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‘All Together Now’: Communities that Care

“Transformation and Technology”

Dr. Kevin Doughty

Parc Y Scarlets, Llanelli
Thursday, 30th. March, 2017

The Four Eras of Care

Institutional focus (1st Era)
Geriatric hospitals replacing the Workhouse and Public Assistance Institutions

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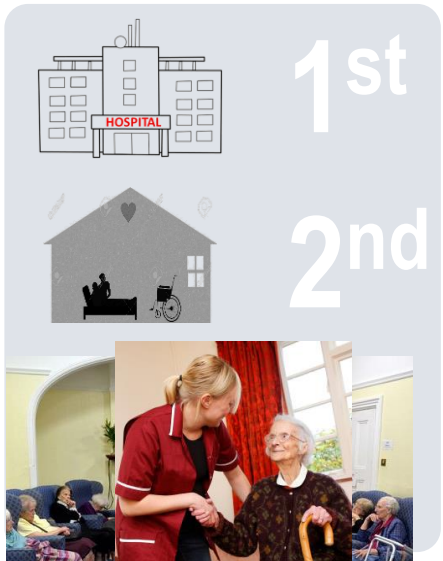
The Four Eras of Care

Community focus (2nd Era)
Sheltered housing, residential care homes, home helps and domiciliary care in the home, and personal assistants



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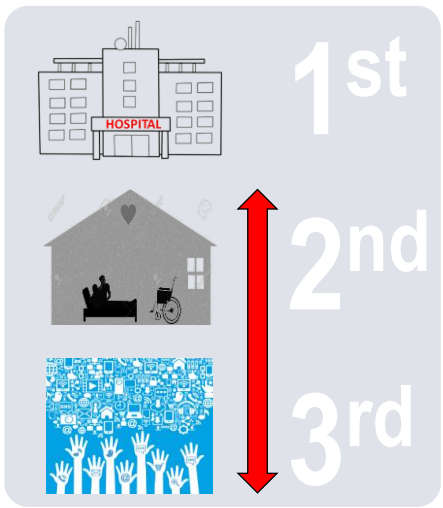
The Four Eras of Care

Person focussed (3rd Era)
Use of **technology** to support health, well-being and independence, and to avoid the need for long-term care



This is a transition and requires a business, service and cultural transformation – ALWAYS difficult to achieve

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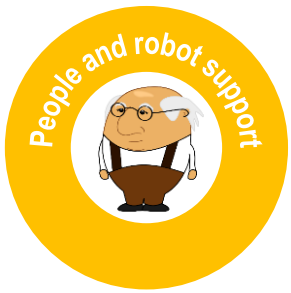
The Four Eras of Care



Cybercare (4th. Era)

Use of intelligent systems and data to support self-care and DIY health and social care to improve Quality of Life and well-being

This requires DIGITAL TRANSFORMATION

What is Digital Transformation?

Big Data

95%
of these data created in the last 3 years alone.

Mobile

1.5 billion (plus)
(plus) smart devices shipped in 2016 alone.

Internet of Things

50 billion
devices connected to the internet by 2020.

Using new technology to:
- Improve services
- Manage cost
- Integrate/collaborate
- Improve customer or service user experience

Cloud

62%
of total workloads were in the cloud in 2016.

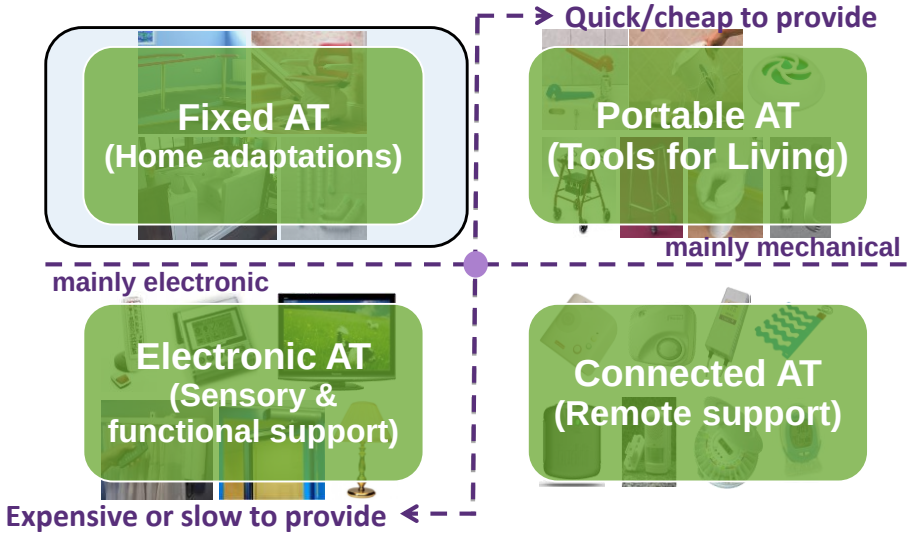
Social

81%
of customers depend on social sites for purchasing advice.

API Economy

Global m-commerce sales were
$120 billion
in 2015 and estimated to rise to $1 trillion this year

Technology Enabled Care @ Home



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Fixed TEC @ Home

The focus is on the property – make it fit for the person

Many installations funded by LAs through Disabled Facility Grants

Av. cost to buy & install - £2000
Av. cost to remove - £1000

Big role for Home Improvement organisations

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Technology Enabled Care @ Home

Fixed AT
(Home adaptations)

Portable AT
(Tools for Living)

Electronic AT
(Sensory & functional support)

Connected AT
(Remote support)

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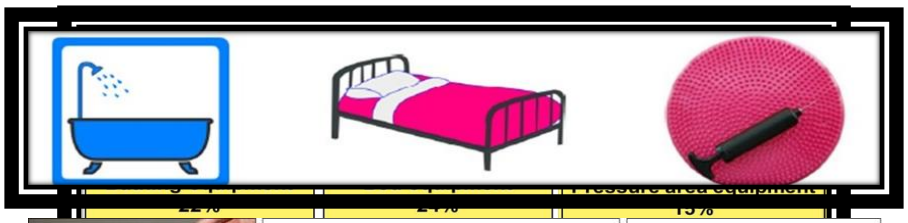
Tools 4 Living & Equipment Stores



Instant water boiler
£39.99

Video intercom
£99.99

Glass-sided toaster
£49.99

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Technology Enabled Care @ Home

- **Fixed AT** (Home adaptations)
- **Portable AT** (Tools for Living)
- **Electronic AT** (Sensory & functional support)
- **Connected AT** (Remote support)

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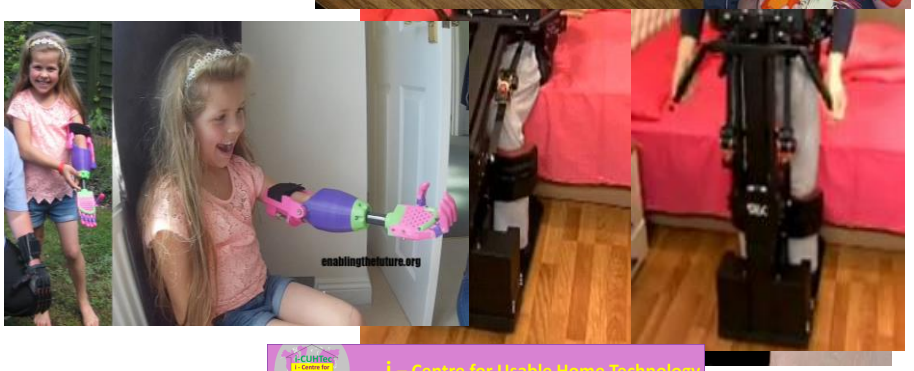
Sensory & Functional A.T.

