Aging 2.0 Grand Challenges is a global initiative to drive collaboration around the biggest challenges and opportunities in Aging.

8 Grand Challenges

INNOVATION PRIORITIES FOR AGING 2.0 COMMUNITY

- Topics identified from 6 years of bottom-up and top-down dialogue with stakeholders from across Aging 2.0’s interdisciplinary, intergenerational, international community of older adults, senior care providers, thought-leaders and entrepreneurs.
Ageism and outdated social norms have led many older adults in both rural and urban communities to feel isolated and marginalised. Helping older adults get and stay meaningfully engaged is critical for their health and the health of our communities. New and creative ways are needed to not only tap into their wisdom but also provide opportunities for lifelong learning and meaningful engagement across the lifespan.
Despite the majority of older adults stating a preference to age in place, “one third of people over the age of 65 need assistance with at least one activity of daily living (e.g. eating, bathing, dressing)”. Products and services are needed to not only support older adults basic daily activities, but also to foster and support their ability to thrive, pursue their passions and engage with their chosen lifestyle.
Grand Challenges (3)

The healthcare journey can be particularly complex and fragmented for older adults, two-thirds of whom have at least two chronic conditions. With three-quarters of global healthcare spending going to chronic care management, families and payers are aligned in their desire to care for people in the least restrictive most cost-effective setting possible. Families and providers need new tools and care models to support care transitions, clinical collaboration, medication management, population health management and remote care delivery.
Grand Challenges (4)

Maximising cognitive ability and brain health is increasingly a priority for ageing societies as the number of people with cognitive limitations and mental health issues continue to rise. New approaches, tools and services are needed to increase awareness, reduce stigma, improve prediction, speed diagnosis, enhance treatment and support caregivers.
Grand Challenges (5)

Care for older adults is provided by informal and formal caregivers, both of which increasingly care for people with high levels of acuity and complex conditions. Family caregivers - who are often juggling other family and work responsibilities while living remotely from the care recipient - need better support, training resources and tools to support their loved ones and themselves. On the professional side, staff shortages and quality concerns require new solutions to help attract, train, develop and leverage scarce human capital.
Grand Challenges (6)

Everyday objects, homes and communities not originally designed with longevity in mind, often become obstacles to movement, safety, independence and socialising. With safety and mobility continuing to be top priorities for older adults, there is a need for products, programmes and services that enable people to maximise their safety, strength, balance, fitness, independence and mobility as they age.
People are living longer and traditional models of work and retirement have not kept pace. To finance this increasing longevity, we need to provide new opportunities for later life employment, new models for planning for and financing care as well as better ways of prevents scams and frauds.
Death is inevitable, but that doesn’t seem to make it any easier to prepare for. Far too often, the way people experience the end of life fails to honour how they have lived their lives. Better health outcomes, high quality and cost-responsible care – can and should exist in tandem. By leveraging emergent technologies and encouraging collaborations, we can expand the range of possibilities for the end of life experience.
## Roadmap...

<table>
<thead>
<tr>
<th>Activities</th>
<th>Timescale</th>
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</thead>
<tbody>
<tr>
<td>Establish the Cluster</td>
<td>Dec 2018</td>
</tr>
<tr>
<td>Identify Vision, Impacts, Priorities</td>
<td>Feb 2019</td>
</tr>
<tr>
<td>Key Challenge Areas for Collaboration</td>
<td>April 2019</td>
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<tr>
<td>Leads/groups to explore challenges &amp; scope approach</td>
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<tr>
<td>Initiate &amp; develop propositions collaboratively</td>
<td></td>
</tr>
<tr>
<td>Identify funding opportunities &amp; timelines</td>
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<tr>
<td>Host challenge competitions/Bid submissions</td>
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<tr>
<td>Implementation</td>
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<tr>
<td>Learn &amp; Share</td>
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Progress some of these concurrently?
WHO definition of Healthy Ageing: “the process of developing and maintaining functional ability that enables wellbeing in older age”

This includes a person’s ability to;
• meet their basic needs
• learn, grow and make decisions
• be mobile;
• build & maintain relationships
• contribute to society
Healthy Ageing Innovation Cluster

