

IDIH ROADMAP

ENHANCING INTERNATIONAL COOPERATION
IN DIGITAL HEALTH FOR ACTIVE AND HEALTHY AGEING



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Abstract

This document is part of the project International Digital Health Cooperation for Preventive, Integrated, Independent and Inclusive Living (IDIH) funded under the European Union's Horizon 2020 Research and Innovation Programme (GA No 826092).

The current report elaborates **three common priority topics for international collaboration** outlined by the experts of the four IDIH Expert Groups (preventive care, integrated care, independent and connected living, and inclusive living) as the result of a series of consultations.

This document is a **roadmap toward international cooperation in digital health for active and healthy ageing** and it presents an **action plan for the implementation of the three common priority topics** at national and international levels from policy formation to policy evaluation.

Keywords

Preventive, integrated, independent, and inclusive care; wearables; IoT, interoperability; data protection; health ethics; infrastructures; international collaboration; digital health; roadmap; active and healthy ageing.



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Introduction

The vision of the IDIH project is to pioneer a transnational approach to global challenges in active and healthy ageing (AHA). The international Digital Health Transformation Forum gathers global top-notch experts, executives, and advocacy groups with the aim to:

- Pave a pathway that overcomes fragmentation in R&I investments in digital health for AHA;
- Tackle system biases in AHA; e.g., in terms of gender, regions, cultures, etc.;
- Generate impact from the EU and international programmes;
- Target future trends and drivers of high impact and disruption in AHA.

Furthermore, the IDIH Digital Transformation Forum acts as a networking platform with the following aims to:

- Identify opportunities and shared priorities of mutual benefit;
- Promote and increase international collaboration;
- Advance digital health in the EU and key strategic partner countries;
- Support AHA through innovation.

This document combines the work performed by the IDIH Digital Transformation Forum and consolidates these efforts into a **roadmap toward international cooperation in digital health for AHA**.

For more information on the methodology for the elaboration of this roadmap, and the strategies and techniques adopted for co-creation and stakeholders' engagement in IDIH, please consult [IDIH_StakeholdersEngagement_methodology_APRE.pdf](#)

This **roadmap** outlines, thus, the path towards the enhancement of international cooperation in this field and answers the following questions:

- **“What to enhance?” (Chapter 1)** - The three common topics recommended as priorities for international cooperation in the areas of data governance, digital inclusion, and interoperability by design, and the impacts expected from their implementation at national/international level, are presented as a reply to this question.
- **“How to enhance?” (Chapter 2)** - A concrete action plan for the implementation of the three common priority topics at national/international level, from policy formation to policy evaluation, is provided to answer this question, considering barriers and enablers potentially preventing/favouring such implementation.

1. What to enhance

This section of the roadmap intends to present the IDIH recommendations for strengthening international cooperation on Digital Health and Ageing between Europe and the IDIH strategic partner countries.

In particular, this section presents “what to enhance” internationally through PLC among the relevant policy makers and funding agencies:

- A common understanding of healthy/active ageing as a global challenge, considered a remarkable success story in human history.
- Cooperation around three areas and, in particular, three priority topics DATA GOVERNANCE, DIGITAL INCLUSION and INTEROPERABILITY BY DESIGN (see the following image) around the expected impacts envisaged for these areas, after implementation of the IDIH priority topics.
- A shared vision toward a scenario of enhanced cooperation at an international level around the expected impacts envisaged for these areas, after implementation of the IDIH priority topics.

THREE PRIORITY TOPICS

DATA GOVERNANCE



To foster a **shared understanding of the determinants of healthy ageing** through new/existing multi-modal and **forward/backward longitudinal studies** and **Big Data analytics** based on the use of multiple data sources (such as patient reported data, patient validated data in electronic health records (EHRs), biometrics and biological data), validated by patients through **personalised-medicine approaches** according to a **shared international validation framework** that also addresses cybersecurity aspects.

DIGITAL INCLUSION



To favour **inclusive healthcare systems** using age-friendly technologies that address social isolation and loneliness, based on **empowerment models, inclusive co-design, and enhanced digital literacy practices**, supported by international and multi/transdisciplinary research toward the adoption of the **5-As approach** (acceptability, applicability, accessibility, affordability, and accuracy).

INTEROPERABILITY BY DESIGN



To ensure **accessibility, sharing, and protection of data from different sources**, such as Internet of Things (IoT) wearables and sensors, through the development of **international standards, procedures, and incentives** for producers so they are accessible in all countries based on an interoperability by design approach for digital solutions in preventive and integrated care and independent and inclusive living of the elderly.

1.1. Common priority topics for International Cooperation in Digital Health for AHA

1.1.1. COMMON PRIORITY TOPIC 1 – Area: Data governance

DATA GOVERNANCE



To foster a **shared understanding of the determinants of healthy ageing** through new/existing multi-modal and **forward/backward longitudinal studies** and **Big Data analytics** based on the use of multiple data sources (such as patient reported data, patient validated data in electronic health records (EHRs), biometrics and biological data), validated by patients through **personalised-medicine approaches** according to a **shared international validation framework** that also addresses cybersecurity aspects

The EU defines healthy ageing as “the process of optimizing opportunities for physical, social, and mental health to enable older people to take an active part in society without discrimination and to enjoy an independent, good quality of life”¹.

The World Health Organisation (WHO) defines healthy ageing as “the process of developing and maintaining the functional ability that enables wellbeing in older age.” This includes a person’s ability to:

- Meet their basic needs;
- Learn, grow, and make decisions;
- Be mobile;
- Build and maintain relationships; and
- Contribute to society.²

According to the EU definition, active ageing means helping people stay in charge of their own lives for as long as possible as they age and, where possible, to contribute to the economy and society³. The active ageing definition by WHO is “Active ageing is the process of optimizing opportunities for health, participation, and security in order to enhance quality of life as people age”⁴.

To comprehend AHA in-depth, it is important to define all the vital factors/determinants that affect the health and quality of life of the elderly. Understanding the evidence for these determinants will be helpful when designing policies and programmes that are successful.

1 EuroHealthNet, healthy and active ageing, 2012, Bundeszentrale für gesundheitliche Aufklärung [link](#)

2 World Health Organisation, Healthy ageing and functional ability, 26.10.2020: [link](#)

3 European Commission, Active ageing: [link](#)

4 World Health Organisation, Active Ageing – A Policy Framework, April 2002: [link](#)

The active ageing model of WHO includes six groups of determinants:**1. Availability and use of health and social services**

Determinants: health promotion and prevention; continuous care

2. Behavioural determinants

Determinants: exercise and physical activity; drinking and smoking habits; feeding; medication

3. Personal determinants

Determinants: biology and genetics, and psychological characteristics

4. Physical environment

Determinants: safety houses, low pollution levels

5. Social determinants

Determinants: education, social care

6. Economic determinants

Determinants: wage, social security. This group is complemented by two crosscutting determinants; that is, gender and culture.

In the recent (February 8, 2022) publication “Determinants of healthy ageing: a systematic review of contemporary literature” a thorough study was conducted to identify current trends in the definition of the determinants for healthy ageing. This review identified determinants for healthy ageing including physical activity, diet, self-awareness, outlook/attitude, life-long learning, faith, social support, financial security, community engagement, and independence. In addition, there appears to be increasing acknowledgment of the instrumental role of social and mental/cognitive wellbeing as determinants of healthy ageing⁵. Another similar publication, “Determinants of Healthy Ageing in European countries” 2019, summarised the determinants found in EU policy related documents and studies at both the individual level and the environmental/societal level. The determinants at the individual level are health status, activity, resilience, social contacts, and involvement, and at the environmental/societal level, the determinants are provisions for accessibility, housing, age-friendly communities, and social security⁶.

It is very important to continue research on clarifying and specifying the role of each determinant, as well as the interaction between determinants, in the healthy and active ageing process. We also need to better understand the pathways that explain how these broad determinants actually affect health and wellbeing. Moreover, it is helpful to consider the influence of various determinants over the life course so as to take advantage of transitions and “windows of opportunity” for enhancing health, participation, and security at different stages.

5 T. Abud, G. Kounidas, K. R. Martin, M. Werth, K. Cooper, P. K. Myint, Determinants of healthy ageing: a systematic review of contemporary literature, Springer, 08.02.2022 [link](#)

6 Wim v. d. Heuvel, M. Olaroiu, Determinants of Healthy Ageing in European Countries, 26.02.2019 [link](#)

Longitudinal qualitative research (LQR) is an emerging methodology in health behaviour and nursing research (Glanz et al., 2008; Polit & Beck, 2017)⁷ ⁸. Researchers are turning to LQR to understand experiences through time as well as identifying the facilitators and inhibitors of health/illness behaviours and transitions.

