



# IDIH

INTERNATIONAL COLLABORATION  
DIGITAL TRANSFORMATION  
HEALTHY AGEING

## D3.4 2nd EG Workshop Report

CATALYST  
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### Abstract

This report is part of the International Digital Health Cooperation for Preventive, Integrated, Independent and Inclusive Living (IDIH) project funded under the European Union's (EU) Horizon 2020 Research and Innovation Programme.

The current report summarises the second meetings of the Preventive Care, Integrated Care, Independent and Connected Living, and Inclusive Care Expert Groups, as well as the results of the follow-up discussions during Innovation Day (part of IDIH Week).

The meetings of the respective groups took place during one week in May 2021 with the objective of further refining the priorities and action plan for the IDIH project roadmap, with Innovation Day taking place at the beginning of June 2021.

The outcomes of the meetings of the second Expert Groups are part of a series of activities during the life span of the IDIH project and as such the report is a draft catalogue of observations and list of the identified recommended themes to be explored further in later meetings and validated by the user groups and healthcare stakeholders, notably funding agencies and health authorities.

### Keywords

Preventive, integrated, independent and inclusive Care; Wearables; IoT, Interoperability; data protection; health ethics; infrastructures; international collaboration; digital health; roadmap; well-being; data analysis/ sharing/ integration; common standards & guidelines; interoperability; stakeholder engagement; understanding of barriers; and care delivery.

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## Abbreviations and Acronyms

Abbreviation, Acronym	Description
AD	Alzheimer Disease
AHA	Active and Healthy Ageing
AI	Artificial Intelligence
APRE	Agenzia per la Promozione della Ricerca Europea (project partner)
ATC	Athens Technology Center S.A. (project partner)
CAD	Computer-aided diagnosis
Catalyst	Catalyst @ Health 2.0 LLC (project partner)
CIHR	Canadian Institutes of Health Research (project partner)
CSO	Civil Society Organisations
EG	Expert Group
GSBC	Global SMEs Business Council (project partner)
ICLG	Independent and Connected Living Group
ICT	Information and communication technologies
ILEG	Inclusive Living Expert Group
Inno	Inno TSD (project partner)
IoT	Internet of Things
JEDI	Justice, Equity, Diversity, Inclusion approach
NDT	Nominal Group Technique
NIH	National Institutes of Health
PD	Parkinson Disease
PLC	Programme Level Cooperation
QOL	Quality of Life
R&D	Research and development
R&I, or R&D	Research and Innovation, or Research and Development
RTO	Research and Technology Organisation
S2i	Steinbeis 2i GmbH (project coordinator)
Sawarabi	Sawarabi Group (affiliate partner)
SPS	School of Pharmaceutical Science Tsinghua University (project partner)
UKRI	UK Research and Innovation
VR	Virtual Reality



## Executive Summary

In order to execute the IDIH mission of facilitating international cooperation to advance digital health and Active and Healthy Aging (AHA) in the EU and countries, including Japan, China, South Korea, Canada, and the United States mission, IDIH partners implemented expert consultation groups under four distinct realms: **Preventive Care, Integrated Care, Independent and Connected Living, and Inclusive Living**. These groups had a round of discussions in 2020, and again met this year during a week in May 2021 to further define, expand upon, and then disseminate a set of priorities under their domains related to achieving better outcomes in AHA.

During these Expert Group meetings (EGs), IDIH Facilitators used the Brainwalk method, where participants use post-it notes to write and pass ideas in order to encourage brainstorming and discussion of priorities. However, this year not only were the priorities discussed at the Expert Group meetings, but feedback was also gleaned from the following IDIH-facilitated events:

- **Programme Level Cooperation - PLC meeting (May 27, 2021):** Funding Agencies from the IDIH Strategic Countries met with the relevant European Commission officers, and all provide their comments to the works of the IDIH Forum of experts presented by the EG Chairs. The results of the discussion among these policy makers are included in the IDIH deliverable *D2.5 Report on the 1<sup>st</sup> Programme Level Cooperation Meeting*. Policy makers discussed respective current national/regional policies for Digital Health & Ageing and, considering the priorities presented as suitable for international cooperation by the EG Chairs, also highlighted their fields of interest to enhance international cooperation in these domains.
- **Innovation Day (June 4, 2021):** As part of [IDIH Week 2021](#), an online co-creation workshop was held. This innovation day expanded upon and integrated the conclusions made by the IDIH experts by allowing a wider community of international experts and users outside the project to join the discussion.

Through these undertakings, priorities became clearer and new ideas emerged. Several common themes surfaced after IDIH analysed the post-event priorities and keywords. These included data analysis/sharing/integration; common standards & guidelines; interoperability; stakeholder engagement; understanding of barriers; and care delivery.

While there is more work to be done, the international collaboration and cooperation facilitated through these IDIH endeavors are helping progress towards better outcomes in AHA. We are establishing clear paths forward in AHA and have outlined in this report our progress towards the IDIH objectives that will benefit AHA globally.

## 1. Introduction

As discussed in earlier project publications and more specifically in D3.3 1<sup>st</sup> Expert Group Workshop Report, the aim of the IDIH project is to promote and increase international cooperation to advance digital health in the EU and key strategic countries, including Japan, China, South Korea, Canada, and the United States, to support active and healthy ageing areas of mutual benefit. The actions aim to create a “Roadmap to design international collaboration of digital transformation in AHA”, in which IDIH acts as a vehicle to create international dialogue in digital health.

In order to execute this mission, IDIH created four distinct Expert Groups, **Preventive Care, Integrated Care, Independent and Connected Living, and Inclusive Living**, described further in (Fig. 1).

### Four Strategic Topics



Figure 1 IDIH Strategic Topics

There are many opportunities for international cooperation, collaboration, and mutual learning in the deployment of digital solutions to foster healthy and active ageing. The different aspects described in Figure 1 can clearly foster progress in the field of active and healthy aging, as well as facilitate research and development (R&D) collaboration and market opportunities for industry players. In order to further encourage that progress, a common set of priorities and a mechanism for information exchange is required. So, the IDIH project has set up a **Digital Health for AHA Transformation Forum** as an umbrella and long-lasting **expert-driven mechanism** to foster collaboration between the EU and its international country partners.

To jumpstart the expert-driven portion of IDIH objectives, IDIH has planned multi-year expert consultation rounds, or Expert Groups (EGs). The aim of the 1<sup>st</sup> meetings of the four Expert Groups (EG) was to set the basis and foundations for each EG and support learning and knowledge dissemination. More specific components of the 1<sup>st</sup> EGs included:

- Developing a common ground for future discussions, such as:





- Defining an action plan, to be developed by each EG independently. Each action plan (EG focused) – and scheduled activities – aimed to advance on the suggested topics of collaboration of the draft roadmap (“Towards an international collaboration in digital health, version 1.0”).
- Elaborating on strategies to enhance collaboration among the RTI stakeholders.
- Discussion topics included:
  - Presentations on the current status in the domains of the EG groups and relevant application domains
  - Policy gaps in the thematic group domains
  - Future perspectives and specific needs for future development
  - Research and innovation challenges

The initial plan to do one joint physical meeting with parallel workshops was not possible due to the ongoing Covid-19 pandemic. Therefore, all four EG groups were organised in separate virtual workshop. The agenda of each meeting and the list of experts are enclosed in the Annex to this report.

## 2. IDIH EG Groups Organisation Methodology and Tools

### 2.1 Implementation Approach and Methodology

The 2nd IDIH Expert Groups workshops were held online during **a week in May 2021<sup>1</sup>**, as described in Table 1 below, involving the IDIH Experts in four separate EG meetings. The results have been presented, shared and improved within the IDIH Forum and in 2 further occasions provided by the project:

- **Programme Level Cooperation - PLC meeting (May 27, 2021):** Funding Agencies from the IDIH Strategic Countries met with the relevant European Commission officers, and all provided their comments to the works of the IDIH Forum of experts presented by the EG Chairs. The results of the discussion among these policy makers are included in the IDIH deliverable D2.5 *Report on the 1<sup>st</sup> Programme Level Cooperation Meeting*. Policy makers exchanged information on their current national and regional policies for Digital Health & Ageing. They also assessed the priorities for international cooperation presented by the EG Chairs and discussed ways to enhance international cooperation in these domains.
- **Innovation Day (June 4, 2021):** As part of [IDIH Week 2021](#), an online co-creation workshop was held. This innovation day expanded upon and integrated the conclusions made by the IDIH experts by allowing a wider community of international experts and users outside the project to join the discussion.

Expert Group Name:	Preventive Care EG	Integrated Care EG	Independent and Connected Living EG	Inclusive Living
Date:	May 17, 2021	May 18, 2021	May 19, 2021	May 20, 2021
Primary Facilitator:	Facilitator: Martina De Sole (APRE)	Facilitator: Hicham Abghay (S2i)	Facilitator: Martina De Sole (APRE)	Facilitator: Mathilde De Bonis (APRE)
Consortium Partner Accountable	APRE	S2i	Catalyst	ATC

Table 1 The IDIH Expert Groups Online Meetings in the 2nd EG Workshop (May 17-20, 2021)

This approach in the design and implementation of the 2<sup>nd</sup> EG Workshop, based on synergies with WP2 (PLC meeting) and WP4 (Innovation Day) activities, allowed the Consortium to align the three key-actors engaged in the IDIH project (see Figure 2):

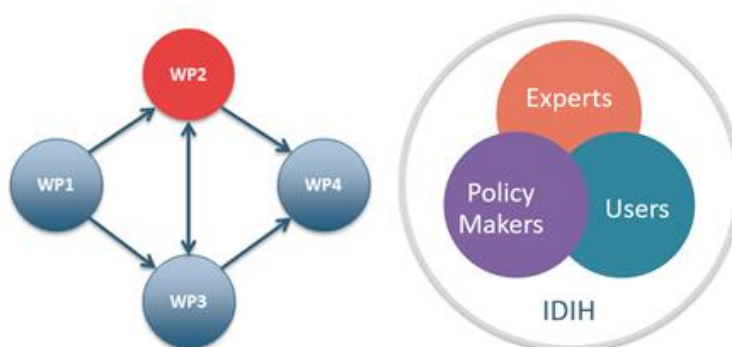


Figure 2 The 2nd EG Workshop Approach. Actors Involved

<sup>1</sup> The workshop has been re-designed as a virtual event, as a mitigation measure set up by the Consortium, due to the pandemic during project implementation.

In the 2<sup>nd</sup> EG Workshop, the experts gradually enriched and consolidated their outcomes, combining both a *bottom-up* and a *top-down* approach in the priority setting exercise, collecting the input and feedback from both users and policy makers (see Figure 3). The aim was to **set priorities suitable for international cooperation in the field of Digital Health for Active & Healthy Ageing**, as outlined in the final iteration of the IDIH Roadmap (D3.7) *Towards an international collaboration in digital health*,

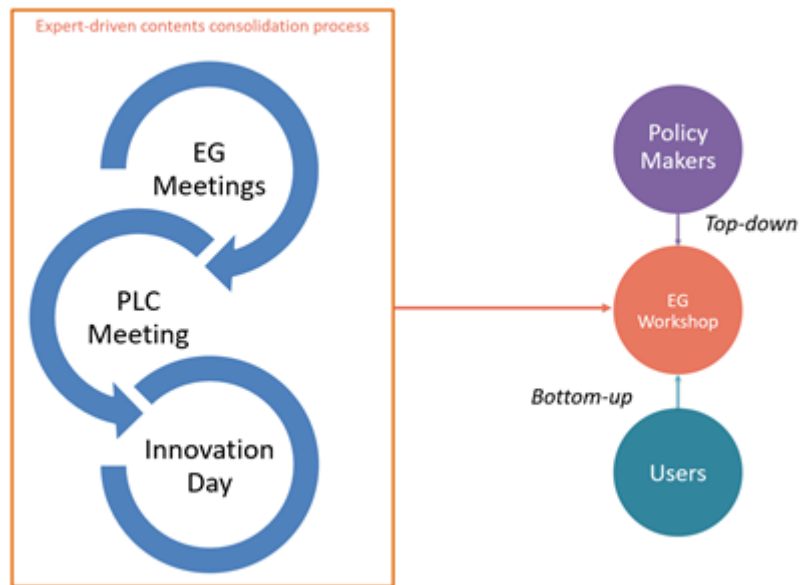


Figure 3 The 2nd EG Workshop. An Expert-Driven Contents Consolidation Process

## 2.1 Co-Creation Methodology and Tools

The PLC meeting was designed and implemented as a *Round Table* among the Policy Makers, based on an open discussion around the results presented by the EG Chairs. The preceding EG meetings and the Innovation Day were developed as co-creation workshops. Depending on the nature of the co-creation exercise, its aims, and the audience involved, different co-creation methodologies were used to engage IDIH experts in EG meetings and the participants of the Innovation Day (Table 2).