**Purpose**
- Collective of shared interest - expertise and skills
- Share information and support knowledge exchange
- Seek & solve demand led challenges
- Host challenge competitions
- Identify funding opportunities
- Build Collaborations

**Activities**
- Current focus on anticipated IUK Grand Challenges – Healthy Ageing but many other funding sources
- Identify key priorities and collaboration opportunities

Facilitated by.....
HAI Cluster Membership – Feb 2019

Number of Cluster Members

- Academic: 33 members
- Industry: 42 members
- Local Authority: 18 members
- NHS: 7 members
- Other: 27 members

Total Members: 127
Healthy Ageing Innovation Cluster

• Discussion Session (Feb 2019)

• Vision & Impact – what difference are we trying to make collectively?
• Priorities – what are our key collaboration opportunities?
• Connecting & Integrating – what useful existing assets/links with other activities & organisations?
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<th>KNOWLEDGE EXCHANGE</th>
<th>JOINT DEVELOPMENTS</th>
<th>RESEARCH &amp; METHODS</th>
<th>SKILLS &amp; CAPABILITIES</th>
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<tr>
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<td><strong>Shared Focus on Specific Conditions/Challenges</strong></td>
<td><strong>Prevention</strong></td>
<td><strong>Skills &amp; Training</strong></td>
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<td>• Better adoption at earlier stage in life?</td>
<td><strong>Business Models for Scotland</strong></td>
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<td>• Team Scotland Approach</td>
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<tr>
<td><strong>Awareness of Technology</strong></td>
<td><strong>Support Independent Living</strong></td>
<td><strong>Evidence Impact</strong></td>
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</tr>
<tr>
<td>• Consumer Technology</td>
<td>• Transport</td>
<td>• Health Economics</td>
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<tr>
<td>• Keeping pace with a fast moving market</td>
<td>• Housing</td>
<td>• Methodologies</td>
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<tr>
<td>• Build Trust to Share</td>
<td>• Supporting people to work longer</td>
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<td>• Reducing inequalities</td>
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<td></td>
<td><strong>Develop</strong></td>
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**KNOWLEDGE EXCHANGE**

- **Awareness of Policy & Guidance**
  - Scottish & UK Government – Policy Direction
  - Relevant Strategic Guidance & Best Practice
  - Team Scotland Approach

- **Awareness of Technology**
  - Consumer Technology
  - Keeping pace with a fast moving market
  - Build Trust to Share

- **Identify Funding Opportunities**
One Test Bed Scotland

Innovation, Commercialisation, Translation, Adoption

Investment, Acceleration, Growth, Sustainability
Test Bed Function

Provide real-word explorations/partnerships, providing advice/testing ‘combinatorial’ innovation (new combinations of products and processes) aiming to improve patient/citizen outcomes at the same or less cost than current practice; whilst supporting economic growth.
ACTIVITY

• Supply led Innovations- Procurement Accelerator, Health Inr Partnerships, Supplier Feedback Forums, Academic Translation, Enterprise sponsored Inward Investments etc

• Demand Led Innovations- SBRI, Hackathons, Innovation Partnership, Open Innovation Projects

• Internal Innovations- SHIL, Innovation Hubs, Health and Social Care Partnership Award Schemes, Clinical Entrepreneurs etc

• Investment Incentivised Innovations- Banks, UK Industrial Strategy Funds, Investor Led, City Deal etc

OFTEN CROSS OVER
Industrial Strategy Challenge Fund

- **Ageing Society**
  - Leading-edge healthcare (inc. medicines manufacturing)
  - Data to early diagnosis and precision medicine
  - Healthy ageing
  - Accelerating detection of disease

- **AI and Data Economy**
  - National Satellite Test Facility
  - Audience of the future
  - Quantum technologies
  - Next generation services
  - Made smarter

- **Future of mobility**
  - Self-driving vehicles
  - Manufacturing and materials of the future
  - Faraday battery challenge
  - Robots for a safer world
  - Driving the electric revolution
  - Future flight