- **Activity support**
- **Prosthetics**



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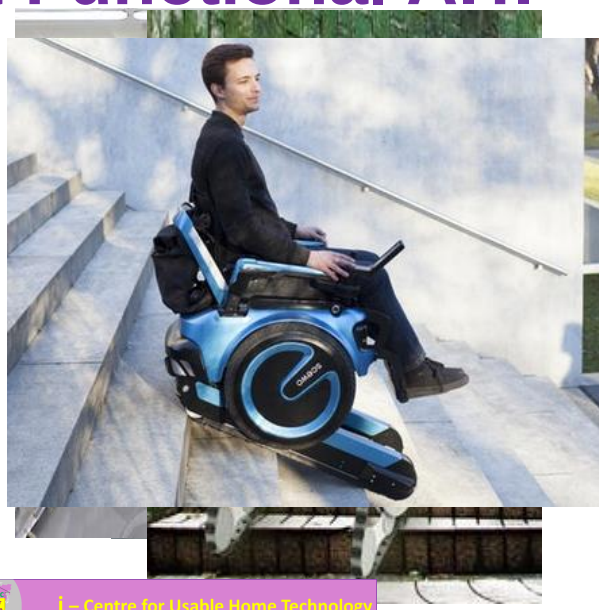
Sensory & Functional A.T.

- Activity support
- Prosthetics
- Speech deficits
- Environmental controllers
- Mobility devices
- Sensory aids



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eSight – A Vision Amplifier

This is effectively an electronic "seeing aid" which amplifies the levels of light which fall on the eyes. It works particularly well in cases where visual acuity has been reduced through age, and is suited to use at night.
User can control contrast, zoom and colour display.

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Sensory & Functional A.T.

- Activity support
- Prosthetics
- Speech deficits
- Environmental controllers
- Mobility devices
- Sensory aids
- Muscle control and amplification

Wearable Solutions to a Lack of Mobility

The Honda Assist system straps on over the hips and legs, giving a mechanical boost to frail people who have reduced muscle strength. It can help someone to get upstairs without relying on a stairlift

Mind-controlled Prosthetic Allows Movement of Individual Fingers

Paralysed man feeds himself with help of implants

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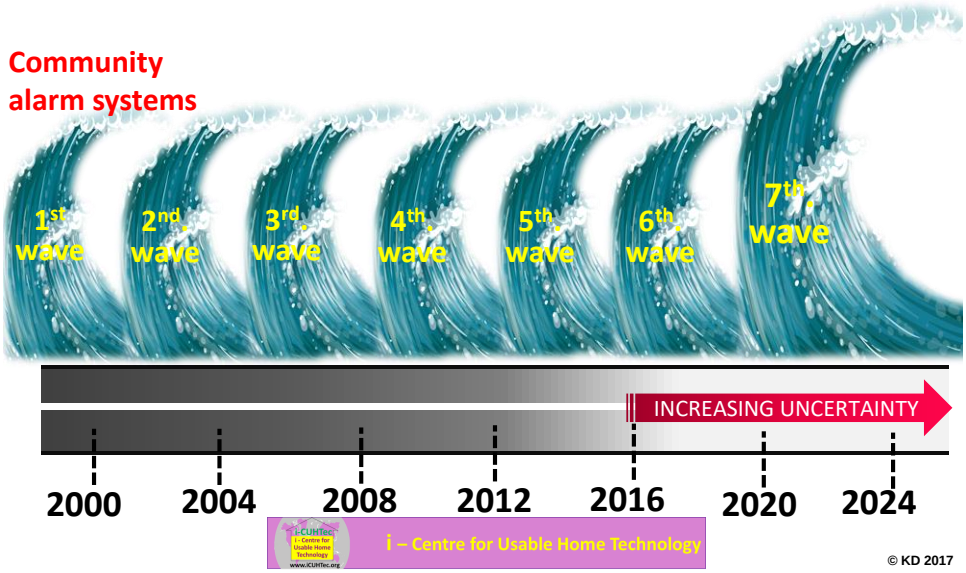
The TEC@Home Journey



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Community Alarm Systems

Sometimes known as a 'button & a box' approach

Active devices - press or pull in emergency

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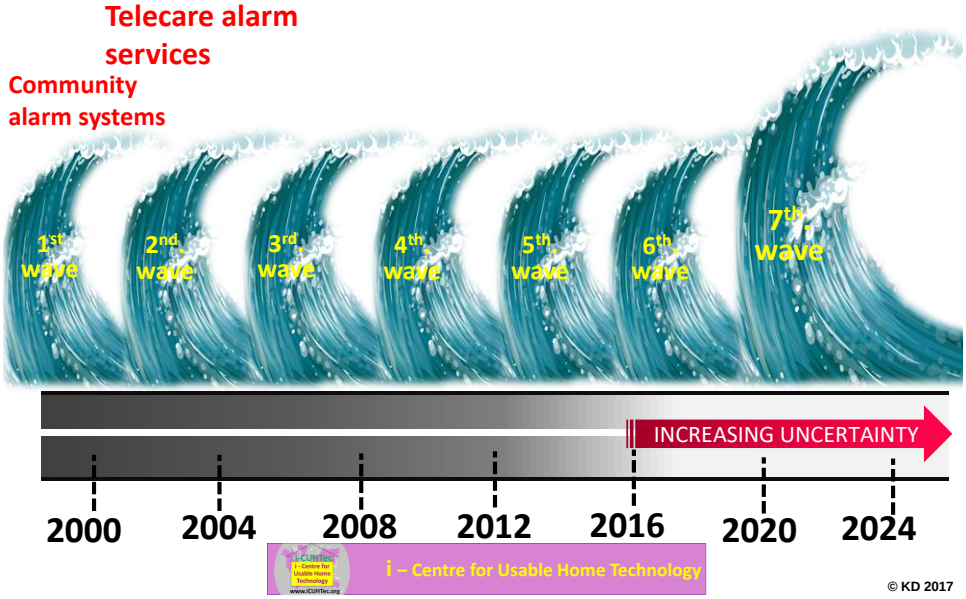
The TEC@Home Journey



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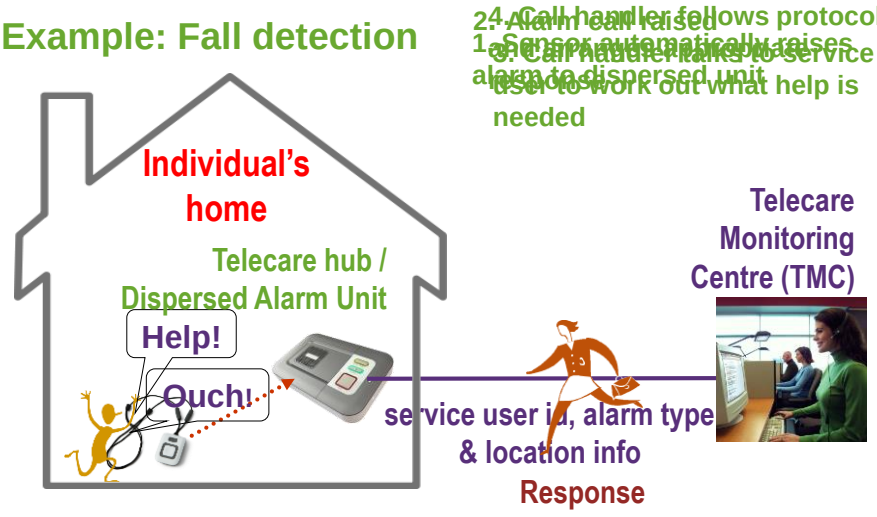
How alarm-based telecare works

