Europe.

[7] Extract from the *Proposal for a Decision of the Council on establishing the specific programme implementing Horizon Europe - the Framework Programme for Research and Innovation*.

[8] From the Proposal for a DECISION OF THE COUNCIL on establishing the specific programme implementing Horizon Europe - the Framework Programme for Research and Innovation

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Participants from five EU-15 countries[9] – UK, Germany, France, Spain and Italy – receive 60% of the overall funding and represent 64.5% of the investment in R&I (GERD) in Europe. While, the EU-13 countries[10] represent 8.5% of the participations in Horizon 2020 and receive 4.4% of the overall funding. Moreover, the EU-13 countries showed to have a lower success rate of their applications (11.1% compared to 14.4% for the EU-15) and a much smaller share of project coordinators in signed contracts: 5.1% vs. 87.6%[11]. **Nevertheless, the participation gap in the FP is not fully aligned with the innovation divide in Europe**[12].

In order to increase R&I performance and reduce the innovation gap, countries have adopted specific measures at national level. Among these: aligning the national R&I system with the EU strategies (including smart specialisation strategy) and best practices, directing EU regional structural funds to support R&I performance, allocating research funding through competitive means, reforming research evaluation systems, or developing the national contact point systems[13]. As a matter of fact, indeed, **the low national research investment remains a key cause for low performance in Framework Programmes for Research and Innovation**. The reasons behind this correlation relate to the access to infrastructure and R&D personnel with skills for leading-edge research and preparation of research proposals; this is often associated with long term resources challenges, including ageing of human resources, outmigration, and low attraction of research careers.

Beyond a diverse picture of R&I systems at national level, **R&D intensity[14] increased over the 2000 - 2018 period in 24 Member States**, with national R&D intensity ranging from 0.5% in Romania to 3.3% in Sweden. While - at transnational level - with a value of 0.72% of GDP in 2018, **the EU has emerged with one of the highest public R&D intensities worldwide.**

The business enterprise sector continues to be the EU's strongest R&D performer, accounting for 66% of total R&D expenditure in 2018. Overall, research, development and innovation are performed by four main institutional sectors: **business enterprise, government, higher education.**

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[9] The EU15 comprised the following 15 countries as Member States before 2004:: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom.

[10] The EU13 comprised the following 13 countries as Member States since 2004: Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia and Slovenia

[11] On this regards, the outstanding pillar of H2020 "Spreading Excellence & Widening Participation" had precisely the goal of improving and increasing participation of some EU Member States and regions with unsatisfactory performances in the Framework Program for R&I.

[12] See the Report (2018), Spreading Excellence & Widening Participation in Horizon 2020. Both Spain and Italy belong to the top-5 performers in Horizon 2020, but are Moderate Innovators according to the European Innovation Scoreboard (EIS). Nordic countries are Innovation Leaders but feature lower FP performance than could be expected based on their national R&D intensity. The two Modest Innovators – Romania and Bulgaria – show low performance in FP. Finally, countries such as Cyprus feature high FP participation rates, but appear in EIS as Moderate Innovators.

[13] The network of National Contact Points (NCPs) is the main structure to provide guidance, practical information and assistance on all aspects of participation in Horizon 2020. NCPs are also established in many non-EU and non-associated countries ("third countries").

[14] R&D intensity is calculated as gross domestic expenditure on R&D relative to GDP.

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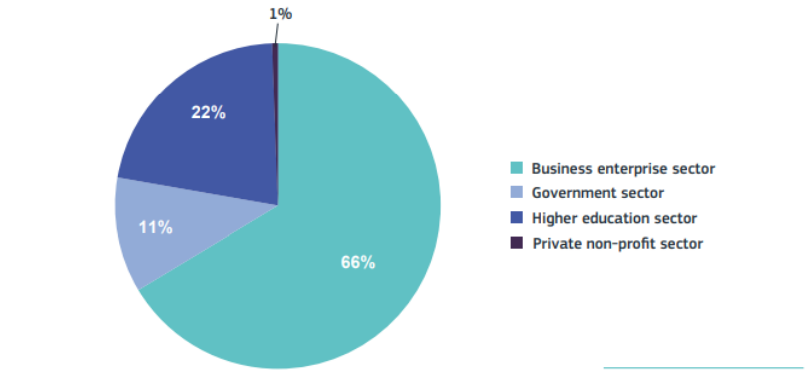

Figure 3: R&D expenditure by sectors of performance (%), EU, 2018

The prevalence of the private sector as a top performer in R&D is also a reflection of the promising European startup ecosystems. On this regard, t**he EU has seven ecosystems in the world top 30 startup ecosystems**: Paris, Berlin, Stockholm, Amsterdam-StartupDelta, Barcelona, Dublin and Munich.

In this scenario, the **European Union maintains also its primacy in the excellence of science, especially in terms of scientific output and number of researchers**, and it is second only to the USA in terms of scientific quality at global level.

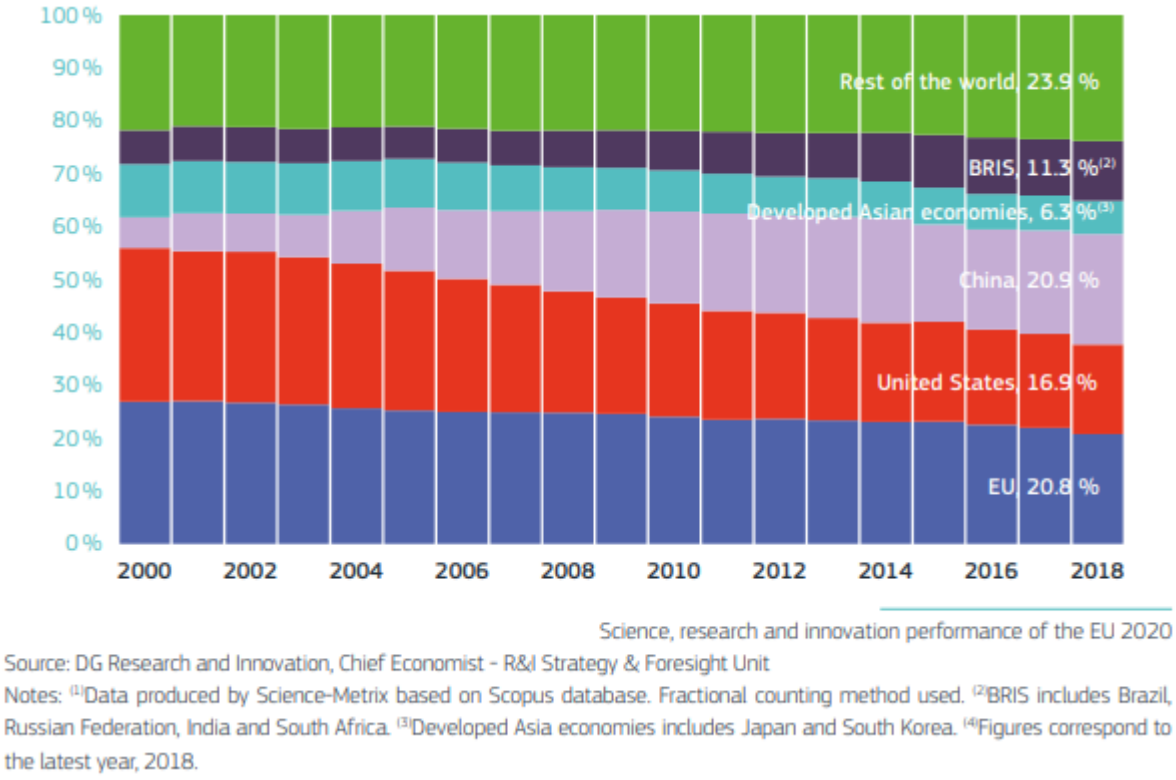

Figure 4: World share of scientific publications, 2000 - 2018

Within Europe, however, the picture of the performance of national R&D systems in terms of scientific excellence is fragmented, with Switzerland as a global leader, followed by numerous western European and Scandinavian countries. In general, **scientific production continues to fluctuate over time for**

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some groups of countries: while several Mediterranean and eastern European countries like Estonia, Greece, Hungary, Italy, Slovenia and Spain have managed to raise their scientific output compared to 2000, a decline has been noted for Iceland, Israel, Malta and Turkey since 2007.

As a measure of the impact of EU R&D on Society as a whole, the **EU accounts for about one fifth of the world's R&D publications and patents.** However, it still perceives the need to better communicating its excellent science and innovation, in order to improve the public awareness on science and technology, as well as to contribute to a stronger *EU identity* on the global scene[15].

Moreover, new global developments, such as the UK's exit from the EU[16], the emerging leadership of China, digitalisation, and a new focus on sustainability are impacting the EU's scientific performance, which is now mainly oriented to food/bioeconomy and climate/environment sectors with high-quality scientific publications[17].

Under the Horizon 2020 Framework Programme, more than 80% of investments has addressed specific SDGs, with the 54% investment to **climate action** and 53% to **good health and well-being.**

Beyond these specific destinations of EU investment, all areas of research have become data intensive, increasingly relying upon and generating big data, offering us the measure of how much digitalisation has definitely transformed science. The expansion of ICT has produced, indeed, the **digital revolution** contributing to the EU growth not only in terms of increased productivity but also through more sustainable solutions for the benefits of citizens.

However, even if almost more than 1 in 10 enterprises in the EU performed big data analyses as part of their work, and the share of employment in the EU's ICT sector has risen over the last decade, the role of **ICT** has remained relatively stable over time in the EU, representing **around 4% of GDP**.

In short, the ICT diffusion and integration across sectors, firms and individuals in the EU need to be further improved, in order to better compete at global level with other major economies.

ICT in the EU | In the EU, the R&D intensity of the ICT sector was the highest in Finland, Austria and Sweden. *Innovation leaders*, namely Finland, Sweden and Denmark, and *strong innovators*, such as Austria and France, rank highest in terms of their ICT industries' R&D intensity in 2018. At the lower end of the spectrum are Latvia, Luxembourg, Croatia, Lithuania and Romania, but the digital divide between the most-advanced and least-digitally advanced nations seems to be closing. Norway stands out an H2020 associated country with a very high R&D intensity in the ICT sector (for which data are available), close to that of Finland. Source: *Science, Research and Innovation Performance of the EU 2020*. A *fair, green and digital Europe*. European Commission, DG RTD, 2020.].

[15] See *Innovation output and knowledge valorisation*, in *Science, Research and Innovation Performance of the EU 2020*. A *fair, green and digital Europe*. European Commission, DG RTD, 2020.
[16] The UK became a third country on 1 February 2020 on the basis of a Withdrawal Agreement that came into force on the same day. The agreement provides for a transition period until 31 December 2020 during which Union law continues to apply to and in the UK.
[17] Compared to China, the EU only appears stronger in health challenge, where its share of scientific publications is 34% higher (2014-2018). See *Science, Research and Innovation Performance of the EU 2020*. A *fair, green and digital Europe*. European Commission, DG RTD, 2020.

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This is not the case of AI science. On this regard, the EU ranks among global leaders. Data explosion, stronger computational power, more sophisticated algorithms and open source software have enabled **breakthroughs in AI R&I**, that is increasingly blending with digital technologies such as blockchain and with the physical world, in fields such as advanced manufacturing and materials science.

Finally, the EU continues to lead on **open science policy and international scientific collaboration**, with its Framework Programme for Research and Innovation. The next one, Horizon Europe, will cover 2021-2027 and will continue to create new knowledge and solutions to attain the SDGs. In her Political Guidelines for the European Commission 2019 - 2024, the President of the European Commission has put forward six overarching priorities for the next five years that, together with the SDGs set at UN level, will shape future EU policy responses to global challenges, among which the EU research and innovation will play a fundamental role[18].

1.2 Digital Health for AHA: EU policy priorities and R&I opportunities

Shaping Europe's digital future is one of the goal of the European Commission that want a *Europe fit for the digital age*, in order to boost business development and enable citizens to reap new benefits, among which improved diagnosis and better public services in health and care[19].

The **health and well-being** of its people, indeed, is a central aim of the European Union, its policies and programmes. Providing timely access to affordable, preventive and curative health care of good quality to everyone is amongst the key aspirations the EU and its Member States.

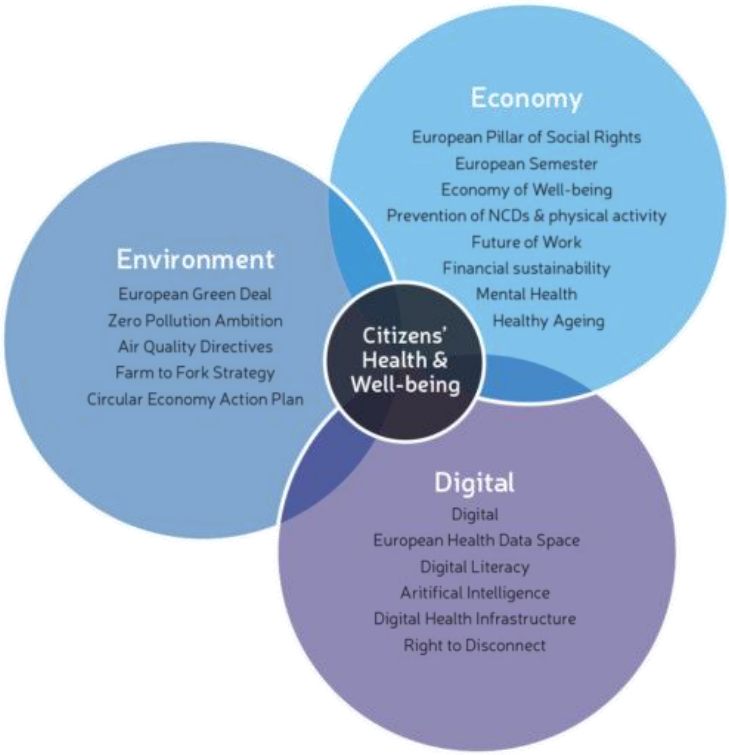

Figure 5: All Policies for a Healthy Europe: an intersectoral initiative (https://healthyeurope.eu/)

According to **Article 168 of the Treaty on the Functioning of the EU**, high level of human health protection shall be ensured in the definition and implementation of all Union policies and *activities*. With the proclamation of the **European Pillar of Social Rights**, the EU set the direction towards a fairer, inclusive and more social Europe for all European citizens based on a European social model that is fit for the challenges of the 21st century.

[18] See the part of this Guidebook dedicated to Horizon Europe.
[19] See the Political Guidelines for the European Commission 2019-2024

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Moreover, a special emphasis is placed on wellbeing of people and, in particular, to their ***Mental Health***, as a factor of increasingly importance for the economic growth and social development of Europe.

Finally, the EU is strongly committed to the ***UN Sustainable Development Goals (SDGs),*** many of which have an important impact on health and well-being, notably SDG 3 (Good Health and Well-being for People) with its nine health-specific targets aiming for **universal health coverage for all at all ages by 2030, leaving no one behind, and ending preventable deaths**.

According with the division of competences between the EU and Member States, established by the Treaties, **EU health-related actions aim to complement national health policies** and, thus, support EU Member States in reaching all these ambitious goals, which will not be possible without a massive investment in R&I at the national, European and international level.

Addressing major health-related challenges, such as the demographic change and the ageing population, responds, thus, to the EU's commitment at international level, in accordance with the **United Nation's 2030 Agenda for Sustainable Development,** as well as the **global strategies and plans of action of the World Health Organization (WHO).**

In this framework, the EU's policy goals and strategies, notably to the **EU Pillar of Social Rights**, the **EU Digital Single Market**, and the **EU Directive on cross-border healthcare**, lay the foundations for the action of the Union in response to the challenge of the ageing population through innovation.

Digital Health and AHA | The EU commitment at international level

- **The UN SDG 3 – Ensure healthy lives and promote well-being for all at all ages.**
- **WHO[20]: a global strategy on Digital Health 2020 – 2024** (see the draft): The purpose of this global strategy is to strengthen health systems through the application of digital health technologies for consumer/people, healthcare providers towards achieving the vision of health for all. Recognizing the need to strengthen digital health implementation, in May 2018 the Seventy-first World Health Assembly adopted resolution WHA71.7 on digital health. The Health Assembly requested the Director-General "to develop (…) in close consultation with Member States and with inputs from relevant stakeholders (…) a global strategy on digital health, identifying priority areas including where WHO

[20] The European Union (EU) is an increasingly important actor in global health and international affairs, and a strong supporter of WHO's role as the lead agency for health, both globally and in the region. The EU is a natural partner of WHO/Europe. Geographically, more than half of the WHO European Region's Member States belong to it or seek to join. WHO/Europe's principal partner in the EU is the European Commission.

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should focus its efforts". It requested the Director-General also to provide normative guidance in digital health, including "through the promotion of evidence-based digital health interventions".

- **WHO: a global strategy and action plan on ageing and health:** To ensure adults live not only longer but healthier lives, a Global strategy and action plan on ageing and health was adopted in May 2016 by the World Health Assembly. This Strategy focuses on five strategic objectives and is a significant step forward in establishing a framework to achieve Healthy Ageing for all. It includes a call for countries to commit to action and develop age-friendly environments. It also outlines the need to align health systems to the needs of older people, and the development of sustainable and equitable systems of long-term care. It emphasises the importance of improved data, measurement, and research, and involving older people in all decisions that concern them.

What is Digital Health? | The term digital health is rooted in eHealth, which is defined as "the use of information and communications technology in support of health and health-related fields". Mobile health (mHealth) is a subset of eHealth and is defined as "the use of mobile wireless technologies for health". More recently, the term digital health was introduced as "***a broad umbrella term encompassing eHealth (which includes mHealth), as well as emerging areas, such as the use of advanced computing sciences in 'big data', genomics and artificial intelligence***" [Source: WHO]

What is Healthy Ageing? | Healthy Ageing is defined by the World report on ageing and health as the **process of developing and maintaining the functional ability that enables *well-being in older age*.** [Source: WHO]

What is AHA? | The broad concept of AHA was proposed by the WHO as the **process of optimizing opportunities for health to enhance *quality of life as people age*.** It applies to individuals and population groups. A universal (and operational) definition of AHA is still not available[21].

What is AAI? | Active Ageing Index is a tool to measure the untapped potential of older people for active and healthy ageing across countries. It measures the level to which older people live independent lives, participate in paid employment and social activities, and their capacity to age actively. The AAI is a product of a joint project undertaken in 2012 by the UNECE Population Unit together with the European Commission Directorate General for Employment, Social Affairs and Inclusion and the European Centre for Social Welfare Policy and Research in Vienna. Click **here** to access the ***Guidelines for Active Ageing Index (AAI) in non-EU countries and at subnational level.***

[21] See Operational definition of active and Healthy Ageing: a conceptual framework: https://ec.europa.eu/eip/ageing/sites/eipaha/files/results_attachments/bousquet.pdf

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Digital Health and AHA | Relevant EU policies

- **The Pillar of Social Rights** aims to serve as a guide towards efficient employment and social outcomes when responding to current and future challenges that are directly aimed at fulfilling people's essential needs, and towards ensuring better enactment and implementation of social rights[22].

  It builds upon 20 key principles, structured around three categories:

  1. Equal opportunities and access to the labour market
  2. Fair working conditions
  3. Social protection and inclusion

  Under Chapter III: Social protection and inclusion, several points concern AHA:

  - 15. Old age income and pensions: (…) **Everyone in old age has the right to resources that ensure living in dignity.**
  - 16. Health care: **Everyone has the right to timely access to affordable, preventive and curative health care of good quality.**
  - 18. **Long-term care**: Everyone has the right to affordable long-term care services of good quality, in particular home-care and community-based services.

- Directive 2011/24/EU on patients' rights in cross-border healthcare sets out the conditions under which a patient may travel to another EU country to receive medical care and reimbursement. It covers healthcare costs, as well as the prescription and delivery of medications and medical devices.

[22] See: https://ec.europa.eu/commission/priorities/deeper-and-fairer-economic-and-monetary-union/european-pillar-social-rights/european-pillar-social-rights-20-principles_en

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The Directive:

- Creates a network of National Contact Points to provide clear, accurate information on cross-border healthcare.
- Creates EU rules on a minimum list of elements to be included in a medical prescription taken from one EU country to another (cross-border prescription).
- Encourages further development of European Reference Networks of medical expertise, broadening cooperation between EU countries, with added benefits to health technology assessments and **e-health**.

A 2018 European Commission report (available in all EU languages) and its annex covers the key provisions, trends and progress to date in the last reporting period (2015-2018).

E-health glossary:

- **Patient summaries**
  Patient summaries collect main essential health data of each patient. They will be accessible to health professionals in the EU, facilitating tailored care for EU citizens even when accessing services in other EU countries.
- **e-prescriptions and e-dispensations**
  Patients abroad can receive similar medication to that of their home countries through e-prescriptions and e-dispensations.
  e-prescribing permits the electronic transmission of a prescription to a pharmacy while e-dispensing refers to the electronic retrieval of a prescription and supply of the medicine to the patient.
- **Electronic Health Records (EHRs)**
  EHRs refer to the comprehensive medical records of an individual that are accessible in electronic form.

Figure 6: E-health glossary of the European Commission: https://ec.europa.eu/health/ehealth/home_en

- **The Digital Single Market** (DSM)**:** enhancing the use of digital technology through the creation of a Digital Single Market is one of the European Commission's main priorities. Launched in 2015[23], the DSM aims to open up digital opportunities to people and business, and to bring the EU's single market into the digital age. Health is one of the sectors included in this agenda, given the potential benefits that digital services have to offer citizens and enterprises in this area. A mid-term review of the DSM conducted in May 2017[24] highlighted a strong willingness to ***facilitate the accessing and sharing of health data for research or treatment purposes, and to encourage patient feedback regarding the quality of health services***.

  In line with the Commission's Digital Single Market (DSM) strategy, and after analysing the results of an Open Public Consultation, the EC published a Staff Working Document and a "**Communication on Digital Transformation of Health and Care in the Digital Single Market**", empowering citizens and building a healthier society. These policy documents give direction to EU activities in this field for the coming years. This infographic (see Figure 7) gives an overview

[23] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on *A Digital Single Market Strategy for Europe* (COM/2015/0192)
[24] https://ec.europa.eu/digital-single-market/en/news/digital-single-market-mid-term-review

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of the European Commission policy on transformation of health care in the Digital Single Market. It was published together with the Communication and Staff Working Document on this topic.

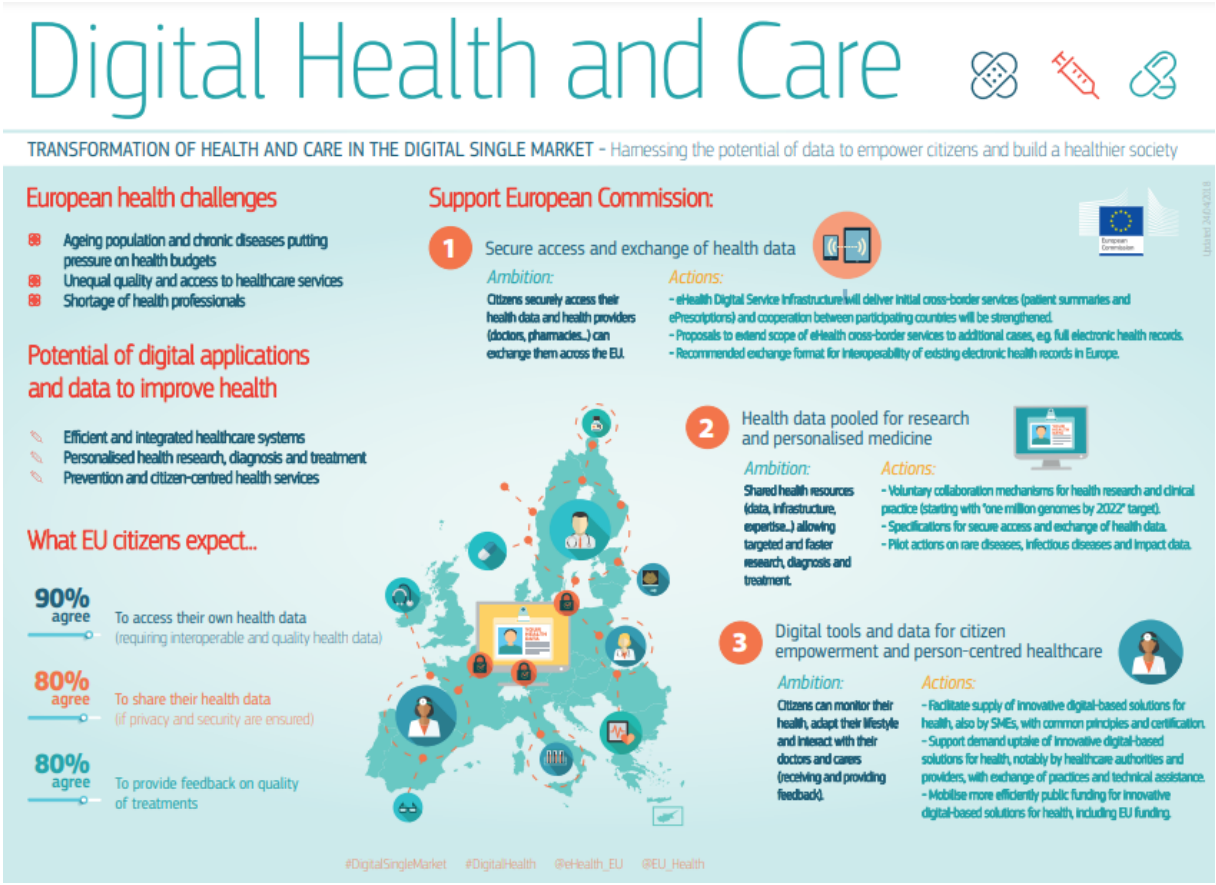

Figure 7: Transformation of Health and Care in the Digital Single Market. Infographics by EC.

- **The Commission's Communication on the Transformation of Digital Health and Care** of April 2018[25] identified three pillars to build activities around, in order to enhance the digitisation of the health and care sectors:
  - PILLAR 1 - Secure data access and sharing
  - PILLAR 2 - Connecting and sharing health data for research, faster diagnosis and improved health
  - PILLAR 3 - Strengthening citizen empowerment and individual care through digital services

- **EU Policies and initiatives supporting Mental Health**: policies and services addressing mental health are the responsibility of individual EU countries. However, the need to include mental health among the priorities of the public health agenda has resulted in a renewed focus at EU level[26].

[25] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on *enabling the digital transformation of health and care in the Digital Single Market; empowering citizens and building a healthier society* (COM/2018/233)

[26] In 2005, the Commission published a Green Paper – Promoting the Mental Health of the Population as a first response to the World Health Organization's Mental Health Declaration for Europe.

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- The Joint Action Mental Health and Well-being, launched in 2013 and ran until 2018, resulted in the European Framework for Action on Mental Health and Wellbeing, which supports EU-countries to review their policies and share experiences in improving policy efficiency and effectiveness. The Joint Action focused, among others, also on implementing of e-health approaches and developing of community-based and socially inclusive mental healthcare.

Digital Health and AHA | R&I at EU level

The last Horizon 2020 Work Programme 2018-2020 for Societal Challenge 1 - Health, demographic change and wellbeing gathered 50% of the available investment in Research and Innovation for this challenge. The SC1 Work Programme set – **at EU level** - as its primary challenge, the need to address the aging of population and, in particular, the "rising and potentially unsustainable health and care costs, mainly due to the increasing prevalence of chronic diseases".

In the 2014-2020 programming period, Health R&I has also leveraged **Member States** activities in areas including neuroscience, digitalization, cancer, and systems medicine. On this regard, several European and international initiatives have been realized, such as the European Innovation Partnership on Active and Healthy Ageing, the Global Alliance for Chronic Diseases, the Joint Programming Initiative "More Years, Better Lives - the Challenges and Opportunities of Demographic Change" and the Joint Programming on Neurodegenerative Diseases Research.

In this framework, digital health solutions have created many opportunities to solve the problems of care services and to address other emerging issues of ageing society. Digital devices and software have been developed to diagnose, treat and facilitate patients' self-management of illness, including chronic diseases. Digital technologies are also increasingly used in medical training and education and for patients and other healthcare consumers to access, share and create health information. **Full advantage should be taken of these progresses, with a special attention to privacy and data protection.**

Health research and innovation have played a significant part also in improving productivity and quality in the health and care industry. However, **the EU continues to face novel, newly emerging or persisting challenges** that are threatening citizens and public health, the sustainability of its health care and social protection systems, as well as the competitiveness of its health and care industry. Among these [27], the **demographic change and the ageing population represent cross-cutting issues that have a significant socio-economic impact in the European countries**, starting from the increasing costs for European health care systems.

Indeed, health challenges are complex, interlinked and global in nature and require multidisciplinary, technical and non-technical, cross-sectorial and transnational collaborations. Therefore, for the next period 2021-2027, research and innovation will foster strategic collaboration at EU and international level in order to pool the expertise, capacities and resources needed to create scope, speed and

[27] See the Proposal for a DECISION OF THE COUNCIL on establishing the specific programme implementing Horizon Europe - the Framework Programme for Research and Innovation Health challenges in the EU [Interinstitutional File: 2018/0225(COD)].

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economies of scale, as well as to exploit synergies, avoid duplication of effort and share the expected benefits and financial risks involved.

In this new framework, close linkages between discovery, clinical, translational epidemiological, ethical, environmental and socio-economic research, as well as with regulatory sciences, will be built. The skills of academia, practitioners, regulatory bodies and industry will be combined with the engagement of health services, social services, patients, policy-makers and citizens, in order to leverage on public funding and ensure the uptake of results in clinical practice as well as in health care systems.

R&I in the EU will develop the knowledge base, exploit existing knowledge and technologies, consolidate and create the research and innovation capacity and develop the solutions needed for a more effective promotion of health and the integrated prevention, diagnosis, monitoring, treatment, rehabilitation and cure of diseases and (long-term and palliative) care. Results of research will be translated as recommendations for action and communicated with the relevant stakeholders.

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1.3 EU Funding Programmes supporting International Cooperation in the field Digital Health for AHA

Horizon Europe, as its predecessor Horizon 2020 is **Open to the World**. This means that participants from all over the world, regardless of their place of establishment or residence, can participate in most of the calls of Horizon Europe. Furthermore, in many cases, the EU will fund at least partly the participation of the international partners.

In addition to this general openness of most Horizon Europe calls to non-EU researchers, many calls will particularly encourage cooperation with non-EU partners. All calls are published in bi-annual "Work Programmes".

Horizon Europe | International cooperation opportunities

- **Collaborative research & innovation projects:** carried out by consortia of organisations working together on specific research & innovation areas. A consortium must include at least 3 participants from 3 different EU Member States or Associated countries, with at least one EU Member State. In addition to these three partners, any legal entity from anywhere in the world can be included in the consortium.
- **Individual researcher projects:** The European Research Council and the Marie Skłodowska-Curie actions offer unparalleled funding opportunities for individual researchers who want to work in Europe

Researchers throughout the world can participate in Horizon Europe projects - though they are not always eligible for Horizon Europe funding.

Regarding funding, we can distinguish between countries that are automatically eligible for funding and those that are not (see Table below).

HORIZON EUROPE | Eligibility of third countries for funding	
Automatically eligible for funding	▪ **Associated countries** - they participate in Horizon Europe under the same conditions as EU Member States. Under Horizon Europe, we will have the opportunity also for the Association of Countries not geographically bordering with Europe. The negotiations for the Association will start as of the 1st of January 2021. The link to the list of Associated countries will be added as soon as published. ▪ **Developing countries** - Research organizations in some 130 developing countries are automatically eligible for funding. The full list of these countries will be provided as soon as published
***Not* automatically eligible for funding**	▪ **Industrialised countries and emerging economies** - participants from these countries have themselves to determine the sources of funding and find the resources for their part of the action. Several countries have created mechanisms to co-fund their participants in Horizon Europe actions selected for EU funding. We do expect similar opportunities also Horizon Europe. ▪ [!] *In exceptional circumstances, industrialised and emerging economies can receive EU funding if:*

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	▪ there is a bilateral agreement between that country and the EU ▪ the country is explicitly identified in the relevant work programme and call for proposal as being eligible for funding ▪ their participation is deemed by the European Commission to be essential for carrying out the action.
WARNING !	in Horizon Europe it will be possible to exclude participants for selected Countries from specific topics. It is very important to read carefully the Work Programme to check their eligibility.

Table 1: HORIZON EUROPE | Eligibility of third countries for funding

The following illustrates in a snapshot an overview of the Funding Agencies and current Programs that deal with Digital Health for AHA in Europe and may represent valuable opportunities for international cooperation in these fields.

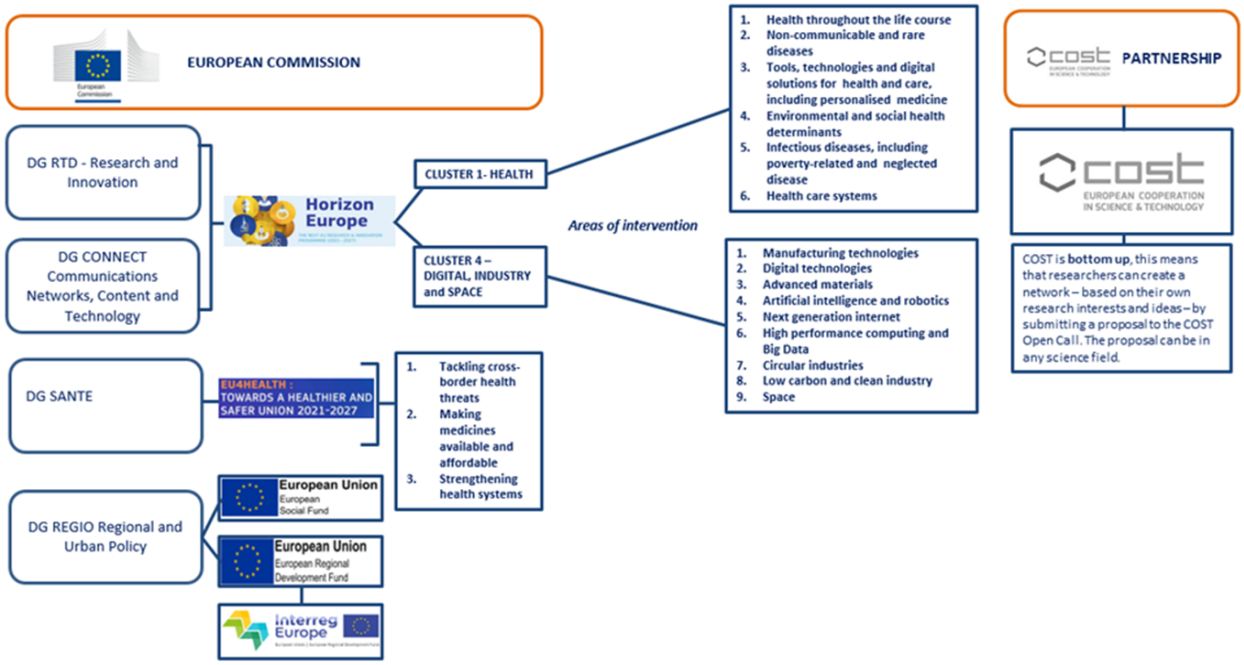

Figure 8: Digital Health and AHA: relevant Funding Agencies and/or Programmes in Europe suitable for international cooperation

DG RTD & DG CONNECT | Relevant policies and programmes

DG RTD - Directorate-General for Research and Innovation of the European Commission –defines and implements the European R&I policy. Therefore, **the new and ambitious European Research and Innovation Funding Programme 2021-2027, Horizon Europe, is mainly managed by the DG RTD. However, it is also partially managed by the DG CONNECT - Communications Networks, Content and Technology – that develops and carries out the Commission's policies on Digital economy and society, Business and industry, and Culture and media, even addressing Research and innovation.**

DG CONNECT is, indeed, responsible to develop a Digital Single Market to generate smart, sustainable and inclusive growth in Europe. It strives to develop a long-term vision investing in potential technology breakthroughs and flagships, which can improve peoples' lives, increasing the competitiveness of the European economy at large and its key sectors. As such, DG CONNECT aims to

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drive the digital transformation of European industry and public services using innovative digital technology and support for the development of digital skills, in line with the Digital Single Market Strategy.

