



IDIH

INTERNATIONAL COLLABORATION
DIGITAL TRANSFORMATION
HEALTHY AGEING

D2.3

Report on second Users Consultation Group meeting

ATC

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Executive Summary
<p>The IDIH Users Consultation Group (UCG) has been created to advise the IDIH experts selected to work within the Digital Health Transformation Forum, a long-lasting and umbrella mechanism set by the project to foster collaboration between the European Union and five Strategic Partner Countries (Canada, China, Japan, South Korea, USA) in the field of Digital Health for AHA. Composed of the most relevant representatives of “end users” of the digital transformation of health and care in the EU and the Strategic Partner Countries, the UCG guides the experts of the IDIH Forum to adopt a user-centred perspective by providing inputs and feedback to their work, towards the elaboration of a roadmap to enhance international cooperation in priority areas in the field of Digital Health for AHA. This report documents the results of the 2nd meeting of the UCG within IDIH that has been held virtually on February 3, 2022.</p>

Keywords
Digital Health, Active and Healthy Ageing, Users Consultation Group, Users Associations

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Abbreviations and Acronyms

Abbreviation	Description
APRE	Agenzia per la Promozione della Ricerca Europea (project partner)
ATC	Athens Technology Center S.A. (project partner)
Catalyst	Health 2.0 LLC (project partner)
CET	Central European Time
CIHR	Canadian Institutes of Health Research (project partner)
EC	European Commission
EG	Expert Group
GAC	G.A.C. Group
GSBC	Global SMEs Business Council (project partner)
PLC	Programme Level Cooperation
R&I	Research and Innovation
S2i	Steinbeis 2i GmbH (project partner)
SPS	School of Pharmaceutical Science Tsinghua University (project partner)
UCG	Users Consultation Group

Introduction

This document reports the work of the 2nd meeting of the Users Consultation Group (UCG) that has been held on February 3, 2022, within the EU-funded project IDIH - *International Digital Health Cooperation for Preventive, Integrated, Independent and Inclusive Living*. The second meeting of the Users Consultation Group was organised in **two separate and consecutive sessions**.

This responds to the need of expanding as much as possible the contribution from users' representatives also drawing on external expertise, given the limited availability of UCG members – especially those from Asian strategic partner countries – to participate in the originally planned meetings presumably due to other incumbencies or time zone issues. **Therefore, this document reports the results of the contribution of only four out of seven UCG members - representing Europe, Canada, and China - but includes the perspective of three external experts, all with distinguished experience in users' engagement in the field of Digital Health & Ageing, introduced by a relevant lecture of an IDIH expert¹. A perspective on Japan – as an example of an approach to users' engagement - has been included by involving the coordinator of the e-VITA project in Japan.** However, to comprehensively contribute to the works of the Digital Health Transformation Forum for the elaboration of a roadmap to enhance international cooperation in this field², IDIH could count also on the interviews with the IDIH experts from the strategic partner countries on the occasion of the IDIH magazine and podcast editions³, as well as on the results of the preliminary study phase initiated by the project with the mapping the digital health landscape in the EU and the 5 strategic partner countries⁴, and progressed with the analysis of relevant policies and strategies to address Digital Health for AHA at regional and international level⁵

During the **first open session** of the event, key stakeholders from Europe and beyond presented case studies and design experiences of digital solutions for the AHA domain, especially addressing challenging designing and implementing aspects that concern the inclusion of final users (older persons and formal/informal carers) in the development and adoption of solutions, as well as in addressing the issues of data sharing and compliance with data regulations. This **first session** of the event was **open and public**, with the participation of UCG members and external speakers dealing with users' engagement in R&I internationally. An invitation with the concept and the agenda was sent through IDIH social media, website, and email campaigns.

The **second session** of the event was a **closed meeting** with the participation of the members of the IDIH Users Consultation Group and IDIH project partners representatives. This meeting aimed to provide a first reflection on the results of this first open session in the light of project purposes, and discuss, to evaluate and elaborate on the findings of the 3rd IDIH Experts Groups Workshop three on

¹ Matthew Lariviere, Chair of the IDIH Inclusive Living Expert Group.

² See D3.7 Towards an international collaboration in digital health, v2.0 at <https://idih-global.eu/outcomes/>

³ See the Annex 1 of this document.

⁴ See D1.2 Panorama of the digital health landscape in the EU and in the Strategic Partner Countries and the Country Factsheets at <https://idih-global.eu/outcomes/>

⁵ See D4.5 Guidebook for care providers and users at <https://idih-global.eu/outcomes/>

Priority Topics around three main areas of intervention: Data Governance, Digital Inclusion, and Interoperability-by-design⁶.

Therefore, the current report consists of two main parts that are presenting the proceedings and the findings of the open and closed sessions of the 2nd UCG meeting. The methodological approach and some conclusive remarks are also included.

1 Methodology

The strategy, decided unanimously by the IDIH consortium, is to unite forces of the IDIH Expert Groups Members and work collaboratively towards the final phase for the design and development of a Roadmap for policymakers with concrete steps and recommendations to enhance international cooperation in the field of Digital Health for Active and Healthy Ageing.

To this end, the 3rd IDIH Expert Group Workshop considering findings and results of the previous project activities, consolidated its first results around three common priorities in the areas of

- Data Governance
- Digital Inclusion, and
- Interoperability-by-design.

To **open and widen as much as possible the debate around the results of the IDIH Experts Forum and its Users' Consultation Group**, the Consortium decided to take the opportunity of the 2^o UCG meeting to host a Stakeholder's Event with the [IDIH "wider" Community](#) - now counting more than 400 R&I stakeholders working internationally in the fields of Digital Health & Ageing – to better explore users' needs and perspectives and prove the coherence and relevance of the 3 Common Priorities outlined by IDIH Experts.

According to this approach, two distinguished sessions have been designed as part of the 2^o UCG meeting:

- **The first session was an open and public event (IDIH Stakeholders' Event)**, with the participation of UCG members and external speakers dealing with users' engagement in R&I internationally.
- **The second session was a closed meeting**, only among UCG members, held right after the IDIH Stakeholders' Event on February 3.

The results of the discussion held during these sessions are presented in this report and will be fully integrated into the IDIH Roadmap (D3.7).

⁶ See D3.5 3rd Expert Group Workshop Report at <https://idih-global.eu/outcomes/>

1.1 Organisation and realisation of stakeholders' event (public)

In the same spirit, IDIH project and particularly APRE in collaboration with the rest of the partners decided to organise a public event entitled: "Digital Health for Active and Healthy Ageing. Addressing the needs of users". The agenda of the public event is presented in Table 1.

Table 1: Agenda of the 2nd UCG meeting (public event) | February 3, 2022

IDIH Stakeholders' Event (public event)	
14.00 – 14.05	Introduction and welcome <ul style="list-style-type: none">Kristin Dallinger, Steinbeis (IDIH Coordinator)
14.05 – 14.15	Adopting assistive and digital technology for dementia-friendly communities: Lessons from a national randomized controlled trial <ul style="list-style-type: none">Matthew Lariviere, Lecturer in Social Policy, School for Policy Studies, Faculty of Social Sciences and Law, University of Bristol. Chair and EU Representative, IDIH Global Expert Group on Inclusive Living.
14.15 – 14.30	The SoCaTel platform: digital co-creation from a human-centricity approach <ul style="list-style-type: none">Blanca Deusdad Ayala, Associate Professor, Dep. Anthropology, Philosophy and Social Work, Rovira I Virgili University, Tarragona
14.30 – 14.45	The users' perspective to tackle Social Isolation. A hinge strategy to create a user centric community system in which local councils and care providers are actors, not owners. <ul style="list-style-type: none">Nanno van der Laan, CEO and founder, 112Motion
14.45 – 15.00	The e-VITA project: EU-Japan Virtual Coach for Smart Ageing and its coordinator in Japan, the Smart Ageing Research Center at Tohoku University. <ul style="list-style-type: none">Lorenz Granrath, Specially Appointed Assistant Professor, Tohoku University, Smart Aging Research Center
15.00 – 15.15	Design and evaluation of age-friendly digital solutions. Addressing implementation and methodological challenges <ul style="list-style-type: none">Jie Wang, Vice President of Smart Health Care and Home Care Branch of China Association of Gerontology and Geriatrics (S2HC-CAGG)
15.15 – 15.30	Open Discussion moderation by: <ul style="list-style-type: none">Pierre Kil, CEO, Open Remote platform
15.30	<i>Closure of the event</i>

The topics of the invited speakers' presentations were in accordance with the three defined common priorities of the 3rd Expert Group Workshop bringing to the audience the end-users' perspective through their experience.