Data analytics in healthcare can be applied to every aspect of patient care and operations management, including improving the provision of clinical care, enhancing disease prevention, and measuring the effectiveness of various treatment options.

Cybersecurity systems and mechanisms for technical and organisational frameworks need to be developed in accordance to national regulations to ensure privacy of the elderly and protect their personal data. These systems will allow free and secure access and exchange of datasets. The security mechanisms and frameworks will protect data integrity and minimize the risk of compromising the health of elderly patients.

7 Longitudinal Qualitative Methods in Health Behavior and Nursing Research: Assumptions, Design, Analysis and Lessons Learned, 26.10.2020, [link](#)

8 Developing longitudinal qualitative designs: lessons learned and recommendations for health services research, 06.02.2013, [link](#)

See the full description of this Priority Topic in the IDIH deliverable D3.7 Towards an international collaboration in digital health, v2.0, freely available at [link](#)

PERSPECTIVES UNDER THE EUROPEAN HEALTH DATA SPACE

While formal laws create a governance framework for the use of data, the organisations in which data are collected, processed, stored, and used as part of everyday healthcare activities impose a further layer of governance. This happens via the policies and practices that are in place to regulate the way in which staff and business partners can interact with the data for which they are legally responsible. This includes practices related to the data itself; that is, the data format, the way in which data are labelled, the languages in which data are captured (both human and machine), as well as policies for how the data may be used; that is, who has access rights, when data can be shared, and how data can be amended or deleted.

The proposal for a Regulation for the European Health Data Space (“EHDS”), launched by the European Commission on May 3, 2022* includes a legal framework for the use of health data by the industry for innovation purposes, in particular through Artificial Intelligence (“AI”) and Machine Learning (“ML”) technology. EHDS is a health-specific data sharing framework for the EU Member States establishing clear rules, common standards and practices, infrastructures, and a governance framework for the use of electronic health data by patients and research, innovation, policy making, patient safety, statistics or regulatory purposes.

Free and unobstructed access to healthcare data sources for researchers and technology providers will facilitate an increase in the effectiveness and quality of healthcare services for the elderly. Smoother and faster implementation of sophisticated digital solutions and services using state-of-the-art AI, machine learning, and Big Data analysis will help address the future demands of data handling and allow timely intervention for older people and/or their caregivers.

* Proposal for a Regulation of the European Parliament and of the Council on the European Health Data Space at [link](#)

older people



Free and unobstructed access to healthcare data sources for researchers and technology providers will facilitate an **increase in the effectiveness and quality of healthcare services for the elderly**. Smoother and faster implementation of sophisticated digital solutions and services using state-of-the-art AI, machine learning, and Big Data analysis will help address the future demands of data handling and allow **timely intervention** for older people and/or their caregivers.

older people healthcare



Personalised medicine and engagement with older people will assist technology providers to develop **personalised healthcare and wellbeing applications and services**. These products and services will be designed and tailored to the specific requirements of the elderly and will improve their self-management and quality of life.

healthcare



The implementation of technologies in healthcare systems will dramatically increase the quality and effectiveness of services provided to the elderly. **The formal and informal caregivers' obligations and workload will be greatly reduced** if the health of the elderly is improved and they are effectively supported in their daily activities.

COMMON PRIORITY TOPIC 1: EXPECTED IMPACTS

older people healthcare



Personalised healthcare services and "apps" for the elderly will increase the **effectiveness of communication between caregivers and their patients**. These services will allow caregivers to better understand patients' requirements and provide timely and appropriate interventions. Personalised healthcare services will be provided with respect to gender and ethnicity. Considering the diversity of the elderly population, healthcare solutions and services will be need-based instead of age-based.

public admin. policy maker



Decision support systems for health policymakers, social service administrations, and healthcare organisations will allow them to **effectively conduct qualitative and quantitative assessments**. These assessments should be based on the analysis and interpretation of available optimised data for improved planning and evaluation of healthcare services. The incorporation of thoroughly assessed innovative services in the healthcare ecosystem should significantly reduce the burden on healthcare systems.

R&I community



Access, elaboration, and analysis of rich, updated, and accurate datasets will improve research outcomes in medical, ICT, and social science domains and **enable data-driven and interoperable solutions for different fields and applications**.

Continuous elaboration and updates of health and active ageing determinants will drive research and technological development of healthcare and wellbeing services, thereby **gaining academic and societal recognition**.



The voice of the «IDIH» Community



DATA GOVERNANCE

Wearables can play a crucial role in this field. > 50% of adults age 65+ own smartphones in the USA. Therefore, Increased ability to track health over the lifespan using Apps and wearables is expanding dramatically. It is essential to create valid methods for interpreting these data. 

End-users are the main owners of data. These must be used with Transparency and Understandability. 

There are several challenges to address, for example, looking at the Canadian context: federalism, incremental policy change, siloes within jurisdictions, lack of one EHR for each Canadian that can travel with them. 

It is important to better understand the technology usage behaviors of older people (with a special attention to retired persons), in accordance with GDPR and APPI data governance processes and tools; then, include multiple co-creation strategies to reach the hard-to-reach group of older people (with a special attention to marginalised groups) and understand their unmet needs is also a necessity. 

Research design methods have not kept pace with the explosion in new data sources from wearables and long term data sources such as surveillance technologies. New methods are required. 

Companies are working a lot in Canada to get patients access to their own records. So, patients are becoming more savvy at advocating for themselves in complex systems. 

A recognition during the pandemic of the digital determinants of health occurred and can be considered as an opportunity: e.g. wifi and internet infrastructure, digital literacy, and one one support for older adults. 

What is needed is not just randomize trials, but make technology as central in people daily life, based on short term and long term trajectories. 

1.1.2. COMMON PRIORITY TOPIC 2 – Area: Digital inclusion

DIGITAL INCLUSION



To favour **inclusive healthcare systems** using age-friendly technologies that address social isolation and loneliness, based on **empowerment models, inclusive co-design, and enhanced digital literacy practices**, supported by international and multi/transdisciplinary research toward the adoption of the **5-As approach** (acceptability, applicability, accessibility, affordability, and accuracy).

This has been described as the **5-As approach** for the design and development of inclusive services for the elderly.

- **Acceptability** relates to cultural and social factors that affect an individual's ability to accept or seek healthcare services.
- **Affordability** reflects on the economic capacity of individuals to spend money on resources and services that they need for their health. It is not only affected by the price of healthcare but also by reduced income due to ill health. Healthcare should be cost effective, implying that the price individuals pay for their care should produce effective and desired outcomes in health. Inability to pay for healthcare results in health inequalities.
- **Applicability** denotes that individuals with health needs can identify forms of services that exist and can be reached. Service providers are responsible for making themselves known among various social and geographical population groups through transparency and providing information and conducting outreach activities. Complementary to this dimension is the notion of the ability of individuals to perceive their own need for care.
- **Accessibility** refers to healthcare services being reachable and usable, both physically and in a timely manner.
- **Accuracy** denotes the net clinical benefit to the patient; the expected health benefit (i.e., increased life expectancy, relief of pain, reduction in anxiety, etc.) needs to exceed the expected negative consequences (cost, time off work, mortality, morbidity, etc.)⁹.

See the full description of this Priority Topic in the IDIH deliverable D3.7 Towards an international collaboration in digital health, v2.0, freely available at <https://idih-global.eu/outcomes/>

⁹ N. Insan, Access to Healthcare, [link](#)

PERSPECTIVES UNDER THE EUROPEAN HEALTH DATA SPACE

The European Health Data Space will empower individuals across the EU to fully exercise their rights over their health data. People will be able to easily access and share these data*, while retaining greater control over them, fully in line with our overall EU approach to data protection. Particularly, MyHealth@EU aims to empower citizens by giving secure access to their health data abroad and to strengthen cooperation and synergies between the Member States and the European Commission. Specifically, it enables the Member States to provide high-quality cross-border healthcare services to the EU citizens by allowing the seamless cross-border exchange of clinical documents (Patient Summary and ePrescription).

