Our Vision

To harness and build upon the potential of emerging and advanced technologies in areas such as artificial intelligence (AI), e-health, information communication technologies (ICTs) and mobile technologies to stimulate technological, social and policy innovation.

Our Mission

To accelerate innovation in the field of technology and aging that will improve quality of life and produce economic and social benefits for Canadians and the global community. AGE-WELL strives to:

• Conduct world-class research in technologies for healthy aging;

• Develop a broad and transdisciplinary understanding of the impacts and implications of assistive technologies for healthy aging, including an in-depth understanding of the needs of older people and their caregivers, as well as the social, ethical and policy implications thereof;

• Train and mentor students and emerging researchers in unique, applied environments and through a core focus on commercialization, clinical application and knowledge mobilization;

• Foster strong networking and partnerships among academic, public, private and community sector stakeholders; and

• Position Canada to become a global leader in the development of technologies for healthy aging.

Corporate Profile

AGE-WELL NCE Inc. (“AGE-WELL”) is a federally-funded Network of Centres of Excellence established in 2015 to support Canadian research and innovation in the area of technology and aging. AGE-WELL is harnessing the power of new technologies to benefit older adults and caregivers. Our aim is to help older Canadians maintain their independence, health and quality of life. We do this by developing technologies and services that increase their safety and security, support their independent living and enhance their social participation.

As Canada’s technology and aging network, AGE-WELL brings together more than 150 funded and affiliated researchers from 37 universities and research centres across Canada. We have over 200 industry, government and non-profit partners who work closely with us on solutions for healthy aging. AGE-WELL also trains the next generation of leaders in the field of technology and aging, with almost 400 trainees now in our ranks. Our research projects are organized into eight research themes (called Workpackages), supported by four Crosscutting Activities in knowledge mobilization, commercialization, team-working and training.

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Acknowledgements

AGE-WELL gratefully acknowledges the support of its funder:

An initiative of Canada’s research granting agencies

www.nce-rce.gc.ca

The NCE Secretariat manages three national programs: Networks of Centres of Excellence (NCE); Centres of Excellence for Commercialization and Research (CECR); and Business-Led Networks of Centres of Excellence (BL-NCE). Through multidisciplinary partnerships between academia, industry, government and not-for-profit organizations, NCE programs focus a critical mass of research resources on social and economic challenges, commercialize and apply research breakthroughs, increase private sector R&D and train highly qualified people. Since its inception in 1989, NCE funding has helped create more than 1,900 companies; supported the development of more than 50,000 highly qualified personnel (HQP); invested more than $2.3 billion in research, commercialization and knowledge translation; and leveraged $2.1 billion in partner support to enhance the lives of Canadians.

And the support of its host institution:

AGING GRACEFULLY ACROSS ENVIRONMENTS USING TECHNOLOGY TO SUPPORT WELLNESS, ENGAGEMENT AND LONG LIFE

UHN Toronto Rehabilitation Institute

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Benefiting Canadians

A Message from the Scientific Directors

Dr. Alex Mihailidis and Dr. Andrew Sixsmith
Joint Scientific Directors, AGE-WELL

Canada’s 2016 census shows that Canadians over age 65 now outnumber children for the first time in the survey’s history. We’re living longer. But how do we ensure health, independence and a good quality of life into our older years? AGE-WELL, Canada’s technology and aging network, was established to address that challenge. We are unique—a truly pan-Canadian network of researchers, non-profits, industry, government, older adults and caregivers that is developing practical solutions to support healthy aging. The network has expanded significantly over the past year and now includes more than 150 funded and affiliated researchers from 37 universities and research centres. We are also pleased to be working with over 200 academic, industry, community and government organizations.

AGE-WELL now supports 64 projects that are producing real-world products such as sensors built into homes to help older people and caregivers with their daily tasks, mattresses that can monitor people’s health, remote therapies and intelligent wheelchairs. Six startups are commercializing products. Dozens of AGE-WELL’s early successes speak to the creativity and commitment that fuels the work we do every day to benefit older people and caregivers in Canada and beyond.

AGE-WELL’s innovation extends beyond product development. We are fundamentally changing the culture of research in the field of technology and aging. Knowledge mobilization and commercialization are built into every research plan. Our philosophy of co-creation means that older people and caregivers are deeply involved in the research, along with our industry and community partners. This spirit is also reflected in the new AGE-WELL National Innovation Hub in Fredericton, New Brunswick.

We are looking to the future by preparing the next generation of innovators. Our unique training program called EPIC (Early Professionals, Inspired Careers) has grown beyond all expectations. AGE-WELL now has 398 highly qualified personnel (HQP) from 40 institutions across eight provinces, Australia, the United Kingdom and the United States. All of our work is made possible through the generous support of the Networks of Centres of Excellence (NCE). We are also grateful to our host institution, the Toronto Rehabilitation Institute – University Health Network (UHN). And we want to thank members of the AGE-WELL Board, committee members, researchers, trainees, staff members, partners and other stakeholders. It is their energy, creativity and commitment that fuels the work we do every day to benefit older people and caregivers in Canada and beyond.

A Message from the Chair of the Board

Michael Harcourt
Chair, AGE-WELL Board of Directors

This is an exciting time for AGE-WELL. In its first two years, AGE-WELL has put Canada on the path to becoming a global leader in the technology and aging sector.

It’s impressive to see the focus on real-world outputs—and on getting them into the hands of people who need them. Many AGE-WELL innovations are already being tested, and some are market ready.

Equally exciting is the phenomenal success of AGE-WELL’s program to train and mentor the next generation of leaders in the field. AGE-WELL trainees are quickly making their mark—publishing papers, filing patents, founding startups and securing positions in industry and academia.

The research being conducted by AGE-WELL teams is world class. It addresses the many dimensions of technological innovation. This includes ethical and privacy considerations, and policies that best support the adoption of AGE-WELL products.

AGE-WELL’s early successes speak to the talent and drive that abound at this network—and the promise of innovation to come.

A Message from the Managing Director

Bridgette Murphy
Managing Director, AGE-WELL

AGE-WELL’s presence, profile and influence have all increased significantly in the last year. The network has become a go-to authority which is called on by government, industry and community organizations to share expertise and knowledge. We are making headlines with our research and our perspectives on issues of public importance.

Our profile has also grown through high-profile events such as the AGE-WELL–HACKING HEALTH National Ideathon, a five-city national competition to identify and invest in great new ideas to support healthy aging.

Our 2nd Annual Conference, held last October in Montreal, once again showcased the dynamism of this network. This year, we enriched two of our funding programs to increase the dollar value of the grants and to provide mentoring and other supports. Interest in these programs has soared. At the same time, AGE-WELL researchers are leveraging additional sources of funding, allowing them to accelerate their research and deliver benefits to consumers and the economy even sooner.

We are proud of our growing number of mutually-supportive partnerships. These partners bring significant cash and in-kind contributions. Their involvement, and that of consumers, is vital to our success.

A big thank-you to our host institution, Toronto Rehab – UHN, and to the AGE-WELL Network Management Office and extraordinary staff. It’s been another amazing year. AGE-WELL is making remarkable progress in creating technologies and services to enhance the lives of older adults and caregivers, now and in the future.
AGE-WELL

By the Numbers
as of September 2017

150+ Researchers
225 Network Partners
132 Innovators of Tomorrow Certificates awarded
64 Research Projects
100+ Publications
6 AGE-WELL-supported startups

University 18%
Provincial 16%
Federal 3%
Industry 32%
Other 31%

132 HQP Totals
398 2016-17
220 2015-16

Professionals*
Postdoctoral Fellows
Doctoral Candidates
Master’s Candidates

2016-17
2015-16
2016-17
2015-16
2016-17
2015-16

55
49
63
53
84
90
91

* [includes research associates, technicians and summer students]

AGE-WELL

Innovation Pipeline >>>

1 present day
2 ready to hit the market
3 mid-stage
4 >>>
5 the future

Serious games
Online resources
Smart wheelchairs
Apps to connect
Smart home systems
Health monitoring devices
Wearable and in-home therapies
Social robots

AGE-WELL by the Numbers

MEMBER UNIVERSITIES AND RESEARCH CENTRES across Canada

37
First-of-its-kind national innovation hub launched

AGE-WELL and the New Brunswick Health Research Foundation (NBHRF) teamed up last May to launch a national innovation hub to advance policies, practices and services in the field of technology and aging.

The Advancing Policies and Practices in Technology and Aging (APPTA) hub will design innovative solutions to specific policy, program and service challenges, and will develop best practices for rapid adoption of new technologies.

The first of its kind, the hub is located in Fredericton at the York Care Centre. Seniors now make up 19.92 per cent of New Brunswick’s population, making it the province with the oldest population in Canada. Nova Scotia is a close second at 19.90 per cent. It’s projected that within a generation, the number of New Brunswickers aged 65 and over may climb to 29 or even 31 per cent.

“We are delighted to be the host province for a hub that will be a national resource for policymakers, researchers, clinicians and others working to implement novel technologies that will improve the health and well-being of older Canadians and their caregivers,” said the Honourable Lisa Harris, New Brunswick Minister of Seniors and Long-Term Care, as she officially opened the hub.

“Existing and novel technologies, applied to the right people, at the right place and at the right time, hold the key to making sure our Canadian seniors age well, and are assisted by programs and services adapted to their needs,” added Dr. Bruno Battistini, president, CEO & scientific director of NBHRF and a co-sponsor of the hub on behalf of the Government of New Brunswick.

“This hub will promote knowledge sharing and effective transfer of needed technologies right across Canada.”

In New Brunswick, the hub will also bring new training opportunities for graduate students and postdoctoral fellows in the field of technology and aging.

APPTA will help innovators and entrepreneurs transform their ideas into market successes by connecting them with end-users, policymakers and service providers, and nurturing the transfer and early adoption of new technologies. It will give stakeholders ready access to the latest research findings and information on emerging tools and health technologies.

“As smart homes, assistive and digital technologies become more available, we want to maximize their impact on people’s lives, and produce economic benefits for Canadians. This hub will be a platform for knowledge mobilization and policy innovation that will ensure new technologies get to the people who need them as quickly as possible,” said Dr. Alex Mihailidis, scientific director of AGE-WELL.

