

# Housing LIN

*Connecting people, ideas and resources*

**4. Building better and smarter  
communities: utilising technology and  
innovative solutions**

**#HLINconf19**



**Tunstall**

Enabling independent living

Loreburn Housing Association  
**Investing in sheltered housing  
for a digital future**

**ANGELA TARVET**  
Senior Account Manager  
Tunstall Healthcare

# The challenge

- In 2017, seven Loreburn Housing Association schemes in Dumfries and Galloway were identified that had alarm systems nearing end of life
- Loreburn's strategy: using technology to innovate and improve services
- Required a digital solution enabling rapid and robust communication and adaptation to advances in technology
- Tunstall's Communicall Vi IP was chosen



## Provide free Wi-Fi at all Loreburn schemes

- Sheltered developments the first to benefit
- Increase in number of residents using tablets, smart phones and computers
- Enabling social/digital inclusion
- Ensure schemes are fit for purpose in the future



Gifhorn House, the first Loreburn Housing Association development to benefit from Communicall Vi IP

“Loreburn is dedicated to creating great places to live, and to helping our customers to live independently and safely in their own homes for longer. We are continuously striving to improve our services, and technology plays a key role in this. We want to provide the best support we can today, but also make sure our investment provides us with a platform for the future.”

**Moira Charters, Head of Partnerships and New Initiatives, Loreburn Housing Association**



# The solution

Communicall Vi IP is Tunstall's first digital solution for housing providers and residents. Loreburn Housing Association are the first Registered Social Landlord in Scotland to install Communicall Vi IP, demonstrating its commitment to providing its customers with the most advanced and best value solutions possible.



# Communicall Vi IP Features

- Digital touchscreen phone, which enables rapid alarm reporting
- Video door entry
- Free onsite video and telephone calls
- Multiple speech channels
- Capability for the system to evolve over time to support new technologies such as apps.
- Android-based ecosystem for apps and services
- Social and digital inclusion



**Tunstall**

Enabling independent living

“This investment will change the lives of more than 200 older people, helping them to feel safe and secure, and more independent. It will also enable them to connect with their friends and family, and participate in an increasingly digital world.”

**Amanda Yellowley, Operations Director, Loreburn Housing Association**





# Android-based ecosystem for apps and services

---

- ARMED (Advanced Risk Modelling for Early Detection) solution by CM2000
- Data collected from a smart waterproof wristband with predictive analytics modelling to monitor the wearer's vital health signs and predict the potential risk of falling



**ARMED**

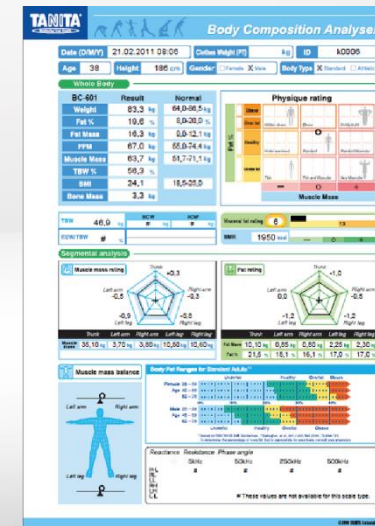
ADVANCED RISK MODELLING FOR EARLY DETECTION

**Prevention in Action**

# What we are using...

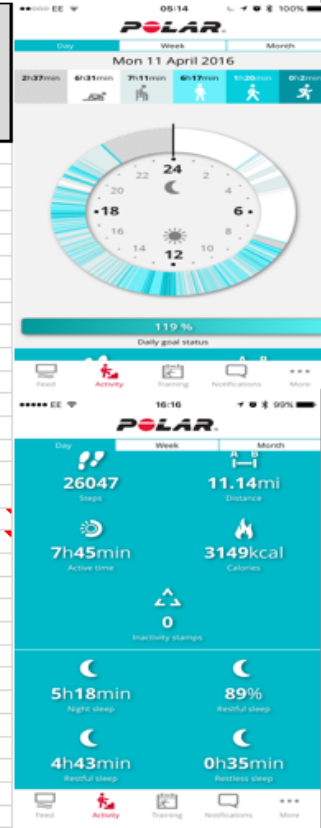
## Measurements

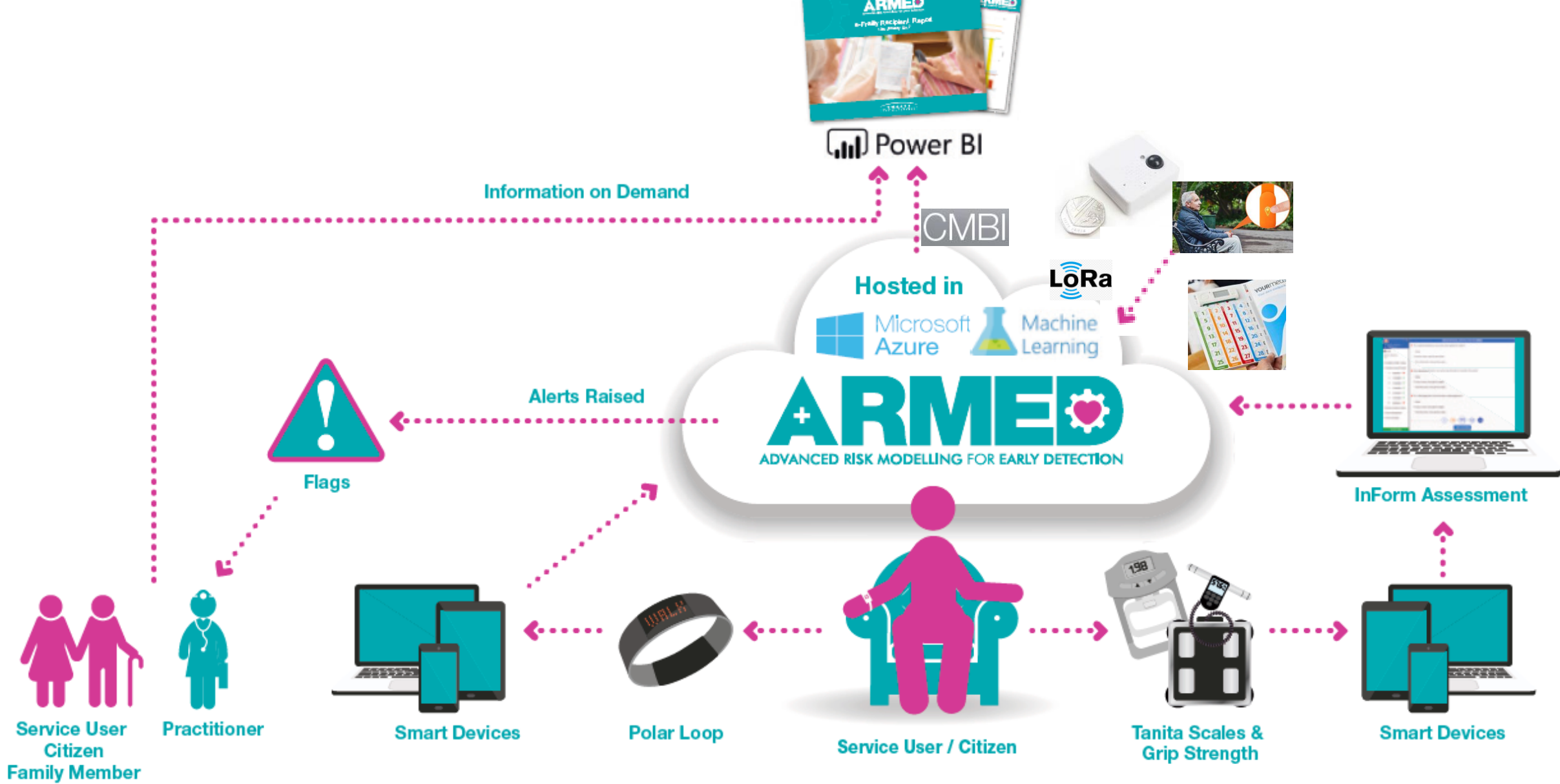
- Weight
- Segmental body fat %
- Segmental muscle mass
- Body fat % (age 5 – 99 years)
- Healthy body fat indicator
- Total body water %
- Muscle mass in kg
- Bone mineral mass
- Visceral fat indicator
- Daily Calorie Intake
- Metabolic age
- BMI