Example: Fall detection



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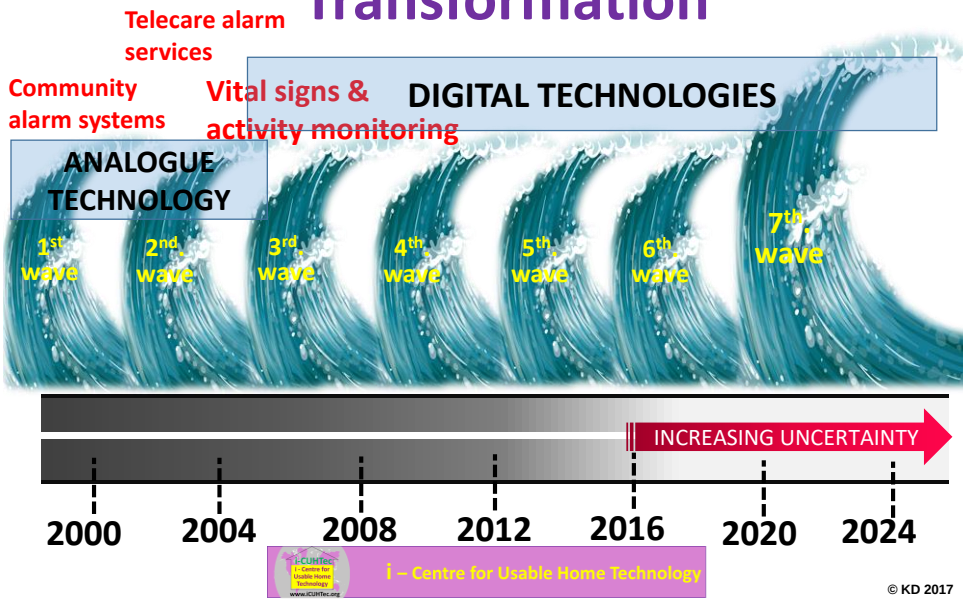
The TEC@Home Journey to Transformation



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Telemonitoring of Vital Signs

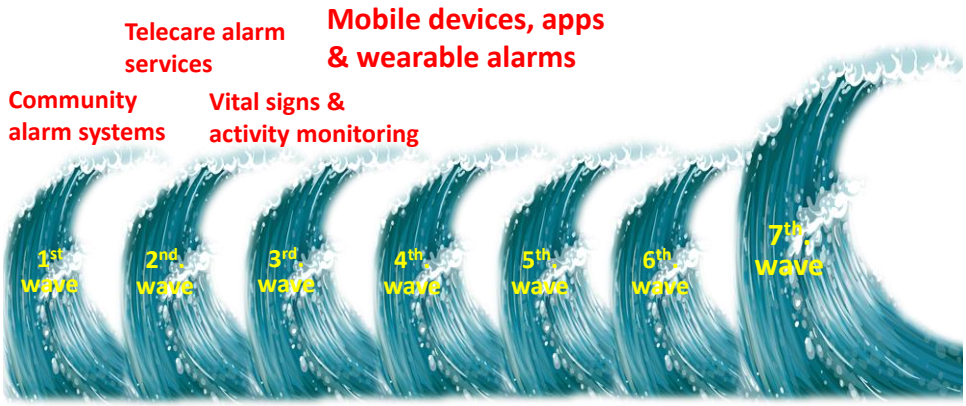




Activity Monitoring Systems

- **Systems such as Just Checking and Canary can be installed in minutes to enable room and door activities to be recorded and viewed remotely over the Internet.**
- **Other systems such as Lively, Sense and 3 Rings use smaller sensors that can detect specific actions enabling alerts to be generated if routine tasks are not performed on time.**


The TEC@Home Journey



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GPS Devices to Find People

- Latest GPS devices also provide:
  - Fall detection alerts
  - Geofence breach alerts
  - High speed travel alerts
  - Lack of movement alerts
- They can be used by:
  - Children, lone workers, people at risk of getting lost & care staff
    - People who carry a phone
    - People who wear a watch
    - People who carry a key ring or bag (or in pocket)

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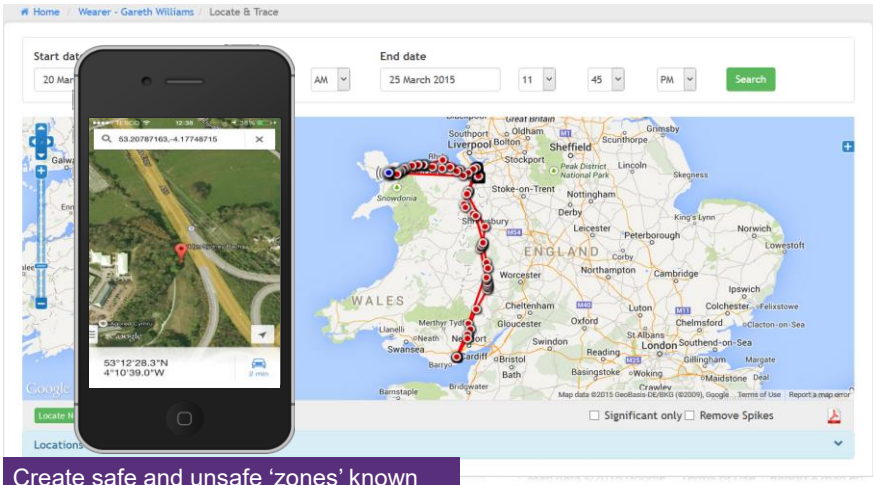
GPS in Practice



Create safe and unsafe 'zones' known as 'geofences'

Other GPS Wearables

- Invisible: the discreet and comfortable insoles cannot be spotted or interfered with.
- Discrete monitoring: the person is only tracked when they leave a pre-defined geo-zone that is deemed to be safe, such as the garden or street.
- Personalised updates: choose the alert frequency (e.g., 5-min, 10-min, 1 hour), share the monitoring portal with multiple family members or carers and generate reports as and when you need them.

Smartphones – We will all have one!

Features	Sensors, actuators and connectivity
Powerful processors	Microphone
Large touch-screen colour display	High quality audio
Large memory and storage capacity	Accelerometers
Telephone and text-messaging	GPS and GSM location
Versatile apps	Magnetometer
In-App notifications and messaging	Temperature
Familiar interface options	Camera(s)
Lightweight and always available	Vibration unit
Battery life improving	Bluetooth and Wi-Fi for connectivity
Contactless and touch ID	NFC and proximity sensor

Ideal platform for mCare and mHealth applications

Vulnerable people can now go out and feel protected!