	EG Meetings	Innovation Day
Date	May 17 – 20, 2021	June 4, 2021
Type of event	Online - Internal – not public	Online - Public
Aims	Set priorities suitable for international cooperation	Deepen, integrate, and complement the priorities set by the EGs
Target Groups	IDIH Experts in each EG	<ul style="list-style-type: none"> <li>▪ IDIH Experts’ Forum as a whole                             <ul style="list-style-type: none"> <li>○ IDIH Experts in each Parallel Session (according to their membership in the EGs)</li> <li>○ IDIH EG Chairs as moderator in each Parallel Session (according to their membership in the EGs)</li> </ul> </li> <li>▪ (External) experts/users in the field of Digital Health for AHA</li> </ul>
Co-creation methodology	Nominal Group Technique	Customized Brainwalk

Table 2 Features of the Co-Creation Sessions in IDIH (May - June 2021)



The EG meetings were implemented using the Nominal Group Technique while the Innovation Day was deployed as a Customised Brainwalk. Below are some details about these two methodologies. The sessions were facilitated by APRE – Agenzia per la Promozione della Ricerca Europea in cooperation with the IDIH Coordinator (S2i) and the WP3 Leader (ATC).

## 2.2 Nominal Group Technique (NGT)

### About NGT

This method is useful to quickly gather input and create a synthesis of main patterns from a variety of individual contributions. It is mainly used to highlight broad areas of consensus, big patterns, and clusters of ideas. The wording of a **framing question** is crucial and needs to be clear in order to get people brainstorming. The underlying idea is that participants have the chance to **individually brainstorm** their answers, and then **patterns** will emerge.

### When is NGT suitable?

When a group needs to map out clusters from individual ideas; when there are factors at play that tend to limit someone's contributions at the expense of other people's ideas (hierarchy, people who tend to dominate conversations versus more quiet ones, etc).

### NGT Logistics

The exercise may involve from five to 50 people, time is variable according with the facilitation phases mentioned below. As spaces and materials, large round tables, boards/ flipchart papers and sticky-notes are needed.

### Facilitation

**Check-in** | Facilitator briefly describes the NGT phases and asks participants to present themselves with some quick sentences. Then, the framing question is introduced, and a fixed number of sticky notes is distributed to each participant.

**Phase 1** | In silence, each person considers the *framing question* and writes an answer on a separate sticky-note. As this is the **individual brainstorming** stage, participants are encouraged to feel that any ideas are welcome - there are no bad ideas.

**Phase 2** | When ready, the group stands around a clean/empty table and each **participant reads** his/her sticky-note aloud and puts it on the board. Brainstorming rules apply; therefore, no criticism or discussion are allowed in this phase, but questions for clarification may be asked. Answers that seem related can be placed close together.

**Phase 3** | The group completes the analysis process, sorting the sticky-notes into related *piles* in order to start **clustering**. Participants start an open discussion on titles to be assigned to each pile, as specific as possible. If it's difficult to find a short title, maybe the pile should be divided. There might also be a stand-alone sticky-note, representing a single title which probably needs to be finetuned.

**Phase 4 (optional)** | In order to reach a certain number of clusters, facilitators can ask the participants to **vote** on the clusters and create a ranking.

**Check-out** | Facilitators can pause the process to establish further consensus prior to summarizing the exercise and surveying the participants regarding their takeaways from the exercise and results.



**NGT in the EG meetings of the 2<sup>nd</sup> EG workshop** | Considering the aims of the workshop and the constraints set by the need of having an online event, the facilitators followed the methodology briefly described above, including all the four phases of facilitation, and using [miro.com](https://miro.com) as a tool for co-creation. The aims and the structure of the agenda of EG meetings were the same for each EG meeting, while the *framing question* differs in each EG just for the four different focuses (Preventive Care/Integrated Care/Independent and Connected Living/Inclusive Living).

The *framing question* was introduced by each facilitator to establish a baseline for the subsequent exercise:

- “We are dealing with Digital Health for Active and Healthy Ageing and, in particular, with [Preventive Care] through Digital Health for AHA. Today, we are kindly ask you: **which are the main priorities in this field, suitable for international cooperation? (Framing Question)**

The exercise as a whole lasted 1 hour and 45 minutes, as part of the EG meeting agenda (See Annex 1), that - for each EG - totalled 2 hours and 30 minutes, with a first welcome and introduction to the aims of the workshop and its relationship with the other IDIH activities.

The Check-in/Check-out phase was used, indeed, to delineate next steps and the follow up of the exercise as part of the PLC meeting and the Innovation Day.

As a **preparatory phase**, after a first Save the Date about one month before, the experts were further briefed via email with more details and actively engaged to check some background materials one week before the exercise. The whole process has been designed and coordinated by APRE for all the EGs meetings, as a partner with a particular expertise in co-creation and stakeholder engagement, with the aim of ensuring, thus, coherence and uniformity in the collection of results within the Forum.

As background materials, the following documents were taken into considerations:

- D3.3 – 1<sup>st</sup> EG Workshop Report
- D3.6 - *Towards an international collaboration in digital health, v. 1.0*

In order to familiarise themselves with the co-creation tool and avoid technical issues within the online boards, experts were invited to watch this [demo](#) and rehearse with the APRE staff during the week before the meeting.

Below is the Miro board after the exercise (Fig. 4). The pink, big sticky-notes represented the final clusters, voted and ranked by the Experts in each EG. The names of the experts are written outside the circle and represent their place around the virtual round table. Each participant had from three to five sticky-notes, depending on the number of total experts attending the meeting. They were asked to use all the sticky-notes at their disposal. Only the Preventive Care EG had five sticky notes, considering the two experts attended the meeting, which ensured a more articulated brainstorming.

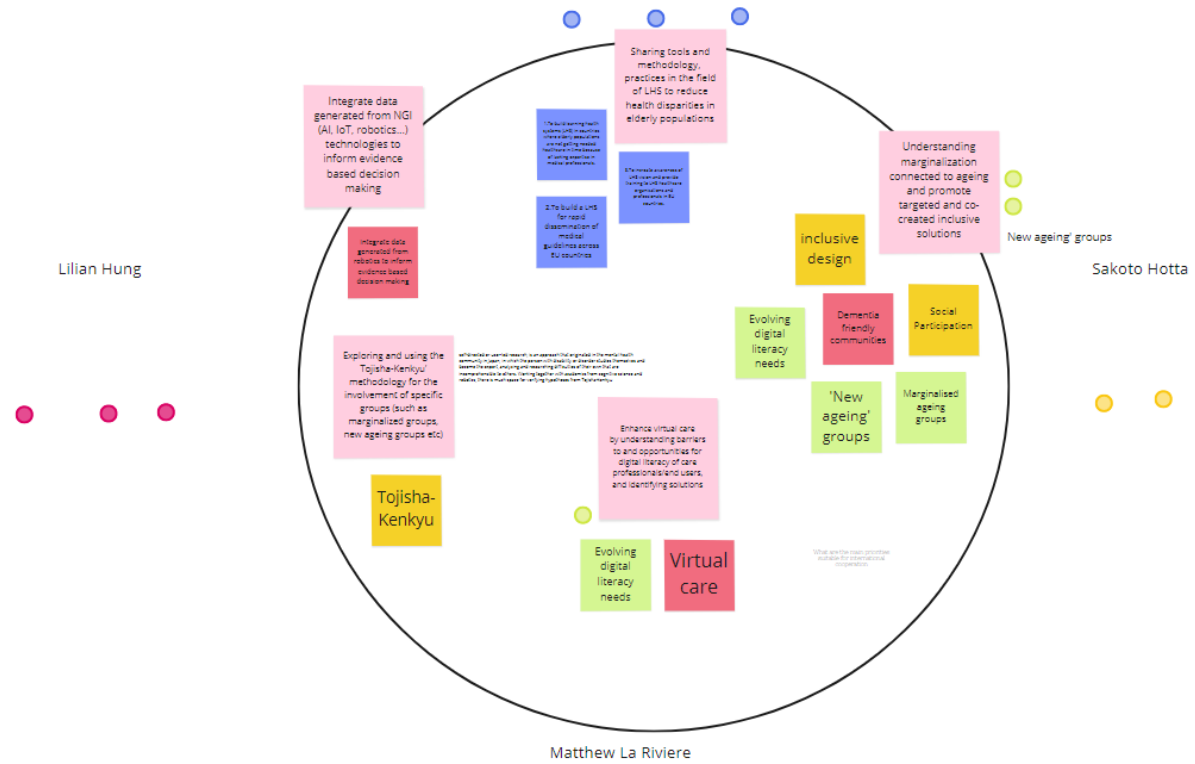


Figure 4 A Miro Board layout after the exercise in the EG meetings.

### 2.3 The Brainwalk Method

#### About Brainwalk

*Brainwalk* is a co-creation method very similar to *Brainwriting*. Participants write down their ideas on paper and, after a few minutes, they pass on their own piece of paper to another participant who'll then elaborate on the first person's ideas and so forth<sup>2</sup>, encouraging an open and instant discussion. Within the Brainwalk exercise, however, instead of passing around the paper, the participants *walk* around in the room and continuously find new "ideation stations" where they can elaborate on other participants' ideas.

**Brainwalk customized for the Innovation Day |** After in which the EG Chairs presented the results of the 2<sup>nd</sup> EG Workshop to a wide international audience of stakeholders – four parallel thematic (co-creation) sessions were held online using boards on [miro.com](https://miro.com) (see Fig. 5).

**Preparatory phase:** For the Innovation Day we shared the [agenda of the workshop](#) with 171 registered participants, as well as some further information and instructions (see Table 3).

- **Facilitation:** The exercise and the overall implementation approach are included in Table 4, as part of the Facilitator Notes developed by APRE for the four facilitators.