An open invitation for this event was repeatedly sent to the public through the project's social media channels (Figure 1, tweet posted on January 28, 2022), email campaigns to stakeholders within the IDIH Community and announcements on the project's website⁷.

⁷ <https://idih-global.eu/2022/01/31/last-chance-to-register-idih-stakeholders-event-digital-health-for-active-and-healthy-ageing-addressing-the-needs-of-users-3-february-2022/>

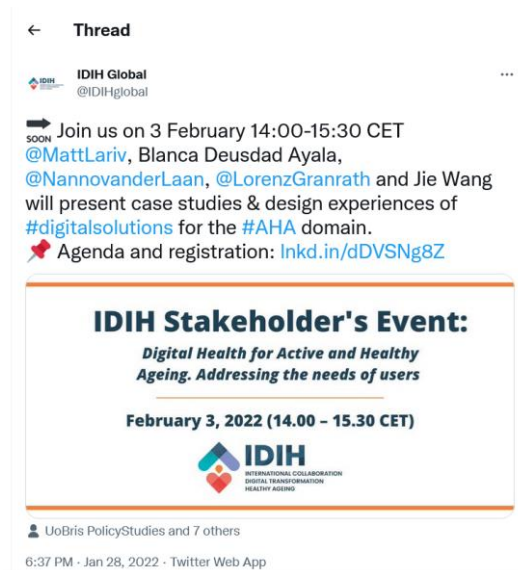


Figure 1: Public event invitation tweet

All the invited people were requested to register through the public event registration form (Figure 2) providing their explicit consent for their participation.

Figure 2: Public event online registration form

Taking into consideration the precautions related to the COVID-19 pandemic, the IDIH consortium was forced to organise a virtual event using online collaboration tools. The medium used for the conduction of the public session of the event was Microsoft Teams. The proceedings of this event are presented in Chapter 2.

1.2 Organisation and realization of UCG Meeting (closed)

The UCG consists of members and representatives from the following organisations:

Table 2: UCG member organisations

Organization	Website	Region
Smart Health Care and Home Care Branch China Association of Gerontology and Geriatrics (S2HC-CAGG)	http://www.cagg.org.cn/porta/page/index/id/5.html	China
European Public Health Association (EUPHA)	www.eupha.org	EU
AGE Platform Europe	https://age-platform.eu/	EU
European Institute of Women's Health (EIWH)	https://eurohealth.ie/	EU
Aging 2.0	https://www.aging2.com/	USA/ Japan/ Canada
International Society of Gerontechnology	https://www.gerontechnology.org/	USA/Canada
Chinese Geriatrics Society	https://www.zglnyxxh.com/	China

All members of the UCG were timely invited to participate in this meeting. Together with the invitation to this event, APRE sent to the members of the UCG a preliminary report with the findings of the 3rd Expert Groups Workshop that took place on November 19, 2021, particularly the three Common Priority Topics in the areas of Data Governance, Digital Inclusion, and Interoperability-by-design.

The main objective of the UCG meeting was to thoroughly discuss and systematically gather the opinion of the members related to the three Common Priorities Topics to emphasize the end-users' perspective and validate the findings of the IDIH Expert Groups.

Accordingly, the agenda of the 2nd UCG meeting was organized as presented in Table 3.

Table 3: Agenda of the 2nd UCG meeting (closed session) | February 3, 2022

UCG Meeting (reserved to UCG members)	
15.45 – 16.00	Welcome and update by the IDIH Teams
16.00 – 17.00	Feedback to the IDIH Experts results (live survey)
17.00	Closure of the event

The medium used for the conduction of the UCG meeting agenda (closed session) was Microsoft Teams. The survey was conducted in a systematic manner using the sli.do online tool. The proceedings of this event are presented in Chapter 3.

2 Public Event: Digital Health for Active and Healthy Ageing. Addressing the needs of users

The public event started at 14:00 CET with an introductory presentation of IDIH by the coordinator of the project Kristin Dallinger from S2i. After the introductory presentation followed the presentations of the invited speakers according to the agenda and the public session of the event closed with a Q&A session moderated by Pierre Kil, CEO OpenRemote platform. The participants were technology providers, healthcare experts and representatives of end-user organisations.

The total number of the participants was 56, among which three IDIH experts and three out of seven UCG members.

Chapter 2 provides a brief introduction of the keynote speakers and outlines each session’s keynotes.

2.1 Participants

Table 4: Participants of the public session of the 2nd UCG meeting | February 3, 2022

Participants public session of the 2nd UCG meeting		
Consortium members		
Name Position	Organisation	Region
Mathilde De Bonis	APRE	EU
Bruno Mourenza	APRE	EU
Cecilia Grabowski	APRE	EU
Garifalia Sebou	ATC	EU
George Zisis	ATC	EU
Krisztina Dax	GAC	EU
Kristin Dallinger	S2i	EU
Francisco Javier Casado Hebrard	S2i	EU
IDIH UCG members		
Jie Wang Vice President	Smart Health Care and Home Care Branch of China Association of Gerontology and Geriatrics (S2HC-CAGG)	China
Anna Odone Digital Health Section President	European Public Health Association (EUPHA)	EU
Gloria Gutman President Vice President	North American Chapter International Society for Gerontechnology International Longevity Center-Canada	USA CANADA
IDIH experts		
Matthew Lariviere	IDIH Global Expert Group on Inclusive Living	EU
Jisoo Emily Lee	IDIH Global Expert Group on Integrated Care	SOUTH KOREA
Marie-Pierre Gagnon	DIH Global Expert Group on Integrated Care	CANADA
Keynote speakers		
Matthew Lariviere Lecturer IDIH Global Expert Group on Inclusive Living	School for Policy Studies, Faculty of Social Sciences and Law, University of Bristol	EU
Blanca Deusdad Ayala Associate Professor	Dep. Anthropology, Philosophy and Social Work, Rovira I Virgili University, Tarragona	EU
Nanno van der Laan CEO and founder	112Motion	EU

Lorenz Granrath Specially Appointed Assistant Professor	Tohoku University, Smart Aging Research Center	JAPAN
Jie Wang Vice President IDIH UCG member	Smart Health Care and Home Care Branch of China Association of Gerontology and Geriatrics (S2HC-CAGG)	CHINA
Pierre Kil CEO	OpenRemote platform	EU

2.2 Keynote session: Adopting assistive and digital technology for dementia-friendly communities: Lessons from a national randomized controlled trial | Matthew Lariviere

Keynote speaker | Matthew Lariviere is a lecturer at the School for Policy Studies at the University of Bristol, a researcher at the Center of Research in Health and Social Care and IDIH Inclusive Living Expert Group Leader. His speech was about **how to adopt assistive and digital technology for dementia-friendly communities** and the **lessons learned from a national randomized control trial** in England.

Keynotes of the session | According to the Rowntree Foundation report in 2012 the “dementia-friendly” community can be defined by the “Four Cornerstone Model” which consists of the following factors:

- Place (homes, other built environments, outdoors)
- People (what do people in the locality know about dementia?)
- Resources (how can localities support people with dementia – public services, businesses, shops, restaurants/cafes)
- Networks (how do different actors work together to support people with dementia).

A paradigm is the De Hogewyk dementia village in the Netherlands which acts as a prototype for similar communities in Canada, the USA, and the EU.

The research was conducted for people with dementia living in their homes aiming to help people with dementia to live in their own homes and communities and be active citizens within the society as well.

A study called Attila “Assistive Technology and Telecare to maintain Independent Living At home for people with dementia” started in 2013 and finished in 2018 is one of the largest **pragmatic randomized clinical trials** (Leroi et al. 2013; Howard et al. 2021) of assistive technology products for people living with dementia. This study aimed to investigate the effectiveness and cost-effectiveness of assistive technology and telecare (ATT) provided within social services to delay people with dementia permanently moving into residential care.

The participants received an ATT needs assessment followed by installation of indicated ATT (intervention n=248) or an ATT assessment with restricted installation to smoke and carbon monoxide detectors and pendant alarms (control n=247). The participants were followed up for 104 weeks. According to the results of this study, there were:

- No significant difference between health and social care costs or societal costs between control and intervention,
- No significant difference to delay permanent moves into residential care,

- Benefits of costs of what ATT offered not considered cost-effective.

Some insights for the trial that were mentioned by Matthew Lariviere is that the fidelity of the intervention was low in terms of matching ATT assessment, recommendations, and installation. This fact, however, reflects current practice within adult social care in England.