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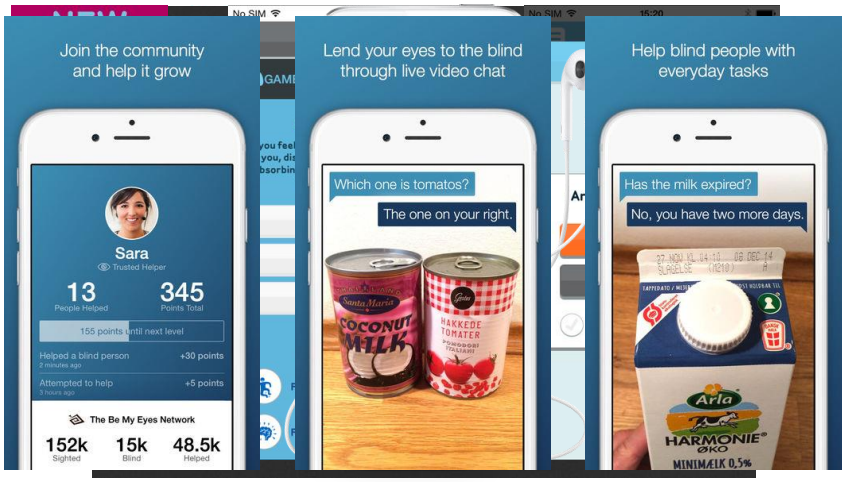
Health and well-being apps



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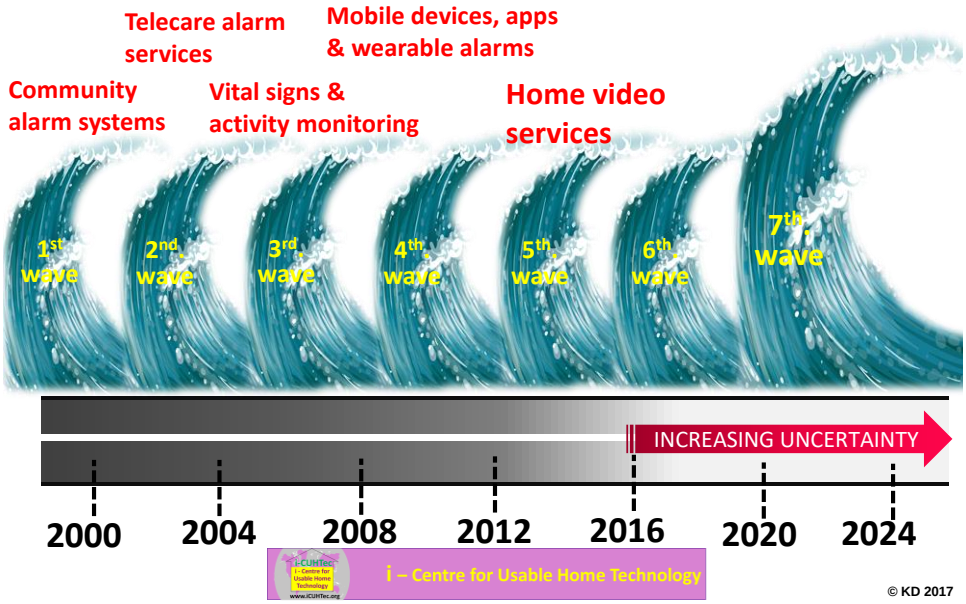

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The 5th wave – Video-based Services

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Home & Virtual Therapy Services

Gaming platforms such as Microsoft Xbox & Kinect, Nintendo Wii and Playstation

They open up opportunities for people who need physiotherapy, occupational or speech & language therapy to perform exercises and participate in observed competitions in their own homes

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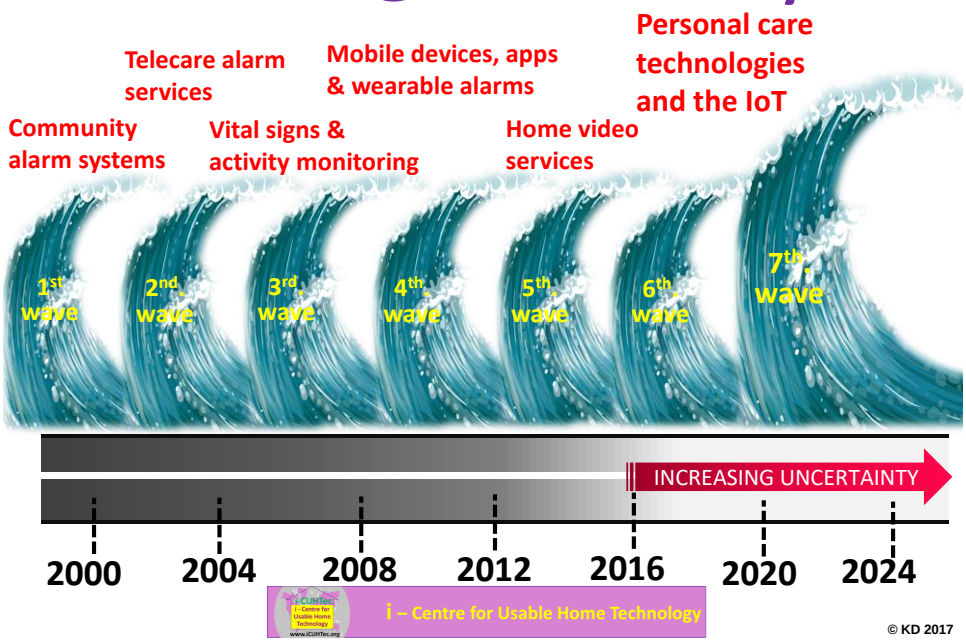
The TEC@Home Journey



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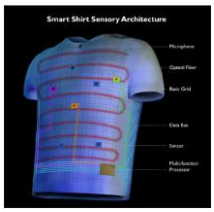
Collecting Health & Well-being Data

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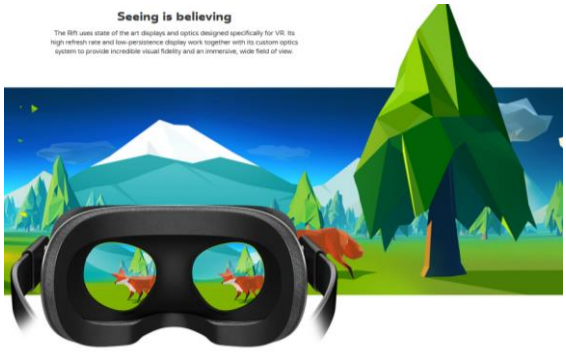
Virtual Reality Immersion

Virtual reality headsets can offer people an entertainment or reminiscence experience that can overcome the limitations of their mobility and finance.

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"Smart" Homes and the Internet of Things

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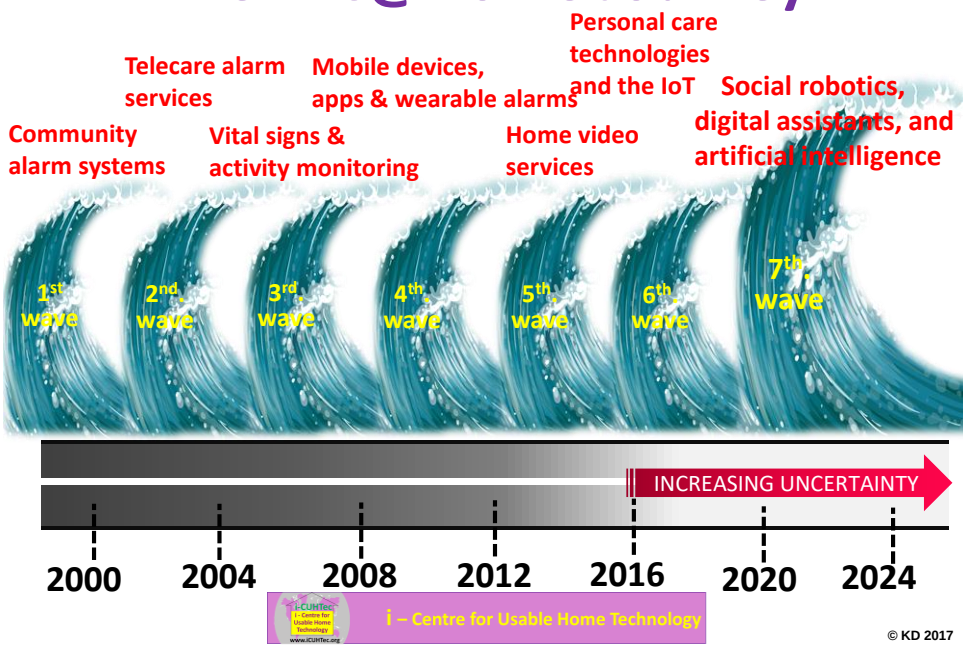
The TEC@Home Journey



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Robotic Devices
- From Companions to Butlers!