<sup>2</sup> See: [www.interaction-design.org/literature](http://www.interaction-design.org/literature)



15.40 – 15.45	<b>Setting the thematic parallel sessions</b>			
15.45 – 16.45	<b>4 Thematic Parallel Sessions</b> Contributions of participant stakeholders to improve and deepen the identified priorities for international cooperation presented by the IDIH Experts			
	<b>Preventive care</b> (i.e.: "Preventive" wellbeing, early diagnosis and detection)  <b>Facilitator:</b> Bruno Mourenza, APRE	<b>Integrated care</b> (i.e.: using new technologies to redesign, coordinate and integrate health and social services and place citizens, patients and seniors at the centre of health systems)  <b>Facilitator:</b> Hicham Abghay, Steinbeis	<b>Independent and connected living</b> (i.e.: tele-monitoring via smart home and living technologies)  <b>Facilitator:</b> Martina De Sole, APRE	<b>Inclusive living</b> (i.e.: helping the elderly feel more connected socially / healthy living)  <b>Facilitator:</b> Mathilde De Bonis, APRE
16.45 – 17.00	<b>Closing remarks</b>			

Figure 5 Innovation Day at the IDIH Week 2021. Agenda of the Thematic Parallel Sessions

Table 3 Innovation Day (June 4). Preparatory Phase

Innovation Day (June 4, 2021) – Preparatory Phase
[INFORMATION TO REGISTERED PARTICIPANT]
<p>As shown in the <a href="#">IDIH Week website</a>, the aim of the Innovation Day was to <b>deepen and integrate the reflections of our experts on the priorities in the field of Digital Health for Active and Healthy Ageing, that may be suitable for international cooperation</b>. This was achieved by opening the discussion to a wider community of international experts outside the project.</p> <p>As a participant, your co-creation exercise will be mainly based on listening in detail to topics identified by the IDIH Experts and reacting to:</p> <ul style="list-style-type: none"> <li>▪ Questions to the Chairs of the IDIH Experts Groups</li> <li>▪ Feedback to the identified topic priorities (comments in support of the identified priorities, resulting from your expertise)</li> <li>▪ Original contributions (missing priority topics): new priorities that have not been yet identified by IDIH Experts</li> </ul> <p>Please consider these <b>keywords</b>, which come from the first round of meetings of the IDIH Experts, as a starting point for reflection and co-creation within the parallel session in which you'll participate on June 4 (IDIH Experts will detail the priority topics related to these keywords during the plenary session, according with the <a href="#">agenda</a>):</p> <p><b>PREVENTIVE CARE</b></p> <ul style="list-style-type: none"> <li>▪ Big Data</li> <li>▪ Interoperability</li> <li>▪ Standardisation</li> </ul> <p><b>INTEGRATED CARE</b></p> <ul style="list-style-type: none"> <li>▪ Health Systems Accessibility</li> <li>▪ Interoperability</li> <li>▪ Digital Literacy</li> </ul> <p><b>INDIPENDENT AND CONNECTED LIVING</b></p> <ul style="list-style-type: none"> <li>▪ Smart environments</li> <li>▪ Data Governance &amp; Security</li> <li>▪ Social empowerment</li> </ul>

**INCLUSIVE LIVING**

- Marginalization
- Learning Health Systems
- Digital Literacy

*Tool for the online workshop:* We will start on [Webex](#), then we'll move to **Miro.com** to work and co-create on an online board (watch this video to get familiarized with Miro, it's

easy: <https://www.youtube.com/watch?v=0olcwCD9-GM&list=RDCMUCfhGfgBKDcFI74bBJ9yjLDQ&index=3>)

*For any need of support, please email to [idih@apre.it](mailto:idih@apre.it)*

**Table 4 Innovation Day (June 4). Facilitation**

**Innovation Day (June 4, 2021) – facilitation (co-creation exercise)**

[FACILITATORS NOTES]

**KEY-STEPS OF THE INNOVATION DAY**

14.30 CEST: Starting of the plenary session (Webex)

*As described in the [agenda](#), the co-creation workshop – made of four thematic parallel sessions - represents the second part of the Innovation Day that will start at 14.30 CEST and will be opened by the presentation of the IDIH Forum and its current results, as part of **a first plenary session** by the project team and the Experts Groups Chairs (held on [Webex](#)).*

15.40 CEST: Setting of the parallel sessions with briefing to participant (Webex)

*At the end of the EG Chairs presentation – at about 15.40 CEST - **APRE** will share the four Miro links in the Chat and brief the participants with technical instructions to migrate to MIRO and manage the board. In the meantime, the **FACILITATORS** will have promptly accessed their MIRO board to be prepared to host and assist participants accessing MIRO.*

15.45 CEST: Starting of parallel sessions (MIRO)

*The co-creation workshop (each thematic parallel session) will start, then, at about 15.45 CEST in each MIRO board. **FACILITATORS** will be the sole responsible for the board and the related activities till the end of the parallel session at 17.00.*

*FACILITATORS will close the works and thank participants on MIRO, without migrating again to Webex.*

**HOW THE MIRO BOARD IS DESIGNED**

According with the ranking of the priorities identified in each EG, each board will be designed as in this following sketch:



■ Each participants will have **5 posts** to be redistributed between questions (to the EG Chair) and contributions (feedback/inputs answering the main question) + **1 post-it** to be eventually added in the *Extra priorities* tab.

■ This exercise will be led by the Facilitator in **4 steps per each tab**:

- 1) **5 minutes** to write post-its
- 2) **5 minutes** to clusterize
- 3) **Max. 10 minutes** to answer questions by EG Chair

**AIM OF THE CO-CREATION EXERCISE ON MIRO**

The aim of the co-creation exercise is to **deepen and integrate the thematic priorities identified by the IDIH Experts by collecting further input and feedback from the R&I communities outside the project, coming from Europe and the five IDIH Strategic Countries.**

Therefore, the main question that will guide the participants in the co-creation exercise will be:

**QUESTION:**

**How would you deepen the reflection and complement these identified priorities?**

**INSTRUCTIONS**

**15.45 – 15.50: Facilitator welcomes participants and assist** them with technical instructions, even by writing down temporarily in the board if needed (...).

**15.50 - 15.55: Check-in.** Facilitator welcomes again participants, explain the exercise very quickly and asks them *one sentence* to introduce themselves and their experience.

**15.55 – 16.55: Co-creation exercise**

**Explanation by the facilitator**

- Per each priority here written, each participant will have five posts to be redistributed between questions (to the EG Chair) and contributions (feedback/inputs answering the main question)
- One more post-it is to be eventually added into the *extra priorities* for original/missing priorities
- *We remind you that:*
  - *We are dealing with Digital Health for Active and Healthy Ageing and, in particular, with [Preventive Care] through Digital Health for AHA.*
  - *TODAY we kindly ask you: How would you deepen the reflection and complement these identified priorities in this domain?*



**PRIORITY 1**

- Five minutes to write your post-its
- Five minutes to clusterize together
- Five-ten minutes for the EG Chair to answer to questions

**PRIORITY 2**

- Five minutes to write your post-its
- Five minutes to clusterize together
- Five-ten minutes for the EG Chair to answer to questions

**PRIORITY 3**

- Five minutes to write your post-its
- Five minutes to clusterize together
- Five-ten minutes for the EG Chair to answer to questions

**EXTRA-PRIORITIES**

- Five-ten minutes to write and directly discuss with the other expert participants eventual missing priorities

**16.55 – 17.00: Check-out.** Facilitator sums up and asks participants impressions about the exercise. Facilitators quickly explains how these results will be used and to anticipate a follow-up via email (through which participants are able to provide additional/integrative references to their statements and permission to be mentioned in IDIH deliverables). Facilitator thanks all and closes the session.



### 3. Report on Expert Groups: Scope and Findings of the 2<sup>nd</sup> Expert Groups (EG)

#### 3.1 General Scope of the Expert Groups

As outlined in D3.3 *1<sup>st</sup> Expert Group Workshop Report*, the core idea of this consortium is that people are at the centre of health services and consideration of all of their needs are critical in the development of technologies through promoting the ultimate end user's engagement in co-producing their own health.

IDIH previously presented a plan to achieve this goal with a specific focus on senior adults through an expert-driven approach. Then, four Expert Groups composed of stakeholders from the EU and the five international countries were selected to specifically work on the core aspects that regroup the priorities of the EU and the international strategic countries Canada, China, Japan, South Korea and the USA. This idea was continued through this second year of Expert Groups (Fig. 1): **Preventive Care, Integrated Care, Independent and Connected Living, and Inclusive Living.**

In order to further refine the list of international priorities as it relates not only to Active and Healthy Aging, but to the four domains therewithin, planned layers and stages of consultation and feedback were implemented (as discussed in section 2.1). Following the completion of each EG and the establishment of the foundational sets of priorities, all respective EG members were updated with the results of the priority setting exercises discussed in section 2, and, for those unable to attend the EG meeting, asked to provide their further contributions and comments--integrating the priorities set within the EG meeting.

The experts were also invited to join the Innovation Day, a part of IDIH Week, where the EG Chairs from each group presented the findings of their EGs. Then the discussion was opened up to IDIH Week international participants to expand upon and/or add to the list of previously created priorities.

Additionally, the EG priorities were presented at the PLC meeting at the end of May 2021. The main findings from this meeting are discussed in more detail in D2.5 *1<sup>st</sup> Programme Level Cooperation Meeting*, while any commentary on the priorities otherwise developed is also included here.

## 3.2 Preventive Care Expert Group Consultations Results

### 3.2.1 Introduction to the Preventive Care Group Consultation Meetings

The *Preventive Care EG Meeting* was held online on **May 17, 2021 (14.00 – 16.30 CEST)**. As it was the first EG meeting of the 2<sup>nd</sup> EG workshop series, many attendees were internal project staff who used the opportunity to become familiar with the co-creation methodology designed by APRE.

In particular, from the **IDIH Team**, the following participants attended the EG meeting:

- Martina De Sole, APRE (EG Facilitator)
- Bruno Mourenza, APRE
- Mathilde De Bonis, APRE
- Hicham Abghay, S2i
- Charlotte Schlicke, S2i
- George Zissis, ATC
- Krisztina Dax, GAC

The following experts were consulted in the framework of Preventive Care, two which attended the 2<sup>nd</sup> EG workshop and participated in the co-creation exercise.

- Giovanni Saggio (EG Chair) EU
- Yves Joannette, Université de Montreal, CA
- Takao Tashiro, The Open University of Japan, JP
- Hye-Jin Kim, Baekseok University, KR
- Yiqiang Chen, Chinese National Institute of Science and Technology, CN
- Steven Charlap, GeneYes, US

The other EG members were promptly updated with the results of the priority setting exercise and asked to provide via email their further comments, integrating the priorities set within the EG meeting.

Moreover, they were also invited to the parallel session dedicated to the Preventive Care topic at the Innovation Day. Among these EG members, Steven Charlap participated actively in the Innovation Day.

### 3.2.2 Setting the Frame

As a starting point for debate in the Preventive Care EG meeting, the outputs of the 1st EG meeting organized on May 18th, 2020, were used as a common ground for further reflection. The aim was to highlight priorities suitable for international cooperation in the Preventive Care domain.

Therefore, some highlights from the outcomes of the previous EG workshop and were shared before and during the 2<sup>nd</sup> EG workshop, as **preparatory materials and information** (see D3.3, D3.6). These focused on:



**Figure 6 Preventive Care Strategic Topics**



1. A definition of the **features of the Preventive Care domain in an international perspective**, shared as a first result of the discussion under the 1<sup>st</sup> EG workshop.

At the beginning of the discussion within the 1st EG meeting, it was crucial to set up the framework of the Preventive Care domain at an international level. The definition of Preventive Care could change from country to country and even in the same country could be controversial. In order to agree on a set of priorities suitable for international cooperation under this domain, experts in this group focused their first efforts in developing a shared definition of Preventive Care. The experts agreed on the following features for the Preventive Care domain:

- *Preventive Care should include care to help both **physical and mental health wellbeing**.*
- *Preventive Care aims to prevent diseases in asymptomatic subjects, with **tailoring to age-range, gender and ethnicity**.*
- *Preventive care should allow **to sense personal health condition** both physically and mentally **in a less obtrusive manner** and give **personalized prediction** and feedback based on the knowledge and experience from users.*

2. The **key messages** resulted from the discussion under the 1<sup>st</sup> EG workshop and beyond.

After the 1st Expert Group meeting on May 18th, 2020, the key messages resulted from the discussion were summarized as follows:

- *Place-sensitive measures shall be put into place to consider **rural vs urban lifestyles and environments**.*
- ***International accepted standards and parameters** are crucial especially when considering comparative analysis of data.*
- ***Data protection** is a hurdle to preventive care as access is an issue related to trust and acceptability.*

3. **Grounds for further cooperation at international level** identified in the field of Preventive Care included:

- *Identifying the **geographical areas** with the longest-lived population, and correlating them to **genetics, lifestyle and quality of nutrition**.*
- *Bringing together **nutritionists** and **geriatricians** in order to **exchange** expertise and ideas about nutrition and health-related issues for the elderly.*
- ***Bringing together all relevant actors in health care**, with special attention to nutritionists and geriatricians, so that they can take into account the whole challenge of Healthy Ageing (as in the WHO definition<sup>3</sup>). This must include different complementary aspects of Healthy Ageing: eating, physical activity, cognitive stimulation, social connection, etc.*
- *Find correlations among those **healthy status populations and their surrounding conditions**. For this we would need to examine several parameters such as pollution, climate, home conditions etc.*
- *(Re)-define the internationally accepted threshold parameters of **pollution** (caused from electro-smog and other factors).*

---

<sup>3</sup> Healthy Ageing is defined by the World report on ageing and health as the process of developing and maintaining the functional ability that enables well-being in older age. See also operational definition of active and Healthy Ageing: a conceptual framework: [https://ec.europa.eu/eip/ageing/sites/eipaha/files/results\\_attachments/bousquet.pdf](https://ec.europa.eu/eip/ageing/sites/eipaha/files/results_attachments/bousquet.pdf)



- *Devote special common efforts to fight and defeat widespread **mental disabling pathologies like** Parkinson's or Alzheimer's) which no single Country or Company cannot afford to combat alone.*
- *Establish a federated computing platform, so that all countries can be brought together to solve challenging tasks, such as the early warning of Parkinson's and Alzheimer's Diseases*

### 3.2.3 Priorities for International Collaboration in Preventive Care

**PRIORITY 1:** Forward/backward longitudinal study and Big Data analysis to better understand the determinants of healthy ageing and the trajectory towards the "un-healthy": from normality to the presence of disease.

