Responding to the Challenge of Aging - The Canadian AGE-WELL Network of Centres of Excellence
Introduction

• Information and communication technologies (ICTs) have huge potential:
  • enhance the health, well-being, and independence of seniors
  • open up opportunities for new services and businesses
  • meet the desire of most seniors to age in place
  • provide solutions to increased demands on health and community services.
• Despite this “win-win” scenario, actual impact of research has often been limited
• Good ideas and technologies failing to be turned into new products and services.
Aims of today’s talk

• How AGE-WELL, a Canadian Network of Centres of Excellence, is taking great research from the laboratory into the real-world.
  • What is the potential of technology for “aging well”
  • What is AGE-WELL doing?
  • What makes AGE-WELL unique
  • How to connect with AGE-WELL

The Time is Now

A convergence of key trends in Canada make it the right time for the AGE-WELL NCE:

- An increasing number of older adults
- Seniors are becoming more tech-savvy
- Smart homes, AI, robotics, pervasive computing and the “internet of things” are being mainstreamed
- Health care technologies are “the next big thing” with significant global investment
- Alignment with Federal and international priorities
Aging Well

- remain independent in our lives
- actively participate in society

We can all age well, even in the face of disease, impairment, and disability.
The opportunity is HUGE

Global silver economy valued at $7 trillion per year, reaching a projected $15 trillion by 2020.

The global market for elder-care technology products is expected to grow to $10.3 billion in 2020 from nearly $4.4 billion in 2015, at a compound annual growth rate (CAGR) of 18.8% from 2015 to 2020.
The Market: the Silver Economy

Table 1 - ICT Innovations according to techno-economic clusters

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing</td>
<td>e.g. ICT systems augmenting the home environment such as smart home systems and connected home solutions (smart living environments for the elderly &amp; Internet of Things); housing schemes with ICT enabled services such as remote energy management, safety monitoring, entertainment, service / domestic robotics</td>
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<tr>
<td>Mobility &amp; tourism</td>
<td>e.g. ICT-augmented age-friendly tourism such as hotel rooms incorporating intelligence through an ICT platform; augmented age-friendly mobility such as assistance systems for older drivers; barrier-free environments and seamless / accessible mobility such as provision of accessible information to travellers and inter-modality exchanges</td>
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<tr>
<td>Health &amp; long-term care</td>
<td>e.g. ICT for chronic disease management and remote programmes supporting adherence to treatment; Telecare such as advanced home safety monitoring solutions and ICT-supported integration of care delivered by different parties (health, social, third-sector); personal health systems/medical devices such as implantables; big data analytics &amp; solutions such as decision support systems for patients, professionals and health system planning; service robotics supporting stationary / home care; robot-assisted rehabilitation; ICT systems enabling personalised medicine/treatment; VPH / in-silico medicine / Digital Patient</td>
</tr>
<tr>
<td>Wellbeing, prevention &amp; self-care</td>
<td>e.g. ICT enabled patient empowerment and self-management services such as online counselling; personalised digital coach for physical, mental and social wellbeing (Avatar); personal health devices; mHealth apps; ICT-enabled nutrition support and analytics; digitalised social protection systems; innovations on early markers of ill health</td>
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</table>

Cluster Example

- Citizenship & consumerism: e.g. virtual communities & digital neighbourhood platforms for community building; social participations and mutual support; personalised interfaces and service processes for commercial and public online services (e.g. ATM machines) and online services such as e-banking, e-commerce and e-government; age-friendly designed electronic gadgets and ICT devices; mobile apps for Active Ageing

- Employment, education & training: e.g. accessibility and inclusiveness of the labour market (regulations, change of perception on older people, ageism); wide-spread reconciliation of paid work and informal care; virtual communities and mutual support; ICT and robotics fostering employment capacity; ICT research and innovation & ageing (e.g., customisable user interfaces, co-design); (e)skills and (e)Leadership skills / Education for active ageing/ employment; ICT-enabled services for caring