* See: Questions and answers – EU Health: European Health Data Space at [link](#)

1.1.2.1 COMMON PRIORITY TOPIC 2: EXPECTED IMPACTS

older people



Age-friendly products and services based on the personalised medicine approach should be delivered tailored to the specific needs and requirements of elderly people. This will facilitate the provision of **improved personalised caregiving services** designed to enhance the quality of life.

The adaptation of inclusive age-friendly design techniques for the development of digital services and apps will be able to **reduce social isolation and loneliness of older citizens**. These services will facilitate the communication of older people with their caregivers, family members, and friends. The need for such services and apps was evident during the isolation caused by the Covid-19 pandemic. During the Covid-19 pandemic, indeed, it became evident that digital inclusion is a necessity for society to exercise basic human rights. Worldwide, the most vulnerable group to this phenomenon was the elderly who were facing loneliness and isolation during the pandemic. Therefore, at an international level, inclusive strategies need to be constructed and adopted to engage older people in programmes of digital literacy for AHA.

The design and delivery of training courses, taking into account age and cultural and gender related particularities, will help older people obtain basic digital skills. This will allow them to adopt digital healthcare services and apps that will improve the quality of their lives and allow them to become integrated members of the digital society.

R&I community



“Design for all” principles considering the particular needs and usability constraints of elderly users in the design and development of healthcare services will **facilitate the provision of accessible technological products** for them. It is also important to conduct thorough multi/transdisciplinary research to create a framework for the integration and provision of AHA services in respect to the 5-As approach. This will ensure equitable access for the elderly, regardless of their background.

Multi/transdisciplinary research needs to focus on:

- integration into the healthcare system of inclusive and age-friendly healthcare services adopted to the needs of older people; and
- advanced methods that will lead to the empowerment of elderly citizens to eliminate the gap between them and the healthcare system.

Synergies and networking activities among researchers and stakeholders in the EU and partner countries will facilitate **expanded cooperation and knowledge sharing for the adaptation and replication of these successful models and tools**.



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DIGITAL INCLUSION

Policy makers should take into account users' empowerment, especially how to take care that they are able to learn and execute data governance actions. 🗣️

Combine digital skills training with health literacy training (eHealth literacy training) is a fundamental action to be undertaken in this field. 🗣️

A positive approach to Ageing (as a "chance") is needed, based on Intrinsic Capacity of the older people and intergenerational exchange and sharing. 🗣️

Our technologies should be vetted by older adults and caregivers at the research and development phase. Startups should participate in insight sessions where they receive feedback from older adults and caregivers. 🗣️

Another change in perceptions is needed when dealing with Differences, to be meant as opportunities, also re-thinking personalization, scalability and adaptability of solutions. 🗣️

Matching the target groups and their needs in real (social) setting is a key to provide effective solutions for AHA. 🗣️

Disseminating and promoting an approach based on Intrinsic capacity of the older people, should be done among caregivers and practitioners. 🗣️

Take care of and secure digital education in policies for older societies in different countries could be a path for the enhancement of international cooperation in this field. 🗣️

Our technologies should be vetted by older adults and caregivers at the research and development phase. Startups should participate in insight sessions where they receive feedback from older adults and caregivers. 🗣️

It is fundamental with older persons to go beyond technical jargon and support them in daily life usage of technology based on their real personal needs. 🗣️

Check this publication by <https://gluusociety.org/>: organizations are providing digital literacy supports - from local libraries <https://www.torontopubliclibrary.ca/seniorstechhelp/>. 🗣️

There is a recognised need for standards in physical environments - standards dealing with operations/technologies of solutions. 🗣️

1.1.3. COMMON PRIORITY TOPIC 3 – Area: Interoperability by design

INTEROPERABILITY BY DESIGN



To ensure **accessibility, sharing, and protection of data from different sources**, such as Internet of Things (IoT) wearables and sensors, through the development of **international standards, procedures, and incentives** for producers so they are accessible in all countries based on an interoperability by design approach for digital solutions in preventive and integrated care and independent and inclusive living of the elderly.

Despite policy recommendations made in 2019, there are many differences in data formats in hospitals, clinics and health regions in Europe. The goal is to make 100% of the EHR accessible to the whole population by 2030. This means that people with particular needs, such as older adults, will need to learn how to navigate the system and make use of the EHR. Even now where EHRs are available, citizens do not know how to access them.

Data standards are created to ensure that all parties use the same language and the same approach when sharing, storing, and interpreting information. In healthcare, standards make up the backbone of interoperability, or the ability of health systems to exchange medical data regardless of the domain or software provider.

The list of the largest and most recognised standards development organisations include:

- HL7 – Health Level 7 International,
- NCDPD – National Council for Prescription Drug programmes,
- IHTSDO – International Health Terminology Standards Development Organisations,
- DirectTrust Standards,
- CDISC – Clinical Data Interchange Standards Consortium.

The main standards created by the standards development organisations and widely used across healthcare organisations fall into four large groups:

- terminology standards;
- content standards;
- data exchange or transport standards; and
- privacy and security standards.

Terminology standards. Created to communicate medical concepts with utmost precision, there are sets of codes, terms, and classifications that clinicians use on a daily basis. Health data may be exchanged without terminology standards, but there is no guarantee that all parties will be able to understand and use them.

Content standards. Content or document standards dictate the structure of electronic documents

and types of data they must contain. They ensure that medical data is properly organised and represented in a clear and easy to understand form.

Transport standards. Transport standards facilitate data exchange between different health systems. They define what formats, document architecture, data elements, methods, and APIs to use for achieving interoperability.

Privacy and security standards. Privacy and security standards establish administrative and technical rules to protect sensitive health data from misuse, unauthorised access, or disclosure. In the US, the privacy and security standards for medical information are outlined by the Health Insurance Portability and Accountability Act (HIPAA). In the European Union, health information falls within the scope of the GDPR¹⁰.

This section presents a strategy to concretely address the IDIH recommendations through an **action**

¹⁰ I. Dunskiy, Data exchange standards in healthcare & the importance of FHIR, 23.07.2021, [link](#)

See the full description of this Priority Topic in the IDIH deliverable D3.7 *Towards an international collaboration in digital health, v2.0*, freely available at [Link](#)

PERSPECTIVES UNDER THE EUROPEAN HEALTH DATA SPACE

There are many issues to address because this task is not only for privacy and cybersecurity concerns but also to consider differences in GDPR between member states. The goal is to use and reuse data for research. The EHDS* sets essential requirements specifically for EHR systems in order to promote interoperability and data portability of such system, which would allow natural persons to control their electronic health data more effectively. In addition, where manufacturers of medical devices and high-risk AI systems declare interoperability with the EHR systems, they will need to comply with the essential requirements on interoperability under the EHDS Regulation.

* Proposal for a Regulation of the European Parliament and of the Council on the European Health Data Space at [link](#)

1.1.3.1 COMMON PRIORITY TOPIC 3: EXPECTED IMPACTS

R&I communities and society



Technology providers will create an ecosystem of validated, age-friendly AHA services and apps to facilitate access for interested organisations in the EU and other regions. Academic institutions and healthcare organisations will collaborate on data sharing and the creation of **harmonised global datasets**.

International cooperation in the AHA domain will create synergies that allow an increase in participation by target groups. Consequently, the **quality of the research outcomes** will be significantly enhanced, creating a **meaningful impact on societies**.

policy maker



Best practices sharing and knowledge exchange at an international level will facilitate the creation of **enhanced evidence-based common policies and guidelines**. This collaboration will facilitate the standardization of key technological developments and findings and common approaches in the AHA domain. The EU has already initiated a framework toward these recommendations for interoperability^A.

healthcare system/services



The endorsement of worldwide accepted technological standards will allow the delivery of interoperable services and devices, which contribute to WHO Strategic Objective 3 “Strengthen governance for digital health at global, regional and national levels.” The potential for integration and quality should exponentially increase the **added value of these technologies, positively affecting integrated care at a national level**. Interoperability will allow data sharing to provide better healthcare services^B.

A Joinup, European Commission, Interoperable Euro [link](#)
 B.IDIH Week 2022 – US Regional Workshop recording, [link](#)



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INTEROPERABILITY BY-DESIGN

Data Harmonization is a priority in this field and must be addressed ensuring data security and privacy. Therefore, ethical boards are always a fundamental component in consortia dealing with such domain. 

AGE-WELL (Canada) has a special experience, to be potentially exploited for international cooperation, in the field of standard development in terms of hip protector testing procedures and long-term care infection prevention and control. 