- **Notes:** Big Data analysis, longitudinal studies, tech and AI to compare Big Data with AI
- **Linked keywords:** *AI, home-monitoring, data analysis, common predictive tools.*

#### PRIORITY 1 | Description

*Prevention of care could be better improved, and the potential of collecting interpolated data is essential for understanding the health evolution of patients and the first stages of the disease. As a clear example, we can take neurodegenerative diseases, like Parkinson's, where knowing in advance the aspects that could lead to the disease would be crucial not only for preventive measures but treatment as well.*

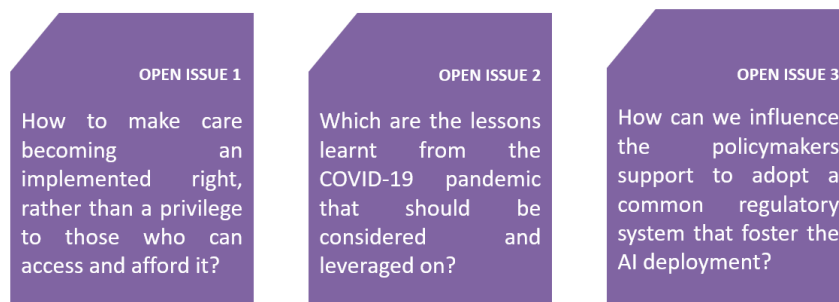
Contributions from the international experts participating in the co-creation session of the Innovation Day complementing Priority 1 are reported in Figure 7.



**INNOVATION DAY CONTRIBUTIONS TO PREVENTIVE CARE EG  
Priority 1**

**Figure 7 Innovation Day Contributions to Preventive Care EG (Priority 1)**

Moreover, participants in the Innovation Day brought to the attention of the IDIH Experts the following open issues (Figure 8):



**INNOVATION DAY QUESTIONS TO PREVENTIVE CARE EG  
Priority 1**

**Figure 8 Innovation Day Questions to Preventive Care EG (Priority 1)**

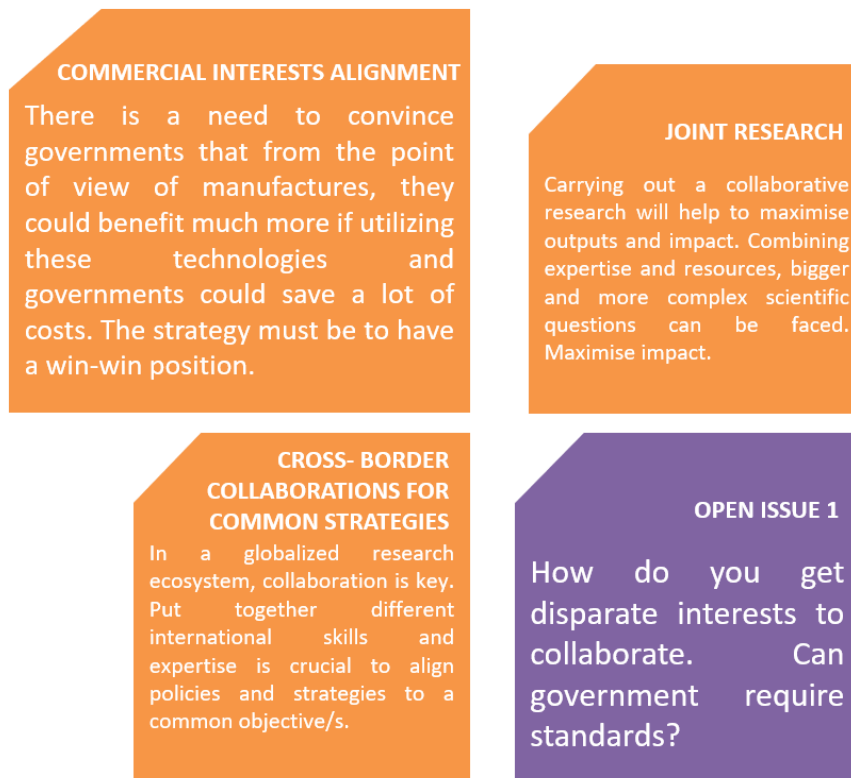
**PRIORITY 2: Development of international standards and procedures for interoperable outputs of wearable (and all) technologies**

- **Notes:** Development of international standards
- **Linked keywords:** *Local health commission, international standards*

**PRIORITY 2 | Description**

*There is a disparity in health technology assessment between countries and regions due to linguistic differences. The way in which one country approaches diagnosis, prevention and treatment can vary which means that data usage could be affected. In order to harmonize and homogenize data, creation of international standards and procedures can support health outputs interoperability.*

Contributions from the international experts participating in the co-creation session of the Innovation Day related to Priority 2 are reported in Figure 9, including an open issue also brought to the attention of the IDIH Experts.



**INNOVATION DAY  
CONTRIBUTIONS & QUESTIONS  
TO PREVENTIVE CARE EG  
Priority 2**

**Figure 9 Innovation Day Contributions/Questions to Preventive Care EG (Priority 2)**





**PRIORITY 3: Data analysis modelisation at different levels, such as: factors of wellbeing, diseases, and other determinants of health**

- **Linked keywords:** *AI, human digital twin.*

**PRIORITY 3 | Description**

*The paradigm of [Personalized Medicine](#) is based on applying the right therapy to the right patient in the right moment. Being able to understand in advance the evolution and consequences of a specific health intervention would positively disrupt innovations in preventive care. The use of artificial intelligence, in particular machine learning approaches, based on big data analysis could open the door to new possibilities, such as setting up simulations in many pathology interventions.*

Contributions from the international experts participating in the co-creation session of the Innovation Day related to Priority 3 are reported in Figure 10, including an open issue also brought to the attention of the IDIH Experts.

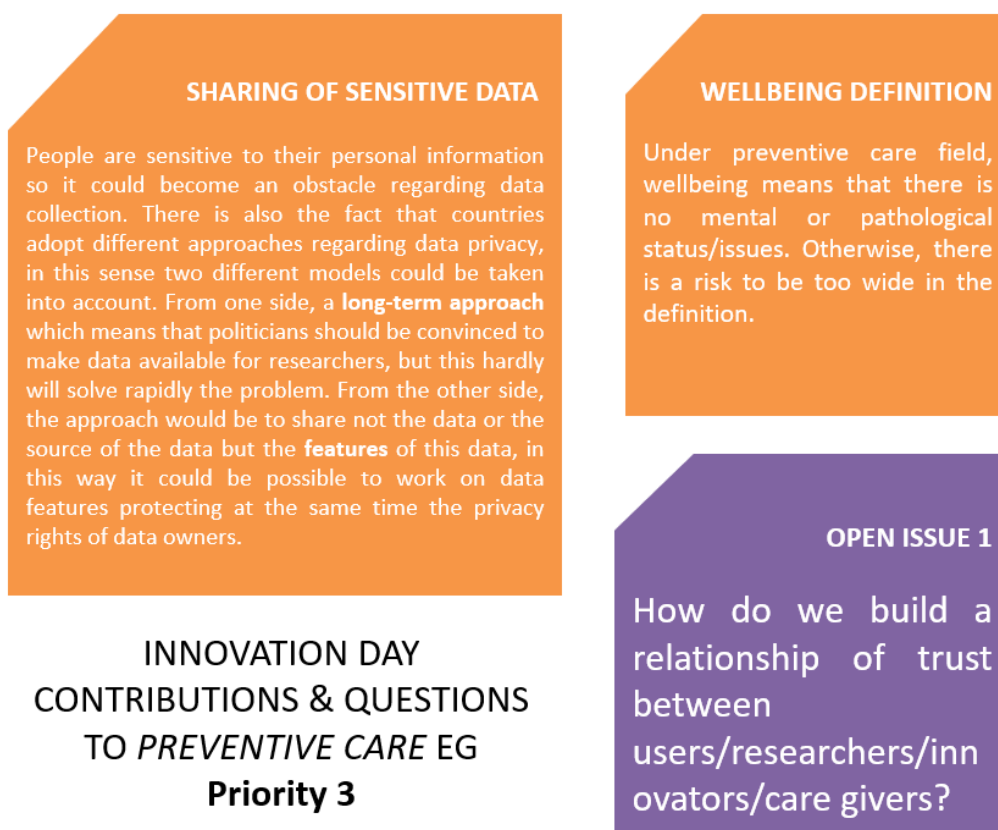


Figure 10 Innovation Day Contributions/Questions to Preventive Care EG (Priority 3)



**PRIORITY 4: Empowering individuals through co-design processes, digital literacy, and the use of evidence-based source of information.**

- **Notes:** Global Council of Brain Health
- **Linked keywords:** *Healthy habits, websites with information to optimize health and prevent diseases.*

**PRIORITY 4 | Description**

*The fact that there is ample information coming from a huge number of sources that are not controlled can create problems regarding the veracity of data. To mitigate this, it is necessary to empower individuals through digital literacy and solution co-design to support the creation and use of evidence-based sources of information.*

**PRIORITY 5: Creation of eco-systems, such as between academia/industry/consumers/institutions, for open innovation in wearables**

- **Linked keywords:** *collaborations with manufacturers, consumerization of sensors, taxonomic approach, individual aging monitoring.*

**PRIORITY 5 | Description**

*Academics and practitioners acknowledge the relevance of integrating consumers in the development of new products, technologies, and services in innovation and relationship management. Engaging customers through the co-creation process is advocated as a powerful means of establishing dialogue, developing a community around firms' interests, strengthening the commitment towards the new offering, and stimulating positive perceptions and attitudes from end users.*

**PRIORITY 6: Support the learning of health and wellness as well as social systems through access to data, procurements, and other sources of information**

- **Linked keywords:** *procurement models, home monitoring technologies, public healthcare systems.*

**PRIORITY 6 | Description**

*When using sensitive data, it is crucial to guarantee privacy to individuals but also important to make the data available for various uses. However, the legislation disparities among countries regarding data protection create huge barriers to facilitating accessible data. Avoiding this problem may require sharing not the key (original) data but the features related to it, thus protecting the most sensitive aspects.*

Finally, further ideas and suggestions regarding the implementation of Preventive Care priorities were identified by the international participants attending the Preventive Care parallel session on June 4<sup>th</sup>, 2021, including:

- *The need for additional **discourse and incentives** to companies to boost the standardization in ICT domain*
- *Help validate a standardised medical history interview to improve accurate and complete data intake*
- *Focus on creating **Precision Patients***
- *Create standards for data validation and consolidation, such as through carrying out **small pilot studies***

Feedback on the Preventive Care domain from the US policy makers in the PLC meeting emphasised the need for *better understanding and consensus around health and wellbeing determinants, starting from existing models.*

### 3.3 Integrated Care Expert Group Consultations Results

#### 3.3.1 Introduction to the Integrated Care Group Consultation Meetings

The *Integrated Care EG Meeting* was held online on **May 18<sup>th</sup>, 2021 (14.00 – 16.30 CEST)**.

From the **IDIH Team**, the following participants attended the EG meeting:

- Hicham Abghay, S2i (EG Facilitator)
- Charlotte Schlicke, S2i (EG Facilitator)
- Martina De Sole, APRE (moderator)
- Bruno Mourenza, APRE
- Mathilde De Bonis, APRE
- George Zissis, ATC (work package leader)

**Seven Experts<sup>4</sup>** attended the meeting and participated in the co-creation exercise.

- Andreas Kremer, Information Technology for Translational Medicine, LU
- Isabel Van de Keere, Immersive Rehab, UK
- Jisoo Emily Lee, HealSage Consulting, KR
- Kanoko Oishi, Mediva, JP
- Ville Salaspuro, Mediconsult, FI
- Andrew Sixsmith, Science and Technology for Aging Research Institute, Simon Fraser University, CA
- Yanchun Zhang, Cyberspace Institute of Advanced Technology, Guangzhou University, CN

Hicham Abghay, from IDIH partner S2i, presented the EG findings during the IDIH Week's Innovation Day.