AGEWELL
Technology as a Solution
From Reactive Care to Proactive Support

Cost of Care / Day

- Home Care
  - Independent, Healthy Living
  - Chronic Disease Management
  - Community Clinic
  - Doctor’s Office
  - Assisted Living
  - Skilled Nursing Facility

- Acute Care
  - Specialty Clinic
  - Community Hospital
  - ICU

Quality of Life

Technology
Challenges

• The needs of older adults are complex, and are even more so in the face of specific impairments and diseases

• The health sector is innovation averse

• More often than not, an understanding of users’ needs is not part of a project

• There has been a “silo” mentality in this field that has resulted in poor outcomes
Failure to Launch

Despite a “win-win” scenario, research and development in this field has had relatively little impact
What is AGE-WELL doing to support HEALTHY & ACTIVE LIVING?
Our Vision

Canada’s leadership in technology and aging benefits the world.
AGE-WELL is the only pan-Canadian network that brings together a broad range of stakeholders (researchers, academic institutions, non-profits, industry, government, care providers, older adults and caregivers) to develop solutions to healthy aging; we are successful in part because of the diversity of our membership and partnerships.
AGE-WELL Produces Products

User-Driven Research

Technology

Services

Policy & Practice

Transdisciplinary Research
# AGE-WELL by the Numbers

**Highly Qualified Personnel (HQP)**
- Professionals: 40%
- Postdoctoral Fellows: 16%
- Master’s Candidates: 22%
- Doctoral Candidates: 22%

**200+**
- # of Researchers

**# of Network Partners**
- Industry
- Government
- Community
- Community

**275**

**# of Research Projects**
- 76

**# of Jobs created by startups**
- 100+

**# of AGE-WELL-supported Startups**
- 19

**# of Member Universities and Research Centres across Canada**
- 40

**# of Innovators of Tomorrow Certificates awarded**
- 175

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**Innovation Pipeline >>>**

1. **present day**
   - Serious games
   - Online resources

2. **ready to hit the market**
   - Smart wheelchairs
   - Apps to connect

3. **mid-stage**
   - Smart home systems
   - Health monitoring devices

4. **the future**
   - Wearable and in-home therapies
   - Social robots

- **5**
AGE-WELL Projects

57 active projects:

- 25 Core Research Projects (3-5 years)
- 32 Catalyst and Strategic Investment Program (SIP) projects (1 year – mainly post discovery projects)

Diversification across the innovation pipeline to increase our potential for real-world impact and results.

Network growth from Y1-Y3: +132%
Av. Annual growth from Y1-Y3: +44%
Research Project Spotlight: WP3.1 - CoPILOT

Research  ➔  Validation  ➔  Product
Research Project Spotlight: Silver Alert

Policy

Technology

Service
Imagine the Potential

AGE-WELL teams are developing technologies across a range of applications:

- Robotics & Assistive Technology
- Smart Homes And IoT
- Software & Big Data
Smart Homes
Big Data in the Home

- Actigraphy devices
- Localization sensors
- Bed Sensors
- Physiological sensors
- Phone sensors
- Walking sensors
- Activity sensors
- Cell phone as prompting device and for location tracking
- User PC: Experience sampling; cognitive testing; social engagement; coaching
- Door sensors
- Medication tracking device
What Makes AGEWELL Unique?
Creating Impact

• Our projects are producing 99 products (technologies, services, policies/practices)

• We now count 19 AGE-WELL-supported startups amongst our successes. They are developing needed products, leveraging AGE-WELL investment to secure other funding, creating jobs and making sales.

• We are engaging researchers and startups in educational webinars, one-on-one mentorship and key partner meetings
Networking and Partnerships with AGE-WELL

**Industry**
- Access to products
- Access to experts
- Access to customers
- Potential new employees
- Access to facilities
- Testing capabilities
- Competitive edge
- New joint funding opportunities

**Post-Secondary**
- New collaborations
- Access to funding
- Access to HQP
- Increased subject pools for testing
- Access to domain experts
- Access to new IP models and approaches

**Healthcare**
- Access to products and services
- Access to experts
- New collaborations
- Competitive edge

**Government**
- Access to new knowledge
- Guidance on policies and regulations
- New collaborations
- Access to stakeholders
- New joint funding opportunities

**Not-for-Profit**
- Access to experts
- Access to key stakeholders
- Access to HQP and interns
- Access to new knowledge
- New joint funding opportunities
National Ideathon Competition

• Focused on identifying and investing in great new ideas (technologies and services) to support healthy aging

• The first national competition of its kind, prizes awarded in total: $75,000 in cash and in-kind services.