In the next long-term EU budget - the Multiannual Financial Framework 2021-2027 - the Commission has proposed the Digital Europe programme **under the management of the DG CONNECT** - Communications Networks, Content and Technology. **The Digital Europe Programme (2021-2027) EU's programme focuses on building the strategic digital capacities of the EU and on facilitating the wide deployment of digital technologies, to be used by Europe's citizens and businesses.** With a budget of €9.2 billion, it will shape and support the digital transformation of Europe's society and economy. Among the topics that will be funded under the Digital Europe Programme:

- **Increase accessibility and broaden the use of supercomputing** in areas of public interest such as **health**, environment and security, and in industry, including small and medium-sized enterprises.
- **Strengthen and support existing artificial intelligence testing and experimentation facilities** in areas such as **health** and mobility in Member States and encourage their cooperation.
- **Ensure that the public sector and areas of public interests**, such as **health and care**, education, transport, and the cultural and creative sectors, can deploy and access state of-the-art digital technologies.

Digital Europe will complement other EU programmes, such as the proposed Horizon Europe programme for research and innovation, as well as the *Connecting Europe Facility programme (2014-2020) - CEF*[28] funding, that support continuity of care for European citizens across borders through the progressive introduction in EU Member States of the following two electronic cross-border health services:

- ePrescription and eDispensation
- Patient Summaries

DG SANTE | Relevant policies and programmes

The Health Programme has been the major funding instrument managed by DG SANTE - Health and Food Safety - and implemented by CHAFEA (Consumers, Health, Agriculture and Food Executive Agency). In line with the Europe 2020 strategy, DG SANTE has delineated the strategy for safeguarding good health and healthcare in the EU defining priority actions as well as the criteria for funding actions under the program. On this basis, CHAFEA organises calls for proposals for projects and operating grants, as well as calls for joint action and tenders. Direct grants are signed with international organisations active in the area of health.

For the 2021-2027 period, the Health strand covers several elements related among others to:

- supporting health promotion and disease prevention,
- contributing to effectiveness, accessibility and resilience of health systems,

[28] https://ec.europa.eu/digital-single-market/en/europe-investing-digital-digital-europe-programme

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- safer healthcare, reduced health inequalities and protected citizens from e.g. cross-border health threats

Furthermore, **the new EU4Helath program forecasts[29] several areas of actions [30] around three pillars alongside the above aforementioned strands that have been elaborated with a strong focus based on the recent experience with the pandemic outbreak:**

1. strengthening health systems preparedness to counteract epidemics as well as long-term challenges through:
    - **disease prevention and health promotion in an ageing population**
    - **digital transformation of health systems**
    - **access to health care for vulnerable groups**
2. Providing access to affordable medicines and medical devices, advocate the prudent and efficient use of antimicrobials as well as promote medical and pharmaceutical innovation and greener manufacturing.
3. Increasing EU preparedness for major cross border health threats through setting up:
    - reserves of medical supplies for crises
    - a reserve of healthcare staff and experts that can be mobilised to respond to crises across the EU
    - increased surveillance of health threats

In these regards, **DG SANTE cooperates with authorities from many countries within multilateral frameworks, confidentiality arrangements and mutual recognition agreements with strategic partners supporting international collaboration.** The EU4Health is complemented and part of a set of programmes of the EU that will provide additional investments in the EU health sector. **EU4Health will be implemented by Member States, non-governmental and international organisations who can apply for EU funding in the form of grants, prizes and procurement** as well as through indirect management by the European Commission and EU executive agencies.

The EU agencies, the European Centre for Disease Prevention and Control (ECDC), the European Medicines Agency (EMA), the European Food Safety Authority (EFSA) and the European Chemicals Agency (ECHA), have a key role to play in Europe's defence against serious cross border health threats and pandemics, both on the prevention and on the crisis management front. The programme's actions will complement and enhance the work of these EU Agencies.

Synergies will be, thus, implemented with:

- European Social Fund Plus (ESF+) to support vulnerable groups in accessing healthcare
- European Regional and Development Fund to improve regional health infrastructure
- Horizon Europe for health research
- Union Civil Protection Mechanism/rescEU to create stockpiles for emergency medical supplies

[29] To date the Programme has not yet been approved.
[30] The consultations as of the day of drafting this proposal are still in progress as such our data have been based upon the current text: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020PC0405

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- Digital Europe and Connecting Europe Facility for creating the digital infrastructure needed for digital health tools

This is an effective overview of how these synergies will be sought in the field of Digital Health:

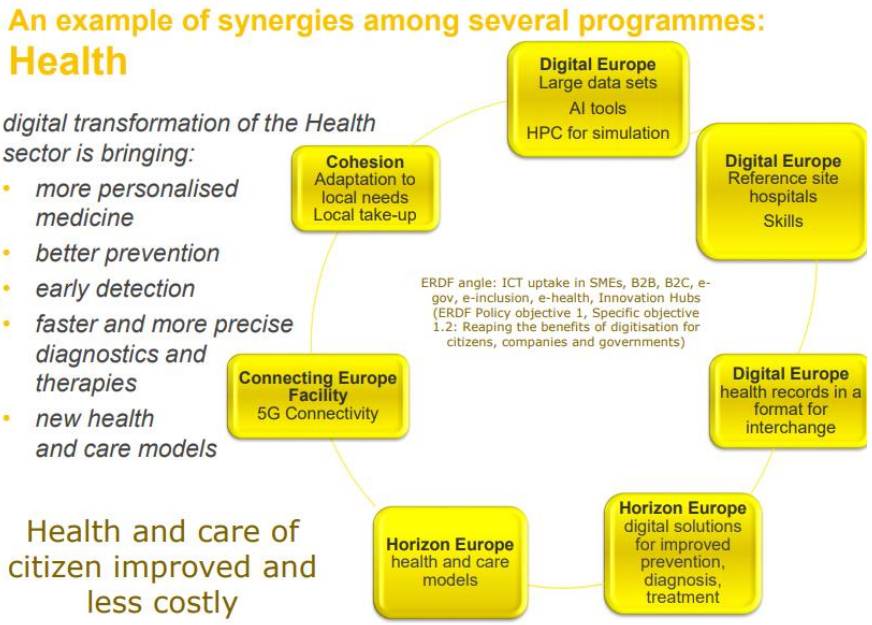

Figure 9: Digital Health: an example of synergies among different programmes (Source: DG CNECT)

DG REGIO | Relevant policies and programmes

DG REGIO - Regional and Urban Policy – is responsible for the EU measures to assist the economic and social development of the less-favoured regions of the European Union under Articles 158 and 160 of the Treaty of Rome, as part of the EU Cohesion policy that promotes and supports the overall harmonious development of Member States and regions. In a nutshell, the **DG REGIO targets all regions and cities in the European Union in order to support job creation, business competitiveness, economic growth, sustainable development, and improve citizens' quality of life. Its ultimate mission is to improve the economy and quality of life for everybody, wherever they live.**

The new Cohesion Policy will support not only research and innovation on e-health related technologies, but also promote a better work/life balance including access to childcare, a healthy and well–adapted working environment addressing health risks, adaptation of workers to change, and healthy and active ageing.

For the 2021-2027 programming period, the Programme Interreg Europe – aimed at managed by the DG REGIO will continue to support interregional cooperation among regions from all across Europe

COST | European Cooperation in Science and Technology

European Cooperation in Science and Technology (COST) is a funding organisation for the creation of research networks - COST Actions – in every field of research. Since 1971, COST receives EU funding under the various research and innovation framework programmes, such as Horizon 2020.

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1.3.1 Horizon Europe

Horizon Europe intends to **strengthen the EU's scientific and technological bases and the European Research Area (ERA), boosting Europe's innovation capacity, competitiveness and jobs**, in order to deliver on citizens' priorities, and sustain the EU socio- economic model and values.

In this perspective, Horizon Europe will implement some key novelties based from lessons learned from Horizon 2020 Interim Evaluation.

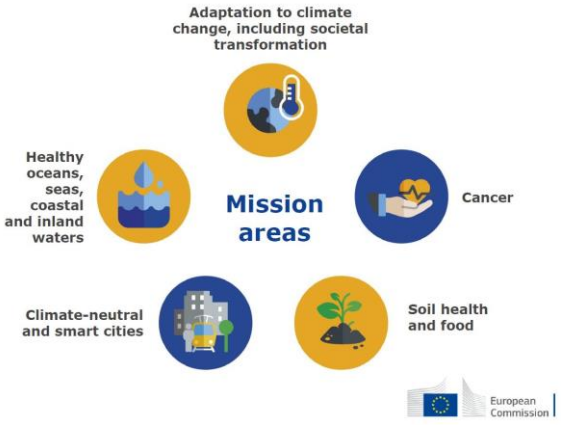
Among these novelties the EC will **strenghten international cooperation** in actions funded under Horizon Europe with the final aim of:

- Tackling together global societal challenges
- Access to the world's best talents, expertise and resources
- Enhanced supply and demand of innovative solutions

This ambition from the EC about international openness to association will cover all research fields, included Digital Health and AHA. The core of this vision will:

- Involve third countries with good capacity in science, technology and innovation
- Consider the objective of driving economic growth in Europe through innovation
- Intensify targeted actions (flagship initiatives, joint calls, etc.).

A **Mission-oriented policy** is another big novelty under Horizon Europe. As an integral part of the Horizon Europe Framework Programme for Research and Innovation (2021-2027), a set of European Research and Innovation Missions will aim to deliver solutions to some of the greatest challenges facing Europe. ***Cancer***[31] is one of these challenges. This Mission outline explains how a mission-driven approach can save and improve the lives of millions of European citizens exposed to cancer and its risk factors. It sets out the goal of the Mission on Cancer and makes recommendations on how to achieve this goal.



EU Missions | Main features:

- be bold, inspirational and widely relevant to society
- be clearly framed: targeted, measurable and time-bound
- establish impact-driven but realistic goals
- mobilise resources
- link activities across different disciplines and different types of research and innovation
- drive a systemic change and transform landscapes rather than fix problems in existing ones
- make it easier for citizens to understand the value of investments in research and innovation

[31] See the Interim Report of the Mission Board for Cancer (September 2020): *Proposed Mission: Conquering cancer, mission possible*

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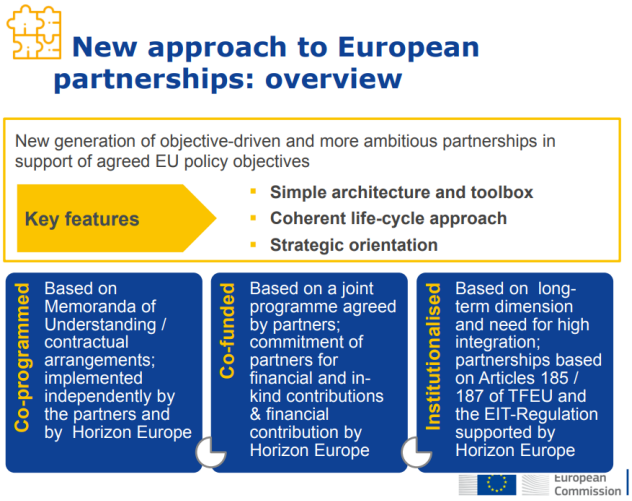
Another key novelty to be introduced under Horizon Europe is represented by the **European Partnerships**. These partnerships are particular funding schemes that supposed to involve the EU countries, as well as the private sector, foundations and other stakeholders, with the aim of delivering on global challenges and industrial modernisation through *concerted funding efforts* in research and innovation.



European Partnerships | Areas of intervention:

- *Health*
- *Digital, industry and space*
- *Climate, energy and mobility*
- *Food, bioeconomy, natural resources, agriculture and environment*
- *Partnerships across themes*

1.3.1.1 Programme Genesis & Architecture

*"The programme aims at giving Europe a new push to a global positioning. Horizon Europe is to be **the biggest and most ambitious EU Research Innovation programme** ever. It builds on the **success of Horizon 2020** and improves it further by fostering a stronger support to **breakthrough innovation** through the European Innovation Council, by creating greater **impact** through R&I **missions** and by streamlining **partnerships** landscape"*

Mariya Gabriel,
European Commissioner for Innovation, Research, Culture, Education and Youth

As part of the EU's proposal for the next EU long-term budget (2021 – 2027), the multiannual financial framework (MFF), the European Commission has published in June 2018 its proposal for "Horizon Europe", an ambitious €100 billion investment that will succeed "Horizon 2020" as a Framework Programme for Research and innovation.

FIND MORE ABOUT | Horizon Europe legal basis

- Legal texts and factsheets for Horizon Europe (2018)
- Factsheet about research and innovation in the new EU budget (2018)

In the transition from Horizon 2020 to Horizon Europe, the EC had several initiatives to make the most from the previous funding experience and put lessons learned to good use (see Figure: 10).

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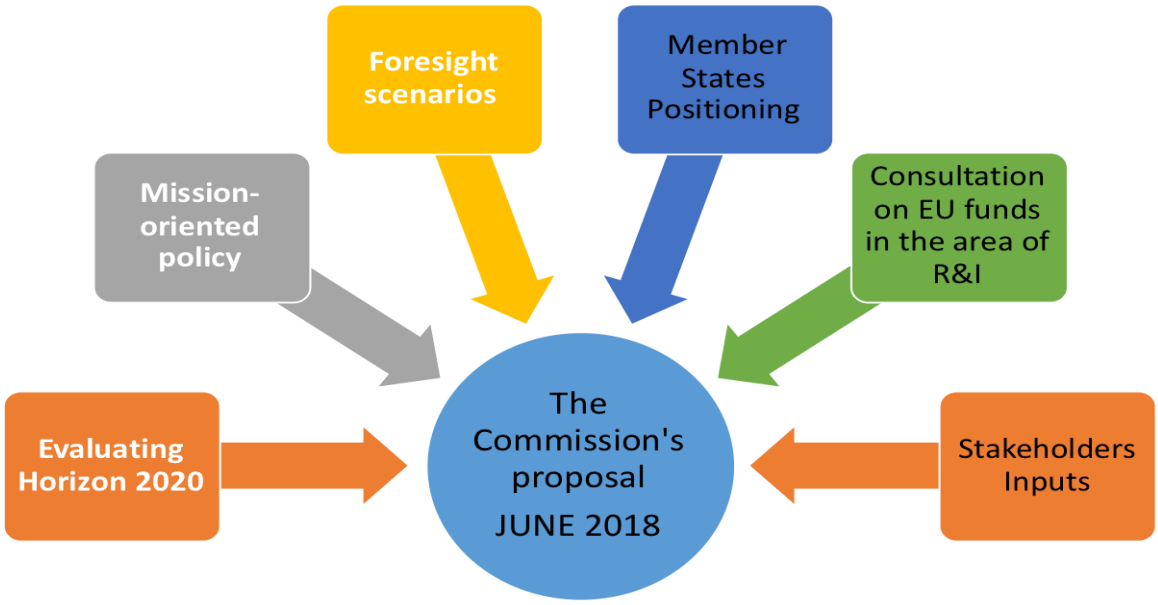

Figure 10: Preparatory activities for the EC proposal on Horizon Europe

While evaluating H2020, the EC has taken into account:

- Evaluation of the first two years of H2020 (May 2017)
- LAB – FAB – APP: Investing in the European future we want. Report of the independent High-Level Group on maximising the impact of EU Research & Innovation Programmes (July 2017)
- EC - Communication on H2020 interim evaluation: it takes the inputs of the two previous documents and establishes the guidelines of the future Commission proposal (at the time) FP9 (January 2018)

Several areas have been identified for improvement:

- **Stimulating breakthrough, market-creating innovation**, notably by SMEs, and scaling up to EU level;
- Further alignment to policy priorities;
- **Bringing results to citizens and involving them more**.

A new level of ambition to boost the scientific, economic and societal impact of EU funding is, therefore, now promoted by the EC in the field of R&I. This, in order to "shape the future" of the EU in line with the 17 SDGs set by the UN Agenda 2030, from which the same 6 political priorities of the EC for 2019 – 2024 arise.

Figure 11: The vision of the EC at the base of Horizon Europe FP

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The Horizon Europe regulation, proposed by the Commission in **June 2018**, established the EU framework programme for research and innovation for the years 2021–2027, laying down the objectives, the budget, the forms of EU funding and the rules for providing such funding in the field of research and innovation. The decision on the specific programme implementing Horizon Europe, also proposed by the Commission in June 2018 as part of the Horizon Europe package, sets out the operational objectives and types of activities envisaged for implementing Horizon Europe.

The European Parliament and the Council of the EU reached in March and **April 2019** a provisional agreement on Horizon Europe. The European Parliament endorsed the provisional agreement on 17 April 2019.

On **4 June 2020**, the Commission presented amended proposals for both legal acts to allow additional funding from the EU recovery instrument *Next Generation EU* (NGEU) to flow to Horizon Europe.

On **21 July 2020**, the heads of state or government agreed on the recovery plan for Europe, which combines the multiannual financial framework (MFF) for the years 2021-2027 and the funds to be made available through the NGEU.

On **29 September 2020**, the Council of the EU finalised its position on the proposed regulation establishing Horizon Europe and proposed decision on the specific programme implementing Horizon Europe. The Council agreed on:

- the **internal break-down of Horizon Europe's budget**, including funds to be made available under the EU recovery instrument NGEU
- the provisions regulating **international cooperation and the association of third countries** to Horizon Europe
- the provisions ensuring **synergies with other EU funding programmes**.

FIND MORE ABOUT | The legislative path towards the adoption of Horizon Europe

- Agreed text on Horizon Europe regulation
- Corrigendum to the agreed text on Horizon Europe regulation
- Agreed text on specific programme decision

The agreement paves the way for the conclusion of negotiations, which will now have to be undertaken with the European Parliament in *trilogues*, for the adoption of the two legal acts by the end of 2020.

"Today's agreement is an important step forward towards final adoption of Horizon Europe. We now need to make sure with the European Parliament and the Commission that our forward-looking EU Framework Programme for Research and Innovation can enter into force in the beginning of the next year. This is our joint task – for the benefit of the European research and innovation community as well as the competitiveness of the EU."

Anja Karliczek, German federal minister of education and research
September 29. 2020

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The path towards the final approval and adoption of the Horizon Europe Programme, that is planned for January 2021, with the launch of the first Call for proposals by March 2021, may be summarized in the Figure 12.

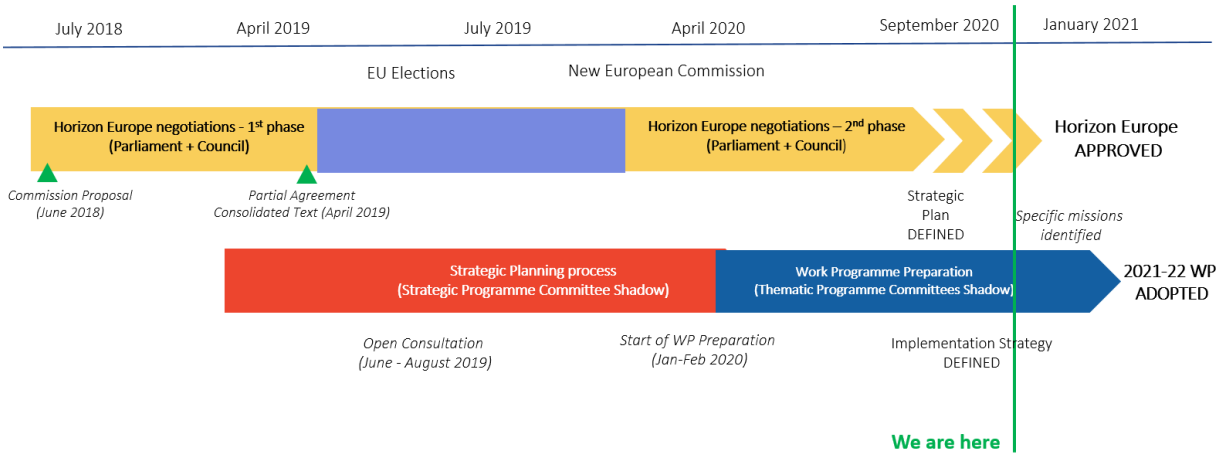

Figure 12: The path towards the adoption of Horizon Europe

This path has included to date two main processes:

- The **Strategic Planning**: dedicated to the preparation of the content in the work programmes, resulting in a Strategic Plan[32] covering a maximum period of four years.
- The **preparation of the consequent Work Programmes** for each theme of Horizon Europe, which will include the Call for Proposals for the first 2 years of implementation.

Figure 13: Horizon Europe: from the Strategic Plan to the Work Programmes (Source: EC)

Figure 13 summarize how these 2 processes are connected and will lead to the Horizon Europe implementation, following an impact-oriented approach.

[32] This is a draft, to be updated.

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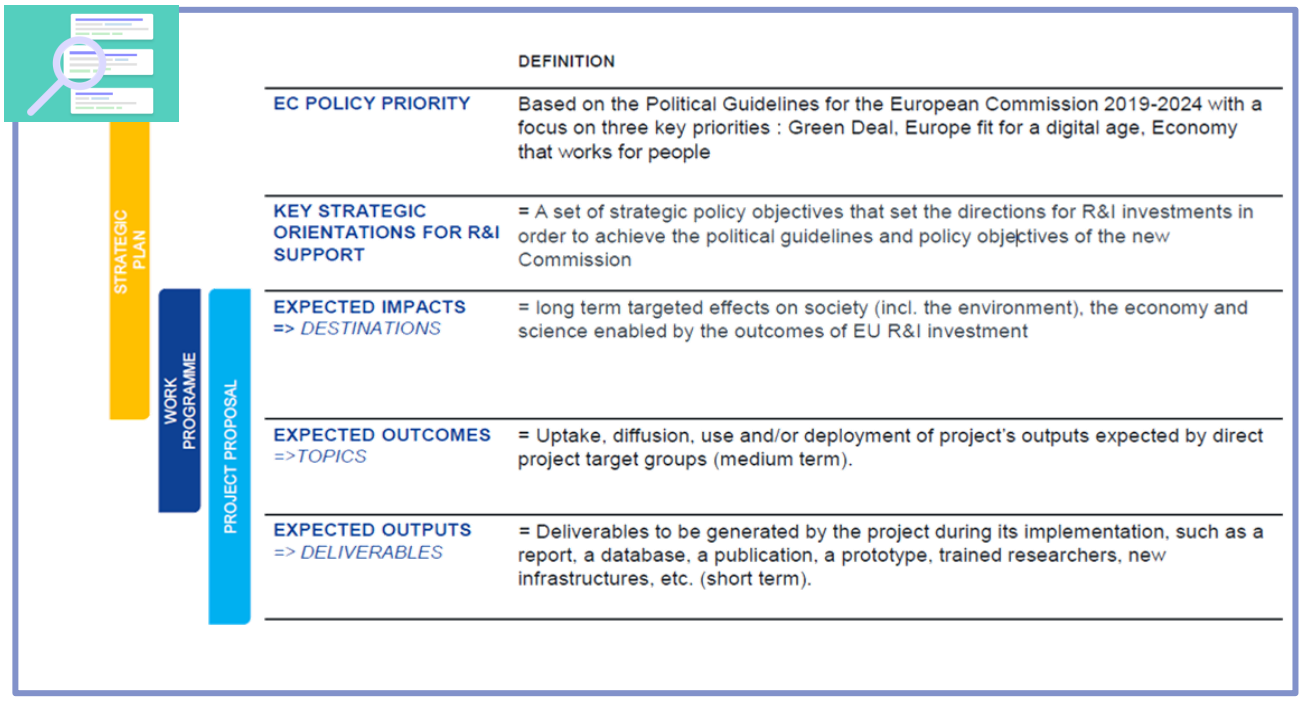
A new glossary is at the base of this approach and highlights how to respond with project proposals to the policy priorities set by the EC under Horizon Europe.



	DEFINITION
EC POLICY PRIORITY	Based on the Political Guidelines for the European Commission 2019-2024 with a focus on three key priorities : Green Deal, Europe fit for a digital age, Economy that works for people
KEY STRATEGIC ORIENTATIONS FOR R&I SUPPORT	= A set of strategic policy objectives that set the directions for R&I investments in order to achieve the political guidelines and policy objectives of the new Commission
EXPECTED IMPACTS => *DESTINATIONS*	= long term targeted effects on society (incl. the environment), the economy and science enabled by the outcomes of EU R&I investment
EXPECTED OUTCOMES =>*TOPICS*	= Uptake, diffusion, use and/or deployment of project's outputs expected by direct project target groups (medium term).
EXPECTED OUTPUTS => *DELIVERABLES*	= Deliverables to be generated by the project during its implementation, such as a report, a database, a publication, a prototype, trained researchers, new infrastructures, etc. (short term).

Figure 14: Horizon Europe logical framework and main glossary

This glossary responds to the Horizon Europe logical framework that from its legal base goes to the implementation of the Work Programme. In this framework, the **legal texts** - that constitutes the proposal of the EC to the Parliament and the Council of the EU – have provided the structure of the Programme (*Pillars*) and its *Areas of Intervention*. From this proposal, the **Strategic Planning** process has produced a set of *KSOs – Key Strategic Orientations* that are in line with the policy priorities of the EC and identify the *Expected Impacts* of the Programme as a whole. These impacts will turn in *Destinations* of the **Work Programmes** that will include the Call for proposals for the first years of implementation. Each Call for proposals will be built around different *Topics* (project outcomes) to which each project proposal will respond by concretely producing a set of deliverables (project outputs).

KSOs | The key strategic orientations have been defined to set out the R&I contribution to EC political priorities ('whole of government' approach). They aim at creating a strong bridge between R&I and EU policy priorities, and at giving directionality towards the UN SDGs – across all clusters (and HE parts).

The pathway to IMPACT | **The way that project RESULTS can contribute towards their *outcomes* (medium term) and *wider impacts* (long term) relevant for the topic.**

The **impacts** define the wider effects on society, the economy and science to be targeted by R&I activities, but not the manner in which to achieve them. This is entirely up to the imagination and skill of the applicants. The impacts are structured by the **six clusters** that make up Horizon Europe's second Pillar, "Global Challenges and European Industrial Competitiveness".

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As such, the key strategic orientations and expected impacts set the scene for the R&I activities and outputs to be defined in the work programmes under Horizon Europe's Pillar II, Global Challenges and European Industrial Competitiveness for 2021-2024.

The **Implementation Strategy**[33] will set out how the programme will be managed in practice, defining the common mechanisms and systems that concern the funded projects during their whole life cycle, in order to ensure that the new Framework Program is implemented at its best, **maximizing its impact**. In this sense, three main novelties have been introduced in the transition towards Horizon Europe:

- Strengthening of the synergies with other EU programs
- Simplification of the model grant agreements and guidelines on how to become beneficiaries
- The **Funding and Tenders Portal**: the one-stop shop for quick access to information on EU funding and project implementation.

Among the implementation strategy actions taken to date, the adoption of the **Corporate Model Grant Agreement** (MGA) should be also mentioned. The Corporate MGA is a document aimed at assisting applicants, showing the full range of provisions that may be applied in the management of a grant under Horizon Europe.

In this time framework, based on the proposal of the EC and the recent agreements at the level of EU institutions, **the objectives of the Programme** are the following:

HORIZON EUROPE | Objectives
▪ Strengthen EU science and technology thanks to increased investment in highly skilled people and cutting-edge research
▪ Foster the EU's industrial competitiveness and its innovation performance, notably supporting market-creating innovation via the European Innovation Council and the European Institute of Innovation and Technology
▪ Deliver on the EU's strategic priorities, such as the Paris Agreement on climate change, and tackle global challenges that affect the quality of our daily lives

Table 2: HORIZON EUROPE | Objectives

In order to address these objectives, the new programme will be implemented through **three pillars,** supported by activities to widen participation and strengthening the ERA - European Research Area (Figure 15).

ONE PROGRAMME, TWO APPROACHES:

Bottom-up: it concerns those funding schemes that are open to any R&I idea and topic from the applicants.

Top-down: it concerns those funding schemes in which applicants are asked to respond exactly to the topic described by the EC Commission Work Programme.

[33] This document is the first draft of such a strategy. It is a living text that will evolve and grow as preparations and deployment unfold by the end of 2020.

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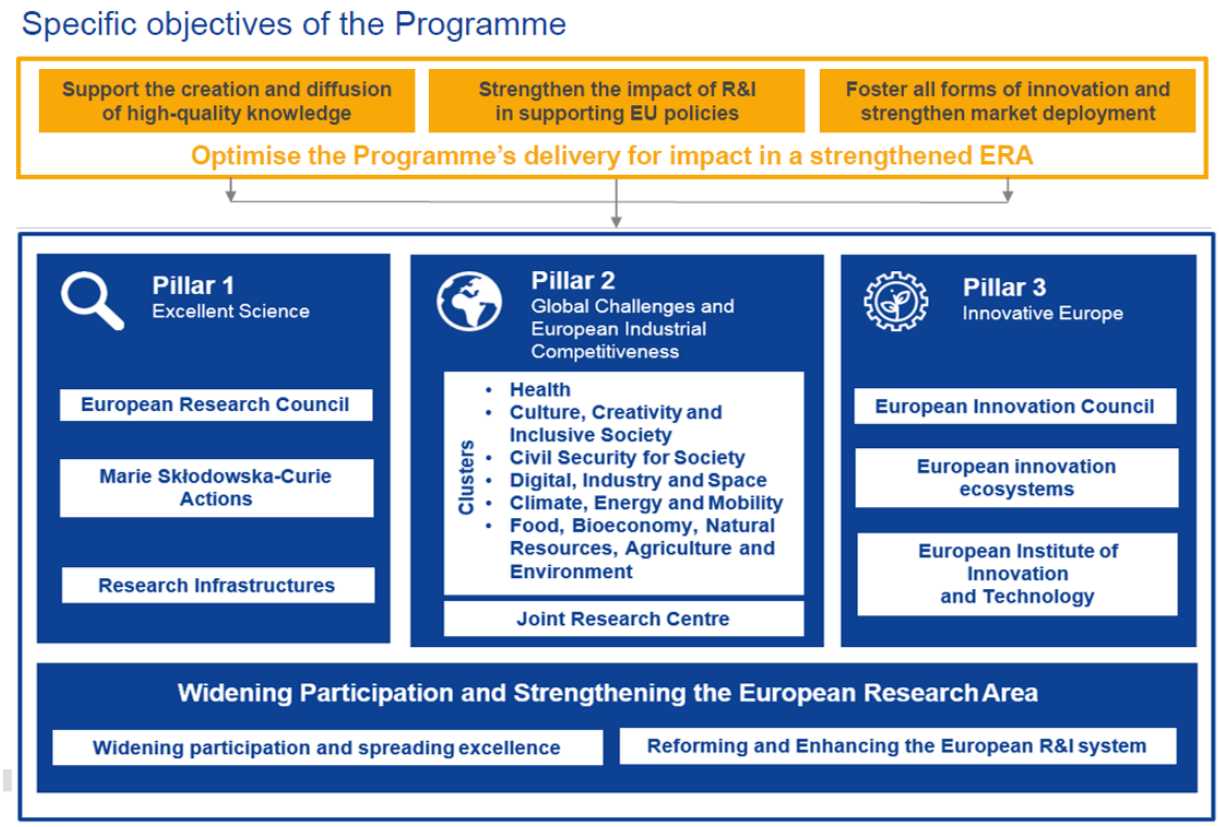

Figure 15: The structure of Horizon Europe (Source: EC)

The **first pillar "Excellent Science"** will ensure solid continuity with Horizon 2020 in supporting scientific excellence following a ***bottom-up*** approach, in order to strengthen the Union's scientific leadership and develop high quality knowledge and skills through the European Research Council, the Marie Skłodowska-Curie actions and the development of Research Infrastructures.

The **second pillar "Global Challenges and Industrial Competitiveness"** will address societal issues and industrial technologies through a ***top-down*** approach that will focus on the Union's global policies as well as challenges and opportunities for a more competitiveness of the EU at global level.

Even if innovation will be supported across the whole program, the **third pillar is dedicated to "Open Innovation".** Featured by a ***bottom-up*** approach, this pillar essentially focuses on the gradual expansion of pioneering and market-creating innovations. This will be made possible through the establishment of the European Innovation Council, and the support for the improvement of European innovation ecosystems and the European Institute of Innovation and Technology (EIT), which will offer a single entry-point for high-potential innovators. Support will also be provided for collaboration with and between national and regional innovation agencies, but also with any other public or private entity, general or sectoral actor in the European innovation landscape.

The three pillars will be underpinned by activities to **widening participation and strengthening the European Research Area (ERA)**[34], specifically: sharing excellence to fully exploit the potential in less

[34] The EC on September 30, 2020 has defined a new strategy for the European Research Area, in order to support the ecological and digital transition and the recovery of the Union. See: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2020:628:FIN

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R&I performing countries so that they attain high Union standards of excellence (e.g., via teaming, twinning, ERA chairs); and reforming and enhancing the European R&I system. The support to *enhanced international cooperation* is also included in this part of the Programme[35].