Another aspect that was also investigated during the trial was how people with dementia use ATT in their homes. This led to another study entitled: ACCOMMODATE – “A Collaborative, COOMMunity-based ethnography of people with dementia and their carers using Assistive technology & Telecare in England”.

ACCOMMODATE was an embedded ethnography - a qualitative approach to examine the practices of people with dementia and their caregivers with assistive technology and telecare in the national ATTILA trial (Lewis and Russell, 2011, Lariviere et al. 2021). For this study were observed practices of people with dementia and family carers in their homes for six months (a total of 208 hours). There were identified three broad themes from cases that captured and evoked how participants’ practices with ATT shaped care relations and spaces:

- Placing Care
- Replacing Care
- Displacing Care

In the placing care case study, it was observed that it is needed to consider the placement of technology in the wider context of peoples’ lives – relationships, built environment, other humans, and animals. For example, a dog moving in front of the activity monitoring system sensor triggered false-positive results.

In the replacing care case study, a relatively poor family that could not afford a landline phone service to use the Telecare services was involved. Therefore, CCTV cameras were installed. This raised the question of how to distinguish between care, security, and surveillance when we design future care technologies.

The displacing care case study was a case of observing a person living through the gradual process of deteriorating condition with dementia. In this case the importance of how we should design and implement care technologies that adapt to the changing spaces and places of care in later life of people with cognitive impairments, was mentioned.

Key insights of the study:

- Care practices went from being co-located interactions to displaced and mediated through apps and screens.
- Other care practices (e.g. personal care) which may have a greater impact on dignity and wellbeing, are rendered invisible.
- Carers reconfigured the home to meet the sitting care needs of people with dementia. Participants had to continuously make ATT fit in domestic places and routines.

The findings of the study problematise “living independently in the community” for people with dementia. Participants rarely left their homes due to carers’ perception of risks and social isolation.

Many investigated technologies (e.g. telecare systems) required people to be close to the base unit at home. Risk-management of people with dementia through ATT may unintentionally confine them.

KEY-MESSAGE | Current technology for people with dementia may disrupt people’s sense of place, relationships, and ties to the wider community. Future technology needs to ensure that it attends all aspects of “The Four Cornerstone Model” (place, people, resources, networks). It is needed to move beyond the risk management technology and to explore how technology can enhance connections and not diminish them.

SLIDES & VIDEO RECORDING ARE AVAILABLE [HERE](#)

2.3 Keynote session: SoCaTel platform: digital co-creation from a human-centricity approach | Blanca Deusdad Ayala

Keynote speaker | **Blanca Deusdad Ayala** is an associate professor at the University Rovira i Virgili, in Catalonia and coordinator of the SOCATEL project on digital co-creation for long-term care services through a multi-stakeholder co-creation platform. Dr. Ayala presented the **SoCaTel Platform** which is servicing **digital co-creation from a human-centricity approach**.

Keynotes of the session | A very [informative video](#) was presented about the SOCATEL platform which was an outcome of a European project. This project was coordinated by social scientists and involved a variety of stakeholders such as software developers, healthcare practitioners, researchers, and academics from all over Europe.

The SOCATEL project co-created a platform for digital co-creation online. Using the platform were co-created long-term care tools services specific for the adults. The human-centric approach of the project was the quadruplet helix which means that were involved stakeholders from the society: adult users, practitioners, healthcare professionals, informal and formal carers, software developers, service providers, researchers, and policymakers.

The co-creation of the platform and the co-creation of long-term care services were carried out in four locations in Europe, having representation of different welfare states. The co-creation took place in Finland, Ireland, Spain, and Hungary and the project did twinning with the region of Veneto in Italy. The implemented methodology for the platform co-creation comprised of focus groups preliminary co-creation workshops to co-creation pilots/hackathons, until the service roll-out.

KEY-MESSAGE | Engage users at all levels of knowledge creation. The SOCATEL co-creation platform supports the co-creation with the following steps. A human-centric approach at the base of SOCATEL the co-creation platform allowed to address the real needs of the users with a bottom-up approach

- CO-IDEATION to communicate needs and discuss possible solutions, CO-DEFINITION to discuss benefits and barriers of the proposed solutions,
- CO-DESIGN of the service following the Canvas business model to implement the service and CO-DEVELOPMENT of a prototype.
Service providers and entrepreneurs are also involved in this process from the beginning to the final phase.



- After the development of the prototype is available for the CO-VALIDATION step to be validated by all the stakeholders involved.

The feedback of the **facilitator** in the human-centric approach was also very important. The role of the moderator was to help with the co-creation process, to come out with ideas, and to help to pass all the mentioned steps. Another actor in this process was the moderator focusing on more technical aspects. The SOCATEL platform was adopted from the ISRAA institute in Treviso, Italy, and the Innovation Center ICUK in the Czech Republic. The SOCATEL platform is the appropriate tool to address the needs of the social service reform that deals with the management change, transformation and innovation bringing together all the stakeholders. The platform allows the participation of all the people (and people with mobility issues) at a large scale and benefits all stakeholders. It is also a cost-efficient solution in long-term care services. The platform is available on GitHub and all the necessary information is presented on the project's website. The SOCATEL project currently aims at engaging the stakeholders' community. Stakeholders' participation in co-creation ensures real citizens' needs are met in a cost/efficient way. Service suppliers, entrepreneurs and software developers should be engaged. This could be incentivized facilitators or local authorities' managers to find synergies among local actors.

For example, professionals in Italy were able to meet and share ideas about potential services and came out with the idea of Alzheimer's Café.

The added value of the SOCATEL platform became evident during the pandemic period. Digital co-creation has become and can be crucial in a pandemic as an easy way to connect with a large range of stakeholders from home. It has also the potential to create virtual communities efficiently.

SLIDES & VIDEO RECORDING ARE AVAILABLE [HERE](#)

2.4 Keynote session: Users' perspective to tackle Social Isolation. A hinge strategy to create a user-centric community system in which local councils and care providers are actors, not owners | Nanno van der Laan

Keynote speaker | Nanno van der Laan, CEO of the 112Motion presented the way to set up large-scale community systems taking users' perspective and particularly the **EncourAGE Community Health System that increases our citizen's healthspan**.

Keynotes of the session | Changing our mindset toward ageing means that we are not neglecting the fact that elderly people are detected with a disease however we should focus also on the healthy life expectancy to see how we can increase the ability of people to live longer and healthier.

If we start looking at identifying issues or problems, we do not necessarily want to focus on individual issues, but we want to take a more comprehensive approach.

We focus on frailty and how to prevent frailty. This is a common objective between the end users that could be at risk, but also the secondary users like formal and particularly informal carers. If we put all the actors together and we use a business-oriented approach it would be easier to make it tangible. By tangible we do not necessarily mean to have one single app for every single problem.

Business process re-engineering is a prerequisite to success. Technology, in the way we apply it in health and social care, is a solution (to a problem). However, for a system to be successful, it needs to be efficient, and customer centered. Re-engineering processes are unavoidable, but the results are very tangible benefits.

Nanno van der Laan presented diagrams of actors and their information flows not focused on technology but the information exchange. The diagrams help to visualize the flows considering health, societal and financial issues facilitating a comprehensive engineering process. To this end, a catalogue was created where of use cases were grouped into 12 high-level groups. All these cases were investigated within the context of preventing social isolation and well-being in general. The entire community was incorporated into the EncourAGE Community Health System considering best practices in the UK, Austria, Germany, Belgium, and other countries.

KEY MESSAGE | A new organization model is required to develop communities. Establishing a collaborative organization (which is described in the MSP® methodology) facilitates the development and operation of Healthy Aging Communities. It takes a lot of courage, and leadership to truly activate and enable the end users to become self-supporting.

Nanno van der Laan is successfully using the MSP® methodology for 20 years for community building. When you try to build a community, it is recommended to get involved with the stakeholders such as social services, healthcare providers, academics, insurance companies etc., and with other countries (for large-scale communities). If you start refining the details of what you want to do in a community, then you will see that you can come up with new solutions.

The EncourAGE Community Health System is not an ordinary platform. It would not only allow you to run your application. You can create applications because every community has different typicality. In

terms of processes and organisations, there is always going to be logic, that is different from one country to another. We create a solution that can connect a device and connect people, (people with people and people with systems) but also a solution that allows you to create community platforms.