The Integrated Care Expert Group deals with the contemporary issue of implementing resilient digital health solutions that position citizens, patients, and seniors at the heart of health systems. Technology in the Integrated Care domain is intended to provide support at the point of care, anytime and



Figure 11 Integrated Care Strategic Topics

<sup>4</sup> The group chair (Kendal Ho), representatives from USA (Abhishek Pratap and Kit Gordon) and the Greece delegate (Pantelis Angelidis) excused themselves due to concurring commitments. They have been informed about the results of the consultation via mail after the workshop to include their remarks and feedback.



anywhere. This requires redesigning, coordinating, and integrating health and social services with the citizen at the core of health solutions and services. This type of innovation includes data sharing between relevant users, and seamless interoperability of devices, tools, and care providers.

### 3.3.2 Setting the Frame

During the first iteration of the Integrated Care Expert Group, the consensus was that there is a need for more strategic senior-adult-oriented and holistic research as well as increased exchange of good practices, including different dimensions of integrated care. The deployment of enabling technologies for a more integrated healthcare should take the following aspects into consideration:

- The specific needs of senior adults to allow comprehensive integrated care, with the target individual at its core
- The lack of digital skills and understanding of complex systems deployed in the specific socio-cultural background of senior adults
- Integrated concepts must align with the workflows and operation framework around senior adults, going beyond hospitals following a holistic approach
- The role of social relationships and acceptance of intelligent technology in society by different generations
- Health risk assessment studies considering the entire ecosystem around senior adults
- Trust and design framework conditions for digital solutions that underly certification and strict standards; these standards should consider senior adults' capabilities, skills and cultural as well as gender backgrounds
- Ethical issues associated with the generation of large volumes of data by digital health solutions; this data could not only be exploited, such as for research purposes, but could also create ownership and privacy concerns

### 3.3.3 Priorities for International Collaboration in Integrated Care

Using the nominal group technique, the Integrated Care Expert Group's priorities were revisited during the second Expert Group meeting. This in turn was followed by a consultation round with policy and programme managers. Finally, a session during the IDIH Week co-creation day was dedicated to the top three priorities as established by the EG.

The results of the three layer-consultations are summarised below:

#### 3.3.3.1 Layer 1: Expert Findings at EG Meeting

During the co-creation workshop, the Integrated Care Experts focused on Digital Health & Ageing priorities that have the capacity to impact international cooperation. During the nominal group identification process, a set of priority topics was gathered and clustered around five final priorities (Fig. 12).



Figure 12 MIRO Board from Integrated Care Expert Group

### **PRIORITY 1: Digital inclusion and integrated care delivery through the deployment of novel digital solutions**

- **Linked keywords:** *social isolation, digital exclusion, unobstructive data generation, critical health parameters, engagement of healthcare professionals, digital tool usage*

#### **PRIORITY 1 | Description**

- *Improve the digital literacy and related skills of both healthcare providers and patients to achieve maximum benefits from using digital solutions*
- *Engage providers and other healthcare professionals throughout the process of integrating digital tools into workflows so that the uptake of these tools is optimized, both in the health care setting and by the intended end users*
- *Provide access to infrastructure that enables the integral application of digital tools, not only in the healthcare environment but also at home and in remote areas*
- *Generate data in a way that will allow for the creation of a critical mass of data that is ethically sound and usable while not encroaching on the beneficiary's (data) safety and privacy*
- *Identify critical health parameters that permit decisive and evidence-based prediction, prevention, and protection that is comparable and quantifiable*

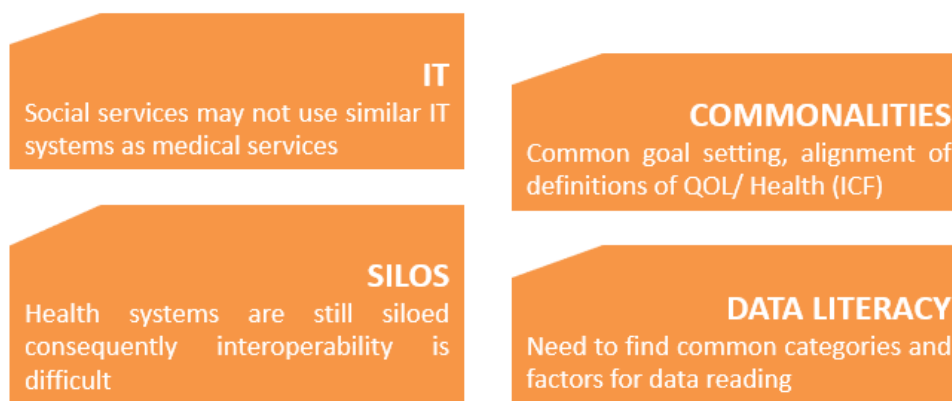
**PRIORITY 2: Interoperability by design, through the incorporation of Big Data and the standardization of data-related infrastructure**

- **Linked keywords:** *interoperability standards, data exchange, broadband infrastructure, technology business and architectural guidelines.*

**PRIORITY 2 | Description**

*Data (big data, highly curated, metadata) formats shall:*

- *Meet international and security standards that allow interoperability and data exchange beyond institutional and regional boundaries; this will increase usability as well as comparative analysis, ultimately contributing to greater learning and further dissemination of results*
- *Be provided with necessary and robust broadband infrastructure that allows processing, transferability, and full exploration of the data's potential*
- *Be based on technology, business, and architectural guidelines underlying a consensual basis by design that avoids reverse engineering and inefficient interfaces*
- *Guarantee privacy of individuals, especially related to the handling of sensitive information, while also allowing for public accessibility of data. In addressing this, it is critical to consider the variations in data privacy laws and regulations between countries because of the implications that these differences can have on the treatment of data. One possibility is to share only features from the original data, protecting sensitive personal data.*



**INNOVATION DAY CONTRIBUTIONS TO INTEGRATED CARE EG  
Priority 2**

Figure 13 Innovation Day Contributions to Integrated Care EG (Priority 2)

**PRIORITY 3:** Policy harmonisation and framework conditions policies to address transparency, security, ethics, privacy, and data preservation

- **Linked keywords:** *barriers in healthcare, political framework, key stakeholders*

**PRIORITY 3 | Description**

*Harmonisation will support:*

- *Breaking down barriers in healthcare value chains*
- *Increasing key stakeholder commitment*
- *Minimising bottlenecks and creating political framework conditions that evolve with the pace of innovation*

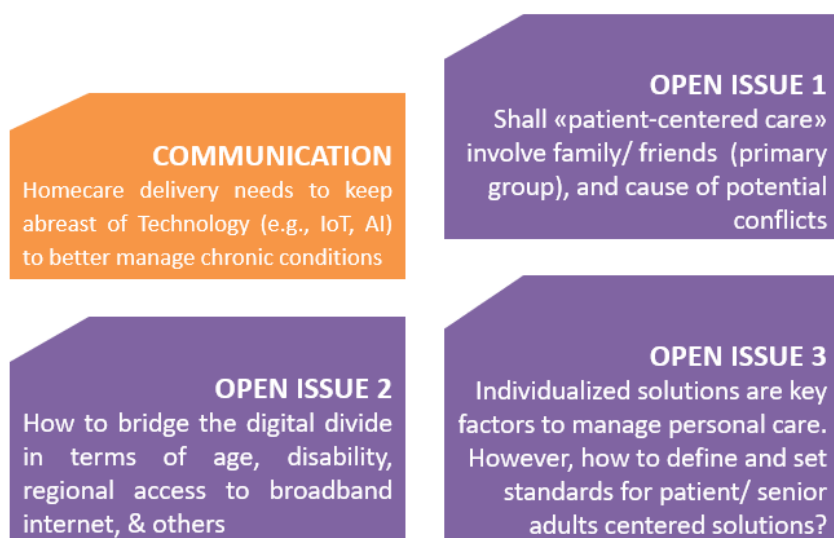
**PRIORITY 4:** Patient-centric long-term chronic care supported by standardised digital solutions and personalised medicine

- **Linked keywords:** *long-term care, digital solutions, multi-centric/multi-region trials*

**PRIORITY 4 | Description**

*Patient-centric chronic care shall incorporate:*

- *Long-term care considerations, particularly as related to ageing and the presence of co-morbidities requiring care provision from different healthcare service providers and settings*
- *Evolution of digital solutions over time, including the integration of novel technologies and updates with the most relevant and evidence-based insights*
- *Multi-centric/multi-region trials*



**INNOVATION DAY CONTRIBUTIONS & QUESTIONS TO INTEGRATED CARE EG  
Priority 4**

Figure 14 Innovation Day Contributions/Questions to Integrated Care EG (Priority 4)

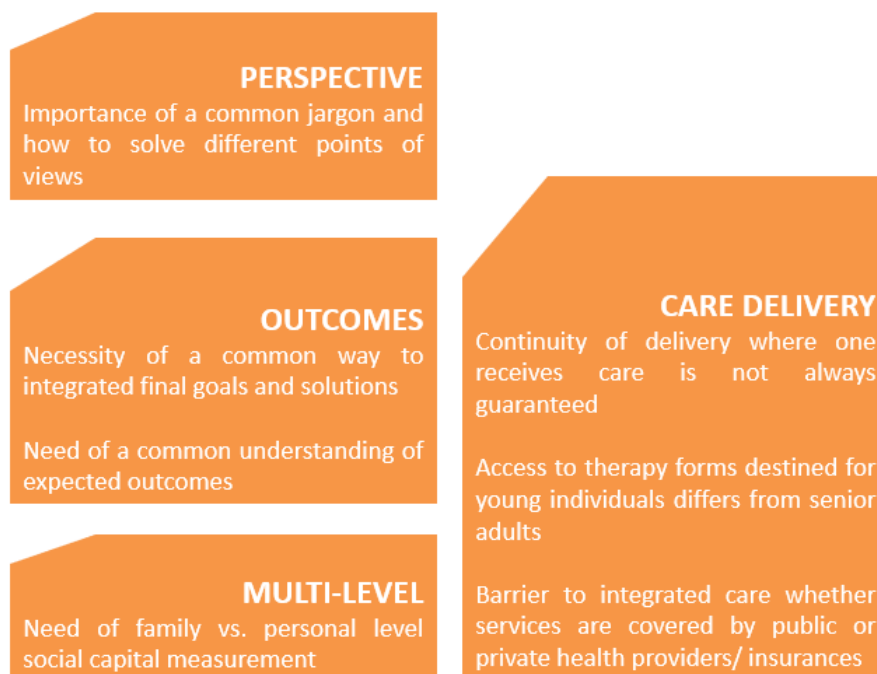


**PRIORITY 5: Co-design and co-development** – Health care service co-design and co-development with the involvement of caregivers across different typologies and disciplines (i.e., physiotherapists and doctors) to tackle gaps and barriers

- **Linked keywords:** *caregiver support, healthcare providers barriers, HCP workflows, data needs*

**PRIORITY 5 | Description**

- **Caregiver support** and medical expert engagement shall be explicitly encouraged
- **Health care professionals’ workflows and data needs** should be considered throughout the design and development process
- **Patient requirements and end user operability** shall be addressed through active engagement in the design and co-creation process as well as through the consideration of the special needs and requirements related to AHA
- **IT support** shall be aimed at enabling and empowering the use of digital solutions so that digital technologies meet the needs of the **senior adults**, as opposed to the contrary
- **Healthcare providers’ barriers** shall be overcome using health impact assessments based upon longitudinal and multidisciplinary considerations that demonstrate improved outcomes and benefits over time



**INNOVATION DAY CONTRIBUTIONS TO INTEGRATED CARE EG  
Priority 5**

**Figure 15 Innovation Day Contributions to Integrated Care EG (Priority 5)**





### 3.2.3.2 Layer 2: Validation for the Wider Group (Innovation Day)

At Innovation Day during IDIH Week 2021, the co-creation workshop dedicated to the Integrated Care domain focused on three Digital Health & Ageing priorities that were selected by the Experts as the most relevant ones to pursue in the context of international cooperation. During the nominal group identification process, a set of sixteen topics was gathered and clustered around the three priorities. The group added three further priority themes, complemented with six open questions, which were identified as critical issues for further consideration in future stakeholder consultations.