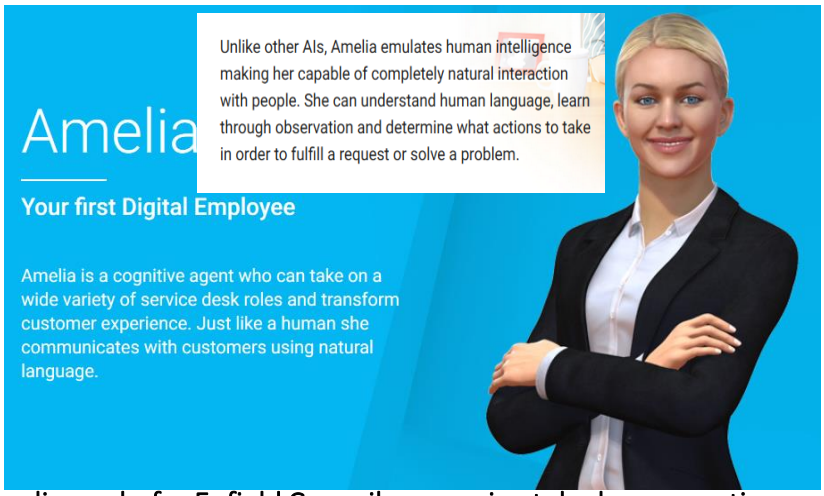


Personal Assistants & Chatbots




Name	Siri	Google Now	Cortana	Alexa	M	Bixby
Company	Apple	Google	Microsoft	Amazon	Facebook	Samsung
Communication	Voice	Voice & typing	Voice	Voice	Typing	Voice
Capability	Answer question, place calls	Getting directions, reminders	Manage calendar, PC file finding	Streams music, cooking help	Supports complex actions	Able to use context

Personal Assistants & Chatbots



Amelia works for Enfield Council, answering telephone questions.
She can answers many calls at the same time – so no capacity issues.

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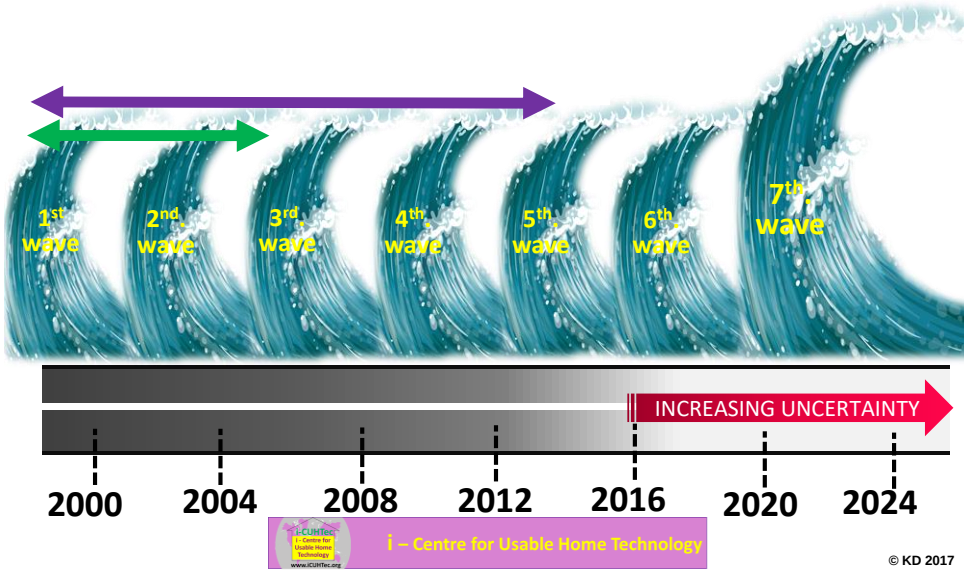
Where Are We on the Transformation Journey?

HOUSING



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WISER Homes

Smart assistive technologies can transform homes and make them WISER:

- **W**atchful – monitoring activities & well-being of individual
- **I**ntelligent (and Informed) – able to recognise problems & take action
- **S**afe (and Secure) – able to prevent accidents and crime
- **E**mpowering – support individual to participate in events & tasks
- **R**esponsive – quick to react sympathetically to changing circumstances.

All properties for older or disabled people in South West Wales could become WISER Homes

A big IoT application?

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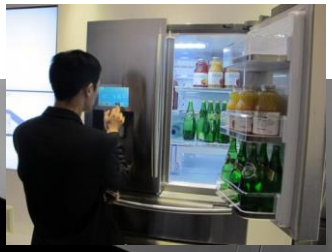
WISER Homes



Personalised menu suggestion based on activity levels and bio data

Cooking suggestions and recipes from celebrity chefs online using ingredients in the smart fridge

All food is automatically ordered by the smart fridge, using local sources

Smart Kitchen – Technology all interconnected

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WISER Homes

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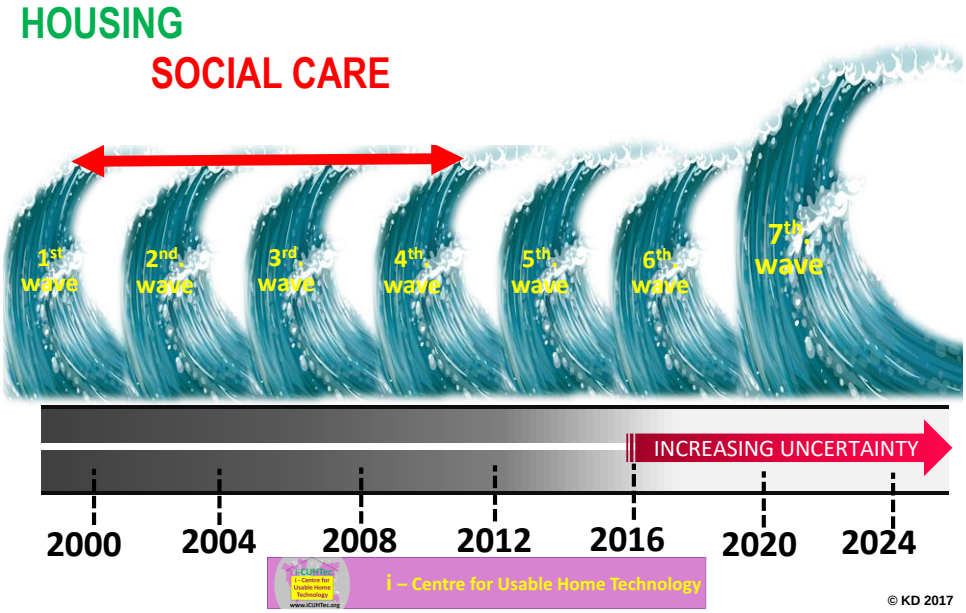
Where Are We on the Journey?