“The mission of AGE-WELL National Innovation Hubs is to engage a range of stakeholders in a specific location to advance innovation and adoption of technology-based solutions for healthy aging. Using dedicated infrastructure and expertise at the local level, AGE-WELL hubs are places where industry, community, government, researchers, end-users and others can interact and generate new ideas together. The aim: to foster more efficient development, testing and delivery to market of products and services that will benefit older people and caregivers across Canada. AGE-WELL plans to announce more hubs in coming months.”

Visit the APPTA website at: www.agewell-nih-appta.ca
Benefiting Older Adults and Caregivers

It would have been unimaginable a generation ago but today technologies that use artificial intelligence, robotics and virtual reality are bursting into the lives of older people. AGE-WELL is leading the way in harnessing and building on these advanced technologies to support healthy aging.

Our 64 research projects across Canada include smart-home sensors embedded in household objects, health monitoring systems, virtual exercise programs and apps to connect people. As you will read, our researchers are developing social robots to assist people with activities of daily living. And we are asking exciting questions—like whether seniors will be among the first adopters of driverless cars.

In this chapter, we also spotlight some AGE-WELL innovations that directly support caregivers. There's a wearable device called PostureCoach which is designed to reduce the risk of back injury. Another team has developed an online resource to help families choose GPS tracking devices to prevent wandering in loved ones with dementia.

There's a device called COACH that uses artificial intelligence, sensors and audio/video cues to guide people with dementia through the steps of handwashing and tooth brushing. A device called COACH uses artificial intelligence, sensors and audio/video cues to guide people with dementia through the steps of handwashing and tooth brushing.

For people living with Alzheimer's and other dementias, home can become an unsafe environment. Now imagine a “smart home” that is loaded with sensors to help people stay safe and independent for as long as possible. AGE-WELL researchers are working to make this a reality in the next few years.

The goal is to create a home that is adapted to each person’s quirks and habits, says Dr. Hélène Pigot, a computer science professor at the Université de Sherbrooke—a bespoke system that would include features such as infrared sensors in the floor that light the path from the bed to the bathroom, a garbage can that indicates when it is full and what day to empty it, a meal tray that provides hints on the right sequences for eating and a stove that reminds users to turn it on and, most importantly, off.

“We want to give back as much autonomy and control as possible to people,” says Dr. Pigot, a co-founder of the DOMUS (DOMotics at the Université de Sherbrooke) laboratory, which works on innovations to help people with cognitive deficits, including head trauma, schizophrenia and Alzheimer’s. “With a rapidly aging population, it’s so important to create features that give people the option to remain in their homes, still mostly independent, enjoying a real quality of life.”

Dr. Pigot and her collaborators are creating the high-tech features, but caregivers are providing crucial input and, ultimately, will be the ones who pick and install the right features in their loved one’s home.

Project co-lead Dr. Jesse Hoey calls it a “do-it-yourself” approach to a smart home. “Caregivers know the older person’s habits and can personalize the smart-home features to that person’s needs,” says Dr. Hoey, an associate professor of computer science at the University of Waterloo. “Right now, health care in this country is mostly reactive. We want to be pro-active—to act before it’s too late,” says Dr. Mihailidis, who holds the Barbara G. Stymiest Chair in Rehabilitation Technology Research at Toronto Rehab. “Smart homes will also reduce the burden on caregivers and help to keep people out of hospitals and long-term care. It’s a win-win scenario.”

Features of smart homes ideally will be integrated into the homes of healthy older adults too, allowing them to get used to the technologies, says Dr. Hoey. “The Do-It-Yourself Smart Home aims to provide assistance over long periods to support older adults as functional ability and health status declines.”

Smart homes will also be able to predict problems. Dr. Mihailidis is building “predictive algorithms” to determine who will develop dementia—by gathering information on patterns of daily living.

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Co-Leads: Dr. Jesse Hoey, University of Waterloo; Dr. Hélène Pigot, Université de Sherbrooke
Imagine a bed that monitors an older adult’s health while they sleep and alerts a health-care provider if there are potential problems. That’s the goal of an AGE-WELL project that uses pressure sensor technology to help predict and prevent health problems by analyzing clues such as movement, breathing and fluid retention.

Pressure ulcers are one area of focus, says Dr. Frank Knoefel, project co-lead and a physician at Bruyère Continuing Care in Ottawa. A significant concern for people who cannot easily change positions in bed, pressure ulcers can cause severe pain, are difficult to heal and can become infected. They typically occur where a boney part of the body like a hip or heel presses against the skin.

By placing a mat equipped with hundreds of sensors under a mattress, Dr. Knoefel and co-lead Dr. Rafik Goubran are able to track how, and how much, someone moves during sleep. They’ve also correlated the amount of movement with blood flow by comparing the movement of patients’ heels overnight with pictures taken in the morning using a thermal camera. A heel that hasn’t moved appears “cold,” signaling a lack of blood circulation that could lead to a pressure ulcer.

The potential for prevention is significant. Dr. Knoefel imagines a simple alarm system in a hospital or long-term care setting in which “a little red light goes on at the nursing station saying, ‘Mr. Jones in bed four needs to be turned.’” And for older adults living at home, a “smart bed” could tip off a family caregiver or attendant to the need for repositioning.

The research team has also used the pressure sensor system to monitor the irregular breathing patterns associated with sleep apnea. A clinical trial will be conducted to test the mat’s ability to detect nighttime fluid build-up associated with congestive heart failure, a debilitating condition common in older adults.

A unique online resource that allows consumers to find the right locator device for loved ones with dementia who may wander was recently launched through the support of AGE-WELL and the Alzheimer Society of Ontario.

The Consumer Guideline for Locator Technologies website offers caregivers a level playing field to compare GPS-based locator devices and other types of tracking technologies. The site can be used to determine which device best meets the needs of an individual with Alzheimer’s disease or another form of dementia who is at risk of becoming lost.

“Until now, there has been no source for consumers to consistently compare the features of locator devices. This is a market that is booming. Within the next three to five years, we are going to see an exponential increase in demand for these devices and information about them,” says Dr. Lili Liu, lead investigator for the project and chair of Occupational Therapy, Faculty of Rehabilitation Medicine at the University of Alberta.

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Canadian statistics on dementia and wandering make a compelling case for high-quality consumer information on these types of solutions. In 2011, 747,000 people in Canada were reported to have some form of dementia, according to Statistics Canada. In 2010, the number of people reported missing due to wandering was 1,365 and by 2014, the number jumped to 1,528. And these statistics reflect only reported cases.

The Alzheimer’s Society says that 60 per cent of people with dementia-related memory problems become lost at some point. A person with Alzheimer’s disease who is lost for more than 12 hours has a 50 per cent chance of being injured or dying.

The new site, which is part of the Alzheimer Society of Ontario’s Finding Your Way® program, funded partially by the Province of Ontario, provides categorized, user-friendly and easy-to-compare information on locator devices. “We have established a set of consistent parameters. Vendors then go online, share their information and keep it updated,” explains Dr. Liu. Consumers are encouraged to rate locator devices and share their reviews.

“Many families are struggling not knowing where to invest with regard to this technology. The new website is a great start for showcasing solutions that are out there,” says Ron B., an advisor on the project who has used more than half a dozen different locator devices in caring for his father, who has lived with Alzheimer’s for the past decade.

The Consumer Guideline for Locator Technologies is the result of an AGE-WELL-Alzheimer’s Society of Ontario Working Group that was established and co-funded by the two organizations, and a 2015 study by Dr. Liu’s team at the University of Alberta and Alberta Health Services on the usability of GPS locators. A key finding of the study was that among numerous benefits—from safety to cost savings in health care and among first responders—locator devices provide peace of mind for caregivers.

Visit the website: https://tech.findingyourwayontario.ca

Although pressure sensor technology is not new, the team’s expertise is developing sophisticated algorithms to sort through the data and extract information and patterns that are valuable to clinicians—an innovative reimagining of the technology. “It’s extremely complex, but extremely rewarding,” says Dr. Goubran, vice president, Research and International, at Carleton University.

He notes that moving the concept to market will require the involvement of a wide variety of sectors, including telecommunication and network communications, data analytics and health-care monitoring. Partnerships are already in place with three major companies.

“The smart bed” holds great promise for keeping older adults healthy and at home. Dr. Knoefel uses the example of someone’s bed sending daily health status reports to a home care nurse, allowing early intervention if there are signs of problems.

“This is like a bedside nurse 24 hours a day,” he says.

SAFETRACKS IS ONE OF THE GPS TECHNOLOGIES THAT PROVIDES ELECTRONIC LOCATING AND MONITORING.

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PostureCoach: Teaching caregivers to protect their backs while helping others

Carolyn Sutherland, a busy Ottawa professional in her fifties, makes time to take a 90-year-old family friend to appointments and out for excursions. She enjoys their time together but is concerned that she doesn’t know the best way to transfer her friend from the chair to the walker, and in and out of the car, in a way that protects her own back. Over eight million Canadians are caring for family members or friends. One of the biggest risks they face is injuring their backs while helping loved ones with activities such as chair and bed transfers, dressing, toileting, and bathing.

“We’re putting an increasing burden on people to provide care in the home yet we really haven’t given them the right tools or training to do their jobs,” says Dr. Tilak Dutta, a scientist at Toronto Rehab – UHN and an AGE-WELL investigator.

Dr. Dutta, in partnership with Saint Elizabeth Health Care, has developed PostureCoach. This light-weight, wearable device provides caregivers with real-time feedback through a vibration or an audio signal when they are in a posture that puts them at high risk for back injury.

PostureCoach measures the angle between two sensors—one positioned for the upper back and the other for the lower back. It is designed to encourage the wearer to keep their lower back straight, and to bend from the hips instead of flexing the spine.

“It is often impossible to avoid bending in an unsafe posture,” says Dr. Dutta. “We know that back injuries are the result of cumulative damage from being in dangerous postures for extended periods of time. If you can reduce that cumulative effect or load, you will reduce the chances of experiencing pain or a serious injury.”

Wearing PostureCoach even for a short period of time would give caregivers an insight into their own behaviours when they are doing caregiving tasks. The device is for anyone who provides care for another person—whether they are a family caregiver or health professional, such as personal support worker (PSW). PSWs often provide care to people in their homes.