# Polar Wearables – Data Metrics – 10

Date	Resting	Sitting	Low	medium	high	Total sleep	restful sleep	Restless sleep	inactivity stamps	Distance walked	Steps taken	How is service user feeling today
01/03/2016	6h 33min	14h 55min	2h 31min	0	0	2h 40mins	2h 5mins	34mins	4	0.65mi	2346	Not so good
02/03/2016	6h 49min	14h 48min	2h 23min	0	0	5h 8mins	3h 53mins	1h 15mins	3	0.58mi	2112	Okay
03/03/2016	6h 13min	14h 41min	2h 42min	0	0	4h 30mins	3h 18mins	1h 12mins	1	0.65mi	2346	Okay
04/03/2016	6h 42min	14h 59min	2h 18min	0	0	2h 14mins	1h 46mins	28mins	3	0.56mi	2048	n/a
05/03/2016	7h 2min	12h 5min	1h 54min	0	0	2h 19mins	1h 48mins	30mins	3	0.49mi	1780	n/a
06/03/2016	7h 1min	15h 3min	1h 55mi	0	0	3h 59min	2h 37min	1h 22min	3	0.47mi	1714	Okay
07/03/2016	6h 29min	14h 43min	2h 47min	0	0	3h 27min	2h 40min	46min	2	0.71mi	2562	Not so good
08/03/2016	6h 36min	15h 6min	2h 17min	0	0	6h 6min	3h 53min	2h 13min	4	0.59mi	2136	Okay
09/03/2016	4h 38min	16h 55min	2h 26min	0	0	2h 57min	2h 0min	56min	2	0.60mi	2287	Not so good
10/03/2016	4h 31min	16h 53min	2h 35min	0	0	3h 11min	2h 3min	1h 8min	3	0.69mi	2514	Okay
11/03/2016	7h 19min	14h 42min	1h 50min	0	0	4h 58min	3h 4min	1h 53min	3	0.47mi	1724	Okay
12/03/2016	5h 15min	16h 34min	2h 10min	0	0	2h 3min	1h 1min	1h 2min	4	0.56mi	2032	Not so good
13/03/2016	6h 53min	15h 8min	1h 58min	0	0	3h 22min	2h 49min	33min	4	0.56mi	2014	Not so good
14/03/2016	5h 32min	12h 18min	2h 22min	0	0	n/a	n/a	n/a	0	0.60mi	2174	Not so good
15/03/2016	5h 28min	15h 40min	2h 40min	0	0	1h 49min	1h 23min	25min	3	0.85mi	3028	Okay
16/03/2016	6h 52min	14h 31min	2h 36min	0	0	2h 31min	2h 10min	20min	3	0.70mi	2520	Okay
17/03/2016	7h 6min	14h 24min	2h 30min	0	0	6h 43min	4h 44min	1h 59min	3	0.77mi	2788	Okay
18/03/2016	9h 30min	12h 31min	1h 42min	0	0	3h 7min	2h 12mins	55mins	2	0.48mi	1730	Okay
19/03/2016	8h 51min	13h 8min	2h 0min	0	0	6h 4min	4h 34min	1h 29min	1	0.57mi	2056	Okay
20/03/2016	4h 57min	16h 46min	2h 16min	0	0	2h 24min	1h 34min	50min	3	0.60mi	2176	Not so good
21/03/2016	5h 37min	13h 56min	1h 47min	0	0	4h 30mins	3h 31min	58min	2	0.52mi	1866	Okay
22/03/2016	7h 1min	13h 52min	3h 6min	0	0	5h 51min	3h 37min	2h 13min	1	0.81mi	2944	Okay
23/03/2016	5h 53min	15h 27min	2h 31min	0	0	4h 8min	3h 25min	43min	2	0.69mi	2468	Okay
24/03/2016	7h 33min	13h 29min	2h 48min	0	0	3h 46min	3h 33min	13min	2	0.84mi	2990	n/a
25/03/2016	5h 52min	15h 53min	2h 14min	0	0	3h 13min	2h 11min	1h 2min	2	0.65mi	2312	n/a
26/03/2016	5h 0min	16h 57min	2h 2min	0	0	n/a	n/a	n/a	3	0.58mi	2120	n/a
27/03/2016	5h 22min	15h 31min	2h 6min	0	0	1h 39min	1h 12min	26min	3	0.55mi	1986	n/a
28/03/2016	6h 41min	13h 34min	2h 39min	0	0	4h 46min	3h 19min	1h 26min	4	0.72mi	2592	n/a
30/03/2016	0h 37min	7h 12min	1h 16min	0	0	n/a	n/a	n/a	1	0.37mi	1296	n/a
31/03/2016	8h 14min	13h 56min	1h 49min	0	0	4h 5min	2h 51min	1h 13min	3	0.51mi	1844	n/a





# Challenges of an Aging Population



## Innovation to Age in Place

Moira Charters  
Head of Partnerships & New Initiatives,  
Loreburn Housing Association



### National Health & Wellbeing Outcomes

Outcome 2: "People, including those with disabilities or long term conditions, or who are frail, are able to live, as far as reasonably practicable, independently and at home or in a homely setting in their community"



E-Frailty – CM2000 Pilot Report | 2017



Loreburn  
Housing Association



E-Frailty – CM2000 Pilot Report  
(Nithsdale Mills & JM Barrie House)

Author:  
Moira Charters  
Head of Partnerships & New Initiatives  
Loreburn Housing Association  
26 June 2017

Wider Rollout of ARMED  
commenced in May 2018

# ARMED use Within Loreburn HA



- Reported falls since May 2018 (reported as @ 20/11/18) where ARMED **not deployed**

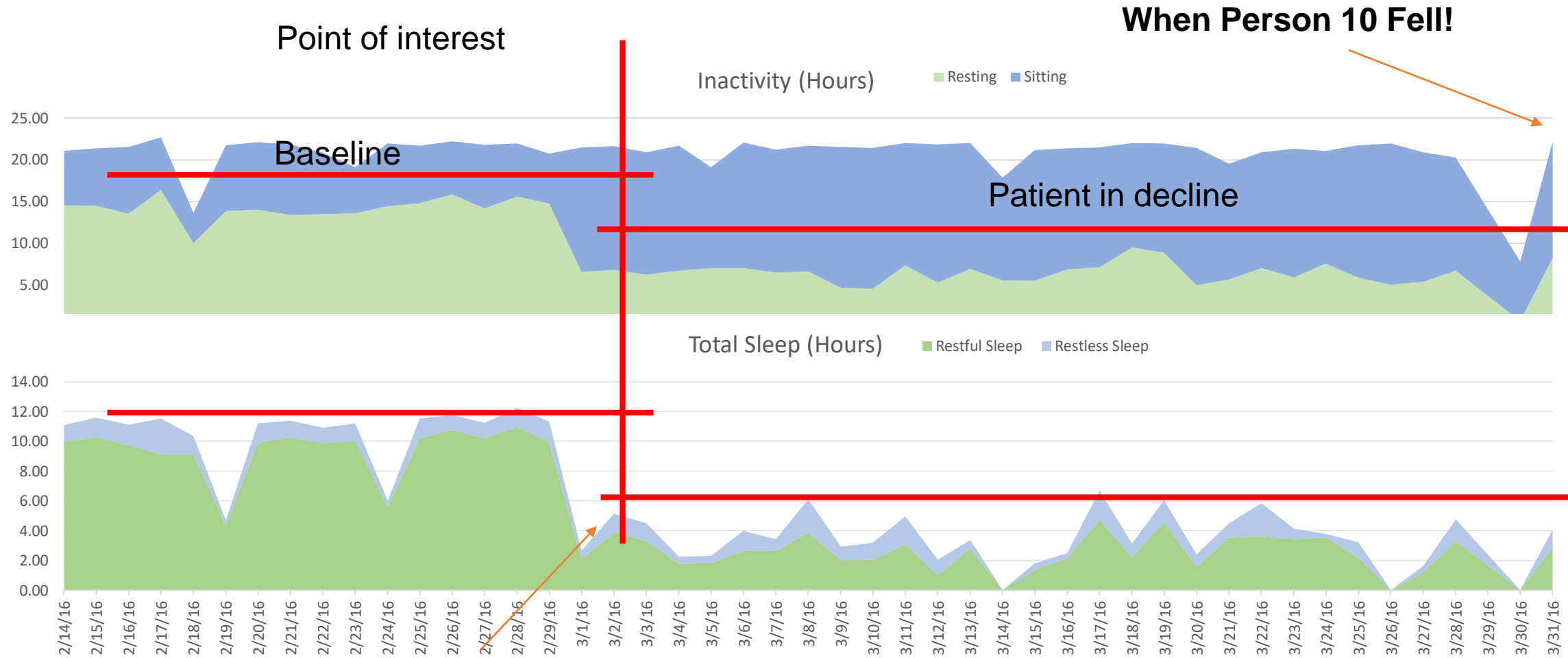
	Number of Reported Falls	Number of Unique Individual Fallers	GP Visit	Ambulance Called	Social Care Package Instigated
Sheltered Development 1	30	9	11	16	9
Sheltered Development 2	13	5	2	3	3
Sheltered Development 3	9	5	2	2	3
Sheltered Development 4	7	3	0	0	0
<b>Total</b>	<b>59</b>	<b>22</b>	<b>15</b>	<b>21</b>	<b>15</b>

- Establishments 1-4 (where ARMED has yet to be deployed), there has been 59 reported falls in this timeframe of 22 unique people
- There has been a lot of statutory service involvement of GP callout's, ambulances called, and packages of care put into place. This has conservatively costed at **approximately £200,000\***

How many falls has there been within Sheltered Development 5 where ARMED has been deployed? **ZERO!!!**

- In development 5 where we have the ARMED solution rolled out there has been zero falls. The cost of the ARMED solution over the same period would be **approximately £8,000**
- The ARMED solution in this example would represent a significant return in investment in the region of **25: 1** save to spend ratio

# Patient 10 - Data Visualisation Following Recent Data Re-Analysis



**When the ARMED flag would have been raised. 32 days in advance of when person fell**



# What is the effect of the Environment?

Our LoRa Gateway on the Left attached to a high gain external antenna.



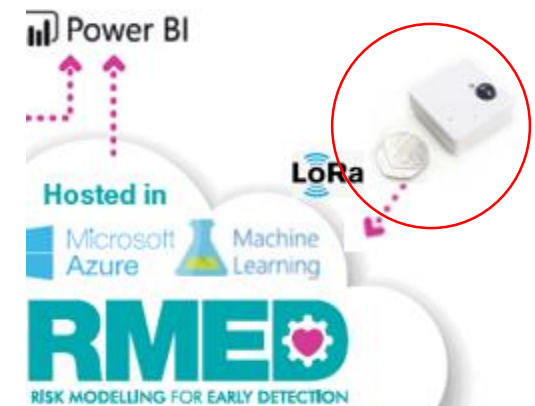
Test Equipment that Boston Network have provided on the right.