Technology must adapt with the evolution of the functional abilities of people. 

There is the need to consider ownership of patient data and portability of it in an increasingly globalised world. 

There is a debate about how to tackle this topic in Canada in terms of ensuring cybersecurity and updated policies for the new digital reality. e.g. [link](#) 

There are several policy actions to be undertaken in this field, always including the strong participation of Civil Society. Regulations for preventing product obsolescence, such as requiring updates for smartphone OS's , an consumer repair options are needed. Moreover, there is a general need for more Ethics in Clinical Trials: differences in regulations/procedures from Health Authorities call for harmonizing procedures in clinical trials. 



2. How to enhance

plan for the implementation of the three common priority topics at national and international levels: from policy formation to policy evaluation.

As a first step, IDIH here highlights **barriers** to consider and possibly remove, as well as **enablers** upon which to leverage to possibly favour implementation of the IDIH common priority topics.

Among the possible barriers and enablers for international cooperation in digital health for AHA, the IDIH consortium recommends considering the IDIH project findings on:

- the [panorama of the digital health landscape in the EU and in the strategic partner countries](#)
- the trends, drivers, and enablers of digital health supporting AHA.

Moreover, as part of the analysis of the **funding schemes supporting international cooperation in digital health for AHA**, IDIH encourages the policymakers and funding agencies interested in a follow up of the IDIH common priority topics to take into account the policies and schemes already put in place in the EU and the IDIH Strategic Partner Countries to address digital health for AHA through international cooperation, as enabling factors for further strengthening international collaborative research. The IDIH [Guidebook for RDI Stakeholders](#), therefore, could also be considered as a reference document in this regard.

Additionally, a comprehensive collection of key policy drivers is included in the action plan of this roadmap, already available as a legacy of the IDIH project for the purposes of the first agenda setting phase.

Furthermore, the IDIH action plan addresses several **key initiatives, stakeholders, and networks to be engaged in knowledge mobilisation** workshops as part of the policy/programme formation phase of the proposed plan, who are also considered as enablers facilitating the process of enhancement of international cooperation around the IDIH common priority topics.

Among these initiatives, IDIH highlights also the **cluster organisations**. More information about the analysis of cluster organisations as enablers to enhance international cooperation in digital health for AHA, in the EU and IDIH strategic partner countries, is included in the ANNEX 1 of the IDIH deliverable D3.7 *Towards an international collaboration in digital health, v2.0*, freely available at [link](#)



Barriers of common priority topic 1 – Area: Data governance

- *Lack of digital health literacy [level of likelihood: low]*
- *Conservative tendencies in the healthcare industry where verification and application processes are tight and strict, making political, economic and social change slower [level of likelihood: low]*
- *Lack of organisational resources for healthcare systems to meaningfully engage/empower patients in the process and address management challenges. [level of likelihood: medium]*
- *Lack of a harmonised regulatory framework for data integration and interoperability that would facilitate data transfer and exchange, mainly due to scattered decision-making throughout the management levels of public affairs [level of likelihood: high]*
- *Non-availability of health data and electronic health records [level of likelihood: high]*



Barriers of common priority topic 2 – Area: Digital inclusion

- *Digital technology is still too expensive for some older citizens to purchase. The high cost of implementing digital solutions may be the cause and should be addressed. [level of likelihood: high]*
- *Not all citizens have equitable access to digitally enabled infrastructure (e.g., secure broadband, mobile data). [level of likelihood: medium]*
- *Some older citizens may be concerned that digital inclusion may disrupt 'non-digital' forms of inclusion and social relationships. [level of likelihood: medium]*
- *Differences in healthcare systems and models across countries may represent a level of complexity to be addressed by international and multi/transdisciplinary research. It is necessary to consider national, as well as individual, differences for the verification and standardization of research results¹¹. [level of likelihood: high]*



Barriers of common priority topic 3 – Area: Interoperability by design

- *Differences in data security policies and regulations remain an issue for international R&I. It is important to include a preliminary study phase on this field and consider favouring a policy dialog at an international level, supporting and accompanying the R&I actions proposed. [level of likelihood: high]*
- *If data interoperability and some international standards already exist, huge implementation challenges still affect research outcomes; this is often due to the lack of interoperable health data made available by the healthcare services according to specific government policies¹². [level of likelihood: medium]*

11 For example, in Korea, most medical services are available to all citizens due to the implementation of the national health insurance system. However, if it is not covered by national insurance, public accessibility is low, so other solutions are needed.

12 US government has spent huge amount of money in these efforts. It remains to be seen whether other countries have the willing to do the same.

Enablers at national/international level*



Europe and beyond

[Global Coalition On Ageing](#)
[The AAL Community](#)
[European Innovation Partnership on Active and Healthy Ageing \(EIP AHA\)](#)
[EC eHealth Stakeholder Group/ Task Force](#)
[Futurium](#)
[European Public Health Alliance \(EPHA\)](#)
[Enterprise Europe Network \(EEN\)](#)
[Healthy Ageing Incubator](#)
[AGE Platform Europe](#)
[JADECARE](#)



Canada

[AGE-WELL Networks of Centers of Excellence \(NCE\)](#)
[North American Chapter International Society for Gerontechnology \(ISG\)](#)



China

[Smart Health Care and Home Care Branch of China Association of Gerontology and Geriatrics \(S2HC-CAGG\)](#)
[CBTC – China-Belgium Science and Technology Center](#)



Japan

[National Center for Geriatrics and Gerontology \(NCGG\)](#)
[Smart Ageing Research Center of Tohoku University](#)
[Agile Co-creation of Robots for Ageing \(ACCRA\)](#)
[CARESEES](#)



South Korea

[Korea Research Institute of Biosciences and Biotechnology \(KRIBB\)](#)
[Electronics and Telecommunications Research Institute \(ETRI\)](#)
[Korea Institute for Advanced Technology \(KIAT\)](#)
[Korea Innovation Center Europe](#)
[Global Digital Health Partnership](#)
[Seoul Clinical Laboratories \(SCL\)](#)



United States

[American Association of Retired Persons \(AARP\) Foundation](#)
 The importance of private insurers for older adults
 Academic medical centers (AMCs)



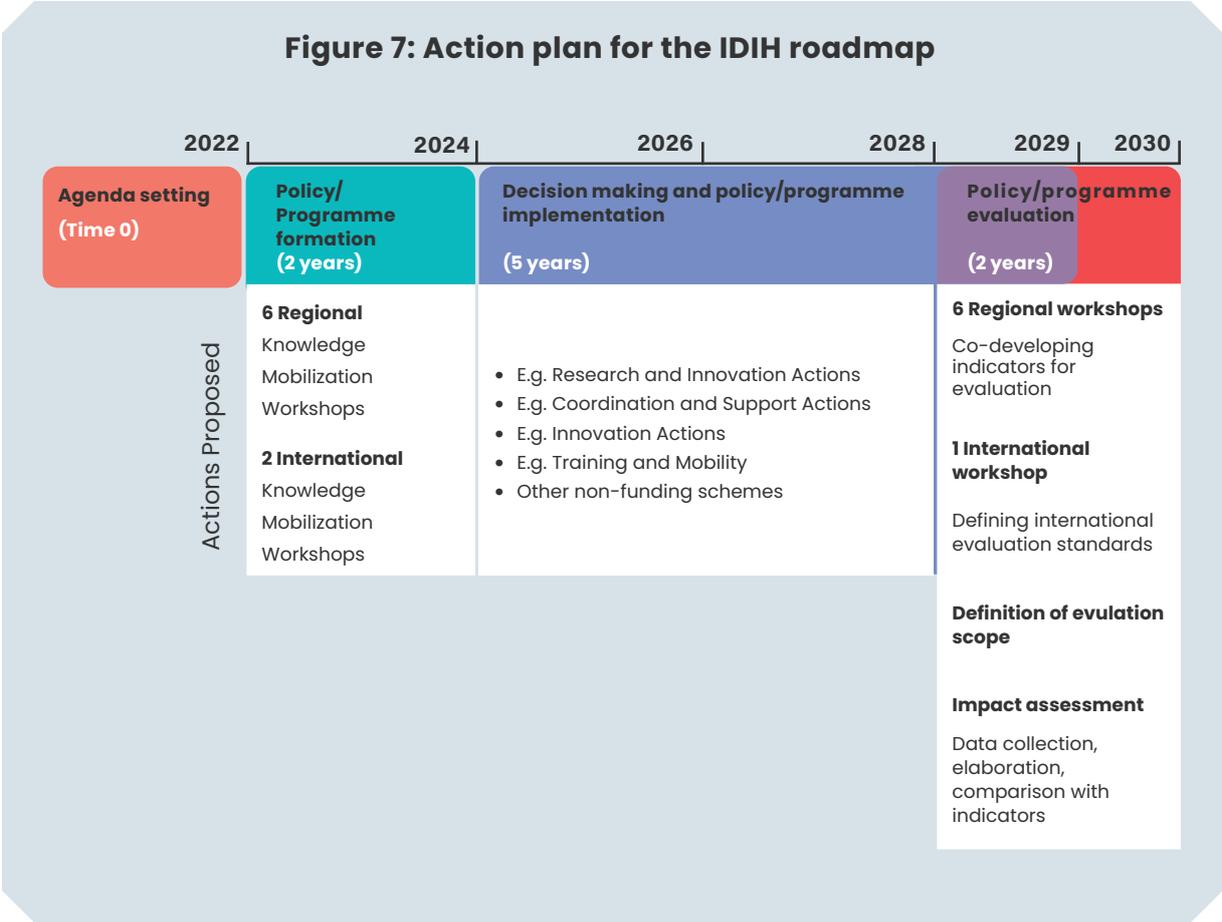
* More information on these initiatives and their exploitable outcomes for the purposes of IDIH can be found in the long version of this Roadmap available at <https://idih-global.eu/outcomes/> as D3.7 Towards an international collaboration in digital health

