IDIH

INTERNATIONAL COLLABORATION
DIGITAL TRANSFORMATION
HEALTHY AGEING

IDIH WEEK 2022

A 4 days online event dedicated to researchers, innovators, care providers and users associations dealing with Digital Health for Active and Healthy Ageing (AHA).

Information, Networking&Matchmaking, and Co-creation sessions among all the key-stakeholders of digital solutions for AHA in Europe, Canada, China, Japan, South Korea and USA.

Join the IDIH Week 2022 | March 21 – March 24

https://health-innovation-community-platform.b2match.io/

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IDIH WEEK 2022

- **INFO DAY (March 21, 9.00 - 11.00 CET)**
- This Info Day is dedicated to the IDIH findings and products, as well as to IDIH progress towards sustainability. It will also *highlights* current opportunities for international cooperation in the field of Digital Health for Active and Healthy Ageing.

- **US REGIONAL WORKSHOP (March 21, 17.00 - 19.00 CET)**
This workshop is dedicated to the US landscape of R&I around Digital Health for AHA. It will focus on how COVID has impacted independent and connected living of the older persons with the perspective of start-ups, investors, and the patients themselves. A session will be dedicated to Q&A with the audience.

- **PARTNERING DAYS (March 22, 9.00 – 11.00 CET/March 23, 15.00 – 17.00 CET)**
Partnering Days will be dedicated to the presentation – through a short pitch – of ongoing projects (for results dissemination/exploitation purposes), new project ideas and expertise offers/requests by the organizations working in the field of Digital Health for AHA. Sessions are planned for March 22, 9.00 – 11.00 CET and March 23, 15.00 – 17.00 CET and will be respectively dedicated to Asian and American audience. Do you wish to pitch your project idea or expertise?**Apply HERE! Use this template to send your Flash Presentation to idih@apre.it by March 14.**

- **JAPAN REGIONAL WORKSHOPS (March 23, 9.00 - 11.00 CET)**
A panel-discussion (in Japanese with English subtitles) will be held with the participation of the Ministry of Internal Affairs and Communication, in charge of HORIZON 2020 in Japan, and some key-players in the R&I landscape in Japan. A session will be dedicated to Q&A with the audience.

- **INNOVATION DAY (March 24, 9.00 – 11.00 CET & 15.00 – 17.00 CET)**
Starting from the findings of IDIH Experts – gathered in the **IDIH Digital Health Transformation Forum** – this event will be the occasion to address Digital Health for Active and Healthy Ageing focusing on the three areas suggested by the IDIH Experts for enhancing international cooperation in the field: *Data Governance, Digital Inclusion, Interoperability-by-design*. Thanks to the participation of the **eVita project** and the **North American Chapter International Society for Gerontechnology**, 2 Panel Discussions will further explore these areas highlighting tech challenges and opportunities offered by collaborative research at international level. Co-creation sessions will follow among the panelists, as well as the audience through ad hoc tools for live interactions.

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HEALTHY AGEING

IDIH WEEK 2022

Innovation Day

(March 24, 15.00 – 17.00 CET)

Join the Q&A with Slido:

Join at
slido.com
#IDIH

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IDIH INTERNATIONAL COLLABORATION DIGITAL TRANSFORMATION HEALTHY AGEING — GERONTECHNOLOGY — AGE-WELL Canada's technology and aging network

CONCEPT | Starting from the findings of IDIH Experts – gathered in the IDIH Digital Health Transformation Forum – this event will be the occasion to address Digital Health for Active and Healthy Ageing focusing on the three areas suggested by the IDIH Experts for enhancing international cooperation in the field: *Data Governance, Digital Inclusion, Interoperability-by-design.* Thanks to the participation of the North American Chapter International Society for Gerontechnology and AGE-WELL Network a Panel Discussion will further explore these areas highlighting tech challenges and opportunities offered by collaborative research at international level. A co-creation session will follow among the panellists, as well as the audience through ad hoc tools for live interactions.

AGENDA	
15.00 - 15.10	**Welcome and introduction** *Kristin Dallinger, IDIH Coordinator*
15.10 - 15.20	**The International Society for Gerontechnology. Its mission and activities** *Gloria Gutman, President of the North American Chapter International Society for Gerontechnology*
15.20 - 15.30	**AGE-WELL Network: Making Canada a world leader in technologies that help aging population** *Andrew Sixsmith, Associate Scientific Director, AGE-WELL Network of Centres of Excellence. IDIH Expert*
15.30 - 15.40	**The outcomes of the IDIH Experts Forum in the field of Digital Health for Active and Healthy Ageing** *Mathilde De Bonis, APRE (IDIH Partner)*
15.40 - 15.50	**Frameworks for technology design and technology interventions: Application to social connectivity.** *Neil Charness, William G. Chase Professor of Psychology, Florida State University. Director, Institute for Successful Longevity*
15.50 - 16.00	**Multi-modal and longitudinal studies towards a shared understanding of the determinants of healthy ageing** *William Kearns, Associate Professor (Retired Meritorious). Department of Rehabilitation and Mental Health Counseling. University of South Florida*
16.00 - 17.00	**Co-creation session:** improving IDIH outcomes based on the Panel insights
17.00	*Closure*

Link to access the meeting: click here

IDIH Short Fact Sheet

- **Full Title:** International Digital Health Cooperation for Preventive, Integrated, Independent and Inclusive Living
- **Start Date:** 1st May 2019
- **Aim:** **Promote and increase international collaboration** to **advance digital health** in the EU and key Strategic Partner Countries to **support active and healthy ageing (AHA) through innovation**

9	4	5	36	2.4
Partners	EU Countries	Strategic Partner Countries	months (May 2019 - April 2022)	million € (including partners' own contribution)

IDIH PARTNERSHIP

AIM | **Promote and increase international collaboration** to **advance digital health** in the EU and key Strategic Partner Countries to **support active and healthy ageing (AHA) through innovation**

IDIH serves as a **CATALYST** for the **INTERNATIONAL DIALOGUE in DIGITAL HEALTH for AHA**

IDIH's EXPECTED IMPACT

Increased awareness of relevant research and innovation initiatives by stakeholders.

Improved competitiveness of European industry by opening up to international innovation possibilities and gaining access to future markets.

More networking between European and international stakeholders interested in international cooperation in the field.

Increased international cooperation in ICT research and innovation for AHA through a roadmap of priority areas and potential funding schemes.

IDIH PRODUCTS AND SERVICES (I)

1 IDIH Factsheets

Overview of the **digital health research and innovation landscape** in Strategic Partner Countries (CAN, CN, JP, KR, USA):

- Priorities within digital health and AHA
- Challenges,
- Relevant key programmes
- Key players in the field
- Strengths and weaknesses

Overview of **international collaboration** and

- Success stories in digital Health bw EU and Strategic Partner Countries

Access the factsheets:

- Factsheet Canada
- Factsheet China
- Factsheet Japan
- Factsheet South Korea
- Factsheet USA

2 IDIH Guidebooks

Updates on opportunities for researchers and innovators

- from IDIH Strategic Partner Countries under EU Funding
- from the EU under the American, Canadian, Chinese, Japanese and South Korean Funding Programmes

https://idih-global.eu/outcomes/

IDIH PRODUCTS AND SERVICES (II)

3 IDIH Helpdesk

idih-global.eu/idih-helpdesk

Ad-hoc advice to RTI stakeholders from the EU and the Strategic Partner Countries on Funding Programmes and Calls that offer opportunities for international cooperation in the field of Digital Health and AHA

4 IDIH Long-term Matchmaking Platform

Networking among all key-stakeholders of digital solutions for AHA

Register at: https://idih-week-2021.b2match.io/

- Create your online profile specifying your Area of Activity and/or expertise request/offer in the Marketplace + Schedule B2B-meetings with your potential international partners until Dec 31, 2021.

5 IDIH Week 2021 & 2022

- 4 days online event dedicated to researchers, innovators, care providers and user associations dealing with Digital Health for AHA.
- Information, Networking & Matchmaking, Co-creation sessions
- Materials available at: https://idih-week-2021.b2match.io/page-4061

IDIH PRODUCTS AND SERVICES (III)

6 IDIH Podcast

- **The Future of Ageing Actively and Happily** is the podcast of the EU Project IDIH - International Digital Health Cooperation for Preventive, Integrated, Independent and Inclusive Living.
- Each episode focuses on one of these **topics**, and a strategic **region** of the world: Europe, China, Canada, Japan, South Korea, and USA.
- Available on 6 platforms

TIMING

PODCAST 1: March 2021 (Intro HE)
PODCAST 2: July 2021
PODCAST 3: October 2021
PODCAST 4: December 2021
PODCAST 5: January 2021
PODCAST 6: March 2022

Duration: max. 25 minutes

WHERE TO LISTEN

6 IDIH Magazine

- IDIH MAG FORMAT: a full PDF version
- IDIH MAG FORMAT: a reduced HTML version

- You can just draft your article promoting ***events, initiatives and R&I projects at national/international level or experts/stakeholders from your organization/network***, dealing with Digital Health for Active and Healthy Ageing

6 sections:

Findings from the IDIH Experts Forum [HOW]:

- 4 Experts Groups
- 4 Strategic Topics
- 3 Experts Groups Workshops
- IDIH Week 2021
- IDIH Webinars
- IDIH PLC - Programme Level Cooperation (6 Funding Agencies)
- Consultation with the IDIH Users Consultation Group (UCG):

AGE Platform Europe
Ilenia Gheno, Research Project Manager

EUPHA
EUROPEAN PUBLIC HEALTH ASSOCIATION
Anna Odone, President of the Digital Health section

EIWH
Peggy Maguire, Director General

AGING 2.0
Stephen Johnston, co-funder

中国老年学和老年医学学会智慧医养分会
Jie Wang, Vice President

株式会社MTヘルスケアデザイン研究所

GERONTECHNOLOGY

Digital Health Transformation Forum

- **Expected to become a long-lasting mechanism for international dialogue on exploitation of synergies, promising avenues, and open issues in digital health.**
- **Shall develop a Roadmap with concrete measures for enhancing collaboration in priority areas.**

IDIH Expert Groups

Activities

- Collaborative actions
- Exchange in areas and topics of collaboration in digital health domains
- Ensure mutual learning and knowledge exchange between countries and regions

Experts

- Four Expert Groups (one per strategic topic)
- Experts coming from research, technology, industry, advocacy groups, etc.
- Experts were selected via application process

Four Strategic Topics

	Preventive care	Integrated care	Independent and connected living	Inclusive living
				