- This combined sensor includes
  - Motion Detection(PIR)
  - Temperature
  - Relative Humidity
  - Accelerometer
  - Light detection
  - Magnetic switch



- Data collected over long range low power network called LoRa
- Significantly reduces ongoing monthly costs
- Ability to capture data from very remote & rural locations
- GPS panic button via LoRa



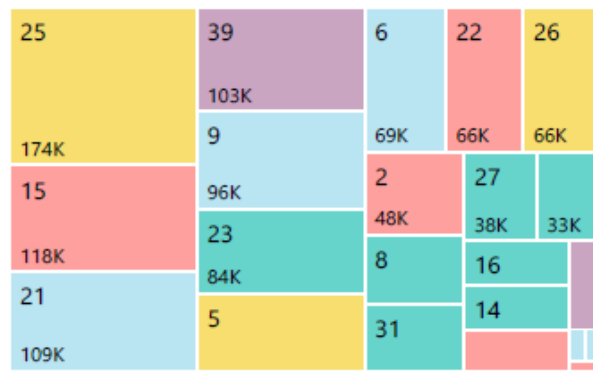
# All Clients Summary (Last 14 days)



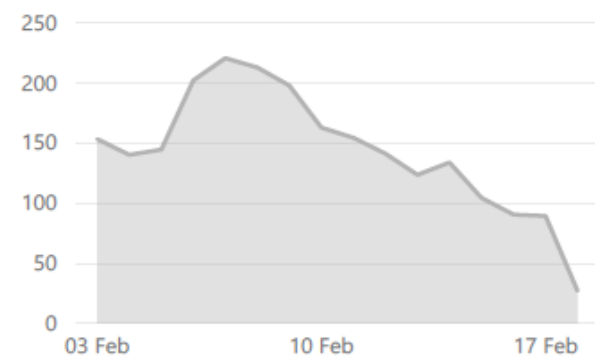
Clients by Risk Level

Risk Key	ServiceUserId	Measure Date	Risk Score	Risk Level
High	2	16 February 2019	3	High
Medium	15	16 February 2019	3	High
Low	26	16 February 2019	2	Medium
Ok	9	16 February 2019	1	Low
No Score	35	16 February 2019	1	Low
	16	16 February 2019	0	Ok
	14	16 February 2019	0	Ok
	14	15 February 2019	3	High
	2	15 February 2019	2	Medium

Total Steps by Client

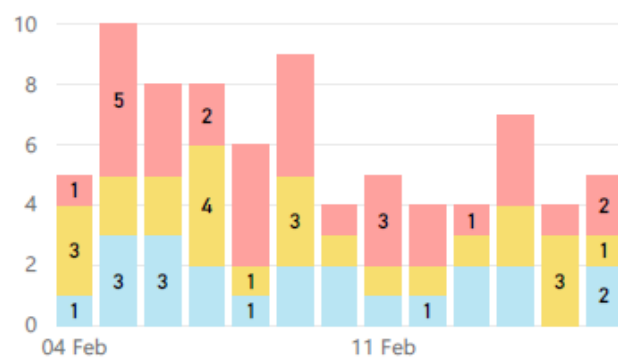


Sedentary Hours by Date

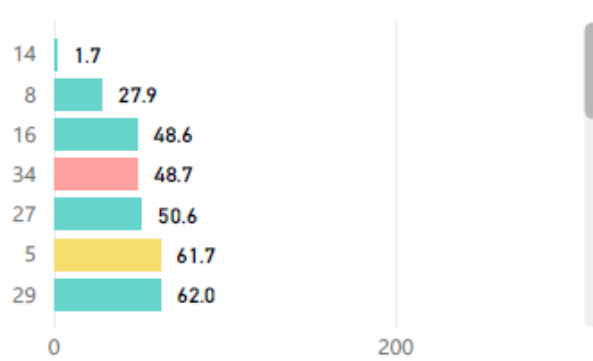


- AgencyId
- (Blank)
  - 1
  - 2
  - 3
  - 4
  - 5
- Risk Level
- High
  - Medium
  - Low
  - Ok

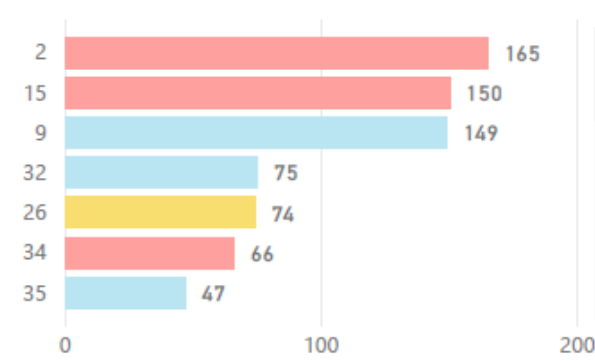
Number of "At Risk" Clients by Date and Risk Level



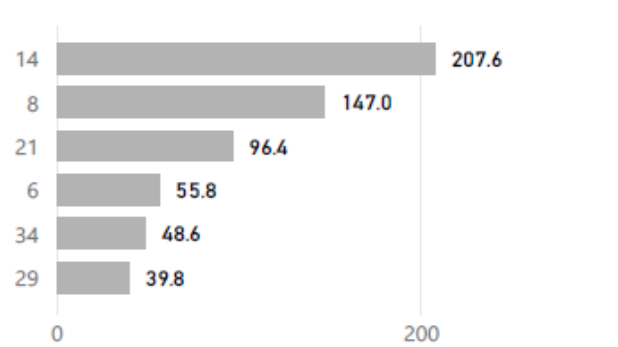
Sleep Hours by Client



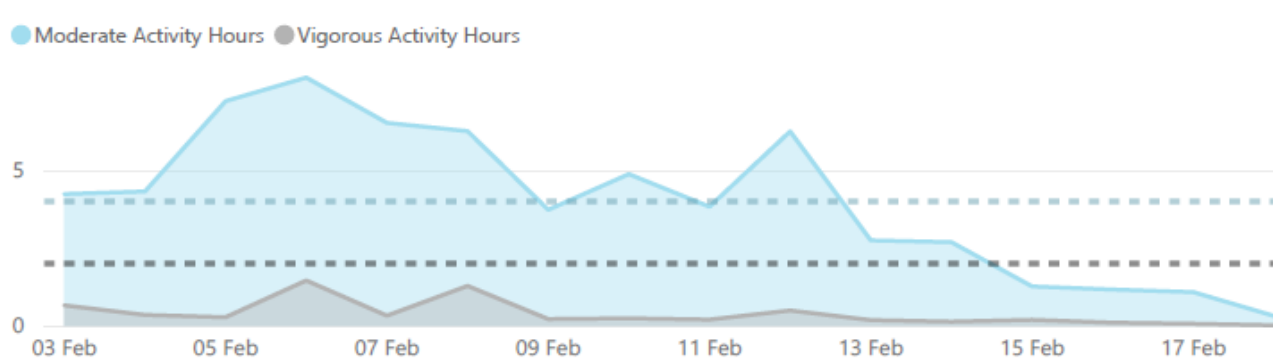
Total Inactive Stamps by Client



Non-Wear Hours by Client



Active Hours by Date



- Measure Date
- 18 February 2019
  - 17 February 2019
  - 16 February 2019
  - 15 February 2019
  - 14 February 2019
  - 13 February 2019
  - 12 February 2019
  - 11 February 2019
  - 10 February 2019

- ServiceUserId
- 48
  - 47
  - 46
  - 45
  - 44
  - 43
  - 42

Latest Measure Date: 13 February 2019  
 Latest Update Time: 13/02/2019 03:19:31

## Client Details (Last 14 days)



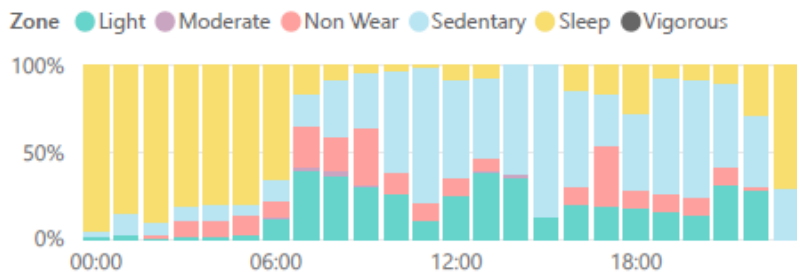
Service User ID

22

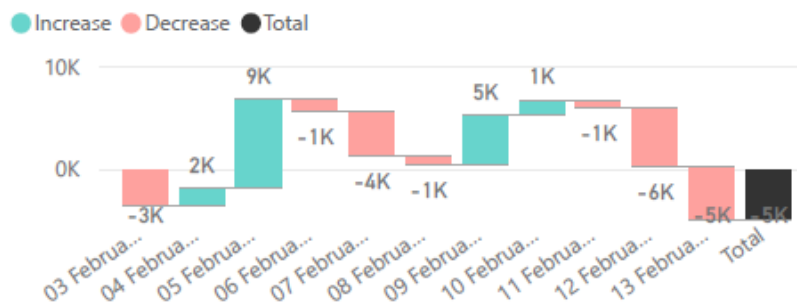
Latest Risk Score

3

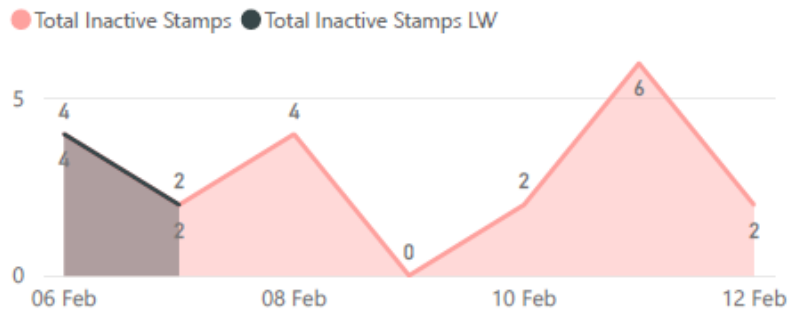
Average Activity by Hour



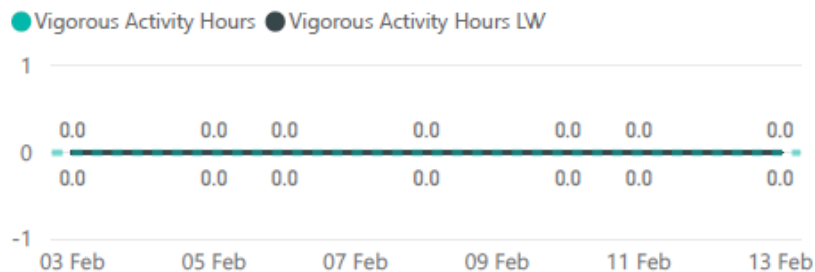
Week on Week Steps Change by Date



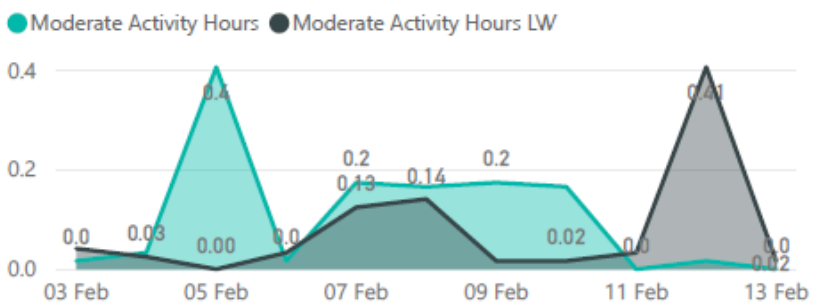
Total Inactive Stamps vs Last Week by Date