PSWs, 92 per cent of whom are female, are the highest injured female workforce in Ontario. Family caregivers are considered at higher risk for injury since they lack training in how to safely perform tasks.

Caregiving in the home is especially challenging due to confined spaces and stairs. Home-based caregivers usually work alone with little assistive equipment.

PostureCoach is modelled after the coach-athlete relationship where a coach’s continual feedback over time enhances an athlete’s performance. By providing the caregiver with instant alerts when they are in risky postures, researchers hope caregivers will learn to avoid or minimize these positions.

A pilot study, funded in part by Saint Elizabeth Health Care, showed that new health professionals and people with no caregiving experience or training showed a decrease in the amount of time spent in high-risk or extreme postures when using PostureCoach during a set of caregiving tasks. Experienced and well-trained health professionals benefited the least from PostureCoach.

Amanda Longfield, occupational therapist and program development leader in the Adult Occupational Therapy Program at Saint Elizabeth, was part of the pilot project team. She also helped to evaluate the initial PostureCoach prototype. Her key message to the design team: “Caregivers in the field are very busy so this can’t be something extra in their day. It has to be simple—easy to put on, easy to wear and easy to use to get that immediate feedback.”

With $25,000 in funding from AGE-WELL, PostureCoach was redesigned after the pilot and 10 samples of the new version are being manufactured. Researchers have applied for government funding to use the new prototypes in a larger-scale test involving 100 PSWs in the community.

“The funding from AGE-WELL has been extremely important,” says Dr. Dutta. “It is so difficult to get funding to build prototypes. AGE-WELL has given us a very unique opportunity.”

“I think PostureCoach has a lot of potential,” adds Longfield, “and it’s really exciting to see it moving forward.”

This light-weight, wearable device provides caregivers with real-time feedback through a vibration or an audio signal when they are in a posture that puts them at high risk for back injury.
Systems to stimulate and engage

It’s a shocking number: as many as 43 per cent of older adults living in the community feel socially isolated.

This can lead to stress, depression and cognitive decline. AGE-WELL researchers are producing novel technologies to enhance social connectedness for older Canadians and engage them in collaborative activities, learning and knowledge sharing. Here are some examples:

Connections a ‘game changer’

When 94-year-old Elsie Dodds wants to touch base with a family member, she taps on the person’s picture on the Connections home page of her tablet and records an audio message that is sent to the relative’s email inbox. She also could have chosen to send a photo or video, or to type a message.

“I have arthritis and hand problems due to diabetes. Talking into a computer is easier than typing,” says Dodds. “I really do like it and it’s a fast way of getting your message across and the best way to keep in touch with my relatives.”

“Talking into a computer is easier than typing…”

Connections (formerly InTouch) was developed by TAGlab at the University of Toronto with support from AGE-WELL. The communications platform is designed to prevent loneliness and isolation by keeping older adults in contact with family and friends through a system that focuses on the user’s abilities and is easy to navigate.

Connections has been tested in long-term care, seniors’ residences and private homes. Seniors with mild cognitive impairment have adopted the system as readily as those with no cognitive issues. Families are calling it a “game changer” in online communications for older adults.

The spinoff company Famli.net has landed its first paying customer, a retirement home. The next step is to attract investment to develop Connections as a multi-platform system that allows multiple users to communicate, including the older person, family members and service providers.

Combating inactivity and restlessness

Nothing would make Tricia Jose happier than to know that her grandfather, who has early stage dementia and lives with her family, spent his day doing activities that were stimulating and engaging. That’s the idea behind a research project being conducted by Jose and five other AGE-WELL trainees from across Canada: to combine a wearable system that detects inactivity with a smart TV and computer vision system that engages people with dementia in meaningful activities to improve their quality of life and encourage independence. Activities can be tailored to the interest of the individual such as online games based on golf or bowling, music and stretching exercises. The system also sends a message to the person’s family caregiver to let them know their loved one is busy.

The team was inspired by stories of Jose’s grandfather, and by Jim Mann, an AGE-WELL volunteer who lives with dementia and served as a mentor at the AGE-WELL Summer Institute in 2016. “This is a challenging but very compelling project that could really make a difference,” says Jose, a Master of Applied Science candidate at the Institute of Biomaterials and Biomedical Engineering, University of Toronto. Collaborating on the project are Victor Cervantes, University of Alberta; Julia Jeremic, Simon Fraser University; Shereen Khan, Toronto Rehab – UHN; Maxime Lussier, Université du Québec à Montréal; and Noellannah Neubauer, University of Alberta.

Connecting socially through digital games

Solitaire Quiz, the first in a series of AGE-WELL-supported digital games to encourage social connectedness and help reduce loneliness in older adults, is now available online in English and French at Android and Apple stores and through Facebook. Also in development are Tic Tac Quiz and a multi-user escape room game among others designed especially for the older user. “There is a strong association between loneliness or social isolation and cognitive decline,” explains Dr. David Kaufman, who is project co-lead. Dr. Kaufman is a professor in the Faculty of Education and associate member of the Gerontology Department, Faculty of Health Sciences at Simon Fraser University in British Columbia.

“Older adults in our studies tell us that playing games like these, particularly in group settings or with family members including grandchildren, gives them cognitive exercise, new knowledge, enjoyable social interaction and new confidence in their technology skills.” Familiar games to an older audience, Solitaire Quiz and Tic Tac Quiz feature an added element of life-long learning with customizable quizzes on a variety of topics, such as nutrition and healthy living.
Innovative ways to improve health and quality of life

Although many older Canadians feel healthy, approximately one-quarter report having a physical, cognitive or sensory impairment that affects their ability to perform common activities of daily living. Groundbreaking technologies like the ones highlighted below can help older adults to be active, engaged and ‘healthy,’ even in the face of disease and disability.

A prototype virtual gym

A virtual gym that delivers personalized exercise instruction and feedback to promote physical and cognitive health among older adults is being tested in retirement homes in Edmonton and Fredericton. Funded by AGE-WELL, the computer-guided system features a virtual coach on screen for each participant. The coach demonstrates an exercise, and a special camera records the movement of the older person in 3-D and superimposes their body position onto the body of the coach. The goal is to get the body positions to match. “The system provides timely and accurate feedback so that seniors can exercise correctly and safely,” says project co-lead Dr. Eleni Stroulia, a professor of computing science and a researcher at the University of Alberta. Exercise is a way to stay healthy and independent for longer, but there are barriers that can prevent some older people from participating in group-exercise activities.

The virtual gym is designed for older adults who have chronic conditions, early-to-moderate dementia, mobility, accessibility or transportation challenges — and who will benefit from an exercise program where they live. Co-Leads: Dr. Lili Liu, University of Alberta; Dr. Eleni Stroulia, University of Alberta

Treating overactive bladder

It’s a huge problem that doesn’t get a lot of attention: overactive bladder (OAB) affects 18 per cent of Canadian adults. Now, a clinical trial is testing a novel home-based, self-administered treatment that could improve quality of life for up to 500 million people worldwide who suffer from the condition. “The sheer number of people that could benefit is one of the most exciting aspects,” says project co-lead Dr. Paul Yoo of the University of Toronto’s Institute of Biomaterials and Biomedical Engineering. The trial, supported by AGE-WELL, will determine if non-invasive electrical stimulation of the saphenous nerve in the leg improves bladder symptoms. OAB involves the frequent and sudden urge to urinate, and may be accompanied by urinary incontinence. The condition often affects older people, especially women, and may cause anxiety, social withdrawal and falls from rushing to the washroom.

Co-Leads: Dr. Sasha John, University of Toronto; Dr. Paul Yoo, University of Toronto

Wearable therapy

A Toronto research team has created clothing with a special something inside that delivers therapy in a whole new way:

The novel shirt and pants are designed to help reawaken muscles in people with upper or lower limb paralysis caused by stroke or spinal cord injury.

The clothing is embedded with electrodes that deliver functional electrical stimulation (FES)—a therapy that uses low-intensity electrical pulses to generate muscle contractions and improve motor function, such as the ability to stand or grasp a cup.

With AGE-WELL funding, the researchers at Toronto Rehab – UHN will now test the shirt with people who have upper limb paralysis. The pilot trial is being conducted by project lead Dr. Milos R. Popovic and colleagues in collaboration with industry partner Myant Inc. “In hospitals, FES therapy is given to patients using an iPad-size electric stimulator,” explains Dr. Popovic. “Garment-based FES is intended for use at home to train and assist people to do daily activities, such as standing, transferring and grasping objects. For older adults whose mobility and participation in society is limited by neurological conditions, the potential benefits are enormous.”

The researchers are also holding focus groups with end-users and clinicians, with the goal of identifying all challenges in bringing this “e-suit” to market in the future.

Lead: Dr. Milos Popovic, Toronto Rehab – UHN, University of Toronto

High-tech in-home therapy

For older adults recovering from stroke, an advanced “telerobotic” rehabilitation system developed by researchers in London, Ontario opens the door to a new supervised in-home therapy. The AGE-WELL-supported team is now testing its system with the goal of delivering frequent, low-cost, individualized therapy at home for older stroke survivors. The system, which incorporates haptic- or force-enabled robotic technology, virtual reality and internet communication, will be used to improve people’s sensory and motor function, enhancing quality of life. The therapy will also be available to seniors with age-related movement disorders. “I think the impact could be very significant,” says project co-lead Dr. Rajni Patel, a founding member of CSTAR (Canadian Surgical Technologies & Advanced Robotics) at London Health Sciences Centre and a Canada Research Chair in Advanced Robotics and Control. “The amount of time a stroke patient has with a therapist is limited because of the shortage of therapists and, in some cases, the distance people have to travel to get to a clinic. We are hoping with this kind of environment in the home that therapy will be available to a large number of people.”