- **Additional questions raised:**

- Who are the target users for the final solutions? Do all stakeholders need to be considered?
- Who has access to the data (GDPR issues: regional, national, EU or global level)?
- Does the patient have ownership of integrated health and social services records?
- How can integrated solutions be adapted for every participant country?
- What are examples of pilots evaluating the feasibility of common cloud systems (infrastructures), integrated solutions, and platforms at a global level?
- What does IT integration look like outside of public hospitals or regional health services, such as in dental clinics or community pharmacies?

Finally, further ideas and suggestions related to the implementation of Integrated Care priorities were identified by the international participants attending the Integrated Care parallel session on June 4<sup>th</sup> 2021, including:

- *Intergenerational programs with youth teaching seniors how to use technology*
- *Health literacy for global users*
- *Integration across health and social care*
- *Develop patents share approaches*

Feedback on the Integrated Care domain from policy makers in the PLC meeting suggested there is a need for standardisation and consensus on measurement methods in longitudinal studies along with harmonisation of data and interoperability across disciplines.

### 3.4 Independent and Connected Living Expert Group Consultations Results

#### 3.4.1 Introduction to the Independent and Connected Living Group Consultation Meeting

The *Independent and Connected Living Expert Group Meeting* was held online on **May 19<sup>th</sup>, 2021 (15.00 – 17.30 CEST)**.

Attendees from the IDIH Team

- Mathilde De Bonis, APRE (moderator)
- Martina Desole, APRE (moderator)
- Matthew Holt, Catalyst @ Health 2.0 (EG Facilitator)
- Elizabeth Brown, Catalyst @ Health 2.0 (EG Facilitator)
- Yumiko Nishimura, Sawarabi
- Sakon Yamamoto, Sawarabi
- Bruno Mourenza, APRE
- Hicham Abghay, S2i

#### Independent and Connected Living Expert Group Members (6 out of 6)

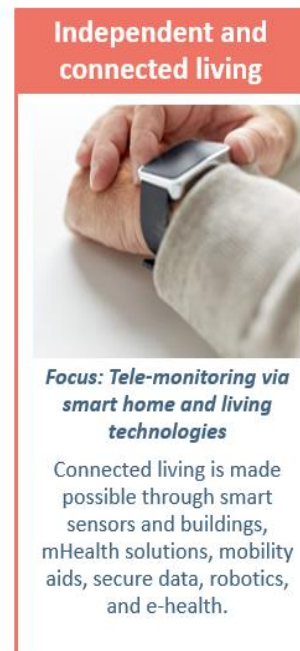
- George Demiris (EG Chair), University of Pennsylvania, US
- Guilan Kong, Peking University, CN
- Kyoung Eun (Kelly) Lee, Texas Women's University, KR
- Hirohisa Hirukawa, National Institute of Advanced Industrial Science and Technology, JP
- Matteo Melideo, Engineering Ingegneria Informatica SpA, IT
- Robyn Tamblyn, McGill University, CA

The Independent and Connected Living Expert Group (ICL) focuses on tele-monitoring via smart home and living technologies. Connected living is being made possible through smart sensors and buildings, mHealth solutions, mobility aids, secure data, robotics, and eHealth.

#### 3.4.2 Setting the Frame

The second Expert Group Meeting began with welcomes, re-introductions of the members to each other, and to IDIH goals and pursuits. To preface the primary exercise of the meeting, Facilitators presented the results of 2020's Expert Group Meetings, as the second Expert Group Meeting session was intended to be a continuation and expansion on the prior year's multiple Expert Group Meetings.

In the first Expert Group Meetings for the Independent and Connected Living Expert Group, a comprehensive brainstorming session resulted in the following mind map: (Fig. 17)



**Focus: Tele-monitoring via smart home and living technologies**

Connected living is made possible through smart sensors and buildings, mHealth solutions, mobility aids, secure data, robotics, and e-health.

**Figure 16 Independent and Connected Living Expert Group Strategic Topics**

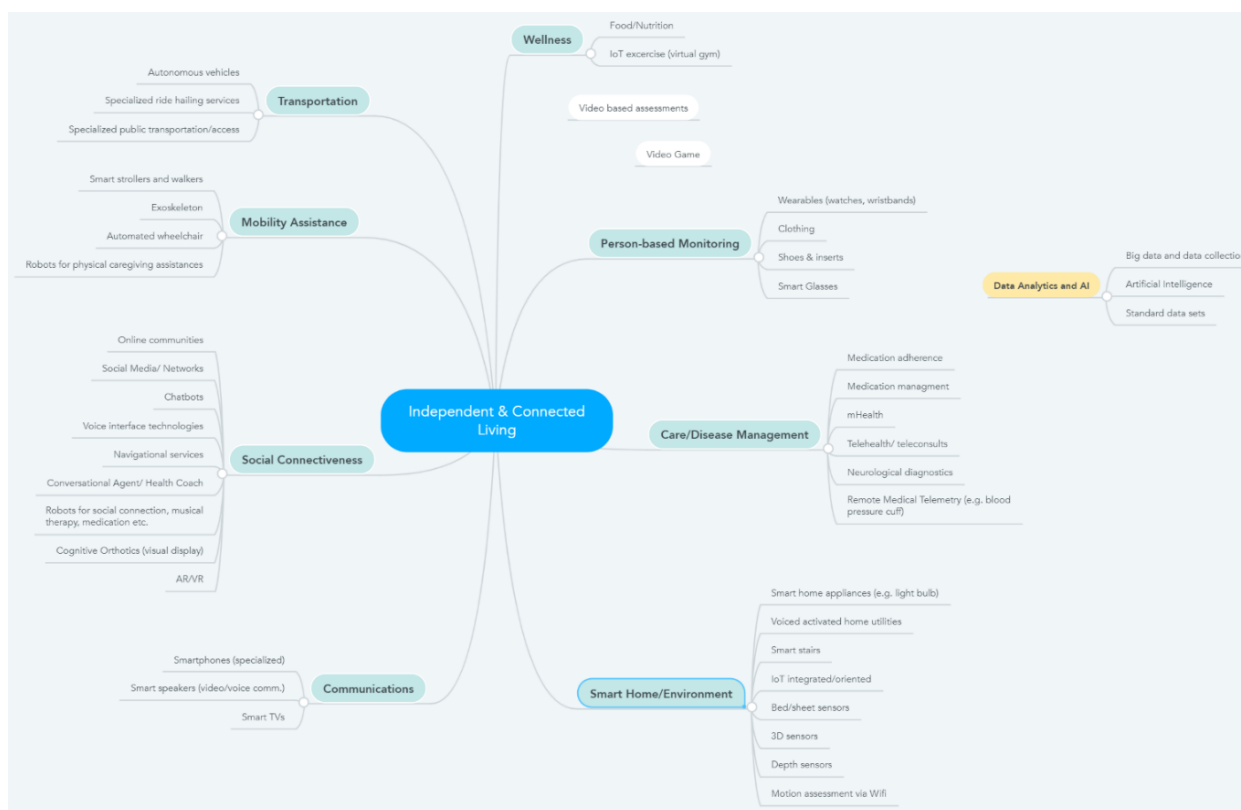


Figure 17 Field of Research for ILCG

After the creation of this map, nine categories of solutions and supports emerged as those in which the domain of Independent and Connected Living was grounded: transportation; wellness; person-based monitoring; mobility assistance; social connectiveness; care/disease management; data analytics and AI; communications; and smart home/environment.

Using these categories to inform the discussion, the key messages from the first ICL Expert Group were found to be as follows:

- Facilitating Independent and Connected Living requires more than just novel technologies. Policies, care delivery models, cultural and social factors, and environment all play a part.
- Health disparities as well as health and digital literacy influence technology adoption among the senior population.
- Key technologies that can promote Independent and Connected Living include:
  - **Smart Home/Environment** technologies such as sensors (bed, 3D, depth sensors), IoT voice activated appliances, smart stairs, and smart home utilities.
  - **Social Connectiveness** technologies such as robots, conversational agents, AR/VR.
  - **Person-based Monitoring** which includes wearables such as smartwatches, wristbands, clothing, shoes/inserts, and glasses.
  - **Data Analytics and AI** serve as the underlying technology behind the tools and products to promote independent and connected living (e.g., chatbots, sensors).
- While research on the feasibility of key technologies is available, more research on its impact on clinical outcomes such as hospitalisation, quality of life (QoL) and cost effectiveness is necessary.



- COVID-19 has prompted an unprecedented adoption of virtual care delivery - encouraging both the older adult generation and federal agencies to experiment with digital health. This sudden, large-scale adoption is expected to increase evidence-based research about digital health for AHA and ideally, boost senior acceptability of health innovation.

During the expert consultation meeting, the ICL EG focused on expanding upon and contributing ideas towards priorities considered to have bigger and more widespread implications at the international level. The priorities tentatively identified in the first EG were used to define the four clusters under which the ideas were placed (Fig. 18).



Figure 18 MIRO Board from the 2nd ILC Expert Group



### 3.4.3 Priorities for International Collaboration in Independent and Connected Living

#### 3.3.5.1 Layer 1: Expert Findings at EG Meeting (May 2021) - Priorities

**PRIORITY 1:** Promoting independence and mobility through smart and connected communities and environments.

**Notes:** from smart homes to smart cities, tested in real setting

**Linked keywords:** *obstacles, smart mobility, communities*

#### PRIORITY 1 | Description

*A key component of Active and Healthy Aging is allowing for individuals to be able to live independently, whether with or without conditions requiring monitoring. As such, there is emphasis on home-based care and monitoring, with this priority focusing on expanding the work that has already been happening with regards to smart homes and smart cities and looking at large deployments. These large-scale implementations are what generate generalizable and/or reproducible evidence, not to mention drive home the importance of independence and mobility. Thus far, the central objective has been on feasibility studies, and so moving beyond feasibility into real world effects is what is needed now.*



#### INNOVATION DAY CONTRIBUTIONS TO *INDEPENDENT AND CONNECTED LIVING* EG Priority 1

Figure 19 Innovation Day Contributions to ICL EG (Priority 1)



**PRIORITY 2:** Create a standardized framework for International Data Governance & Security based on interoperability and the sharing of patient-related data.

- **Linked keywords:** *interoperability, telehealth, standards, common regulation, data sharing, security, machine learning.*

**PRIORITY 2 | Description**

*Here, the focus is on the implications of widespread implementation and deployment of digital health technologies to support AHA. Of concern is how patient health data and privacy is being treated, as well as where such patient data is and should be stored; when private digital health company solutions are used to provide home-based monitoring, does the data that is generated from the wearables belong in the electronic health records? Other issues presented in the realm of patient data, privacy, and standardization of such include accountability, liability, and reimbursement for such models. More standardization is needed around not only who is looking at these issues, and the parties responsible for the aforementioned concerns. A standardized framework also needs generally recognized sources able to evaluate validity of studies and the implementations of digital health solutions, both in the public but also as it relates to integration into clinical workflows. Lastly, different payor plans, and health care models dictate different reimbursement structures – creating a more standardized mechanism for data governance and security, incorporating patient data and interoperability, would allow for an easier integration of these technologies into care settings.*

**OPEN ISSUE 1**

Realizing what are the critical data pieces that are needed for sure in this framework, but that may be difficult to collect, and how to collectively make efforts to acquire this data

**INNOVATION DAY CONTRIBUTIONS TO INDEPENDENT AND CONNECTED LIVING EG  
Priority 2**

Figure 20 Innovation Day Question for ICL EG (Priority 2)

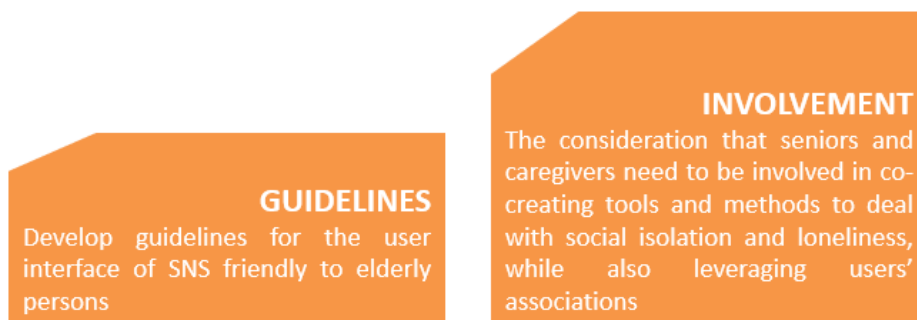


**PRIORITY 3:** Develop age friendly technologies to facilitate social connectivity as well as address social isolation and loneliness through international and multidisciplinary research teams.