2.1. Action plan

In order to **support follow up of the three common priority topics** identified by the **IDIH Digital Health Transformation Forum** as common ground for enhancing international cooperation in digital health for AHA, IDIH intends to provide policy makers and funding agencies from the EU and the five IDIH strategic countries with **a concrete proposal for how to implement the IDIH recommendations**. Therefore, an **action plan** is included here as part of the section “How to enhance.”

This **action plan** was developed considering the steps of the **policy making process**, suggesting specific durations for each key step, developing an **overall timeframe for implementation in eight years**, and looking at the goals of the **UN Decade for Healthy Ageing** in 2030.

1. **Agenda setting:** highlighting to policy makers the relevant framework policy priorities at regional/international levels to be taken into account, justifying the need for action in the field proposed by the IDIH Forum [*at time 0*].
2. **Policy/programme formation:** supporting the policy makers and relevant funding agencies to map a state-of-art programme in the field of digital health and ageing, consult the key stakeholders at national/international levels (through PLC), and identify the trends and enablers to be potentially exploited [*suggested duration: 2 years*].
3. **Decision-making and policy/programme implementation:** supporting the policy makers and relevant funding agencies to single out and manage a particular course of action; e.g., joint funding scheme/partnerships and other initiatives at national/international levels, considering the available resources and opportunities at stake [*suggested duration: 5 years*].
4. **Policy/programme evaluation:** suggesting the policy makers and relevant funding agencies develop a methodology for a follow up to determine whether the policy/programme brought about the desired results and impact; pointing out, in particular, knowledge mobilisation through workshops with users and policy makers (now experienced as best practice from CIHR/Canada) as an option to be put in place in this phase and possibly replicated in different countries internationally [*suggested duration: 2 years*].



2.1.1. Agenda setting [2022]



As a result of the IDIH analysis¹³ of the policy framework that, at national and international levels, may support implementation of the IDIH recommendations, **several key policy drivers and highlights** are to be considered as a basis – at time 0 (2022) of this action plan, justifying further action in the three areas suggested by IDIH for international cooperation in the field of digital health for AHA: *data governance, digital inclusion, and interoperability by design*.

¹³ See reports [Briefing note on \(priority\) topics for the Expert Groups](#), [Guidebook for RDI stakeholders](#).

- Key policy drivers for agenda setting at the EU and international levels:

Europe's strategy for international cooperation in a changing world:

Commission Communication on the Global Approach to Research and Innovation

2030 Digital Compass

- The Communication of the European Commission "Shaping Europe's digital future"

[Communication of the European Commission "Shaping Europe's digital future"](#)

[Regulation on European data governance](#)

[The Data Act](#)

- WHO Decade of Healthy Ageing

[A 10-years Plan for a Decade of Healthy Ageing 2020–2030](#)

[WHO Global Report on Ageism](#)

- Green Paper On Ageing

[Green Paper on Ageing. Fostering solidarity and responsibility between generations"](#)

See *policy highlights for agenda setting in strategic countries* and the full description of this stage of the action plan in the IDIH deliverable D3.7 *Towards an international collaboration in digital health, v2.0* , freely available at [link](#)

2.1.2. Policy/Programme formation [2022–2024]



In order to support the policy makers and relevant funding agencies to map the state-of-the-art situation in the field of digital health and ageing, IDIH reviewed the [panorama of the digital health landscape in the EU and in the strategic partner countries](#) and has explored the [trends, drivers, and enablers of digital health supporting AHA](#).

An analysis of the funding schemes supporting international cooperation in digital health and ageing has also been carried out and the results have been gathered in the dedicated [Guidebook for RDI Stakeholders](#).

Starting from this first published information concerning the R&I landscape around digital health and ageing in the EU and in the strategic partner countries (Canada, China, Japan, South Korea, and the United States), IDIH intends to encourage policy makers and funding agencies to complement this first mapping of the state-of-the-art by **further exploring the trends and the enablers so that they can be potentially exploited for the purposes of policy/programme formation** around the three common priority topics proposed by the IDIH Digital Health Transformation Forum.

As described below, IDIH recommends initiating **a round of consultations** with key stakeholders at national and international levels, as part of a **knowledge mobilisation effort** through which relevant policy makers and funding agencies could further gain evidence-based and updated information on trends, drivers, and enablers of digital health potentially supporting AHA through international cooperation.

Considered as a consolidated best practice in Canada¹⁴, the knowledge mobilisation approach could be successfully replicated in the EU and the strategic partner countries for the purposes of this policy/programme formation phase by organising **at least one regional workshop (one in each region)** and **two international policy dialog workshops** (eventually held in synergy with the [ENRICH GLOBAL Health Innovation Thematic Group](#)), especially leveraging on key initiatives stakeholders dealing with digital health and AHA, such as those suggested as target groups in the steps below.

Aims of the Knowledge Mobilisation Workshops		Target Groups
Regional Workshops:	Update the state-of-the-art of regional R&I landscapes around digital health and ageing and discuss the policy/programme options with relevant regional stakeholders for implementation of the IDIH common priority topics through co-creation sessions and foresight exercises based on desired scenarios of strengthened international cooperation.	R&I communities and networks; care providers, tech providers, users' associations, policy makers/funding agencies
International Workshops (ENRICH GLOBAL):	Compare regional R&I landscapes around digital health and ageing and identify common paths for decision-making at an international level.	policy makers/funding agencies

This phase - supported by the [Programme Level Cooperation](#) already set internationally by the IDIH project among six relevant funding agencies - will better orient decision-making for the eventual implementation of international cooperation initiatives around the three common priority topics proposed by the IDIH Digital Health Transformation Forum.

¹⁴ Guidelines for Effective Knowledge Mobilisation, Government of Canada, https://www.sshrc-crsh.gc.ca/funding-financement/policies-politiques/knowledge_mobilisation-mobilisation_des_connaissances-eng.aspx

1. Strengthening programme level cooperation initiated by IDIH

As a first step in the policy/programme formation phase, IDIH recommends leveraging on the international policy dialog initiated in the framework of the project itself, as part of the [Programme Level Cooperation](#) (PLC) set among the six relevant funding agencies from the EU and the five strategic partner countries.