	Focus: Early diagnosis and detection Active and healthy aging begins with a prolonged health regimen. Tech enabled solutions that engage users in health and wellness techniques will allow active and meaningful senior lifestyles.	***Focus: Using new technologies to redesign, coordinate and integrate health and social services and place citizens, patients and seniors at the centre of health systems.*** Technology in the integrated care domain is intended to provide support at the point of care, anytime and anywhere.	***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	***Focus: Helping the elderly to feel socially more connected*** Healthy environments equal healthy individuals. In the aging population, a component of healthy living is inclusivity, promoting positive social engagement, and ensuring a rewarding social aspect to age
Facilitators	APRE	STEINBEIS 2i	catalyst @ Health 2.0	ATC
Experts EU	Giovanni Saggio *University of Rome Tor Vergata*	Ville Salaspuro *Mediconsult Oy*; Isabel Van De Keere *Immersive Rehab*	Matteo Antonio Melideo *Engineering Ingegneria Informatica SpA*	Dr Matthew Lariviere *University of Sheffield*
USA	Steven Charlap *CEO of GeneYes*	Christopher Gorton *Medsolis*	George Demiris *University of Pennsylvania*	Dr Mandy Salomon *Mentia Inc.*
Canada	Yves Joanette *Université de Montréal*	Kendall Ho *University of British Columbia*	Robyn Tamblyn *McGill University Health Centre*	Dr Habib Chaudhury *Simon Fraser University*
China	Yiqiang Chen *Chinese National Institute of Science and Technology*	Yanchun Zhang *Victoria University*	Guilan Kong *Peking University*	Dr. AJ Chen *West China Hospital*
South Korea	Hye-jin Kim *Baekseok University*	Jisoo Lee *HealSage consulting*	Kyoung Lee *Texas A&M University*	Dr Roland Wilson *George Mason University*
Japan	Dr Takao Tashiro *The Open University of Japan*	Ms Kanoko Oishi *Mediva*	Dr Hirohisa Hirukawa *NovusCare*	Dr Satoko Hotta *Keio University*

IDIH (wider) Community

- IDIH | Long-term matchmaking platform
- Open Community at: https://idih-week-2021.b2match.io/
- **+390 international stakeholders** of Digital Health for Active and Healthy Ageing (32 %Universities, 30% Companies, 9% R&D Institutions)

Towards IDIH Week 2022!

Join the IDIH long-term matchmaking platform!

Networking&Matchmaking among all the key-stakeholders of digital solutions for Active and Healthy Ageing (AHA) in Europe, Canada, China, Japan, South Korea and USA.

This platform is part of the project IDIH - International Digital Health Cooperation for Preventive, Integrated, Independent and Inclusive Living and works as a Community of Experts where registered participants can exchange and match their interests and expertises in the field, starting building new exciting partnerships!

If you are already registered, you can keep schedule and have meetings with your potential international partners whenever you like until December 31, 2023.

If you are not registered yet, you can do it here, then – after creating your online (always editable) profile - you will be enabled to browse the Participants Catalogue and the Marketplace, and request/accept meetings that can be realized via the platform until December 31, 2023.

How to schedule and have a meeting? It's easy! Visit the page B2B| How it works, you will find step-by-step instructions.

[!] FURTHER GUIDANCE ON HOW TO HAVE B2Bs. Check **these instructions** that may help you to access the video conference call directly in the b2match platform.

[!] UPCOMING

IDIH Week 2022 will be held on March 2022: to know more and register, please visit the dedicated section.

Contacts

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IDIH

Register now
Open until 31 December 2023

ORGANISED BY

IDIH

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

RESOURCES

Guidance on how to have a b2b
Partnering Day_Flash Presentation_template ppt.pptx
IDIH Week 2022_Programme.jpg

MEETINGS

Participants	328
Meetings	100

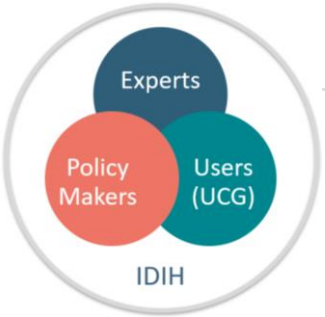
PARTICIPANTS

Company	116
University	126
R&D Institution	38
Association/Agency	31
Authority/Government	15
Other	47
Care Provider	18
Total	**391**

https://health-innovation-community-platform.b2match.io/

TOWARDS A ROADMAP FOR INTERNATIONAL COOPERATION IN DIGITAL HEALTH FOR AHA

An expert-driven approach and a user-centred perspective to favour evidence-based policies and an international policy dialogue



1
IDIH Stakeholders Event
October 4, 2021

2
Inclusive Design Webinar
November 5, 2021

3
3rd IDIH EG Workshop (online)
November 19, 2021

4
Addressing the needs of users IDIH Stakeholders' Event
February 3, 2022

2° UCG

5
Data Protection Regulations and Data Sharing Webinar
March 10, 2022

2° PLC

6
IDIH Week
March 21-24, 2022

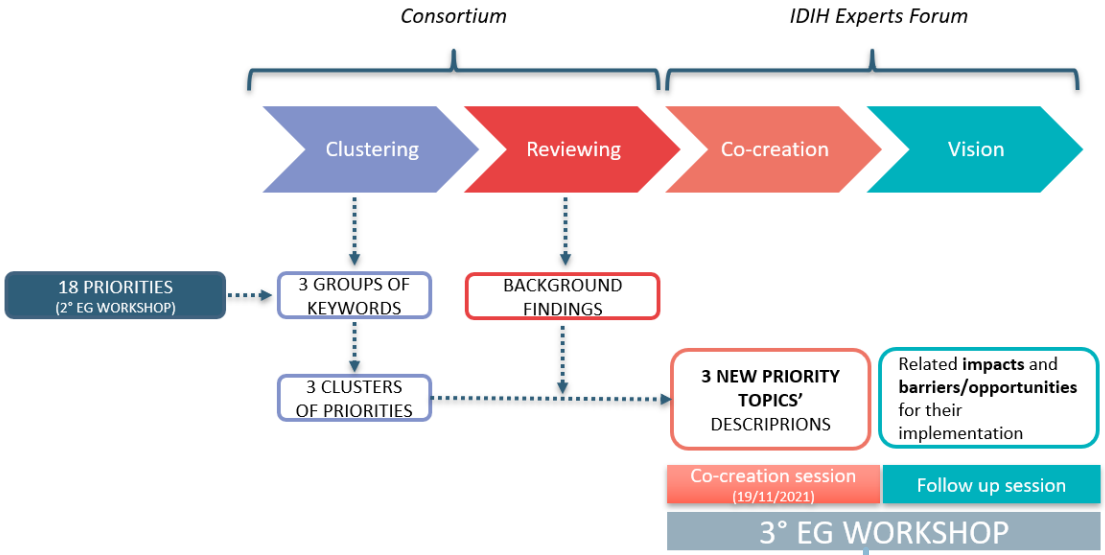
CURRENT VERSION OF THE ROADMAP (1.0)

- *The framework of the EGs*
- *Key Technologies per EG*
- *EG Priorities*
- *Current International Activities per EG*
- *Preliminary Recommendations*

NEW VERSION OF THE ROADMAP (2.0)

3° Experts Groups (EGs) Workshop

3° EGs Workshop



DATA GOVERANCE

*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.*

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).*

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.*

Policy framework considered 1/2

3° EGs Workshop

Policy Makers

Therefore, as a first step towards the enhancement of international cooperation in the field of digital health for AHA, **the first PLC meeting has produced a set of preliminary broadlines for cooperation around 3 main priority-areas** identified by the IDIH Expert Groups:

- **EG Inclusive Living - Priority 1:** Understanding marginalization connected to ageing and promote targeted and co-created inclusive solutions (connected with "Dementia-friendly communities")
- **EG Inclusive Living - Priority 2:** Sharing tools and methodology, practices in the field of LHS (learning health systems) to reduce health disparities in ageing populations (connected with "Learning Health Systems")
- **EG Preventive Care - Priority 2:** Development of international standards and procedures for interoperable outputs of wearable (and all) technologies (connected with "Unlock the potential of data coming e.g. from wearables or sensors through AI, machine learning algorithms").

Green Paper On Ageing. Fostering solidarity and responsibility between generations

Source: https://op.europa.eu/it/publication-detail/-/publication/d918b520-63a9-11eb-aeb5-01aa75ed71a1/language-en

Introduction

The purpose of this green paper is to launch a broad
opportunities, in compliance with the UN 2030 Agen
Decade for Healthy Ageing.

Laying the foundations

Laying the right foundations at early stages of our lives can help p
of the challenges linked to ageing. This includes **promoting he**
people's education throughout their lives.

Making the most of our working lives

To compensate for the shrinking working-age population, the EU
more people into the labour market (women, migrants, p
entrepreneurs), **enable longer working lives** and improve produ

New opportunities and challenges in retirement

Thanks to healthier lifestyles and medical progress, most retirees
contribution to society and economy through **intergenera**
(volunteering). This also requires to protect them from old age
sustainable pension systems.

Meeting the growing needs of an ageing population

Health promotion and disease prevention, in the form of healthy lifestyles can help limit or postpone illness or disability. A comprehensive policy response may involve investing in **quality services, infrastructure and community-based service**.

WHO Decade of Healthy Ageing

Getting ready for the Decade of Healthy Ageing 2021-2030

Sources: https://www.who.int/publications/i/item/9789240023307 ; https://cdn.who.int/media/docs/default-source/decade-of-healthy-ageing/final-decade-proposal/decade-proposal-final-apr2020-en.pdf?sfvrsn=b4b75ebc_25&download=true

The United Nations Decade of Healthy Ageing 2020-2030 addresses **four areas** for action at multiple levels and in multiple sectors in order to promote health, prevent disease, maintain intrinsic capacity and enable functional ability.

Decade Action Areas

Age-friendly environments
Physical, social and economic environments are important determinants of healthy ageing

Integrated Care
Old people require access to good quality and essential services

Combatting Ageism
The narrative around age negatively impacts on old adults and their well-being

Long-term Care
Long-term-care systems enable old people to live a consistent life

Decade Enablers

Voice and engagement
Give voice and actively engage older people is crucial to give them visibility

IConnecting stakeholders
Multi-stakeholder approach leaverages new knowleges and resources

Leadership and capacity building
Governance has to design specific policies and foster capacity-building systems

Strengthening research, data and innovation
Reasearch can drive national policies and actions

As healthy ageing is influenced by multiple factors, strong collaboration for transformative change requires the building of systems with several stakeholders.

A 10-years Plan for a Decade of Healthy Ageing 2020–2030 has been already defined to coordinate concerted, catalytic, sustained collaboration.

Policy framework considered 2/2

Where are we now? Global st

Combining geographical
investigate the interaction and the in

Many countries already use national
for old people. However, **the lack of**
invisibility. Governments need to inv

What improvements could we

The baseline assessment includes tw

- indicators of progress at **nati**
- indicators of outcome and im

Despite an increased worldwide com
to be accelerated and **new indicators**
proceeding through an improvement

How could we improve by 203

Research on healthy ageing should n
to link the **social, biological, econom**
that, new studies and the **in**

The emerging trend to **transform di**
optimizing functional ability persona

Opportunities for International Cooperation on Digital Health

Source: https://www.ceps.eu/ceps-publications/opportunities-for-international-cooperation-on-digital-health/

CEPS Researchers Nadina Iacob and Felice Simonelli produced a policy brief (**Opportunities for International Cooperation on Digital Health**) as a part of '**Task Force 4 – Digital Transformation**', organised by The Think20 (T20), the official engagement group of the G20. The group serves as the 'ideas bank' of the G20 and aims to provide research-based policy recommendations to G20 leaders. This policy brief was finalised as part of T20 Italy, in advance of Italy's hosting of the annual G20 summit from 30-31 October 2021.