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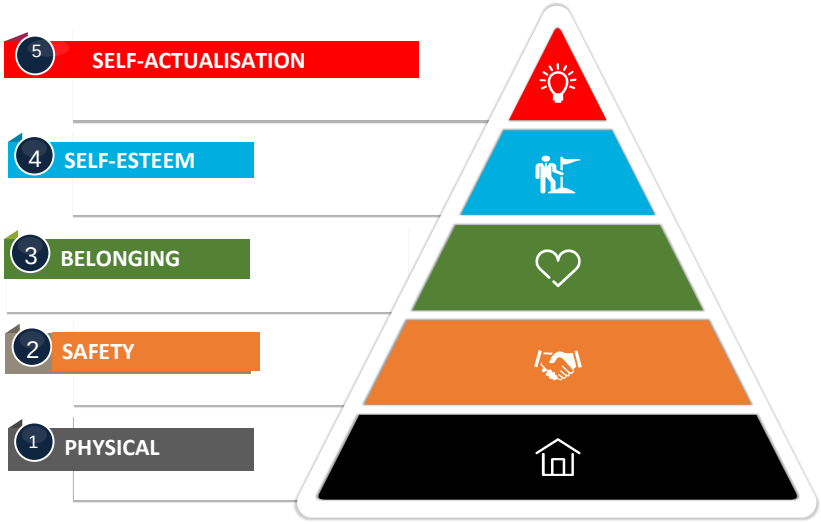
Maslow's Hierarchy of Needs



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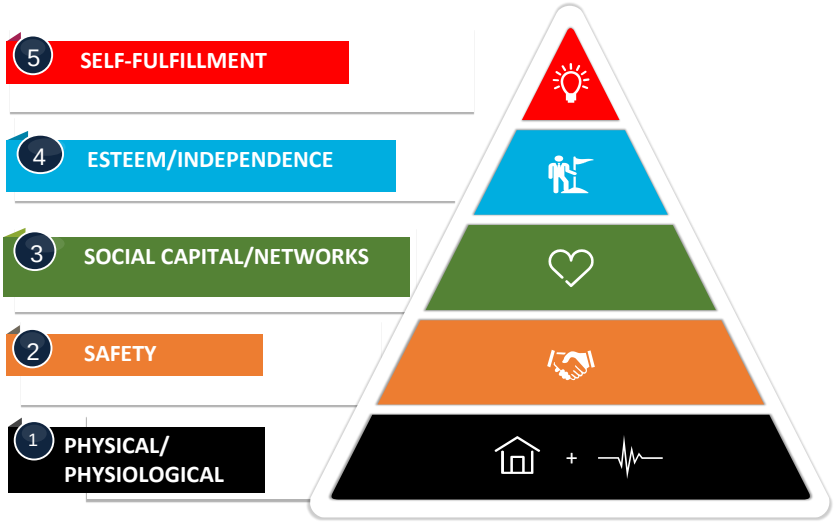
Hierarchy of TEC@Home Needs



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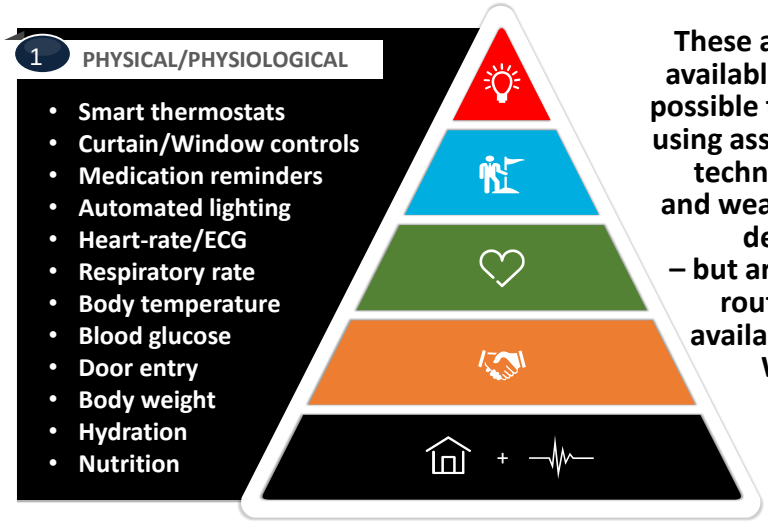

These are all available and possible today using assistive technology and wearable devices – but are not routinely available in Wales

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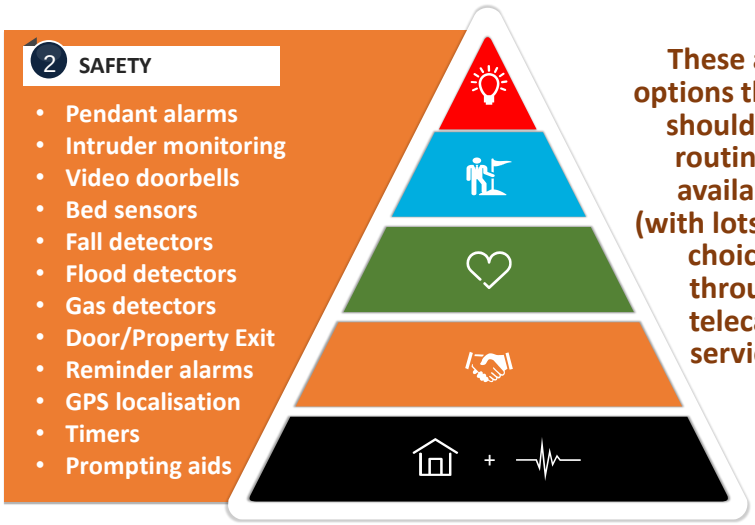
Hierarchy of TEC@Home Needs



These are options that should be routinely available (with lots of choices) through telecare services

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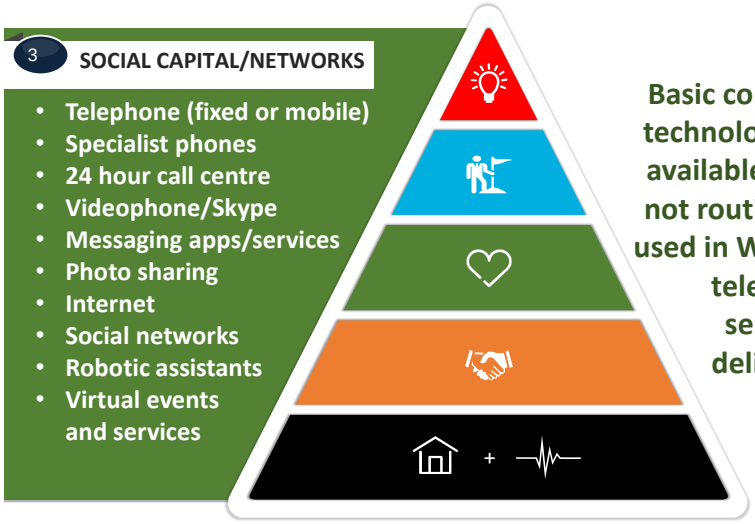
Hierarchy of TEC@Home Needs



Basic comms technology is available but not routinely used in Welsh telecare service delivery