Co-Leads: Dr. Mandar Jog, University of Western Ontario; Dr. Rajni Patel, London Health Sciences Centre

The system incorporates haptic- or force-enabled robotic technology, virtual reality and internet communication, will be used to improve people’s sensory and motor function, enhancing quality of life. The therapy will also be available to seniors with age-related movement disorders. “I think the impact could be very significant,” says project co-lead Dr. Rajni Patel, a founding member of CSTAR (Canadian Surgical Technologies & Advanced Robotics) at London Health Sciences Centre and a Canada Research Chair in Advanced Robotics and Control. “The amount of time a stroke patient has with a therapist is limited because of the shortage of therapists and, in some cases, the distance people have to travel to get to a clinic. We are hoping with this kind of environment in the home that therapy will be available to a large number of people.”

Co-Leads: Dr. Mandar Jog, University of Western Ontario; Dr. Rajni Patel, London Health Sciences Centre
Technology can support healthy aging in so many ways. But a complex health-care system coupled with an unclear path for approvals can make it a challenge to implement new technologies. “Our goal is to help AGE-WELL innovators and others doing similar work to more successfully navigate regulatory and approval processes to get their technologies into the hands of people who need them,” says Dr. Paul Stolee of the University of Waterloo, who is co-leading a study with Dr. Don Juzwishin of Alberta Health Services and a team of AGE-WELL trainees.

The study team has already produced a primer on technology regulatory policies and charted the innovation pathways for AGE-WELL products. The researchers will make recommendations to assist technology innovators both with regulatory processes and health-care system approvals. Major government policy changes can take 10 years or more to implement, so recommendations will focus within a given policy group’s mandate in the hope of timely approval and implementation.

For researchers, it can be a daunting task to find their way through multiple jurisdictions of federal, provincial and territorial governments, regional health authorities, and health-care and community care organizations that could have a role in the approval and funding of technologies.

There also is the “gray area” of determining whether or not a technological innovation is deemed a “medical device,” which requires a rigorous federal approval process. The study team has interviewed key stakeholders across the country including researchers, government representatives, industry innovators and health-care providers to identify barriers and collect ideas for improving adoption of technologies.

Dr. Paul Stolee

Improving the environment for adoption of technologies and services

Getting new technologies to people who need them

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Many older adults rely on cars to get around and stay independent. Yet as driver age increases, changes in visual acuity, flexibility, strength, memory and reaction time all affect the ability to drive. Some seniors will have their licenses taken away, which can be devastating and cause depression. Could self-driving cars be the answer?

In a unique study, AGE-WELL trainee Shabnam Haghzare is investigating the acceptability of autonomous cars among older adults. She will be recording older adults’ experiences in DriverLab, a driving simulator at Toronto Rehab. Study participants will first drive in manual mode in different simulated road conditions—normal, nighttime and trafficky. Then they will do it again with the car in autonomous mode.

“The goal is to understand how older drivers will interact with or trust autonomous vehicle technology,” says Haghzare, who holds an AGE-WELL-UBER Graduate Student Award in Technology and Aging and is a master’s student at Toronto Rehab — UHN/U of T. The study is led by Dr. Alex Mihailidis, AGE-WELL scientific director and a U of T professor. Results will also offer insights into how driverless cars can be modified to suit older adults.

Co-Leads: Dr. Don Juzwishin, Alberta Health Services; Dr. Paul Stolee, University of Waterloo

Josephine Grayson, Seniors’ advocate

“...We need new ideas to serve the rapidly-growing older population and AGE-WELL is delivering such ideas. As one who has had a life-long career in human rights, equality and accessibility, I applaud AGE-WELL’s efforts to consult and include older adults and caregivers in its work, and to bring together researchers, industry and community representatives.”

The fascinating future

Self-driving cars: Will seniors be big adopters?

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social robots increasingly will be a part of people’s lives. to communicate effectively, they must be able to identify human emotion and also learn to express emotion in familiar ways that people will easily understand.

unlike robots that perform specific physical tasks, social robots are intended to communicate and interact with people—for example, guiding a person with cognitive impairment through the steps of meal-making, reminding them to take their medication or playing brain-stimulating games.

adding emotion to social robots is complex. canada is on the leading edge of this emerging area of research.

“others have done some basic emotional expressions with robots but we’re taking it one step further,” says dr. goldie nejat, director of the institute for robotics and mechatronics at the university of toronto. “we’re creating ‘robot emotional models’ to map out when and how a robot should display an emotion, and even the intensity of that emotion.”

dr. nejat, who holds the canada research chair in robots for society, co-leads an age-well project to create social robots for older people with cognitive challenges. the aim is to help promote independence of the older adult, enhance their quality of life and assist with activities of daily living.

studies show that non-verbal communication, including facial expression, body language and vocal intonation, conveys human intent better than verbal content, so researchers are focusing on these areas with the age-well prototype robot casper, developed by dr. nejat’s team in collaboration with crosswing inc.

casper can display the emotions of happiness, sadness, surprise and a neutral expression. using led lights for its facial expressions, the robot can smile, frown, arch its eyebrows and move its mouth while talking. the level of emotion displayed can be affected by increasing or decreasing the intensity of the lights. the robot can also use vocal intonation, and its arms to point, wave and gesture in a way that is similar to hand movements used by people when they talk.

these expressions can be synchronized with the robot’s speech.

the social robot also uses non-verbal cues to read human emotions. it also learns its own emotions from interactions with users. in particular, the user’s emotions and the activity at hand are used by the robot to determine its own appropriate emotions.

researchers aim to achieve ‘natural communication’ between a social robot and a person. “when the robot speaks and displays body language and facial expressions similar to a person, the intent is clear—and with intent comes emotion. this promotes the user to engage with the robot,” says dr. nejat.

the social robot uses perception and artificial intelligence to determine its emotions. “it’s exciting to see these elements come together and interact with the goal of doing it all in real time.”

once the emotional model is fully developed and added to a new prototype robot, plans call for testing with older adults. the team and its commercial partner crosswing inc. aim to bring the emotionally intelligent social robot to market within two to five years.
Benefiting Canadian Society

So much of AGE-WELL’s work has wide societal benefits. Many of our projects have implications not only for older adults and caregivers, but for all. On these pages, we showcase a selection of AGE-WELL research that relates to where we work, where we live and how we get health information.

You can read, for instance, about a fascinating survey of employers and employees with family caregiving responsibilities. This project offers insights not only for employee retention and satisfaction, but also for reducing absenteeism and increasing productivity.

Wherever we work or live, there’s the challenge of getting usable online health information, especially for those with literacy problems. An AGE-WELL researcher is developing a device that simplifies digital health information by instantly transforming online text to a person’s reading level.

You can also read about an AGE-WELL trainee who wants to make sure that adults can move around safely and avoid falls. Her interest is in handrails—something we all use every day.

In northern British Columbia, there’s a great initiative that is bridging generations digitally. The Nak’azdli Lha’hutit’en Project is helping to preserve culture and historic knowledge by using digital storytelling to reconnect Elders and children in a First Nations community.

Because AGE-WELL projects have broad relevance, it is vital to share them widely. AGE-WELL investigators do this in many ways, including conferences, publications and through the news media. We also contribute to government and other stakeholder panels, and promote discussion of health matters. Last year, for example, AGE-WELL teamed up with the Women’s Brain Health Initiative (WBHI) to co-host a panel discussion on the importance of sex-based research, the impact of cognitive impairment on women’s lives and the use of assistive technology to help them manage their responsibilities.

Three years ago, Tammy reached the breaking point. She’d spent years juggling two jobs while caring for her husband, whose chronic health issues left him unable to work. The emotional and physical exhaustion finally triggered a mental health crisis and she had to take a three-month leave from work. “Basically, I burnt myself out,” she says.

Tammy’s situation is not unique—almost one-third of Canadians in the workforce are caring for an adult family member or friend and most work full-time. Balancing care work and paid work responsibilities takes its toll on individuals, but there are costs to business too. Caregiver employees miss 9.7 million days of work each year, accounting for 10 per cent of all absenteeism reported for the Canadian workforce, and almost 560,000 of them leave their jobs to provide care.

With the support of an AGE-WELL grant, Dr. Janet Fast is investigating whether assistive technology can help. In the first study of its kind in Canada, she surveyed employers and their caregiver employees about using assistive technology to help integrate and balance paid work and care work roles.

Dr. Fast, a professor in the Department of Human Ecology at the University of Alberta, says many employees don’t disclose that care responsibilities are interfering with their job because they fear repercussions. As a result, most employers are unaware of how many employees carry these dual roles. This disconnect and lack of communication also extends to the use of technologies: 40 per cent of employees felt that their workplace would not be open to the use of assistive technology to help them manage their responsibilities, yet the majority of employers were actually supportive.

Some assistive technologies are already being developed, such as apps that allow caregivers to find personalized information on support services or to create a network of family and professional caregivers and share information and health data. There is also sensor technology being pioneered by AGE-WELL researchers that would allow a caregiver to remotely monitor what is happening in the home.

“We need to connect employers and employees so that they are aware of each other’s needs,” says Dr. Fast. “But we also need to connect them with product developers who have the capacity to innovate and create new products and services that will better meet caregiver needs.”

The AGE-WELL Network, which brings stakeholders together to develop technologies and services for older adults and caregivers, is an obvious starting point. Dr. Fast will be sharing her findings across the network. She is also establishing a leadership circle of employers to develop strategies, including technological solutions, to meet the needs of caregiver employees.

Dr. Fast says the fact that employers thought assistive technology had the potential to help employees is a good sign. “That’s very encouraging,” she says. “That means there is probably a market out there.”

Lead: Dr. Janet Fast, University of Alberta
Elders & the Nak’azdli

The title of “Elder” not only relates to age, but also reflects a person’s cultural and historical knowledge, explains Lillian Sam, a well-respected leading Nak’azdli Elder. Elders often hold varied knowledge that they share with their community, such as knowledge of medicines, the clan system and potlaches. The title of Elder is often used as a term of respect.

* Nak’azdli Whut’en, 2017: https://nakazdli.wordpress.com/dakelh-culture/

Preserving Elders’ stories for youth

Legends of the Nak’azdli people, descriptions of traditional medicines from the land, experiences of growing up, becoming a poet: these are among the stories shared by Elders and preserved digitally for today’s youth and future generations of a First Nation community in a pilot project funded by AGE-WELL.