The Covid-19 pandemic has brought to the forefront the role of **sharing quality data in a timely manner** to inform crisis management, public health and research. **The value of data is enhanced when countries cooperate and facilitate cross-border data flows.**

Policymakers should harness the value of health data and engage in a **global discussion** that strives for **common, cross-border and effective digital health solutions to improve health outcomes for all**. In this context, policymakers should focus on:

1. **Establishing technical and legal building blocks:**

   a. Harmonising rules for health data protection.
   b. Fostering cooperation for living and dynamic standards
   c. Updating existing liability rules
2. **Gaining end public/users' trust:**
   a. Increasing accountability and transparency
   b. Creating a "privacy label"
   c. Developing clear and transparent rules for data access
   d. Improving data quality
   e. Equipping patients and professionals with the right set of skills
3. **Fostering research, innovation and competition:**
   a. Enhancing interoperability
   b. Enabling data portability
   c. Ensuring fair access to health data
   d. Developing a framework for the secondary use of health data

These three key steps could facilitate data sharing for better health outcomes and enable research and novel data-driven solutions for healthcare and well-being.

European Scaling-up Strategy in Active and Healthy Ageing

Source: https://1library.net/document/yn60el0q-european-scaling-up-strategy-active-and-healthy-ageing.html

A high number of good examples in the field of active and healthy ageing have been mapped through Europe by the European Innovation Partnership on Active and Healthy Ageing (EIP on AHA) during three years (2012 – 2014). A comprehensive strategy (European Scaling-up Strategy in Active and Healthy Ageing) is needed to scale-up the most innovative features to other European contexts which could benefit from the experience of the most advanced ones. The EIP on AHA has developed a document (**European Scaling-up Strategy in Active and Healthy Ageing**) proposing a 5-step framework for developing an individual scaling up strategy.

Health and care services in Europe are undergoing **changes to adapt systems to a growing demand caused by ageing and the expansion of chronic diseases**. This restructuring, which combines health and social care resources, **involves the developing and testing of innovative solutions** and eventually **the large-scale implementation of the most successful practices**.

The multitude of good examples developed throughout the EU has led to a realisation that **a comprehensive scaling-up strategy is needed at European level**. The **European Innovation Partnership on Active and Healthy Ageing** ("EIP AHA" or "Partnership") which brings together key stakeholders in this policy area, and supports the good practices and References Sites developed by its partners, can act as a catalyst to foster scaling-up across regions and countries.

Five steps for setting up an effective European scaling up strategy:

Step 1 - Building a database of good practices (**What?**)

Step 2 - Assessment of viability of good practices for scaling up (**What?**)

Step 3 - Classification of good practices for replication (**What?**)

IDIH Webinar: Inclusive Design of Digital Solution for AHA [Results]

PRIORITIES	VISIONS	BARRIERS
• Digital solutions have to consider **digital divide** among senior population • Digital solutions have to consider **different social, gender and cultural determinants** of health • **Long-term care** should be addressed at systemic level • **User involvement** should start at the beginning of design process	• Seniors are becoming increasingly **techno-sophic** • The **indivuduals** should be at **the centre of technology** design • Digital solutions can address **social exclusion** • Technology should enable or facilitate new ways to **meaningfulness** • Technology should be **accessible, affordable, appropriate, attractive, acceptable, alternative, flexible**	• High cost of digital **solutions' customisation** • Technology does not have to **overcompensate** real or imagined physical or social losses • New technology brings a high risk of **privacy violation** • Free markets may prevent system or data **interoperability** in healthcare

Gloria Gutman, President of the North American Chapter International Society for Gerontechnology

THE INTERNATIONAL SOCIETY FOR GERONTECHNOLOGY. ITS MISSION AND ACTIVITIES

Mathilde De Bonis, Head of International Cooperation, APRE (IDIH Partner)

THE OUTCOMES OF THE IDIH EXPERTS FORUM IN THE FIELD OF DIGITAL HEALTH FOR ACTIVE AND HEALTHY AGEING

IDIH proposal for:

PRIORITY TOPICS FOR INTERNATIONAL COOPERATION IN DIGITAL HEALTH FOR AHA

Common Priority 1 – 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.*

Expected Impacts of Common Priority 1

- **Smoother and faster implementation by tech providers** of more sophisticated digital solutions and services that meet the future demand of data handling and allow a timely intervention on older persons and/or their care givers.
- **Improved self-management and quality of life of the older persons** through enhanced quality of more personalized, accessible and participated health care services.
- **Reduced workload and burnout risk for formal and informal carers.**
- Improved **communication** between patients and caregivers.
- **Improved planning and evaluation of health care services** based on the optimization of available data better informing decision making.
- **Reduced economic burden** of health care systems.
- Older persons and all citizens getting more familiar with sharing personal health data and allow **services integration**
- **Improved research outcomes** based on more accessible and accurate data
- **Enabled data driven and interoperable solutions** for different fields and applications.
- **Societal recognition of the importance of health determinants** throughout the life course.
- Improved **security** of health information systems.

Potential *Barriers* for Common Priority 1

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

Common Priority 2 – 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).*

Expected Impacts of Common Priority 2

- **Reduced social isolation and loneliness** of older citizens
- Ensure **equitable access** to public services for older citizens regardless of their background
- **Increased digital literacy** of older citizens
- Improved healthcare system engagement for older persons
- **Improved offer of personalized care** services
- Expanded co-operation and knowledge sharing with EU and partner countries, also for **adaptation and replication** of successful models and tools **internationally**
- More inclusive strategies adopted for the engagement of older people in programmes of digital literacy for AHA

Potential *barriers* of Common Priority 2

- **Digital technology is still too expensive** for some older citizens to purchase. The high costs of digital solutions implementation may be the cause and should be addressed. [Level of likelihood: high]
- Not all citizens have **equitable access to digitally enabled infrastructure** (e.g. secure broadband, mobile data). [Level of likelihood: medium]
- Some older citizens may be concerned that **digital inclusion may disrupt 'non-digital' forms of inclusion** and social relationships. [Level of likelihood: medium]
- **Differences in health care systems and models across countries** may represent a level of complexity to be addressed by international and multi/transdisciplinary research. It is necessary to consider national, as well as individual, differences for the verification and standardization of research results[15]. [Level of likelihood: high]

Common Priority 3 – 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.*

Expected Impacts of Common Priority 3

- Facilitated access to tools with proven and validated program design from other countries and **enhanced collaboration on datasets**.
- **Enhanced evidence-based policy making** through knowledge exchange at international level, towards **standardization of key findings** and common approaches in the field.
- **Increased target groups participation** through **international** cooperation for better research outcomes and a **meaningful impact on societies**.
- Better outcomes in interoperability (at international level and among devices) will positively affect **Integrated Care** at country level.

Potential *barriers* of Common Priority 3

- **Differences in Data Security policies and regulations** remain an issue for international research and innovation. It is important to include a preliminary study phase on this field and consider to favour a policy dialogue at international level, supporting and accompanying the R&I actions proposed. [Level of likelihood: high]
- If Data Interoperability and some international standards already exist, huge **implementation challenges** are still affecting research outcomes and this is often due to the **lack of interoperable health data made available by the health care services** according with specific government policies. [Level of likelihood: medium]

IDIH proposal for:

A *ROADMAP* TOWARDS THE ENHANCEMENT OF INTERNATIONAL COOPERATION IN DIGITAL HEALTH FOR AHA

IDIH Roadmap: towards the enhancement of international cooperation in Digital Health for AHA

[WHAT] to enhance

- A common understanding of **Healthy/Active Ageing as a global challenge**, among the most remarkable success story in Humanity.
- Cooperation around 3 *areas* and, in particular **3 Priority Topics:**

DATA GOVERANCE	DIGITAL INCLUSION	INTEROPERABILITY-BY-DESIGN
*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.*	*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).*	*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.*

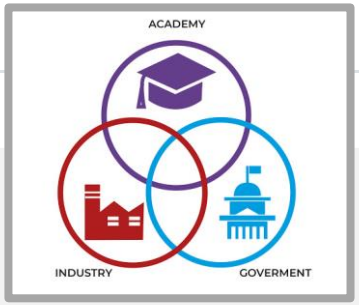
- A shared **Vision** around the ***Expected Impacts*** of international cooperation in these areas.

[HOW] to enhance

- **Action Plan** for the implementation of the 3 Priority Topics at national/international level: from *policy formation* to *policy evaluation*
  - *Which **key-stakeholders** to be involved and when*
  - *Which **barriers** to consider and possibly remove*
  - *Upon which **enablers** to leverage to possibly favour implementation:*
    - *Current **policies and funding schemes** for R&I and international cooperation*
    - *Cluster **organizations & partnership***

IDIH Roadmap: towards the enhancement of international cooperation in Digital Health for AHA

ENABLERS



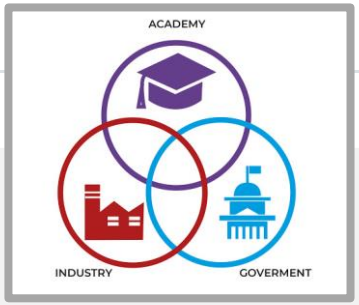
- **Cluster organisations** are defined as:
  - *member organisations gathering in their ecosystems actors from the triple helix: academic / research organisations, industry players among which notably SMEs, R&I support organisations such as accelerators or incubators, but also policy support organisations.*

- This means they are ideal ***facilitators*** in the R&I landscape and one of their main goals is to support their members' collaboration efforts.
- In line with the EU's strategy in this field, strongly supported by the European Commission DG GROW, ***cluster organisations have a strong interest in international collaboration*** and are thus, for a large majority, constantly seeking for international collaboration opportunities with relevant organisations from other countries (inside and outside of the EU). These collaboration schemes are developed for the purpose of supporting their members and above all the academic/research organisations and SME of the clusters' ecosystem.

- This is why cluster organisations can be seen as important *enablers* for international collaboration in Research, Development and Innovation (RDI), supporting also the international policy dialogue.