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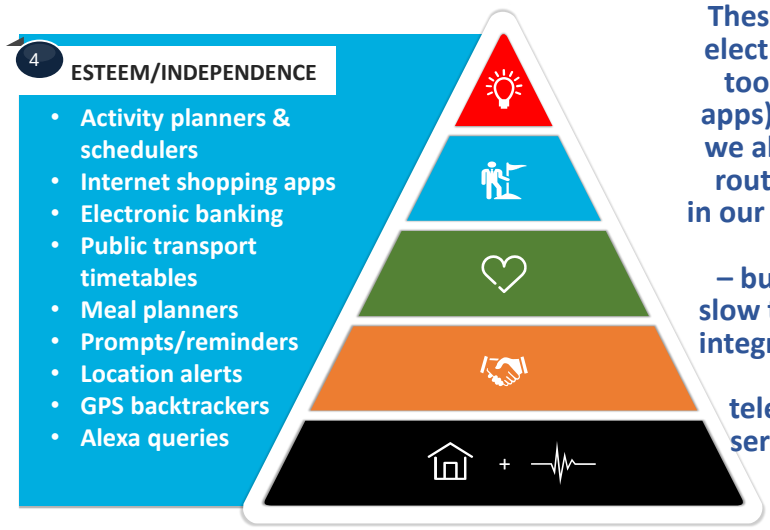
Hierarchy of TEC@Home Needs



These are electronic tools (or apps) that we all use routinely in our daily lives – but are slow to be integrated into telecare services

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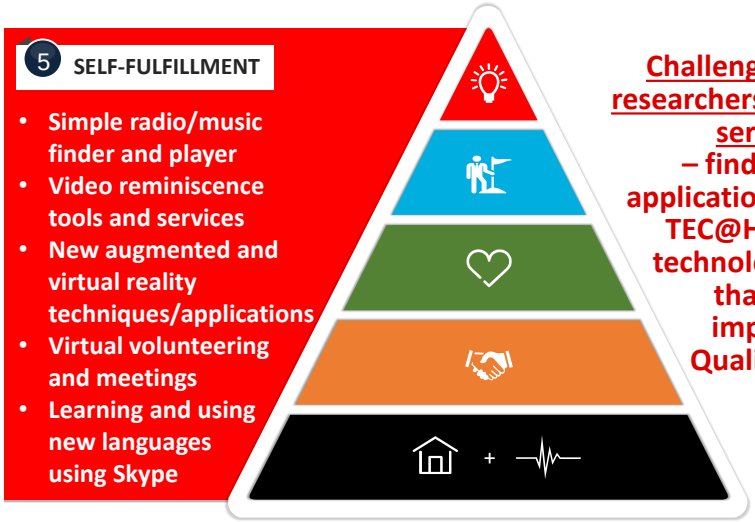
Hierarchy of TEC@Home Needs



Challenge for researchers and services – find new applications of TEC@Home technologies that can improve Quality of Life

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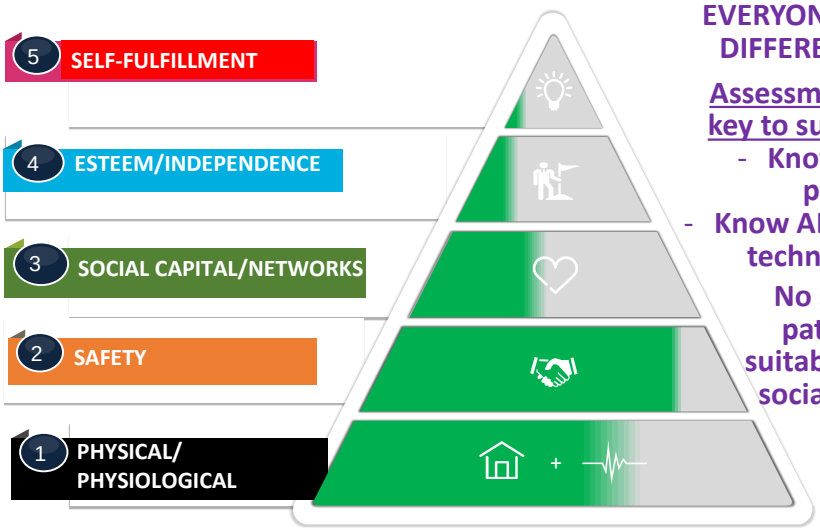
Hierarchy of TEC@Home Needs



EVERYONE IS DIFFERENT!

Assessment is key to success

- Know the person
- Know ALL the technology

No single pathway suitable for social care

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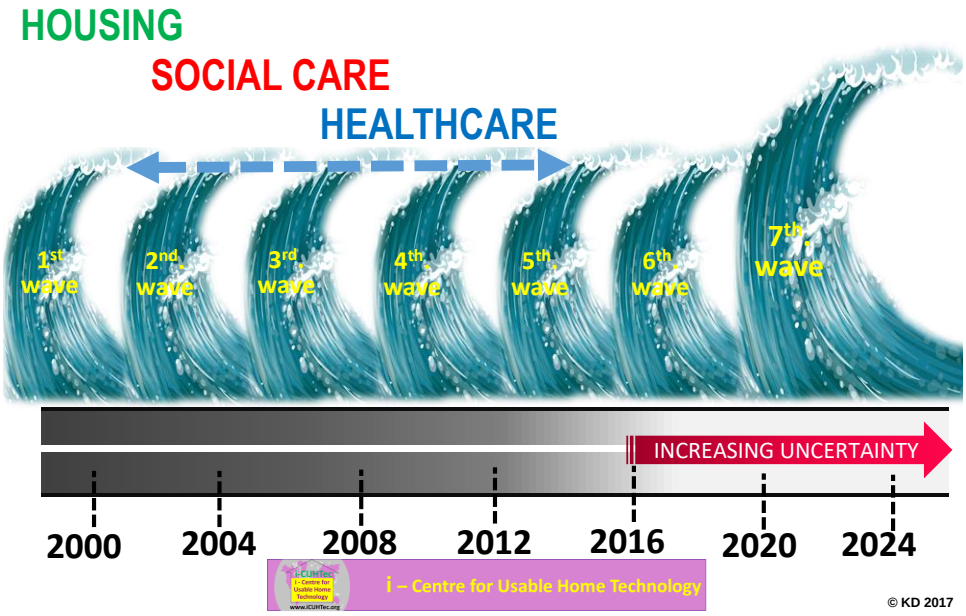
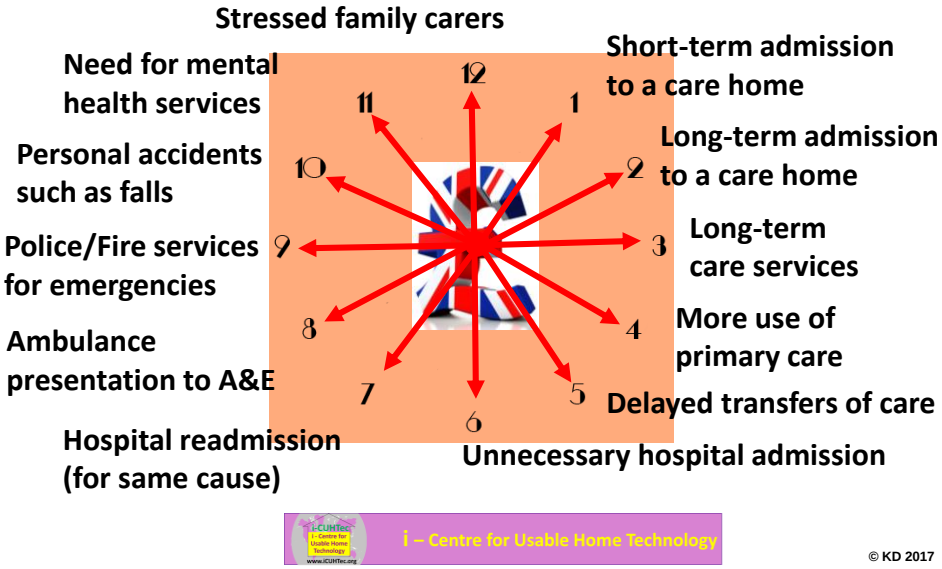
Where Are We on the Journey?