- **Linked keywords:** *multidisciplinary, age friendly, social support, digital health literacy.*

**PRIORITY 3 | Description**

*The recent pandemic has only exacerbated the worldwide issue of social isolation and loneliness, especially in the older population. Therefore, inclusive technologies are needed that alleviate these issues. Such technologies need to take a multidisciplinary approach, as the core issues of loneliness and social isolation are not able to be addressed without encompassing a multitude of perspectives, such as those supporting biological, physiological, social, psychological, and environmental factors.*



**INNOVATION DAY CONTRIBUTIONS TO INDEPENDENT AND CONNECTED LIVING EG  
Priority 3**

Figure 21 Innovation Day Contributions to ICL EG (Priority 3)



**PRIORITY 4:** Enable enhanced mechanisms to share best practices and barriers to independent and connected living.

- **Notes:** knowledge and technology transfer
- **Linked keywords:** *experience/knowledge sharing*

**PRIORITY 4 | Description**

*As solutions to support independent and connected living as a part of AHA are implemented, it is important to not only use the results of those deployments to inform similar future ones, but to take those lessons learned and share them across disciplines, geographic areas, and other constructed borders. It is only when there is widespread cooperation that better outcomes are able to be observed, as the evaluations of what worked, what did not, and what obstacles needed to be overcome are all important pieces of data not just applicable to one locale. Additionally, the realization of obstacles such as literacy and digital health literacy in the target population(s) as well as optimal evaluation of the data from the target population are critically important in supporting independent and connected living. These topics are also relevant in ethical considerations around informed consent and data privacy, so the development and widespread usage of a cooperative, more standard mechanism to share best practices and lessons learned would help mitigate many of these issues and allow attention to be turned more towards better outcomes in the aging population.*

**3.3.5.2 Layer 2: Validation for the Wider Group (Innovation Day)**

Within the realm of Innovation Day during IDIH Week, a group exercise following discussion of 3.3.5.1's priorities allowed for both the addition of ideas under the previously established priorities, as well as the emergence of other priority topics to be considered.

Finally, further ideas and suggestions regarding the implementation of Independent and Connected Living priorities have been identified by the international participants attending the Independent and Connected Living Group parallel session on June 4<sup>th</sup>, 2021, including:

- *Assessing how to sustain the motivation of the aging population to connect with others*
- *The development of a common understanding of 'wellbeing' and defining indicators*

Feedback on Independent and Connected Living domain from policy makers in the PLC meeting suggested that there is a need to further explore *degenerative diseases*, such as *Alzheimer's*, and understand *Dementia-friendly communities*.





### 3.5 Inclusive Living Expert Group Consultations Results

#### 3.5.1 Introduction to the Inclusive Living Group Consultation Meetings

The *Inclusive Living EG workshop* was held online on **May 20, 2021 (15.00 – 17.30 CEST)**. The following participants from the **IDIH Team** attended the EG meeting:

- George Zissis, ATC (EG Facilitator)
- Martina De Sole, APRE
- Bruno Mourenza, APRE
- Mathilde De Bonis, APRE
- Hicham Abghay, S2i
- Sakon Yamamoto, Sawarabi

**Four Experts** attended the meeting and participated in the co-creation exercise:

- Matthew Lariviere (EG Chair), University of Bristol, UK/US
- Lillian Hung, University of British Columbia, CA
- AJ Chen, West China Hospital, CN, US
- Satoko Hotta, Keio University, JP

Matthew Lariviere presented the second EG outcomes during the PLC meeting on May 27, 2021. Additionally, Lillian Hung and AJ Chen participated in IDIH Innovation Day during IDIH Week as well as contributed to the discussions with the external experts and facilitated the advancement of the Workshop findings.

#### 3.5.2 Setting the Frame

During the first workshop the participated experts defined the framework of the Inclusive Living domain. A preliminary set of priorities was presented and reported thoroughly in the deliverable D3.3 “1<sup>st</sup> EG Workshop Report” and further elaborated in the deliverable D3.6 “Towards an international collaboration in digital health, v. 1.0”. Prior to the second workshop the reports D3.3 and D3.6 were presented to the experts to remind them of the previous discussions before proceeding with the presentation and discussion of updated sets of priorities.

A synopsis of the first Inclusive Living Expert Group Meeting is presented below. *Inclusive Living* is the processes and outcomes associated with an individual’s involvement in all aspects of personal, familial, community, civic and social life. Inclusive Living should not only focus on home-based technologies but should also consider the individual’s mobility as they travel or move around. Age, physical health, and mental health are all important in the determination that a person is senior. To determine that a technology is inclusive, user adoption is critical, as is supporting those developing applications and solutions. International collaboration on research and technology is also a high priority, and additional funding has to be available for attracting and allowing the research community to collaborate and work together. The COVID-19 pandemic highlighted the importance of Inclusive Living and underlined the need for adaptation of such solutions.



**Figure 22. Inclusive Living Strategic Topics**



### 3.5.3 Priorities for International Collaboration in Inclusive Living

#### 3.5.3.1 Layer 1: Expert Findings at the 2<sup>nd</sup> EG Meeting (May 2021)

**PRIORITY 1:** Understanding marginalisation connected to ageing and promoting targeted and co-created inclusive solutions

- **Linked keywords:** *inclusive design, digital literacy, marginalisation, social participation.*

#### **PRIORITY 1 | Description**

*This priority area identifies the need to focus on historically marginalised population subsets, including low income populations, minority ethnic groups, individuals with diverse gender identities and sexualities, and those residing in remote and/or isolated areas*

*It is also essential to understand the needs and work to engage “new ageing” groups such as people with HIV, former drug addicts, older prisoners, etc.*

*It is very important to promote inclusive design of services and solutions that can enhance the social participation of older adults and in particular of the above-mentioned groups.*

*The design and development of “Dementia-Friendly Communities” is also a very important topic that needs to be addressed by the international collaboration initiatives.*



### END USERS INVOLVEMENT

The Involvement of the real end-users is necessary in the early stages of solutions development, for example in co-creation sessions. User-involvement is key to ensure that technological tools and services are usable, useful, and ready to be applied and used by the elderly. Marginalized groups need to actively participate in innovation processes and their participation should be promoted and rewarded. The interaction and communication with marginalized groups is very important in order to understand their challenges and needs. It is important to listen directly to the opinions of the marginalized people. People with disabilities should be also taken into account and actively participate. To this end the development of infrastructures that facilitate end-users involvement is very important. Use of technologies by LTC (long-term care) staff is also a very important factor towards a qualitative inclusive living of the elderly.

### NEW APPROACHES

Taking into account the natural process of ageing, potentiality of disability, and development of dementia it is needed to design our society respectively. The research should focus on particular needs stemming from chronic diseases, non-communicable diseases and infectious diseases. The structure of diseases will change as the population ages. Therefore, it is important to think of a form of medical care able to address these needs.

### LEARNING FROM COVID 19

The momentum of ICT & telehealth use that has been emerged during COVID-19 pandemic needs to be further supported and enhanced.

### AGAINST PREJUDICE

It is important to overcome not only the prejudice of society, but also the prejudice of the people marginalized against themselves. It is essential to understand specific needs of the elderly taking into account - different levels of literacy and particularities of ethnic groups. Multidisciplinarity and strong collaboration with social scientists will allow to deal with prejudices of/against marginalized groups

### OPEN ISSUES

- How can we produce a good exit strategy so we can keep end users motivated after the experiment? Is there any place where we can find good practices?
- Have you observed disparities in the marginalized groups in the different countries (different regions inside the EU or differences between the countries represented in the EG)?
- Marginalised groups usually have monetary problems, and also low literacy levels (digital and health).
- What are the solutions you have envisaged to promote the inclusion?
- How is the promotion of inclusion done and what are the main actors involved?
- How to build trust?

## INNOVATION DAY CONTRIBUTIONS TO *INCLUSIVE LIVING* EG Priority 1

Figure 23 Innovation Day for IL EG (Priority 1)



**PRIORITY 2: Sharing tools and methodology and practices in the field of Learning Health Systems to reduce health disparities in elderly populations.**

- **Linked keywords:** *medical guidelines, training.*

**PRIORITY 2 | Description**

*The development of knowledge sharing and learning/training platforms on health-related issues may address unmet needs of ageing populations and enhance the quality of services and the expertise of medical professionals caring for older adults and unpaid carers.*

*The development of these platforms will facilitate the rapid dissemination of medical guidelines in EU partnering countries and at international level.*

*Knowledge sharing and learning/training platforms on health-related issues will increase the awareness and will facilitate the provision of training to healthcare organizations and professionals in EU countries and worldwide.*

**HEALTH LITERACY**

Health literacy needs to be promoted of to all. It is very important to exchange methodologies and best practices to raise awareness in health literacy. In order to make available funds to develop health literacy campaigns policy makers need to be involved. 3rd sector organizations can facilitate the promotion of campaigns and classes near elderly populations.

**KNOWLEDGE SHARING**

Joining organizations like the International Society for Gerontechnology, International Association of Gerontology & Geriatrics will facilitate the knowledge transfer and the exchange of best practices. The development of platforms for sharing tools for integration of state-of-the-art technologies with healthcare systems is very important for the provision of healthcare services to the society. Use of AI and data analytics will improve the quality of the technologies used for healthcare.

**TRAINING /EDUCATION**

Changing medical education. From a focus on acute care to a focus on chronic care, recovery, and end-of-life care. It is essential to train new generation of researchers with skills to work with diverse stakeholders. Care providers & the elderly need to be trained about end-of-life care. It is needed to change the concept of health. Not as something given to us by medicine, but as the ability to choose our lives.

**OPEN ISSUE**

Data Regulatory/security issues how can be resolved?

**INNOVATION DAY CONTRIBUTIONS TO INCLUSIVE LIVING EG  
Priority 2**

**Figure 24 Innovation Day for IL EG (Priority 2)**

**PRIORITY 3:** Enhance virtual care by identifying solutions through understanding barriers as well as opportunities in digital literacy of care professionals and end users

- **Linked keywords:** *virtual care, digital literacy*

**PRIORITY 3 | Description**

*It is very important to understand evolving digital literacy needs of all end user groups (older person, carers/families, care workforce). The requirements of today may differ significantly a few years from now as infrastructural upgrades, combined with new innovations in digital consumer and health technologies, shape the market.*

*Researchers, policy makers, and industry experts from the EU and partnering international countries will need to identify, evaluate, and deploy appropriate interventions to increase digital literacy for these end user groups.*

*As part of this priority area, it will be crucial to develop new tools and methodologies to evaluate the impact of improved digital literacy for virtual and remote care platforms and technologies.*

**OPEN ACCESS**

All the population needs to have access to the technology. The usage of Open Service Platforms needs to be promoted in order to facilitate the interoperability and accessibility between applications. Governments should support this digital transformation. Wi-Fi access needs to be a basic human right . It is needed to make technology available, so we can promote the technology usage/adoption.

**DIGITAL DIVIDE**

The virtual care has to complement the human personal care, not substitute it. The digital divide should be eliminated by evolving the UI/UX, not by making the user learn. The tech design that is user friendly, require min effort to learn. Technology needs to adapt to each disability. Stigma and assumptions that older people do not or can't use tech needs to be addressed. The opportunity to work with older people with disability to co-design needs to be promoted. The diversity within the older adults related to digital literacy needs to be taken into account.