In this regard, policy makers and funding agencies interested in a follow up of the IDIH common priority topics are encouraged to strengthen the relationships among their peers at:



[EU] DirectorateGeneral for Communications Networks, Content and Technology (DG CONNECT), European Commission – https://ec.europa.eu/info/departments/communications-networks-content-and-technology_en



[EU] DirectorateGeneral for Communications Networks, Content and Technology (DG CONNECT), European Commission – https://ec.europa.eu/info/departments/communications-networks-content-and-technology_en



[CANADA] Canadian Institutes of Health Research (CIHR) – Institute of Ageing, Canada – <https://cihr-irsc.gc.ca/e/8643.html>



[CANADA] Canadian Institutes of Health Research (CIHR) – Institute of Health Services and Policy Research (IHSPR) – <https://cihr-irsc.gc.ca/e/13733.html>



[CHINA] NNSFC – National Natural Science Foundation of China – https://www.nsf.gov.cn/english/site_1/index.html



[JAPAN] METI – Ministry of Economy, Trade and Industry – <https://www.meti.go.jp/english/>



[JAPAN] MIC – Ministry of Internal Affairs and Communication – <https://www.soumu.go.jp/english/>



[SOUTH KOREA] KIHDI – Korea Health Industry Development Institute – <http://khidicis.org/en/>



[USA] National Institute on Ageing (NIH – NIA), United States of America – <https://www.nia.nih.gov/>

Contact persons for the abovementioned funding agencies have been identified and are reported in the IDIH reports of the PLC meetings:

- Report of the 1st PLC meeting
- Report of the 2nd PLC meeting (available on the [project website](#) after approval of the EC)

Moreover, APRE, as a partner responsible for PLC in IDIH and beyond, coordinating the initiative of the recently established [ENRICH GLOBAL Health Innovation Thematic Group](#) and supporting IDIH project sustainability, could serve as **a contact point** to facilitate the liaisons among the policy makers and funding agencies interested in a follow up of the IDIH common priority topics, during the policy/programme formation phase and for the time necessary to implement this action plan.

APRE – Agenzia per la Promozione della Ricerca Europea

Contact person: Mathilde De Bonis

Phone number: +39 06 48 93 99 93

Email address: debonis@apre.it;

Website: www.apre.it

Besides the **spontaneous initiative of the policy makers and funding agencies to deepen bilateral/multilateral relations**, the activities here envisaged to strengthen the programme level cooperation and support this policy/programme formation phase, are those currently foreseen by the [ENRICH GLOBAL Health Innovation Thematic Group](#) under the umbrella of the ENRICH GLOBAL international network.

Initially concentrating its efforts on digital health for AHA, building on the IDIH legacy, the ENRICH Global Health Innovation Group will work as an expert-driven and long-lasting umbrella mechanism to enhance international cooperation and policy dialog on global health issues at large. In particular, the group will address policy makers and R&I stakeholders in the field (researchers, care providers, users/patient associations, health-tech providers, etc.) by engaging them in workshops and initiatives at an international level inspired by open innovation and evidence-based policymaking.

Therefore, as part of this policy/programme formation phase, IDIH encourages the policy makers and the funding agencies interested in the implementation of the IDIH recommendations to take part in:

- **Two international policy dialog (thematic) workshops** (to be held online by 2024), which will be organised by the ENRICH GLOBAL Health Innovation Thematic Group to discuss global challenges and compare policies in a mutual learning and exchange environment that will also encourage eventual joint funding initiatives and will be further nurtured with evidence-based information by a panel of international experts and key stakeholders from the *International Experts Forum for Health Innovation*, also managed by the ENRICH GLOBAL Health Innovation Thematic Group.
- **Proposal for focus of themes:**
 - **Data governance and interoperability by design in digital solutions for AHA:** accessibility, sharing, and protection of data toward international standards.
 - **Inclusive design and access of digital solutions for AHA:** best practices of empowerment and digital literacy

2. Engaging R&I communities and networks at national and international levels

In order to promptly identify the trends and enablers for the implementation of IDIH common priority topics in the EU and in the strategic partner countries, IDIH encourages the relevant policy makers and funding agencies to activate synergies with R&I communities and networks at national and

international levels through knowledge mobilisation regional workshops. The following are some key initiatives, in terms of players to be involved and knowledge legacies to be exploited, to be considered in the organisation of the regional workshops.

3. Consulting user associations

In order to **ensure that a user-centered perspective is at the foundation of any further action for the implementation of the IDIH common priority topics** at an international level, IDIH recommends engaging in knowledge mobilisation workshops with those associations at regional and international levels that represent older persons, patients and their families, as well as care providers/caregivers (formal and informal) and professionals.

These organisations are mainly umbrella organisations (II level associations) with demonstrated advocacy power and they have already been addressed by IDIH as part of the setup of the UCG, whose members are listed below.

Moreover, a [list of NGOs accredited to the UN OEWG on Ageing](#) (open-ended Working Group on Ageing for the purpose of strengthening the protection of human rights of older persons) can be also considered for further engagement in the knowledge mobilisation workshops.

UCG members		
Name	Organisation	Region
Anna Odone Digital Health Section President	European Public Health Association (EUPHA) https://eupha.org/	EU
Ilenia Gheno Research Project Manager	AGE Platform Europe https://www.age-platform.eu/	EU
Peggy Maguire Director General	European Institute of Women's Health (EIWH) https://eurohealth.ie/	EU
Gloria Gutman Vice President	International Longevity Center-Canada https://www.ilccanada.org/	Canada
Jie Wang Vice President	Smart Health Care and Home Care Branch of China Association of Gerontology and Geriatrics (S2HC-CAGG)	China
Yasuko Akutsu CEO/Ambassador	MT Health Care Design Research Inc. http://hcdr.co.jp Ageing 2.0 Tokyo chapter ambassador	Japan
Gloria Gutman President	North American Chapter International Society for Gerontechnology https://www.gerontechnology.org/	USA/Canada
Stephen Johnston Co-Founder	Ageing 2.0 https://www.ageing2.com/	USA

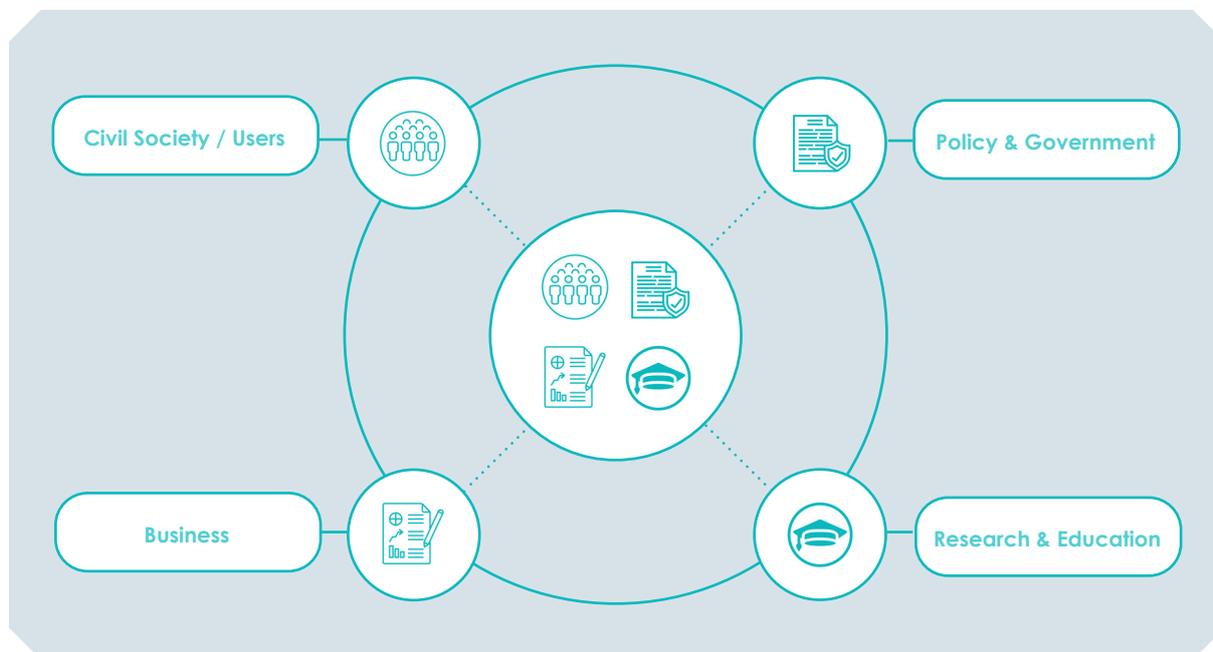
Moreover, besides UCG members, IDIH has identified other relevant organisations, listed in the table below:

Region	Organisation
Europe	European Patients' Forum (EPF)
Europe	International Alliance of Patients' Organisations (IAPO)
Europe	European Senior Organisation of the PES
Europe	Alzheimer Europe (AE)
Europe	European Federation of Neurological Associations (EFNA)
Europe	European Parkinson's Disease Association (EPDA)
Canada	International Longevity Center
Canada	Canadian Association for Retired Persons (CARP)
China	Chinese Geriatrics Society
China	Smart Health Care and Home Care Branch of China Association of Gerontology and Geriatrics (S2HC-CAGG)
China	Chinese Ageing Well Association
Japan	Japan Geriatrics Society (JGS)
Japan	Japan Federation of Senior Citizens Club
South Korea	Care Rights
South Korea	Réseau FADOQ
United States	National Council on Ageing (Center for Healthy Ageing)
United States	National Alliance on Caregiving
United States	Alzheimer's Association

4. Mobilise R&I ecosystems through a quadruple helix approach

R&I ecosystems that are relevant at regional and international levels in the field of digital health and ageing can be further explored by engaging **cluster organisations** in knowledge mobilisation workshops together with user associations in order to adopt a *quadruple helix* approach and ensure the inclusion of a wide range of stakeholders and views.