The TEC@Home Cost Avoidance Clock



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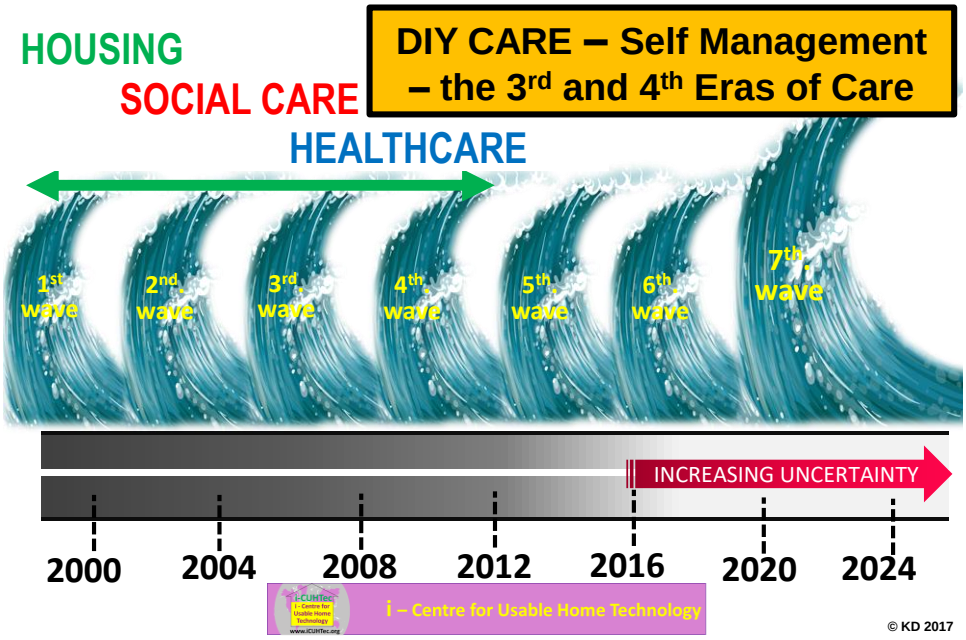
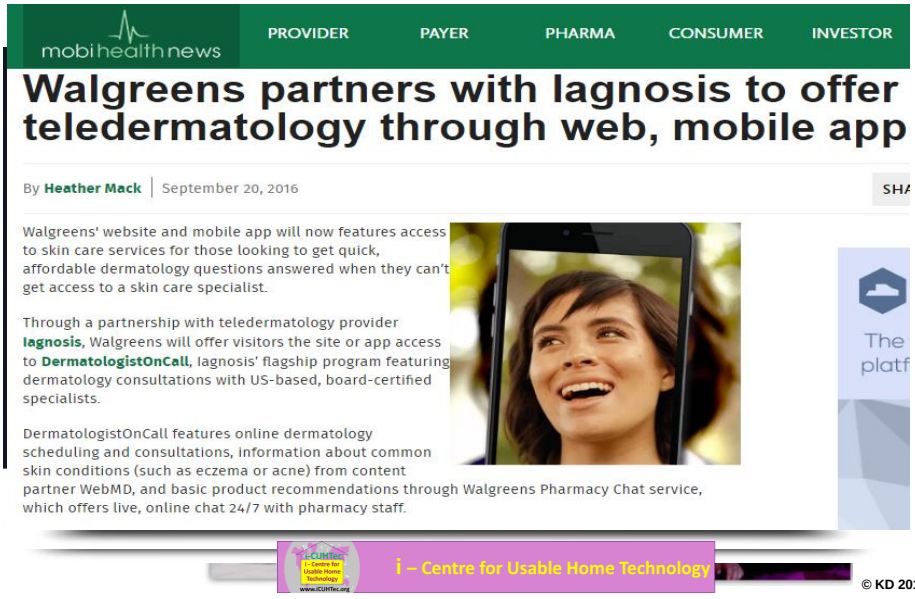


The DIY Care & Support Market
– Personal Budgets



Virtual doctor service aims to save NHS millions

Orbital Media and University of Essex are creating a digital platform with machine learning principles, so that it can be trained with user data.
It will align its responses precisely to natural language queries.
Responses will be delivered via a photo-realistic avatar.

Digital Transformation Implications for the Health and Social Care Economies

UBER
No Cars

Alibaba Group 阿里巴巴集团
No Inventory

airbnb
No Real Estate

Care@Home
No Hospitals?

Independent TEC@Home Information

- The Vivo Guide from the Liverpool *dallas* project supports users to find their own TEC@Home solutions (and services)
- Vivo Pro helps health & social care staff to find tried and test products to advise patients to buy and use, sharing opinions of solutions
- It provides the basis of self-assessment using the principles of the New Welsh Care Act

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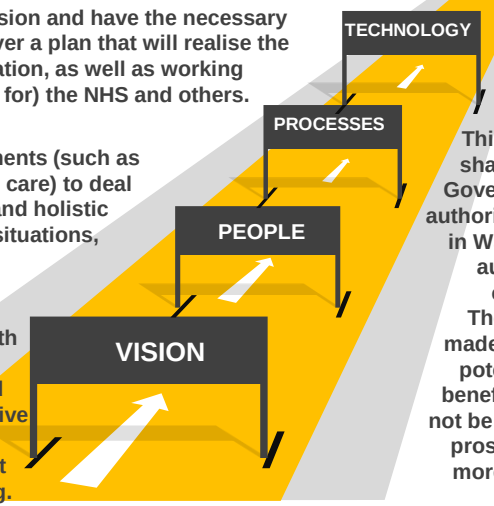
Breaking Down the Barriers to Digital Transformation of Care Services

PEOPLE.
They need to embrace the vision and have the necessary skills and knowledge to deliver a plan that will realise the benefits of digital transformation, as well as working collaboratively with (and not for) the NHS and others.

PROCESSES
New protocols and arrangements (such as reablement and intermediate care) to deal with emergency situations, and holistic ones to deal with long term situations, conditions, and disabilities.

TECHNOLOGY
Understanding and using both electronic data sharing and prediction opportunities, and the emergence of new assistive devices and connected (telecare) systems to support independence and well-being.



VISION.
This needs to be shared by Welsh Government, local authorities, the NHS in Wales, housing authorities and communities. They need to be made aware of the potential and the benefits, and must not be scared at the prospect of using more technology.

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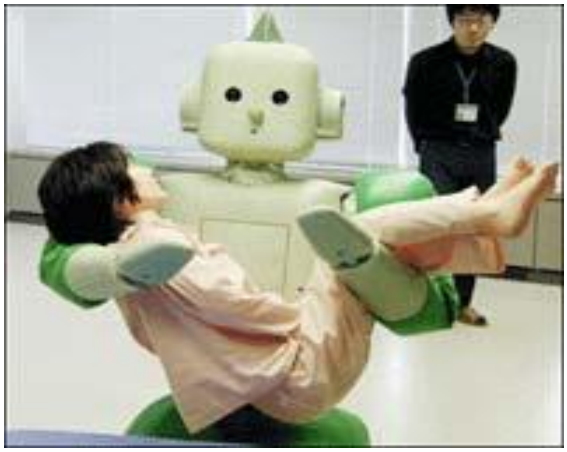
Finally - Where Do We Draw the Line?

Japanese bathing system for older people



RI-MAN robot is equipped with sensors that show a body's weight, position smell!

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Thank you for your attention

For more information, or for copies of slides or other papers on which this presentation has been based, please contact me:

dr.k.doughty@btinternet.com

and join for free at:

icuhtec.org