Elders are an integral part of the Nak’azdli Whut’en, “a holistic community that believes in maintaining and enhancing traditional values by learning, living and teaching their culture and language.” * Many Elders in Nak’azdli still speak the Carrier language; the younger community members predominantly speak English. The Elders fear that their language and cultural practices will be lost with future generations. For this reason, sharing and other means of cultural preservation are very important to Elders and the Nak’azdli Whut’en.

The “Nak’azdli Lha’hutit’en Project: Intergenerational Digital Storytelling in a First Nations Community,” was created to strengthen intergenerational linkages between Elders and youth and to preserve cultural wisdom held by the Elders of the Nak’azdli Whut’en and several other nearby communities in north-central BC. Lha’hutit’en means ‘we work together, we help one another’ in the Carrier language and symbolizes the partnerships between members of the Nak’azdli people, community organizations such as the Nak’azdli Health Centre, the Nak’albun School, and the Nak’azdli Elder Society, and with academic partners from the University of Northern British Columbia, Simon Fraser University and the University of Waterloo. The goal is to integrate an intergenerational digital storytelling program into the school curriculum and support Elders to collaborate with youth.

Testimonial

“I am extremely impressed with what the AGE-WELL team has accomplished to date. This is a testament to the quality of the management, researchers, trainees and network partners. The societal benefits of AGE-WELL’s work are indisputable.”

Dr. Richard McAloney, Director of Entrepreneurship, the Impact Centre, University of Toronto
Simplifying Internet health information

An alarming 88 per cent of Canadian seniors are considered to have low health literacy and struggle to understand and trust online health information. A new tool now being developed with AGE-WELL support will simplify digital health information by instantly transforming online text to a person’s reading level.

“This tool has the potential to impact millions of older Canadians, revolutionize how they interact with information online and improve decision-making shared between patients, caregivers and health-care providers,” says project lead Dr. Cosmin Munteanu, an assistant professor at the Institute for Communication, Culture, Information and Technology at the University of Toronto Mississauga.

The browser extension (a plug-in that extends the functionality of a web browser) is a joint effort of the Technologies for Aging Gracefully Lab (TAGlab) at the University of Toronto, where Dr. Munteanu also serves as co-director, and commercial partner Heuristext Inc., a technology startup company.

To make online health information more understandable, the tool will use artificial intelligence and natural-language processing.

The initial prototype uses a single accessible reading level, but additional elements will be added so that the user can control the reading level.

A study with a group of older adults will help to answer questions including how much of a website to translate, how to display the material, the role of and trust in “behind-the-scenes” artificial intelligence algorithms and other aspects of usability.

The benefits of the tool for older people are clear, says Dr. Munteanu, adding that it will also reduce requests made of health-care providers to translate online information.

Getting a grip

It’s happened to all of us: we lose our balance and reach for a handrail to steady ourselves. But is that handrail in the right place to prevent a fall?

Vicki Komisar, an AGE-WELL trainee and University of Toronto/Toronto Rehab doctoral student, is studying the optimal height and structural strength of handrails in the community. She has already found that, in Ontario, the building code may not be appropriate for everyone when it comes to handrail height requirements.

Komisar’s further findings will inform design standards across the country—and enhance safety. Falls can happen to anyone; they are the leading cause of injury among older Canadians, resulting in $2 billion a year in direct health-care costs.

“My great-grandmother died at 92 from complications of a hip fracture caused by a fall, so I have a personal interest in falls prevention,” says Komisar.
Benefiting the Canadian Economy

A crucial part of our mission at AGE-WELL is to produce economic benefits for Canadians. With changing demographics, the “silver market” is an important and growing sector worldwide, and AGE-WELL is working hard to position Canada to make the most of this opportunity.

AGE-WELL gives industry partners a meaningful voice in the network to ensure that our research responds to their needs and those of their customers. Through our growing list of industry partners, we are opening up new business opportunities for startups and small to medium-sized enterprises (SMEs), generating jobs in the technology sector and contributing to the Canadian economy.

We are always looking for new ideas that will benefit older adult and caregivers, and bring socio-economic returns. AGE-WELL produces and sponsors events that encourage ideas, products and startups in the tech and aging space. Our Canada-wide “ideathon” competition, hosted with HACKING HEALTH, is all about identifying and investing in new technologies and services for healthy aging (see page 36). AGE-WELL hosted a pitch competition in July 2016 with the Global Council on Alzheimer’s Disease (GCAD), and sponsored by Otsuka America Pharmaceutical, Inc., Aging 2.0 Local I Toronto, the Ontario Brain Institute (OBI) and Ontario Centres of Excellence. Winning OBI’s study is planned. Incubated at the University of Toronto’s Impact Centre, Steadiwear also receives funding from the Ontario Brain Institute (OBI) and Ontario Centres of Excellence. Winning OBI’s ONtrepreneurs Pitch Challenge at Discovery 2017 netted a $20,000 prize.

As a student of civil engineering, Mark Elias learned how to stabilize buildings against earthquakes and wind vibration. Now, he’s applying that knowledge to a problem that affects millions of people worldwide: hand tremors.

Elias and colleagues have developed a glove that uses the same “vibration damping” technology that he studied at university and used on construction projects to decrease hand tremors from Parkinson’s disease, essential tremor and other movement disorders. “It was basically scaling down a shaking building to a shaking hand,” says Elias, CEO and co-founder of Steadiwear Inc., the producer of Steadiglove, a lightweight, compact and battery-free stabilizing glove that, Elias believes, will reduce tremors by about 70 per cent.

The device, which is patent pending, features a small ball-and-socket stabilization system and a “smart” fluid, which provides instant and equal resistance to differing degrees of hand tremors. With support from AGE-WELL, the team has quickly moved from laboratory testing to beta testing Steadiglove with people. A formal study is planned. Incubated at the University of Toronto’s Impact Centre, Steadiglove also receives funding from the Ontario Brain Institute (OBI) and Ontario Centres of Excellence. Winning OBI’s ONtrepreneurs Pitch Challenge at Discovery 2017 netted a $20,000 prize.

Steadiglove offers the potential for major improvement in quality of life for people with tremors, including Elias’s own grandmother. Tremors can make it difficult to drink a cup of coffee without spilling, eat normally, put a key in a keyhole or use a keyboard, computer mouse or cell phone. “People with essential tremor can spend up to $2,000 a year on medication or other options,” says Elias. About one-quarter of those with essential tremor lose their jobs due to the condition, he says.

The team believes Steadiglove is an improvement over available treatment options for hand tremors. Medications for tremor often produce side effects that outweigh the benefits. Surgery, especially deep brain stimulation, can involve significant risk and expense, and Botox injections on an ongoing basis also can be costly.

Early results from beta tests are “very promising,” says Elias who, with co-founder Emile Mamary, is part of a transdisciplinary team that has grown to seven.

They plan to bring Steadiglove to market in the coming months.

On page 38, you can find out how AGE-WELL is nurturing future innovators. Our EPIC training program [Early Professionals, Inspired Careers] trains bright, young researchers in applied environments, equipping them with the skills they need to be innovators in technology and aging. Already, our trainees are taking on positions in industry and academia.

We have taken concrete steps to encourage our researchers to focus on real-world products and outcomes. Every AGE-WELL research project is evaluated using a scale to track product readiness. We provide the right kind of supports to help AGE-WELL researchers commercialize and mobilize their intellectual property (IP). Last year, AGE-WELL launched a series of Innovation Workshops for network members, focused on technology commercialization and transdisciplinary working. We also named a new core facility, the University of Toronto’s Impact Centre, which is helping us to fuel entrepreneurship and nurture startups in the field of technology and aging.

Six AGE-WELL-supported startups are commercializing and launching products, and creating jobs in Canada. This chapter spotlights some of these startups and their exciting offerings.
Holter is a device which records a person’s heart activity (ECG) during regular daily activities. The clinical study is also evaluating the Hexoskin shirt for monitoring exercise rehabilitation in cardiac patients. More than 30 participants are enrolled in the study and results are expected soon. “The support from AGE-WELL is helpful because we are still a small company and these clinical projects are expensive,” says Pierre-Alexandre Fournier, CEO and co-founder of Hexoskin. “We understand the challenges related to aging, and we hope that with AGE-WELL we will be able to reach more people.”

The Hexoskin shirt hit the consumer market in 2013. Hexoskin has secured more than $2 million in investments and has a contract with the Canadian Space Agency to provide an advanced version of its shirt for astronauts on the International Space Station. Other funding sources include federal grants.

Fournier is excited about the possibilities for improving health assessments, informing therapy and improving outcomes for angina patients.

The washable Hexoskin shirt has a small device attached to it that records data. The information can be sent to a health professional via a charging station (no wifi is needed), and to the wearer’s smart phone or watch.

Just 18 months ago, Braze Mobility Inc. was in the proof-of-concept stage with its novel collision avoidance and feedback system for wheelchairs. Today, the startup is filling orders. “We’ve hit a lot of milestones in a short period of time,” says Dr. Pooja Viswanathan, CEO of the AGE-WELL-supported startup. Those milestones include testing the system with wheelchair users in Canada and the U.S., and securing manufacturers and distributors. Braze’s add-on system uses sensors to detect obstacles and provide feedback to the driver, transforming a regular wheelchair into a “smart” wheelchair.

The new product seems to be striking a chord. “Every time we attend an event in the U.S. or Canada, there is interest and it is translating into multiple orders,” says Dr. Viswanathan. Seeing the product get to market is deeply satisfying for Dr. Viswanathan, a postdoctoral fellow in computer science at the University of Toronto and an AGE-WELL HQP. “This system will help people to maintain independence, safe mobility and dignity,” she says. Those with visual-perceptual difficulties, including older adults with dementia, are often excluded from using powered wheelchairs.

Braze is readying for a busy Fall with an official product launch. The company has hired one of its interns as a full-time product manager and expects to bring more people on board in 2018.

Incubated at the University of Toronto’s Impact Centre, Braze’s other funders are the Ontario Brain Institute and Ontario Centres of Excellence. The company also captured cash prizes recently after coming first in the Power Play Pitch Competition at Toronto Rehab, and in a competition hosted by the Ontario Bioscience Innovation Organization.