SLIDES & VIDEO RECORDING ARE AVAILABLE [HERE](#)

2.5 Keynote session: E-VITA project: EU-Japan Virtual Coach for Smart Ageing and its coordinator in Japan, the Smart Aging Research Center at Tohoku University | Lorenz Granrath

Keynote speaker | Lorenz Granrath is an Assistant Professor at the Smart Aging Research Center (SARC) of the Tohoku University in Japan. Lorenz Granrath introduced the **EU Japan project**, called **e-VITA** which is a **virtual coach for smart aging**. Tohoku University is one of the top universities in Japan. It is one of the three designated national universities concerning practice orientation ranked on the first place for Education in Japan. The Institute of Development, Aging, and Cancer of Tohoku University is already 80 years old. SARC investigates dementia, prevention of dementia, researching human brain development and physiology, brain images, cognitive resource, and memory trying to find correlations between factors influencing elderly and young people's life.

Keynotes of the session | There is a correlation between gray matter volume and body mass index and between gray matter volume and intellectual curiosity. The director of SARC Institute professor Kawashima is quite famous. He developed a brain training system together with Nintendo.

Concerning dementia, the lifestyle helps to improve to prevent dementia. Habits like smoking, consuming alcohol and others like diet, exercise and sleeping are also very important parameters for dementia disease. Mental health and intellectual activity are also very important topics for research.

The e-VITA project started in January 2021 till 2023 and is co-funded by the EU and the Japanese ministry for internal affairs and communication. In the project, there are about 10 partners from Europe and ten partners from Japan. Tohoku University is one of the Japanese partners. The partnership consists of academia, research (technological and healthcare) institutes and industries.

The objectives of the project are to:

- Develop a set of standards and norms for interoperability of advanced Internet of Things, Nature Language Programming and, Artificial Intelligence-based on smart living technology in Europe and Japan,
- Develop an advanced intercultural virtual coach with seamless integration of smart living technologies, advanced artificial intelligence, and tailored dialogue interaction,
- Enable smart living support and tailored AHA interventions for physical, cognitive, emotional, and social wellbeing of older adults in real-life settings in Europe and Japan,
- Propose and co-design practice-based ICT tools to empower older adults to experience ageing as a positive process and meaningful period of life,
- Conduct a proof-of-concept study to validate the coach and assess users' needs and acceptance through real-life environment living labs in different countries and cultures,

- Explore the feasibility of the new ecosystem for disruptive innovations of AHA coaching and incubation of SME's and NGOs in Europe and Japan.

KEY – MESSAGE | The target variables for wellbeing of the elderly comprise: autonomy, relatedness, competence, popularity, security, stimulation, physicality and meaning. A good approach to users' engagement is testing these variables in real setting, making end-users able to interact with devices at a Living Lab.

An overview of the e-VITA system is presented in the following diagram (Figure 3):

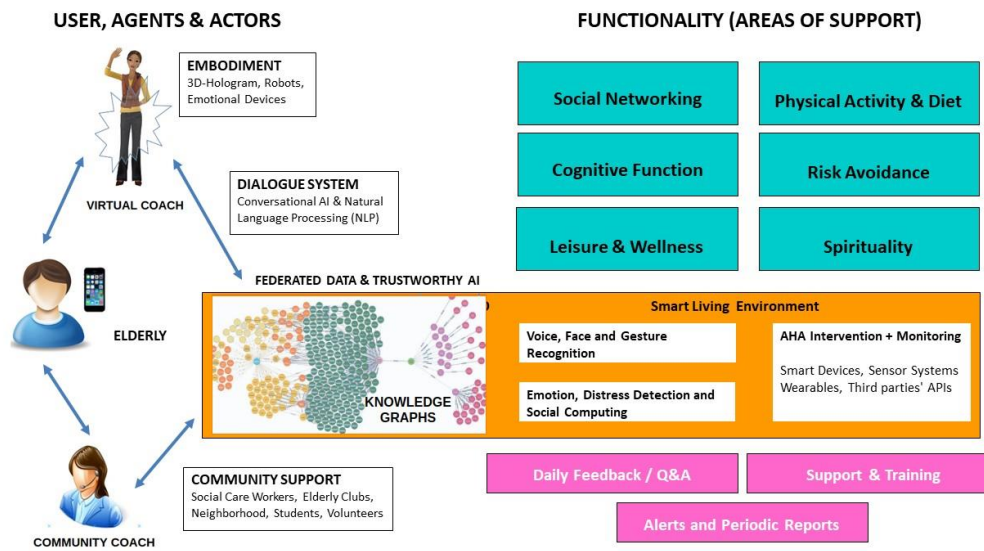


Figure 3: The e-VITA system overview

The e-VITA system will be able to provide to the end-users directly advice or through community support.

The Smart and Natural Interaction of the e-VITA system presented in the following diagram (Figure 4) is based on the development of a conversational system with knowledge graphs, trying to standardize the methodological approach to the knowledge which is behind of the whole system and integrate a reliable communication system.

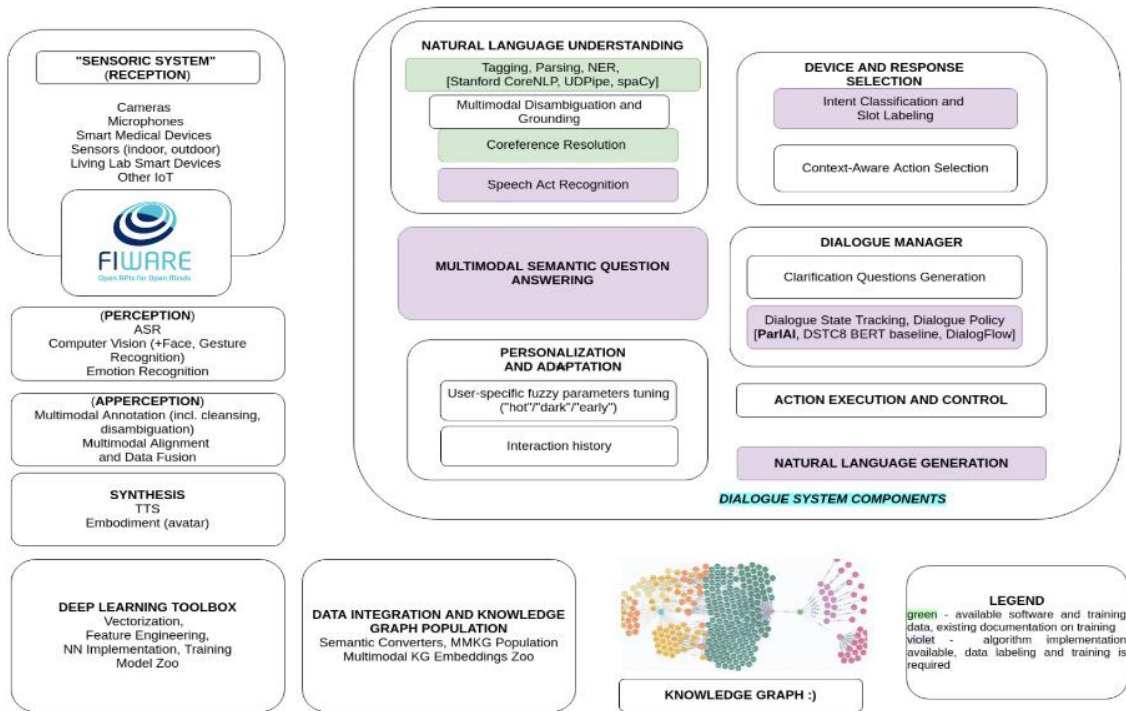


Figure 4: Smart and natural interaction of the e-VITA system

A variety of devices are used for the system and user interaction such as of the shelf small robots and humanoids. **The end-users can interact with the devices at a Living Lab.** It was very interesting to observe how the elderly are interacting with a humanoid in comparison to a small robot. Other devices that are used are the: Gatebox hologram which provides visualization of a virtual coach using a 3D effect and DarumaTO-2 a social robot with a familiar appearance for older generations in Japan. In the e-VITA project we also have devices that analyse the brain activity. The methodology adopted by e-VITA partners is based on participatory and value-based design approaches in real life settings, involving various end-users and the stakeholders around them. The following diagram (Figure 5) presents the interaction of different stakeholders and the end-users:

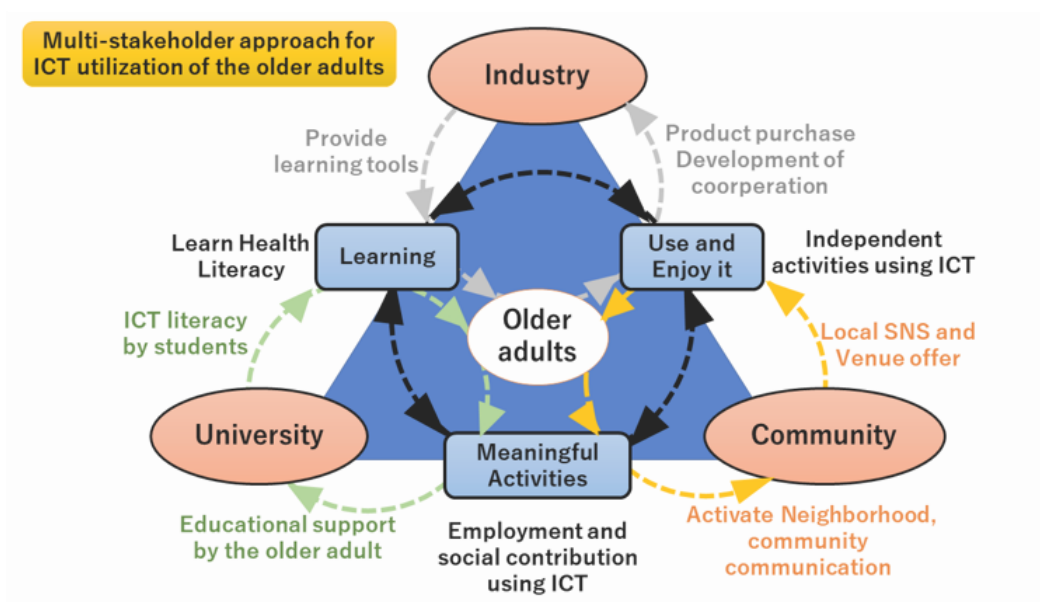


Figure 5: Multi-stakeholder approach of the e-VITA project based on older adults' needs

The expected impact of the e-VITA project is to provide:

- Independent living, and improved quality of life of older persons compared to the current State of the Art
- Usefulness and effectiveness of personalized recommendations and follow-up in terms of goals of preserving physical, cognitive, mental, and social wellbeing for as long as possible
- Evidence of user-centred design and innovation, effective ways of human computer interaction, and user acceptance
- Fostering social participation and reducing social exclusion's risks of older adults
- Validation of non-obtrusive technology for physical, cognitive, social and mental wellbeing
- Strengthened international cooperation in research and innovation on Smart Living for AHA.

SLIDES & VIDEO RECORDING ARE AVAILABLE [HERE](#)

2.6 Keynote session: Design and evaluation of age-friendly digital solutions. Addressing implementation and methodological challenges | Jie Wang

Keynote speaker | Jie Wang, is Vice President of the Smart Health Care and Home Care Branch of China Association of Gerontology and Geriatrics (S2HC-CAGG). The scope of S2HC-CAGG organization is to promote smart solutions under community settings for ageing in place. The main aspects of Jie Wang's presentation are the age-friendly digital solutions that have been studied by S2HC-CAGG during the last five years. Age related digital divide has been well known in China. According to the 47th CNNIC China Internet Survey shows that by December 2020 there were 416 million people not connected to the Internet in China; 46% of which were people 60+ years old. 18,3 % of the total population in China are 60+ years old.

Keynotes of the session | The reasons why people are not connected to the Internet are presented in the Figure 6.

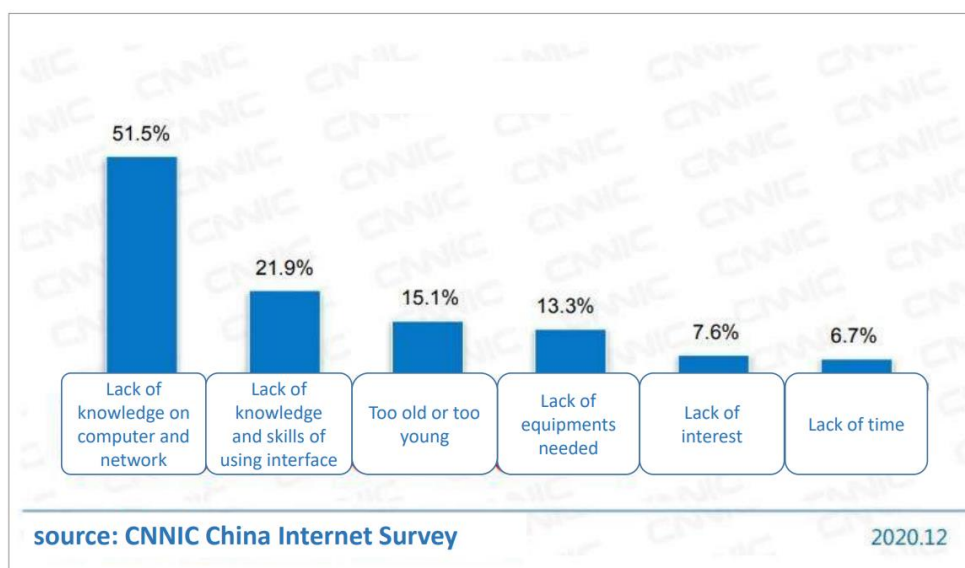


Figure 6: Reasons and percentage shares of population without internet connection

The top five reasons of the Figure 6 are related to the elderly people. This fact leads us to find out how to promote smart technologies to older people and to motivate them to learn to use. During the pandemic Chinese government undertook necessary measures to prevent Covid-19 pandemic. The compliance of the population with these measures was supported with the implementation of smart solutions. The impact in the daily life of the older people was significant. For example, QR codes are used to access shops, movie theaters, governmental buildings etc. Therefore, the Chinese government undertook the following actions: 1) A State Council Decree: Resolution to deal with obstacles faced by elderly while using smart technologies and 2) Ministry of Industry and Information (MII) Decree: Action Plan for improving the age friendliness and accessibility of Internet applications. For the MII decree the compliance requirements are applied:

- For applications with more than 50 million registered users and/or with market share among top 5, and
- For applications that belong into one of the following six categories: news, social media, shopping, financial services, travel, and healthcare.

In total 43 apps need to make modifications to improve age friendliness and accessibility. By end of 2021, the first phase for improvements needs to be finalised. By S2HC-CAGG was observed that the phenomenon of lacking age friendliness is not something temporary, on the opposite, it will be a long-term problem. According to the diffusion of innovation theory by Everett Rogers any new product when comes to the market, go through two peak phases, the early market phase, and the mainstream market phase. Only 16% of the users are in the early market phase and the older people are almost nonexistent. Even in the mainstream market phase the elderly is the last to appear. Thus, the developers of the smart products over the years they formed the opinion that does not make sense to make them more age friendly because the old people are not going to use/buy them and because they are under pressure to get to the market as soon as possible. We believe that we are going to see this a lack of age friendliness in the new wave of products for a long time. Facebook CEO publicly admitted that the company's future relies on the younger users.

Only a small percentage (3%) of the old people are participating at the training seminars for smart technologies in China. There are three major impact factors for the Elderly use of smart technologies:

- Age friendliness of the products and addressed needs,
- Elderly users' characteristics (ability to learn, ability to operate),
- Supporting environment (Family, friends etc.).

There are two types of digital divide: Explicit Divide and Implicit Divide. The explicit divide is related to the physical ability, internet access and capability. The implicit divide is related to knowledge and digital literacy. In China more than one third of the older population has internet access and they are using apps. Some of them are using apps daily but many of them are victims of disinformation considering that they do not have the knowledge to filter the information. Age-friendly design is far from sufficient.

KEY – MESSAGE | The attitude of old users plays a significant role on the digital divide. Elderly people believe that the new/smart products are addressed to younger generations and not to them. Therefore, they deny using them. A more systematic approach is needed taking into consideration four major components addressing explicit/implicit digital divide:



- Digital literacy.
- Age friendly design of the smart products,
- User training,
- User support.

Products from the China government are more user friendly. Communities like universities are offering training courses but there is no systematic approach to raise the digital literacy. Also, the age friendly users' support is nonexistent. From the previous experience we came up with a framework to design age friendly solution. In this framework the user characteristics are categorized in five different levels: Sensory, Motor Control, Cognition, Knowledge and Psychological Tendencies and their impact to Motivation, Ability to learn and Ability to use. This framework is promoted to the vendors of the smart products. Apart from the perceived usefulness and perceived ease to use of a product, age friendly design requires support for the user in real time.