**TRAINING /EDUCATION**

Changing medical education. From a focus on acute care to a focus on chronic care, recovery, and end-of-life care. It is essential to train new generation of researchers with skills to work with diverse stakeholders. Care providers & the elderly need to be trained about end-of-life care. It is needed to change the concept of health. Not as something given to us by medicine, but as the ability to choose our lives.

**OPEN ISSUE**

How we may deal with the debate tech vs human, tech should be tools to help human flourish?

**INNOVATION DAY CONTRIBUTIONS TO INCLUSIVE LIVING EG  
Priority 3**

**Figure 25 Innovation Day for IL EG (Priority 3)**



**PRIORITY 4: Tools and methodologies for the engagement and active involvement of the elderly and specific groups (such as marginalized groups, new ageing groups etc)**

- **Linked keywords:** *User involvement, new ageing groups, multi-disciplinarity*

**PRIORITY 4 | Description**

*User-led research will enhance the development of systems and services that are able to address the needs of older people.*

*It is important to understand and take into account that the person living with a disability may research their own experiences which may be incomprehensible to others without a similar lived experience.*

*Cognitive scientists, roboticists and engineers will be able to verify their work with the active involvement of the elderly at both the design and development stages of the product cycle.*

**PRIORITY 5: Integrate data generated from next generation internet technologies (e.g., AI, IoT, robotics) to inform evidence-based decision making.**

- **Linked keywords:** *integrated data, decision making.*

**PRIORITY 5 | Description**

*Sharing of data generated from NGI technologies can inform and influence evidence-based decision making and support the design and development of efficient systems and services able to address the unmet care needs and safety of older adults.*

**3.5.3.2 Layer 2: Validation for the wider group (Innovation Day)**

Finally, further ideas and suggestions for a proper implementation of Inclusive Living priorities have been identified by the international participants attending the Inclusive Living parallel session on June 4<sup>th</sup>:

- *The need for **reframing** the relationship between ‘health’ and ‘happiness’*
- *Using the **JEDI (Justice, Equity, Diversity, Inclusion) approach***
- *Focus on **environmental/digital accessibility***
- *Support for **informal carers***

Regarding feedback on Inclusive Living domain from policy makers in the PLC meeting, there is opportunity for more *engagement of charities and other organisations to support individuals’ self-determination in their own health care and confirmation that caregiver engagement is needed, along with other stakeholders.*

#### 4. Common Set of Priorities for the IDIH Expert Groups

Individually, the four domains of Preventive Care, Integrated Care, Independent and Connected Living, and Inclusive Living appear to be distinct realms under the umbrella of Active and Healthy Aging. Following the development, recognition, and refinement of the sets of priorities for AHA under each of these categories by both identified experts, policy makers, and international participants in IDIH Week, it becomes clear that, while the priorities are each specific to their respective domains, there are some common themes that emerge when assessing the priorities of each of the four groups compared to each other, as in Figure 26.

Certain major themes bridge the gaps between each of the four groups, including data analysis/sharing/integration; common standards & guidelines; interoperability; stakeholder engagement; understanding of barriers; and care delivery. Common themes and priorities will be further investigated with IDIH Expert Groups organizing workshops and inviting other external experts in these domains.

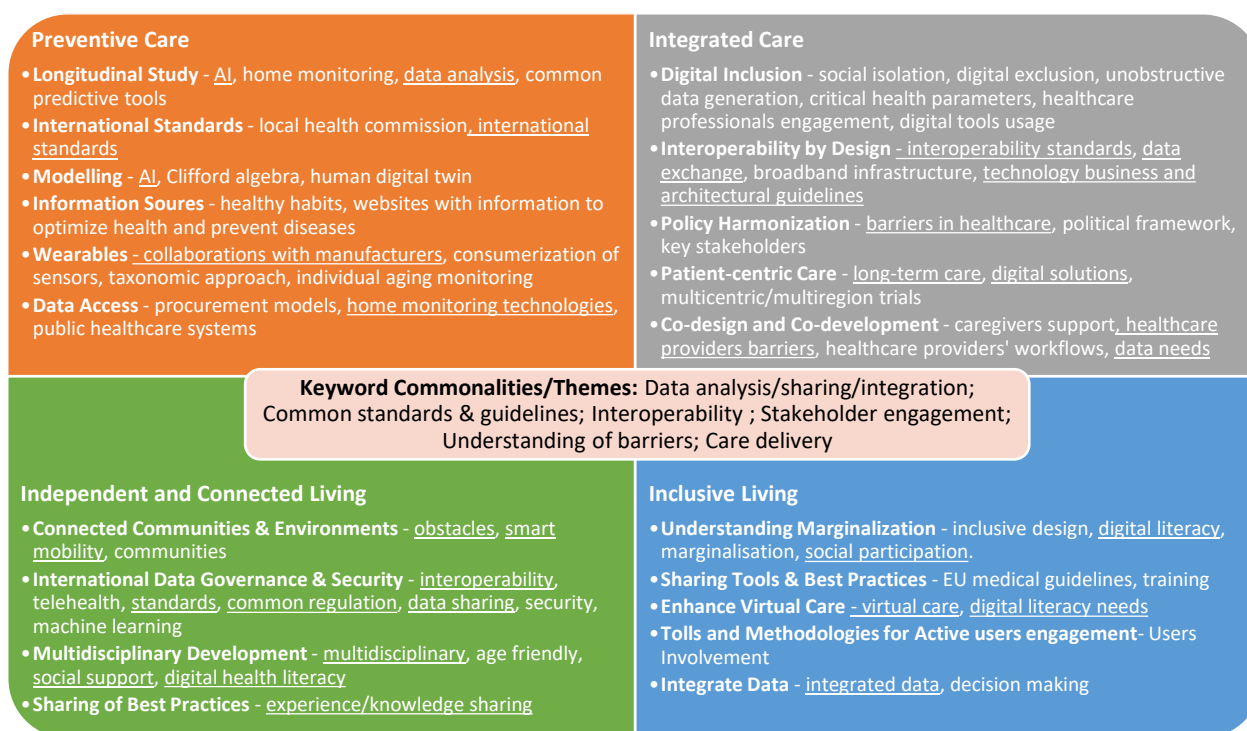


Figure 26 Matrix of priorities & keywords for the four domains following the Expert Groups & IDIH Week's Innovation Day

## 5. Synopsis and Next Steps

The priorities identified as suitable for international cooperation in each EG have been brought to the attention of policy makers at international level within the IDIH project, as part of the *1<sup>st</sup> Programme Level Cooperation (PLC) Meeting* held on May 27, 2021, where the IDIH EGs Chairs presented the results of the priority setting exercise made during their 2<sup>nd</sup> EG Workshop. This allowed to collect feedback and further inputs to their work in relation to the policy agendas and future national/regional perspectives around digital health for AHA.

Therefore, as we consider the priorities resulted from the 2<sup>nd</sup> EG Workshop in the light of the international policy dialogue initiated with the 1<sup>st</sup> PLC meeting, several areas of major interest have been recognized, as summarized in Figure 27<sup>5</sup> highlighted as domains already addressed/funded at national/regional level (in line with current policy agendas), and/or as topics with potential for R&I strategies at international level, demonstrating potential for future (possibly joint) funding initiatives.










AREAS	In line with current policy agendas	With potential for future R&I strategy at international level
<b>Innovative digital solutions for AHA co-created among researchers, manufacturers, users, formal and informal carers.</b>		
<b>Dementia-friendly communities</b>		
<b>Learning Health Systems</b>		
<b>Unlock the potential of data coming e.g. from wearables or sensors through AI, machine learning algorithms</b>		
<b>Sharing data on degenerative diseases</b>		

Figure 27 Areas of major interest in line with current policy agendas and with potential for future R&I strategy at international level

This exchange with policy makers within the 1<sup>st</sup> PLC meeting has confirmed the validity of the basis upon which the IDIH Experts Forum is building its Roadmap towards an international cooperation in Digital Health for AHA, enabling the Expert Groups to finetune and better focus their works around these core areas.

As demonstrated, these topics - as derived from the priority setting exercise during the 2<sup>nd</sup> EG Workshop - show how multi-faceted even the most fundamental aspects of AHA can be, such as care delivery or the creation of common standards, in which the domain of Preventive Care focuses on creation of

<sup>5</sup> From D2.5 Report on the first Programme Level Cooperation meeting, IDIH Project.





standards with the involvement of manufacturers, compared to the interoperability standards designated by Integrated Care Group, versus the standards identified as playing a role in international data governance and security by the ICL Group, versus the creation of medical guidelines to govern Inclusive Living.

Further consultations will be required to further differentiate, deepen, and validate the experts' assumptions. However, at this point, the Forum is getting closer to establishing clear paths forward in Digital Health for AHA based on an expert-driven approach, facilitating an evidence-based progress towards better outcomes in AHA at international level. By retracing the actions undertaken within the IDIH Experts Forum, we are now outlining an action programme for the near future that will enable the EGs to develop a comprehensive set of recommendations to support international cooperation to advance Digital Health for AHA.

#### **IDIH Steps taken since D3.3 The 1<sup>st</sup> Expert Group Meeting**

- *Prepared and sent out the workshop proceedings to all 4 Expert Groups the report for validation*
- *Established regular communication and information exchange*
- *Standardised template to collect experts' profile/expertise a) to highlight their profiles on the IDIH website and b) IDIH poster*
- *Developed internal platform for communication amongst experts in this group and between the different Expert Groups e.g., to share relevant information, articles, links, opportunities for collaborations among the EU and the strategic partner countries.*

IDIH plans to proceed by not only continuing discussions with our experts, policymakers, and engaged stakeholders from IDIH Week, and looks forward to continued progress in Active and Healthy Aging.


#### **Future IDIH Activities**

- *Proposition of future topics to be discussed in future expert meetings a) that were not completely covered in the 2<sup>nd</sup> meeting, b) topics that are leading to the next steps in the action plans.*
- *Organisation of workshops with the participation of IDIH experts and other external specialists to further investigate common priorities and topics.*
- *Further geographical and related differentiation and discussion within identified priority areas*
- *Development of partnerships and connections between stakeholders*
- *Establishment of connections to funding opportunities, R&D, and data sources*
- *Further evaluation and monitoring of the impact of COVID-19 on the recognized domains and priority areas*

## Annex

### Annex 1 Programme of 2<sup>nd</sup> Expert Group Workshop

The following is an example of an agenda for the 2nd Expert Group Workshop, representative for all four Expert Groups.



## 2<sup>nd</sup> EG Workshop Integrated Care Expert Group | Agenda

Date: May 18<sup>th</sup>, Time: 14.00 -16.30 CEST

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[TEAMS Link](#)

Platform	Time	Topic	Who
TEAMS	5 minutes	Welcome and introduction of IDIH	EG Facilitator
TEAMS	5 minutes	<ul style="list-style-type: none"> <li>▪ Brief overview on the project IDIH and vision/ objectives.</li> <li>▪ IDIH Experts in the IDIH Week (June1-4)</li> <li>▪ The Innovation Day (June 4): a space to open the discussion around EG outcomes towards a wider audience of experts</li> </ul>	APRE
TEAMS	5 minutes	<ul style="list-style-type: none"> <li>○ Aims of the workshop and methodology</li> </ul>	APRE
MIRO	1 hour and 30 minutes	<ul style="list-style-type: none"> <li>▪ Priority setting exercise via miro.com                             <ul style="list-style-type: none"> <li>○ Digital Health for AHA. What are the priorities for Integrated suitable for International Cooperation? Post-it on the board!</li> <li>○ Let's clusterize!</li> <li>○ Vote clusters!</li> <li>○ Find commonalities among countries</li> <li>○ Let's share a title for each priority (max.5 priorities)</li> </ul> </li> </ul> <p>BREAK 5 minutes</p> <ul style="list-style-type: none"> <li>▪ Any barrier to the identified priorities?                             <ul style="list-style-type: none"> <li>○ Post-it on the board!</li> </ul> </li> </ul>	Experts facilitated by APRE
	10 minutes	Break	ALL
TEAMS	15 minutes	Conclusions	EG Facilitator Coordinator