- **Clean growth**
  - Energy revolution
  - Transforming construction
  - Transforming food production
  - Industrial decarbonisation
  - Smart sustainable plastic packaging
  - Transforming Foundation Industries
Example: NHS Greater Glasgow and Clyde COPD
AI and Diagnostics

iCAIRD
Industrial Innovation in Artificial Intelligence and Digital Diagnostics

28 February 2019

PHILIPS  Canon
HEALTH AND SOCIAL CARE CATALYST-
Demand Led Innovation Programme
Examples

I. Diabetes and data enabled in patient care
II. Mental Health AI and triage
III. COPD AI Upscaling
IV. Trauma Network and Ambulance data
V. Create Scotland’s Command Centre-Flow
VI. Osteoporosis and DEXA scan data
VII. Falls and Overnight Care
VIII. Pathology Image matching automation
IX. AI and Fracture SBRI
X. Kidney Cancer and Precision Treatments
Next Generation Service for Healthy Ageing

Our aim is to extend healthy independence through delivering new digitally enabled service models addressing key issues such as:

- Frailty
- Long term conditions
- Co-morbidities
- Loneliness

We will do this by developing:

1. Blue print for a proactive, personalised, predictive Healthy Ageing service model

2. Foundation for advanced healthy ageing analytics

3. Accelerated market access for SME products
New service model which brings the whole network together

The connectivity of IP has the power to deliver a wide range of possibilities within Independent living – for users, choosers and formal and informal carers.

There is growing consumer interest in health and well being applications and services.

Business models are changing with data as the crucial element rather than hardware of software products.
Common Challenges of Ageing

**Challenges?**

- Loneliness
- Fitness & Physical – muscle degeneration
- Medication adherence / reviews & management
- Nutrition and Hydration
- Frequent Infections – Eg UTI’s
- Cognitive Impairment
- Poor Sleep
- Accessible Home
- Personal Security
- Co-morbidities/chronic health conditions

**Potential Solutions?**

- Social Connections & Activities
- Rehabilitation / Virtual Coaching / Exercise Groups
- Video Reviews / Automated Dispensing
- ADL / Weight Management / BMI
- ADL/ Temperature Management
- ADL/ Safer Walking Tech
- Wearables / Apps
- Smartlocks / Video Calls/panic alarm/Hive/Ring
- Home & Mobile Health Monitoring

*Research opportunity to refine focus?*
Next Generation Service Model
personalised, proactive & preventative care

Services at home/in community:
• Extensive environmental and personal IoT sensors (inc. wearables)
• Real Time monitoring to define activity patterns and increased predictive capabilities
• Enhanced menu of services for choosers, users & carers – see discussion point slide
• Safe walking with geolocation

Wellbeing Programmes (Consumer overlay)
• Calendars and Personal Reminders
• ‘Vincles’ Program – Social & Community Connections
• Life & Fitness Coaching (Relaxation)
• Cognitive Gameification
• Nutritious & Balanced Fresh Food
• Digital Inclusion & Skills Programme

Care programmes (State commissioned)
• Active and Healthy Aging Promotion Program
• Processes and protocols for integrated health and care pathways e.g. falls
• Programs of early detection and prevention of cognitive impairment. Tele Stimulation
• Physical and functional tele-rehabilitation
• Telemonitoring programmes for people with chronic diseases
• Carers assessment & support programmes
• Specialist Skillsets:
  • Psychosocial care program ?? Such as??
  • Abuse prevention.
  • Suicide prevention.
  • Contingency and major disaster management
Integrated and accelerated marketplace

Digital Product/Services

Demo, Simulate, Integrate

Service Delivery Test Beds

New Service Model

Business Modelling, Citizen Engagement & Real World Evidence
Neighbourhoods of the Future

2019

Creating a brighter future for our older selves
THE CHALLENGE

In an ideal world, what could our homes and neighbourhoods look like in ten to twenty years’ time? What should we be doing now to disrupt the status quo and make this vision a reality?
‘Our ambition, as a collective, is to build a prototype Neighbourhood of the Future.’