1.3.1.2 Funding Instruments & Participation features

In continuity with the provisions of the previous framework programme "Horizon 2020", even under Horizon Europe there is a difference between who can participate to the programme and who can receive funds.

HORIZON EUROPE | Eligibility criteria for funding
▪ **Entities are eligible for funding if they are established in a Member State or associated country**
▪ **Entities established in a non-associated third country should in principle bear the cost of their participation.** (!) However, for low to middle income countries and exceptionally for other non-associated third countries they could be eligible for funding in an action if: a) The third country is identified in the work programme adopted by the Commission; **b)** Or the Commission or funding body consider that its participation is essential for implementing the action.
▪ **Affiliated entities** are eligible for funding in an action if they are established in a Member State, Associated country, [or in a third country] identified in the work programme adopted by the Commission.
HORIZON EUROPE | Eligibility criteria for participation
▪ **Any legal entity, regardless of its place of establishment, including legal entities from non-associated third countries or international** organisation may participate in actions under the Programme.
▪ **Entities shall be part of a consortium that shall include at least three independent legal entities** each established in a different Member State or associated country and with at least one of them established in a Member State, unless the work programme provides otherwise, if duly justified. (!) **The European Research Council (ERC) frontier research actions, European Innovation Council (EIC) actions, training and mobility actions or programme co-fund actions** may be implemented by one or more legal entities, one of which must be established in a Member State or associated country.

Table 3: HORIZON EUROPE | Eligibility criteria for funding/participation

Where appropriate and duly justified, the work programme may provide **additional eligibility criteria** according to specific policy requirements or to the nature and objectives of the action, including the number of legal entities, the type of legal entity and the place of establishment.

[35] Other activities foreseen to strengthen the ERA will be: foresight activities; monitoring and evaluating the Framework Programme and disseminating and exploiting results; modernising European universities.

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ABOUT THE PARTICIPATION OF INTERNATIONAL ORGANIZATIONS:

- The JRC (Joint Research Centre), international European research organisations and legal entities created under Union law shall be deemed to be established in a Member State other than the ones in which other legal entities participating in the action are established.
- For other parts of the Programme, international organisations other than International European Research Organisations shall be deemed to be established in a non-associated third country.
- For **European Research Council (ERC)** frontier research actions, training and mobility actions and when provided for in the work programme, international organisations with headquarters in a Member State or associated country shall be deemed to be established in this Member State or associated country.

Currently, there is no official and specific information/orientation which envisages the possibility that the future Horizon Europe's *Types of Action* (funding schemes) will change. Therefore, it is assumed that these will remain the same as those in H2020.

The **type of action** specifies:

- the scope of what is funded
- the reimbursement rates
- specific evaluation criteria to qualify for funding
- the use of simplified forms of costs like lump sums

The maximum rate per action shall be fixed in the Work Programme and shall apply for all activities funded under the Type of Action.

In general, the **Programme may reimburse up to 100 % of total eligible costs of an action**, except for:

a) **Innovation Actions:** up to 70 % of the total eligible costs, except for non-profit legal entities where the Programme may reimburse up to 100 % of the total eligible costs;
b) **Programme co-fund actions:** at least 30 % of the total eligible costs, and in identified and duly justified cases up to 70 %.

These funding rates shall also apply for actions where flat rate, unit or lump sum financing is fixed for the whole or part of the action.

Here follows, an overview that summarizes about the three main Types of Actions assumed to be foreseen also in Horizon Europe:

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HORIZON EUROPE | Types of actions[36]	
Research and Innovation Actions (RIAs)	▪ ***EU funding rate*: 100%** ▪ ***Description***: Activities aiming to establish new knowledge and/or to explore the feasibility of a new or improved technology, product, process, service or solution. For this purpose they may include basic and applied research, technology development and integration, testing and validation on a small-scale prototype in a laboratory or simulated environment. Projects may contain closely connected but limited demonstration or pilot activities aiming to show technical feasibility in a near to operational environment. (!) In case of Research and Innovation Lump Sum actions (**RIA-LS**), funding for grants awarded will take the form of ***lump sums***. For more information on the specificities of Lump Sum actions in H2020, see the video or check the presentation.
Innovation Actions (IAs)	▪ ***EU funding rate*: 70%** (except non-profit, which are still funded 100%) ▪ ***Description***: Activities directly aiming at producing plans and arrangements or designs for new, altered or improved products, processes or services. For this purpose they may include prototyping, testing, demonstrating, piloting, large-scale product validation and market replication. (!) In case of Innovation Lump Sum actions (IA-LS), funding for grants awarded will take the form of ***lump sums***. For more information on the specificities of Lump Sum actions in H2020, watch the video or check the presentation.
Coordination and support actions (CSAs)	▪ ***EU funding rate*: 100%** ▪ ***Description***: Accompanying measures such as standardisation, dissemination, awareness-raising and communication, networking, coordination or support services, policy dialogues and mutual learning exercises and studies. (!) In case of Coordination and support Lump Sum actions (CSA-LS), funding for grants awarded will take the form of ***lump sums***. For more information on the specificities of Lump Sum actions in H2020, see the video or check the presentation.

Table 4: HORIZON EUROPE | Types of actions

[36] These information are to be confirmed following the final approval and adoption of the Horizon Europe Programme.

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1.3.1.3 Work Programmes, Calls for Proposals and (relevant) Topics

Here you find an overview of the funding instruments under Horizon Europe that are **relevant for international cooperation in the fields of Digital health and AHA**, described according with the two Pillars (I and II) that actually include opportunities in these fields.

HORIZON EUROPE | PILLAR I – Excellent Science

The Pillar I – Excellent Science aims to **reinforce and extend the excellence of the Union's science base**.
This Pillar encompasses three relevant specific programmes.
The budget assigned to this Pillar is currently about 23 billion EUR[37], of which:

- EUR 14 861 000 000 for the European Research Council
- EUR 6 288 000 000 for Marie Skłodowska-Curie Actions
- EUR 2 149 000 000 for Research Infrastructures

The European Research Council (ERC) funds frontier research designed and driven by the best researchers in Europe.
Aiming to make the EU a more attractive environment for the world's best scientists, the ERC will target a measurable improvement in the EU's share of the world's top 1 % most highly cited publications, and aim at a substantial increase in the number of excellent researchers from outside Europe which it funds.

ERC | Main features of the programme:

- The only evaluation criterion is **scientific excellence**.
- ERC has a ***bottom-up*** approach. Applications can be submitted in **each field of research**, without predefined themes.
- It is an **individual programme**, the application is directly made by the researcher who applies respecting the different deadlines for the different programmes.
- **Independent researchers of all ages and stages of career and from all over the world can apply for attractive and long-term financing term**.
- Host Institutions must guarantee independence to the Principal Investigator to direct their research and manage their funding.

The governance of the ERC programme is summarized as follows, highlighting the bodies involved and their role:

- *The European Commission:*
  - Provides financing through the EU framework programmes
  - Guarantees autonomy of the ERC
  - Assures the integrity and accountability of the ERC
  - Adopts annual work programmes as established by the Scientific Council
- *The ERC Scientific Council*
  - 21 prominent researchers proposed by an independent identification committee
  - President appointed following recommendation of an independent committee
  - Appointed by the Commission (4 years, renewable once)

[37] See the proposal approved by the Council of the EU on September 29, 2020.

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  - Establishes overall scientific strategy; annual work programmes (incl. calls for proposals, evaluation criteria); peer review methodology; selection and accreditation of experts
  - Controls quality of operations and management
  - Ensures communication with the scientific community
- *The ERC Executive Agency*
  - Executes annual work programme as established by the Scientific Council
  - Implements calls for proposals and provides information and support to applicants
  - Organises peer review evaluation
  - Establishes and manages grant agreements
  - Administers scientific and financial aspects and follow-up of grant agreements
  - Carries out communications activities and ensures information dissemination to ERC stakeholders

The big novelty in Horizon Europe ERC will be to improve the evaluation process through:

- *A new panel structure for 2021/22 and "dynamic" panels:* ERC is considering dynamic panels as an alternative to a predefined panel structure. Studying the development of a new methodology to group panel members and proposals received, it was considered the creation of a framework where **proposals and panel members are grouped coherently taking into account constraints like size balances, gender and panel member affiliations**. In this sense, the challenge will be to obtain in real time a balanced and coherent set of panels (proposals and panel members) which is better than the one based on predefined panels.

Some tentative timelines for calls in 2021 have been published for ERC calls and are reported in the following tables, in relation with the **4 Funding instruments foreseen** by the programme.

Title	**1| Starting Grants (ERC-2021-StG)**
Deadline	Next tentative deadline: March 9, 2021 (to be open on January 12, 2020)
Target	Talented early-career scientist who has already produced excellent supervised work, is ready to work independently and shows potential to be a research leader
Eligibility criteria	Researchers of any nationality with 2-7 years of experience since completion of PhD, a scientific track record showing great promise and an excellent research proposal.
Eligibility criteria for EU/Third Countries	Any nationality
Type of action	▪ *Criteria*: Applications can be made in **any field of research.** The ERC's grants operate on a 'bottom-up' basis without predetermined priorities. ▪ *Location*: Research must be conducted in **a public or private research organisation** (known as a Host Institution/HI). It could be the HI where the applicant already works, or any other HI located in one of **the EU** Member States **or** Associated Countries[38] ▪ *Host Institution*: Applications for an ERC grant must be submitted by a single Principal Investigator (PI) in conjunction with and on behalf of their Host Institution, called the applicant legal entity. Grants are awarded to the Host Institution with the explicit commitment that this

[38] These are sources related to H2020.

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	institution offers appropriate conditions for the Principal Investigator independently to direct the research and manage its funding for the duration of the project. Any type of legal entity, including universities, research centres and undertakings can host the PI and his/her team. Legally the host institution must be based in one of the **EU Member States**, or one of the **associated countries**. (!) The PI does not necessarily need to be working at the host institution at the time when the proposal is submitted. However, a mutual agreement and the host institution's commitment on how the relationship will be established are necessary, should the proposal be successful. ▪ *Team*: ERC grants support projects carried out by **an individual researcher** who can employ researchers of any nationality as team members. **It is also possible to have one or more team members located in a non-European country.** Vacancies for team members interested in joining an ERC led research project, can be published on the Euraxess-Jobs portal. Initiatives, under the form of 'Implementing Arrangements', exist for ERC-funded teams in Europe to host non-European talented scientists. Find out more about the agreements.
Grant	Up to € 1.5 million for a period of 5 years.
Official Sources	https://erc.europa.eu/funding/starting-grants

Table 5: ERC Starting Grant (main features)

Title	**2| Consolidator Grants (ERC-2021-CoG)**
Deadline	Next tentative deadline: April 20, 2021 (to be open on January 21, 2020)
Target	Scientist who wants to consolidate his independence by establishing a research team and continuing to develop a success career in Europe.
Eligibility criteria	Researchers of any nationality with 7-12 years of experience since completion of PhD, a scientific track record showing great promise and an excellent research proposal.
Eligibility criteria for EU/Third Countries	Any nationality
Type of action	▪ *Criteria*: Applications can be made in **any field of research.** The ERC's grants operate on a bottom-up basis without predetermined priorities. ▪ *Location*: Research must be conducted in **a public or private research organisation** (known as a Host Institution/HI). It could be the HI where the applicant already works, or any other HI located in one of **the EU** Member States **or** Associated Countries ▪ *Host Institution*: Applications for an ERC grant must be submitted by a single Principal Investigator (PI) in conjunction with and on behalf of their Host Institution, called the applicant legal entity. Grants are awarded to the Host Institution with the explicit commitment that this institution offers appropriate conditions for the Principal Investigator independently to direct the research and manage its funding for the duration of the project. Any type of legal entity, including universities, research centres and

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	undertakings can host the PI and his/her team. Legally the Host Institution must be based in one of the **EU Member States**, or one of the **Associated Countries**. (!) The PI does not necessarily need to be working at the Host Institution at the time when the proposal is submitted. However, a mutual agreement and the Host Institution's commitment on how the relationship will be established are necessary, should the proposal be successful. ▪ *Team*: ERC grants support projects carried out by **an individual researcher** who can employ researchers of any nationality as team members. It is also possible to have one or more team members located in a non-European country. Vacancies for team members interested in joining an ERC led research project, can be published on the Euraxess-Jobs portal. Initiatives, under the form of 'Implementing Arrangements', exist for ERC-funded teams in Europe to host non-European talented scientists. Find out more about the agreements.
Grant	Up to € 2 million for a period of 5 years.
Official Sources	https://erc.europa.eu/funding/consolidator-grants

Table 6: ERC Consolidator Grant (main features)

Title	**3 | Advanced Grants (ERC-2021-AdG)**
Deadline	Next tentative deadline: August 31, 2021 (to be open on May 20, 2021)
Target	Established, leading principal investigator who need long-term funding to pursue a ground-breaking, high-risk project
Eligibility criteria	▪ Applicants for the ERC Advanced Grants - called Principal Investigators (PI) - are expected to be active researchers who have a track-record of significant research achievements in the last 10 years. ▪ The Principal Investigators should be exceptional leaders in terms of originality and significance of their research contributions. No specific eligibility criteria with respect to the academic requirements are foreseen.
Eligibility criteria for EU/Third Countries	Any nationality
Type of action	▪ *Criteria*: Applications can be made in **any field of research.** The ERC's grants operate on a 'bottom-up' basis without predetermined priorities. ▪ *Location*: Research must be conducted in **a public or private research organisation** (known as a Host Institution/HI). It could be the HI where the applicant already works, or any other HI located in one of **the EU** Member States **or** Associated Countries ▪ *Host Institution*: Applications for an ERC grant must be submitted by a single Principal Investigator (PI) in conjunction with and on behalf of their Host Institution, called the applicant legal entity. Grants are awarded to the Host Institution with the explicit commitment that this institution offers appropriate conditions for the Principal Investigator independently to direct the research and manage its funding for the duration

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	of the project. Any type of legal entity, including universities, research centres and undertakings can host the PI and his/her team. Legally the Host Institution must be based in one of the **EU Member States**, or one of the **Associated Countries**. The PI does not necessarily need to be working at the Host Institution at the time when the proposal is submitted. However, a mutual agreement and the Host Institution's commitment on how the relationship will be established are necessary, should the proposal be successful. ERC grants support projects carried out by **an individual researcher** who can employ researchers of any nationality as team members. It is also possible to have one or more team members located in a non-European country. Vacancies for team members interested in joining an ERC led research project, can be published on theEuraxess-Jobs portal. Initiatives, under the form of 'Implementing Arrangements', exist for ERC-funded teams in Europe to host non-European talented scientists. Find out more about the agreements.
Grant	Up to € 2.5 million for a period of 5 years.
Official Sources	https://erc.europa.eu/funding/advanced-grants

Table 7: ERC Advanced Grant (main features)

Title	**4 | Synergy Grants**
Target	Researcher that wants to address a research problem so ambitious, that cannot be dealt with you and your team alone.
Eligibility criteria	▪ A **group of two to maximum four Principal Investigators (PIs)** – of which one will be designated as the corresponding PI (cPI)[39] – working together and bringing different skills and resources to tackle ambitious research problems. ▪ **PIs must present an early achievement track-record or a ten-year track-record**, whichever is most appropriate. No specific eligibility criteria regarding the academic training are foreseen for ERC Synergy Grants. ▪ Proposals will be evaluated on the sole criterion of scientific excellence which, in the case the ERC Synergy Grants, takes on the **additional meaning of outstanding intrinsic synergetic effect**.
Eligibility criteria for EU/Third Countries	Any nationality
Type of action	▪ *Criteria*: Applications can be made in **any field of research.** The ERC's grants operate on a 'bottom-up' basis without predetermined priorities. In the case of the ERC Synergy Grants, applications must **demonstrate that the proposed research cannot be carried out by a single PI working alone.** ▪ *Location*: Research must be conducted by all PIs in **a public or private research organisation** (known as a Host Institution, HI). It could be the HI

[39] One of the PIs will act as corresponding PI (cPI), thus, as a contact point of behalf of the group.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826092.

	where the applicant already works, or any other HI established in one of **the EU** Member States or Associated Countries. For the first time under the 2019 Work Programme, one Principal Investigator per Synergy Grant group at any one time can be hosted or engaged by an institution outside of the EU or Associated Countries.
Grant	Up to € 10 million for a period of 6 years.
Official Sources	https://erc.europa.eu/funding/synergy-grants

Table 8: ERC Synergy Grant (main features)

Title	**5 | Proof of Concept (ERC-2021-PoC)**
Deadline	Expected Call Opening: January 14, 2021
Target	Researchers who already received an ERC grant for their frontier research project and now want to explore the commercial or societal potential of their work.
Eligibility criteria	All Principal Investigators in an ERC frontier research project, that is either on going or has ended less than 12 months before 1 January 2020, are eligible to participate and apply for an ERC Proof of Concept Grant. The Principal Investigator must be able to demonstrate the relation between the idea to be taken to proof of concept and the ERC frontier research project (Starting, Consolidator, Advanced or Synergy) in question.
Eligibility criteria for EU/Third Countries	Any nationality
Type of action	▪ *Criteria:* The ERC Proof of Concept funding is made available only to those who already have an ERC award to establish proof of concept of an idea that was generated in the course of their ERC-funded projects. The activities to be funded shall draw substantially on this scientifically excellent ERC-funded research. However, the additional funding is not aimed at extending the original research or predominantly concerned with overcoming obstacles to practical application. The funding will cover **activities at the very early stage of turning research outputs into a commercial or socially valuable proposition**, i.e. the initial steps of pre-competitive development. The funding can be used to: ○ Establish viability, technical issues and overall direction ○ Clarify intellectual property rights position and strategy ○ Provide feedback for budgeting and other forms of commercial discussion ○ Provide connections to later stage funding ○ Cover initial expenses for establishing a company ▪ *Location*: The project must be conducted in **a public or private research organisation** (known as a Host Institution/HI). ▪ *Host Institution*: The Host Institution must engage the Principal Investigator for at least the duration of the Proof of Concept project. Legally the Host Institution must be based in one of the EU Member States or one of the Associated Countries.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826092.

Grant	Lump sum of € 150 000 for a period of 18 months
Official Sources	https://erc.europa.eu/funding/proof-concept

Table 9: ERC Proof of concept (main features)

Marie Skłodowska-Curie Actions

- Equipping researches with new knowledge and skills through mobility and training

Marie Skłodowska-Curie Actions (MSCA) is a programme that intends to facilitate cross-border and cross-sector mobility and training of researchers. The MSCA are **the main instrument at EU-level for attracting researchers from third countries to Europe**, thus making a major contribution to global cooperation in research and innovation. Evidence shows that the MSCA not only have a positive impact on individuals, organisations, and at system level, but also yield high-impact and breakthrough research results while at the same time contributing significantly to societal as well as strategic challenges. Long-term investment in people pays off, as indicated by the number of Nobel Prize winners who have been either former MSCA fellows or supervisors

MSCA | Main features of the programme:

- **For researchers at every stage of their career**
- Coverage for all domains of research (*bottom-up* approach).
- Support the **mobility, training and career development of researchers from all over the world** through excellent doctoral programmes, postdoc fellowships and collaborative projects.
- Participation of non-academic sector strongly encouraged**, especially industry and SMEs.**
- Promotion of attractive working and employment conditions (financing rate of up to 100%).

MSCA intervenes on 5 areas of intervention

- mobility of researchers
- training of researchers
- strengthening human capital across the ERA (by spreading best practices across institutions and systems)
- facilitating synergies
- promoting public outreach

Here follows, a collection of useful information on the related **5 funding instruments foreseen under MSCA.**

Title	**1 | MSCA Doctoral Networks**
Target	All fellows enrolled in a doctoral training.
Type of action	▪ Incentives for industrial or joint doctorates: Increased number of person-months and Industrial doctorate possible between entities in one country. ▪ Pre-agreement for joint degrees required
Grant	▪ 4 years funded for project implementation. ▪ Funding for max. 36 researcher-months per individual doctoral candidate.

Table 10: MSCA Doctoral Networks (main features)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826092.

Title	2| MSCA Postdoctoral Fellowships
Target	Support post-doctoral research and careers.
Eligibility criteria	▪ Limit to research experience: up to 6 years of research experience after PhD (with possible exceptions) ▪ Require PhD degree ▪ Restrict resubmissions below quality threshold
Type of action	▪ Funding of all research domains including areas of research covered by the EURATOM Treaty ▪ Two (mobility) destinations: European and Global ▪ Support to Develop skills needed for academia and beyond: ○ Intensify exposure/secondments to training in entities beyond academia ○ Improved guidance towards career development (plan & supervision).
Grant	▪ European Destination: 12-24 months funded (additional up to 6 months for non-academic sector) ▪ Global destination: 24 -36 funded (12-24 outgoing & **12 months return phase in Europe**).

Table 11: MSCA Postdoctoral Fellowahips (main features)

Title	3 | MSCA Staff Exchanges
Target	Support staff exchanges, open to any type of staff
Eligibility criteria	▪ Interdisciplinary secondments possible within Europe (max 1/3 of project's person-months). ▪ Number of person-months: 360
Type of action	▪ International, intersectoral, interdisciplinary secondments. ▪ Emphasis on the added-value of the collaboration itself.
Grant	4 years funded for project implementation.

Table 12: MSCA Staff Exchanges (main features)

Title	4| MSCA COFUND
Target	Co-funding national, regional, institutional schemes for doctoral training and postdoctoral fellowships
Type of action	▪ Focus on introducing sustainable structuring effects, and spread of best practice. ▪ Synergies with Structural Funds are encouraged
Grant	▪ It will cover minimum remuneration (70% living + mobility allowance) ▪ Limited to EUR 10 million per beneficiary per call ▪ Maximum duration: 60 months

Table 13: MSCA COFUND (main features)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826092.

Title	5 | MSCA and Citizens
Type of action	▪ Continuation of the European Researchers' Night[40]: it is a Europe-wide public event that brings researchers closer to the public. The Night provides researchers the opportunity to showcase the diversity of science and its impact on citizens' daily lives, and to stimulate interest in research careers – especially among young people. **The events highlight how researchers contribute to our society by displaying their work in an interactive and engaging forum.** ▪ Extension to existing outreach events: supporting also other science festivals and outreach events with EU-added value
Eligibility criteria	▪ European Researchers' Night grants may be awarded to any legal entity established in an EU Member State or Associated Country. **Legal entities involve the coordination of activities between local, regional, national or international partners.** ▪ Possible beneficiaries' profiles may include private and public research organisations, companies, public authorities, schools, science museums, parent-teacher organisations, EU mobility centres for researchers, foundations or the media.

Table 14: MSCA and Citizens (main features)

Research Infrastructures

- Integrated and inter-connected world-class research infrastructures

Research Infrastructure (RI) is a specific programme of Horizon Europe aimed at empowering Europe through world class and accessible Research and Technology Infrastructures. This programme will include mostly Research & Innovation Actions (RIA) and will put in place synergies with other Horizon Europe pillars, in order to enhance results of already funded projects and make data sets available for further actions, **in all fields of research (including Digital Health and AHA).**

SHARE-ERIC | A research infrastructure on Ageing

The Survey of Health, Ageing and Retirement in Europe (SHARE) is a multidisciplinary and cross-national panel database of micro data on health, socio-economic status and social and family networks of about 140,000 individuals aged 50 or older (around 380,000 interviews). SHARE covers 27 European countries and Israel.

SHARE contributes to research about the social, health and economic impact of COVID-19. *In June 2020, SHARE resumed Wave 8 fieldwork via telephone interviews including a special "SHARE COVID-19" questionnaire. The data collected with this questionnaire will allow examining in-depth how the risk group of the older individuals is coping with the health-related and socioeconomic impact of COVID-19. The great advantage of these data will be the possibility to measure and interpret differences in a cross-country and a longitudinal dimension.*

The new RIs will be oriented to better address new global environmental, social and economic challenges, considering that the renewed ERA requires a more explicit contribution of research infrastructures themselves to Europe's wider policy objectives, thus putting science at the service of the society and increasing Europe's competitiveness.

[40] In 2019, 55 projects were implemented. The projects took place in 433 cities from 27 countries across Europe and beyond. Over 1.6 million visitors attended the event and over 36,000 researchers took part – including 955 MSCA fellows. In 2020, the European Researchers' Night will take place on Friday, 27 November.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826092.

RI | Main objectives of the programme

- Consolidate and enhance the EU research infrastructures landscape.
- Support **Open Science and data driven research** through the European Open Science Cloud (EOSC) and high capacity network.
- Enable and drive the **green and digital transformation** through research infrastructure services.
- Push the limits of frontier research.
- Develop cutting edge technologies for RIs and foster innovation.
- **Enhance the international dimension of RIs**.

Under Horizon Europe, the Research Infrastructure programme (RI) will intervenes in **4 areas of intervention:**

- Consolidating the landscape of European research infrastructures
- Opening, integrating and interconnecting research infrastructures
- The innovative potential of European Reseach Infrastructure and activities for Innovation & Training
- Reinforcing European research infrastructure policy and international cooperation

For the next period 2021-27 covered by Horizon Europe, the RI Programme will implement the following *novelties*:

- a new **challenge-driven approach** will join the **science-driven** one.
- emphasis on **customization and integration of (different) RI services** to better support research addressing global challenges and political priorities.

HORIZON EUROPE | PILLAR II – Global Challenges and European Industrial Competitiveness

The Pillar II – *Global Challenges and European Industrial Competitiveness* aims to:

- generate knowledge, **strengthen the impact of research and innovation** in developing, supporting and implementing Union policies and support the access to and uptake of innovative solutions in European industry, notably in SMEs, and society to address global challenges, including climate change and the Sustainable Development Goals.

This perspective is reflected both in the consistency with the other parts of the Program and in the systemic approach oriented to impact on which this Pillar is based, requiring, thus, particular efforts for **interdisciplinary** and **intersectoriality** in research actions.

PILLAR II | Main features:

- improve **societal issues** and industrial technologies with a **top-down approach**
- **Integration among Clusters,** with a series of intervention sectors to encourage interdisciplinary, intersectoral, transversal and international collaboration, thus obtaining a higher impact and **better grasping the innovation potential which is often greater at the intersection points of disciplines and sectors**

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- the essential role of **industry** in achieving all program objectives, also fostered by investments in the key enabling technologies of the future

PILLAR II | Key-novelties elements:

- Inclusion of **Partnerships** (new rationalization on three categories) and **Missions** (which will pursue ambitious but achievable and limited objectives over time, encouraging citizen participation)
- Increased participation in research and funding by **entities from low- and middle-income countries**
- The role of the JRC (Joint Research Centre) as a source of scientific data and technical assistance in support of Union policies

The budget assigned to this Pillar is currently about 47 billion EUR[41], of which:

- EUR 6 893 000 000 for cluster *Health*
- EUR 1 253 500 000 for cluster *Culture, Creativity and Inclusive and Secure Society*
- EUR 1 253 500 000 for cluster *Civil Security for Society*
- EUR 13 429 000 000 for cluster *Digital, and Industry and Space*
- EUR 13 429 000 000 for cluster *Climate, Energy and Mobility*
- EUR 8 952 000 000 for cluster *Food, Bioeconomy, and Natural Resources, Agriculture and Environment*
- EUR 1 970 000 000 for the non-nuclear direct actions of the *Joint Research Centre (JRC)*

This allocation shows how the Cluster *Climate, Energy and Mobility* and the Cluster *Digital, and Industry and Space* share almost 32 % of the Horizon Europe overall budget (15,9 % each), as main destinations of the EU funding, followed by *Food, Bioeconomy, and Natural Resources, Agriculture and Environment* (10,6%) and *Health* (8,2 %).

As mentioned, Pillar II includes five thematic clusters that address the full spectrum of global challenges through top-down collaborative R&I activities. **The clusters cut across typical boundaries between disciplines, sectors and policy areas and will lead to more collaboration and increased impact in what concerns Union and global policy priorities.** According with the proposal approved by the Council of the EU on September 29, 2020, the KSOs and the related Impact Areas which keep these 5 Clusters interconnected are the following:

KSO	IMPACT AREAS	CLUSTERS
1. Promoting an open strategic autonomy by leading the development of key digital and enabling technologies, sectors and value chains to accelerate and steer the digital and green transitions through human-centred technologies and innovations**.**	▪ A competitive and secure data-economy ▪ Industrial leadership in key and emerging technologies that work for people ▪ Secure and cybersecure digital technology ▪ High quality digital services for all	▪ **Cluster 1 (Health)** ▪ **Cluster 2 (Culture, Creativity and Inclusive Society)** ▪ **Cluster 3 (Civil security for society) Cluster 4 (Digital, Industry and Space)**
2. Restoring Europe's ecosystems and biodiversity, and managing sustainably natural resources to ensure food security and a clean and healthy environment.	▪ Enhancing ecosystems and biodiversity on land and in waters	▪ **Cluster 1 (Health)** ▪ **Cluster 4 (Digital, Industry and Space)**

[41] See the proposal approved by the Council of the EU on September 29, 2020.

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	▪ Clean and healthy air, water and soil ▪ Sustainable food systems and nutrition security	▪ **Cluster 5 (Climate, Energy and Mobility)** ▪ **Cluster 6 (Food, Bioeconomy, Natural Resources, Agriculture and Environment)**
3. Making Europe the first digitally led circular, climate-neutral and sustainable economy through the transformation of its mobility, energy, construction and production systems.	▪ Climate change mitigation and adaptation ▪ Affordable and clean energy ▪ Smart and sustainable transport ▪ Circular and clean economy	▪ **Cluster 1 (Health)** ▪ **Cluster 4 (Digital, Industry and Space)** ▪ **Cluster 5 (Climate, Energy and Mobility)** ▪ **Cluster 6 (Food, Bioeconomy, Natural Resources, Agriculture and Environment)**
4. Creating a more resilient, inclusive and democratic European society, prepared and responsive to threats and disasters, addressing inequalities and providing high-quality health care, and empowering all citizens to act in the green and digital transitions.	▪ A resilient EU prepared for emerging threats ▪ A secure and open EU society ▪ Good health and high-quality accessible healthcare ▪ Inclusive growth and new job opportunities	▪ **Cluster 1 (Health)** ▪ **Cluster 2 (Culture, Creativity and Inclusive Society** ▪ **Cluster 3 (Civil security for society) Cluster 4 (Digital, Industry and Space)** ▪ **Cluster 5 (Climate, Energy and Mobility)** ▪ **Cluster 6 (Food, Bioeconomy, Natural Resources, Agriculture and Environment)**

Table 15: Horizon Europe (Pillar II), Key Strategic Orientations

This Guidebook here presents the 2 Clusters that are particularly relevant for R&I in Digital Health and AHA:

- **CLUSTER 1 - Health**
- **CLUSTER 4 - Digital, Industry and Space**

CLUSTER 1 | Health

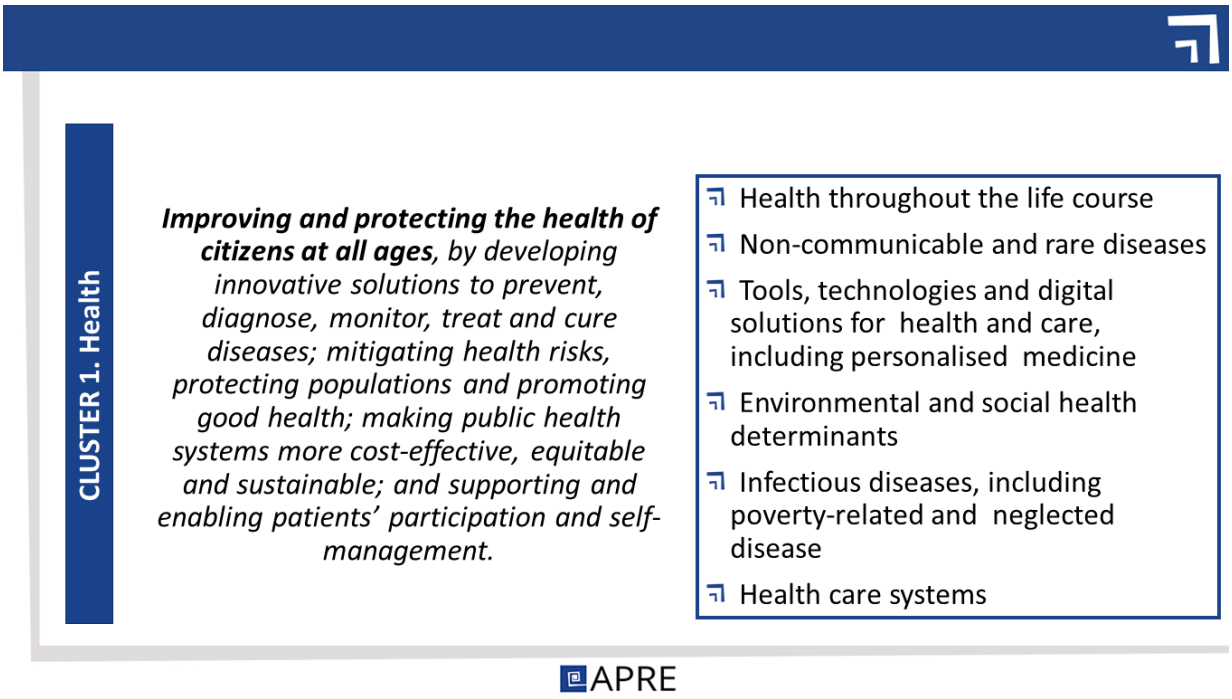

Figure 17: Objectives and areas of intervention of the Cluster 1 Health of Pillar II (Horizon Europe)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826092.

The R&I activities under this Cluster will **develop the knowledge base, build the research and innovation capacity and develop the solutions needed for a more effective promotion of health and the prevention, treatment and cure of diseases**. Improving health outcomes will in turn result in increased life expectancy, healthy active lives and productivity of working age people, and sustainability of health and care systems. Therefore, through the initiatives funded under this Cluster, Horizon Europe intends to build **close linkages between discovery, clinical, epidemiological, environmental and socio-economic research** as well as with regulatory sciences.

Cluster 1 Health | Main features of the Cluster:

- The Health Cluster has a ***top-down*** approach. Applications can be submitted only in response to the topics identified by the EC.
- Only **collaborative projects** are eligible.
- Required *interdiciplinarity* and *intersectoriality*, harnessing the combined skills of **academia and industry** in collaboration with the **health services, patients, policy-makers and citizens**. This will allow to better uptake results in clinical practice as well as in health care systems.
- **Personalised Medicine** and **Digitalization** are considered as transversal aspects across the Cluster destinations.