Dr. Pooja Viswanathan, CEO of Braze Mobility Inc.
AGE-WELL-supported startups

WINERLIGHT LABS
Using technology to track Alzheimer's

It's not every day that a Toronto startup makes the big screen at Times Square. That's what happened in July 2016 when Liam Kaufman, CEO and co-founder of WinterLight Labs, won first prize at the AGE-WELL Pitch Competition.

Kaufman, who competed against nine teams from Canada and around the world, was chosen by a panel of judges for his pitch on the company's new technology that can monitor cognitive health through speech.

WinterLight Labs is getting a lot of attention for its tablet-based assessment tool that analyzes a person's natural speech to detect and monitor Alzheimer's disease and other cognitive disorders.

The tool records short samples of a person's speech as they describe a picture—even a family photo—on the screen. It extracts hundreds of variables, such as pitch, tone and choice of words from the samples, and produces results in under five minutes.

WinterLight was recently named as one of the top 10 most promising Toronto artificial intelligence startups, capping off a dizzying year for the AGE-WELL-supported company.

Last fall, WinterLight raised $500,000 in seed funding from Novatio Ventures. It also receives support from the Ontario Brain Institute and Ontario Centres of Excellence.

Liam Kaufman being interviewed by Fairchild TV

TESTIMONIAL

"By supporting startups, training young professionals, and investing in new ideas through the AGE-WELL-HACKING HEALTH ideathon competition, AGE-WELL is helping to address the socio-economic challenges of an aging population and move research into viable commercial products. This is in keeping with IBM Canada's strategy to incubate startups and drive innovation in the Canadian marketplace."

Sanjeev Gill, National Industry Executive for Research, IBM Canada

AGE-WELL ANNUAL REPORT 2016-2017

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AGE-WELL teamed up with the global initiative HACKING HEALTH last year to launch a first-of-its-kind national ideathon competition. The goal: to identify and invest in great new technologies and services to support healthy aging.

More than 300 people took part in local ideathons held in Toronto, Montreal, Halifax and Vancouver. Seven projects were selected by a panel of judges to proceed to the final round at AGE-WELL’s 3rd Annual Conference in Winnipeg on October 17-19, 2017.

The finalists will present solutions to assist with challenges such as memory loss, arthritis management, caregiver burden, hand tremor, online privacy, repositioning people with limited mobility, and gait changes in the elderly.

Competing at the grand finale for $75,000 in cash and in-kind services are:

- Carechair Solutions Inc.
- eTreat MD
- Heel2toe
- MyMem
- Steadiwear
- Tikit Care
- Who Sees What

Read more about the finalists at www.agewell-nce.ca.

“AGE-WELL and HACKING HEALTH share an interest in bringing people together to develop creative solutions to health-related challenges,” says Dr. Alex Mihailidis, scientific director of AGE-WELL. “The competition has produced some great ideas to support the independence, health and quality of life of older people, and to support their caregivers.”

Luc Sirois, managing director and co-founder of HACKING HEALTH, says the partnership and competition have brought together the tech and medical communities to “catalyze the innovation spirit.”

Generous sponsors of the national competition are: Bereskin & Parr and the Impact Centre. Local sponsors include: Aging 2.0 Local I Toronto; the Canadian Consortium on Neurodegeneration in Aging (CCNA); Desjardins; MaRS; MedStack; and MEDTEQ.

Local ideathons brought together people from different backgrounds—entrepreneurs, researchers, post-secondary students, older adults and caregivers—to work towards solutions that will produce social and economic benefits.

Dr. Andrew Sixsmith, scientific director, AGE-WELL; Mike Harcourt, AGE-WELL board chair; the Honourable Carla Qualtrough, then-Minister of Sport and Persons with Disabilities; and Dr. Alan Mackworth, University of British Columbia professor and AGE-WELL board member (from left to right).
At AGE-WELL, we believe that doing great science and creating real-world products can go hand-in-hand. AGE-WELL is transforming the culture of research in the field of technology and aging. We are creating a dynamic knowledge community through our transdisciplinary approach, innovation workshops, training program and the meaningful involvement of end-users, community and industry partners.

We have developed an “AGE-WELL way” of doing research that focuses on co-creation of technologies with older adults and caregivers involved in all stages of research. Our network is building capacity, advancing the state of science and bringing together talent from multiple disciplines and sectors. AGE-WELL supports the development of traditionally under-represented groups. We promote research involving Indigenous populations that is conducted by Indigenous investigators.

Our unique EPIC training program (Early Professionals, Inspired Careers), with 398 trainees, far exceeds what we had anticipated. The majority of our trainees are female, consistent with the slow and steady growth of women in STEM disciplines (science, technology, engineering and mathematics). In this chapter, you can read about the first group of highly qualified personnel (HQP) to receive their Innovators of Tomorrow Certificates.

AGE-WELL is now providing even more support for research through our new SIP Accelerator program, launched in 2017, and our enriched Catalyst Funding Program.

The AGE-WELL philosophy of co-creation led to a major new initiative in 2017. The first AGE-WELL National Innovation Hub was launched in Fredericton, New Brunswick. The first of its kind in Canada, the hub brings together local stakeholders to focus on Advancing Policies and Practices in Technology and Aging (see page 9).

One hundred and thirty-two trainees are the first to earn AGE-WELL Innovators of Tomorrow Certificates—a major step for emerging researchers and young professionals in their journey to become the next generation of leaders in the field of technology and aging.

“Congratulations to the trainees who have obtained these certificates, which demonstrate their transferable skills and comprehensive knowledge of the technology and aging field,” says Dr. Susan Jaglal, AGE-WELL’s crosscutting activity lead for training and mentorship.

“Part of AGE-WELL’s mandate is to train individuals who will produce social and economic benefits for Canada. It’s a phenomenal achievement for AGE-WELL to see so many trainees earn certificates.”

AGE-WELL has 398 funded and affiliate trainees, also called highly qualified personnel (HQP), in its EPIC training program—Early Professionals, Inspired Careers. EPIC trains HQP to be industry, academic and community leaders in the development and introduction of technology to the health system and marketplace. Some HQP are required to earn an Innovators of Tomorrow Certificate, while others have the option to do so. They must complete a set number of activities within a calendar year.

continued on next page
AGE-WELL's first Innovators of Tomorrow continued

For Dr. Alexander Moreno, a psychologist/neuropsychologist and then-postdoctoral fellow at McGill University, a key activity involved a trip to Chile to attend the 3rd International Summer School on Aging at the University of Chile. Along with workshops and field visits, he worked with others to create a new innovation: a smart phone application designed to ease the isolation sometimes felt by older adults. Dr. Moreno is now a lecturer at the Université du Québec à Montréal, and still involved with AGE-WELL projects.

There will be jobs in academia for about 25 per cent of trainees, while 75 per cent will seek careers in industry, non-profits and government, says Dr. Jaglal, who holds the Toronto Rehabilitation Institute Chair at the University of Toronto. “By being associated with a network like AGE-WELL, you get to rub shoulders with industry leaders as well as policymakers, and experience what a job in those environments would entail.”

The group of 132 certificate recipients includes postdoctoral fellows, doctoral candidates, master’s students, undergraduate students, research assistants, research associates and clinicians from more than 20 institutions in six Canadian provinces. Their areas of specialty span engineering, computer science, rehabilitation science, education and social sciences.

To earn an Innovators of Tomorrow Certificate, trainees engage in a variety of activities including internships, exchanges, online courses, workshops, journal clubs, collaboration and mentorship within AGE-WELL and a maximum of three approved activities outside of the network.

Activities must fall into four core competency areas including knowledge and technology exchange and exploitation, transdisciplinary research skills, ethics and understanding impact.

Most of the new certificate holders will actively continue with AGE-WELL while pursuing degrees or fellowships. Those who complete the training program and their academic goals are encouraged to remain involved in the network.

That’s exactly what Dr. Alexandra König is doing—all the way from Nice, France. Dr. König, who is originally from Germany but studied in Canada and the Netherlands, is a neuropsychologist with a special interest in technology and dementia. She did her AGE-WELL-funded postdoctoral fellowship at the University of Waterloo.

Dr. König recently started work as a clinical researcher at the Université Nice Sophia Antipolis and its teaching hospital. She is also working for a company that develops serious games for education and training, and is expanding into health care working with the older population.

In addition, Dr. König will be collaborating on projects with teams from AGE-WELL. “My goal after leaving Canada is to stay connected with AGE-WELL,” she says.

Dr. Ayse Kuspinar is already putting her experience as an AGE-WELL trainee to work in her new position as assistant professor of physiotherapy in the School of Rehabilitation Science at McMaster University.

“My job involves teaching and research. Despite the many advantages of technology in physiotherapy practice, it is still underutilized. I hope as a clinician-scientist to play a role in improving that,” she says. She also plans to keep a focus on research in aging and technology.

Dr. Kuspinar was among the first group of trainees to earn AGE-WELL’s Innovators of Tomorrow Certificate. Taking part in AGE-WELL’s EPIC training program, as an HQP, was essential preparation for her first position in academia, she says.

“It was an excellent experience,” says Dr. Kuspinar, who did her postdoctoral fellowship at the University of Waterloo on an AGE-WELL project looking at barriers and facilitators of using health technology with older adults.

She also served as president of the AGE-WELL HQP Advisory Committee. “Being president helped me develop my leadership, communication and networking skills. That was a big learning opportunity for me.”

TESTIMONIAL

“The work of AGE-WELL researchers has led me to believe that, within my lifetime, the best solutions for improving the quality of life of older adults with dementia are not going to come from medical sciences but from engineering and technology development.”

Dr. Thomas Hadjistavropoulos, AGE-WELL Investigator & Research Chair in Aging and Health, University of Regina

HQP Profiles

Dr. Ayse Kuspinar

Dr. Patrick Plante’s role as an AGE-WELL HQP doing postdoctoral work in digital educational games for older people proved to be the perfect launch pad for his new career as professor and researcher at TELUQ University, North America’s only French-language distance education university.

“At TELUQ University, I was asked to teach a number of courses in educational games. If not for AGE-WELL, I don’t think I would be working in this area. It gave me a solid understanding of educational games, theoretically and technically,” says Dr. Plante.

As an HQP, Dr. Plante, who holds a PhD in educational technology from Université Laval, was part of an AGE-WELL research team that developed digital games to promote social connectedness, improved cognition, learning and entertainment for older adults.