One of the things that is neglected to be mentioned is the cost of the age friendly design of the smart products. The smart products vendors do not have any incentives to design an age friendly product at the beginning. If in the second phase if they expect elder users to join, probably they will add age friendly features, but this is not a cost-effective approach. In addition to that it is important to notice that there is a lack of age friendly design experts. Now many of the vendors are simplifying the versions of their products targeting the elder users. It is also important to mention that it is not clear whether there will be a market return for this investment. That means for the age friendly products we cannot rely on the market alone.

SLIDES & VIDEO RECORDING ARE AVAILABLE [HERE](#)

2.7 Questions & Answer session

During this session - moderated by Pierre Kil - a summary of the experts' presentations pointed out how the real challenge is how to involve the elderly, a vulnerable group of people, which could benefit from the assistance in terms of technical solutions.

In this regard research is showing that the impact of assisted technologies is limited, and it often results in confining people. For age-friendly solutions there is a need for real investment and not only talking about the people but with the people, while this should not conflicting business. It seems to be like a conflict between the business rationale and the validity of all kinds of solutions versus the real need.

Awhile the end user should be both, the starting and ending point of any business solutions.

VIDEO RECORDING IS AVAILABLE [HERE](#)

3 Second Users Consultation Group Meeting

The 2nd IDIH UCG meeting has followed to the IDIH Stakeholders' Event: *Digital Health for Active and Healthy Ageing. Addressing the needs of users* that has been held online the same day, right before, between 14:00 and 15:30 CET, engaging UCG members and a wider audience from the IDIH Community, especially users' representatives and tech providers. More info available are [here](#).

3.1 Participants

Table 5: Participants of the closed session of the 2nd UCG meeting | February 3, 2022

Participants closed session of the 2nd UCG meeting		
Consortium members		
Name	Organisation	Region
Mathilde De Bonis	APRE	EU
Bruno Mourenza	APRE	EU
Francisco Javier Casado Hebrard	S2i	EU
George Zissis	ATC	EU
UCG members		
Name	Organisation	Region
Gloria Gutman President / Vice President	North American Chapter International Society for Gerontechnology/ International Longevity Centre-Canada	USA/Canada
Anna Odone Digital Health Section President	European Public Health Association (EUPHA) https://eupha.org/	EU
Peggy Maguire Director General	European Institute of Women's Health (EIWH) https://eurohealth.ie/	EU

3.2 UCG members at the IDIH stakeholders' event

Among the participants in the IDIH Stakeholders' Event, Gloria Gutman positively commented the webinar, by highlighting what pointed out by Matthew Lariviere who stated how often technology for people with dementia requires that they stayed at home so, exacerbating people isolation. Therefore, this led to a reflection from Gloria Gutman on why technology is not more portable.

3.3 Updates from the UCG members

A particularly relevant update came from Gloria Gutman about the next Conference of the [International Society for Gerontechnology](#) (ISG), a key event to be addressed as part of the sustainability strategy of the IDIH project. The ISG will be having its conference, hopefully face-to-face, in Korea in October 2022 and the call for papers has been published very recently, so there are still opportunities for stakeholders to be involved, from all around the world. The society is also working with the European experts from WHO on a new initiative in which Gloria Gutman is engaged and will provide IDIH with relevant news, when there will be a major launch of the WHO project. Moreover, the [International Association of Gerontology and Geriatrics](#) is having a virtual meetings in June 2022. There is still time for IDIH to propose a symposium or to be an executor presenting the IDIH Roadmap. IAGG is, indeed, the *Olympics* of Gerontology that meet only every four years.

3.4 Feedback from UCG members to the 3rd Expert Groups Workshop

During the online event of November 19, 2021, as part of the 3rd EGs Workshop, IDIH experts consolidated the 18 priorities from the second workshop – previously identified as suitable for international cooperation between Europe and our strategic partner countries among which there is Canada, China, Japan, South Korea, and the USA – outlining, then, three main topic priorities related to the areas of Digital Health & Ageing that are: Data Governance, Digital Inclusion, and Interoperability-By-Design.

As part of this restricted 2nd UCG meeting, the IDIH consortium intended to collect the feedback of UCG members to these latest findings of IDIH experts complementing their reflections on:

- **Expected impacts** on target groups
- **Barriers** that could prevent the implementation of these topics and actions
- **Opportunities and external factors** that could contribute to the successful implementation of such topics.

Validated Priority Topic description 1 – Area: 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 EHRs, biometrics and biological data), validated with and by patients through personalised-medicine approaches and according with a shared international validation framework which also addresses cybersecurity aspects.

Gloria Gutman suggested as an enabler or resource to be exploited in this field, the initiative by [International Telecommunication Union \(ITU\)](https://academy.itu.int/main-activities/capacity-development/big-data-and-statistics) using big data to solve various problems including climate change and other public and global issues (see: <https://academy.itu.int/main-activities/capacity-development/big-data-and-statistics>)

Validated Priority Topic description 2 – Area: Digital Inclusion

To favour inclusive healthcare systems through 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 towards the adoption of the 5-As approach (acceptability, applicability, accessibility, affordability, accuracy).

Gloria Gutman commented that, considering this important challenge, it is also of great importance to take into consideration what highlighted from the panelists during the IDIH Stakeholders' Event and the **Digital Divide**, very common in China, as pointed out by Jie Wang, where 50% of the 46million people are not internet connected. This *barrier*, added Dr. Gutman, should be addressed considering that older people is not a homogeneous group, but some old people are very used to technology, and some are not, people are excluded and some of them are tech averse or missing information, often under the same conditions and external factors. Therefore, while trying to raise digital inclusion, it is

important to use different approaches for those different layers of the population. Only one approach is not enough.

Another key point highlighted from Gloria Gutman, commenting this Priority Topic, and looking at the contributions from the Panelists in the IDIH Stakeholders' Event, is supporting an easy usage of technologies and devices by the older persons. In this sense, support must be built within the community, bringing together tech providers, insurance organizations, health care providers, local health authorities, discussing with users 'associations real needs and criticalities in usage. **Community-based supporting programs** should be, then, designed and funded as part of actions to favour inclusive healthcare systems through age-friendly technologies.

Anna Odone added that this is a matter of **digital literacy**, which is recognized in the IDIH Report as a barrier, so the support should be given through training and education. This could really fill the gap between the actual use of technologies by elder people and the technologies themselves.

Literacy and training are the core issues in this sense, and the stakeholders responsible for these parts are **at different levels**. That is why it is also important to **map** these stakeholders, at the community level and/or **within or outside the health care system**. Moreover, this aspect should be explored at international level, considering that **Europe, Canada, USA, Japan, and China** probably have different ways to address and promote digital health literacy, as well as active and healthy aging. On this regard, as positively recognized also by Gloria Gutman, the **IDIH Roadmap** should bring forward some examples to illustrate ways of operationalizing the recommendations across countries.

Peggy Maguire also commented on the Priority Topic 2 by reflecting on digitalization. With the Digital Transformation, indeed, we do not want to leave anybody behind, so therefore we need to have this **inclusive approach** of including older people in the co-design of any digitalization and solutions moving forward. The EU Commission has done quite enough in this regard over the last number of years with the different programs, but we can move even further along – said Peggy Maguire - **ensuring that digital health literacy is on the top of the policy agenda for older people**, or any policy in digitalization, any solution or innovation designed include the voice of older people.

Moreover, Peggy Maguire, by reflecting on the topic under the lens of the gender dimension, provided a good example from a policy perspective: “For a long time, women have been excluded from clinical trials and the older people have been excluded from clinical trials up to quite recently with the revision of European clinical trials regulations. Also, older people and women were not included in clinical trials for drugs which of course test the efficacy and appropriateness of drugs supply to people who are involved. We need to move forward and underline the differences between **accessing health for different population groups** and particularly **ethnic minorities and migrants, including the women's perspective**, because women are the more vulnerable group in these populations that do not always access health care. So, from a digitalization point of view, we have an opportunity to reduce inequalities from a gender perspective in accessing and implementing good health care. Therefore, more co-design of digitalization solutions and policy moving forward the issue of gender must be included in the discussion and in the policy making”.

Validated Priority Topic description 3 – Area: Interoperability by Design

To ensure accessibility, sharing and protection of data from different sources, such as IoT wearables and sensors through the development of international standards, and procedures and incentives for producers accessible for all countries based on an interoperability-by-design approach of digital solutions for preventive and integrated care, independent and inclusive living of the older persons.