Bimlendra Jha
Chief Executive Officer, Tata Steel UK
Do I really want to die before I get old?
Multigenerational Housing is the future
Modern methods of construction
Platform design has transformed the automotive industry – Could it do the same for housing?
Mobility
Health + Care
Technology
Thank you

Neighbourhoods of the Future 2019
AAA Congress May 14/15 London
Ian Spero
ian@agileageing.org
Overview

• Context
• Regulation and compliance
• Policy priorities
• Challenges
• Opportunities
2017 Housing tenure

- Owner Occupied, 58%
- Private Rent, 19%
- Local Authority, 12%
- Housing Association, 11%
2017 Housing stock by tenure, age and property type
2017 Housing tenure by households
2017 – Scottish House Conditions Survey

11% of fuel poor households are families

Seven out of ten fuel poor households live in houses

- Older Families: 51%
- Other households: 37%

- 31%
- 69%
Context for ageing population

• More likely to live in owner occupation without a mortgage
  • Asset rich, but capacity to increase income limited/non-existent

• More likely to live in a house over 30 years old
  • Consideration to how fit for purpose their home is in terms of accessibility, size and manageability

• More likely to experience fuel poverty
  • Ex-Right to Buy especially problematic as many did not have capital to make improvements since purchasing
# Regulation and compliance

**Owner occupied**
- Building standards
- Planning requirements
- New build or renovations only

**Private rented**
- Registration of landlords
- Registration of letting agents
- Licencing of Homes in Multiple Occupation
- Energy efficiency standards
- Tolerable (habitable) standard

**Social rented**
- Housing Regulator
- Care Inspectorate
- Office of Charities Regulator
- Housing for Varying Needs (new build) Standards
- Scottish Housing Quality Standard
- Energy efficiency standards
- Gas safety compliance
- Electrical safety compliance
- Fire Safety compliance
- Scottish Social Housing Charter
- Homelessness responsibilities
- Tenant Participation
- Public Protection
- Procurement
- Equality & Human Rights
Policy priorities – Resources

• Welfare Reform issues
• Affordability of rents
• Affordable Housing Supply Programme (50,000 by 2021 - £3 billion plus)
• Energy efficiency
• Fire safety – post Grenfell
• B.....
Policy priorities – Service provision

• Housing First – permanent, affordable house ASAP then support services/connections to sustain
• “Age, Home and Community” – national older people’s strategy
• Affordability of rents
• Digital services
• Dementia
• Domestic abuse
Challenges – Social Housing specific

• Universal credit and welfare reform impact on financial health of the sector
• Compliance requirements puts pressure on investment capacity
• Housing development funding – post 2021??
• Housing support funding increasingly vulnerable and Housing 1\textsuperscript{st} a priority but inconsistent strategic direction from IJBs
• Health & social care colleagues not having sufficient understanding of our specific limitations/remit
Challenges – Public & 3rd sector

• Increasing complex care and support needs
• Ageing demographic
  • Impact of service provision
  • Impact on workforce planning
• Place making to create healthy places and communities
• Analogue to digital
• Increased focus on technology
• “Municipalism” – public sector entrepreneurship
Opportunities

• Many shared challenges across health, care and housing
• Housing associations are key community anchor organisations
  • Employability
  • Wellbeing
  • Isolation
  • Social enterprise
• Housing’s contribution to wellbeing
• Housing and innovation
  • Social rented sector – test bed for innovation for wider market
  • TEC in Housing – Loreburn, Blackwood, Albyn
  • A plug for our own innovation project
Let’s change perception of old age
References

• Housing Tenure statistics available from [https://www2.gov.scot/Topics/Statistics/Browse/Housing-Regeneration/HSfS/KeyInfoTables](https://www2.gov.scot/Topics/Statistics/Browse/Housing-Regeneration/HSfS/KeyInfoTables)


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Social Media
🐦 @ViewpointHA
 FACEBOOK ViewpointHA
TEC in Housing

Marian Reid
TEC in Housing Project

Healthy Ageing Cluster Meeting
30 May 2019
· **TEC Ready** project - 2 year project, showcased reach and contribution and of housing

· Funded by the Scottish Government’s TEC Programme and supported by key partners, SFHA hosting

· Project legacy includes: [www.techousing.co.uk](http://www.techousing.co.uk) and TEC in Housing Charter
Reflecting the reach of the sector
Encouraging involvement
TEC in housing solutions (filmed clips):
6 case study examples:

- Aberdeen City Council - MyChoice
- Albyn Housing Society – Fit Homes
- Blackwood – CleverCogs
- Loreburn Housing Association – ARMED
- Perth and Kinross Council – TEC Strategy
- Tighean Innes Gall – A Tablet for the Patient
Launched March 2019

- Emphasis on engaging customers, encouraging partnership working and review and redesign of services
- Asks for ‘top 3 priorities’ for TEC in Housing
- Aim for 100 signatories over 2 years
7 Charter Pledges

- Pledge 1 – **Opportunity and solution focused**
- Pledge 2 – **Engaging with the customer**
- Pledge 3 – **Working in partnership**
- Pledge 4 – **Preventative analytics**
- Pledge 5 – **Service redesign**
- Pledge 6 – **Supporting the workforce**
- Pledge 7 – **Getting the infrastructure right**

**Commitment to at least 3 Pledges required**
TEC in Housing
Next Phase
2019 – 2021

- Builds on work of TEC Ready and Charter – aims to scale up housing contribution
- Focus will be on customer-centred approaches and service redesign
- Will include Customer Forum – to advise and influence
- Two key enablers for project - Internet of Things and Housing Sector Digital Maturity Audit
People must be at the centre

Innovation

Housing

Homes of the future

Inclusive  Secure  Multi generational

Beautiful  Healthy  Multi tenure  Sustainable
We live in an overcrowded world...

Where loneliness is a huge issue.

We need common spaces...

Housing, living, social connection, which are wonderful spaces.

Sustainable communities
INNOVATION FACTORY
Modern building methods...

- Cost effective
- Sustainable
- Off-site building
- Safer
- Living effective
- Faster
- Better quality
- Innovation
Innovation support for Housing Associations

- Alliance between SFHA & CSIC
- Innovation ecosystem
- BIM
- Offsite housing
CSIC Funding Call to launch at SFHA Development Forum

A funding call for support for Modern Methods of Construction will be launched at the SFHA Development Forum on 22nd November.

Construction Scotland Innovation Centre (CSIC) and SFHA have entered a partnership to increase opportunities and provide support for SFHA members. A funding call for support for Modern Methods of Construction will be launched at the SFHA Development Forum on 22nd November.
Offsite construction for social & affordable housing projects

- SFHA, COSLA, Scottish Enterprise, Scottish Government, CSIC
- Evidence base
- Industry capacity to scale
- Co-design of solutions
Preparing for BIM

BIM ‘Offline’ Hub

A ‘Step by Step’ Awareness & Implementation Programme with free events, free resources & free advice.

Join the network today, register at www.cs-ic.org/BIM
The Emotional Gym

**Challenge**
Develop new housing solutions for over 60’s that allow residents to live independently in their homes for longer

**Project**
Pilot the use of building integrated and wearable technology within the retrofit of a high-rise development to encourage ongoing physical and mental stimulation

**Outcomes**
- Tenants are more active and remain in their homes for longer
- New uses for under utilised spaces within high-rise buildings identified
- Technologies deployed within buildings to support independent living

**Support**
- Total Project Value: £49,388
- CSIC Funding: £19,755
- Project Duration: January 2017 - July 2017
## Future technology strategy for Housing Associations

**Challenge**
The technology associated with building and operating social housing is going to change dramatically over the next 10 years. How should Housing Associations be thinking about future strategy to prepare for this?

**Project**
The Property Tech 2025 project will help Wheatley Group understand technology and housing development trends and potential future directions likely to impact their business. This will include: materials and products, digital construction techniques, housing typologies and technology integration.

**Outcomes**
- An overview of international trends, innovations and opportunities
- Focus groups and interviews using Interaction Design and Design Scenarios
- Provide themes to shape the Technology and Development Strategy for 2020-2025

**Support**
- Total project value £98,000
- CSIC contribution £43,000
- Project Duration April 2018 – October 2018
Scotland’s First Off-site Manufactured Gold Standard Housing Development

**Challenge**
With Scotland facing an acute affordable housing shortage, the use of volumetric construction lends itself to providing affordable and sustainable homes within benchmark housing association costs.

**Project**
48 new homes were built offsite using volumetric techniques - a first for this scale in the affordable sector. Whole life cycle costing, building performance & post occupancy evaluation.