When he was offered the job at TELUQ University in 2016, he continued on with the AGE-WELL team by transitioning from an HQP to a research associate. Dr. Plante played a pivotal role in the development and commercialization of Solitaire Quiz, and he continues to work on other digital games including Tic Tac Quiz [see page 17].

Dr. Plante conducts research with TELUQ University on digital educational games for a younger audience, and serves as research director of SAVIE Public Research Centre, which focuses on educational technology and life-long learning. He is also involved in studies for the Canadian Frailty Network, another of the country’s Networks of Centres of Excellence.

Dr. Patrick Plante

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AGE-WELL Summer Institute 2017

Shediac, New Brunswick was the picturesque setting for the 2nd AGE-WELL Summer Institute, a dynamic week-long training event. Eighteen trainees from across Canada participated in the week of workshops, lectures and activities on participatory, user-centred design. This year’s theme was Co-Creating Possibilities: Physical Fitness to Avoid Frailty. Trainees worked closely with expert mentors and developed solutions to facilitate physical fitness and healthy aging to avoid frailty.

Teams worked tirelessly to define a problem, develop a solution, address project elements from prototyping to commercialization, and plan a short pitch presentation.

Team Mouvable won the pitch competition for designing interactive digital gaming surfaces for older adults to encourage more physical activity and social engagement in their daily lives.

Innovation is a complex process and AGE-WELL is addressing the challenges in multiple ways. One is the AGE-WELL Innovation Workshops, a new initiative launched in 2016. Almost 200 network researchers and trainees attended these regional workshops, held in Vancouver, Edmonton, Toronto, Montreal and Halifax. The full-day sessions are designed to support AGE-WELL projects in technology commercialization and transdisciplinary working. They are catching attention outside Canada as well. AGE-WELL Innovation Workshops have been conducted in Marseille, France and Santiago, Chile. A second series is now underway for AGE-WELL members, with a focus on helping researchers and trainees to integrate knowledge mobilization and commercialization into their research plans—a key network priority.

“Wow, this is life-changing! Thank you so much for granting me this award to build experience and work with other top labs, institutes and clinics in this dynamic field of rehabilitation. I’ll make the most of it.”

Aaron Yurkewich, AGE-WELL trainee and PhD student, Biomedical Engineering, University of Toronto
Conference spotlights robust research and innovation program

AGE-WELL’s 2nd Annual Conference & AGM attracted more than 300 researchers, trainees, older adults, caregivers and partners from industry, government and the community who share a goal: to enhance the lives of older adults and caregivers. Held in Montreal in October 2016, the conference showcased research projects from across the network, explored hot topics in technology and aging, and provided a forum for networking and collaboration.

Forty-one AGE-WELL trainees delivered fast-paced presentations on their research. Pictured above, from left to right: Sébastien Laniel (Université de Sherbrooke), Dr. Jyoti Joshi (University of Waterloo) and Joash Sujan Samuel Roy (Ryerson University).

Best Demo Award went to CoPILOT, a remote control technology that can be used for training people to use powered wheelchairs.

Best Poster Award was given to a presentation on a computer vision-based system that analyzes facial expression to detect pain in older adults with dementia.

From left to right: PhD candidate Emma Smith (University of British Columbia) is presented with Best Demo Award by Dr. Kim van Schooten, then-member, HQP Advisory Committee and postdoctoral fellow (Simon Fraser University), and Barbara Stymiest, vice-chair, AGE-WELL Board of Directors.

AGE-WELL 2016 included panels on intellectual property (IP), policy and entrepreneurship. Above, a policy panel discussion with Shelagh Maloney, vice president, Consumer Health, Communications and Evaluation Services, Canada Health Infoway and Steven Hart (centre), assistant deputy minister, Seniors and Long-Term Care, New Brunswick, moderated by Dr. Don Jużwischin, director, Health Technology and Innovation, Alberta Health Services.

Right: Dr. James Barlow, professor of Technology and Innovation Management (Healthcare) at Imperial College Business School in the UK, gave a thought-provoking keynote speech on innovation, technology and the “built infrastructure” for health.

AGE-WELL 2016 put a spotlight on an extraordinary range of research, and was an important opportunity for knowledge exchange.

Generous sponsors of AGE-WELL 2016 were: Alzheimer Society of Canada, Canadian Association on Gerontology, Gilbrea Centre for Studies in Aging, MEDTEQ, Ontario Brain Institute, Revera, Toronto Rehab Foundation, Uber and VHA Home HealthCare.

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Research and innovation in the area of technology and aging is a global enterprise. In its first two years, AGE-WELL has already established itself at the forefront of this field. We are well on the way to making Canada an international leader in the development of technologies for healthy aging.

AGE-WELL investigators regularly reach out beyond our borders. For example, Dr. Hélène Pigot of the Université de Sherbrooke is working with a national centre in France to test a new system designed to prevent night wandering in people with Alzheimer’s. Another AGE-WELL investigator, Dr. Judith Sixsmith of the University of Dundee, is doing fascinating work in Chile (see page 47).

Last year, AGE-WELL celebrated a major international honour for one of our network members. AGE-WELL investigator Dr. Rosalie Wang was named “One of 25 Women in Robotics You Need to Know About” for 2016. The annual list, compiled by Robohub, showcases women working in research, development and commercialization of robots.

As a network, AGE-WELL is involved in a growing number of international partnerships and research collaborations. Last year, we partnered with the Global Council on Alzheimer’s Disease (GCAD), a cross-sector group of Alzheimer’s experts, to co-author a paper about opportunities for technology in Alzheimer’s disease. AGE-WELL scientific director Dr. Alex Mihailidis served as a reviewer on the World Economic Forum’s final aging and technology report.

We also engage in international leadership activities and advisory roles, and network on a global scale. AGE-WELL was thrilled to co-lead the planning of the first-ever Technology and Aging Track at the International Association of Gerontology and Geriatrics (IAGG) World Conference in San Francisco in July 2017. This one-day event brought together leading companies, gerontologists and entrepreneurs engaged in developing solutions to improve the lives and wellbeing of older adults.

Aging is a worldwide issue, and developing solutions for older people is crucial to the world. AGE-WELL is rising to this challenge. Worldwide, more and more people recognize AGE-WELL and the work we are doing to support healthy aging everywhere.
AGE-WELL on the global stage

It has been an extraordinary year for international engagement. Some examples:

AGE-WELL participated in the 2017 BIO International Convention in San Diego, California, with both scientific director Dr. Alex Mihailidis and WinterLight Labs, a startup supported by AGE-WELL, attending. The largest global event for the biotechnology industry, BIO 2017 attracted over 16,000 attendees from 74 countries. AGE-WELL was invited by the Ontario government to participate in the Ontario Pavilion during the convention.

In August 2016, AGE-WELL investigator Dr. Joon Lee was one of four Ontario scientists who visited China as part of the Ontario-China Young Scientist Exchange Program, giving seminars at three Chinese institutions and reporting on AGE-WELL projects. Dr. Lee is an assistant professor in the School of Public Health and Health Systems at the University of Waterloo.

AGE-WELL was pleased to partner once again with the Canadian Institutes of Health Research (CIHR) to provide a major international funding opportunity for Canadian researchers through the European Commission’s 2017 Active and Assisted Living (AAL) Programme. The AAL’s overall objective is to enhance the quality of life of older adults while strengthening the industrial base in Europe through the use of information and communication technology (ICT).

As part of a new Canada-France collaboration, AGE-WELL is co-organizing a major international conference in Europe on innovation, funded by the French Ministries of Industry and Research. A large grant application is also underway. Both activities build on a 2016 agreement between Simon Fraser University, the City of Surrey and France’s Société d’Accélération du Transfert de Technologies (SATT Grand Centre), which AGE-WELL helped to bring about.

At age 22, Mackenzie Martin is casting a wide net in the hope that one day her research will improve the lives of aging populations in Canada and around the world.

In the summer of 2016, the AGE-WELL trainee travelled to the Netherlands for a “life-changing” experience. Her destination: De Hogeweyk, a village for people with dementia. Martin conducted her own study on the role of design in dementia care at the fully enclosed, publicly-accessible village.

“Visiting the village, interacting with persons with dementia and conducting research in the field has fueled my passion for research on aging to heights I had not anticipated,” says Martin, who is pursuing a combined Bachelor of Science in Human Ecology and Bachelor of Education (Secondary) from the University of Alberta.

This past summer, Martin was in Kobe, Japan for an internship at the World Health Organization Centre for Health Development. While in Kobe, she carried out a literature search on the impact of different family living situations on the health of older adults.

“AGE-WELL has become an important driving force for Canadians to benefit from the most relevant and cost-efficient technology in support of optimal health and wellness in aging. AGE-WELL is doing so by bringing together researchers and stakeholders from all horizons, in Canada and internationally, and by synergizing with CIHR’s eHealth Innovations strategy.”

Dr. Yves Joanette, Scientific Director, Canadian Institutes of Health Research, Institute of Aging

Mackenzie Martin visiting De Hogeweyk dementia village in the Netherlands.
AGE-WELL research projects are organized into eight Workpackages, supported by four Crosscutting Activities: knowledge mobilization; commercialization and technology transfer; transdisciplinary working; and training and mentorship.

**WP 1: NEEDS-OA**
Understanding the Needs of Older Adults
To most effectively harness the power of technology and translate it into practical solutions, it is crucial that the people who will be using it are consulted and fully involved from the early stages right through product testing and marketing. NEEDS-OA is centered on understanding the needs of older adults related to technology, and on developing tools to include them in technology development.

**WP 2: NEEDS-CG**
Understanding the Needs of Caregivers
Family caregivers are critical to the health and support of older people. The aim of NEEDS-CG is to gain greater insight into how to better support caregivers. The goal is to support the development of novel technologies that can provide more effective and efficient care, reduce the burdens and consequences of care, and also enhance the quality of life of caregivers. We are developing strategies to assist caregivers in making more informed decisions on the selection of technologies.