IDIH Roadmap: towards the enhancement of international cooperation in Digital Health for AHA

ENABLERS



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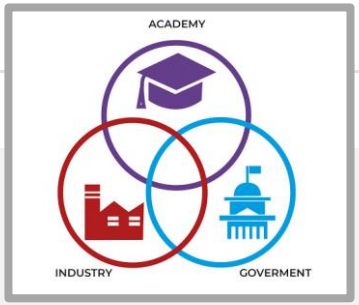
- The initiatives gathering clusters **targeting the same targets markets as IDIH**:
  - 6 partnerships targeting the markets of the United States;
  - 4 of the partnerships target the markets of Japan and/or China
  - 2 of the partnerships target the markets of Canada and/or South Korea.
- Some of them are finished and some are still ongoing. It can be expected that more are to come in the next generation and clearly see the perspectives offered to IDIH with regards to the exploitation of results.
- ***European Strategic Cluster Partnerships Going International*** have been identified as target groups to ensure an efficient uptake of the IDIH results and targeted dissemination towards the ongoing ESCP-4is
- At the same time, we ***encourage future cluster partnerships to take IDIH achievements*** as a background in order to benefit from the lessons learnt and engage in international collaboration with RDI and policy actors from the Third Countries.

IDIH Roadmap: towards the enhancement of international cooperation in Digital Health for AHA

ENABLERS



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ENRICH GLOBAL
TAKING EUROPEAN INNOVATION GLOBAL

Health Innovation Thematic Group: International Collaboration for Health Innovation

#Health #InternationalCooperation #Policies #Research&Innovation
#Digitalization #Ageing #Stakeholders Engagement

Aim:

- Facilitate international cooperation and policy dialogue on global health issues by harnessing the networking potential and critical mass of ENRICH Global members and their projects.

Activities:

*Evidence-based policy making will be also favoured through the participation in the workshop of the R&I experts from the International Experts Forum for Health Innovation.

International Experts Forum for Health Innovation establishment and management: this will be done by leveraging on the IDIH Community of experts +300 stakeholders. Activities and events engaging the Forum (*1 Forum event per year, online*) will be planned through a Bi-annual Plan.

- Target groups: *Researchers, Care providers, Users/Patients Associations, Health Tech providers, etc.*

International Policy Dialogue Workshops: (*1 per year, online*) to discuss about global Health challenges and compare Health policies, in a mutual learning and exchange environment that will also encourage eventual joint funding initiatives, to enhance international cooperation in specific sectors of Health*.

- Target groups: *Policy makers and funding agencies in the Health/R&I field*

IDIH

Coordinated by: APRE *Co-lead by:* G.A.C. GROUP *Members:* DLR-PT ENRICH

Neil Charness, William G. Chase Professor of Psychology, Florida State University. Director, Institute for Successful Longevity

FRAMEWORKS FOR TECHNOLOGY DESIGN AND TECHNOLOGY INTERVENTIONS: APPLICATION TO SOCIAL CONNECTIVITY.

Mission & Activities

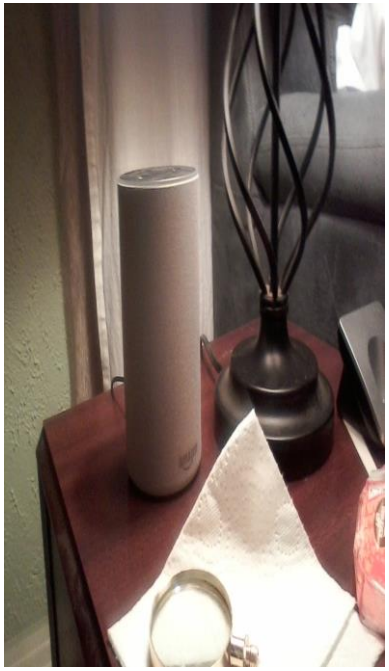
Gloria M. Gutman, PhD
President, North American Chapter
International Society for Gerontechnology
Professor Emerita Gerontology
Simon Fraser University, Vancouver, Canada

The Challenges of Global Aging

Desires of Older Adults

- Retain independence
- Remain in own home
- Stay connected to their friends and community
- Retain mobility
- Stay healthy and maintain functional capacity

What can we do to provide/improve care for frail/ill older adults?




amazon


Self-Driving

Gerontechnology

www.gerontechnology.org

- An interdisciplinary field of scientific research in which technology is directed to meet the aspirations of, and provide opportunities for, older persons.
- Gerontechnology aims for good health, full social participation and independent living to a great age, through research, development and design of products and services that improve quality of life.

International Society for Gerontechnology

- Mission
  - Encourage and promote technological innovation in products and services to address older peoples' ambitions and needs, informed by scientific knowledge of ageing processes and cultural and individual differences
- Vision
  - To realize a society fully served by technology that is just as accessible to ageing people as it is to younger persons

International Society for Gerontechnology (ISG)

Values - Innovative technology that enables people by:

- Maintaining independence and equality in residence, mobility, safety, security, communication, activities, and quality of life
- Supporting well-being and health as defined by the WHO
- Realizing individual and collective/social ambitions and needs
- Keeping people embedded within their evolving socio-cultural environment
- Enhancing dignity
- Supporting caregivers

Who Belongs to ISG?

- Engineers (All sub-disciplines)
- Computer Scientists
- Designers & Architects
- Health Sciences Professionals – physicians, nurses, epidemiologists…
- Social Sciences Professionals – psychologists, sociologists, anthropologists…
- Student members – all disciplines

ISG Chapters & Presidents

- **Austrian-German-Swiss Chapter**
  - Barbara Klein
    bklein@fb4.fra-uas.de
- **Brazilian Chapter**
  - Carla da Silva Santana Castro
    castro@ufscar.br
- **Dutch-Flemish Chapter**
  - Joost van Hoof
    J.vanHoof@hhs.nl
- **Francophone Chapter**
  - Luigi Corrado -
    luigi.corrado@lescharmettes.ch
- **Hong Kong Great Bay Area Chapter**
  - Yongping Zheng
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- **Japanese Chapter**
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- **Korean Chapter**
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    yeongranpark@daum.net
- **North America Chapter**
  - Gloria Gutman
    gutman@sfu.ca
- **Sinophone Chapter**
  - Yeh-Liang Hsu
    mehsu@saturn.yzu.edu.tw
- **Student Chapter**
  - Manuel Jesus Azabal
  - manuel@unex.es

Gerontechnology Journal

- Peer reviewed academic journal
- Indexed and abstracted in Scopus
- Published quarterly
- Current issue and archives available online at http://journal.gerontechnology.org

ISG World Conferences

- ISG holds biannual thematic conferences worldwide
  - 2010 7th - Vancouver, Canada
  - 2012 8th - Eindhoven, Netherlands
  - 2014 9th - Taipei, Taiwan
  - 2016 10th- Nice, France
  - 2018 11th - St. Petersburg, USA
  - 2020 12th - Trondheim, NO (virtual)
  - ***2022 13th - Daegu, Korea – October 24-26***

https://isg2022.org/kr/

Master Classes

- Promote gerontechnology knowledge and skills by:
  - High level teaching in research, design, engineering and innovation
  - Promoting high quality methodology publications
  - Active lobbying of academic, national and international authorities to foster teaching and dissemination of gerontechnology

News

- Newsletter

https://www.gerontechnology.org/news20220118.html

- Webinars

May 7, 2021: "Using technology to assist older adults in coping with COVID-19"
https://www.gerontechnology.org/news20200427.html

- Special projects

World Health Organization

ISG - WHO Collaboration on Assistive Technology for Healthy Ageing

Assistive technology is an umbrella term for assistive products and related systems and services.

Assistive products are used by persons with permanent or temporary functional difficulties to enable and enhance their participation and inclusion in all domains of life.

WHO (2021)

MoU Objectives

Pillar I

- Develop **criteria/evaluation metrics to assess safety and effectiveness of technology** (i.e. acceptability, accessibility, integration and appropriate use) to support active assisted living and ageing in place.

Pillar II

- Scope and categorize available technologies for ageing-in-place, evaluate existing evidence on their implementation and use, **identify gaps where further research is required with a focus on emerging technologies**.

Pillar III

- **Promote international cultural and scientific exchanges between clinicians, scientists, technologists/engineers and allied professionals on development and use of assistive technologies** (including digital assistive technologies) for healthy ageing with a focus on ageing in place based on existing or to-be-developed guiding principles with a global relevance

TIMELINE

- **August 2021 – August 2023**
  Renewable for additional periods of one year possible
- **August 2021 – March 2022**
  Operational activities
- **March 2022 – September 2022**
  Review literature incl expert consultation on the classification list (Pillar I)
- **May2022 – March 2023**
  Defining the gaps (Pillar II)
- **August 2021- August 2023**
  Interdisciplinary exchanges/disseminating final findings (Pillar III)

Conclusion

- Marked expansion in Artificial Intelligence (AI) capability has increased the number of potential users.
    - Voice control makes devices easier to work
    - Better software design and AI compensate for short-term memory loss, worsening vision, loss of hearing
- Changes in “Technology Generations”
    - The “young-old” are tech savvy – used cell phones in their work and use APPs
    - Have little fear of newer technologies
- Gerontechnology is a growing field driven by worldwide population aging
- ISG plays a unique role in fostering research, education and policy in gerontechnology.

Questions? E-mail: gutman@sfu.ca

ISG SOCIAL MEDIA

/gerontechnology

@isg_gerontechnology

@sbgerontec

secretary@gerontechnology.org

https://www.gerontechnology.org

AGE-WELL Network:

Making Canada a world leader in technologies that help aging populations

IDIH Week 2022 | Innovation Day

Andrew Sixsmith PhD
Associate Scientific Director, AGE-WELL
Director, SFU STAR Institute

AGE-WELL
Canada's technology and aging network

STAR INSTITUTE
Science and Technology for Aging Research

WE ARE AGE-WELL

- Canada's Technology & Aging Network Centre of Excellence (NCE)

46 Member Universities and Research Centres

51 Technologies

31 Policies/Practices

36 Services

56 Startups Supported by AGE-WELL

139 Industry

85 Academic

108 Not-for-profit

27 Government

68 Other

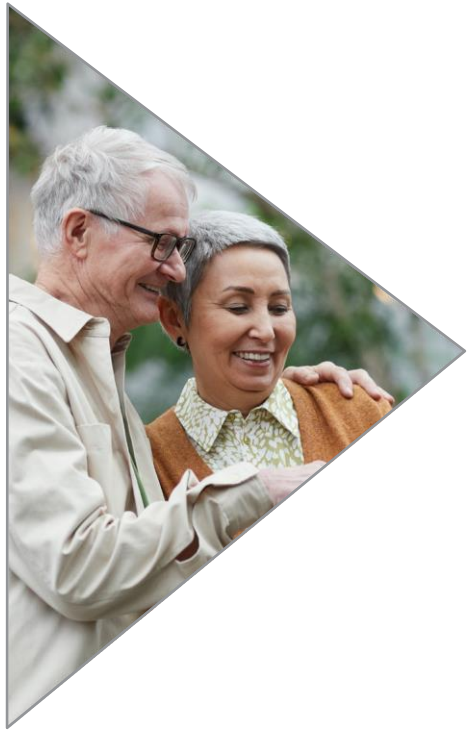
5,000+ Engaged Older Adults and Caregivers

250+ Researchers

1000+ Highly Qualified Personnel (trainees)

110+ International Collaborations

What is AgeTech?