**Outcomes**
Delivery of Gold Standard sustainable quality housing with high thermal performance built in a significantly reduced timeframe at an affordable cost. Conventional construction times could readily be reduced by 50% a unit.

**Support**
- Total project value: £130,000
- CSIC contribution: £61,000
- Project Duration: November 2015 – April 2017
get in touch…

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construction scotland innovation centre
HEALTHY AGEING INNOVATION CLUSTER
April 2019
Ageing society

Chronic conditions
Lack of health professionals
Financial unsustainability
HLY vs LE
Health inequalities
Scotland’s Demographics - 2012
WHO definition of Healthy Ageing: “the process of developing and maintaining functional ability that enables wellbeing in older age”

This includes a person’s ability to;
• meet their basic needs
• learn, grow and make decisions
• be mobile;
• build & maintain relationships
• contribute to society
Healthy Ageing Innovation Cluster – ‘Success through Collaboration’

**Purpose**
- Collective of shared interest - expertise and skills
- Share information and support knowledge exchange
- Seek & solve demand led challenges
- Host challenge competitions
- Identify funding opportunities
- Build Collaborations

**Activities**
- Current focus on anticipated IUK Grand Challenges – Healthy Ageing but many other funding sources
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127 Members
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• Vision & Impact – what difference are we trying to make collectively?
• Priorities – what are our key collaboration opportunities?
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HEALTHY AGEING COLLABORATION PRIORITIES – Feb ‘19

**COLLECTIVE LEARNING**
- Awareness of Policy & Guidance
  - Scottish & UK Government – Policy Direction
  - Relevant Strategic Guidance & Best Practice
  - Team Scotland Approach
- Awareness of Technology
  - Consumer Technology
  - Keeping pace with a fast moving market
  - Build Trust to Share
- Identify Funding Opportunities

**JOINT DEVELOPMENTS**
- Shared Focus on Specific Conditions/Challenges
  - Falls
  - Diabetes
  - Physical Activity
- Support Independent Living
  - Transport
  - Housing
  - Supporting people to work longer
  - Hospital at home
  - Care in the Community
  - Reducing inequalities
- Develop
  - Test beds
  - Data/Analytics
  - Patient/Citizen Journeys

**RESEARCH & METHODS**
- Prevention
  - When should interventions best be made?
  - Better adoption at earlier stage in life?
- Evidence Impact
  - Health Economics
  - Methodologies
  - Real World Impacts
- Ensure Citizen at the Centre
  - What does the citizen want?
  - How best engage with the end user?
  - Co-design
  - Build Trust

**SKILLS & CAPABILITIES**
- Skills & Training
  - Joint Learning
- Business Models for Scotland
ASSETS & CAPABILITIES
Feb ‘19

Technology
• IOT
• Sensors
• Industry IT Knowledge
• Ability to add technology layers
• Ability to Trial Technology
• Range of Technology

Open Digital Infrastructure

Industry
• Industry Knowledge
• Ability to move quickly
• Funding

Global Capacity

Bridge between Industry & Academia

Data
• Linking consumer data
• Data Analysis
• Existing Data

Academic Expertise

Existing Research projects

Cross-disciplinary research groups

National Best Practice

Create Business Model for Scotland

Procurement
• Innovative procurement

Champions

People/Workplace
• Skills and Training
• Volunteers
• Training in communities
• Knowledge/Expertise
• Citizens – real life!

Captured Audience

Links with Networks & Forums

Scottish Care Network

Housing Associations

Large Strategic groups

KTN
Test Beds
- People
- Public Sector
- Private Sector

Citizen Engagement
- Citizen enabled collaborations

Small commercial/private companies

Hospital to Home (and vice versa)

Forums
Integration of H&C for:
- Testing
- Deployment
Focus Area Specific Forums

Academia – expertise in key challenges

Existing Research projects

Cross-disciplinary research groups

Thinking Space Group

Technology Led Innovation Route

Education & Training
- Digital as part of health courses

Public Sector Organisations

Scottish Care Network

NHS Health Boards

KTN

Scotland Excel

Housing Associations

LINKS & CONNECTIONS
Feb ‘19