R&I interventions under Cluster 1 Health will be oriented towards the following **six health-related challenges,** that represent the ***destinations*** included in the Work Programme of the Cluster:

1. Staying healthy in a rapidly changing society
2. Living and working in a health-promoting environment
3. Tackling diseases and reducing disease burden
4. Ensuring access to sustainable and high-quality health care in the EU
5. Unlocking the full potential of new tools, technologies and digital solutions for a healthy society
6. Maintaining a sustainable and globally competitive health-related industry

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These challenges are addressed by covering **6 Areas of Intervention**. Each challenge may require R&I actions under several Areas of Intervention (AoI), as shown by the Figure below (Figure 18).

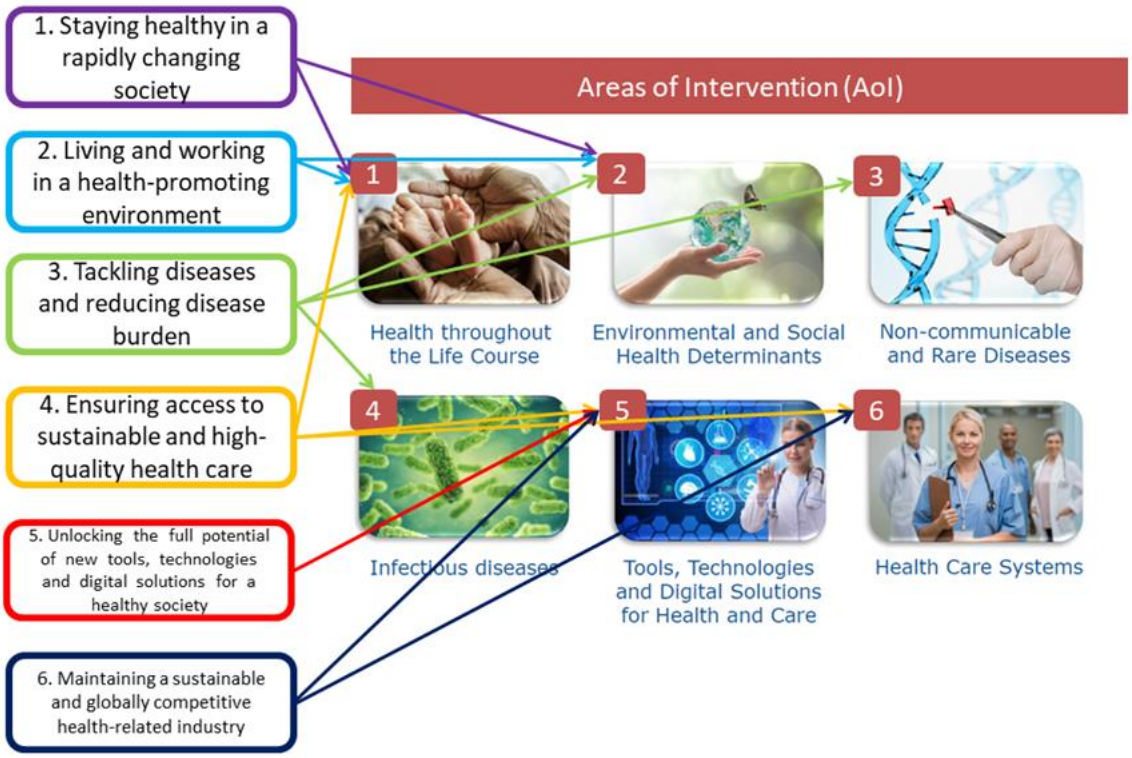

Figure 18: Cluster 1 - Health (Horizon Europe, Pillar II): interconnections between Destinations and Areas of intervention of R&I projects to be funded

Among the 6 destinations identified by the EC proposal for Horizon Europe, three are particularly relevant for Digital Health and AHA:

- **DESTINATION 1: Staying healthy in a rapidly changing society**
  - Related Areas of intervention:
    - Health throughout the Life Course
    - Environmental and Social Health Determinants
- **DESTINATION 3: Tackling diseases and reducing disease burden**
  - Related Areas of intervention:
    - Environmental and Social Health Determinants
    - Non-communicable and Rare Diseases
    - Infectious Diseases
- **DESTINATION 5: Unlocking the full potential of new tools, technologies and digital solutions for a healthy society**
  - Related Areas of intervention:
    - Tools, Technologies and Digital Solutions for Health and Care
    - Health Care Systems

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These Destinations are described as follows, based on their related ***Key R&I Orientations***, that are the **research and innovation interventions and results identified by the EC as needed to tackle the health-related challenges**[42].

Destination	**1 | Staying healthy in a rapidly changing society**
	Research and innovation aim at supporting citizens in pursuing healthy and active lives by providing suitable and tailor-made solutions, including for people with specific needs, such as rehabilitation.
Key R&I orientations	▪ **Better understanding of human health at various developmental stages and their impact on healthy development and ageing**, including individual factors affecting health and individual resilience to diseases. ▪ Better understanding of specific health and care needs and better solutions for addressing those needs, including **specific needs of people in vulnerable stages** of life, people with physical or mental impairments, or of population groups with structural socio-economic disadvantages. ▪ **Personalised solutions for health promotion and disease prevention** of individuals or stratified solutions tailored to groups, including for improved prediction and prevention of diseases before/at birth. ▪ **Development of digital tools applications and other solutions, including social innovation, fostering health literacy and empowering citizens to better manage their own health and wellbeing throughout their life course** and to protect them from health threats, including for countering health-related misinformation, manipulation and fraudulent sales of substandard, falsified or inappropriate medicines and illicit drugs.
International Cooperation	Similar health challenges and needs for health promotion and disease prevention are faced by other regions and countries. International cooperation should be sought and promoted in order to benefit from new knowledge and solutions as widely as possible.

Table 16: Horizon Europe (Pillar II), Cluster 1, Staying healthy in a rapidly changing society

Destination	**3 | Tackling diseases and reducing disease burden**
	Research and innovation aim at decreasing the burden of diseases on citizens and health care systems.
Key R&I orientations	▪ **Better understanding of diseases, their drivers and consequences**, including pain and the causative links between health determinants and diseases, and better evidence-base for policymaking. ▪ Better methodologies and diagnostics that allow **timely and accurate diagnosis, identification of personalised treatment** options and assessment of health outcomes, including for patients with a rare disease. ▪ Development and validation of effective intervention for better **surveillance, prevention, detection, treatment and crisis management of infectious disease threats**. ▪ **Innovative health technologies developed and tested in clinical practice**, including personalised medicine approaches and use of digital tools to optimise clinical workflows.

[42] See: *Orientations towards the first Strategic Plan for Horizon Europe*

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	▪ **New and advanced therapies for non-communicable diseases, including rare diseases** developed in particular for those without approved options, supported by strategies to make them affordable for the public payer. ▪ **Scientific evidence for improved/tailored policies and legal frameworks** and to inform major policy initiatives at global level (e.g. WHO Framework Convention on Tobacco Control; UNEA Pollution Implementation Plan).
International Cooperation	Effective international cooperation is essential to reduce disease burden and to protect people against cross-border health threats including the rise and spread of **AMR and (re)emerging epidemics**. The EU should continue its efforts to initiate and participate in cross-border coordination and integration of research and innovation. To address these challenges of global dimension, it will require international cooperation to pool the best expertise and know-how available worldwide, enable a better alignment with actions in the rest of the world, and contribute to the achievement of SDG 3 'Healthy lives and well-being for all'. This includes **international collaboration with major EU and global initiatives in the area of infectious diseases** (Global Research Collaboration for Infectious Disease Preparedness, GloPID-R), **non-communicable diseases** (Global Alliance for Chronic Diseases, GACD), **rare diseases** (International Rare Diseases Research Consortium, IRDiRC), **brain research** (International Traumatic Brain Injury Research, InTBiR), **personalised medicine** (International Consortium for Personalised Medicine, ICPerMed), and **-omics64** (e.g. the International Human Epigenome Consortium, IHEC, the 1 Million Genomes Initiative), and **global health** (World Health Organisation and other UN agencies)

Table 17: Horizon Europe (Pillar II), Cluster 1, Tackling diseases and reducing disease burden

Destination	**5 | Unlocking the full potential of new tools, technologies and digital solutions for a healthy society**
	Research and innovation aim at supporting the integration and deployment of innovation in health care systems.
Key R&I orientations	▪ **New tools and technologies for biomedical research, prevention, diagnosis and therapy** of diseases and tools for monitoring diseases as well as treatment progression are designed, developed, tested or validated for the benefit of patients and the health and care systems. These solutions can include a variety of technologies and approaches such as *nano medicines, advanced therapies, biomaterials, medical devices, hybrid technologies, digital solutions, Artificial Intelligence applications, robotics, -omics67 and other data-driven interventions and procedures.* ▪ **Health data accessibility and interoperability across the EU**, including the free flow and secure exchange of health data, leaning on existing research infrastructures as well as the creation of a European Health Data Space to promote health-data exchange and support research. ▪ **Improved risk-benefit ratio of the developed innovative tools, technologies and approaches** owing to powerful digital solutions using and processing big data for better detection, diagnosis and monitoring of disease, including real-world data, for efficient value assessment. ▪ Efficient up-scaling and production systems, including bioprinting, additive manufacturing and other advanced **manufacturing techniques, enabling targeted and personalized health interventions**. ▪ Improved health technologies and interventions based on digital solutions, which support **timely health information and secure use of health data**.

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	▪ **New data-driven approaches, computer models and -simulations** and other digital solutions are developed, translated and optimised for the prevention, health care and person-centred care, including smart data infrastructures and AI-based data analytics.
International Cooperation	To be negotiated

Table 18: Horizon Europe (Pillar ii), Cluster 1, Unlocking the full potential of new tools, technologies and digital solutions for a healthy society

[!] OPEN/FORTHCOMING CALLS FOR PROPOSALS | To stay up to date on the upcoming calls that will be published within the Cluster Work Programme once the Horizon Europe Program is adopted (starting from January 2021), please monitor the **Funding and Tenders Portal**.

CLUSTER 4 | Digital, Industry and Space

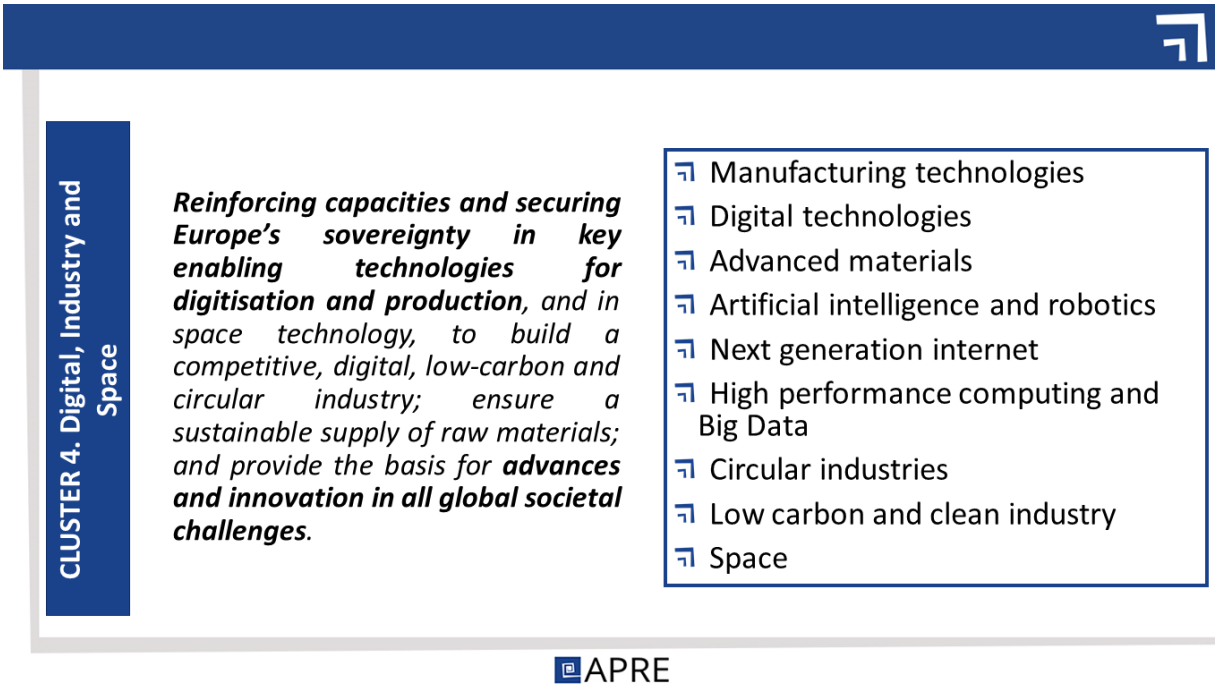

Figure 19: Objectives and areas of intervention of the Cluster 4 Digital, Industry and Space of Pillar II (Horizon Europe)

Bringing together activities on digital, key enabling and space technologies, as well as a sustainable supply of raw materials, will allow for a more systemic approach, and a faster and more profound **digital and industrial transformation**. It will ensure that research and innovation in these areas feed into, and contribute to the implementation of, the EU's policies for industry, digitisation, environment, energy and climate, circular economy, raw and advanced materials and space. Complementarity will

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be ensured with activities under the **Digital Europe Programme**[43], to respect the delineation between both Programmes and avoid any overlaps.

Cluster 4 Digital, Industry and Space | Main features of the Cluster:

- The Cluster 4 has a ***top-down*** approach. Applications can be submitted only in response to the topics identified by the EC.
- Only **collaborative projects** are eligible.
- **[!] International Cooperation**: Activities under this cluster will engage with international partners as appropriate to enhance exchange of know-how, access to international value chains, in areas of mutual benefit and EU interest, and with due consideration to the technological sovereignty/autonomy objective. Particular attention will be paid to Europe's strong position in sustainability, to ***promote EU climate-neutral, clean and circular technologies***. Activities will also aim to pursue level playing fields, reciprocity and the development of technologies that put ***human rights and social values*** first, including through industrial and policy dialogues. Among the domains identified for cooperation: Circular economy and climate-neutral technologies, to support ***global sustainability*** and European industry, including a harmonised approach to materials life cycle assessment ("circularity by design"); ***Common standards and interoperability***, including in the regulatory context of manufacturing technologies, digital technologies and Artificial Intelligence (focussed on ethics and data).

Cluster 4 covers **11 Key R&I orientations** grouped in two general categories: (I) Enabling technologies ensuring European leadership and autonomy; and (II) Accelerating economic and societal transitions. The path towards the adoption of Horizon Europe has progressively clarify that R&I actions under this Cluster will be oriented towards six main challenges, representing the **Expected Impacts** of the Cluster implementation. These will be reflected in the **6 Destinations** included in the Cluster Work Programme.

Cluster 4 **9 Key R&I orientations**	
1. Manufacturing Technologies 2. Key Digital Technologies 3. Advanced Materials 4. Emerging Enabling Technologies 5. Artificial Intelligence and Robotics 6. Next Generation Internet 7. Advanced Computing and Big Data 8. A globally competitive Space sector	**Enabling technologies ensuring European leadership and autonomy**
9. Circular Industries 10. Low-Carbon and Clean Industries 11. New services from Space for the EU society and economy	**Accelerating economic and societal transitions**

Expected Impacts	Destinations
1. **Global leadership in clean and climate-neutral industrial value chains, circular economy and climate-neutral digital systems and infrastructures (networks, data centres),** through innovative	1. Climate neutral, circular and digitised production

[43] To find more about the Digital Europe Programme, see the presentation of Annalisa Bagliolo, DG CNECT.D.1 at: https://www.apre.it/media/586540/annalisa_bogliolo.pdf

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	production and manufacturing processes and their digitisation, new business models, sustainable-by-design advanced materials and technologies enabling the switch to decarbonisation in all major emitting industrial sectors, including green digital technologies.	
2.	**Industrial leadership and increased autonomy in key strategic value chains with security of supply in raw materials,** achieved through breakthrough technologies in areas of industrial alliances, dynamic industrial innovation ecosystems and advanced solutions for substitution, resource and energy efficiency, effective reuse and recycling and clean primary production of raw materials, including critical raw materials.	2. A digitised, resource-efficient and resilient industry
3.	**Sovereignty in digital technologies and in future emerging enabling technologies** by strengthening European capacities in key parts of digital and future supply chains, allowing agile responses to urgent needs, and by investing in early discovery and industrial uptake of new technologies.	3. World leading data and computing technologies
4.	**Globally attractive, secure and dynamic data-agile economy** by developing and enabling the uptake of the next-generation computing and data technologies and infrastructures (including space infrastructure and data), enabling the European single market for data with the corresponding data spaces and a trustworthy artificial intelligence ecosystem.	4. Digital and emerging technologies for competitiveness and fit for the green deal
5.	**Strategic autonomy in conceiving, developing, deploying and using global space based infrastructures, services, applications and data,** including by reinforcing the EU's independent capacity to access space, securing the autonomy of supply for critical technologies and equipment, and fostering the EU's space sector competitiveness.	5. Strategic autonomy in developing, deploying and using global space-based infrastructures, services, applications and data
6.	**A human-centred and ethical development of digital and industrial technologies,** through a two-way engagement in the development of technologies, empowering end-users and workers, and supporting social innovation.	6. A human-centred and ethical development of digital and industrial technologies

Table 19: Horizon Europe (Pillar II), Cluster 4, Key R&I Orientations

Among the 11 Key R&I orientations identified by the EC proposal for Horizon Europe, five are particularly relevant for Digital Health and AHA and concern **Enabling technologies ensuring European leadership and autonomy**:

Key R&I orientation	**1 | Manufacturing Technologies**
	They are also directly relevant for activities in clusters related to health, energy and mobility. Priorities include: ▪ ***Strengthening and creating value chains based on digital industrial platforms,*** *benefitting the production sectors from automotive and aerospace to health and food processing*.
Key R&I orientation	**2 | Key Digital Technologies**
	They are bringing the benefits of digital innovations, notably through Artificial Intelligence and big data analytics, to all types of products and services from connected and autonomous vehicles to ***health equipment***, novel materials and *drugs*, and smart energy systems.
	3 | Advanced Materials

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826092.

Key R&I orientation	The development of advanced materials for innovative medical products and devices directly contributes to the well-being of European citizens. In addition, **advanced materials will provide solutions for challenges related to health, and sustainability of building materials contributing to the safety of Europe's citizens.**
Key R&I orientation	**5 | Artificial Intelligence and Robotics** They will bring potential benefits to the other clusters, to address global challenges, with direct impacts in sectors such as ***healthcare***, agriculture, manufacturing, energy, transport: ▪ The introduction of AI and autonomous behaviour in complex, safety- and time-critical systems, such as those used in large transport networks, avionics***, health or industrial applications***, is a technological challenge but also a significant business opportunity for which Europe has a competitive advantage. ▪ In this field, Europe also needs to deploy a human-centric, ethical and trustworthy AI, which will be crucial for its acceptance, and a trademark for AI developed in Europe.
Key R&I orientation	**7 | Advanced Computing and Big Data** While the abundance of data is a core element for computing complex problems and solutions, it may conversely create problems, in particular as regards the protection of personal and sensitive data (e.g. commercial data, trade secrets, health data etc.) that need to be protected by privacy preserving technologies respecting the rights of data subjects and content creators. In the same vein, some complex problems can only be computed and solved with a sufficient critical mass of data that may only exist in isolated silos that need to be connected. ▪ To ensure that diverse data from different sectors and of different types can be seamlessly combined and exploited across sectorial and national borders, methodologies and tools are needed to ensure interoperability and to keep track of the provenance, quality and completeness of data sets.

Table 20: Horizon Europe (Pillar II), Cluster 4, relevant Key R&I orientations (Digital Health and AHA)

Under the Pillar II are also included EU Missions and most of the EU Partnerships[44].

In particular, the Mission "Cancer" and a set of EU Partnerships under the Health and Digital domains are here presented as relevant for Digital Health and AHA within the Horizon Europe programme.

EU MISSION | Cancer

Each year, 2.6 million people in the EU-27 are diagnosed with cancer. This number is expected to increase rapidly ***because of ageing populations****, unhealthy lifestyles and unfavourable environmental conditions. (…)* ***The Mission on Cancer will address the whole cancer control continuum****, i.e. from prevention of risk factors to survivorship support and end-of-life care, for all ages and cancers,*

[44] These has been rationalized: from 120 Partnerships in H2020 to 49 Partnerships under Horizon Europe, grouped in three categories (co-programmed; co-funded; institutionalized). 35 partnerships have been candidate to be included in Pillar II; 11 partnership candidates are currently outside pillar II (9 EIT-KICs, SMEs, Open Science Cloud). A new partnership on "European Partnership on (Pandemic) Preparedness and Societal Resilience" is also under discussion to be added to the whole portfolio.

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*including rare and poorly understood cancers, cancers in children, adolescents/young adults and the **elderly**, cancers in socially or economically vulnerable families and among people living in remote areas, across all Member States.*

Interim Report of the Mission Board for Cancer (September 2020*)*

As anticipated, EU Missions include a portfolio of excellence-based and impact-driven R&I actions across disciplines and sectors, intended to:

- achieve, ***within a set timeframe***, a measurable goal that could not be achieved through individual actions
- have ***impact on society and policymaking*** through science and technology
- be ***relevant for*** a significant part of the European population and a wide range of ***European citizens***

Therefore, EU Missions will potentially **combine different funding instruments** and policy actions and will be supported by a range of activities, engaging different actors such as the Member States, and European citizens, as well as the European Commission.

Moreover, each EU Mission encompasses activities from a broad range of TRLs, including lower TRLs, as appropriate to achieving the goal of the mission.

EU BUDGET FOR EU MISSIONS | There is no fixed budget for each of the 5 Missions areas identified by the EC:

- During the **first three years** of the programme, a **maximum of 10%** of the annual budget of **Pillar II** shall be programmed through specific calls for implementing the missions
- For the remaining part of the programme, and **only after a positive assessment** of the mission selection and management process, this percentage may be increased

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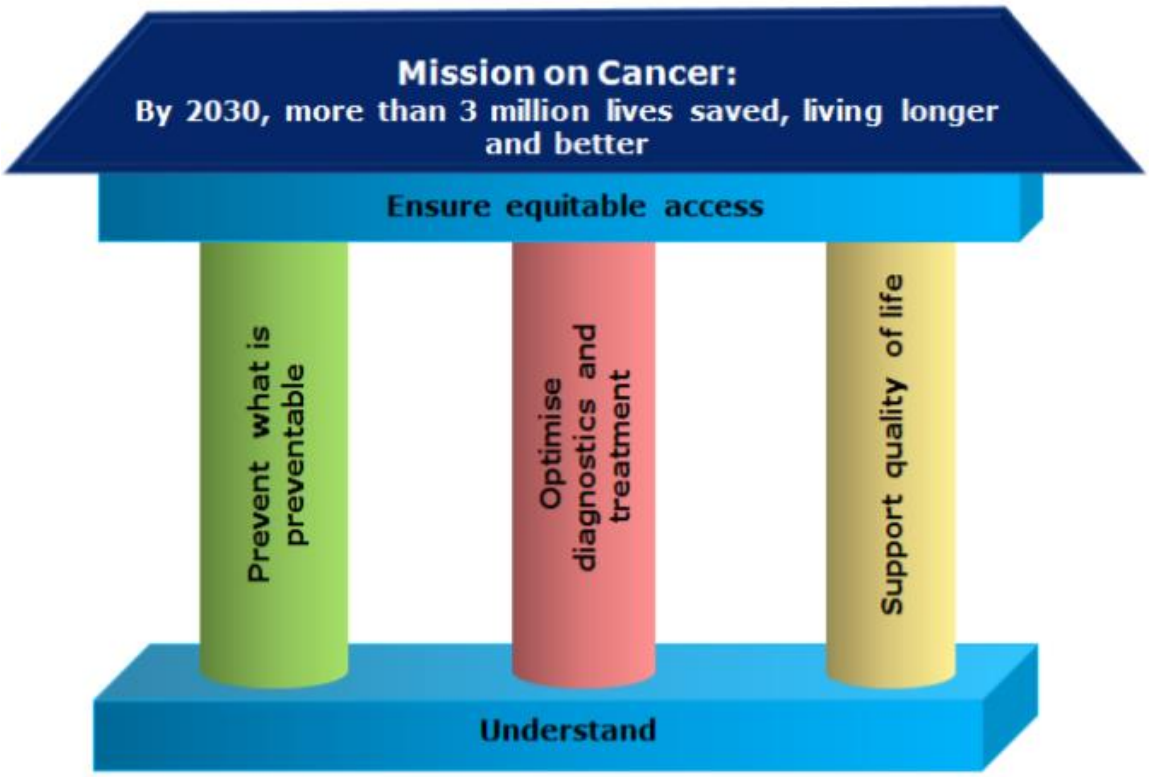

Figure 20: EU Mission "Cancer": structure and objectives (Source: Interim Report of the Mission Board for Cancer: *Proposed Mission: Conquering cancer, mission possible* – September 2020)

The overall goal of the Mission on Cancer has been formulated as: "***By 2030, more than 3 million lives saved, living longer and better***". This is consistent with UN Sustainable Development Goal (SDG) 3: Ensure healthy lives and promote well-being for all at all ages. The target of this SDG for non-communicable diseases for 2030 is "*to reduce by one third premature mortality through prevention and treatment and promote mental health and well-being*."

Given the high level of ambition, a comprehensive plan of bold actions supported by all Member States and stakeholders – including patients, survivors, carers and the wider public - is required to achieve the Mission's goal. Figure 20 illustrates that three main outstanding pillars of interventions are needed to these achievements:

1. **Prevention**
2. **Diagnostics and treatment**
3. **The quality of life of cancer patients, survivors, and their families and carers**

Supported by two transversal priority axes:

4. **Equitable access**
5. **Understanding Cancer**

As such, these areas are considered the main intervention areas of the Mission. All require a thorough understanding of cancers, causal factors and mechanisms, and their impact on cancer; therefore, understanding is considered the basis for actions. Furthermore, effective policy measures are needed and resources should be allocated to ensure that citizens and other stakeholders in all Member States

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have equitable access to high-quality prevention, diagnostics and treatment, care and support, including access to research funding and knowledge.

FIND MORE ABOUT | Mission "Cancer"

See the Interim Report of the Mission Board for Cancer (September 2020): *Proposed Mission: Conquering cancer, mission possible*

EU PARTNERSHIPS | Transforming Health and Care Systems

This partnership will build on the experience and outcomes of some closely related European initiatives, [such as]:

- ***The Active & Assisted Living Programme (AAL Programme)** with a focus on funding R&I projects for new/adapted solutions for older adults and those supporting them, mainly in non-institutional health and care (i.e. at home and in community) by making use of ICT-based/digital technologies; The AAL Programme has extensive experience in involving end-users and different types of stakeholders in the Programme set up, in the call definition, in support actions as well as in funded projects.*
- ***The Joint Programme Initiative "More Years, Better Lives'** focusing on transdisciplinary policy-directed research and in particular social sciences and behavioural research about the effects of an ageing population on society at large and in particular with regard to the current health and care systems;*
- ***The European Innovation Partnership on Active & Healthy Ageing** developing tools, know-how and exchanges to stimulate ecosystems at subnational level, public/private investment and scale-up of innovation within regions for the benefit of the whole society*[45].

As mentioned, European Partnerships provide a framework for programme level collaboration between the Union and public or private partners.

Key precondition for launching a partnership is the existence of an agreed Strategic Research and Innovation Agenda/Roadmap. Then, the launch of a European Partnership is conditional to partners signing up to those objectives and committing the resources and investments needed from their side to achieve them.

EU PARTNERSHIP | Main features

- **Initiatives where the EU together with private and/or public partners commit to jointly support the development and implementation of a programme of research and innovation activities.**
- The partners could represent industry, universities, research organisations, bodies with a public service remit at local, regional, national or international level or civil society organisations including foundations and NGOs.

[45] See: https://ec.europa.eu/info/files/european-partnership-health-and-care-systems-transformation_en

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- Partnerships will be supported only if there is evidence that they are more effectively **achieving policy objectives** than Horizon Europe alone
- Unified umbrella branding to improve **visibility.**

3 types of partnerships are foreseen within Horizon Europe:

- **Co-programmed European Partnerships:** These are partnerships between the Commission and private and/or public partners. They are based on memoranda of understanding and/or contractual arrangements.
- **Co-funded European Partnerships using a programme co-fund action:** Partnerships involving EU countries, with research funders and other public authorities at the core of the consortium.
- **Institutionalised European Partnerships:** These are partnerships where the EU participates in research and innovation funding programmes that are undertaken by EU countries. These partnerships require legislative proposals from the Commission and are based on a Council Regulation (Article 187) or a Decision by the European Parliament and Council (Article 185). They are implemented by dedicated structures created for that purpose.

  [!] Institutionalised partnerships will only be implemented where other parts of the Horizon Europe programme, including other types of partnership, would not achieve the desired objectives or expected impacts.

The current portfolio of European Partnerships within Horizon Europe is found in Annex 7 of the *Orientations towards the first Strategic Plan for Horizon Europe*.

The health-related Partnerships candidates are summarized in the figure below that highlights also changes from the previous framework programme in the sense of rationalization and reform[46].

[46] To date, the EC has published detailed plans for 26 of the 49 planned partnerships, including the provisional composition and content sheet of each partnership. The final list of co-programmed and co-funded partnerships is discussed in the Shadow Program Committee and will be included directly in the Strategic Plan of Horizon Europe. The 12 institutionalized partnership proposals based on Articles 185 and 187 of the TFEU must be established through an *ad hoc* legislative act.

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Health

Rationalisation and reform:

Overall number reduced from 13 to 7, of which

- 4 are reformed continuations of current partnership topics;
- 3 partnerships that would build on existing actions or merge existing partnerships;
- No discontinuation, but merging.

CF: Co-funded
CP: Co-programmed

Current candidates	Type
EU-Africa Global Health Partnership	A185/7, CP, CF
Innovative Health Initiative	A187, CP
European partnership for chemicals risk assessment	CF
Pre-clinical / clinical health research	CF
Large-scale innovation and transformation of health systems in a digital and ageing society	CF
Personalised Medicine	CF
Rare Diseases	CF
In addition: EIT Health	KIC

Figure 21: Health-related European Partnerships candidates under Horizon Europe (Source: EC)

Under the title "**Transforming health and care systems**" the candidate Partnership "Large-scale innovation and transformation of health systems in a digital and ageing society" has been redrafted, as a co-funded action.

CO-FUNDED PARTNERSHIP | Main features

Legal form: based on a *Grant Agreement* (programme co-fund action) signed between the Commission (executive agency) and a consortium of beneficiaries such as:

- *Ministries in charge of R&I policy*, and research and innovation and technology funding *agencies* and foundations (national and regional);
- *Ministries in charge of Health and care policy*, and Health and care *agencies* (national and regional).

Implementation: On this legal basis, the Member States design a common programme to be implemented under their responsibility. It pools national funding/resources with co-funding from the Union.

- *Funding rate* 30% (in justified cases higher);
- *Calls and evaluations* are organized centrally, beneficiaries in selected projects are typically funded at national level (on the basis of rules agreed by partners).

As described in the in the *Draft Proposal for a European Partnership under Horizon Europe Transforming health and care systems*[47], dating from the 9th of June 2020, in the autumn 2019 the

[47] See: https://ec.europa.eu/info/files/european-partnership-health-and-care-systems-transformation_en . It is to be noted that the "Draft version 1 - July 2020" has not been adopted or endorsed by the European

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Commission services asked potential partners to further elaborate proposals for the candidate European Partnerships identified during the strategic planning of Horizon Europe. This document that is currently available is a stable draft of this Partnership proposal, released for the purpose of ensuring transparency of information on the current status of preparation.

The core issue that this Partnership is addressing is that health and care systems have been facing increasing challenges. As the draft explains, **COVID-19 pandemic has highlighted that improvements are urgently needed to reach high quality, efficient, accessible, health promoting, people-centred, resilient, health and care systems for all EU citizens**. Research and Innovation activities (R&I) in a EU Partnership will accelerate the transformation towards sustainable health and care systems.

As such, the creation of a research and innovation partnership with a focus on health and care systems transformation is a strategic opportunity for coordinated, relevant, timely and evidence-based research and innovation (R&I), which is considered to be a must for a successful health and care systems transformation to occur.

In this perspective, technological development, biomedical innovation and the need to foster implementation research to support the transformation of health and care systems to become more proactive, are considered as important drivers. **There is a need for a shift from intervention to prevention approach as a key transformation process, (i.e. by stressing on positive health and well-being for sustaining mental and physical abilities and promoting the best possible quality of life for the citizens**).

Therefore, in order to ensure the transition towards more sustainable, resilient, innovative and high-quality people-centred health and care systems, this Partnership will be organised around the following specific objectives to be achieved by 2030:

EU PARTNERSHIP "TRANSFORMING HEALTH AND CARE SYSTEMS" | Vision and objectives

Vision: to lay the ground to provide high-quality health and care services at affordable prices to all European citizens in a way that is sustainable for the public finances

***Specific Objectives*:**

1. To provide multidisciplinary research and innovation actions in priority areas of common interest to **fill knowledge gaps**, **produce evidence and develop guidance on how to transform** health and care systems.
2. To provide **applied research/development and innovation actions** in priority areas of common interest to develop new solutions for health and care to support and maintain people's health
3. To **strengthen the research and innovation community** in the field of health and care systems across Europe

Commission. As such, any views expressed in it are the preliminary views of the Commission services and may not in any circumstances be regarded as stating an official position of the Commission. The information transmitted is intended only for the Member State or entity to which it is addressed for discussions.