Any type of technology
that improves the lives of aging adults
(including some fintech)

An emerging subset of the health
tech sector that focuses on technology
and innovation for older people

"The preferred way to describe the intersection
between Longevity and Technology."

- Tina Woods, Forbes Magazine columnist

Who uses AgeTech?

As we are now living longer than ever before, and continue to stretch human lifespans even further, AgeTech can also be defined as technology products or services:

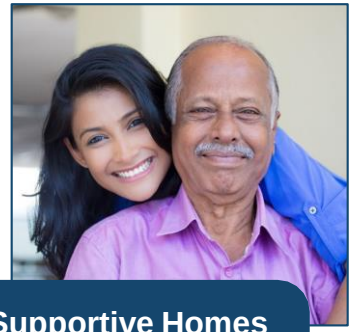
AGE-WELL is currently an NCE, but that's changing

- Launched in 2015 through the federally-funded **Network of Centres of Excellence (NCE) program**

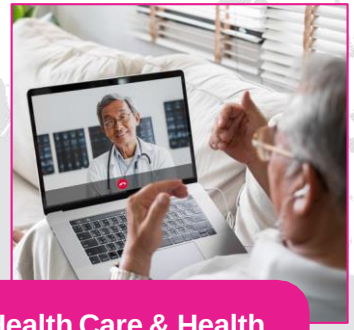
- Addresses a wide range of complex issues in technology and aging by:
  - research across disciplines
  - partnerships across sectors
  - training programs
  - putting evidence into practice
  - commercial development of solutions

- AGE-WELL is positioned to significantly build on its achievements as an NCE in 2023 and beyond

AGE-WELL's eight challenge areas:



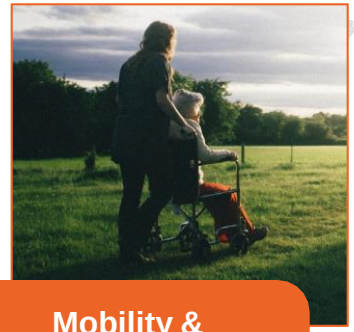
Supportive Homes & Communities



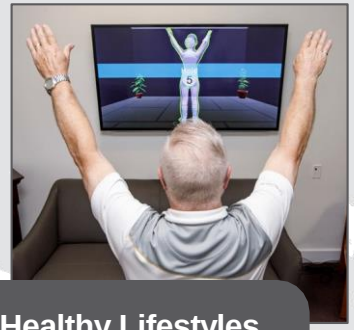
Health Care & Health Service Delivery

Autonomy & Independence

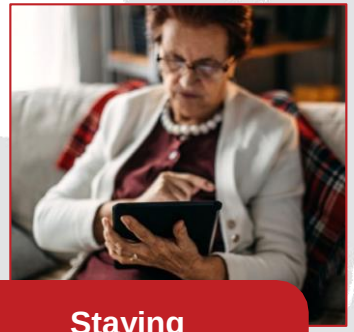
Cognitive Health & Wellness



Mobility & Transportation



Healthy Lifestyles & Wellness



Staying Connected

Financial Wellness & Employment

Powerful Partnerships across Canada and beyond

139 Industry

85 Academic

108 Not-for-profit

27 Government

68 Other

nhsa
Northern Health Science Alliance

BEST BUY

BC Seniors Living Association

Rakuten kobo

innovacorp
EARLY STAGE VENTURE CAPITAL

innovationpei

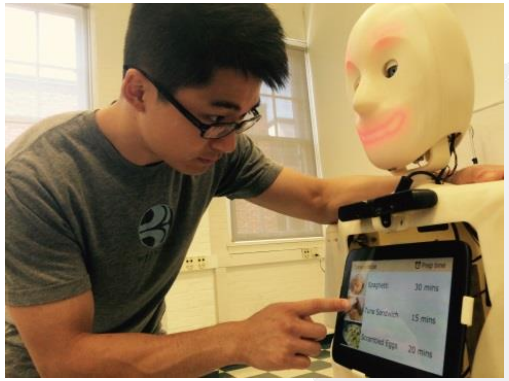
International Partnerships and Collaboration

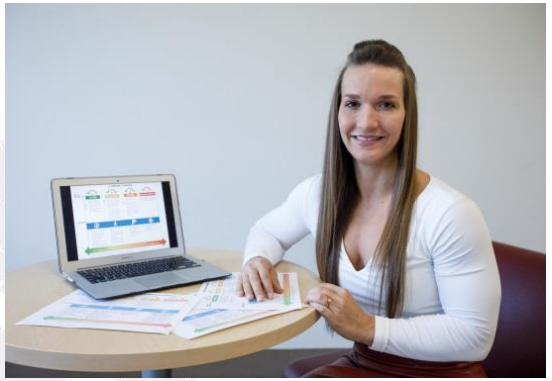
- Active and Assisted Living Joint Programme (AAL-JP) in Europe with the Canadian Institutes of Health Research (CIHR) – Institute of Aging
- World Health Organization
- United Nations
- Trade Missions and official visits in Europe and Asia

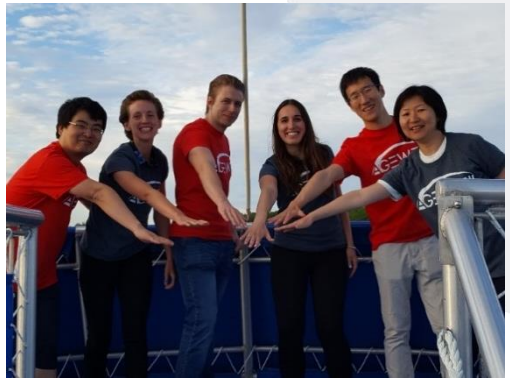
Partnering with AGE-WELL - Opportunities

- Early access to preview, inform and validate emerging innovations
- Partnership offerings within promising young startups in the AgeTech space
- Align your strategic partnership goals with an organization with demonstrated success in supporting product development
- Insights on how to implement and scale solutions for older adults and caregivers
- Working with innovation hubs like Digital Health Circle

Training the future leaders in AgeTech







Our successes over the last 7 years:

- A high-performing network of researchers and experts
- Providing guidance to innovators through mentorship, expert services and more
- Putting products on the market, generating jobs and contributing to the economy
- A robust test network of older adults and caregivers to provide critical consumer feedback

56 Startups Supported by AGE-WELL

5,000+ Engaged Older Adults and Caregivers

200+ Jobs created

CANADA AGETECH STARTUP MAP

AGE-WELL

Supportive Homes & Communities

5Lakes · CareHubble · chirp · helpers · IATSL · Sharing Circles · Tuktu · Aerial · AIH Technology · AltumView Systems Inc. · Choro · domilia · Home Except · Quantum Robotic Systems · SenSights.AI · tenera · Tochtech Technologies · UCARENET

Autonomy & Independence

ΔΔ∇Δ · Able Innovations · Bisep · eyful · LISNEN · Nightingale.ai · PROVA Innovations Ltd. · rekammend · ImaginAble · Novalte · secours.io · Steadiwear.

Healthcare & Health Service Delivery

EBT medical · Gray Wolf · hyivy · INVICARE · KatInnovation · Kayan+ · MEDtech - Motion Driving Patient Mobility · Physio Biometrics Inc · PLAKK · Retinalogik · SKIIN · SPARROW Acoustics · STABILO · Vital Tracer · AceAge · AlayaCare · careaxis · Curovate · Echobox · eTreatMD · Evoke Health · Fortius Labs Performance & Wellness · HEXOSKIN Health Sensors & AI · ManagingLife · precare · ServUs Health · THERappX

Staying Connected

Linggo · Social Robots · VISUALVISITOR · AMIINTRO · FamliNet · HeardThat More Voice. Less Noise.

Healthy Lifestyles and Wellness

catalystX · Virtual Gym · Adrenalease · ayogo · SEVEN Movements · StrongerU Senior Fitness · welbi

Cognitive Health & Dementia

Dementi Ability · neurofit · Recreo Therapy · Axolotl Biosciences · Centivizer · Kondor Pharma · NANO-LIT · Marlena Books · Project Whitecard Digital · Winterlight · HealthTech Connex

Mobility & Transportation

wetraQ · Flamingo Mobility · Braze Mobility · MobiSafe systems

Financial Wellness & Employment

BLUEPIER · MatchWork · OPEN Collaboration for Cognitive Accessibility

We are at the forefront of Canada's leadership in technology and aging that will benefit the world.

AGEWELL
Canada's technology and aging network

STAR INSTITUTE
Science and Technology for Aging Research

Please join us.

Andrew Sixsmith
andrew_sixsmith@sfu.ca

www.agewell-nce.ca
@AGEWELL_NCE

www.sfu.ca/starinstitute
@sfu_starinst

Frameworks for Technology Design & Technology Interventions: Application to Social Connectivity

Neil Charness

Director – Institute for Successful Longevity
William G. Chase Professor of Psychology
Distinguished Research Professor