• 5 cities across the country: Toronto, Montreal, Halifax, Vancouver and Winnipeg
“The AGE-WELL EPIC program will train highly qualified personnel (HQP) to be industry, academic, and community leaders in the development and introduction of technology to the health system and marketplace.”
A New Generation of Trainees

• AGE-WELL seeks to “produce” trainees that will be **important for all stakeholder communities**, including academia, clinical, and industry sectors

• AGE-WELL will equip trainees with **transdisciplinary skills** and expertise needed to be relevant across sectors through an experiential training program
Training the Innovators of Tomorrow - Highly Qualified Personnel (HQP)

Over 750 HQP

Government 4%
NGOs 8%
Education 8%
Healthcare 14%
Academia 26%
Private sector 40%

126 SSHRC HQP
257 CIHR HQP
372 NSERC HQP

11 startups run by EPIC trainees
300+ activities & programs
National Innovation Hubs

The Digital Health Circle, our newest hub, launched in Surrey, BC early in 2019. This hub is located on Simon Fraser University’s campus and will address aging challenges through digital health technologies.

The Advancing Policies and Practices in Technology and Aging (APPTA) hub shared policy options on the topic of social isolation at their annual meeting of government stakeholders from across Canada.
• On April 10 we launched the 2019 AGE-WELL National Impact Challenge for Canadian startups

• The winner of each regional competition will receive $15,000 in cash plus in-kind prizes

  • Montreal – June 13, 2019 @ Plaza Centre Ville
  • Vancouver – July 16, 2019 @ TELUS Garden
  • Toronto – July 25, 2019 @ Zoomer Hall
DIRECTIONS FOR THE FUTURE
Listening to our Community

- **National consultations** in Edmonton, Vancouver, Toronto, Halifax, Winnipeg, Montreal + online stakeholder survey
- Feedback from >1000 Network members
- Identification of **stakeholder-driven Challenge Areas** in aging that will form the basis of future research activities
Challenge Areas

1. Supportive Homes & Communities
2. Health Care & Health Service Delivery
3. Autonomy & Independence
4. Cognitive Health & Dementia
5. Mobility & Transportation
6. Healthy Lifestyles & Wellness
7. Staying Connected
8. Financial Wellness & Employment
Your source for healthy aging information that you can trust

Looking for something specific? Try a search or browse by an **AGE-WELL** challenge area.

- Supportive homes and communities
- Health care and health service delivery
- Autonomy and independence
- Cognitive health and dementia
- Mobility and transportation
- Healthy lifestyles and wellness
- Staying connected
- Financial wellness and employment
Partnerships are Crucial to AGE-WELL
Our Network must grow with the Seniors’ Market

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<td>Silver Economy</td>
<td>$7 trillion per annum globally</td>
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<tr>
<td>Spending power of baby boomers</td>
<td>$15 trillion by 2020</td>
</tr>
<tr>
<td>Global market for technology</td>
<td>$10.3 billion by 2020</td>
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Enhancing Cross-sector Activities

Making a difference is a team sport that includes:

• Public sector
• Commercial sector
• Community sector
• Consumers
• Informal networks
Spotlight: Best Buy Canada Partnership

“This collaboration combines the strengths and knowledge of two organizations trying to solve the same challenge. We have the opportunity to have a big impact on Canadian families, using technology to drive a really positive outcome.”

- Ron Wilson, President of Best Buy Canada
Annual Conference in Moncton – October 2019

Creating the Future of Technology and Aging

October 22 – 24, 2019
Delta Beausejour
Moncton, NB

Keynote Speaker

Healthcare in Deep Space – advancing our nation’s leadership in autonomous care

Dr. Robert Thirsk, O.C., O.B.C.
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