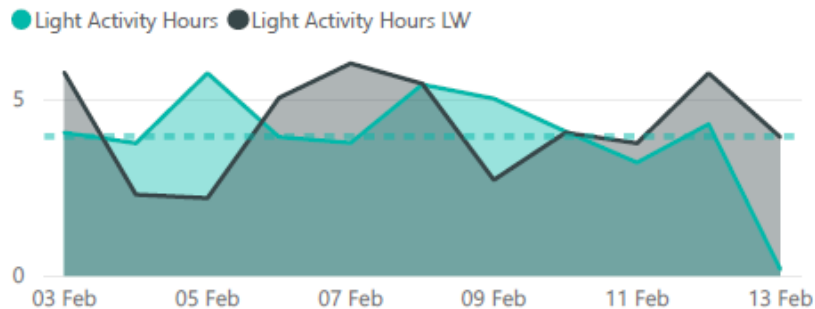
Vigorous Activity Hours vs Last Week by Date



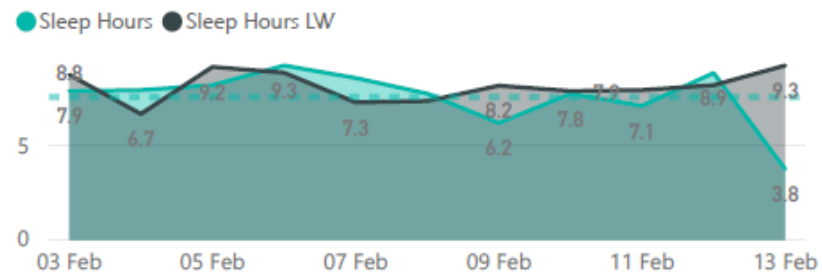
Moderate Activity Hours vs Last Week by Date



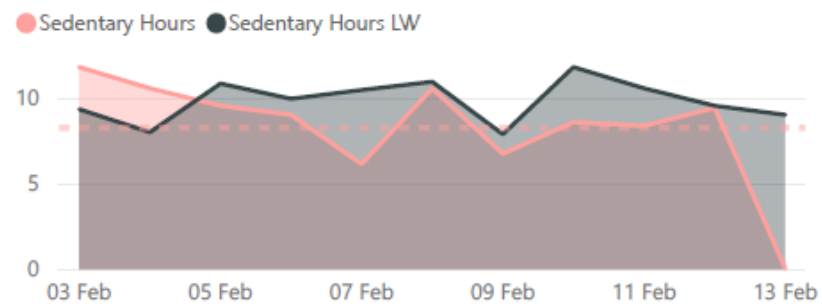
Light Activity Hours vs Last Week by Date



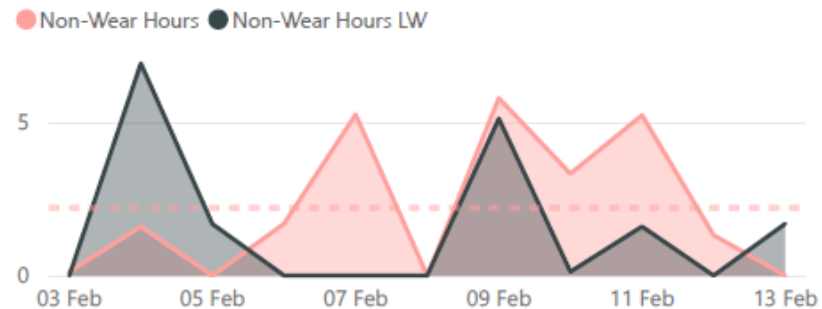
Sleep Hours vs Last Week by Date



Sedentary Hours vs Last Week by Date



Non-Wear Hours vs Last Week by Date





# ARMED

ADVANCED RISK MODELLING FOR EARLY DETECTION

*Measure more,  
Live better*

We are part of

**HAS**  
technology group

Taking you to where technology matters

**ARMED**  
ADVANCED RISK MODELLING FOR EARLY DETECTION

**care management**  
inspiring excellence

**ezitracker**  
action through innovation

**Ezicare**  
making care easy

**PAMMS**  
INTELLIGENT CARE

**QUALITY INSIGHT**  
leading with intelligence

**savii**  
INC.



**Tunstall**

Enabling independent living

Next Generation  
Service for Healthy  
Ageing in Scotland

**STEVE TOPE**

Strategic Business  
Development Director  
Tunstall Healthcare

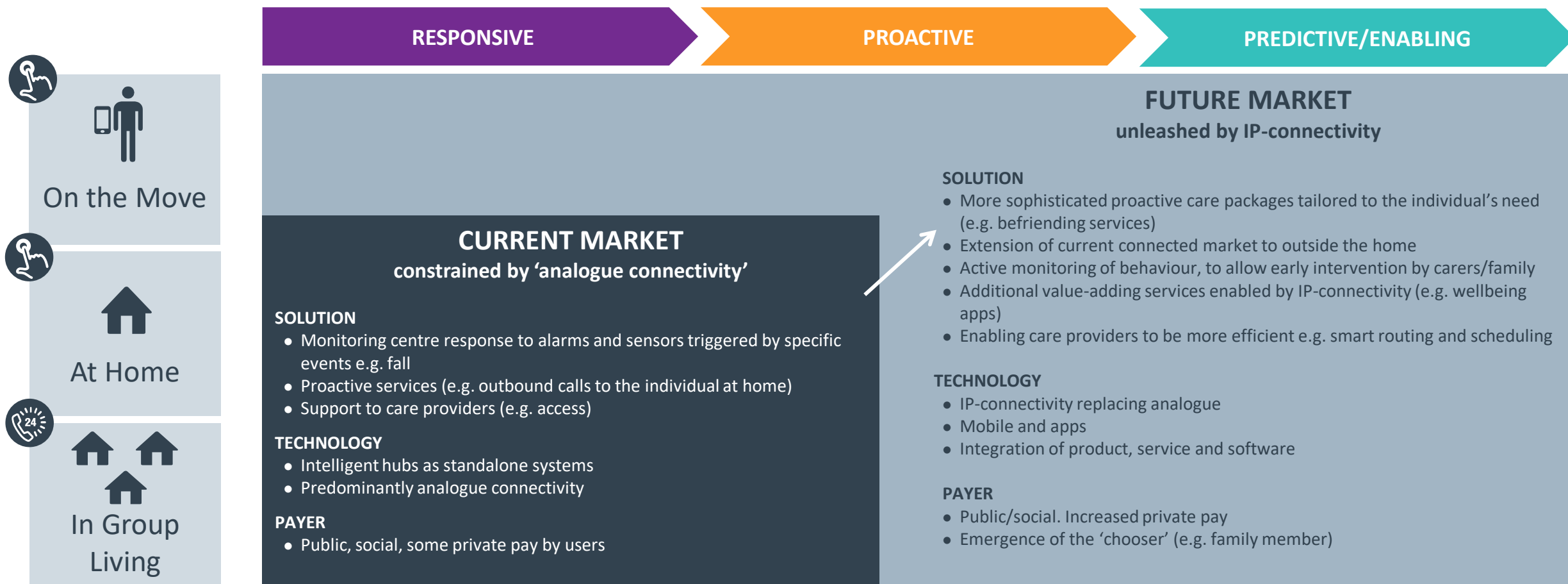
Our aim is to extending healthy independence through delivering new digitally enabled service models addressing key issues such as:

- 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

# Digital connectivity is transforming the market from responsive to predictive



*Developments in technology, such as mobile capability and increased connectivity are stimulating the transition towards more proactive and predictive/enabling care, by increasing the value of these new models of care to key stakeholders*