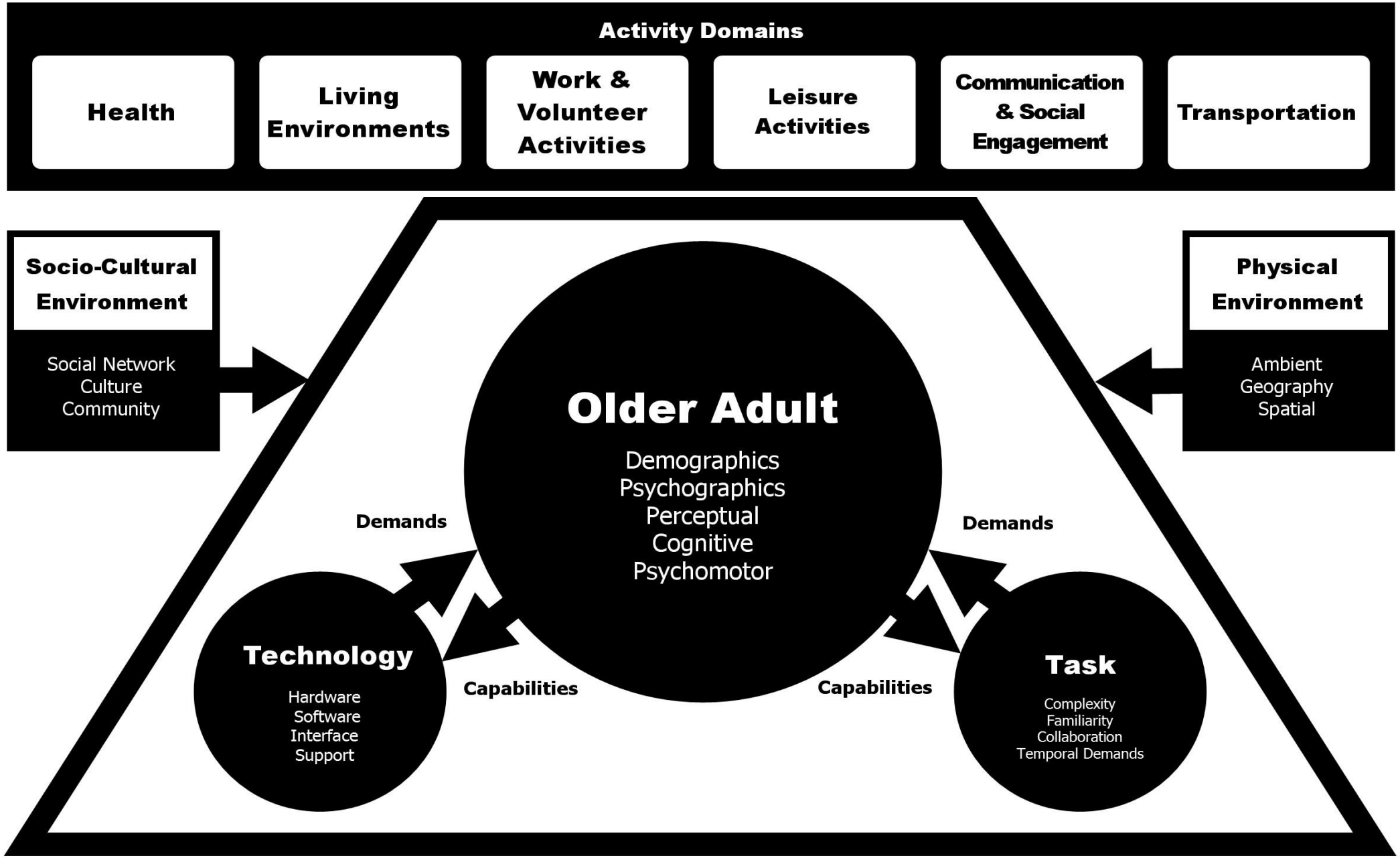
FLORIDA STATE UNIVERSITY

Overview of the Center for Research & Education on Aging & Technology Enhancement

Goals for CREATE

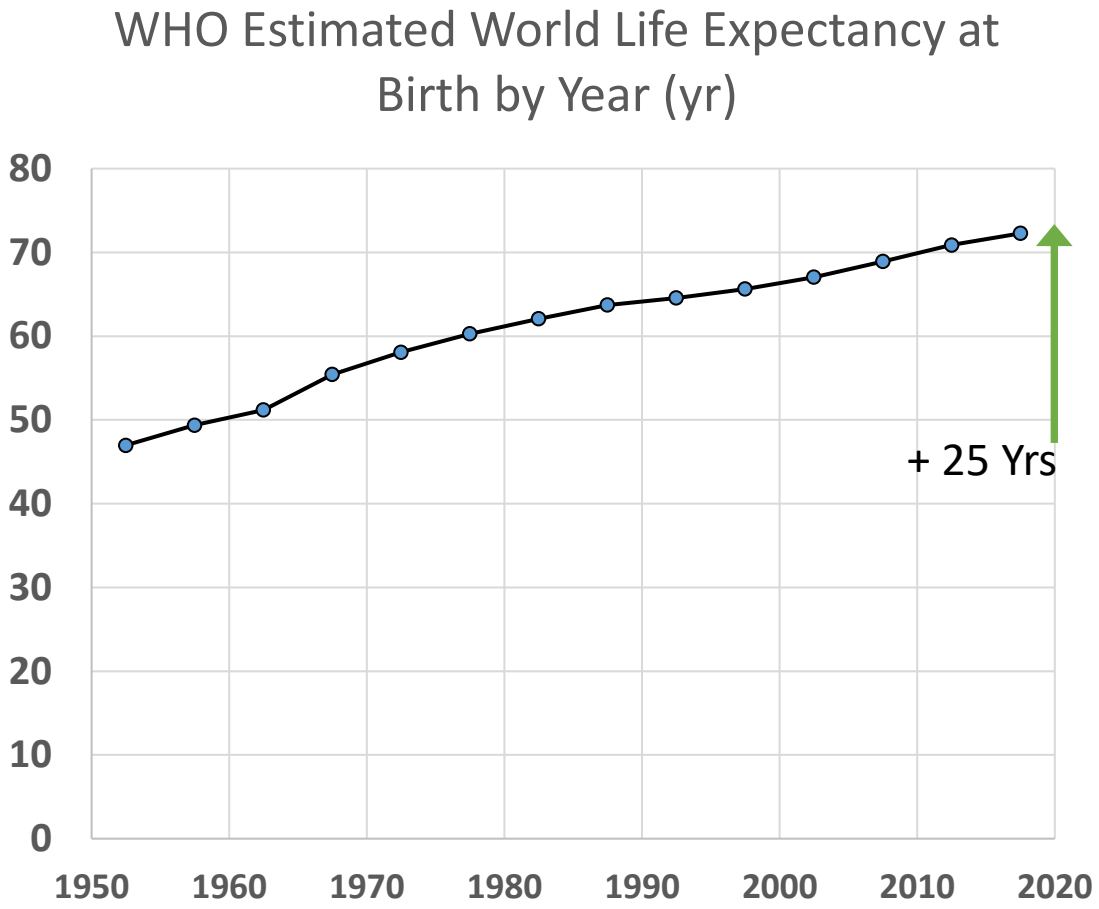
- Develop principles and protocols to aid the design, implementation, and evaluation of emerging technologies.
  - Design guidelines
- Promote new areas of research and training of new investigators.
  - workshops
- Disseminate the findings and products of CREATE to a broad audience.
- Foster collaborations with others working in the aging and technology domain.

Joseph Sharit, Neil Charness, Sara Czaja, Wendy Rogers, Walter Boot


Activity Domains
Health
Living Environments
Work & Volunteer Activities
Leisure Activities
Communication & Social Engagement
Transportation
Socio-Cultural Environment
Social Network
Culture
Community
Physical Environment
Ambient
Geography
Spatial
Older Adult
Demographics
Psychographics
Perceptual
Cognitive
Psychomotor
Demands
Demands
Technology
Hardware
Software
Interface
Support
Capabilities
Capabilities
Task
Complexity
Familiarity
Collaboration
Temporal Demands

Two Revolutions: Technology, Aging

Technology	Patent Year	US 50% Adoption	Years
Fax	1843 (Bain)	~1990	150
Telephone	1876 (Bell)	1920	44
Microprocessor	1971 (Intel)	2001	30
Internet	1983 (tcp/ip network)	2001	18
?	2022	?	?



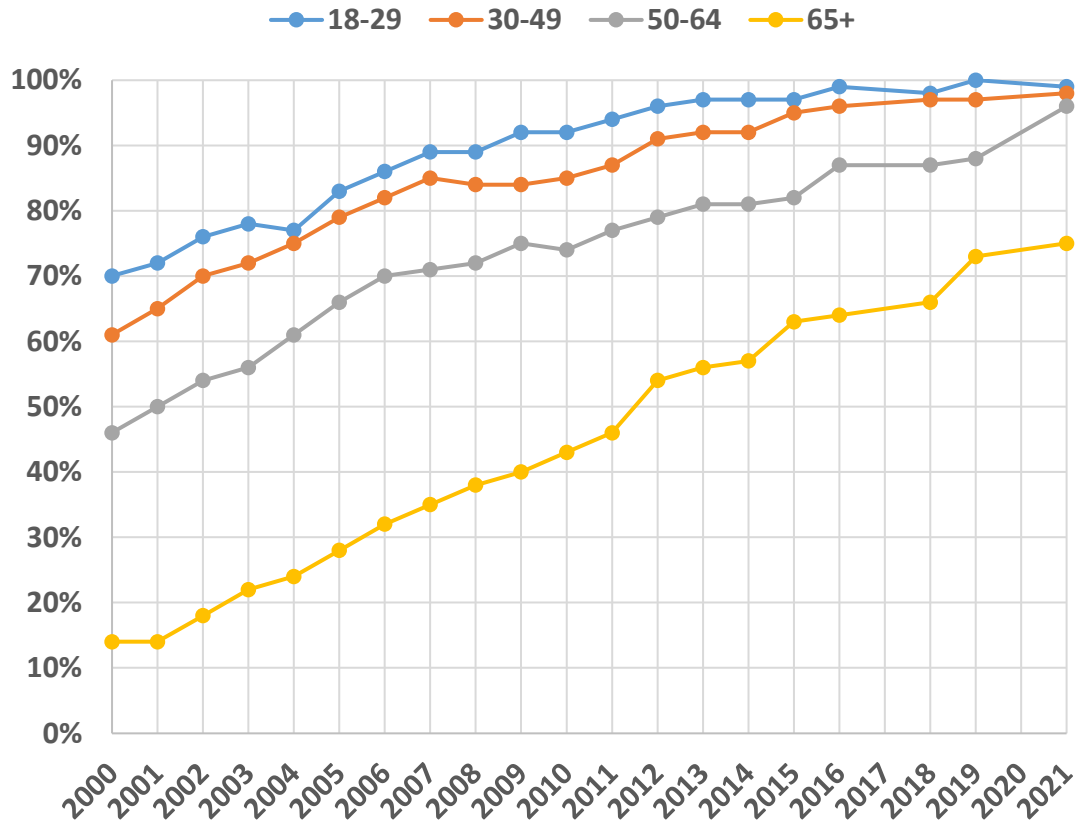
A Grand Challenge for Psychology: Reducing the Age-Related Digital Divide

Current Directions in Psychological Science
1–7

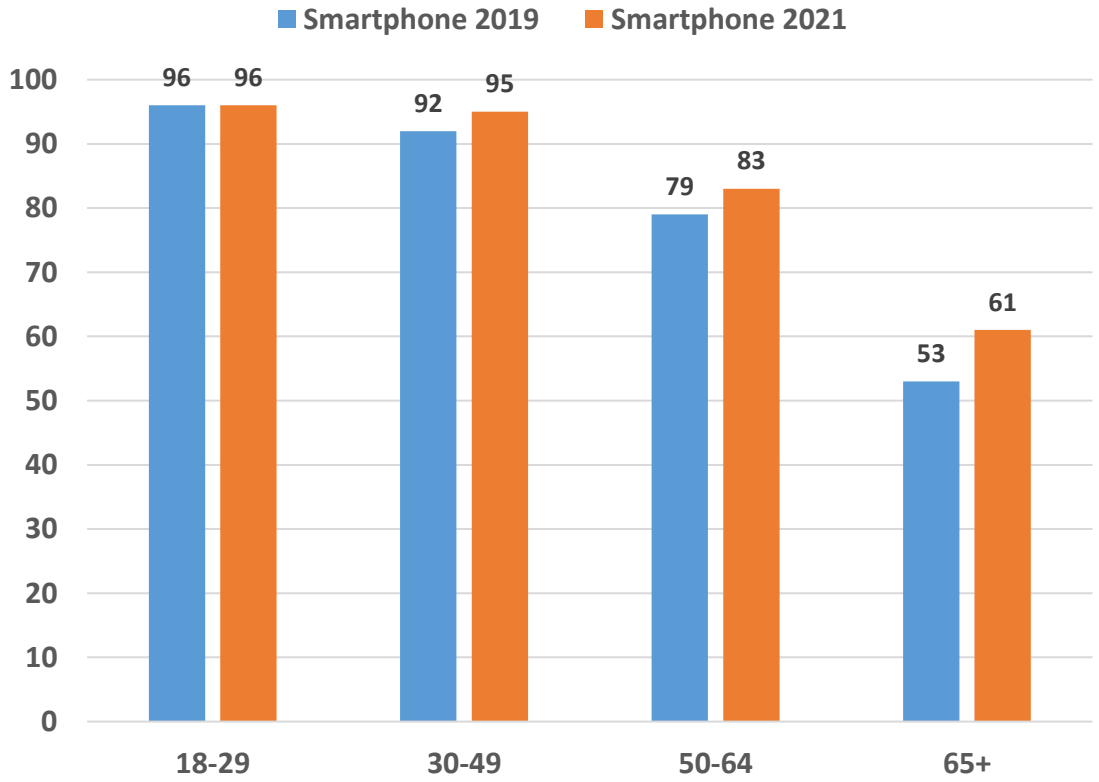
DOI: 10.1177/09637214211068144
www.psychologicalscience.org/CDPS
SAGE