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4. To **improve the ability of relevant health and care actors to take up innovative solutions**, including organisational, service and policy innovations

5. To **establish a platform for connection and coordination** of relevant stakeholders to develop the ecosystems allowing for a swift scaling up and transfer of successful innovations to different health and care systems

The funding of health and care system R&I is complicated and multidimensional when it comes to sectors and actors involved, end users, expected impacts, and legal regulations of the R&I. This partnership will present an opportunity to bring together policy makers, funders, researchers and all stakeholders of the health and care ecosystem. By aligning research and innovation funding through the SRIA – Strategic Research and Innovation Agenda and coordinating with non- research and innovation activities, **resources will focus on those priority areas where joint learning has greatest added value ensuring the knowledge translation needed to best support decision making at services and system level.**

Therefore, the stakeholders and actors that are considered as relevant for this Partnership can be classified as:

- Partners needed to build up the Partnership (national policy makers and the EC)
- Stakeholders that provide inputs through consultation for priority setting (e.g. final users, care providers, etc.)
- Final Beneficiaries of the Partnership implementation (R&I community as a whole)

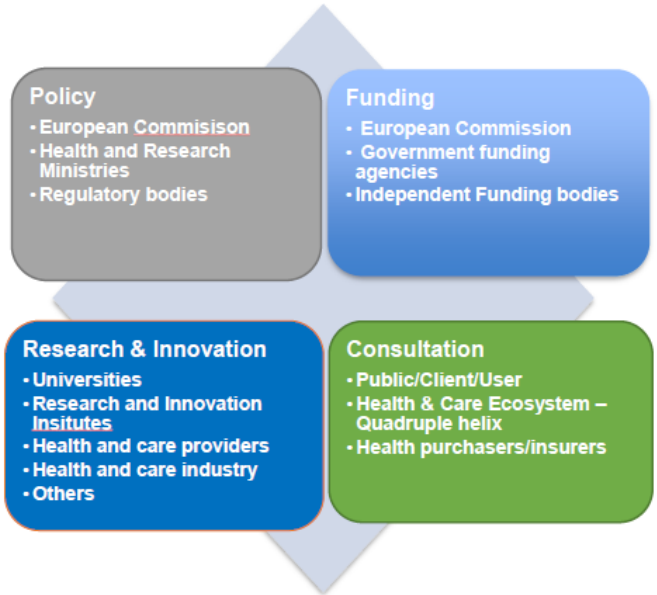

Figure 22: EU Partnership "Transforming Health and Care System": partners composition and target groups (Source: Draft Partnership proposal, version 1 - July 2020)

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Here follows an overview of the activities to be funded under this Partnership:

Type of action	EU PARTNERSHIP | Transforming Health and Care Systems
Funding to Research and Innovation (R&I)	▪ The *national contributions* from countries participating in the call budgets are expected to range from the order of 100K€ up to several Million Euros per country and call. ▪ **Calls will address different categories and different stages of the R&I chain from research and innovation action in the field of health services and systems research, to experimental development, e.g. pilots, living labs, etc.** This will envisage different sources of national funding to increase the capacity and to create synergetic effects. ▪ The organization of calls is planned to be divided into **different pillars depending on TRL levels** and the ability to directly co-fund through the suitable funding schemes of Member States and Associated Countries.
Support actions	The Partnership will support additional relevant actions aiming at: ▪ Increasing the cross-project cooperation; ▪ Enhancing the transnational networking among relevant actors of the health and care ecosystems; ▪ Implementing training and mobility actions, awareness raising, communication, dissemination and exploitation.
Support to the Governance structure	A governance and related management structure shall be set-up and maintained to coordinate and manage the internal and external management of the Partnership both at strategic and also operational level: ▪ decision-making process; ▪ development of the annual work plans; ▪ daily partnership implementation and management etc. (see governance).
Efforts for national coordination	National coordination includes all activities for ensuring: ▪ the mobilisation of relevant stakeholders at country level, local/national promotion of the project calls; ▪ strengthening impact creation and implementation of results at national/regional/local level; ▪ alignment with national and regional strategies and priorities.

Table 21: EU PARTNERSHIP | Transforming Health and Care Systems

1.3.1.4 More to know (e.g. Projects/Best Practices database/Partner Search services, NCPs, etc.)

[!] DO NOT FORGET | CROSS-CUTTING ISSUES

A number of key specific issues will be taken into account in the implementation of Horizon Europe 2021-2024 and, thus, in the evaluation of project proposals. These are transversal aspects creating a sound foundation for the pursuit of the key strategic orientations (Figure 23).

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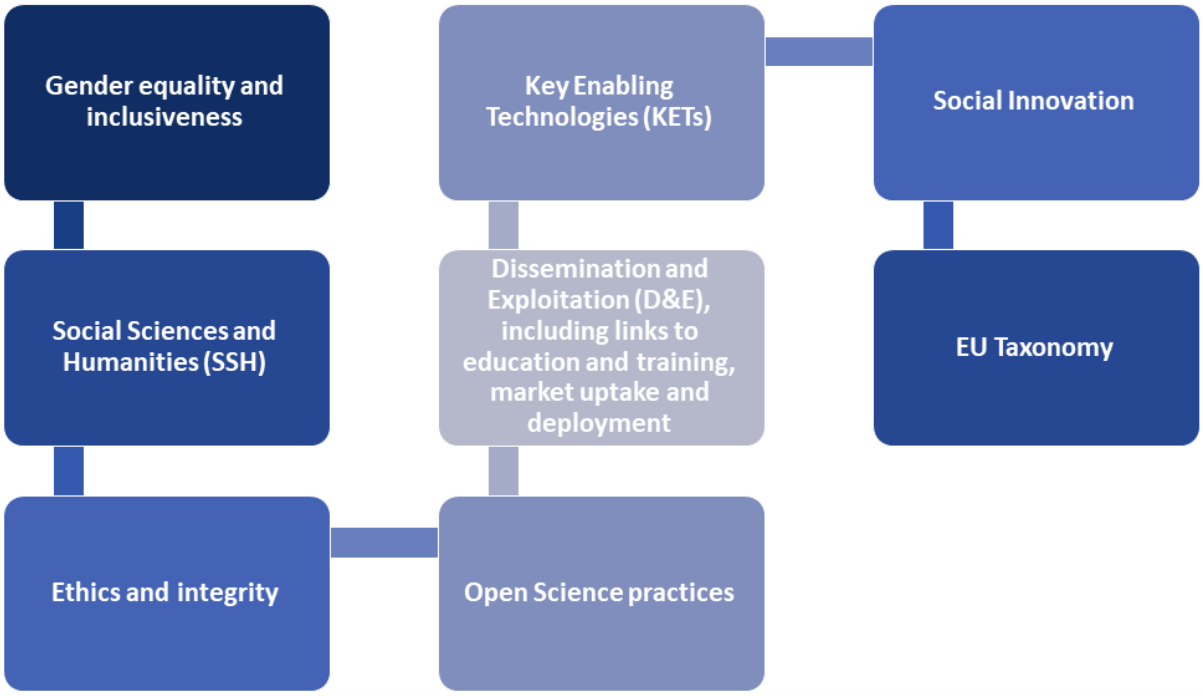

Figure 23: Transversal aspects in the Horizon Europe implementation

In particular, here some highlights:

- **Gender equality and inclusiveness**: activities should aim at eliminating gender, inequality and intersecting socio-economic inequalities throughout research and innovation systems, including by addressing unconscious bias and systemic structural barriers. The integration of the gender dimension will be, therefore, a requirement by default in research and innovation content across the whole programme.
- **EU Taxonomy**: The adoption of the EU Taxonomy Regulation in June 2020[48] creates the world's first-ever "green list" – a clear and common classification system defining which economic activities can be considered as sustainable – a common language that investors, industry and researchers can use to target projects and economic activities that have a substantial positive impact on the environment. The EU Taxonomy can also be used to ensure the 'do no harm' fundamental principle of public recovery investments related to the European Green Deal. More generally the EU Taxonomy should guide all investments in Europe's recovery to ensure they are in line with our long-term ambitions.

These aspects should be considered as part of the three main evaluation criteria followed to date for the current Framework Programme.

[48] See: https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en

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EFP | Evaluation Criteria

When a proposal is admissible and eligible, independent experts will:

- advise the Commission if applicants have the sufficient **operational capacity** with respect to their role and tasks in the proposed action. This assessment will be based on the competence and experience of the applicants, including operational resources (human, technical and other) and, if applicable, exceptionally the concrete measures proposed to obtain it by the time of the implementation of the tasks.
- **Evaluate and score proposals** against a set of selection and award criteria[49]: *Excellence*, *Impact*, and *Quality and efficiency of implementation*. In order to be considered for funding, a proposal must score above a certain threshold for each criterion, and above an overall threshold. Thresholds may vary according to the work programme.

[!] BE INSPIRED | Check EU funded projects

CORDIS

The Community Research and Development Information Service (CORDIS) is the European Commission's primary source of results from the projects funded by the EU's framework programmes for research and innovation (FP1 to Horizon 2020).

CORDIS has a rich and structured public repository with all project information held by the European Commission such as **project factsheets, participants, reports, deliverables and links to open-access publications.**

CORDIS also produces its own range of **publications and articles** to make it easier for you to find relevant results that you can use in your domain. The print editions are in English while the web versions are also available in French, German, Italian, Polish and Spanish.

CORDIS articles are classified by high-level domains that reflect where the research results could be applied, independently of their field of science. Therefore, you can browse by domain of application or filter by keywords, or by specific type of information/document sought.

- **Projects filtered by the keyword "AHA" may be explored here**
- **11 domains have been identified to collect information on R&I projects in CORDIS:**

[49] These criteria are generally applied to the whole Programme, with some exceptions (e.g. MSCA, SME instrument in H2020).

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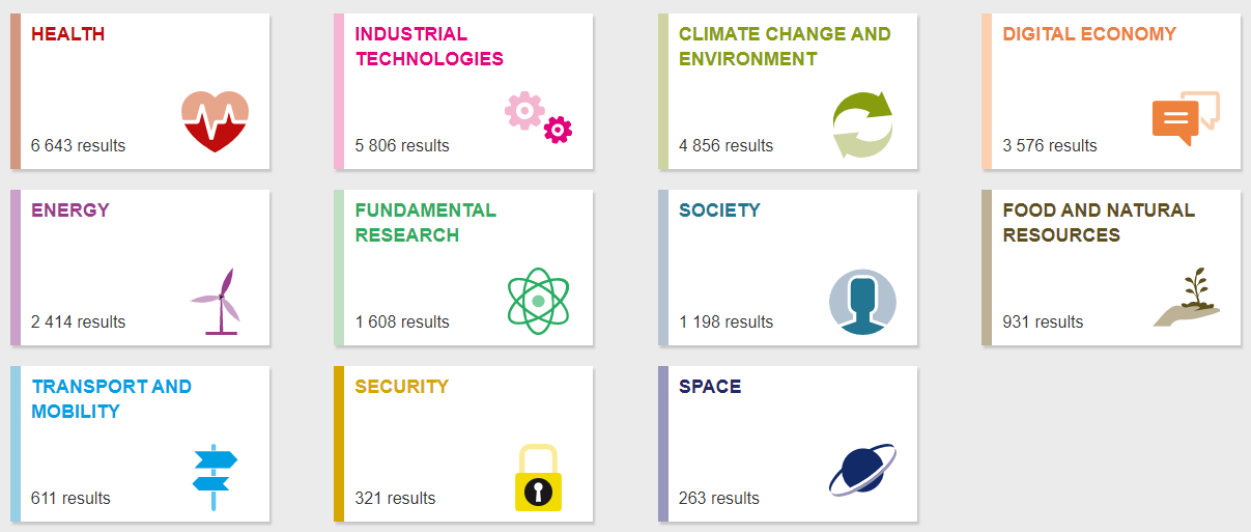

- **Success Stories database**

The most recent *success stories* from EU-funded Research and Innovation projects all around the world are available here and can be filtered by *themes* and *countries.*

Among the relevant themes: Health & Life Science>Health &Ageing, Information Society, International Coopration.

The website is available in 7 EU languages besides English.

- **Horizon Results Platform**

The Horizon Results Platform is a Platform where EU Framework Programme Participants present their results for you to search, contact their owners, and hopefully form fruitful partnerships that will eventually generate the desired value.

The Horizon Dashboard is an intuitive and interactive knowledge platform offering a user-friendly public access to statistics and data on EU research and innovation:

- Easy access to overview and detailed information on proposals, funded projects and project results, notably reported IPRs and scientific publications,
- Views on specific aspects e.g. the Seal of Excellence, the European Innovation Council
- Intuitive functions for filtering and drilling down, allowing analysis by geographical location, research thematic area, organization types etc.
- Functions for data export, story-building and bookmarking – log in here to access full Dashboard functionalities

Results with relevance to COVID-19 are also collected in a dedicated section.

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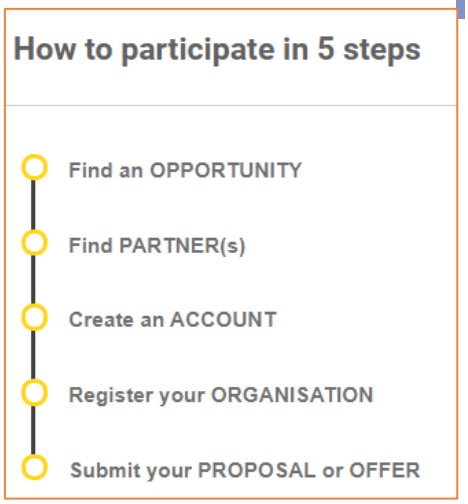
Instructions to publish results on the Horizon Results Platform are available here.

1.3.1.4.1 The Funding & Tenders Portal: functionalities and where to find information and assistance

The Funding & tender Portal (the Single Electronic Data Interchange Area) is the entry point for participants and experts in funding programmes and tenders managed by the European Commission and other EU bodies.

FUNDING & TENDER PORTAL | Functionalities

- Search and apply for funding opportunities in calls for proposals
- Search a call for tender and submit a tender
- Manage your grants and contracts
- Register as an expert, manage contracts and payments online.



5 steps are sufficient to participate through the Funding & Tenders Portal.

1 | Find an OPPORTUNITY

The European Commission and its funding bodies publish calls for proposals on the Funding & Tenders Portal. Therefore, you may start your search:

- by entering different ***keywords***, from the home page, that characterize best your field of interest, and then refine the results with the help of further filters.
- by selecting one of the **EU funding programmes** listed on the home page, and then navigate via the quick links to the calls for proposals of a specific programme.
- Calls are divided into topics, implemented by different type of actions. Select a **topic** to read more about the identified opportunity: the topic-related documents, guidance and other instructions are available on a topic page.

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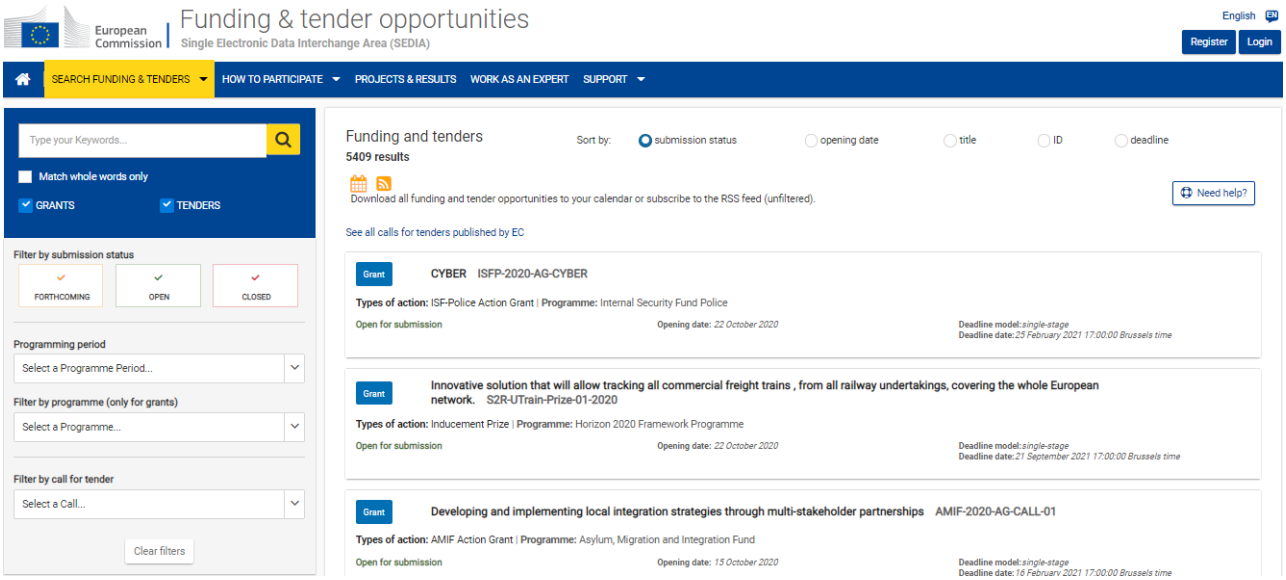

Figure 24: Funding & Tenders Portal (Home Page)

2 | Find PARTNERS (optional)

- Read the topic conditions to assess the partnership and other eligibility requirements of a call.
- To publish your partner search request or offer, select a topic on the Search Funding and Tenders page. Further help is available in the IT HOW TO.
- **Use the Partner Search** site to select an organisation based on their profile or their previous participation.

3 | Create an ACCOUNT

- Each user has to have an **EU Login account** to log in on the Portal. If you already have such an account, you can use it for any interactions supported on this site from proposal submission to reporting.
- If you do not have an account yet, you need to create it by clicking on the **REGISTER** button. Otherwise you get access only to the public services of the site (eg. searching funding opportunities, reading guidance, etc.)

4 | Register your ORGANIZATION

- The Participant Register is the Commission online tool to register and manage the data of the organisations participating in the EU programmes. **It allows consistent handling of the participants` official data and avoids multiple requests to enter the same information.**
- If you want to participate in a project proposal, your organisation needs to be registered and have a 9-digit Participant Identification Code (PIC). This unique identifier of your organisation will be used as a reference by the Commission in any interactions.

5 | Submit your PROPOSAL or OFFER

- Select your topic and go to the Submission Service section of the topic page. Make sure that you select the correct type of action before you start drafting a proposal. The link to the

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submission system is available, if the status of the call is 'open'. A login with your EU Login account is required.

e-SUBMISSION | Main features:

Who?

- Proposals must be created and submitted by a **representative/contact person of the coordinating organisation**. Certain types of action differ from this standard.
- While the submission of a proposal for Marie Skłodowska-Curie fellowships falls under the full responsibility of the applicant organisation represented by the main supervisor, it is technically possible for both the supervisor and the aspirant fellow to create, modify and submit the proposal.
- In proposals for Frontier Research Grants of the European Research Council the individual researcher (Principal Investigator) takes the lead on the proposal.

How?

The proposal itself consists of 2 main parts:

- **Administrative forms** (structured information of the basic administrative data, declarations of partners, organisations and contact persons, etc.)
- **Technical annex**, which is the detailed description of the planned research and innovation project outlining work packages, costs, etc.
- Further mandatory or optional annexes (e.g. supporting documents for ethics issues, detailed budget table for lump sum pilot projects) can be required by the call and the given topic, as shown in the submission system.

1.3.1.4.2 Networks and support services

Under Horizon Europe, each interested country in the world will nominate its National Contact Points (NCP) for those programmes that are considered as more nationally relevant.

NCPs - National Contact Points | who are they?

They are support structures that have become an essential component in the implementation of successive Framework Programmes. They provide **information** and on-the ground **advice** to potential applicants and beneficiaries in their own language, through the project life cycle.

A system of NCPs will be established for Horizon Europe, building on the experience of previous Framework Programmes for Research and Innovation.

As highly professional support services, NCPs operating nationally will form an essential component of Horizon Europe implementation. They will have a key role in delivering the programme's objectives and impacts ensuring that the new programme becomes known and readily accessible to all potential applicants, irrespective of sector or discipline.

The role of NCP's envisages the next core functions:

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NCP role | 1. Informing, awareness raising

- **Circulate general and specific documentation** on the Horizon Europe, including on conditions for participation, on possibilities and conditions for submission of proposals, and on project budgeting and reporting.
- **Organise information and promotional activities** – in liaison with the Commission services when appropriate- e.g. info-days, seminars, conferences, newsletters, web sites, brokerage events, fairs, etc.
- **Raise awareness** of:
    - Horizon Europe funding opportunities offered through the pillars of the programmes and the specific parts such the interdisciplinary nature of Horizon Europe especially with regard to the Clusters, Missions, Partnerships, and EIT KICs, newly established activities of the European Innovation Council in Horizon Europe, especially the equity funding mechanism of the Accelerator;
    - the objectives to ensure gender balance in Horizon Europe and of strengthening the link between science and civil society;
    - the activities of the Joint Research Centre (JRC), the in-house science service of the Commission, to relevant national stakeholders from the scientific community, industry and public authorities.

NCP role | 2. Assisting, advising and training

- Assist researchers and organisations, in particular new actors and SMEs, with a view to increasing their participation in Horizon Europe.
- Assist in partner search activities notably by using internet-based tools, co-operation networks, EEN partnership services for SMES, etc.
- Advise on administrative procedures, rules and issues (e.g. role and responsibilities of participants in a consortium, costs, rights and obligations of participants, ethical rules and for the principles laid down in the Commission Recommendation C(2005)576 on the European Charter for Researchers and the Code of Conduct for their Recruitment).
- Advise participants, in particular smaller organisations and SMEs, on the setting up of appropriate management and legal structures in projects with large budgets and/or numerous participants.
- Explain the scope and the modalities of funding schemes to be used in Horizon Europe.
- Organise courses and training sessions (both physical and virtual) on Horizon Europe where appropriate, for intermediaries and information multipliers to ensure high quality of advice.
- Where appropriate, organise courses and training seminars for specific target groups on specific topics (legal aspects, modalities for participation, research and innovation areas, financial rules, etc.).

NCP role | 3. Signposting and cooperation

- Signpost to other business support network services those potential participants who require assistance, for example on general EU matters or matters relating to internal market, technology transfer, intellectual property rights (IPR), standardization bodies, or regional development (see Annex III?).
- Strengthen cooperation between NCPs within the network by promoting joint activities (see Annex IV).

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- Signpost to national/regional funding services and programmes and to ERA Net Projects.

Under Horizon 2020, the European Commission funded 16 projects for supporting the NCP networks.

[!] For Horizon Europe, the NCP projects will be reshaped based on the programme structure. No specific and official information about future NCP networks is available at the moment of writing this Guidebook.

Accessing to the Funding and Tender Portal of the European Commission (EC), it is possible to verify who are the National Contact Points for each country under each thematic programme of Horizon 2020 and for the future Horizon Europe: https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/support/ncp

1.3.2 COST

1.3.2.1 Programme Architecture

European Cooperation in Science and Technology (COST) is the longest-running European framework for research and innovation. For over 45 years, it has offered European researchers and innovators, a simple and flexible pathway to take part in the best science and technology networks in Europe and across the world. COST is, therefore, a funding organisation for the creation of research networks, called **COST Actions**. These ***networks*** offer an open space for collaboration among scientists across Europe (and beyond) and thereby give impetus to research advancements and innovation.

Since 1971, COST receives EU funding under the various research and innovation framework programmes, such as Horizon 2020.

COST funding intends to complement national research funds, as they are exclusively dedicated to cover collaboration activities, such as ***workshops, conferences, working group meetings, training schools, short-term scientific missions, and dissemination and communication activities***.

COST | Main features

- COST is ***bottom-up***, this means that researchers can create a **network** – based on their own research interests and ideas – by submitting a proposal to the COST Open Call. *The proposal can be in any science field.* COST Actions are highly interdisciplinary and open.
- It is possible to **join on-going Actions**, which therefore keep expanding over the funding period of four years.
- **Actions** are multi-stakeholder, often involving the private sector, policymakers as well as civil society.

1.3.2.2 Funding Instruments & Participation features

Participants are invited to submit COST Action proposals contributing to the scientific, technological, economic, cultural or societal knowledge advancement and development of Europe. Multi- and interdisciplinary proposals are encouraged.

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*The **Open Call Action** proposal submission, evaluation, selection and approval (**SESA**) procedure is **fully science and technology-driven** and will ensure a simple, transparent and competitive proposal evaluation and selection process, reflecting the bottom-up, open and inclusive principles of COST.*

Participants planning to submit a proposal for a COST Action will need to refer to the SESA guidelines and to the Open Call Announcement on the Documents and Guidelines page.

1.3.2.3 Ongoing and forthcoming Calls for Proposals

Check **here** the next date for Proposals collection.

Programme	COST | European Cooperation in Science and Technology
Objectives	COST creates spaces where scientists are in the driving seat (bottom-up) and ideas can grow through a flexible and open approach. By enabling researchers from academia, industry and the public and private sector to work together in open networks that transcend borders, COST helps to **advance science, stimulates knowledge sharing and pools resources**.
Eligibility criteria	**A COST Action is open to all:** ▪ science and technology fields (including trans-, and interdisciplinary, new and emerging fields); ▪ institutions (academia, public institutions, SME/industry, NGO, European/international organisations, etc.); ▪ career stages (both young and experienced); ▪ COST Members All the rules for participation in and implementation of COST activities are available here.
Eligibility criteria for EU/Third Countries	**Non-COST Members are spread across the Near-Neighbour Countries and International Partner Countries and can join on the basis of mutual benefit.** All the rules for participation in and implementation of COST activities are available here.
Official Sources	https://www.cost.eu/
Notes	For more information, applicants can: - Consult "how to apply" - Consult the Open Call Announcement - Consult the Documents and Guidelines page - Contact opencall@cost.eu

Table 22: COST | European Cooperation in Science and Technology (main features)

1.3.3 EU4HEALTH Programme (DG SANTE)

1.3.3.1 From the EU Health Programme to EU4HEALTH Programme

The Health Programme is the major funding instrument that has been managed by DG SANTE in cooperation with CHAFEA (Consumers, Health, Agriculture and Food Executive Agency). In line with the Europe 2020 strategy, it has outlined the strategy for ensuring good health and healthcare in the EU, providing funding to projects on **health promotion, health security and health information.**

The currently phasing out 3rd Health Program (2014-2020) serves four specific objectives (€449.4 million budget). The Health Program has four main pillars:

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- Promote health, prevent disease and foster healthy lifestyles through 'health in all policies',
- Protect EU citizens from serious cross-border health threats
- Contribute to innovative, efficient and sustainable health systems
- Facilitate access to high quality, safe healthcare for EU citizens

Within these areas, 17 topics were called for in 2020 including major diseases, HTA to reference networks and evidence-based decision making[50].

The EU Health Program | It has been implemented by means of **annual work programmes** arranged with EU countries on a number of annually defined priority actions as well as the criteria for **funding actions** under the program. On this basis, CHAFEA organises calls for proposals for projects and operating grants, as well as calls for joint action and tenders. Direct grants are signed with international organisations active in the area of health. The proposals are evaluated by the CHAFEA and assisted by external experts. The latter are selected through calls for expression of interest.

Funding mechanism: the type of funding available for each action is set out each year in the work plan. Unless indicated otherwise (e.g. tenders), the basic principle is joint funding, with Commission grants covering a certain percentage of overall costs.

- According to the guidelines of CHAFEA, there are two main funding mechanisms: grants (grants for projects, operating grants, direct grants with international organisations and grants to EU authorities and bodies for co-financed actions, called *joint actions*) and tenders.

For the 2021-2027 period, the next MFF – Multiannual Financial Framework has incorporated the Health Program in the European Social Fund+. The Commission is proposing a total budget of €101 billion for the EFS+, as a result of a merging of the existing European Social Fund, the Youth Employment Initiative (YEI), the Fund for Aid to the Most Deprived (FEAD), the EU Programme for Employment and Social Innovation (EaSI) and the EU Health programme.

The EU4Health | represents the EU's response to COVID-19 that impactfully rampaged the economy, society and the healthcare systems worldwide. By investing €9.4 billion, it is the largest to be health programme in monetary terms. The program will release its funds for applications in 2021 to EU countries, health organisations and NGOs.

The EU4Health programme has three *general objectives*:

- protecting people in the EU from serious cross-border health threats and **improving crisis management capacity;**
- making medicines, medical devices and other crisis relevant **products, available and affordable** and supporting **innovation;**
- **strengthen health systems and the health care workforce**, including by investing in public health, for instance through health promotion and disease prevention programmes and improving access to healthcare.

[50]https://ec.europa.eu/chafea/health/bookshelf/legal-documents/documents/awp-2020-annexes-summary_en.pdf

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*There will be a significant focus on action in the early years of the programme, in particular on **crisis management**. A full list of possible actions can be found in Annex I of the EU4Health proposal.*

Beyond crisis preparedness and response, the EU4Health Programme will address other important long-term challenges for health systems, in particular:

- **inequalities in health status among population groups**, countries and regions, and access to affordable, preventive and curative health care of good quality;
- **burden from non-communicable diseases**, in particular cancer, mental health, rare diseases and risks from health determinants;
- uneven distribution of health care systems capacity;
- **obstacles to the wide uptake and best use of digital innovations as well their scaling up;**
- growing health burden from environmental degradation and pollution, in particular air, water and soil quality, and also from demographic changes.

Different types of *actions can be funded* in future in the different areas covered by the programme. These include but are not limited to:

- **Country-specific tailor-made support and advice** to countries, or groups of countries, with the highest needs, through twinning, expert advice and peer support, etc;
- **Training and exchange programmes** for medical and healthcare staff;
- New mechanisms for instance for procurement of goods and services necessary for the **prevention and management of health crises;**
- **Audits**, e.g. of Member States preparedness and response arrangements (such as crisis management, antimicrobial resistance, vaccination) to ensure their effectiveness;
- **Clinical trials** to speed up the development, authorisation and access to innovative, safe and effective medicines and vaccines;
- **Cross-border collaboration and partnerships, including in cross-border regions, with a view to transferring and up scaling innovative solutions, including digital, for instance through the European Reference Networks (ERNs);**
- Setting up and coordination of **Union Reference Laboratories** and **Centres of Excellence**;
- Investment in precursory projects for high-value-added initiatives and in **critical health infrastructure;**
- Deployment, operation and maintenance of **digital service infrastructure**;
- **Analytical activities** such as studies, data collection and benchmarking.

FIND MORE ABOUT | EU4HEALTH Programme

To stay up to date and know more about the EU4HEALTH Programme, visit https://ec.europa.eu/health/funding/eu4health_en

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1.3.3.2 More to know (e.g. Projects/Best Practices database/Partner Search services, NCPs, etc.)

CHAFEA provides important resources on its website dedicated to the application process (templates and guide for applicants), a repository of funded projects and fact sheets as well as a list of national focal points under: https://ec.europa.eu/chafea/health/index_en.htm

1.3.4 Interreg Europe (DG REGIO)

1.3.4.1 Programme Architecture

The **INTERREG EUROPE interregional cooperation programme** covers all EU-27 Member States, plus Norway and Switzerland, under the European Territorial Cooperation goal co-funded by the European Regional Development Fund (ERDF). It follows on from the INTERREG IVC programme. **In the period 2014-20, its main goal is to improve regional development policies through exchanges of experiences and good practice.** It also aims to capitalise on regional know-how and good practices already identified at the European level.

INTERREG EUROPE | Main features

- The programme provides co-financing for regional and local institutions, such as public administrations, regional development agencies, educational institutions and others, to create **networks and exchange experiences on different themes, thus generating good regional practice at the European level**.
- Some more experienced networks aim to use previously identified good practices in order to impact positively on their region's immediate development in the given field (capitalisation).

INTERREG EUROPE focuses on four topics[51]:

- Research, technological development and innovation
- Competitiveness of SMEs
- Low carbon economy
- Environment and resource efficiency.

With a budget of EUR 359 million from the ERDF, it finances *two types of actions*:

- **Cooperation projects** are opportunities for organisations from different countries to work together for 3 to 5 years and exchange good practices on particular policy issues.

[51] https://ec.europa.eu/regional_policy/en/policy/what/glossary/i/interreg-europe

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- **Policy learning platforms** are spaces for continuous learning which organisations dealing with regional development in Europe can access.

At the start of the 2021-2027 programming period, Europe faces an unprecedented situation of health crisis due to the COVID-19 pandemic which took hold in spring 2020. It is set to have very severe and long-lasting effects on many economic sectors (e.g. cultural and creative sector) and probably on other aspects like use of transport modes, consumer habits, way of life, etc. in Europe's regions. The challenges arising from this health crisis will be taken into account, next to the ecological transition, the digital transitions and the demographic change that remain crucial issues to be addressed by the EU over the next decades. All these challenges will have strong impacts on a wide range of policy fields at EU, national, regional and local level. Overall, public policies will undoubtedly need to support the capacity of the European economy and society to recover on the way out of the crisis.

*Regarding the period 2021-2027, the overall objective set by the Interreg Programme is to **improve the implementation of regional development policies, including Investment for jobs and growth goal programmes**, by promoting the exchange of experiences, innovative approaches and capacity building in relation to the **identification, dissemination and transfer of good practices** among regional policy actors.*

In addition, "*a better cooperation governance*[52]" was established as a single programme specific objective.

This Interreg-specific objective enables Interreg programmes to support actions to enhance the institutional capacity of public authorities and relevant stakeholders involved in managing specific territories and implementing territorial strategies. The choice for the **Interreg-specific objective** is based on the following considerations:

- It reflects the focus of the Interreg Europe programme on the exchange of experiences and capacity building among regional policy actors to improve their capacity for the design, management and implementation of their regional development policies. This focus on *capacity building* fits perfectly the definition of the Interreg-specific objective on governance.
- It is in line with the type of results that can be expected from the Interreg Europe programme, which are *increased capacities of regional policy actors* and improvements in the (implementation of) regional policy instruments.
- It does justice to the diversity of regional policy challenges across the European territory. Under the umbrella of the Interreg-specific objective, regional policy actors can work together on all policy issues of shared relevance in line with their regional needs, as long as this falls within the thematic scope of cohesion policy.
- It offers the programme a certain *flexibility* to adapt to emerging policy developments - again, within the broader thematic scope of cohesion policy.

[52] Draft European Territorial Cooperation (ETC), Art. 14 and 15

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INTERREG EUROPE | What is offering

Many regions are reviewing their European activity in the context of budget pressures. Interreg Europe 2014-2020 can help your city and/or region in the following ways:

- **Financial support** – funding is available for interregional cooperation projects, which have the potential to lead to longer term collaborations and partnerships (up to 85%)
- **Peer learning** – gain insights and experience from a range of exchange and learning opportunities with your peers across Europe
- **Expert advice and skills** – these can be solicited through policy platform personnel and your country representatives
- **Policy into practice** – make a tangible difference by translating EU policy into on the ground action
- **Bottom-up policy development** – by using the results and positive impact of your successful projects to serve as evidence for feeding into EU and national policies
- **Save time** – rather than reinventing the wheel, find out what solutions to sustainable development challenges already exist in other parts of Europe. A problem shared, is a problem solved
- **Organisational and professional development** – bring collaborative learnings back home for the benefit of you, your organisation and those you serve
- **Expand your network** – meet new like-minded partners, stakeholders and business friends across Europe
- **Build an international profile** – among your project peers and with the EU institutions
- **Make people happy!** Your citizens and communities are relying on you to make their city/region a place of economic, social and environmental progress and possibility.