# New service models bringing people together



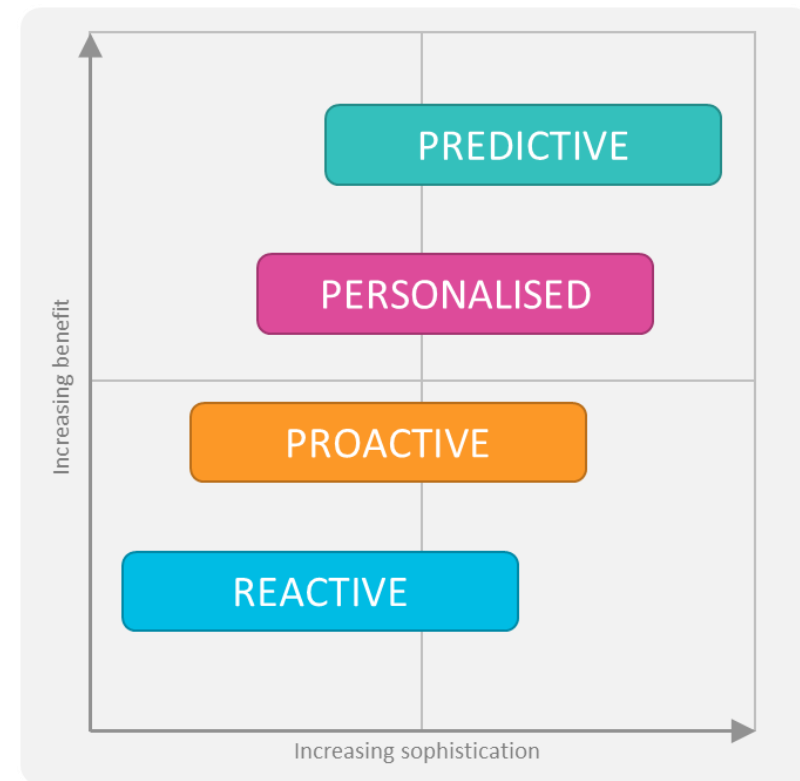
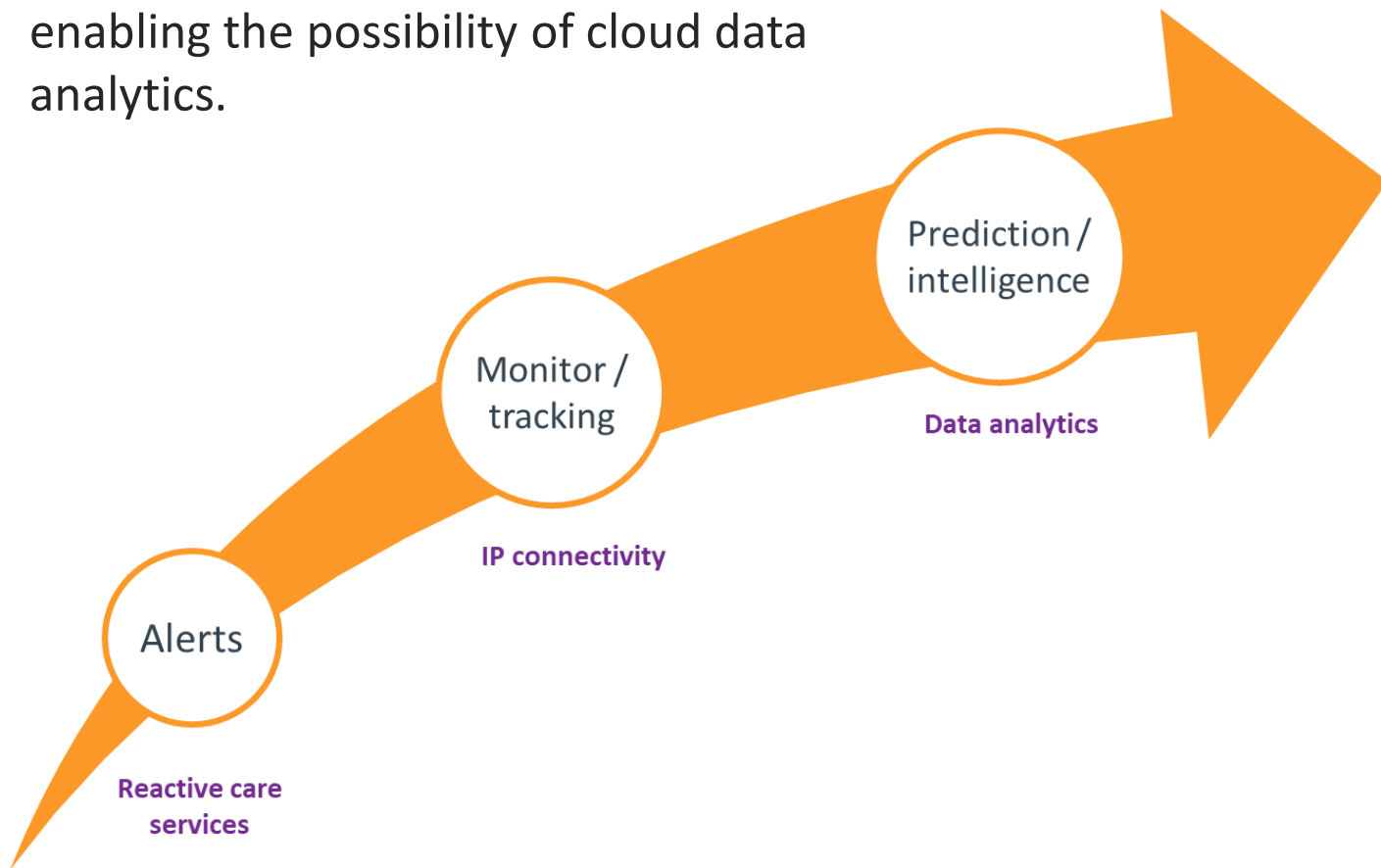
The connectivity of IP has the power to deliver a wide range of possibilities within Independent and Group Living – for users, choosers and formal and informal carers.

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.

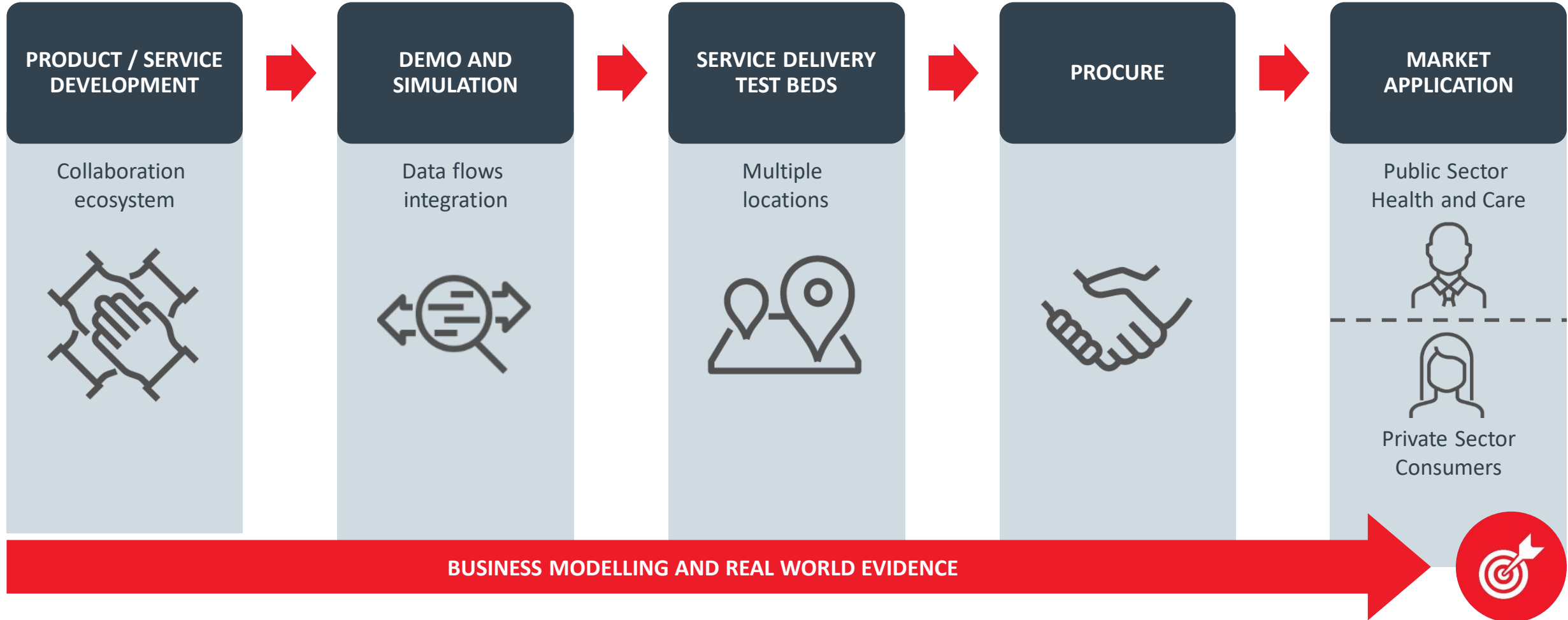
# Where is the journey taking us?

Digital unlocks great potential to combine mass data and connectivity, enabling the possibility of cloud data analytics.



Predict events before they happen, highlight increased risk of falls or issues around the home

# Facilitated route to market





# Technology in Community Care: a service designer's perspective

Gus Desbarats | Chairman | alloy: experience-led design

alloy

# What is a service designer?

A professional innovation leader in services  
Balancing: users | technology | organisations  
Plans & specifications for delegation or buying  
A bit like what architects do for buildings.

My specific expertise:

35 years of design for communication services  
recognised IOT and inclusive design pioneer  
empowering telco innovation control





auto-collection | lightspeed-flow | big-data processing

UK care adoption is at a 'tipping point' – again..

alloy

Big Government interest

The need hasn't gone away

Some useful startups

Some useful tenders

Big incumbents planning re-invention

New huge players entering the space

No nationwide customer stampede..



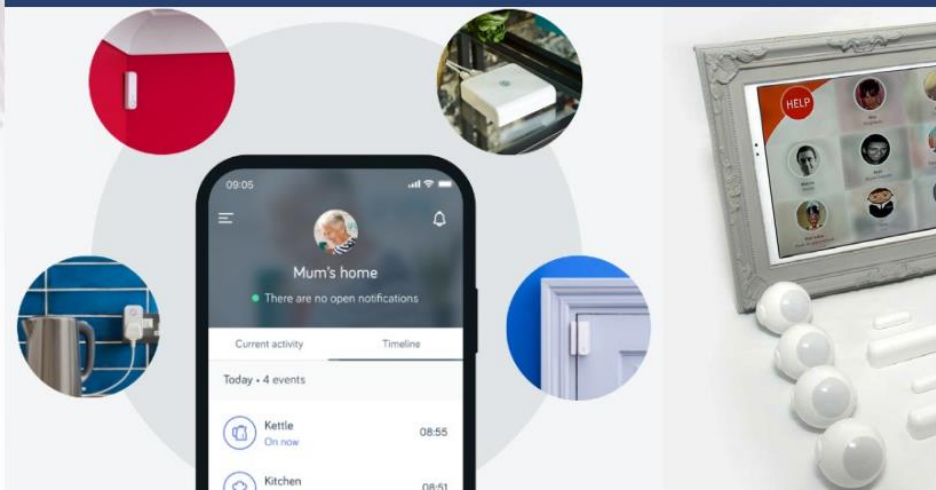
Funded sensor solutions now available to eligible DVA card holders

IVI automatic fall detector pendant  
PIR movement sensor  
Find-Me Tunstall carers watch

[Click here for more information](#)  
Eligibility must be assessed by an appropriately qualified health provider.