Neil Charness and Walter R. Boot
Department of Psychology, Florida State University

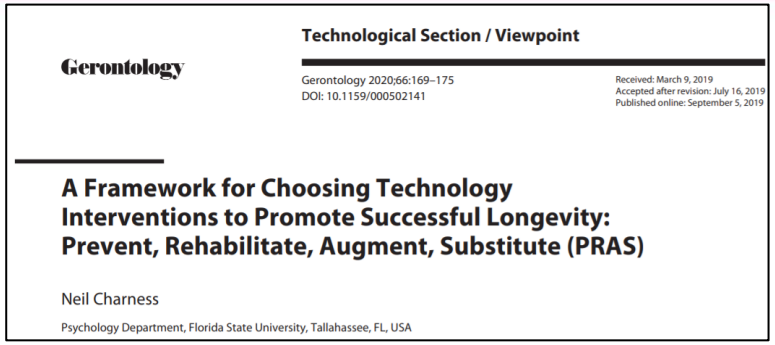
USA Internet Use by Age Group and Year



USA Percent Smartphone Ownership by Age Group and Year



Technology's Role



Technological Section / Viewpoint

Gerontology

Gerontology 2020;66:169–175
DOI: 10.1159/000502141

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A Framework for Choosing Technology Interventions to Promote Successful Longevity: Prevent, Rehabilitate, Augment, Substitute (PRAS)

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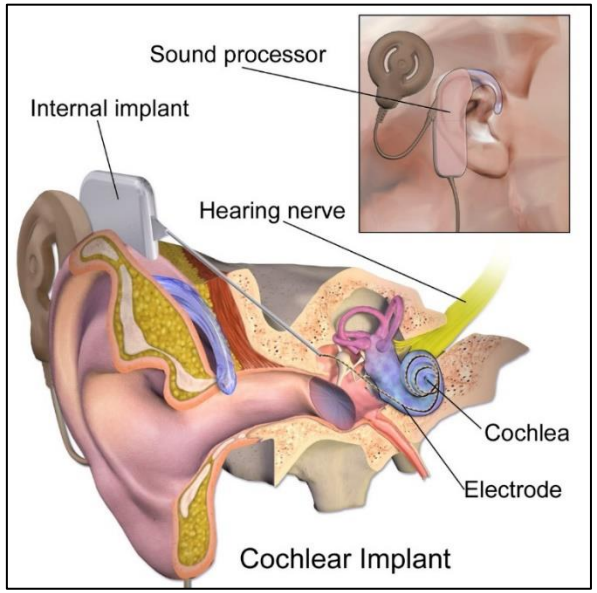
- PRAS Framework for improving person-environment fit for aging
  - Prevent Impairments
    - Reach old age in best possible shape
  - Rehabilitate – train person
    - provide exercises to improve reach post-stroke
  - Augment – support a failing function
    - provide a hearing aid
  - Substitute – replace a failed function
    - Cochlear implant



Augment: Tech for Socio-Emotional Support

- Loneliness & Social Isolation are associated with severe negative consequences
  - "Across studies in which several possible confounds were statistically controlled for, the weighted average effect sizes were as follows: social isolation odds ratio (OR) = 1.29, loneliness OR = 1.26, and living alone OR = 1.32, corresponding to an average of 29%, 26%, and 32% increased likelihood of mortality, respectively."
    - Holt-Lundstad et al. (2015)
- Can technology help?
  - COVID-19 lockdowns

The New York Times

U.K. Appoints a Minister for Loneliness

Tracey Crouch, left, Britain's under secretary for sport and civil society, is to coordinate the government's response to loneliness. Stephen Pond/Getty Images for Sport England

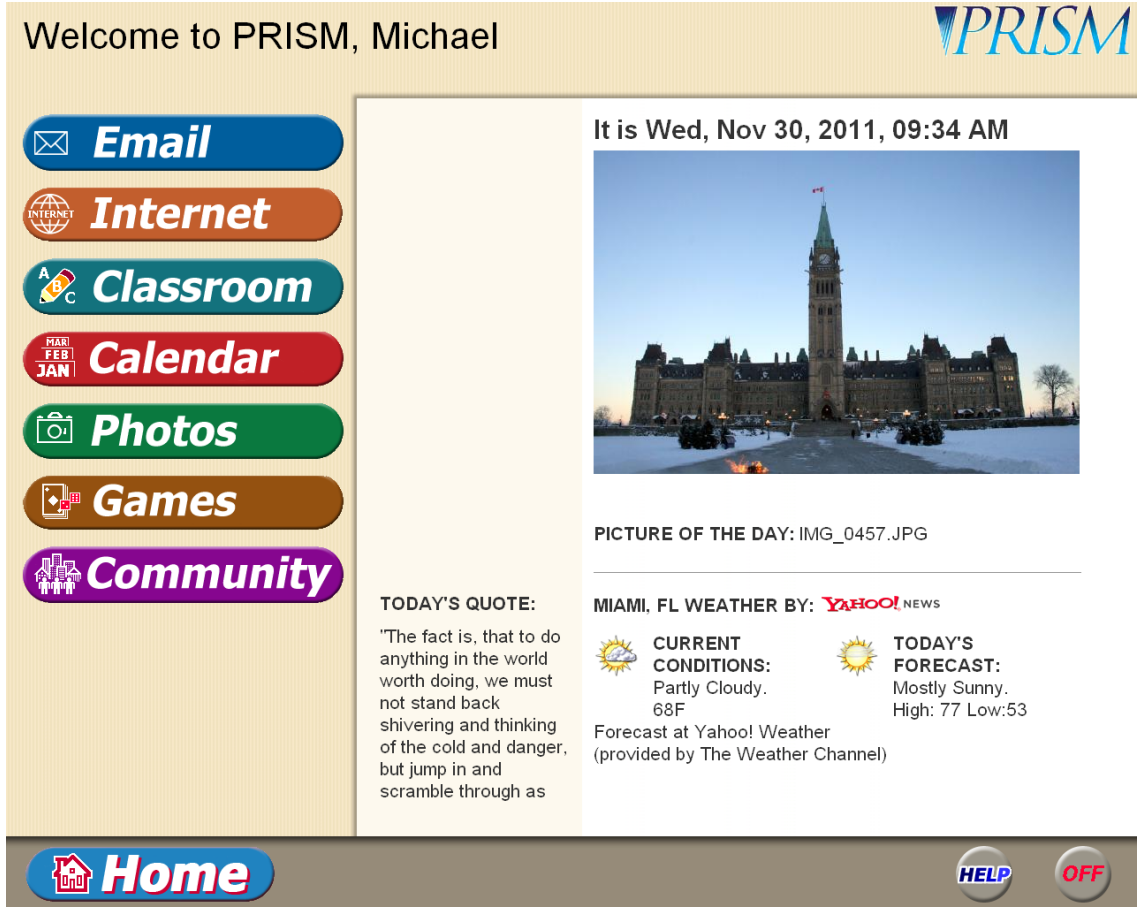
By Ceylan Yeginsu Jan. 17, 2018

LONDON — Since Britain voted to leave the European Union more than a year ago, Europeans have mockingly said that the decision will result in an isolated, lonely island nation.

But Britain, in fact, already has a serious problem with loneliness, research has found. More than nine million people in the country often or always feel lonely, according to a 2017 report published by the Jo Cox Commission on Loneliness.

CREATE PRISM Clinical Field Trial Aims

- The aims of the 12-month trial were to examine:
  - The usefulness and usability of the PRISM system
  - The impact of access to the PRISM system on
    - Social isolation
    - Social support
    - Well-being
    - Computer Attitudes
    - Computer Proficiency
    - Technology Acceptance
  - Usage patterns over time and as a function of individual characteristics.
- 150 adults Age 65+ randomized to PRISM, 150 randomized to Binder



General Findings

- Changes in Outcomes at 6 months in the Expected Direction:
  - Social Support ↑
  - Loneliness ↓
  - Emotional well-being (SF36) ↑
  - Social Isolation ↓ (trend – p = .11)
  - Computer Comfort, Computer Interest, Computer Efficacy ↑
  - Computer Proficiency ↑

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The Gerontologist
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OXFORD

Research Article

Improving Social Support for Older Adults Through Technology: Findings From the PRISM Randomized Controlled Trial