Figure 8: Quadruple helix approach (infographics by the BIOVOICES project GA.774331)



As member organisations gathering in their ecosystems actors from the *quadruple helix*: academic/ research organisations, industry players, among which notably are SMEs, R&I support organisations, such as accelerators or incubators, and also policy support organisations¹⁵, cluster organisations are **ideal facilitators in the R&I landscape**. Moreover, in line with EU's strategy in this field, which is strongly supported by the European Commission DG GROW, cluster organisations have a strong interest in international collaboration and thus, for a large majority, they are constantly seeking international collaboration opportunities with relevant organisations from other countries (inside and outside of the EU).

This is why cluster organisations can be seen as important enablers for international collaboration in RDI, supporting also international policy dialog.

International cluster collaboration is specifically driven through the so called [European Strategic Cluster Partnerships Going International \(ESCP-4is\)](#). These are groups of cluster organisations that are working on a given thematic field/sector and aiming to align their international strategic approach for the benefit of their members. Cluster partnerships help develop common actions (such as business missions, cooperation agreements, gateway services, export consortia, and so on) as well as strengthen European SMEs' access to specific third-country markets. They also help create a long-term collaboration agenda with strategic partners in third world countries.

¹⁵ Definitions of a cluster and a cluster organisation can be found on the European Cluster Collaboration Platform, a DG GROW initiative: <https://clustercollaboration.eu/cluster-definitions>

What makes these collaboration schemes particularly interesting is the fact that EU cluster organisations have on average 100 members each out of which a large majority are SMEs. This is why connecting cluster organisations and similar member networks from the EU with counterparts from the targeted countries can have a very strong multiplier effect and such collaboration schemes can be real catalysts for R&I collaboration among members.

2.1.3. Decision-making and policy/programme implementation [2024–2029]



After having carried on an extensive consultation with relevant stakeholders at regional and international levels through mobilisation workshops to explore the possible paths for implementation of the IDIH common priority topics, policy makers and funding agencies should **further assess and single out a particular course of action at regional and international levels**; e.g., joint funding scheme/partnerships and other initiatives at national/international levels.

Policy makers and funding agencies will identify the best implementation options to pursue considering the contingent national contexts and contingent factors, as well as the resources available and the opportunities at stake. However, IDIH provides them with several recommendations, here presented, to address the implementation of the common priority topics, taking as an example the *Types of Actions* under the European Framework Programme for Research and Innovation (Horizon Europe), but also conceiving partnership schemes not supported with funding.

Types of Actions recommended by IDIH	
Research and innovation actions (RIA)	Activities that aim to create new knowledge and/or explore the feasibility of a new or improved technology, products, processes, services or solutions. They therefore include basic and applied research, development, integration of technology, testing, and demonstration and validation of a small-scale prototype in a laboratory or simulated environment
Innovation actions (IAs)	Activities aimed at planning and designing new, altered or improved products, processes or services, possibly including prototyping, testing, demonstration, piloting, large-scale product validation, and market replication.
Coordination and support actions (CSA)	Activities that contribute to the objectives of the programme and that are not R&I activities in the strict sense.
Training and Mobility Actions	Providing researchers with the right combination of scientific and transversal skills through international, interdisciplinary, and intersectoral mobility.

Priority Topic 1 – Area: DATA GOVERNANCE

Recommended: RIA

- The research and development of **multi-modal and forward/backward longitudinal studies** and the implementation of advanced Big Data analytic techniques could be reached through multinational stakeholder collaboration schemes capable of undertaking projects that fit the characteristics of RIA.
- Multinational consortia of stakeholders with supplementary profiles and expertise could collaborate for research and development of state-of-the-art **personalised-medicine approaches** and supportive technologies through the participation in RIA.
- The implementation and adoption of new technological and methodological approaches for healthcare services requires the **research and development of a reliable international validation framework** capable of being embraced by the research/academic community and society. To this end multidisciplinary international consortia need to undertake RIA. In support of these actions, **international policy dialog** among the involved stakeholders should be undertaken toward the development, adoption, and sharing of an international validation framework.
- Sharing of health-related data and the development and implementation of new technologies and methodological approaches for healthcare services require a validation framework capable of **addressing cybersecurity aspects that will ensure both the privacy and security of the patients/end-users**. Cybersecurity experts and researchers in collaboration with healthcare providers, including services integrators and manufacturers, could collaborate in RIA. In addition to these projects, the implementation and validation of innovative technologies can be applied through **IAs**.

Recommended: CSA

- Health data owners (healthcare institutions, national healthcare, and social services providers etc.) in collaboration with policy related organisations, end-user associations, and academic and research institutions could orchestrate and organise international initiatives toward the **adaptation of frameworks for the provision and sharing of data sources at an international level**. Such activities would ideally fit with the characteristics of coordination and support actions (CSA). Another relevant issue to point out is the **educational aspect** to be included in such actions, as well as the awareness about data security, making individuals feel comfort and security when their data has been accessed and used, and empowering stakeholders to advance healthcare by fostering **responsible and high-quality digital health innovation**.

Recommended: IA

- Multinational consortia could facilitate the implementation and adaptation of innovative approaches for personalised healthcare services through participation in **IAs**.

Recommended: Training and Mobility

- The facilitation of researcher exchanges and the collaboration of academic teams all over the world for scientific research on the above-mentioned topics can be achieved through the organisation of **training and mobility actions**.

Priority Topic 2 – Area: DIGITAL INCLUSION*Recommended: RIA*

- The development of **inclusive healthcare systems and services addressing the needs and functional abilities** of the elderly can be achieved through international multidisciplinary RIA with active involvement of the end-users in all stages of the design (inclusive co-design) and integration processes. The involvement in the RIA projects of social and communication scientists in the international multidisciplinary consortia will lead to the development of elderly empowerment models and tools and services capable of defeating social isolation and loneliness. In particular, these RIA need to undertake the formulation of a holistic framework capable to lead the research and development teams to the provision of age-friendly technologies adopted to the specific needs of the elderly population. This initiative should not target only patients and citizens but also informal carers (family, relatives, neighbours, etc.) who play a key role complementing the primary care.

Recommended: CSA

- Public information, education, digital literacy, and the presence of support systems are needed to get people familiar with the use of and access to digital solutions and therefore benefit from technology. It is necessary that digital solutions should be oriented on a **need-based** instead of *age-based* approach. The **digital divide gap of the elderly** needs to be addressed by sharing and replicating best practices, especially in the field of **education and digital literacy** (against any form of *ageism*), that will be thoroughly studied and validated by multidisciplinary consortia through international CSAs. In addition to that, the research and study of practices **toward the adoption of the 5-As approach** need to be addressed by multi/transdisciplinary consortia in CSA projects.

Recommended: Training and mobility

- Training and mobility actions will supplement the abovementioned initiatives and allow researchers and scientists of all the involved disciplines to thoroughly study and explore the relevant topics.

Priority Topic 3 – Area: INTEROPERABILITY BY DESIGN

Recommended: RIA/IA

- **The integration of heterogeneous technologies for the provision of preventive and integrated care and independent and inclusive living** for the elderly needs to be addressed both by RIA and IAs by international multidisciplinary consortia with the active involvement of end-users.
- **Interoperability issues need to be thoroughly researched and new standards and methodologies need to be designed and developed by the project teams.** These new pilot studies and studies should be based on information or data that already exists. Data gathered from a variety of sources need to be securely collected and shareable with international platforms and data hubs that are able to be re-used and exploited by the scientific community, technology providers, and stakeholders. Therefore, RIA of multidisciplinary consortia need to get involved in projects and initiatives that will address the abovementioned issues.