Commenting on this priority topic, Anna Odone provided a useful definition of Interoperability technically intended, that is the degree of different data sources “talking” to each other. Therefore, the interoperability scenario is extremely heterogeneous, the degree of interoperability is highly diverse, in different settings, not only in different countries around Europe but also in different regions, like for instance in Italy. The very theoretical and simple idea that digital data can be easily linked and integrated to enlarge the informative potential of data to be used to support practice and policies in health, is clear. **The actual realization of interoperability is a huge barrier.** Looking at the case of Italy, Anna Odone highlighted that the level of interoperability is extremely low both within the healthcare system and outside the health care system, and often this is due to the need of having the proper **skills** and the **technical expertise** to realize and implement interoperability in real world settings.

Moreover, something that limits interoperability are of course **privacy** issues and the use and sharing of personal data. So, on top of technical issues related to increasing interoperability we need to add a level of complexity which is related to the reference regulatory framework that can represent a barrier and/or an opportunity across countries. On this regard, it is important to highlight to the final users, as well as policy makers, the **benefits of interoperability in terms of enhanced integrated care systems**, at national and international level, considering that all people should be able to travel to different countries and get the attention of the healthcare they need.

4 Conclusions & Next steps

IDIH project partners concluded that sessions of the 2nd UCG meeting (public event and closed meeting) had a **significant impact** towards the development of the roadmap for international collaboration in the AHA domain.

However, collaboration and co-creation with international stakeholders, be it technical experts, policymakers, or users, could be more effective through means of physical meetings. In a hyper-virtualized scenario as experienced by IDIH, it became exceptionally challenging to design attractive and effective activities with stakeholders online.

Online exchanges are useful as a complementary support tool but cannot replace **face-to-face interactions** especially when stakeholders from various cultures meet. The most desirable mechanism for this is the organization of joint, thematic workshops, ideally **co-funded** by all partner countries and coupled with other external events in the field attracting larger groups of experts from academia, industry, and government relevant to the consultations.

When appointing experts from different regions into a community of interest (e.g. expert or users group) it is important to enlarge the circle of competent stakeholders by **appointing a proxy**, i.e. an authorized representative from the same organization able to substitute the primary contact person, to compensate for the intermittent absence. This becomes of particular relevance when different time zones or reasons of overriding importance or public interest (i.e. emergency management during a pandemic crisis) prevent the participation of the expert. This circumstance may otherwise result in inhomogeneous information collected between regions.

To mitigate these risks and address the challenges related to virtualization of activities and events, the IDIH consortium opted to expand as much as possible the contribution from users' representatives also drawing on external expertise, given the limited availability of UCG members – especially those from Asian strategic partner countries.

In terms of concrete outcomes, looking at three IDIH priority topics resulted from the Expert Groups Workshops within the Digital Health Transformation Forum, the relevance of the recommendations of the experts in the UCG meeting was cross-cutting. The Priority Topic related to the area of **Digital Inclusion** appeared as the most concerned by these recommendations.

Several key aspects have been brought to the attention of the IDIH Forum for the elaboration of the roadmap for the enhancement of international cooperation in Digital Health for AHA and are highlighted in this report as “KEY-MESSAGES” from the experts involved in the UCG meeting.

Starting from the need of ensuring that **future technology could address the people's sense of place, relationships and ties to their communities**, these experts highlighted also the necessity to explore this **by engaging users (older people and formal/informal carers), together with care providers and entrepreneurs according to a quadruple helix approach, at all levels of innovation and knowledge creation**, from co-ideation and co-design (discussing needs, barriers and benefits of possible solutions), to the co-development of a service prototype based on a shared business model canvas and, finally, co-validation.

In this sense, **a new systemic approach and organisational model is recommended to address older people in their community environment, looking at the variables affecting their wellbeing** (autonomy, relatedness, competence, popularity, security, stimulation, physicality and meaning) to be tested in real settings, as suggested by the e-VITA project. In this scenario, a crucial role is reserved to international multi-/transdisciplinary research that could favor exchange of best practices and the collaboration for this integrated and systemic approach, oriented to users' need and their empowerment, especially in terms of improved digital literacy.

All these aspects will be at the base of the elaboration of the **Roadmap for International Collaboration** that will be delivered as an outcome of the IDIH project towards an international collaboration in digital health for AHA.

Finally, a very comprehensive approach tackling all these aspects, resulting from the exchange within the UCG is the **5As approach**, described as follows and fully integrated in the IDIH recommendations.

In particular, the **5As approach** for the design and development of inclusive services for the elderly, proposed by the UCG includes:

- **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 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.)⁸.

⁸ N. Insan, Access to Healthcare, <https://www.theaspiringmedics.co.uk/post/medical-school-interview-public-health-access-to-healthcare>

Annex 1 – User consultation group members

Table 6: Users Consultation Group members.

UCG members		
Name Position	Organisation	Region
Jie Wang Vice President	Smart Health Care and Home Care Branch of China Association of Gerontology and Geriatrics (S2HC-CAGG)	China
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
Stephen Johnston Co-Founder	Ageing 2.0 https://www.ageing2.com/	USA
Gloria Gutman⁹ President	North American Chapter International Society for Gerontechnology https://www.gerontechnology.org/	USA/Canada
Gloria Gutman Vice President	International Longevity Center-Canada https://www.ilccanada.org/	Canada
Yasuko Akutsu¹⁰ CEO/Ambassador	MT Health Care Design Research Inc. http://hcdr.co.jp Ageing 2.0 Tokyo chapter ambassador	Japan

⁹ Engaged thanks to the collaboration of the IDIH partner CIHR (Canada).

¹⁰ Engaged thanks to the collaboration of the IDIH partner SAWARABI (Japan).

Annex 2 – Additional contributions considered for the elaboration of the IDIH roadmap

Country factsheets

These factsheets (Figure 7) summarize the results – per each IDIH strategic partner country – of the analysis of the panorama of the digital health landscape in the EU and in the strategic partner countries¹¹ and have been shared for comments and improvement with IDIH experts, UCG members and policy makers engaged in the PLC:

- [Factsheet Canada](#)
- [Factsheet China](#)
- [Factsheet Japan](#)
- [Factsheet South Korea](#)
- [Factsheet USA](#)

Digital health and active and healthy ageing (AHA):
Panorama and priorities in South Korea

Digital health R&I priorities (Government of South Korea)

- **Innovating bio-health industry through new technologies (Data, Network and AI)**
 - To foster the bio-health industry, companies will focus on supporting next-generation promising technologies such as innovative new drugs, medical devices, and regenerative medicine. It is significantly based on DNA (Data, Network and AI)
- **Strengthening public-interest R&D investment**
 - National health promotion R&D is carried out to reduce medical expenses and preventative health care, such as rehabilitation and care services for the medical vulnerable, chronic diseases, and development of service models for health care
- **Creating a hospital-based research ecosystem**
 - The government will focus on fostering hospitals as a hub for innovation in the research ecosystem, including the establishment of a hospital-oriented joint research platform that can be utilized by industries, universities, research institutes, and hospitals.
- **Supporting localization of materials, parts, and equipment**
 - Self-development of vaccines highly dependent on foreign countries, strengthening support for localization, including basic materials for imported-dependent cosmetics and assistive devices for the elderly and the disabled

Main challenges related to digital health

- Facilitate certification procedures and regulations to industrialize innovation
- Access to a bigger market to produce various pilot projects
- Go beyond research at the level of industrial linkage

Specific challenges for the ageing population

- Prevent dementia through preventive measures and the development of a drug
- Reduce social gap in health technologies acceptance and use
- Realign the technology policies in R&D sector to be more focused on prevention and on mental health issues

Relevant key programmes and funding agencies

Government of South Korea (Ministry of Science and ICT, Ministry of Trade, Industry and Energy, Ministry of Health and Welfare)

and agencies (Korea Health Industry Promotion Agency, Centres for Disease Control and Prevention, etc.)

Most important players and networks in the field

The digital healthcare ecosystem consists of government institutions, regulatory bodies, industry associations, medical centres, large corporations, blockchain-based healthcare service providers and a few notable start-ups and scale-ups.