**Tunstall**



Delivering Assisted Living **Lifestyles, at Scale**

early experiment in user led procurement

6 c's a useful metric

Clarified the big adoption barriers

Too superficial to really drive solutions

Interoperability the overriding tech goal

## **\_The 6 C's**



**Control:** Control over your health and your care.



**Choice:** Awareness of the possible health and care options available to you.



**Community:** Connecting you with your community.



**Connectedness:** Ease connecting with others through technology.



**Contribution:** Opportunities to contribute to your local community.



**Collaboration:** The opportunity to talk and share decisions and experiences with others.

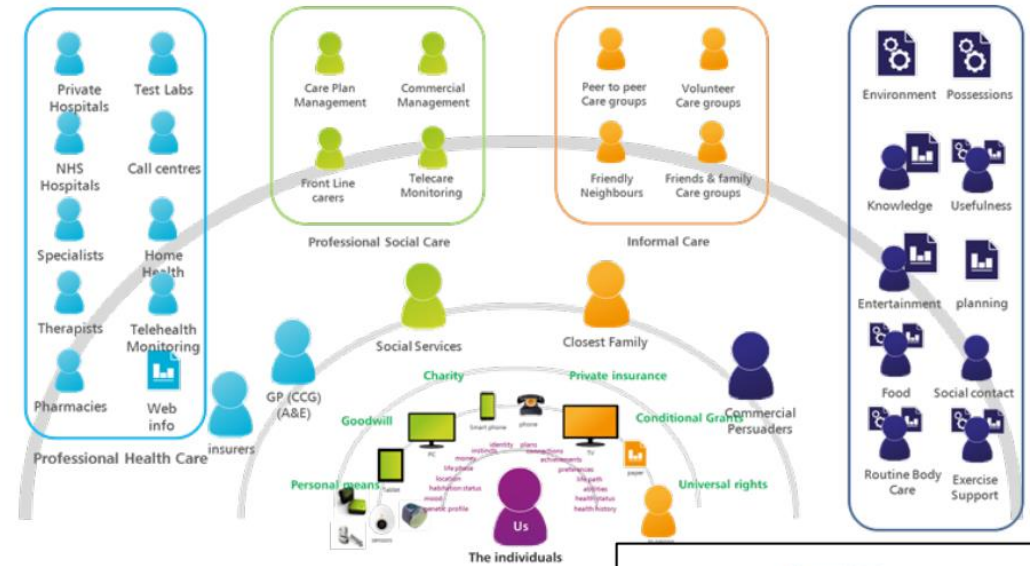


User-led interoperability drive

i-focus legacy:  
The digital Health & Care Allowance  
<https://dhaca.org.uk>

Useful information, but..

Has it ever driven any code?



dallas Interoperability Profile:  
Implications of the Medical Devices Directive when using Consumers' Own Devices

### Draft Stakeholder Requirements

The stakeholder requirements captured here are relevant to the **dallas** Interoperability Profile regarding the Implications of the Medical Devices Directive when using Consumers' Own Devices. They have been derived through engagement with the four **dallas** communities by interviews and direct project meetings, as well as by scenario building in an experience led design process.

Table of Requirements for this profile	RMS
Stakeholder Requirements for this Profile	3
Overview	3
R1: Users' preferences for devices must be taken into account	3
R2: The statutory sector should be able to minimise capital costs by utilising consumers' own devices	4
R3: The statutory sector should be able to purchase and utilise consumer technology	5
R4: It must be possible to access services using a smartphone	5
R5: It must be possible to access services using a tablet	6
R6: It must be possible to access services using a digital TV	7
R7: It must be possible to access services using a desktop PC	7
R8: It must be possible to access services using a laptop PC	8
R9: It must be possible to access services using a basic mobile phone (e.g. via SMS)	8
R10: It must be possible to import information to the statutory sector from a Personal Health Record (and/or for PHR data to be viewed from the statutory sector)	9
R11: Patients must be in control and able to choose the services and devices to use	10
R12: After installation, systems must be able to be extended by the addition of new components, to add features as required	10
R13: Systems must facilitate greater self-care and/or informal (non-statutory) care	11
R14: It must be possible to access service using Games Consoles	11
R15: Guidance on the Medical Devices Directive must cover use for general wellbeing and lifestyle applications, with and without links to the statutory sector	12
R16: Guidance on the Medical Devices Directive must cover use for exporting telehealth information, gathered from any device, from the statutory sector to PHRs	12
R17: It must be possible to export Telehealth information from PHRs into the statutory sector	13

i-focus 1/16 dallas





**P1: Inclusion Society**



Contemplation Homes (UK)  
 'High needs' social care  
 in-home and residential.

Activiteit	Score	Norm	Score	Norm
opstaan	8 <sup>00</sup>	70 <sup>00</sup>	1	8 <sup>00</sup>
voeten wassen met een andere persoon	17 <sup>00</sup>	10 <sup>00</sup>	2	10 <sup>00</sup>
begin toilet / (ver)plaatsenwerk / grooming / toilet	13 <sup>00</sup>	10 <sup>00</sup>	1	13 <sup>00</sup>
voedsel	18 <sup>00</sup>	19 <sup>00</sup>	2	18 <sup>00</sup>
naar bed	23 <sup>00</sup>	24 <sup>00</sup>	0	22 <sup>00</sup>
<b>SMT score</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>2</b>



Medicatie	Dosering (per tablet/capsule)	voorschrift (mg/ml, prop. (gram))	zaterdag	zondag	maandag	dinsdag
Lithium	400	mg	2	2		
SeroquelXR	300	mg	2	2		
Tenaxapan	20	mg				
Paracetamol	500	mg				

**P2: e Care @ Home**

In-Geest Mental Health  
 Hospital (Ned.)  
 VRIJE University(Ned.)  
 Remote, long term care of  
 bipolar conditions

## Initial Report on The Well Together Workshop Findings July 2015

Group A, Residential Nurses and other healthcare personal



**P3: EHR Pathways**



Hawthorn Rd Surgery (UK)  
 Noord University (Norway)  
 Nursing care documentation  
 Remote, long term self care of  
 chronic conditions