Recommended: CSA

- **Address health systems fragmentation at both international and national levels** as a shared challenge in the regions concerned and, therefore, to be considered as a basis for further international cooperation, as well as the activation of **a bottom-up interregional cooperation approach**, leveraging, thus, on the potential (in terms of impact) of local authorities.
- **Standardization bodies, research and academic organisations, healthcare industry representatives, and policy organisations will need to enable the dialog for the adoption of an international standardisation framework** for the facilitation of interoperability and communication of the healthcare technological systems and services at an international level. CSAs are ideally fit for this purpose.

Recommended: Training and mobility

- Data scientists, engineers, and research and academic teams will be able to exchange knowledge and collaborate on the development of interoperable healthcare systems and technologies through the participation in training and mobility actions.

2.1.4. Policy/Programme evaluation [2028 - 2030]



“Evaluation is a key learning tool for the European Union to understand not only what works and what does not, but critically why, and under what circumstances.”

“Evaluation matters. The evaluation policy for European Union development cooperation”

European Commission (2015)

In order to support policy makers and the relevant funding agencies with a methodology for follow up to assess to which extent the policy/programme actions implemented around the IDIH common priority topics have brought the desired results and impacts, IDIH is recommending here to further adopt a **knowledge mobilisation approach** to support the evaluation of actions undertaken, starting after the first two years of their implementation.

The EU’s new approach to evaluation policy has been underpinned by institutional reforms in this region and a vision for more citizen-based governance. *“This shift involves a move from citizens as simply voters, volunteers, and consumers to citizens as problem solvers and creators of public goods.”* In this new strand of development, *“government’s role [is] to arrange and facilitate interactions processes within networks in a such a way that problems of under or nonrepresentation are properly addressed and interests are articulated and dealt in an open, transparent, and balanced manner”¹⁶.*

In particular, by engaging the same stakeholders mentioned in the **Policy/Programme Formation phase**, policymakers and funding agencies will develop **quantitative and quality indicators** (Step 1) to **measure the impact** of actions implemented (Steps 1–4), based on the needs and priorities resulted from that first stage of extensive consultation at regional and international levels.

1. Preparation of an evaluation methodology, including quantitative and quality indicators co-developed with relevant stakeholders.

In a very preliminary stage of this phase, policy makers and funding agencies should develop a **methodology for evaluation**, including quantitative and quality indicators of the impacts and the actions undertaken for the implementation of the IDIH common priority topics, starting from the results achieved with the policy/programme formation phase (through stakeholders’ consultation), and based on an intervention logic, as defined by the OECD–DAC¹⁷:

¹⁶ “Evaluation matters. The evaluation policy for European union development co-operation”. European Commission (2015).

¹⁷ Development Assistance Committee of the Organisation for Economic Co-operation and Development.

*Evaluation is the 'systematic and objective assessment of an ongoing or completed project, programme or policy, its design, implementation and results.' Evaluation provides an **objective and timely assessment** of the performance of a strategy, policy, programme, project, or any intervention. It identifies and explains not only **what** changes have occurred, but critically **why** these changes have occurred. Evaluations follow rigorous methodologies based on intervention logic. Evaluation embraces both intended changes and unintended changes. It provides a judgment on whether a change can be attributed to a particular cause or to what extent particular factors have contributed to a given change.*

Evaluations should be in line with the evaluation policies and regulations set at the EU and international level:

- Evaluation standards of the OECD Development Assistance Committee;
- Evaluation methodological guidance for external assistance;
- EU institutional framework for effective management of evaluation activities.

The United Nations evaluation activities are managed by the UN evaluation group. Development banks, such as the World Bank, also possess strong evaluation functions and EU works closely with them.

Evaluations should be based also on the OECD-DAC evaluation criteria, namely:

Relevance is the extent to which the objectives of a policy or an intervention are consistent with the beneficiaries' needs and EU policies and priorities. Is the strategy currently, and likely to continue to be, appropriate for the beneficiaries?

Effectiveness is the extent to which the development intervention's objectives were achieved, or are expected to be achieved: Have the objectives been delivered and with what level of quality?

Efficiency is the measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results: Is there appropriate and optimal provision and use of resources to deliver the objectives sought?

Sustainability is the continuation, or probable continuation, of benefits from a development intervention after major development assistance has been completed: Are the positive results of the interventions likely to last once the intervention comes to an end?

Impact. Positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended: To what extent and why does the cooperation have an impact, or not?

As part of this preliminary step, IDIH recommends organising **at least one regional "validation" workshop (one in each region)** and **one international "validation" workshop** (eventually held in synergy with the [ENRICH GLOBAL Health Innovation Thematic Group](#)), key initiative stakeholders dealing with digital health and ageing, such as those suggested as *target groups* in the steps below.

Aims of the “Validation” Workshops		Target Groups
Regional Workshops:	Co-develop a set of quantitative/ qualitative indicators for the evaluation of the actions undertaken to implement IDIH Priority Topics.	R&I communities and networks; care providers, tech providers, user associations, policy makers/funding agencies
International Workshops:	Compare regional evaluation methodologies and develop standards at an international level.	Policy makers/funding agencies

2. Define the use and scope of the evaluation using intervention logic

What should be evaluated and why? These elements should be clearly stated in the Terms of Reference of the evaluation. During the inception phase of an evaluation, the **intervention logic** of the intervention is reconstructed, revealing the expected chain of results (from input to impact) and assumptions made during decision-making. A limited number of evaluation questions derived from that intervention logic should be formulated.

3. Collect data and compare with indicators

During the implementation phase, the necessary information is collected with **data collection** tools, such as documentary analysis, surveys, field research, and interviews. Evaluators cross-validate the information sources (“triangulate”) and critically assess the validity and reliability of the data. Limitations in the data collection must be explained.

4. Data elaboration and final assessment

The **final report** offers clear responses to the evaluation questions and reveals a logical chain from the findings to conclusions and recommendations. Good recommendations are realistic, evidence-based, targeted, clear, and prioritised. All these elements, as well as a description of the evaluation methodology used, are reflected in the final report, which is published and distributed on a large scale.

Notes: another assessment methodology to be considered for evaluation of **actions engaging cluster organisations**, is:

[A smart guide to cluster policy monitoring and evaluation](#): This smart guide is addressed to policy makers and cluster managers engaged in cluster policy making who are interested in monitoring and evaluating the impact of their policies. The objective is to provide them with easy access to material of high practical value and sound methodological underpinnings, available in a concise and easy to read manner. It thus complements the Smart Guide Cluster Policy published by the European Commission (2016) that already advocated monitoring and evaluation as a strategic tool for the implementation of cluster policies and programmes.



3. Conclusion

Positive impact is expected for society, above all the older people and the patients, from the implementation of the Priority Topics elaborated by the IDIH project. Potential benefits for the older people stemming from the proposed common priority topics can be summarized as follows:

1. The implementation of sophisticated services using state-of-the-art AI, machine learning, and Big Data analytics will increase the evidence base for decisions on treatment and diagnosis from the health professionals.
2. Personalised medicine services designed and tailored to the specific requirements of the elderly and will improve their self-management and quality of life. Age-friendly products and services tailored to the specific needs and requirements of elderly people will facilitate the provision of improved personalized caregiving services.
3. The empowerment of elderly citizens will eliminate the gap between them and the healthcare system. A framework for the integration and provision of AHA services in respect to the 5-As approach will ensure equitable access for the elderly.
4. Strengthening interoperability to support data exchange between healthcare providers within countries and across borders, will avoid duplications of tests, with positive effects for the elderly and healthcare costs in accordance with the targets and objectives of the European Data Health Space proposal.

It is expected that the **roadmap toward international cooperation in digital health for AHA** will be primarily used and exploited by **policy makers and funding agencies in the EU and the strategic partner countries**, who are the primary target group of this deliverable.

The roadmap is addressed to policy makers and funding agencies from the EU and the strategic partner countries, but also to other relevant target groups, such as the user/patient associations, healthcare organisations and services, academia and industry, R&I experts, clusters/ European strategic cluster partnerships going international/networks, and other enablers with the aim of enhancing international collaboration in digital health for AHA.

It is foreseen that the dialog of the IDIH Digital Health Transformation Forum and the implementation of the suggested policy recommendations in the areas of data governance, digital inclusion and interoperability by design will follow up via the ENRICH GLOBAL Health Innovation Group¹⁸.

18. About the Health Innovation group, ENRICH GLOBAL, [link](#)



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