During 2021-2027 programme timeline, in order to strike a balance between the need to accommodate interregional cooperation on a broad range of policy issues and the need for thematic concentration, the programme will concentrate the **largest share of the programme budget (80%) on a selection of 12 specific objectives**. The remaining 20% of the programme budget can be allocated to the other *specific objectives of cohesion policy*. The allocation is as specified below. It may be subject to modifications during the programming period according to the internal rules or procedures defined by the Monitoring Committee.

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1. **A share of 80%[14] of the programme budget is allocated to the following specific objectives.** ***(Exact list to be confirmed at the end of the programming process)***

Policy Objective 1: Smarter Europe
(i) enhancing research and innovation capacities and the uptake of advanced technologies;
(ii) reaping the benefits of digitisation for citizens, companies and governments;
(iii) enhancing growth and competitiveness of SMEs and job creation in SMEs;
(iv) developing skills for smart specialisation, industrial transition and entrepreneurship;

Policy Objective 2: Greener Europe
(i) promoting energy efficiency measures;
(ii) promoting renewable energy;
(iii) developing smart energy systems, grids and storage at local level;
(iv) promoting climate change adaptation, risk prevention and disaster resilience;
(v) promoting sustainable water management;
(vi) promoting the transition to a circular economy;
(vii) enhancing biodiversity, green infrastructure in the urban environment, and reducing pollution;

Policy Objective 3: More connected Europe
(iv) promoting sustainable multimodal urban mobility;

Policy Objective 4: More social Europe
(i) enhancing the effectiveness of labour markets and access to quality employment through developing social innovation and infrastructure;
(iv) ensuring equal access to health care and fostering resilience of health systems;
(v) enhancing the role of culture and tourism in economic development, social inclusion and social innovation;

2. **A share of 20% is allocated to the following specific objectives.**

Policy Objective 3: More connected Europe
(i) enhancing digital connectivity;
(ii) developing a sustainable, climate resilient, intelligent, secure and intermodal TEN-T;
(iii) developing sustainable, climate resilient, intelligent and intermodal national, regional and local mobility, including improved access to TEN-T and cross-border mobility;

Policy Objective 4: More social Europe
(ii) improving access to inclusive and quality services in education, training and lifelong learning through developing infrastructure, including by fostering resilience for distance and on-line education and training;
(iii) increasing the socioeconomic integration of marginalised communities, migrants and disadvantaged groups, through integrated measures including housing and social services;

Policy Objective 5: Europe closer to citizens
(i) fostering the integrated social, economic and environmental development, cultural heritage and security in urban areas;
(ii) fostering the integrated social, economic and environmental local development, cultural heritage and security, including for rural and coastal areas also through community-led local development.

Figure 25: Specific Ojectives of Cohesion Policy and new Interreg Europe

This selection underlines the continued importance of the policy objectives of Smarter Europe and Greener Europe, which represent **topics that were also at the heart of the Interreg Europe 2014-2020 programme**. At the same time this selection also reflects the emerging urgency at the time of

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programme development of addressing new fields of regional policy in light of the impact of the Covid-19 pandemic, in particular related to labour market and health care challenges under the More Social Europe objective.

1.3.4.2 Funding Instruments & Participation features

The programme 2014-2020 finances two types of action:

- **Interregional cooperation projects**: partnerships made up of relevant policy organisations from different countries in Europe work together for 3 to 5 years to exchange their experiences on a particular policy issue. Each region involved in the cooperation project produces an action plan, specifying what will be done in the region to ensure that the lessons learnt from the cooperation project are put into action. Projects are also required to monitor the progress of their action plans, to determine the impact of cooperation. Calls for project proposals are launched throughout the programming period.
- **Policy Learning Platform**: a space for continuous learning where any organisation dealing with regional development policies in Europe can find solutions and request expert support to improve the way they manage and implement their public policies in the four topics listed above.

To achieve its 2021-2027 overall objective, the Interreg Europe programme strategy consists of two complementary elements, building on the approach adopted by the Interreg Europe 2014-2020 programme.

On one hand, the programme will support **interregional cooperation projects** between regional policy actors, dedicated to exchange, capacity building and transfer of good practices and innovative approaches with the specific aim to prepare the integration of the lessons learnt from cooperation into regional policies and actions.

On the other hand, the programme will continue to facilitate **policy learning services** and capitalisation of regional policy good practices on an ongoing basis – in line with the policy learning platform approach – to enable regional level actors from across the EU to tap into relevant experiences and practices whenever they need them to strengthen their policies.

These operational elements at programme level are applicable to all the specific objectives supported by the programme.

FIND MORE ABOUT | Eligibility for participation in INTERREG EUROPE

- Adding to the above, third countries cannot take part directly in the Interreg Europe programme - countries other than the EU27, Norway, Switzerland and the United Kingdom. **Organisations from third countries can be partners in an Interreg Europe project. However, they cannot be beneficiaries of ERDF funds.**
- For more info, see at this **link**.

Interreg Europe aims at improving the implementation of regional policies, with a particular focus on the Investment for Growth and Jobs and European Territorial Cooperation programmes. **The**

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programme is primarily for organisations responsible for regional policies and organisations in charge of Structural Funds programmes. The following types of institutions are eligible for the programme

- local, regional, national authorities
- bodies governed by public law
- private non-profit organisations

*For the period 2021-2027 and as specified in the overall objective above, Interreg Europe targets **regional policy actors**.*

This target group includes national, regional and local authorities as well as other relevant bodies responsible for the definition and implementation of regional development policies. The composition of this target group is quite diverse, reflecting the diversity in institutional and geographical conditions in the Partner States.

As a **general rule** the beneficiaries of the programme are public bodies and bodies governed by public law. Moreover:

- **Private non-profit bodies** may also be beneficiaries under certain conditions (see also Section 2 of this document). Detailed provisions will be outlined in the programme manual.
- **Private companies**, especially SMEs, are an important target group in the context of several supported specific objectives and when relevant they are encouraged to participate in the activities of Interreg Europe actions and benefit from the exchange of experience, although they cannot directly receive EU funding as a beneficiary.

INTERREG EUROPE | Funding Instruments & Structure

As already mentioned above, **Interreg Europe programme has an ERDF (European Regional Development Fund) budget of EUR 359 million for the 2014-2020 period.**

ERDF is the main EU Structural and Investment Fund used to support economic development in countries and regions across Europe. Together with the European Social Fund (ESF) and the Cohesion Fund, the ERDF accounts for over one third of the EU budget. ERDF is one of the main financial instruments of the EU's cohesion policy. Its purpose is to contribute to reducing disparities between the levels of development of European regions and to reduce the backwardness of the least favoured regions. Particular attention is paid to regions which suffer from severe and permanent natural or demographic handicaps, such as the northernmost regions with very low population density as well as island, cross-border and mountain regions.

As the ERDF contributes to the Europe 2020 Strategy for smart, sustainable and inclusive growth, it has to focus on the priorities specified in this strategy. The main priorities are:

- Research and innovation;
- Information and communication technologies (ICT);
- Small and medium-sized enterprises (SMEs);
- Promotion of a low-carbon economy.

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The level of concentration required varies according to the category of regions being supported. *More developed regions* have to allocate at least 80% of their ERDF resources to at least two of these priorities and at least 20% to the low-carbon economy. *Transition regions* have to allocate at least 60% of their ERDF resources to at least two of these priorities and at least 15% to the low-carbon economy. *Less developed regions* have to allocate at least 50% of their ERDF resources to at least two of these priorities and at least 12% to the low-carbon economy.

1.3.4.3 Ongoing and forthcoming Calls for Proposals

At the time that the current guide is being developed, Interreg Europe has allocated all available funds to projects. As a result, no call is currently open or will open in the future[53]. Funding for Interreg Europe projects was allocated through calls for project proposals – periods of time during the year when applications could be submitted. Each call had an opening and closing date and outside of these dates it was not possible to apply for funding with a project proposal. Applications were submitted online through the Interreg Europe online system (iOLF). The system was available shortly before the call opened, so that applicants could register and start preparing their applications. The 'Submit application' button, however, was active only during an open call. Specific terms of reference were published for each call. They defined specific criteria for each call, for example the maximum amount of funding available, the topics opened for funding and so on.

[53] https://www.interregeurope.eu/projects/apply-for-funding/

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For the next long-term EU budget 2021-20275455, the Commission proposes to modernise Cohesion Policy, the EU's main investment policy and one of its most concrete expressions of solidarity.

Regional development investments will strongly focus on objectives 1 and 2. 65% to 85% of ERDF and Cohesion Fund resources will be allocated to these priorities, depending on Member States' relative wealth.

- **Smarter Europe**, through innovation, digitisation, economic transformation and support to small and medium-sized businesses
- a **Greener, carbon free Europe**, implementing the Paris Agreement and investing in energy transition, renewables and the fight against climate change
- a more **Connected Europe**, with strategic transport and digital networks
- a more **Social Europe**, delivering on the European Pillar of Social Rights and supporting quality employment, education, skills, *social inclusion and equal access to healthcare*
- a **Europe closer to citizens**, by supporting locally-led development strategies and sustainable urban development across the EU.

At this point, it is also critical to mention that for the **2021-2027 programming** period, Interreg will continue to support interregional cooperation among regions from all across Europe. To steer the overall process, take formal decisions on the content of the future programme and select the thematic priorities the new programming committee has been set up. The committee is made of delegates from 29 Partner States who take the decisions. An observer from the European Commission as well as the programme's managing authority and joint secretariat take part, but without any decision-making powers. External experts have been also assigned to assist towards drafting the new programme.

On June 10, 2020, the third programming committee meeting has been held online because of the COVID-19 crisis. Representatives of 30 Partner States came together to discuss in parallel with the EU-level negotiations on the budgetary and regulatory framework. On the agenda, there were the presentation and preliminary approval of version 1 of the draft cooperation programme, and the first inputs on version 2.

[!] Stay up to date at the official Interreg Europe website.

1.3.4.4 More to know (e.g. Projects/Best Practices database/Partner Search services, NCPs, etc.)

[!] FIND ASSITANCE |National Points of Contact

Interreg Europe is an interregional cooperation programme with 30 partner states – 27 EU member states, Norway, Switzerland and the United Kingdom. Each partner state has a point of contact – national/ regional representative(s) who can provide programme information in local languages and any country-specific requirements for the programme. The full list of National Points of Contact can be found here: https://www.interregeurope.eu/contact-us/national-points-of-contact/

[54] https://www.interregeurope.eu/about-us/2021-2027/
[55] https://ec.europa.eu/regional_policy/en/2021_2027/

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[!] FIND PARTNERS | Partner Search

Interreg Europe provides an online partner search facility which can be accesses through: https://www.interregeurope.eu/search/?tx_tevsearch_search%5BfilterMap%5D=partners&cHash=18d725f49fee69507958a331719b482e.

[!] BE INSPIRED |

Online Database of funded projects: Interreg Europe also provides a detailed database with information regarding all funded projects. The complete database can be accessed through https://www.interregeurope.eu/search/?tx_tevsearch_search%5BentityTypes%5D%5B0%5D=project&tx_tevsearch_search%5BfilterMap%5D=project&cHash=5d4ae2fc537c19f8e2faa889c5232906.

Projects Related to IDIH Project:

- **Ithaca - InnovaTion in Health And Care for All** (https://www.interregeurope.eu/ithaca/). Nine regions from the EU share experiences and good practices on smart health and care innovation, to improve active and healthy ageing of the population. A key aim is to refine regional policies in order to support innovative businesses, create growth and scale up the deployment of innovative health and care solutions. In the end, the result is smarter healthcare policies and stronger regional and interregional ecosystems for the benefit of European citizens.
- **Intencive - INnovation and Technology ENhancing Customer OrIented Health SerVicEs** (https://www.interregeurope.eu/intencive/) INTENCIVE project addresses the societal challenge of ageing society combined with decreasing population in rural and other remote areas. There is a dire need for new, accessible and user-friendly models, practices and tools for providing different types of high quality health services accessible to all citizens not depending on their age or place of living. Combining technology to the different phases of service processes with emphasis on the customer orientation means re-thinking and re-planning the health services. Objective of INTENCIVE project is to improve the implementation of policies and programmes in terms of health technology innovation-driven and customer-oriented health services in the partner regions and influence the ERDF Regional Operational Programs or Regional Strategies. Partners from five regions conduct interregional exchange of experiences in the specific field and introduce into their policies of innovative technologies and services in e-health sector. Basis for the exchange of experience consist of state of the art evaluation, good practice evaluation against BIKVA-model, study visits and thematic workshops. INTENCIVE has an unique bottom-up and customer-oriented approach using the BIKVA-method developed for social services giving voice more directly to the citizens using services.
- **EU_SHAFE - Europe enabling Smart Healthy Age-Friendly Environments** (https://www.interregeurope.eu/eushafe/)
  According to World Health Organization (WHO) "making cities and communities age-friendly is one of the most effective local policy approaches for responding to demographic change". However, regional initiatives still lack alignment between absolutely complementary policy areas such as health, social affairs, territorial sustainable development, employment and wellbeing. This silo approach restrains the creation, availability and large-scale adoption of age-friendly solutions across Europe. Known is also the gap between technological

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developments and end-users real needs and expectations. Therefore, policy alignment, collaborative efforts and sharing of good practices will be keystones to add better quality of life, more inclusive and sustainable health and social care systems and citizen's access to the services.

The EU_SHAFE project will improve policies and practices in 7 European regions by developing a comprehensive approach to Smart Healthy Age-Friendly Environments (SHAFE). Through a 'learning by sharing' methodology, this robust multi-disciplinary and intersectoral consortium will build a four-helix European community to exchange experiences and practices to improve multilevel policy instruments. The consortium will create a cooperative, inclusive ecosystem between public authorities, European networks and user's associations, embedding their experience and skills with research & design knowledge from academia and SMEs for the growth of community-based services and "ageing at home" around Europe.

- **HELIUM - Health Innovation Experimental Landscape through Policy Improvement** (https://www.interregeurope.eu/helium/)

  Innovation is a game-changer. And innovation in healthcare is not only a life-saver, but it improves and enhances the quality of people's lives.

  The result is a population in Europe whose proportion of citizens aged 65 and older is projected to double over the next 50 years. Paradoxically, then, this innovation has also presented us with the considerable societal challenge of today and tomorrow: how can healthcare systems be made sustainable in the face of an exponential rise in longevity, taking account of the need for care, affordability and management of scarce resources?

  It is a challenge that affects us all – from government to citizen, from industry to hospital ward. And the solution is one that requires the engagement and participation of all parties.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826092.

2 Opportunities for EU researchers and innovators under the Funding Programmes of IDIH Strategic Cooperation Countries

The project IDIH - International Digital Health Cooperation for Preventive, Integrated, Independent and Inclusive Living is a Coordination and Support Action funded by the European Union (EU) within the framework of the Horizon 2020 research and innovation programme. The purpose of IDIH project is to promote and increase international cooperation between the EU and **5 partner countries considered as *strategic* to advance innovation in digital health for active and healthy aging**, which are: Canada, China, Japan, South Korea, and USA.

As part of the IDIH project, this Guidebook here introduces, to the researchers and innovators coming from the EU, the funding opportunities for international cooperation that are currently offered in the fields of Digital Health and AHA by the programmes and policies of these 5 strategic countries.

Figure 26: Digital Health and AHA: relevant Funding Agencies and/or Programmes suitable for international cooperation in the IDIH Strategic Countries

In order to better contextualize the information, here follows an overview of the relations between the EU and these partner countries in the field of science and technology cooperation, based on the strategy of international cooperation for R&I of the EC[56].

[56] See: https://ec.europa.eu/research/iscp/index.cfm?pg=home

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826092.

CANADA | STATE OF PLAY OF EU-CANADA S&T COOPERATION

An "Agreement for Scientific and Technological Cooperation between Canada and the European Community" has been in place since 1996, and it is not limited in time. The responsibility for the S&T cooperation dialogue lies with the EU-Canada Joint Science and Technology Cooperation Committee (JSTCC), managed by the Directorate-General for Research and Innovation of the European Commission.

The last meeting of the EU-Canada Joint Science and Technology Committee took place on 18 June 2020 via video conference. It was co-chaired by Ms Maria Cristina Russo, R&I Director for International Cooperation and Mr Emmanuel Kamarianakis, Director General for Investment, Innovation and Education - Global Affairs – Government of Canada. Both parties agreed on positioning **Health, Green Deal, Climate Change, Digital Agenda, Artificial Intelligence and Quantum** at the centre of an enhanced R&I strategic cooperation between EU and Canada. Specific thematic areas for future cooperation have been identified, among which: combatting COVID-19 pandemic and research on cancer.

CHINA | STATE OF PLAY OF EU-CHINA S&T COOPERATION

The EU's approach towards China was set out in a Strategy adopted in 2016 and updated in March 2019 in a Joint Communication of the European Commission and the High Representative. The balance of challenges and opportunities presented by China has shifted over time. For the EU, China is simultaneously (in different policy areas) a cooperation partner, a negotiation partner, an economic competitor and a systemic rival. The EU pursues realistic, effective and coherent engagement with China, based on our values and interests[57]. In the framework of the EU-China High Level Innovation Cooperation Dialogue and Joint Steering Committee on Science and Technology cooperation both sides reiterated the willingness to continue to reinforce the already strong links between their respective scientific communities and innovation actors, in particular, by putting in place the principle of **reciprocity in access to respective STI funding programmes.**

On December 2019 , the Director of International Cooperation for the EU, Maria Cristina Russo, and Deputy Director General Zhao from the Chinese Ministry of Science and Technology, International Department met to discuss the way forward for the preparation of the joint EU-China roadmap for R&I cooperation. Discussion were held on how to reach a level playing field in R&I cooperation between China and the EU. Exchanges also included the importance of **climate change**, and **SDG**s in general in the bilateral cooperation, and how the Roadmap could serve as a support to the **Green Deal**.

JAPAN | STATE OF PLAY OF EU-JAPAN S&T COOPERATION

On May 2020, Mariya Gabriel, Commissioner for Innovation, Research, Culture, Education and Youth, and Naokazu Takemoto, Minister of State for Science and Technology Policy, agreed to step up EU-Japan cooperation in the context of a Japan-EU Leaders Videoconference Meeting. They signed a **Letter of Intent to strengthen cooperation in science, technology and innovation**, and to enhance the synergies between the next EU research and innovation programme Horizon Europe, and Moon-shot,

[57] See the Factsheet on EU-China relations (June 2020): https://eeas.europa.eu/sites/eeas/files/eu-china_factsheet_06_2020_0.pdf

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826092.

Japan's research and development programme. European and Japanese researchers and innovators will be able to cooperate more easily on global challenges such as **health, climate change, digital transition and ageing societies**, and to coordinate their efforts in fighting the coronavirus **pandemic**, including through open access to research data and results.

EU and Japan intend to explore the possibility of reciprocal forms of collaboration to promote STI cooperation between the regions, aiming at facilitating the participation of their STI communities in each other's respective STI programmes and initiatives.

SOUTH KOREA | STATE OF PLAY OF EU-REPUBLIC OF KOREA S&T COOPERATION

The Agreement on the Scientific and Technological Cooperation between the EU and South Korea has been in force since 2007. The ninth bilateral summit between the EU and South Korea took place on 19 October 2018 in Brussels where leaders reaffirm their strong ties and their commitment to strengthen their strategic partnership, in a Roadmap for cooperation. The summit was also the occasion to welcome the substantial progress made in the EU-South Korea cooperation in research and innovation and to agree to continue close cooperation on research and innovation in areas such as **ICT, nanotechnology, health, climate, energy and mobility**, to jointly tackle global challenges, boost competitiveness, foster sustainable growth and job creation.

On October 30, 2020 the **5th EU-Korea research and innovation day**[58] took place in Seoul, co-organised by the EU Delegation to the Republic of Korea and the National Research Foundation of Korea (NRF). Supported by the embassies of the Member States to Korea, the event introduced the Horizon 2020 and Horizon Europe programmes, EUREKA and EUROSTARS2, and relevant funding programmes of Korean funding agencies. 8 parallel thematic sessions on **ICT, Bio/Health, Nanotechnology, Energy, Transport, Climate/Environment, Researchers' Exchange (mobility), and Industrial Cooperation** were organized, highlighting the main sectors of interest for the cooperation between the EU and this country.

USA | STATE OF PLAY OF EU-USA S&T COOPERATION

Research and innovation cooperation between the EU and the US is governed by the Agreement for Scientific and Technological Cooperation, which entered into force in 1998. The **EU-US S&T cooperation agreement** was renewed for an additional five years in October 2018 and is **now valid until 14 October 2023**.

The US provides innovation-friendly framework conditions and its investment climate makes it an attractive place to commercialize innovative products, services and solutions. In addition, the US has one of the world's strongest legal systems for the protection of intellectual property rights. Most cooperation with the US is via the US National Institutes of Health (NIH) but also with the National Science Foundation (NSF) and outside government such as the Bill and Melinda Gates Foundation. **The EU as well as the NIH mutually opened the respective health research programmes to US and European scientists.** The EU and US cooperate very well in many multi-lateral initiatives. The cooperation priorities for the years to come should be in line with the existing ones.

[58] https://ec.europa.eu/info/news/5th-eu-korea-research-and-innovation-day-2020-jan-10_en

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826092.

2.1 Understanding the landscape for Research and Innovation in Canada

As stated in the CIHR Act, CIHR's mandate is to "excel, according to internationally accepted standards of scientific excellence, in the creation of new knowledge and its translation into improved health for Canadians, more effective health services and products and a strengthened Canadian health care system."

Canada's Open Data Portal- Canada provides open data sets in a variety of areas. This can be searched by Collection Type, Jurisdiction, Keyword, Subject, Resource Type, and Update Frequency.

Several enablers and barriers for the development of R&I landscape in Canada have been identified, as follows.

R&I landscape in Canada (Source: CIHR)	
Enablers	**Barriers**
▪ Excellent capacity in all aspects of digital health, including AI ▪ Demonstrated ability to work collaboratively across institutions, sectors and countries ▪ Public health and social systems are open to include digital health approaches ▪ Relatively strong and innovative industry (SMEs) in this area ▪ Federal/Provincial/Territorial government funding support ▪ Open Data policies	▪ Challenge of integrating digital health solutions into the health and social system due to lack of cost-benefit analyses ▪ Challenges consistently integrating digital health solutions across Canada ▪ Regulatory challenges, such as procurement regulations impede commercialization of digital health solutions ▪ Weak entrepreneurial culture among academics in this area ▪ Access to health data can be challenging ▪ Fourteen healthcare systems across the country (Healthcare is provincial jurisdiction)

Table 23: R&I landscape in Canada (Source: CIHR)

2.1.1 The opportunities for International Cooperation

Opportunities for international cooperation under the framework of Canadian programmes are listed below in relation with the funding agencies.

1. National Research Council Canada (NRC) **- Industrial Research Assistance Program (IRAP) |** NRC international programs connect companies with the funding, advisory, export, and innovation services they need to access new markets and global value chains.

2. National Research Council Canada (NRC) **| EUREKA international network** is an international network for market-driven industrial R&D that includes 45 economies from Europe and across the globe. Through Canada's associate membership in EUREKA, Canadian innovators have a new advantage in accessing technology, expertise, and markets in Europe and beyond. **The National**

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Research Council Canada (NRC) is the national contact point for EUREKA. EUREKA has been operating successfully since 1985 supporting market-oriented R&D and innovation projects in all technology sectors. Initially a European intergovernmental network, EUREKA has expanded beyond Europe to include Israel, Turkey, South Korea, South Africa, Chile, Argentina and Canada. To date, EUREKA has resulted in 7,100+ projects**,** 42.6+ billion euro public-private funding invested, 33,200+ participants including 14,900 SMEs.

3. Canadian Institutes of Health Research (CIHR) | CIHR Project Grant Program is designed to capture ideas with the greatest potential to advance health-related fundamental or applied knowledge, health research, health care, health systems, and/or health outcomes. It supports projects or programs of research proposed and conducted by individual researchers or groups of researchers in all areas of health. Note that international collaborators may apply, please see eligibility section for further information.

4. Canadian Institutes of Health Research (CIHR) | CIHR International and Global Health Collaborations . CIHR seek to lead, stimulate and facilitate effective Canadian international involvement in health research that benefits Canadians and the global community.

5. The Canada Research Coordinating Committee (CRCC) | CRCC plays an important role in reinvigorating Canada's support for science to meet the current and future needs of the country's scientists, scholars and students. The committee was created to improve the coordination efforts of Canada's granting agencies—the Social Sciences and Humanities Research Council of Canada, the Natural Sciences and Engineering Research Council of Canada, and the Canadian Institutes of Health Research—as well as the Canada Foundation for Innovation.

The Canada Research Coordinating Committee designed the **Government of Canada New Frontiers in Research Fund (NFRF)** following a comprehensive national consultation, which involved Canadian researchers, research administrators, stakeholders and the public. NFRF is administered by the Tri-agency Institutional Programs Secretariat, which is housed within the Social Sciences and Humanities Research Council(SSHRC), on behalf of Canada's three research granting agencies: the Canadian Institutes of Health Research, the Natural Sciences and Engineering Research Council and SSHRC.

NFRF will invest $275 million over the next 5 years beginning in fiscal 2018-19, and $65 million ongoing, to fund international, interdisciplinary, fast-breaking and high-risk research.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826092.

2.1.2 Digital Health for AHA: policy priorities and R&I opportunities at international level

As an opportunity for international cooperation, the **CIHR's Project Grant** program is designed to capture ideas with the greatest potential to advance health-related fundamental or applied knowledge, health research, health care, health systems, and/or health outcomes. It supports **projects or programs of research proposed and conducted by individual researchers or groups of researchers in all areas of health**. The best ideas may stem from new, incremental, innovative, and/or high-risk lines of inquiry or knowledge translation approaches.

Since 2010, CIHR has participated in 48 joint transnational calls and has funded over 145 multinational teams. The organization has invested over $45 million, and has committed an additional $6.7 million to the joint transnational calls in 2019 and $7 million to the nine joint transnational calls in 2020. Horizon Europe will come into effect in 2021 and will be the biggest multilateral research and innovation programme in the world, with a proposed budget allocation of almost €100 billion, an increase of almost 30% (when adjusted for inflation) from Horizon 2020.

This year marks 23 years of Canada's cooperation under the EU-Canada Science and Technology Agreement.

Canada participates in a variety of Horizon Europe programs that seek to maintain/improve the lives of older adults through digital health solutions.

In particular, the **Horizon 2020 Active Assisted Living Program (AAL)** initiative supports projects in public-private partnership in the field of information and communication technology (ICT) for active and healthy aging. AAL's goal is to deliver concrete ICT solutions for older adults to live independently**.**

CANADA & AAL | Canada is represented by CIHR Institute of Aging, CIHR Institute of Health Services and Policy Research, and AGE-WELL Networks of Centres of Excellence.

Looking at the following topics considered as strategic for AHA[59], **several programmes and initiatives** have been identified as key references in the R&I landscape of Canada and often represent opportunities for international cooperation.

PREVENTIVE CARE

- **Active Assisted Living Programme-** This programme fosters the emergence of innovative ICT-based products, services and systems for ageing well at home, in the community, and at work. Find more at: http://www.aal-europe.eu/about/

[59] Within the framework of IDIH project.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826092.

INTEGRATED CARE

- **Transitions in Care** -The goal of the CIHR Transitions in Care (TiC) initiative is to improve the health and wellness of Canadians by supporting research that transforms the health system to optimize the outcomes of individuals experiencing transitions in care.
- **Canada-EU Smart Living Environments – Transitions in Care .** In 2019, CIHR partnered with the European Commission to fund international teams tackling transitions in care challenges. The goal was to build a collaboration of stakeholders in Europe and Canada in the domain of smart living environments for ageing people that will focus on the development, integration and evaluation of eHealth innovations addressing transition in care challenges in order to improve health outcomes.

INDEPENDENT AND CONNECTED LIVING

- **AGE-WELL NCE**- AGE-WELL is dedicated to the creation of technologies and services that benefit older adults and caregivers. Its aim is to help older Canadians maintain their independence, health and quality of life through technologies and services that increase their safety and security, support their independent living, and enhance their social participation.

INCLUSIVE LIVING

- **New Brunswick Healthy Seniors Pilot Project** – by the Public Health Agency of Canada (PHAC). The Healthy Seniors Pilot Project will support a range of applied research initiatives to examine how governments, in partnership with the community and private sectors, can better support seniors in their homes, communities and care facilities.

2.1.3 Funding Programmes supporting International Cooperation in the field Digital Health for AHA

Among the funding opportunities offered by the Canadian agencies, 2 programmes may be particularly featured as opportunities for international stakeholders:

- **CIHR Project Grant**
- **New Frontiers in Research Fund** – *International Stream*

PROJECT GRANT PROGRAMME | CIHR

CIHR'S Project Grant program is designed to capture ideas with the greatest potential to advance health-related fundamental or applied knowledge, health research, health care, health systems, and/or health outcomes. It supports projects or programs of research proposed and conducted by **individual researchers or groups of researchers in all areas of health**.

CIHR invests approximately $1 billion each year to support health research. The **CIHR Project Grant** competition makes up more than half of this funding

[!] CIHR Project Grant **eligibility** rules can be found here.

INTERNATIONAL STREAM | NFRF - New Frontiers in Research Fund

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826092.

New Frontiers in Research Fund is administered by the Tri-agency Institutional Programs Secretariat, which is housed within the Social Sciences and Humanities Research Council(SSHRC), on behalf of Canada's three research granting agencies: the Canadian Institutes of Health Research, the Natural Sciences and Engineering Research Council and SSHRC.

The International stream aims to support international collaborations and **position Canada and Canadian researchers as strategic partners at the international level.** The International stream i[!] ncludes two mechanisms:

- Joint funding calls with international agencies on topics of international relevance
- A dedicated fund to support participation of Canadian researchers within international teams in projects seeking funding from major global platforms.

[!] **Eligibility** requirements may vary. See eligibility for programs here

2.1.3.1.1 More to know (e.g. Projects/Best Practices database/Partner Search services, NCPs, etc.)

[!] STAY UP TO DATE | Check frequently the following sources related to Canadian agencies and programmes to stay up to date on open or forthcoming Call for proposals:

CIHR funding opportunities	
Objectives/Impacts/Scope	Health Research
Official Sources	https://www.researchnet-recherchenet.ca/rnr16/LoginServlet?language=E
KEYWORDS	Preventive Care, Integrative Care, Independent and Connected Living, Inclusive Living
CIHR International and global health funding	
Objectives/Impacts/Scope	Health Research
Official Sources	https://cihr-irsc.gc.ca/e/27173.html
KEYWORDS	Preventive Care, Integrative Care, Independent and Connected Living, Inclusive Living
National Sciences and Engineering Research Council of Canada	
Objectives/Impacts/Scope	*Varies according to program*
Official Sources	https://www.nserc-crsng.gc.ca/Professors-Professeurs/Grants-Subs/Explore-Explorer_eng.asp
KEYWORDS	Preventive Care, Integrative Care, Independent and Connected Living, Inclusive Living
Social Sciences and Humanities Research Council of Canada	
Objectives/Impacts/Scope	*Varies according to program*
Official Sources	https://www.sshrc-crsh.gc.ca/funding-financement/search_tool-outil_de_recherche-eng.aspx
KEYWORDS	Preventive Care, Integrative Care, Independent and Connected Living, Inclusive Living
EUREKA	
Objectives/Impacts/Scope	EUREKA is an international network for market-driven industrial R&D that includes over 40 economies from the EU, Europe, Israel, South Korea, and now Canada.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826092.

Official Sources	https://nrc.canada.ca/en/support-technology-innovation/eureka
KEYWORDS	Preventive Care, Integrative Care, Independent and Connected Living, Inclusive Living
CABHI Programs	
Objectives/Impacts/Scope	Innovation driver in the aging and brain health sector
Official Sources	https://www.cabhi.com
KEYWORDS	Preventive Care, Integrative Care, Independent and Connected Living, Inclusive Living

Table 24: More to know about relevant funding programmes/initiatives in Canada

[!] BE INSPIRED | Visit the following sources to access database of funded projects:

- **CIHR funded research** - to search digital health topics by keyword: https://webapps.cihr-irsc.gc.ca/funding/Search?p_language=E&p_version=CIHR
- **AGE-WELL funded research** - AGE-WELL is Canada's technology and aging network: https://agewell-nce.ca/research/research-programs-and-projects
- **Other Canadian funded research** - to search digital health topics by keyword: https://cihr-irsc.gc.ca/e/829.html

[!] FIND PARTNERS | Partner Search Services may vary according to program. Please consult individual programs for NCP's and partner search services

[!] FIND ASSISTANCE | The **CIHR Contact Centre** manages all types of inquiries regarding CIHR's funding opportunities, competition and peer review processes, post award/grant inquiries, and technical support.

2.2 Understanding the landscape for Research and Innovation in China

The World Health Organization issued the "Global Strategy for Digital Health (2020-2024)", which formulated strategic goals and action frameworks for countries to advance the vision of digital health planning. The Internet is a natural weapon to break the restrictions of time and space, and digital health will also become one of the important runways of the digital economy in the next 20 years.

In the global digital age, **China is becoming a fertile ground for the international digital health industry**, and a digital health platform that integrates advanced technologies, such as "5G + artificial intelligence + big data", is becoming **a new engine for China's medical reform to rapidly move towards the 3.0 era**[60].

In recent years, China's digital health has developed vigorously, continuously catalysing the birth of new technologies, shaping new business formats, cultivating new ecology, and creating new value. The "**Digital Health Community**"[61] which aims at people's health and is supported by a digital platform,

[60] See Office of the Central Cyberspace Affairs Commission: http://www.cac.gov.cn/2019-09/15/c_1570079192235392.htm

[61] General Office of the State Council, PRC published issue [2016] No.47, Guiding Opinions of the General Office of the State Council on Promoting and Regulating the Application and Development of Health and Medical Big Data. Also mentioned in The Second Session of the 13th National People's Congress.