A service design inspired by user research across 3 Euro projects

# Insight | A 'big' solution is needed, 1 future-proof adoption decision

Secure  
Low Cost &  
Future-proof



Buyers



Family

Affordable  
piece of mind



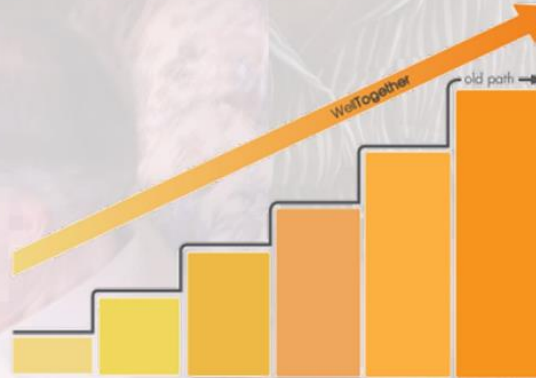
Friends

Closer  
contact

Easy to own  
and operate



ME



Doctors

An easy to adopt  
productivity tool

Helping me  
Help others



Peers/helpers

The patient  
knows  
what I look like



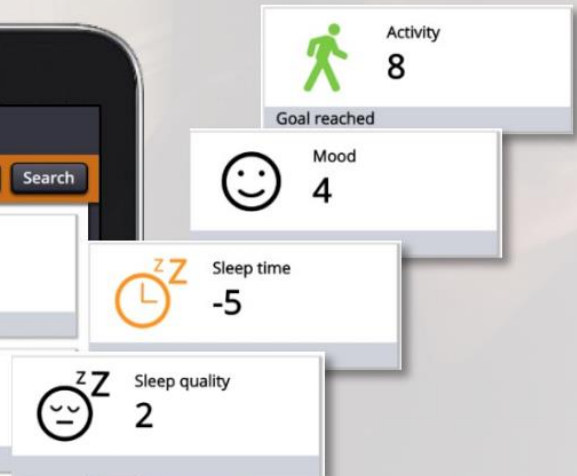
Pro Carers



Nurses

More  
patient time, less  
paperwork

A single service that works across all care modes & stakeholders

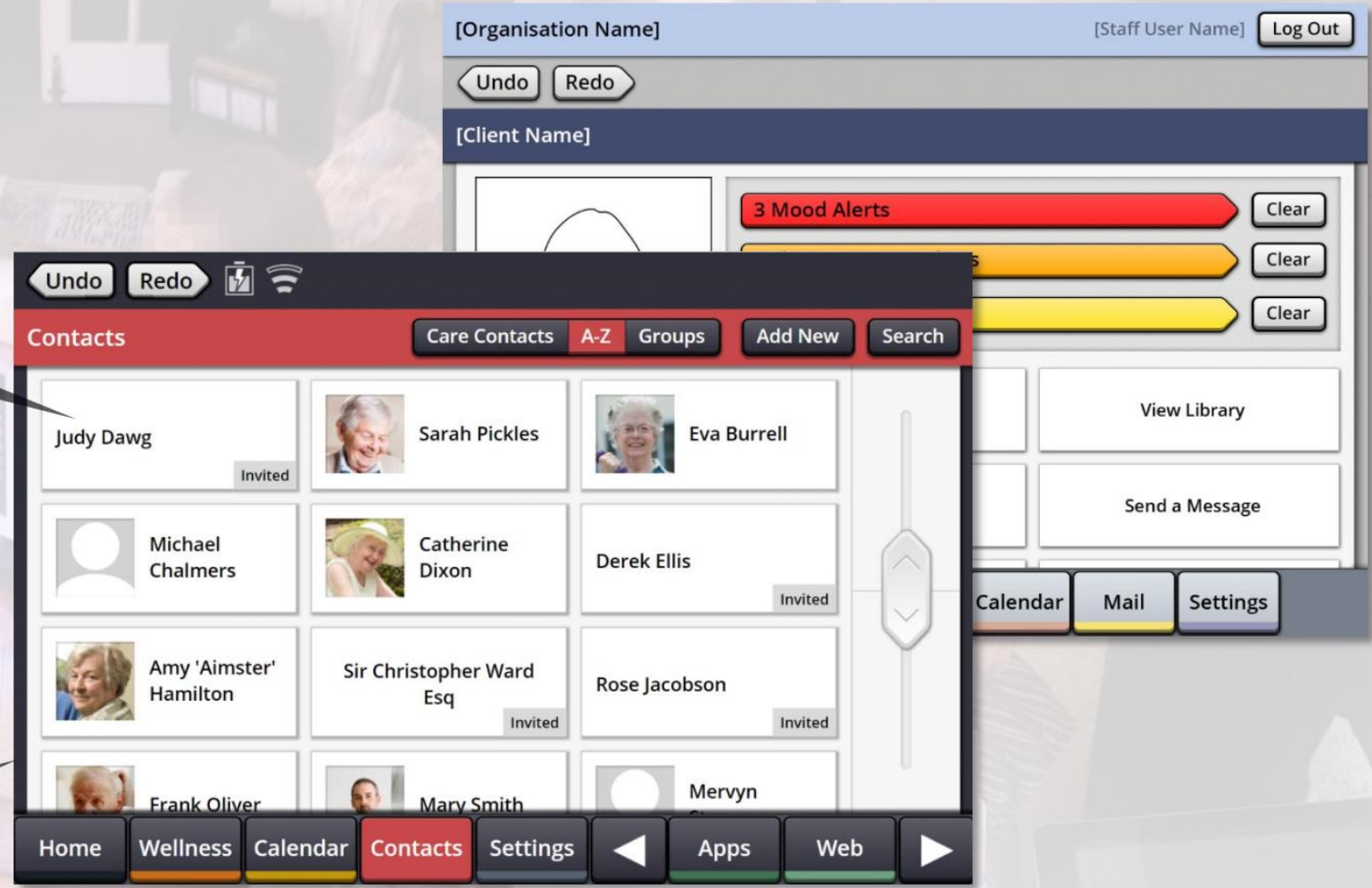


modular functionality | sensor obsolescence | data continuity | process control



Person to person / Sensor to database(s) / pers to org / org to org

High-legibility graphics



nothing 'discoverable'

Both professionals and consumers crave simplicity

# Insight | Interop & security will demand next-gen 'edge' architecture

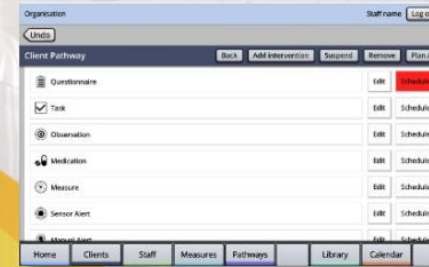
Service users



Informal carers



Housing Associations



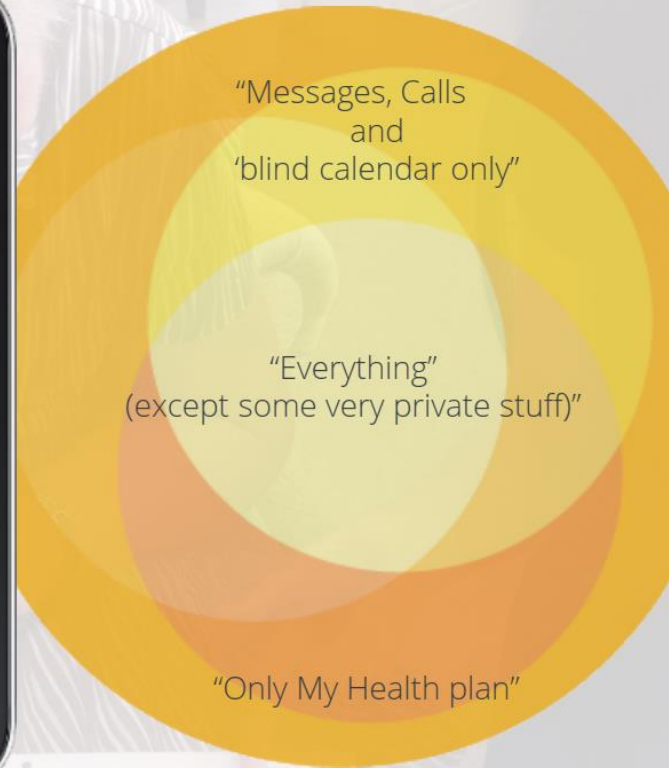
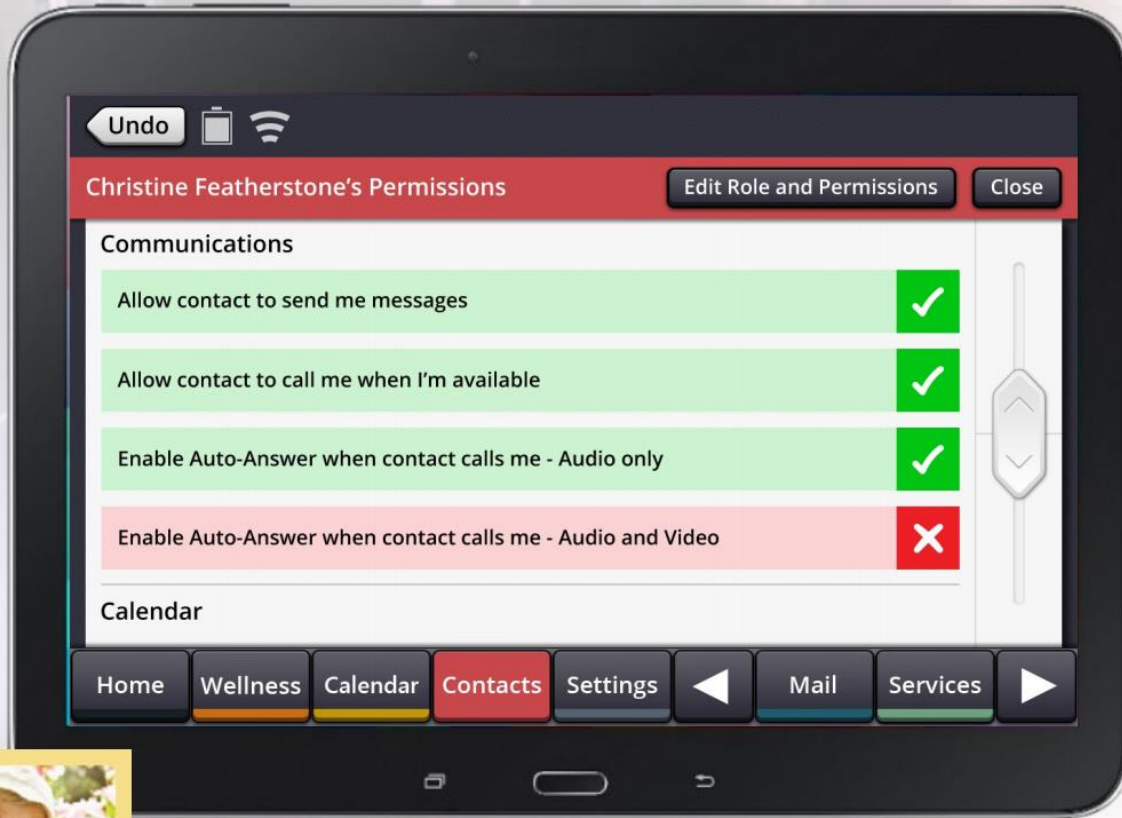
NHS trusts



Private Care orgs



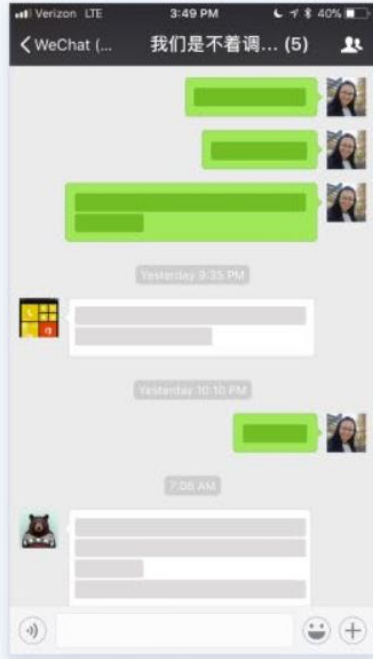
Real-time, peer-to-peer, block-chain, managed, across multiple servers



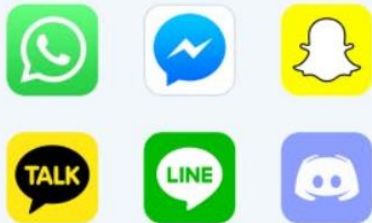
"I decide what I want to share, on what terms"