SWOT

S	W	O	T
<ul style="list-style-type: none"> • Familiarity with digital technologies • Eagerness for leadership in the digital healthcare market compared to the same generation in other countries • Growth of the South Korean government's R&D investments 	<ul style="list-style-type: none"> • Difficulties in commercialisation of technology: small market • Personalised management • The social security system is vulnerable • There is a large gap in income, education, and health status, and a great diversity of life patterns among the elderly 	<ul style="list-style-type: none"> • The elderly population is growing at a rapid rate • Global commercialisation, international cooperation • Increase interest for life-cycle healthcare through digital health 	<ul style="list-style-type: none"> • Various policies and welfare projects for the elderly are on the rise, but concrete measures and strategies to keep them financially stable are lacking • Complex standardisation procedures

Internationalisation S&I collaborations in Health between EU & strategic partner countries

- Cooperation between the EU and South Korea on R&I is governed by the Agreement for S&T Cooperation which came into force in 2007. Despite that, some practical issues in R&I cooperation are still to be improved. In 2017, both the EU and Korea emphasised the need to deepen, scale up and open opportunities for cooperation in selected technological areas such as ICT, nanosafety, nanoelectronics, health/bio (infectious diseases, rare diseases, and antimicrobial resistance).

Good practices and outlook for further international collaboration

- South Korea is a great place to conduct pilot projects for AHA related technologies as the elderly population is large and the governmental support is high. There is a demand for the development and global commercialisation of holistic care services with innovative technologies and cooperation. An 'AHA platform' shall be built all together to solve social problems caused by a super-ageing society soon.
- Mental, psychological and wellness related R&D are also considered to be interesting topics for collaboration, since EU is advanced in these topics.

Key sources

More information can be found in the complete report D1.2 - Panorama of the digital health landscape in the EU and in the Strategic Partner Countries
https://www.nid.or.kr/info/lab_2019.aspx?no=47995
[ANNUAL REPORT 2019 NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS](https://www.korea.ac.kr/annual-report/2019/annual-report/2019-01-2019-02)
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https://idih-global.eu/wp-content/uploads/2021/06/D1.2-Panorama-of-the-digital-health-RI-landscape_public.pdf

Figure 7: Visual example of IDIH factsheet | South Korea

¹¹ See: D1.2 Panorama of the digital health R&I landscape at <https://idih-global.eu/outcomes/>

Guidebook for care providers and users

This guidebook¹² reports on the initiatives supporting international cooperation in Digital Health for AHA in each strategic partner country also looking at the four topics considered as crucial in a user’s-centered perspective: Integrated Care, Inclusive Care, Independent & Connected Living, Inclusive Living (Figure 8).


INTEGRATED CARE¹³

- ETRI - Electronics and Telecommunications Research Institute  **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.

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

- 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 Papers¹⁴.

- 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.  **SCL** (재)서울의과학연구소 Seoul Medical Science Institute

INDEPENDENT & CONNECTED CARE¹⁵

- NRF - National Research Foundation of Korea: the NRF  **NRF** National Research Foundation of Korea
 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 CARE¹⁶

- 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 elders 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.

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&D Program; Industrial Technology Cooperation Program; Official Development Assistance Program.

KIAT | Korea Institute for Advanced Technology

 **KIAT** 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.

Figure 8: Visual example of IDIH guidebook for care providers and users

¹² See: D4.5 Guidebook for care providers and users at <https://idih-global.eu/outcomes/>

Interviews for the IDIH podcast series

Among the episodes of the IDIH podcast “[The Future of Ageing Actively and Happily](#)”:

- Podcast #1: The one on Health, Wellness, Wellbeing & Happiness
- Podcast #2: The one on Preventive Care and Canada
- Podcast #3: The one on Integrated Care and USA
- Podcast #4: The one on China and the gender dimension in R&I and Ageing
- Podcast #5: The one on Japan and the uptake of open platforms for AHA
- Podcast #6: The one on South Korea and the future of IDIH

Several interviews have been carried out with internal and external experts representing strategic partner countries sharing insights about Digital Health & Ageing in their respective country, with a special consideration of the approaches to users’ engagement:

- Interview with YoungHee Ro – CEO at GSBC (South Korea) on the Happiness-related INDEX developed for the GSBC platform (podcast #2).
- Interview with Ilenia Gheno – UCG member representing AGE Platform Europe (podcast #2).
- Interview with Giovanna Ferrari, Project Lead representing Pfizer for the project Gravitare Health, a Public-Private Partnership, funded under the Innovative Medicines Initiative, that equips and empowers citizens with digital information tools making them confident, active, and responsive in their patient journey, specifically encouraging safe use of medicines for better health outcomes and quality of life (podcast #3).
- Interview with Huiyao Huang, from the Clinical Trial Center, National Cancer Centre of China (podcast #4).
- Interview with Timo Strohäker, coordinator of the SENET project, enhancing EU-China collaboration on Health (podcast #4).
- Interview with Peggy Maguire, Political Scientist and the Director General of the European Institute of Women’s Health (EIWH) on the inclusion of the gender dimension in R&I in Digital Health and Ageing (podcast #4).
- Interview with Francesco Giuliani, involved in the Eu project GATEKEEPER engaging 43 partners, 9 medical pilots and 40,000 involved citizens (podcast #4).
- Interview with Sakon Yamamoto, CEO of Sawarabi Group, a group of medical – welfare integrated and comprehensive care service providers for the older persons in Japan (podcast #5).
- Interview with Lorenz Granrath, on the perspectives of EU-Japan collaboration in R&I, with a focus on the e-VITA project, “EU-Japan Virtual coach for smart ageing” (podcast #5).
- Interview with Emily Lee, expert in the “Integrated Care” Expert Group of the IDIH Digital Health Transformation Forum, tracing the R&I landscape around Digital Health & Ageing in South Korea.

Interviews for the IDIH magazines

Among the six editions of the [IDIH magazine](#) that have been released, several interviews and articles with the collaboration of internal and external experts have been produced in order to contribute to the elaboration of the IDIH recommendations, also with the intent to collect several approaches to users' engagement in R&I dealing with Digital Health & Ageing:

- Interview with Gian Marco Revel, Associate Professor at Università Politecnica delle Marche (Magazine #1).
- Interview with Kanoko Oishi by Sawarabi Group (IDIH Partner) (Magazine #2).
- Interview with Giovanni Saggio by APRE (IDIH Partner) (Magazine #2).
- NO SHORT-CUTS WHEN DEALING WITH AGE, PLEASE! By Ilenia Gheno, Research Project Manager, AGE Platform Europe (Magazine #2).
- BRIDGING SCIENCE & TECHNOLOGY TO REAL HUMAN LIFE: THE CASE OF AIST (JAPAN) By Yumiko Nishimura, Sawarabi Group (IDIH Partner) (Magazine #2).
- SQUARE STEP EXERCISE WITH A DIGITAL MAT TO KEEP DEMENTIA AWAY (SOUTH KOREA) By Sue Hong (lead and corresponding author) & YoungHee Ro (co-author), GSBC (IDIH Partner) (Magazine #2).
- Interview with Ory (Kentaro) Yoshifuji “Design and Technologies to eliminate Human Loneliness” by Sakon Yamamoto IDIH-JAPAN, SAWARABI-GROUP (Magazine #3).
- TOWARDS PEOPLE, BEYOND PRODUCTS. The perspective of the Ambassador of Aging 2.0 Tokyo chapter (Magazine #3).
- Interview with Yasuko Akutso, member of the IDIH Users Consultation Group (UCG) By Yumiko Nishimura, Sawarabi Group (IDIH Partner) (Magazine #4).
- SOAP HEALTH. THE RIGHT DIAGNOSIS, EVERY TIME, FOR EVERYONE. By Steven Charlap, IDIH Expert (Magazine #4)
- Interview with Francesco Giuliani, CSS PILOT PI IN THE EUROPEAN PROJECT GATEKEEPER. By Mathilde De Bonis, International Cooperation Group Coordinator, Project Manager, APRE (Magazine #4)
- PHARAON. PILOTS FOR HEALTHY & ACTIVE AGEING. By Lucie Vaamonde, Isabelle Lesterpt and Oriane Thibeau-Sutre (Magazine #4)
- Interview with Peggy Meguire, Director General of the European Institute of Women's Health (EIWH) (Magazine #5)
- Voice-based diagnosis: determine pathologies or altered psychological conditions by analyzing of simple vocal tasks. By Giovanni Saggio, Dept. Electronic Engineering, University of "Tor Vergata", Rome, Italy (Magazine #5)
- The new challenges of an ageing population in Europe. By Elena López and Lola Salinas, Ticbiomed (Magazine #5)
- Interview with Sakon Yamamoto, CEO of Sawarabi Group (Magazine #5)
- Interview with Lorenz Granrath, Academia-Industry (A2B) and B2B High-Tech Consultant in AI, Digital transformation DX, Smart Aging. (Magazine #5)
- Interview with Emily Lee, Expert in the Integrated Care Expert Group of IDIH Digital Health Transformation Forum (South Korea) (Magazine #6).