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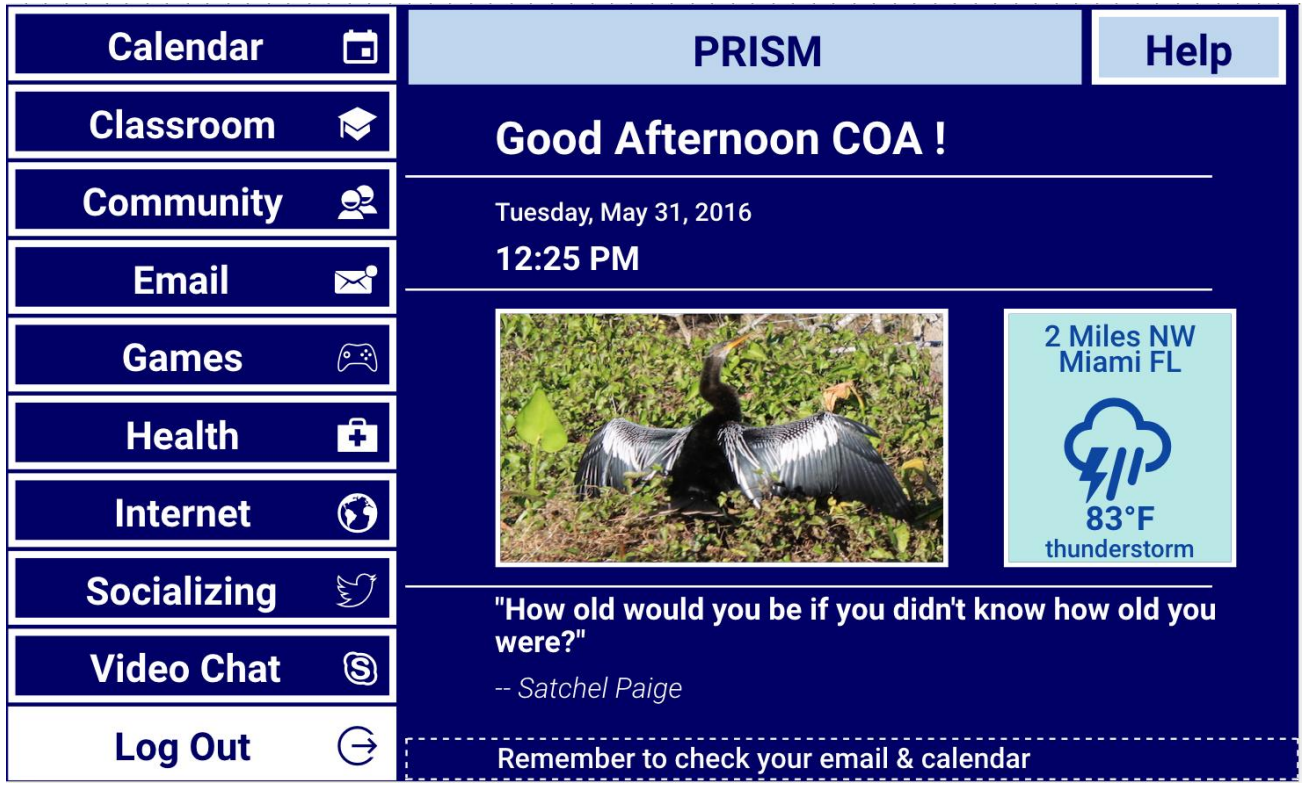
PRAS: **Augment** Social Support

- We had some transient differential effects of PRISM vs Binder on loneliness, social support
  - Present at 6 months, but gone at 12 months
- We had enduring computer proficiency, computer efficacy effects
  - Even a 96-year-old was able to learn to use PRISM
  - User-centered, iterative design for instructional materials
- Whether tools like PRISM can **S**ubstitute during pandemics is an open question

- Now analyzing PRISM 2



Challenges for Mobile Technology

TABLE 2-1 Challenges in Mobile Monitoring and Intervention (MMI) Research and Practice

Challenge	Example Responses	Constraints to Consider
Why Monitor	Prevent harm, promote well-being	Ethical, legal, self-determination for lifestyle, societal resources
Whom to Monitor	Aging adult	Co-dependent dyads, caregiving teams
What to Monitor	Physiological (e.g., blood pressure), psychological (e.g., cognition, well-being) indicators	Reactivity, lifestyle constraints
Where to Monitor	Home, work, everywhere	Privacy, legal
When to Monitor	Continuous, intermittent intervals, self-chosen intervals	Privacy, data transmission bandwidth, storage, data security
How to Monitor	Sensors, probe questions (e.g., ecological momentary assessment) for person, for proxy	Power source, device, person and network capability and availability/reliability and security

National Academies of Sciences, Engineering, and Medicine 2020. *Mobile Technology for Adaptive Aging: Proceedings of a Workshop*. Washington, DC: The National Academies Press. https://doi.org/10.17226/25878.

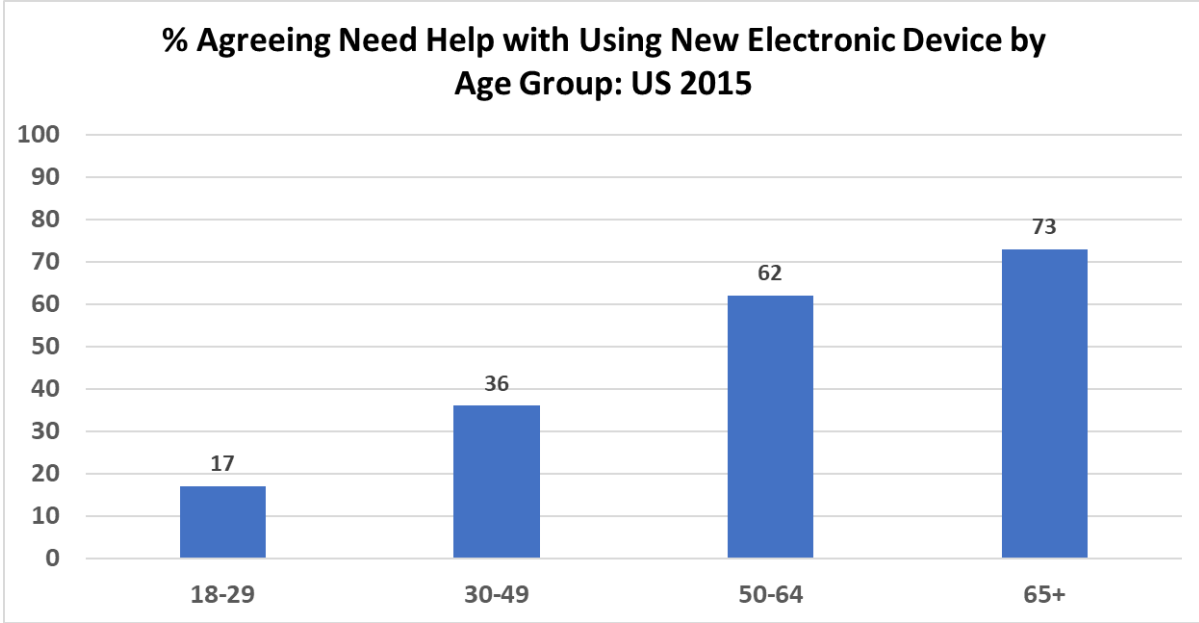
Tech Adoption Constraints
Human-System Reliability & Usability

- Usability is critical to use
- So too is reliability for the integrated system of human and device/environment

	Heart Failure	Non-Heart Failure	Total
# of days of data	3552	3331	6883
% network was up	94	92	93
% watch worn 24/7	72	81	77
% daily blood pressure taken	72	78	75
% daily weight taken	78	86	82
% daily survey taken	**64***	**78***	71

*$p < .05$

USA 2015 Percent that Agrees Statement Describes them Well or Very Well: I Need Help with Setting Up and Using New Electronic Devices by Age Group



Multi-modal and longitudinal studies towards a shared understanding of the determinants of healthy ageing

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Current Status

- Traditional Scientific Analysis – group studies
  - Nomothetic approach
    - Focuses on the generation of general knowledge
      - The notion of “Average subject” +/- standard error of mean
      - May involve random assignment of subjects to exp. & control conditions
      - Data are systematically gathered and descriptive statistics generated and if possible, statistical tests of significance are performed.
      - Data may be gathered at different points in time – repeated measures design; typically with many observations the data are “blocked” into larger groupings.
    - Shortcomings
      - There is no “average subject”, each person is unique. Nobody falls exactly on the mean.
      - When repeated measures data are blocked into intervals, temporal information about the phenomenon is obscured.

Current Status

- A bigger issue concerns the explosion of longitudinal data gathered by APPS on cell phones & wearable devices.

Data Explosion

- We are now gathering more data than we can possibly analyze using traditional methods.
- Tags shown in prior slide generate 100 data points per second per subject for many months!
- These tags were used to study fall risk in 63 ALF residents continuously over a period of 1 year at a data rate of around one reading every second. Many gigabytes of data gathered.

- Idiographic approach
  - B.F. Skinner – Harvard Prof. of Psychology & proponent of the school of thought known as “Behaviorism’.
    - Developed single subject research design methods
    - Methods still in use today, esp. for children with intellectual disabilities.

Idiographic approach

- Strengths of single subject design studies
  - Focus is on a real person – not an "average subject"
  - Temporal information (trends) within a person's own behavior is retained. It's essential to understanding the process of the phenomenon under study.
  - Within subject and between subjects statistical tests of significance are possible.

Kearns, W. & Fozard, J.L. (2016) Evaluating Gerontechnologies: Proof of concept is necessary, but not sufficient. Gerontechnology, 14(3), 139-145. dx.doi.org/10.4017/gt.2016.14.3.007.00

Idiographic approach

- Limitations of single subject design studies
  - Tight experimental control is essential in order to determine if the change in behavior is spurious or real.
  - Multiple replications are required to demonstrate generalizability of findings.
  - They may not lend themselves well to observational studies where no experimental control is in place.

Idiographic approach

- Time series analysis
  - Strengths
    - Well suited to large, continuously gathered data (i.e. stock market prices, weather forecasting)
    - Goal is prediction of future behavior - Examines autocorrelation among successive data points to predict what that one person will do.
    - Again, confidence in findings is built up through replications across individuals.
  - Limitations
    - Time series demands an unbroken string of observations (doesn't handle missing data well)
    - In the final analysis you can say a great deal about a single individual, but its generalizability to all of humanity may be limited.

Case studies – Fall prediction

Fall Prediction using RTLS location monitoring system, cognitive assessment and standardized gait and balance testing.

Kearns, W. D., Fozard, J., Becker, M. A., Jasiewicz, J., Craighead, J., Holtsclaw, L. et al. (2012). Path tortuosity in everyday movements of elderly persons increases fall prediction beyond knowledge of fall history, medication use, and standardized gait and balance assessments. Journal of the American Medical Directors Association, 13(7), 665.e7-665.e13. doi:10.1016/j.jamda.2012.06.010.

Case studies – TBI Recovery

Veterans with traumatic brain injury were monitored using an RTLS to determine location each second over 6 months. Cognitive assessment was performed at admission and discharge from facility. Cognitive changes and compliance were predicted by variations in gross motor movement.

- Kearns, W. D., Fozard, J. L., Ray, R. D., Scott, S., Jasiewicz, J. M., Craighead, J. D., & Pagano, C. V. (2016). Movement path tortuosity predicts compliance with therapeutic behavioral prompts in patients with traumatic brain injury. Journal of Head Trauma Rehabilitation,31(1), E20-E27. doi:10.1097/htr.0000000000000126

- Kearns, W. D., Scott, S., Fozard, J. L., Dillahunt-Aspillaga, C., & Jasiewicz, J. M. (2016). Decreased movement path tortuosity is associated with improved functional status in patients with traumatic brain injury. Journal of Head Trauma Rehabilitation, 31(1), E13-E19. doi:10.1097/htr.0000000000000125

Conclusion

- Given the prospects for the discovery of new medical procedures and cures using advanced sensing technology, it is incumbent upon us to create new statistical models to aid new discoveries using these advanced technologies.
- Failure to do so will result in missed opportunities or worse, an increase in going down “blind alleys”, following unproductive leads despite having an ocean of data at our disposal.