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demonstrates the core values of inclusiveness, sharing, and equality, and provides a promising solution for the digital transformation and **upgrading of China's healthcare industry Program.** The rapid development and accelerated iteration of digital technology have provided, indeed, digital support for the transformation and upgrading of the medical and health industry, and promoted the development of new infrastructure for digital health. Compared with traditional medical care, digital technology empowers medical services, public health services, drug supply, medical and health protection, health management, and other fields, **greatly improving the inclusiveness, sharing, and fairness of medical and health services.** With the popularity and convenience of smartphones and other devices, digital channels have become easily accessible; the main way for professional information. China's digital health industry includes: cloud medical and inspection platform of the whole industry chain, medical e-commerce, digital medical insurance, information service, etc.

"Internet + medical" has moved, thus, from exploration to innovation. Due to the continuous expansion of rigid demand for medical and health, the emergence of more high-quality segmented services, and the increase of users' awareness of health management, more and more "Internet + medical "Health" products have been developing rapidly at an unprecedented speed. The application of Internet technology in the medical industry has become more and more mature, gradually penetrating into all aspects of the medical field. With the rapid development of information technology today, "Internet + medical" is also creating new possibilities and new thinking often addressing problems that cannot be solved by traditional methods.

As major players, technology companies have begun to cooperate with hospitals to explore the potential of big data in the medical field.

However, while the medical industry itself is highly professional, serious **asymmetric information** often occur affecting national economy and people's livelihood. The serious asymmetric information mainly consist in the conceal of hospital medical service quality, the unconscionable and non-transparent drug consumption and medical dispute. For example, for the answer of some questions like, what disease the patient had, how to treat and where to get the best treatment, doctors always know more than the patient. The patient would never know how the drug actually cost but have to pay for many times of the originally cost. Many of these asymmetric **stimulate the distrust and clash between the patient and the doctor.** It is an extremely special and complex industry. Correspondingly, many problems faced by digital medical care are far more difficult than most fields, and many of them are long-term problems that need to be solved gradually. It can be said that there is a long way to go. But from a positive perspective, this also means that digital healthcare has huge room for development.

The current medical and health policies are clearer than in the past, and the status of informatization has increased significantly. In the future, it is expected to be deeply involved in medical operations.

Medical health is related to people's livelihood and well-being, and digital technology is reshaping the future of global medical health. Digitization, networking, and intelligence are driving the traditional medical and health industry to accelerate to a new stage of digital health, and global medical health is undergoing a digital revolution**. Digital health is not only related to people's health, but also related to economic development, and has even become an important part of the country's comprehensive competitiveness in the digital economy era.** China has the world's largest application scenario for

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digital health. **Digital health will become the broadest track in the industrial Internet era, with a market space of trillions.** China must seize the major historical opportunities of digital health development, increase policy supply, industrial incentives, and technological innovation to further enhance the people's sense of security, gain, and happiness in the medical and health field, and contribute to the rapid development of China's new economy.

2.2.1 The opportunities for International Cooperation

At the beginning of 2020, the spread of COVID 19 worldwide not only poses a huge threat to human life and health, and severely endangers global public health security, but also has a huge negative impact on the global economy, finance, and politics, and is important to the stability of the global medical supply chain.

"China upholds the concept of a community with a shared future for mankind and is willing to provide assistance to other countries within its capacity to contribute to world economic stability."

President Xi Jinping, G20 (2020)

Maintaining the security and stability of the global medical supply chain will help boost the confidence of the international community in responding to the epidemic and stabilizing the world economy. **Expanding two-way opening up and deepening pragmatic cooperation between China and the EU will better achieve mutual benefit and win-win results between China and Europe**[62]**.** China and the EU will jointly safeguard multilateralism and free trade and forge a more influential China-EU comprehensive strategic partnership, which will effectively promote the recovery of the world economy and safeguard the world, contribute to peace, stability, development and prosperity.

China and the EU are actively carrying out cooperation in scientific and technological projects involving energy, biotechnology, agriculture, health and medicine, natural resources, environment and many other fields[63].

Strengthening a continuous development of China-EU relations is an important part of China's foreign policy. China is committed to building a long-term and stable comprehensive partnership between China and Europe. **China's policy goals toward the EU are**[64]:

- mutual respect and mutual trust, seeking common ground while reserving differences, promoting the healthy and stable development of political relations, and jointly safeguarding world peace and stability;
- mutual benefit, equal consultation, deepening economic and trade cooperation, and promoting common development;
- mutual learning and mutual prosperity, learning from each other, and expanding humanities Exchange to promote the harmony and progress of Eastern and Western cultures.

[62] See the China's policy paper on EU at: http://www.chinamission.be/eng/zywj/zywd/t1227623.htm
[63] See *EU-China 2020 Strategic Agenda for Cooperation*.
[64] See *EU-China 2020 Strategic Agenda for Cooperation*.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826092.

2.2.2 Digital Health for AHA: policy priorities and R&I opportunities at international level

The global population is entering an aging stage. The number and proportion of the elderly population in almost every country in the world are increasing. The aging of the population may become one of the most important social trends in the 21st century. Almost all social fields are affected by it, including labour and financial markets, demand for goods and services, such as housing, transports, social security, family structure, generations' relationship. The elderly are increasingly seen as contributors to development, and their ability to take action to improve the conditions of themselves and their communities should be incorporated into policies and programs at all levels. In the coming decades, many countries will face financial and political pressures related to public health care systems, pensions and social security in order to adapt to the growing elderly population.

Among the current Chinese policies around Digital health for Active and Healthy Ageing, inclusive living is more supported and developed.

China has implemented an old-age security system, and a relatively sound medical and social security system can provide better inclusive living support. However, while Healthy China Action Promotion Committee[65] with the Healthy China Action (2019-2030) envisage support for healthy aging in preventive care, **preventive care is still need to be improved and international cooperation is necessary.**

According to Promoting active ageing in China from the Oxford Institute of Population Ageing, AAI (Active Aging Index) is more suited to the needs, priorities and datasets of the EU countries since it was first developed with the EU countries. Thus, **AAI application to the Chinese scenario need to be improved and this program need the cooperation with EU stakeholders.**

2.2.3 Funding Programmes supporting International Cooperation in the field Digital Health for AHA

At the 3rd EU-China Innovation Cooperation Dialogue organised in the margins of the 19th EU-China Summit (2017) and co-chaired by Carlos Moedas, Commissioner for Research, Science and Innovation, and Wan Gang, China's Minister of Science and Technology, the European Union and China have agreed to boost their cooperation with a package of flagship initiatives targeting the areas of *food, agriculture and biotechnologies, environment and sustainable urbanisation, surface transport, safer and greener aviation, and biotechnologies for environment and human health*. These initiatives gave birth to topics for cooperation with China under Horizon 2020 and will represent the base for any further initiative to be undertaken under the next framework programme for research and innovation "Horizon Europe".

[65] See https://www.chinanews.com/jk/2020/09-17/9293677.shtml

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826092.

[!] CHECK THIS OUT | DRAGON-STARPLUS

DRAGON-STARPLUS follows its predecessor (DRAGON-STAR), in its important mandate to provide support services to European and Chinese researchers and policy makers, and to offer a flexible platform to facilitate policy discussions between European and Chinese stakeholders. The project – ended in 2019 - has received funding under European Commission's Horizon 2020 Research and Innovation Programme, under Grant Agreement No645775.

Dragon-Star has been constantly investigating and publishing information regarding the opportunities for European researchers to be involved in Chinese programs for Research and Innovation, collecting info in an Online Programmes Database.

Digital transformation in health and care, trusted digital solutions and cybersecurity in health and care are policy priorities that are confirmed in China for the next future, and represent common challenges for Europe and China, for which a urgent need of cooperation exists.

Currently, looking at Digital Health and AHA as grounds for international cooperation, the **China-Belgium Science and Technology Park (CBTC) - a Sino-European platform for innovation and cooperation in the biotechnology industry** – represent an attractive opportunity for EU stakeholders willing to undertake cooperation initiatives in these fields.

CBTC | China-Belgium Science and Technology Centre

As a national-level overseas economic and trade cooperation zone, the establishment of CBTC reflects the two global economic engines of China and Europe. In the context of the "One Belt One Road" grand strategy[66], **it focuses on the advancement of technological frontiers and joint efforts to explore new industrial spaces and patterns of pragmatic cooperation**. CBTC is committed to building a **two-way green channel for China-Europe high-tech industries** with multiple elements of technology, capital, and markets, for technology transfer, strategic investment, industry cooperation and market access for both parties, providing a cooperation platform and support.

CBTC | Main features

CBTC is located in Belgium and it is the first comprehensive science and technology park invested by China in Europe. The CBTC will play an important role in the establishment of cooperation and innovation. The CBTC focuses on supporting companies from the following sectors:

- Life Sciences
- Information Communication
- Smart Manufacturing

Services offered:

- Landing services
- Business services

Spaces offered:

- Start-up

[66] "One Belt One Road", OBOR in short, was originally announced by XI Jingping during official visits to Indonesia and Kazakhstan in 2013 and can be referred as *the politics and government of China.*

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826092.

- Medium Size Enterprises
- Global Headquarters
- Scientific Parks

*The CBTC is a **business ecosystem welcoming both Belgian and Chinese high-tech companies**, creating an environment where cooperation in research and innovation, strategic investment and industrial cooperation between China and Europe becomes reality.*

Facing enterprises of different types and development scales, the park has different spatial configurations that can be customized according to the requirements of the enterprises.

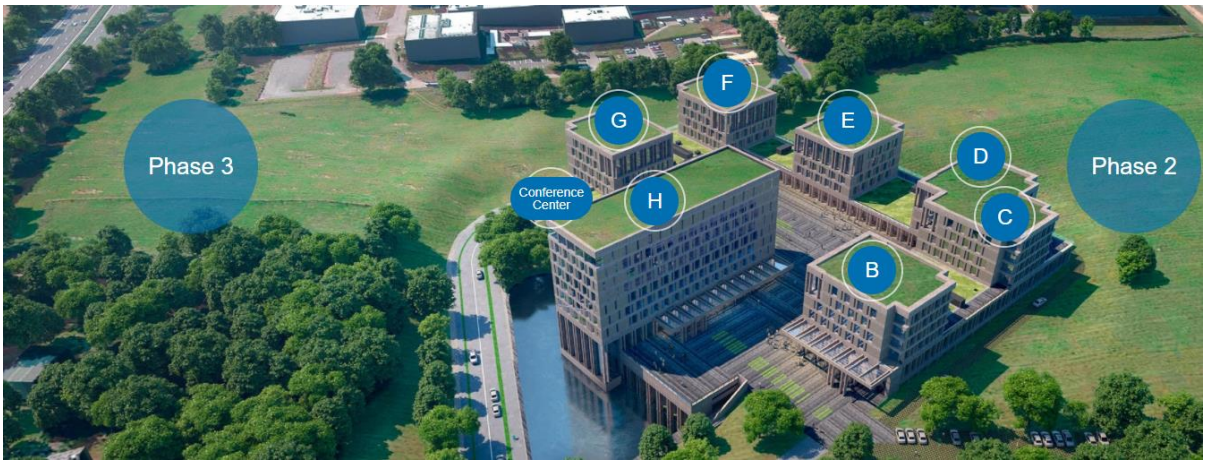

Figure 27: The Smart Valley of CBTC, Leuven, Belgium (Source: http://www.cbtc.eu/)

A **well-equipped public experiment platform** will also be set up to provide biological enterprises with shared R&D, experiment and production sites to achieve "High efficiency, low cost, fast service" goal. The platform can cover different development stages from *foreign investment approval, enterprise establishment, operation, technology achievement patent application, technology transformation and incubation, and financing*, as well as the different needs of large, medium and small enterprises.

CBTC cooperates with KPMG, Antlaw International Law Firm [67] and other multinational service agencies[68] to provide other general services such as *company registration, work visa and residence application, financial and legal affairs, and talent recruitment for enterprises* in the park.

CBTC will also rely on industrial service networks such as Leuven University, Science and Technology Park, and industry associations to actively promote enterprises and universities to carry out the transformation of scientific and technological achievements and technical cooperation with local resources, and to integrate the innovation environment of “production, study and research” of both parties. In the field of life sciences, CBTC and the Belgian life science industry cluster BioWin and other industry associations, and industry service organizations have established long-term, institutionalized close cooperation.

[67] See also: http://www.mofcom.gov.cn/article/i/jshz/zn/201807/20180702764036.shtml
[68] See http://www.cbtc.eu/companies

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[!] Focus on | **BioWin**

Just take BioWin as an example!

Through it, CBTC can establish links with the research resources of 5 universities in Belgium, **more than 400 research units, 164 innovative companies and more than 1,100 researchers**. This "China-Europe Collaborative Innovation Network" has covered the interconnection and cooperation of key industries such as local biopharmaceuticals, medical devices, therapeutic vaccines, digital health, etc., and can provide comprehensive support and services for companies' R&D innovation, skill development and business expansion.

The all-round support and convenience provided by CBTC for enterprises avoids the difficulties and risks of "working alone" in overseas markets. For the potential of the market and profit CBTC framework will bring, and its great stimulation for research projects incubation, the integration type of production and research may interest EU stakeholders and have great developing potential.

CBTC - China-Belgium Science and Technology Centre	
Objectives/Impacts/Scope	Through a state-level overseas economic and trade cooperation zone, by focusing on the frontiers of science and technology, interoperability and common progress, **CBTC fosters EU-China relations to explore new industrial spaces and patterns of pragmatic cooperation.**
Official Sources	Ministry of Commerce of the People's Republic of China: http://www.mofcom.gov.cn/ http://www.cbtc.eu/
KEYWORDS	Life science, information communication, intelligent manufacturing

Table 25: CBTC - China-Belgium Science and Technology Centre (main features)

CBTC also guides European companies to cooperate in China by organizing overseas innovation and entrepreneurship competitions and organizing European companies in China. CBTC goal is to become a "bridgehead" for Chinese innovative companies to enter Europe and **a "terminal" for European companies to enter the Chinese market,** and actively contribute to the construction of the "Belt and Road" China-EU cooperative innovation community.

- The **"Nanjing Overseas Collaborative Innovation Centre"** established by CBTC, for example, is expected to become ***a new window for Europe*** to look at Nanjing's technological innovation and development, and promote seamless docking and mutually beneficial cooperation between universities and institutes, industry-leading enterprises, international capital, and innovation carriers in the two places.

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2.3 Understanding the landscape for Research and Innovation in Japan

Japan | OECD statistics[69]

- is the 3rd largest in the world in terms of R&D expenditure (¥17,900,000,000,000 in 2018) and the number of the researchers;
- the 4th in terms of the number of research papers;
- the 1° in terms of the number of the family-patent applications.

About 80% of the research expenses is spent by private companies, 11.5% by academics, 7.8% by governmental agencies, and 1.3% by non-profit organizations.

About health care field, Japan has the universal coverage of health insurance, and long-term-care insurance for the elderlies. Both insurances are being funded (shared partially by the employers) by the government and controlled with fee schedule set by the national government, and so both **medical care and long-term care are highly regulated by the government.** Because of this situation, regarding the R&I in healthcare and senior care, all the players including private sectors tend to focus their R&D effort along on policy trend, that is, in line with government strategies and policies.

The Prime Minister's Office has just published the policy paper: **Health Care Strategy for 2020 - 2024 on March27, 2020.** According to the paper, the goal to be accomplished by 2024 is to extend the life-expectancy for both male- and female-Japanese by 3years (and these three years must be active and healthy ones). The paper states that, in order to accomplish this goal, the world most advanced medical care must be provided to all the Japanese.

However, the reality is that medical **gap between urban and rural area** is rapidly widening as the elderly population increases and the young population declines especially rural areas very quickly.

*What is needed is **the technologies and innovations** to fill this gap and protect the universal coverage, that has greatly contributed to extending the lifespan of Japanese people.*

To make it happen, Japanese government will:

- establish the Promotion Headquarter on Healthcare in the cabinet consisting of the Prime Minister, the Minister in charge and related Ministers set the comprehensive strategy for R&I in the medical field and at the same time unify and manage the related budgets of each ministry;
- make AMED - Japan Agency for Medical Research and Development the central managing authority of all the R&D from the basic research to commercialization.

[69] Data available at https://stats.oecd.org/ (2017).

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Japan | 2020-2024 Health Priority Research Topics[70]:

- drug discovery
- medical devise and healthcare
- regeneration/cell medicine, and gene therapy
- genome data infrastructure
- disease basic research
- seeds-development and research infrastructure.

Notes: R&D of digital technologies could be included in all the topics.

In addition to the above-mentioned R&I topics aiming commercialization in short term, more ambitious long-term research topics that seem to be difficult but very impactful when it's accomplished are set as **"moon shot" projects**. The most focused are aimed:

- to develop the technologies that can guarantee/protect universal coverage to all Japanese;
- to develop the technologies that can ***control our body to improve our quality of life***.

It is said that medical-care and long-term elderly care fields are the most behind area in digitalization in Japan that, in general, is highly digitalized in the world. Considering that the labour shortage will become serious due to the rapid ageing and declining birth-rate, it's necessary and urgent to promote digitalization in these fields.

Some of the biggest barriers are existing in regulation. Since Japanese health system is highly socialized, deregulation is critically necessary to make R&I get accelerated. **Along with the deregulation, bureaucratic non-cooperative and/or non-risk-taking attitude with lack of awareness of new technologies of the governmental officers must be improved.**

The **Health Care Strategy for 2020 - 2024** above mentioned pointed out the following problems as major barriers for R&I in digitalization of healthcare that may represent further trends for development in this field.

- In order to utilize various novel **healthcare services from private sector** effectively, these services **need to be incorporated into public insurance**. However, the foundation for it is not well prepared.
- In the global trend toward open innovation, life related venture companies such as drug discovery are becoming the main players in R&I, but in Japan, ecosystem to support them from funding to "exit" is not enough. Besides, if new seeds are found/created, there is not enough **manufacturing-infrastructure** to commercialize it.
- New players with **digital technologies** including AI and bigdata-analysis are entering the healthcare market. However, without **collaboration with the old players**, new players could not be shared with knowledge and experiences.

[70] These should aim to commercialization in short term.

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Considering this scenario, however, there has started a movement positively to accelerate R&I in medical care and long-term care in the central government. The Ministry of Health, Labour and Welfare organized "**Medical Venture Promotion Council**" in house in 2017 and, based on the advice of it, the Ministry started the comprehensive **start-up support Program called** MEDISO (Medical Innovation Support Office). The Ministry of Economy, Trade and Industries also started the similar program focused more on digital health, called **InnoHub** (Healthcare Innovation Hub) in 2019. Both programs are aiming to support entrepreneurs and start-ups by providing "one stop for all" (governmental) services so that innovators would not get lost in complex and confusing government-organization and offices.

2.3.1 The opportunities for International Cooperation

The importance of EU-Japan cooperation and collaboration especially in excellence in science & technology, in order to figure out the creative solution for the future, has been recognized and confirmed. Back in 2011, the Agreement on cooperation in Science and Technology (S&T) between the European Community and the Government of Japan entered into force. Based on this agreements the big-sized projects such as EUJO-LIMMS (2011-2016) and JEUPISTE (2013-2016) have been accomplished.

*Most recently, on May26, 2020, EU and Japan signed the **Letter of Intent** to strengthen cooperation in science, technology and innovation, and to enhance the synergies between the next EU research and innovation programs "Horizon Europe", and Japan's "**Moon-shot** by JST.*

However, international cooperation of Japan in Healthcare field has been considered mostly in the context of supporting the Asian (developing) countries in healthcare with Japanese know-how and experience of universal coverage and also with supporting fund from Japan. Similar support for African (developing) countries has been also considered and done. Basically, the situation is the same even today.

JAICA – Japan International Cooperation Agency is a reference in this field. The International Medical Task Force is also to be mentioned as part of the initiatives of the government in the field of Heath at international level.

The expected outcome set by the Japan's 2020-2024 strategy paper is extending "active and healthy" life expectancy by three years. In order to make it happen, along with advanced medical services, the R&I of digital solutions such as digital therapeutics, telehealth, and outcome-management based on the data-analytics including real world data/evidence has been required.

Trend of open innovation such as worldwide simultaneous development of innovative pharmaceuticals requires the skilled and experienced professionals who can positively join and contribute the international clinical research and clinical studies.

International cooperation is extremely important for Japan to secure and train these professional human resources. In order to make this R&I successfully, most urgent needs is to secure human resources for advanced R&I and for new business creation. Especially highly-skilled personnel such as

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bioinformaticians may have to be searched overseas. At the same time, entrepreneurship-training may need experienced human from foreign groups.

The goal of "Moon-shot" is to develop the **technologies to control and support human body freely**. This requires wide-range interdisciplinary R&D such as *Robotics, AI, precision mechanical engineering, neuroscience, and medical science*.

As part of the **Letter of Intent** signed on May 2020, Japan and the EU has set the conditions to enhance international cooperation in the field of Science and Technology. As stated in the Letter, the European Commission proposal on 'Horizon Europe - the next European Union Framework Programme for Research and Innovation - includes a pillar on global challenges and cross-cutting missions, while the Government of Japan decided three target areas and six goals for the 'Moon-shot Research and Development Program' aiming at tackling social, environment and economic challenges, which is coordinated by CAO, and also conducted by the Ministry of Education, Culture, Sports, Science and Technology (MEXT), the Ministry of Economy, Trade and Industry (METI), and the Ministry of Agriculture, Forestry and Fisheries (MAFF).

Therefore, Japan and the EU intend to work together to further intensify their cooperation by exploring synergies between the two Programmes with the aim of addressing those challenges and reaching the ambitious goals that both countries commonly wish to achieve.

For this, Japan and the EU intend to explore appropriate modalities for enhanced STI cooperation such as possible ***expansion of co-funding mechanisms, joint calls, coordinated calls and twinning, where possible.***

2.3.2 Digital Health for AHA: policy priorities and R&I opportunities at international level

Japanese government, as the collaborative project of multiple ministries, has been leading a Data-Health Project - Data Health Reform Promotion Head Quarter (MHLW) - that creates the fundamental base for all R&I to solve the issues and problems of its rapid ageing. Various national EHR including reimbursement data, health examination data, and long-term care insurance data could be connected and available for R&I from 2020 on step by step. Prescription data and other patient data are planned to be available for the patients review. For example, the efficiency and effectiveness of annual health check-up (almost all Japanese have comprehensive check-ups every year from their childhood through), vaccination, and other preventive care could be evaluated and planned better. The data could be utilized also for the precise outcome research by cross-checking the data across medical institutions such as hospitals and clinics, rehab-centres, and nursing-care facilities.

If integrated, individual's data (both medical-care and long-term-care data) could be connected and created to be carried portably, realizing indeed, a ***patient-centred integrated care****. The data will also be planned to be available for R&I and new business creation in private business sectors and, of course, for international cooperation and collaboration.*

The major challenges to overcome related to Data-Health Project are, for example, the cost of implementation, and **security issues**, not only technology issues but also how to get trusted by patients

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and medical professionals. **The solutions are to be searched not only nationally but also internationally.**

Japan in H2020 | Funded projects related to Digital Health and AHA

- Japan took an active part of "**My-AHA** (my active healthy ageing)" project under H2020 as one of 10 international consortium partners. Researchers from Tohoku University and corporation JINS actively joined the project aiming to reduce flail by improving physical activity, cognitive function, psychological state, nutrition and sleep. The Smart Ageing Research Center of Tohoku University is taking the lead in R&I in ageing-related researches in Japan for H2020.
- From 2020, another project "**e-ViTA** (EU-Japan Virtual Coach For Smart Ageing)"[71] has started with the players of H2020 (Universitat Siegen is the representative partner of EU). The Smart Ageing Research Center of Tohoku University will take the lead in Japan again and AIST (the National Institute of Industrial Science and Technology) and other groups will join. This project aims to provide smart living environment to extend the independent life of the elderlies.

2.3.3 Funding Programmes supporting International Cooperation in the field Digital Health for AHA

Since Japan has comparatively highly regulated and more socialized healthcare and long-term care system with rigid price control, all the players in this field tend to focus their R&D effort along on policy trend, that is, in line with government strategies and policies. This situation creates the reliance on public funds even among the private sectors in Japan.

Japanese Funding Agencies in this field are mainly:

JSPS - Japan Society for the promotion of Science: it provides grant to researchers for their own-picked research topics free from the national strategies.

JST - Japan Science and Technology Agency : It is promoting fundamentally basic research focused on life science, and NEDO (New Energy and Technology Development Organization) is focusing on the industrial engineering research. Besides these, each Ministry has its own research fund.

AMED has been working with these agencies mostly about the research result that might be applicable to the medical/healthcare field:

AMED - Japan Agency for Medical research and Development: it is the fund allocation agency to promote R&I in medical field, based on the strategy set by the government, from basics stages through practical use by utilizing the seeds created

[71] See the press-release: https://www.tohoku.ac.jp/japanese/2020/10/press20201020-01-e-vitahorizon.html

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by the all Japan grant-in-aid researches. AMED has a comparatively large fund that integrates the budget of each Ministry.

[!] PLEASE NOTE | Current funding opportunities

The distribution of all the public R&I fund is principally done by open-call and review. Since the budget should be passed the parliament every year, the open call must wait for the budget passing every year and most of all the research publicly funded should be completed within specific fiscal year. Because of this political procedure, the public offering of funds from the next year (2021) onward is still not officially defined.

- Japanese fiscal year starts in April and finish in March. If there's no major social or political issue, the **budget for 2021 will be set from November2020 to January 2021, and then recruit/application for research grant for 2021 will start after that.**

Japanese public fund is principally provided for the domestic research groups the same as in most other countries including EU.

Foreign researcher and/or research groups could be invited depending on the purpose and nature of the research.

As above mentioned, since the budget has to go through the Diet, the opening of the application could be delayed and/or the open recruitment period sometimes could be very short.

[!] TIP | It's recommended for foreign groups to **pre-identify** Japanese collaborators and/or co-operators as strategic partners.

2.4 Understanding the landscape for Research and Innovation in South Korea

The state of research and innovation in South Korea has recently been propelled by the announcement of the **Korean New Deal in mid-July, 2020**. Its primary agenda as a national development strategy is to support the nation's recovery from the current pandemic crisis and further combat the challenges of growth, which has been slowing down since the 1990s, and widening levels of polarization.

*Under the Digital New Deal, **Smart Healthcare** is one of the 10 key projects where Korea's digital capacity, based on its competitive information and communication technology (ICT), is aimed to be strengthened through building large-scale ICT infrastructure including a 'Data Dam' or a large collection of data to support big data development.*

Such technological enhancement will foster the post pandemic medical industry, increasing the accessibility to digital healthcare for rural residents and vulnerable patients. The Korean government is dedicating 0.6 trillion Korean Won (KWN), roughly equivalent to 500 million USD, to building smart medical and care infrastructures from year 2020 - 2025, resulting in 5,000 jobs created. The establishment of **digitized or "untact" infrastructure** will protect the country from unexpected shocks, including infectious diseases such as the novel coronavirus, by ensuring a stable provision of medical services and a safe working environment for medical staff. By 2022, 100billion KWN will be invested

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from the treasury to build 9 **smart hospital models**, 1,000 specialized respiratory clinics, and an environment for Artificial Intelligence (AI) medical diagnosis for 8 diseases. These numbers will increase by 2025 to 18 smart hospital models and diagnosis of 20 diseases using AI, as additionally 100billion KWN will be invested.

Furthermore, to provide convenience to the public, the Ministry of Health and Welfare (MOHW) will work to institutionalize 'untact' or digitized medical treatments based on full discussions with stakeholders including the medical sector. Measures will be prepared to address concerns over patient safety, accountability for medical mishaps and the overconcentration of patients at tertiary hospitals. The government will continue to expand pilot projects extending health insurance coverage on remote medical treatment by utilizing ICT[72].

*The Korean government established a National Strategy for AI on December 17th, 2019[73]. With the vision of '**Toward AI World Leader beyond IT'**, Korea aims to achieve digital competitiveness, create a huge economic effect of AI, and improve quality of life for people by 2030.*

The strategy consists of 100 government-wide action tasks under nine strategies in three main areas of AI (*AI ecosystem, AI utilization, People-centred*). In particular, its ambition of creating an innovative AI ecosystem includes the promotion of convergence of AI and the region's flagship industries, such as automobiles, energy and *healthcare* ('Gwangju AI Cluster', 2020-2024, total project cost of 393.9 billion KRW). In this context, with the intent of expanding the investment and funding for promising AI start-ups, the Strategy supports AI innovators, start-ups in the innovative growth fields such as DNA (Data, Network, AI) and three major new industries (system semiconductors, bio-health and future vehicles) by establishing a '**Future Technology Development Fund**' (2020).

R&D spending | Over the past 20 years, **South Korean R&D spending as a share of GDP has doubled to exceed 4.25% in 2016**[74]. R&D in South Korea is almost entirely performed and funded by the **business sector** (more than 75%). Nearly two-thirds of all R&D is directly targeted at developing specific new or improved applications, whereas basic research represents about 20% of total R&D spending.

Patents | Data on PCT patent applications based on OECD classification notably show that South **Korea specialises more than EU28 on ICT and nanotechnology** related patents. South Korea's R&D investment has placed the country at the frontier of cutting-edge technologies. For technologies related to the Internet of Things, big data, quantum computing and telecommunications, South Korea accounts for 14.1% of the patent families filed at the world's largest patent offices in 2010-12 (up from 4.8% in 2005-07).

Though improving the digital health ecosystem is on the agenda for many parties involved, sustained commitment and implementing digital health tools have been a challenge. **The cost of creating new**

[72] See at: http://english.moef.go.kr/pc/selectTbPressCenterDtl.do?boardCd=N0001&seq=4948
[73] See: "Toward AI World Leader, beyond IT". National Strategy for Artificial Intelligence, Ministry of Science and ICT Artificial Intelligence Policy Division, December 2019.
[74] OECD Science, Technology and Industry Scoreboard 2018.

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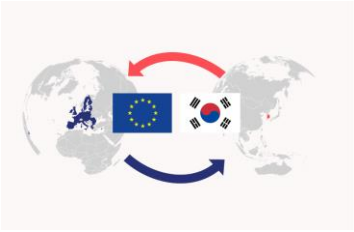
markets and stimulating private demand calls for mobilizing large scale private investment, as well as regulatory improvements.

Human resources is another area of concern, as a smooth transition between occupations and **nurturing digital talent for innovation is a must,** so the job training system will have to be restructured to become future-oriented.

In order for tangible changes to be experienced by the people, **collaborations between the public and private sectors are essential** to design national policies on data, to promote the integrated management, convergence, and utilization of the integration of data, network, and AI (DNA) for real-time monitoring of patients or safer medical treatment or diagnosis. The government can be the active and positive player by expanding pilot projects without excessive regulations through the regulatory sandbox program and health insurance coverage.[75]

2.4.1 The opportunities for International Cooperation

Being one of the only four Asian strategic partners to the European Union (EU), South Korea has been forging strong relations with the Member States of the EU especially since 2010, covering political, trade and security, and economic fields and more, despite the geographic distance and wide cultural differences.



Free Trade Agreement: The bilateral Free Trade Agreement (FTA) (in force since 2015) aims at removing barriers to bilateral trade, thereby creating an expanded and secure market for goods and services and a stable and predictable environment for investment. It is the most ambitious trade deal ever implemented by the EU and a success story deal for both the EU and the RoK.

Korea Innovation Centre Europe: KIC Europe is to build a global innovation ecosystem across Korea and the EU. By leading the global cooperation in innovation – Industry, Public, Alliance, we aim to facilitate and provide a bridge for Korean SMEs and Start-ups and European partners and institutes."[76]

Partnership Instrument: Since 2014, a number of PI projects in Korea have emerged as a direct result of the collaboration between the EU Delegation to the Republic of Korea and EU countries with Korean public authorities, civil society organisations, business promotion agencies, academia and more.[77]

[75] See: http://www.koreaherald.com/view.php?ud=20190110000327

[76] See: https://eeas.europa.eu/delegations/south-korea/8789/republic-korea-and-eu_en; https://ec.europa.eu/info/news/5th-eu-korea-research-and-innovation-day-2020-jan-10_en

[77] To know more about the ***State of Play of the Partnership Instrument 2014-2019:*** https://www.docdroid.net/9SK55us/pi-state-of-play-2014-2019-april-update-pptx

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Global Digital Health Partnership: South Korea joined the Global Digital Health Partnership alongside 30 other countries, including the European Union members Austria, Italy, Sweden, and the Netherlands, when the organization was established in 2018 to **facilitate global digital health collaboration and cooperation**. Being one of the world's largest government-to-government global health Information Technology (IT) partnership, the GDHP strives to identify the best international practices for the use of digital health data in order to advance digitized healthcare, provide opportunities for networking and knowledge transferring, and facilitate horizon scanning to more accurately predict emerging trends or threats like COVID-19. The current GDHP work plan focuses on five work streams: *cyber security, interoperability, evidence and evaluation, policy environments, and clinical and consumer engagement*. In overall, South Korea's advanced eSkills and prevention policies based on digital solutions can be positively contributed to the cooperation in the partnership.

Horizon 2020: Up to October 2018, under Horizon 2020, there are 42 South Korean participations in collaborative actions, 20 participations in Marie Skłodowska-Curie Actions (MSCA) and 1 participation in a European Research Council (ERC) grant, with ICT and energy as the most active areas of cooperation. The success rate of South Korean applicants is 24.6% (as compared to 15.8% overall).

Horizon 2020 participation so far is mainly in the areas of ICT, health, energy, climate action, and satellite navigation.

[!] PLEASE NOTE | Korean participants were not automatically eligible for funding through Horizon 2020. **Korean participants have themselves to determine the sources of funding and find the resources for their part of the project.** These may be own funds, as well as funds received from Korean ministries, foundations and other organisations that fund research and innovation activities in Korea. Contributions can also be made in kind.

- To support Korean participants, the Korean government, Ministry of Science and ICT (MSIT) and Ministry of Trade, Industry and Energy (MOTIE), regularly launched public calls for proposals to co-fund Koreans in Horizon 2020 projects selected for European Union funding, covering all thematic areas.

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2.4.2 Digital Health for AHA: policy priorities and R&I opportunities at international level[78]

Korea's high adoption of Electronic Medical Records (EMRs) in its health care system well equipped with innovative digital health technologies and telemedicine services foster great opportunities for international corporations across the European Union. Moreover, 28% of the population amongst the Organization for Economic Cooperation and Development (OECD) member states are expected to be elderly by 2060, including 4.76% of the elderly being above age 80 (OECD, Historical population data and projections, 1950-2060).

South Korea especially is one of the fastest aging societies, reaching super aging society in only 26 years.