**WP 3: TECH-FAI**
Technology for Supporting Functional Autonomy and Independence
Approximately one-quarter of Canadian seniors report having some kind of physical, cognitive or sensory impairment that affects their ability to perform common activities of daily living. TECH-FAI research focuses on two areas: technologies that can support older adults in the home and community with cognitive tasks, and technologies that address physical impairments and disabilities faced by older adults that often severely restrict their mobility and ability to remain independent.

**WP 4: TECH-APS**
Technology for Active Participation in Society
Social interaction and support are consistently identified as key aspects of seniors’ quality of life. Lack of communication has been shown to lead to isolation and loneliness, which can result in problems such as depression and cognitive decline for older adults. TECH-APS explores novel technologies that encourage and enable greater social interaction for older adults, and support social participation, including technologies for collaborative play, learning and knowledge sharing.

**WP 5: TECH-DD**
Technology for Reduction and Prevention of Disease and Disability
Chronic conditions such as cardiovascular diseases, diabetes or physical injuries due to falls and other accidents have significant costs for people, the health-care system and the Canadian economy. However, close monitoring of chronic conditions can significantly reduce their effects. In addition, regular activity and exercise in older adults is associated with an overall improvement in health, functional capacity, quality of life and independence. TECH-DD is producing technologies and tools that will help to actively engage older adults in society.

**WP 6: TECH-MCH**
Technology for Maintaining Good Mental and Cognitive Health
Currently, 747,000 Canadians have some type of cognitive impairment, including dementia. This number is expected to double to 1.4 million by 2031. Furthermore, 20 per cent of Canadian seniors are living with a mental illness, anxiety and depression. Pain tends to be under-reported and not treated, resulting in agitation and aggression, while mood disorders often go untreated. TECH-MCH will result in new technologies in an area that has been largely ignored in the technology and aging field.

**WP 7: POLICY-TECH**
Health Systems, Practice, Policy and Regulatory Issues
While technological innovation offers tremendous new opportunities, there are challenges in relation to policy, regulation and decision-making in the care of older persons. It is also important to understand how different sectors and stakeholders can work together to develop innovative solutions. POLICY-TECH will deliver in-depth information that will be crucial for AGE-WELL partners as they attempt to bring new technologies and tools to the market. The research will also drive new health-care policies.

**WP 8: ETHICS-TECH**
Ethical, Cultural and Social Aspects of Technology
The use of new and advanced technologies in the care and support of older adults poses significant social and ethical questions, particularly in areas such as robotics, artificial intelligence and sensors that collect potentially sensitive data. ETHICS-TECH is developing advice and methodology to address these concerns and promote ethical practices in the development and deployment of technology.

For more details, visit: www.agewell-nce.ca
STATEMENT OF FINANCIAL POSITION
AGE-WELL NCE Inc.

As at March 31, 2017

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On behalf of the Board:

Director

Please refer to the audited financial statements on the AGE-WELL NCE website: www.agewell-nce.ca
Network Community
as of September 2017

Member Universities and Research Centres

Baycrest Centre for Geriatric Care
Bruyère Research Institute
Carleton University
Centre de recherche de l’Institut universitaire de gériatrie de Montréal [CRIUGM]
Dalhousie University
First Nations University of Canada
George Brown College
Health Sciences North Research Institute
Laurentian University
McGill University
McMaster University
Montreal Heart Institute
Ontario Shores Centre for Mental Health Sciences
Ryerson University
Simon Fraser University
Sunnybrook Research Institute
TELUQ – Université du Québec
The Research Institute of the McGill University Health Centre
Université de Montréal
Université de Sherbrooke
Université Laval
University Health Network
University of Alberta
University of British Columbia
University of Calgary
University of Guelph
University of Manitoba
University of New Brunswick
University of Northern British Columbia
University of Ottawa
University of Regina
University of Saskatchewan
University of Toronto
University of Victoria
University of Waterloo
University of Western Ontario
Wilfrid Laurier University

Partners

G-Harmonics
Abbvie
ACM, Kochi University
Active and Assisted Living [AAL]
ADL Smartcare
Aerial Technologies Inc.
AHS- Glenrose
Alberta Health
Alberta Health Continuing Care
Alberta Health Services
Alberta Health Services [Innovation and Research Operations]
Alberta Health Services [Strategic Clinical Network - Robertson]
Algonquin College
Almage Senior Community Centre
Alzheimer Society of Canada
Alzheimer Society of Ontario
Alzheimer Society of Alberta and Northwest Territories
Ambient Assisted Living [AAL]
Amintro
Annapolis Valley Health
Art Institute of Vancouver
Atlantic Institute on Aging
Atwater Library and Computer Centre
Aunege
Aurora-Newmarket Family Health Team
Baptist Housing
Barrie and Community Family Health Team
Baycrest
Baycrest Centre for Learning Research and Innovation
Belmont House
Bereskin & Parr
Blackberry
Boston Scientific
Breton Ability Centre
British Columbia Care Providers Association
Bruyère Academic Medical Organization Incentive Fund
Burnaby Multicultural Society
Burnaby Hospital Foundation
Burnaby Village Museum
CADA - [Canadian Assistive Devices Association]
Cambridge Brain Sciences
Canadian Association on Gerontology
Canadian Frailty Network [CFN]
Canadian Homecare Association
Canadian Occupational Therapy Foundation [COTF]
CanAssist
CANES Community Care
Career Learning Network - University of Toronto
Caregiver Crosswalk Inc.
Caregiver Omnimedia Inc.
CCS Collective Community Service - 50+ Club
CEFRO
Centre de réadaptation Lucie-Brunneau
Centre de recherche de l’Institut universitaire de gériatrie de Montréal [CRIUGM] – Université de Montréal
Centre de recherche sur le vieillissement
Centre de santé et de services sociaux de la Montagne [CSSS-DLM]
Centre de santé et de services sociaux de la Montagne [CSSS-DE] de l’Énergie
Centre for Addiction and Mental Health [CAMH]
Centre for Assistive Technology and Connected Healthcare [CATCH], University of Sheffield
Centre for Digital Media
Centre for Education and Research on Aging & Health [CERAH] – Lakehead University
Centre for Interdisciplinary Research in Rehabilitation of Greater Montreal [CIRIR]
Centre for International Research on Care, Labour and Equalities [CIRCLE]
Centre Interdisciplinaire de recherche en réadaptation et intégration sociale [CIRIRIS] – Université Laval
Centre on Aging, University of Manitoba
Centre on Aging, University of Victoria
Centre Universitaire Jean-François
Century Group
Champlain Community Care Access Centre
Chartwell Retirement Residences
Christie Gardens Apartments and Care
Circle of Care
Partners (continued)

City of Surrey
Clearpath Robotics Inc.
Communitech
ComSanté, Université du Québec à Montréal
Contactivity Seniors Centre
CrossWing Inc.
Cummings Jewish Centre for Seniors
Delmanor Wynford retirement home
Delta View Life Enrichment Centre
Department of Occupational Therapy, University of Alberta
Emmetros Limited
Employers for Carers UK
Employment and Social Development Canada
ENGAGE Biomechanics Inc.
Episodic Disabilities Network
Expert-Conseil Qualitas
Extendicare
famil.net
Fraser Health
GeronTech LTD
GF Strong Rehabilitation Centre
Gilbrea Centre for Studies in Aging – McMaster University
Glennon Rehabilitation Hospital
GRAND
HACKING HEALTH
Heuristext
Hexoskin
Hoskin Scientific [Tekscan]
IBM
ICOT - University of Toronto Mississauga
i-Edit
Innovation Saskatchewan/University of Regina
Institut de réadaptation Gingras-Lindsay de Montréal
Institut sur le vieillissement et la participation sociale des aînés (IVPSA) – Université Laval
Institut de réadaptation Gingras-Lindsay de Montréal
INTEGR - Institut interdisciplinaire d'innovation technologique (3IT)
Island Health
JINS MEME / JIN CO.,LTD.
LG Health Solutions Inc.
Keebee
Kerrisdale Community Centre
Killam Trust [through UoA FGSR]
Kinova
Kiwanis
Lakeside Long-Term Care Centre
Lawson Health Research Institute, University of Western Ontario
Ludoscience
Manitoba Caregivers Association
Manitoba Health, Seniors and Active Living
March of Dimes Canada
Mavencare
McGill Community for Lifelong Learning
McMaster Health Forum
MDA Space Missions
MEDTEQ
Memory and Company
Microsoft Corporation
Mindful Scientific
Mircom
Mitacs
Mobisafe System
Montreal’s Jewish Rehabilitation Hospital
Mount Pleasant Neighbourhood House
Multidimensional
Myant
Nak’azdli Health Centre
National Association of Federal Retirees
National Initiative for the Care of the Elderly [NICE]
NeuroDevNet NCE
New Brunswick Health Research Foundation
New Hope Senior Citizen Centre
New Vista Society
North Toronto Health Link
Northumberland Partners Advancing Transitions in Healthcare (PATH) Project
Nova Scotia Centre on Aging - Mount Saint Vincent University
Ontario Brain Institute
Ontario Centres of Excellence
Ontario Community Support Association
Ontario Dementia Advisory Group (ODAG)
Ontario Ministry of Health and Long-Term Care
Ontario Ministry of Research, Innovation and Science
Ontario Telemedicine Network (OTN)
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PhysioAtlas
Point Grey
Port Moody Heritage Society
Proximify/Uniweb
Quanser
Quillsalt
RecapHealth Ventures
Regina Qu’Appelle Health Authority
Regroupement des aidantes et aidants naturels de Montréal (RAANM)
Research in Aging- Schlegel, UWaterloo, Conestoga Retirement Concepts
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Rick Hansen Institute (RHI)
Royal Ottawa
Royal Ottawa Health Care Group
RQ Health Authority
Ryerson University
Safetracks
Saint Elizabeth Health Care
Saskatchewan Ministry of Health, Community Care Branch
SAGE
Schlegel-University of Waterloo Research Institute for Aging (RIA)
Semaphore Lab
Seniors Care Network
Seniors Health Knowledge Network
Sensimat Systems Inc.
Semark
Sheridan Centre for Elder Research
Silver Harbour
Simon Fraser University
SIR2N Partners Inc.
Southern Ontario Smart Computing Innovation Platform
(SOSICIP)
St. Antoine 50+ Community Centre
Steadiewear
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as of September 2017
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