This is alarming considering that France will need 154 years, Japan 36 years, and the United States 94 years to become super aging societies. **With such phenomena, Korea can serve as the leader in international collaborations for preparing for an aging society.**

Though every country has different regulations and digital capabilities, as experienced through the novel coronavirus, health issues are all the more global than ever and leveraging innovative health technologies through active co-operations and discussions are greatly perceived as a need[79].

In its efforts towards a Happy Society for All, the Ministry of Health and Welfare pursues a life-course approach to the healthy life of Korean citizens. In particular, the action of the Ministry is focused on four main goals: (i) Social Security System, (ii) Individualized Care, (iii) Challenges & Tasks Ahead, (iv) Global Cooperation.

In the framework of Individualized Care, the Ministry has included the **Services for Senior Citizens**, while, as part of the Challenges & Tasks Ahead, **a strategy to Overcoming the Demographic Crisis** is also included, besides the measures for Health Promotion. In this regard, since 2006, the Ministry has been introducing three five-year plans to address the demographic crisis. In 2017, addressing demographic challenges was chosen as one of the top policy priorities under President Moon Jae-in's administration. Moreover, in response to chronic diseases that come with a rapidly aging population, the Ministry is committed to promoting preventative health measures. **Diverse health promotion programs at local and municipal public health centres have been launched, within which health promotion services using ICT technology, such as mobile chronic disease care, are also provided.** In 2017, the Ministry of Health and Welfare spent 451.6 billion KRW in digital healthcare. The Ministry of Health and Welfare's major R&D budget is distributed between the following five Agencies:

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[78] For references: https://eeas.europa.eu/delegations/south-korea/8789/republic-korea-and-eu_en; https://www.kiat.or.kr/site/eng/activities/tCooperation.jsp; https://www.eurostars-eureka.eu/countries/south-korea; https://www.nid.or.kr/main/main.aspx; https://www.nmc.or.kr/nmc_eng_new/sub02_3.html; http://www.cdc.go.kr/cdc_eng/; https://www.etri.re.kr/engcon/sub1/sub1_07.etri; https://www.nrf.re.kr/eng/index.

[79] Many Korean Small and Medium-sized Enterprises (SMEs) globally supply Personal Projection Equipment (PPE), Coronavirus detection kits, pandemic emergency alert systems and so on already. So further R&I opportunities to develop customized systems for coronavirus or other potential pandemic quarantine for the future are encouraged.

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- Korea Health Industry Development Institute: 33 projects including patient-centred medical technology optimization research (347.8 billion KRW).
- Centres for Disease Control and Prevention (National Institute of Health): 7 projects including research on the development of infectious disease management technologies (74.9 billion KRW).
- National Cancer Centre: Major projects of the Cancer Institute and the National Cancer Management Business Headquarters (33.4 billion KRW).
- Daegu-Gyeongbuk Medical Innovation Foundation (DGMIF): High-Speed Medical Complex Building and Two Projects (5.5 billion KRW).
- National Rehabilitation centre: Rehabilitation R&D Service Project (5.4 billion KRW).

[!] Focus on | Alzheimer

By 2050, it is expected that about 15.9% of the Korean population above age 65 will likely to have Alzheimer's disease, costing the government more than 100trillion KWN or 86billion USD. The South Korean government is dedicating 600billion KWN or 500million USD in R&D in 2021, which opens up doors for innovative global SMEs related to Alzheimer's disease for collaborations.

Korea's National Medical Centre voices that there is a strong need for remote monitoring and health care delivery systems that can be used at care centres, as the country is experiencing acute low birth-rate and aging. **Global SMEs in other health technologies are also encouraged to come together to build preventative and management systems for Active & Healthy Ageing.**

In general, the Korean healthcare system is well-equipped with health technologies and has a high adoption of EMRs. The government is utilizing telemedicine but Korean seniors typically do not lean on it unless necessary.

In addition, the Korean healthcare is still focused on reactive treatment rather than a preventive approach, as Koreans typically practice medical pluralism and utilize self-care and self-medication to complement clinical treatment.

*The Korean government is interested in aiding their senior citizens through **Smart Home Technologies** such as monitoring devices with speakers, global connection via telemedicine, and **research on the long-term benefits of telehealth, mHealth, and eHealth** for the Quality Of Life (QOL) for seniors.*

The combination of interface-agnostic devices, sensors embedded into everyday objects, as well as AI technologies, will allow patients to be continuously monitored and will alert clinicians and caregivers about the onset or progression of health conditions.

Looking at the following topics considered as strategic for AHA80, several initiatives have been identified below as key references in the R&I landscape of South Korea and often represent opportunities for international cooperation.

[80] Within the framework of IDIH project.

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Though each country/region brings its territory's economic, cultural and societal aspects in consideration to strategize differentiated methods and adopt technologies for digital solutions to foster healthy and active ageing, international collaboration is needed to create common standards on data, regulation of technologies, and research. Moreover, **players must take advantage of the synergy created by the independent and connected living technologies overlapping with the technologies under preventative care, integrated care, and inclusive living.** Increasing international cooperation in the field of digital health will help to further harmonize common priorities, enhance peer-to-peer learning and allow to better understand local discrepancies and thus explore synergies and complementarities.

PREVENTIVE CARE[81]

- The **Centre for Disease Control and Prevention (KCDC)** - Chronic Disease Management Research & Development, commenced to develop disease prevention and management technologies in preparation for an aging population. It coordinates investigation and analysis on the risk factors of chronic diseases to manage *dementia, respiratory allergic diseases, and chronic diseases* such as cardio-cerebrovascular diseases, diabetes, and chronic obstructive pulmonary diseases.

  KDCA
  Korea Disease Control and Prevention Agency

  The expected Results are:
  - **Research on cardiovascular diseases:** a follow-up study on the population of the elderly in urban and rural areas and producing evidential data for prevention and management of diseases from which many aged people are suffering including cardiovascular diseases. In addition, a forward-looking follow-up study on patients with heart failure and acute heart failure in order to produce evidential data for secondary prevention and management of cardiovascular diseases.
  - **Research on diabetes and obesity:** to prevent diseases in the early stages, using early diagnosis factors of obesity, diabetes, and complications; a foundation for translational and clinical researches and production of scientific data for the prevention of metabolic diseases by developing target substances preventing such diseases and using clinical and genetic information.
  - **Research on respiratory and allergic diseases:** developing biomarkers and conducting research on preventive and interventional technology.

INTEGRATED CARE[82]

- **ETRI - Electronics and Telecommunications Research Institute:** Founded in 1976, ETRI is committed to contributing to the nation's economic and social development through **research, development and distribution of industrial core technologies in the field of Information, Communications, Electronics, Broadcasting and Convergence technologies**.

  ETRI Electronics and Telecommunications Research Institute

  Its action in the R&D panorama responds to four main management principles:

[81] See at: http://www.cdc.go.kr/contents.es?mid=a30301030000
[82] See at: https://k-erc.eu/ ; http://test.scllab.co.kr/

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- Prepare for future growth by vitalizing creative and challenging research;
- Generate excellent top-tier R&D performance;
- Resolve the living issues of the public and expand support for SMEs;
- Establish a research culture that is rooted in openness, sharing, and cooperation.

Also, thanks to its Global R&D Cooperation Network, ETRI promotes excellence in these fields at national and international level, boasting of considerable achievements, especially concerning Patent Applications & Technology Transfer and Standardization & SCI Papers[83].

- Seoul Clinical Laboratories (SCL): CyberDX focused on testing a big data-based medical artificial intelligence (AI) engine to analyse medical examination data for detecting patients' risks, as an appropriate means for prevention. It focuses on disease prevention, providing tailored analytics by comparing a patient's examination data and thousands of samples. It showed an impressive outcome in analysing how much a patient has the risk of getting Alzheimer's disease.

INDEPENDENT & CONNECTED CARE[84]

- NRF - National Research Foundation of Korea: the NRF intends to set the direction of the nation's basic and applied research across all academic disciplines, lead changes in future-oriented research ecosystems, and become a platform and facilitator of interaction among universities, research institutes and researchers. Several Funding Programmes are under the Directorate for Basic Research in Science & Engineering of NRF, that is committed to supporting researchers in S&E to create knowledge and original technology that contribute to general society and human progress based on their creative ideas and relentless pursuit of knowledge.
  - In this framework, **Micro and Nano Transducers Lab (MINT) Group** and **Korea Advanced Institute of Science and Technology (KAIST)** coordinate to develop Highly Sensitive and Wearable Liquid Metal-Based Pressure Sensor for Health Monitoring Applications. The goal is to explore the potential of wearable soft pressure sensors for the real-time monitoring of health status and for the early diagnosis of disease.

INCLUSIVE CARE[85]

- Sustainability is always an issue, and the **Korean government recognized the importance of implementing long-term care insurance systems for the elderly.** It is a social insurance policy that provides movement support to elderlies who cannot hold a regular living due to old age or geriatric disease, thus improving old age health and stable living, decreasing the burden of family and making quality of life higher.

[83] See at: https://www.etri.re.kr/engcon/sub1/sub1_06.etri
[84] See at: http://mintlab1.kaist.ac.kr/paper/(88).pdf; https://k-erc.eu/
[85] See at: http://www.longtermcare.or.kr/npbs/e/e/100/index.web

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2.4.3 Funding Programmes supporting International Cooperation in the field Digital Health for AHA[86]

Though Korea has limited domestic programmes internationally open, the Korean government has encouraged Korean researchers to be engaged in various global research initiatives and bi/multilateral programmes.

Besides excellent capacity of research and innovation society and productive research environment, indeed, Korea has a relatively good and speedy funding mechanism for those who are willing to take part in international cooperation for research and innovation.

To promote international research cooperation, Korean government initially sign a **memorandum of understanding (MoU),** or **joint declaration**, or **agreement** with partner countries at government level, followed by preparation on **annual budget** to support Korean research beneficiaries. Therefore, the foreign counterparts should secure their own budget through their government.

Nevertheless, **National Research Foundation of Korea (NRF)** offers opportunities for internationalization for the next few years and the **Korea Institute for Advanced Technology (KIAT)** has four international research programmes currently ongoing: *International Technology R&D Collaboration Program; Global R&BD Program; Industrial Technology Cooperation Program; Official Development Assistance Program.*

KIAT | Korea Institute for Advanced Technology

Including Germany and France, Korea Institute for Advanced Technology (KIAT) collaborates with 14 countries to operate technology cooperative institutions and bases for overseas technology transfer and commercialization. It supports cooperative activities for technology commercialization by utilizing the Enterprise Europe Network (EEN) and the Global Commercialization Centre (GCC).

KIAT | Mission

KIAT helps enterprises enter overseas markets successfully and enter the global network. To achieve this, KIAT strengthens global cooperation including international joint R&D with foreign enterprises, universities, and research institutions.

KIAT coordinates internationally joint R&D programs in co-funding/co-planning/co-evaluating with cooperative countries for strategic development of core technologies, within the framework of:

International co-operation of industrial technology (Joint R&D)	
Objectives/Impacts/ Scope	Strategic development of core technologies.

[86] For references: https://ec.europa.eu/research/iscp/index.cfm?amp;pg=korea ; https://www.nrf.re.kr/eng/page/31752ceb-b028-4721-a493-1d46d43b2285; https://www.kiat.or.kr/site/eng/activities/tCooperation.jsp

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Eligibility criteria	▪ Applications for the international R&D consortium must be done in conjunction with a South Korean organization. ▪ The organizing agency must be a South Korean corporation or university or research institute. ▪ The R&D Center from the South Korean corporation must be at least 1 year or over since it was authenticated by Korea Industrial Technology Association (KOITA).
Grant	500 million KRW (= $440,000) Total fund amount: 58 billion KRW (=$51 million)
Official Sources	https://www.kiat.or.kr/site/eng/activities/tCooperation.jsp
KEYWORDS	Joint R&D, international cooperation, industrial technology

Table 26: International co-operation of industrial technology (Joint R&D) - South Korea

NRF | National Research Foundation of Korea

NRF - National Research Foundation of Korea contributes to advancing knowledge and improving the quality of life by nurturing creative research environments and fostering human resources.

NRF | Which opportunities

NRF provides a joint research program to promote exchanging human resources, allowing scholars from global universities and research institutions to visit South Korea for closer collaborations of ideas and knowledge.

- NRF funds projects to provide support for exchanging researches through **exchanging human resources, joint seminars, and other academic activities**[87].

NRF does not coordinate a project directly related to Active & Healthy Aging (AHA), but it aims to foster collaborations amongst European and other countries to share scientific data and technologies, which then can lead to digital solutions and advancements in AHA.

National Research Foundation (NRF) Joint Research Program (Researcher Exchanges)	
Objectives/Impacts/ Scope	▪ Support research exchanges between Korean and international researchers from the countries who have the MOUs signed with the NRF ▪ Contribute to building an overseas R&D network in all academic fields including sciences and technology areas. ▪ Provide opportunities for various forms of exchange activities, such as joint seminars and human resources exchange, to effectively meet the demands for international cooperation and lay the foundations for joint research in the future
Eligibility criteria	▪ Researchers affiliated with “universities” (including affiliated research institutes) and “research institutions” as defined under Article 2 of the Sciences Promotion Act, are eligible to apply for projects in the name of the head of the relevant institution.
Grant	Differs by country (e.g. Austria; Airfare/Living Expenses, 40 million KRW = $35,000)

[87] For detailed funding process, visit https://www.nrf.re.kr/eng/page/f8405a92-5e7d-41b6-9f6a-b8f63b637caf

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Official Sources	https://www.nrf.re.kr/eng/page/e4d25a63-185e-4589-86fb-53798dad9def
KEYWORDS	Research, exchange, human resources, R&D network, joint seminars, universities, research institutions, sciences and technology

Table 27: National Research Foundation (NRF) Joint Research Program (Researcher Exchanges) - South Korea (main features)

2.5 Understanding the landscape for Research and Innovation in USA

The US boasts of the most prestigious research and development institutes in the world. The majority of patents stem from universities and industry located in the US. Innovations demonstrate their market impact when proved by the FDA. From an innovation standpoint, America provides unparalleled opportunities and incentives for entrepreneurship.

*In 2019 **digital health** investments will surpass the previous figure of $8.4 billion. Accordingly, the US is a **global leader** in this arena and American investors are typically the first to spot "unicorns"—companies valued at over $1 billion.*

The unprecedented demographic shift projecting the number of older adults to double from 52 million today to over 95 million by 2060 presents various challenges, as the geriatric population is heavily dependent on Social Security. Federal health insurance programmes account for 8.7% of the GDP and are projected to increase to 11.8% by 2050. Furthermore, advancements in medicine, technology, and social systems have enabled Americans to live longer with an average life expectancy of 78.6 years. The increase in life expectancy is accompanied by age-related diseases such as chronic and neurodegenerative diseases.

*The **following challenges** provide a great opportunity for digital solutions, which may assist in health promotion, enhance care management, promote social engagement, facilitate cost comparisons, etc.*

Such high prevalence of disease has raised concerns on the nation's ability to provide sustainable and quality healthcare services for elderly Americans. In terms of R&I, **Lack of interoperability** is a major challenge facing the adoption of digital health in the US.

It noted in a 2018 report to Congress, the Office of the National Coordinator for Health Information Technology (ONC)[88] that health information is not always accessible across different systems or accessible by all users. The report also listed the following as barriers to progress for interoperability:

- technical barriers such as lack of standards,
- financial barriers such as costs related to development, and
- trust barriers such as a reluctance to share data.

Reimbursements for digital health technologies are not standardised in the US. For HCOs that contract with private health insurers, reimbursements for virtual services are at the insurer's discretion. *While the public-private healthcare system is great for the market, it has created misaligned incentives that can drive stakeholders away from patient-centred care.* Hence, research as well as policy reform is greatly needed to create a common goal that mutually benefits all stakeholders. Though the upward

[88] https://www.healthit.gov/sites/default/files/page/2018-12/2018-HITECH-report-to-congress.pdf

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trend for digital health reimbursement is promising, it is currently still very limited. Unless there are concrete financial incentives and reimbursement models and/or a legal mandate to adopt, HCOs do not have the urgency to change.

Operational chasm and acceptance by end users. Implementation of novel tech requires significant resource and labour investments that many healthcare organisations (HCOs) are hesitant to commit to without adequate evidence for the return on investment. Furthermore, technologies need to be co-designed with the end users in order to fully address the actual need and pain-points the solution aims to address. In addition, pilots need to be implemented with metrics and targets that align with the host organisation's objectives.

Lastly, the innovations must demonstrate **scalability**, which is often not considered during the initial pilot. Then, technologies that are tested at scale allows HCOs to truly understand the technology's impact beyond a subset of their patient population and decide whether or not the product can be implemented.

2.5.1 The opportunities for International Cooperation

The United States is still leader in top-class science, technology but also in innovation, providing innovation-friendly framework conditions and an investment climate that makes it an attractive place to commercialize innovative products, services and solutions. In addition, the US has one of the world's strongest legal systems for the protection of intellectual property rights.

Therefore, **U.S has established a global network of scientific cooperation** and is also a privileged partner country for many EU Member States in science, technology or innovation cooperation.[89]

As stated in the Roadmap EU - USA S&T cooperation (2018), reporting the statements of the EU and US leaders following the EU-US Summit in March 2014, a commitment of the parties "to expand cooperation in research, innovation and new emerging technologies, and protection of intellectual property rights as strong drivers for increased trade and future economic growth" has been confirmed.

*Most cooperation with the US is via the **US National Institutes of Health (NIH)** but also with the **National Science Foundation (NSF)** and **outside government** such as the Bill and Melinda Gates Foundation. The EU as well as the NIH mutually opened the respective health research programmes to US and European scientists*[90].

The US is the EU's main partner when it comes to health research either in terms of numbers of US participations in the Framework Programme (both FP7 & Horizon 2020) projects.

[89] See: Roadmap for EU - USA S&T cooperation (2018).
[90] Ibidem. For the time being (October 2020) such agreement (EC-NIH) has not been questioned but this may change according with next possible policy developments of international relations.

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H2020 | Participation of USA[91]

- **Regarding collaborative actions** of Horizon 2020, U.S. applicants are involved 1397 times in 1088 eligible proposals of which 226 were main listed, leading to a success rate of 20.8% (as compared to 17.5% for non- associated countries and 15.8% overall). U.S. entities have 246 participations (214 times as beneficiaries) in 182 signed grants, receiving 34.0 million euros from EU while 107.0 million euros is the non-EU budget of U.S. beneficiaries.[92]
- **Regarding the Horizon 2020 Marie Sklodowska-Curie Actions (MSCA),** U.S. entities have participated 853 times (403 in Individual Fellowships (IF), 259 in the RISE, 167 in the ITN and 24 in the COFUND programme). US beneficiaries have received 0.2 million euros as direct EU financial contribution. Finally, a total of 390 U.S. researchers have participated in MSCA actions.
- **For what concerns support to frontier research**, US entities have participated 16 times to signed ERC grants of Horizon 2020, receiving 2.5 million euros from EU. The US is the country of nationality of the highest number of ERC non-ERA grantees, amounting to a total of 141 US nationals in Horizon 2020 up to October 2018. The Implementing Agreement between EC and the US National Science Foundation was signed on 13 July 2012 and a total of 46 scientists of US nationality have visited ERC project teams so far.

2.5.2 Digital Health for AHA: policy priorities and R&I opportunities at international level

Digital therapeutics, the IoT, AI, blockchain, and other technologies are expected to play a pivotal role in creating a passive and continuous care environment that allow Americans to age in place. While there is increased interest in the elderly care market, much of digital health innovation but still focuses on the young and healthy as opposed to those who need it most.

Elderly, disabled, and vulnerable populations are often neglected in product design—creating tools that fail to truly engage with those in need. While this issue may be universal, the US can benefit from learnings from other countries who have exemplified user-centred design and product development.

While public agencies play a pivotal role in the American healthcare system, the private sector is of equal importance. For older adults, private insurers that offer medical assistance (MA) plans such as Aetna, Cigna, Kaiser Permanente, Blue Cross Blue Shield, Humana, UnitedHealthcare, and many others, provide more comprehensive health plans that facilitate ageing in place. As MA plans are paid a capitated amount per beneficiary, these insurers are incentivised to keep their patients as healthy as possible through various care delivery models and tools.

To maximise cost savings and promote health outcomes, these insurers have increasingly leveraged digital health.

UnitedHealthcare invests $3.2 billion annually in data, technology, and innovation and is one of the leading organisations moving towards a digital health-powered healthcare system. Other health

[91] Extract from Roadmap for EU - USA S&T cooperation (2018).
[92] This box excludes projects under ERC, MSCA, SME Instrument and Access to Risk Finance.

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insurers also started venture funds to fuel digital health entrepreneurship. Cigna launched Cigna Ventures[93] with $250 million in capital to invest in early and growth stage start-ups while Kaiser Permanente Ventures invests $170 million in capital for companies in all stages. **These insurers are critical in the health innovation space and are some of the largest proponents for digital health in chronic care management, health promotion, and AHA.**

In comparison to the various players in the healthcare system, AMCs and universities are most likely to participate in global research projects and explore international frameworks for digital health implementation.

Academic medical centres (AMCs) play a crucial role in the digital health ecosystem. AMCs power research efforts that help validate and commercialise technologies. Although AMCs traditionally focused on biomedical research, many universities have now developed centres for digital health and/or health innovation.

Another noteworthy research effort is the University of California Centre for Information Technology Research in the Interested of Society (**CITRIS**), which leads several global research efforts including telehealth, as well studying whether AI can detect and prevent falls.[94]

CITRIS partnered with global researchers from Denmark as well as several members of the EU to create the "Transatlantic Telehealth Research Network" and has published literature outlining the global research agenda for telehealth.[95]

2.5.3 Funding Programmes supporting International Cooperation in the field Digital Health for AHA

The **Department of Health and Human Services (HHS)** is the cabinet-level health department of the US Federal Government and encompasses major federal agencies such as **the Centres for Medicare and Medicaid Services (CMS)**, **the Food and Drug Administration (FDA),** the Office of the **National Coordinator for Health Information Technology (ONC)**, the **National Institute of Health (NIH),** and many more.

The HHS serves as the key funding agency for healthcare services and research, and has developed several programmes, initiatives, and funding opportunities to support the digital health ecosystem. These include:

- **Open Innovation**, also known as the IDEA Lab fosters innovation through challenges, hackathons, and accelerators. Since 2011, it has administered over 170 challenges and distributed $35 million in cash prizes to over 9,000 innovators
- **Secretary's Venture Fund,** which offers growth-stage funding and support to HHS employees with innovative ideas for how to dramatically improve the Department's ability to carry out its mission.

[93] https://www.cignaventures.com/
[94] https://citris-uc.org/health/
[95] https://citris-uc.org/telehealth/project/transatlantic-telehealth-research-network/

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- **Entrepreneurs-in-Residence Program**, where HHS recruits private-sector innovators to assist in specific challenges in the health and delivery of human services. Through this programme, the innovator gains access to the highest level of HHS leadership, a network internal and external of innovators, and a suite of tools for app development and testing.

The Department has addressed Digital Health and AHA at policy level through several recent Public Laws, such as:

1. **Health Information Technology for Economic and Clinical Health (HITECH) Act (passed under American Recovery and Reinvestment Act of 2009)[96]:**

   ***Priority/Key Areas*:** Implement meaningful use of interoperable EHR adoption and incentivize the adoption of health information technology[97].

   Relevance: The HITECH Act was a pivotal legislation in the adoption of health information technology and electronic health records in the US. Although it is not directly applicable to active and healthy aging, the act created the foundation for America's embracement of digital health and established the Office of the National Coordinator for Health Information Technology (ONC). The ONC is a key stakeholder in developing standards for health IT and advancing digital health innovation through its challenges and pilot programs.

2. **Patient Protection and Affordable Care Act (ACA)[98]:**

   ***Priority/Key Areas*:** Increase access to care, reduce costs, and improve health outcomes[99]

   Relevance: The ACA's triple aim is to increase access to care, reduce costs, and improve health outcomes. The landmark act began to shift America's fee for service model to one that focused on prevention and overall wellness. The act penalized avoidable readmissions and sought ways to increase access to services, which incentivized the use of connective health technologies such as telehealth that helped providers care for patients outside of the traditional setting. The ACA also created the Centre for Medicare and Medicaid Innovation, which studies innovative payment and service delivery models. While the act does not specifically address digital health, the benefits of digital health is in alignment with its triple aim and the ACA continues to be a core policy driver for health innovation.

3. **Older Americans Act (OAA) Reauthorization Act**[100]

   Priority/Key Areas: (i) Protect vulnerable elders by strengthening the Long-Term Care Ombudsman program and elder abuse screening and prevention efforts; (ii) Promote the delivery of evidence-based programs, such as falls prevention and chronic disease self-management programs[101].

[96] Public Law No:111-5
[97] See: https://www.healthit.gov/sites/default/files/hitech_act_excerpt_from_arra_with_index.pdf
[98] H.R.3590; Public Law No:111-149
[99] See: https://www.hhs.gov/healthcare/about-the-aca/index.html
[100] Ref. S.192; Public Law No: 114-144
[101] See: https://www.congress.gov/bill/114th-congress/senate-bill/192

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Relevance: The Older Americans Act was reauthorized in 2016 with an updated focus on helping older individuals live independently in their home and communities through evidence-based interventions. Through the OAA, the Administration on Aging has developed a network with Area Agencies on Aging, State Units on Aging, and Senior Centres to support home and community-based serves (HCBS) as well as programs to support fall prevention & chronic diseases self-management education. The act also allowed the Federal government to distribute funds to states for supportive services for individuals over the age of 60.

A part of the U.S. Department of Health and Human Services, NIH – National Institute of Health is the largest biomedical research agency in the world. NIH and AARP (non-governmental) are here briefly presented as key-agencies for cooperation programmes in Digital Health for AHA.

NIH | NIA – National Institute of Aging

NIH's mission is to seek fundamental knowledge about the nature and behaviour of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability[102]. NIH is made up of 27 Institutes and Centres, each with a specific research agenda, often focusing on particular diseases or body systems. Among these, the **NIA – National Institute on Aging leads a broad scientific effort to understand the nature of aging and to extend the healthy, active years of life**. In particular, NIA is the primary Federal agency supporting and conducting Alzheimer's disease research. NIA aims can be summarized as follows:

- Understanding the interpersonal and societal factors of aging
- Creating effective interventions for age-related diseases, disorders, and disabilities
- Addressing Alzheimer's and dementia, as well as caregiver burden

*NIA pursues its mission by funding extramural research at universities and medical centres **across the United States and around the world**; maintaining an active communications and outreach program; and conducting a vibrant intramural research program at NIA laboratories in Baltimore and Bethesda, Maryland.*

Two main policy frameworks are driving R&D, as well as Health Care and assistance, currently and for the next future, in IDIH relevant fields of intervention:

1. **21st Century Cures Act[103]**

   ***Priority/Key Areas*:** (i) Accelerate research into preventing and curing serious illnesses; (ii) Accelerate drug and medical device development; (iii) Address the opioid abuse crisis; (iv) Improve mental health service delivery[104].

   Relevance: The 21st Century Cures Act is widely known to help fund efforts in precision medicine but it also aims to improve healthcare IT by addressing interoperability and information blocking. Under the act, providers and insurers may be penalized if they implement health IT in nonstandard ways or health IT that restricts the access, exchange, or

[102] For further details, see: https://www.nih.gov/about-nih/what-we-do/mission-goals
[103] Ref. H.R.34; Public Law No: 114-255
[104] See: https://www.congress.gov/114/plaws/publ255/PLAW-114publ255.pdf

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use of authorized electronic health information. In addition, the act also barred the FDA from regulating mobile health apps designed to maintain and encourage a healthy lifestyle if it is not related to the diagnosis, prevention, or treatment of disease. Therefore, innovative, but low-risk technologies may be more readily available.

2. **Creating High Quality Results and Outcomes Necessary to Improve Chronic (CHRONIC) Care Act (signed as part of the Bipartisan Budget Act of 2018)**[105]

***Priority/Key Areas*:** (i) Promote high quality care in the home; (ii) Advance team-based care; (iii) Expand innovation and technology; (iv) Identify the chronically ill population prospectively; (v) Empower individuals and caregivers in care delivery[106]

Relevance: Nearly 20mm American seniors are covered by Medicare Advantage insurance plans, which previously had very limited coverage on telehealth services and "non-medical" benefits. The CHRONIC Care Act gave MA plans more flexibility on what they can cover under "non-medical" benefits for the chronically ill and increased the availability of telehealth services especially for those who have stroke symptoms. The act also expanded the Independence at Home (IAH) demonstration, which allows seniors with multiple chronic conditions to receive care from primary care teams in their homes to reduce hospital readmissions.

AGING WELL IN THE 21ST CENTURY: STRATEGIC DIRECTIONS FOR RESEARCH ON AGING | The document, most recently updated in 2016, is NIA's "road map" for progress in aging research and outlines its goals and vision. It provides a point of reference for setting priorities and a framework for systematically analysing the Institute's scientific portfolio and assessing progress. In particular, the Goals set by this strategy are:

Understanding the Dynamics of the Aging Process

- **Goal A:** Better understand the biology of aging and its impact on the prevention, progression, and prognosis of disease and disability.
- **Goal B:** Better understand the effects of personal, interpersonal, and societal factors on aging, including the mechanisms through which these factors exert their effects.

Improving the Health, Well-Being, and Independence of Adults as They Age

- **Goal C:** Develop effective interventions to maintain health, well-being, and function and prevent or reduce the burden of age-related diseases, disorders, and disabilities.
- **Goal D:** Improve our understanding of the aging brain, Alzheimer's disease, and other neurodegenerative diseases. Develop interventions to address Alzheimer's and other age-related neurological conditions.
- **Goal E:** Improve our understanding of the consequences of an aging society to inform intervention development and policy decisions.
- **Goal F:** Understand health differences and develop strategies to improve the health status of older adults in diverse populations.

[105] Ref. S.870
[106] See: https://www.congress.gov/bill/115th-congress/senate-bill/870

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Supporting the Research Enterprise

- Goal G: Support the infrastructure and resources needed to promote high quality research.
- Goal H: Disseminate information to the public, medical and scientific communities, and policy makers about research and interventions.

AARP | AARP FOUNDATION

Among the major player for older Americans is the **AARP.** AARP prides itself as one of the leading organisations that recognise the potential of the "longevity economy," which is the economic opportunity that elderly Americans present. Throughout its history, the organisation has consistently researched the 50+ consumer market and explored opportunities to engage with various sectors in an effort to improve the quality of life for older adults.

AARP | *Vision, services and funding*

AARP Foundation is a not-for-profit organization that serves vulnerable people 50 and older by creating and advancing effective solutions that help them secure the essentials.

AARP has been instrumental in reimagining the term "aging." The organisation is dedicated to helping their members thrive and steer away from assumptions on the elderly population. In recent years, AARP has focused on assisting elders with **developing a sense of purpose, painting a positive view of aging, and addressing social engagement and social isolation issues.** The association conducts and sponsors research in various areas related to AHA and has been an advocate for leveraging social media and digital health tools. AARP has launched several initiatives to support their mission.

AARP Innovation Labs created the "**Hatchery**," to bring together top-tier entrepreneurs to share ideas for keeping people 50 and older healthy and designing new products and services to this purpose. The Hatchery uses design challenges, pitch competitions, and other start-up accelerators to co-create products and services.[107]

- Partnering with JP Morgan Asset Management, AARP provides $40 million in capital to innovative companies. Known as the "**AARP Innovation Fund**," the fund is focused on digital solutions for ageing at home, convenient and access to healthcare and preventative health.

AARP tackles senior poverty by sparking bold, innovative solutions that help vulnerable older adults build economic opportunity and social connectedness — fostering resilience and strengthening communities.

Bringing together industry, government, activists, and volunteers, it operates at the intersection of collaboration, innovation, legal advocacy and grant making.

In particular, AARP Foundation support enables grantees to help more people, work more efficiently, bring proven new approaches to scale, and make resources go further.

[107] https://www.aarp.org/about-aarp/innovation/aarp-innovation-labs/

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With these Request for Applications (RFAs), one for ***Direct Service projects*** and one for ***Education, Outreach*** **or** ***Field-Building projects***, AARP Foundation seeks projects that advance economic opportunity among low-income older adults. Application requirements and funding levels vary based on the type of project[108].

In 2019, AARP Foundation has launched new tools designed to equip low-income older adults with skills and resources to increase financial stability and connection to their communities. Among these, **Connect2Affect Connected Communities.** This Pilot program investigates the viability of using hands-free, voice-activated technology to maintain sustained social connectedness for low-income older adults, age 50+, living in independent housing or federally subsidized rental properties. In partnership with LeadingAge Center for Aging Service Technologies, AARP Foundation studied 59 participants and found that voice-activated tech increased the participants' social interaction score and subjective social support score as well as decreased their loneliness score. The pilot study served as the foundation for the Connected Communities program, which currently seeks to expand this model to more senior living facilities.

[108] For further details about grants: https://www.aarp.org/aarp-foundation/grants/

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Conclusions

Populations around the world are ageing at a faster pace than in the past and this demographic transition will have an impact on almost all aspects of society and, especially, on ageing people.

On top of the health-related age impairments such as poor health, cognitive impairment and frailty, ageing people are at risk of facing situations leading to mental health problems, often connected to potential social exclusion that could lead to considerable negative consequences for their independence, quality of life, those who care for them, and for the sustainability of health and care systems.

This calls for a global commitment that already reflects in the Health policies of the main Industrialized Countries towards the funding of new digital solutions.

These challenges are shared by ageing populations beyond the EU, and other countries are also looking into the potential of digital solutions to address them. In this context, there is a need to explore opportunities for collaboration and cooperation with strategic Research partners.

The guide analysed policies and opportunities for teaming up with researchers and innovators in Europe and in the 5 strategic Countries identified in the frame of the IDIH project.

After a brief analysis of the landscape on Research and Innovation in Europe, Canada, Japan, South Korea, and US, this guidebook presents programmes, funding schemes and opportunities for researches and innovators supporting various forms of international collaboration in the field of Digital Health for Active and Healthy Ageing.

From all the information gathered, as soon as the new European financial cycle will be officially launched[109], and the programmes life cycles in the other regions and countries concerned will produce new funding schemes, a hands-on guide for researches and innovators will be extrapolated from this report with the aim of giving a list of available open programmes, and all the primary information needed to get oriented and submit a proposal.

IDIH

INTERNATIONAL COLLABORATION
DIGITAL TRANSFORMATION
HEALTHY AGEING

[109] As the main R&I programme Horizon Europe is still under finalization, the guide is focussing on the genesis of the programme and shares all the information available to date.

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