Insight | this is entirely possible, someone just needs to ask



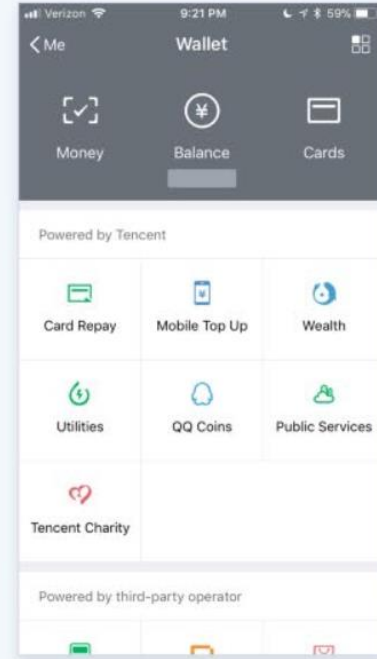
Chat



Official Accounts



Moments



Wallet



Call to action: create a body to take control and deliver

alloy



OR



Big things will happen, if you don't act, they will help others more than you

Thank you

alloy



Gus Desbarats  
gus@thealloy.com



# Housing LIN Conference

## Building better and smarter communities

20<sup>th</sup> March 2019



—  
**Contents**  
—

**Who are ENGIE**

**Touchpoint**

**Cyril**

**Next Steps**



---

# Who are ENGIE?

Innovators in Energy and Services Shaping Places

---



# ENGIE UK in numbers

**£3.8bn**

UK turnover

**80MWe**

Critical standby diesel power

**20,000**

Employees

**60km**

Heat network

**25m**

m<sup>2</sup> of space managed

**240MWe**

Combined heat and power

**2GW**

Thermal production

**27,000**

Customer sites

**£200m**

invested in energy schemes

**5GW**

Power generation

**21**

Major NHS Trusts

**£700m**

Managed lifecycle fund



# ENGIE Places & Communities

**350,000**

Homes refurbished and made more energy efficient in the last ten years

**Invested >£150m**

To tackle fuel poverty

**Saved 60,000 tonnes of CO<sub>2</sub>**

Every year

**£1 billion**

Regeneration pipeline

**Provide district energy to 8 major cities**

**250+ educational facilities** managed

**15 major facilities management**

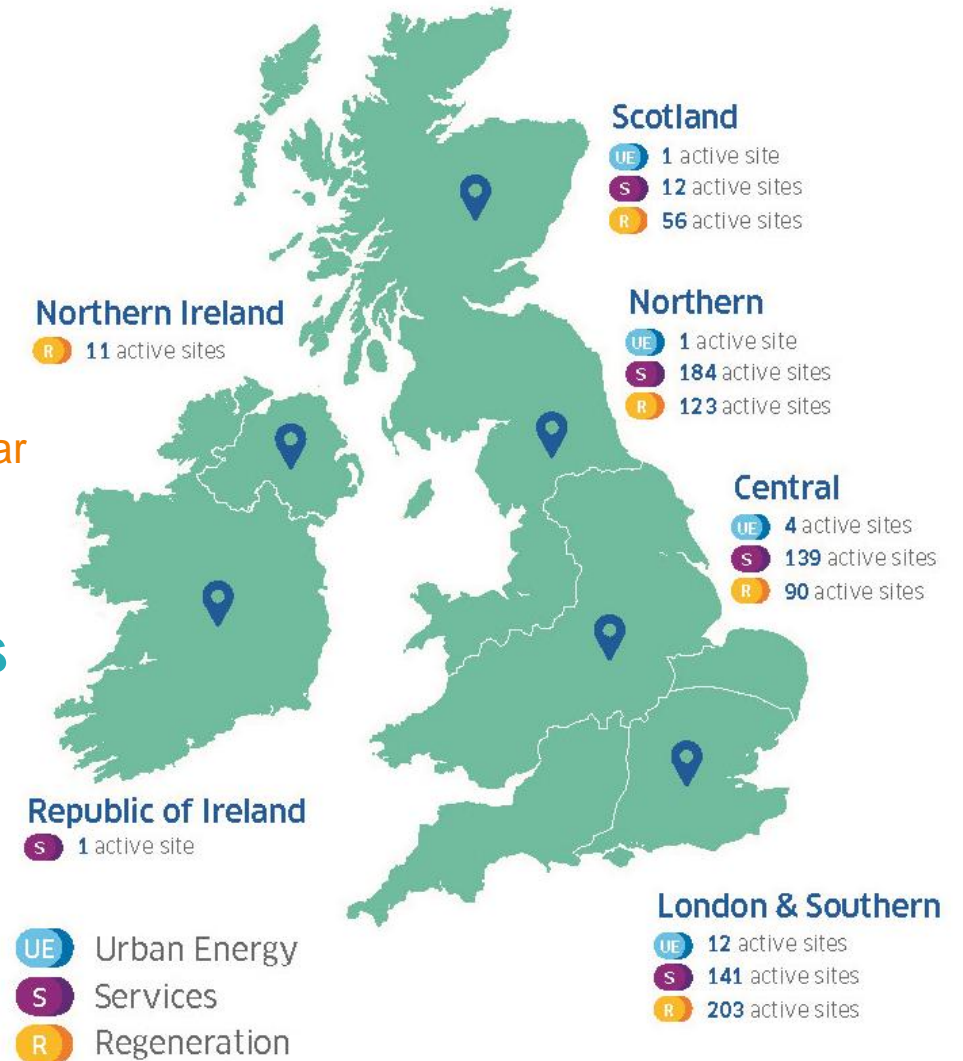
and business services with local authorities in UK & Ireland

**Delivered over 4,000 units** of Extra Care housing

**250,000 responsive repairs**

Carried out to properties each year

**Managing the services for 35 healthcare sites**







# Touchpoint

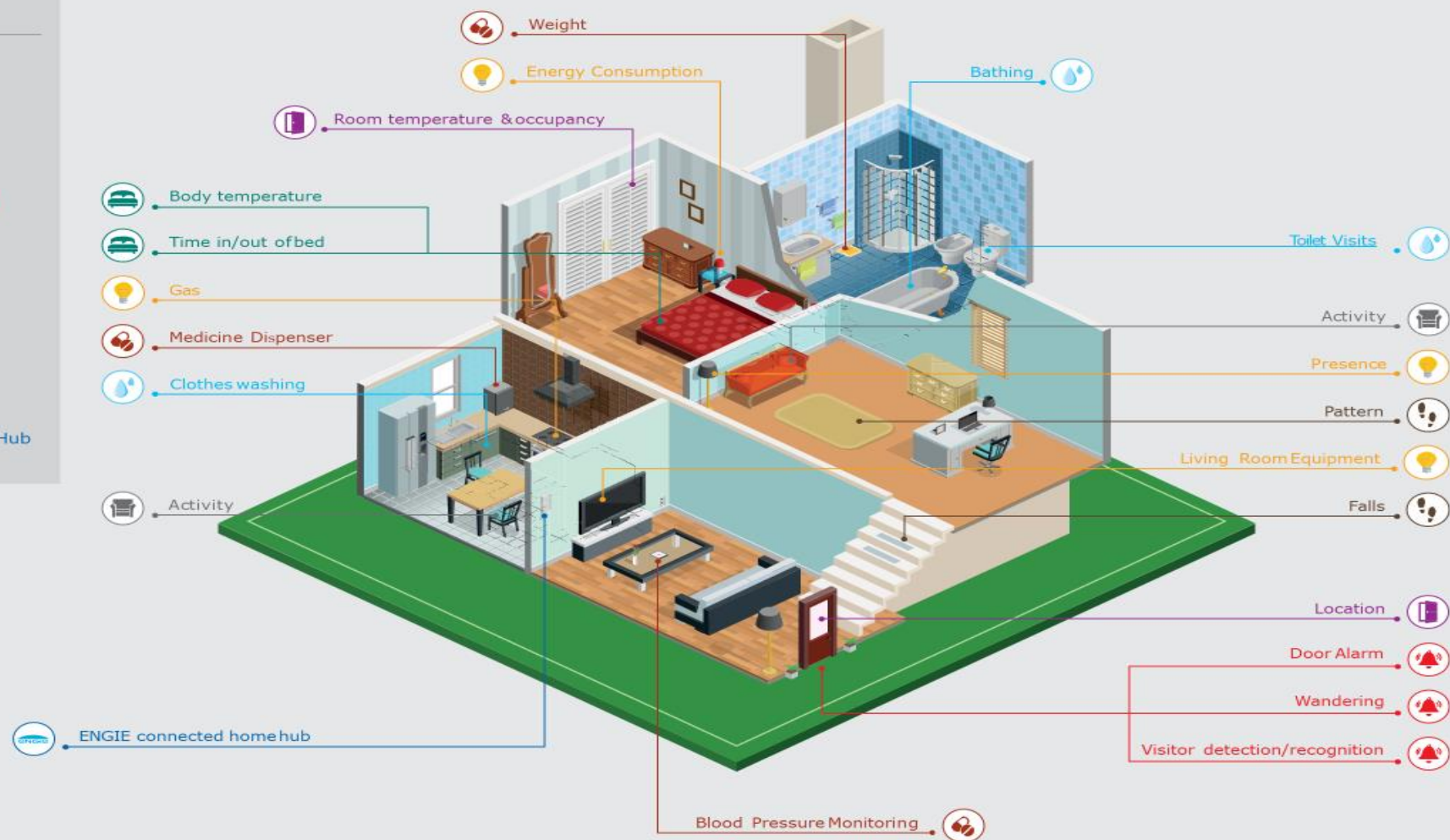
Pilot - Healthy at Home Solution



# Touchpoint

## KEY

-  1. Door entry system
-  2. Door movement
-  3. Movement
-  4. Flow (water) monitoring
-  5. Chair/Couch Occupancy
-  6. Bed occupancy
-  7. Energy consumption
-  8. Health Hub
-  9. ENGIE Connected Home Hub





# Cyril

Live Application NHS compliant



—  
Cyril  
—



# NHS – Risk Assessment



## Risk Assessment

Has the patient deteriorated to either skin grade 3/4 or multiple grade 2 from healthy unbroken skin since the last opportunity to assess / visit?

YES

e.g. record of blanching / non-blanching erythema / grade 2 progressing to grade 3 or more, or multiple 2 or more grade 2).

NO

e.g. no previous skin integrity issues or no previous contact health or social care services.

Has there been a recent change, days or hours, in their clinical condition that could have contributed to skin damage?

*e.g. infection, pyrexia, anaemia, end of life care (Skin Charges at Life End), critical illness*

Change in condition contributing to skin damage

No change in condition that could contribute to skin damage

Was there a pressure ulcer risk assessment or reassessment with appropriate pressure ulcer care plan in place and document?

*In line with each organisations policy and guidance*

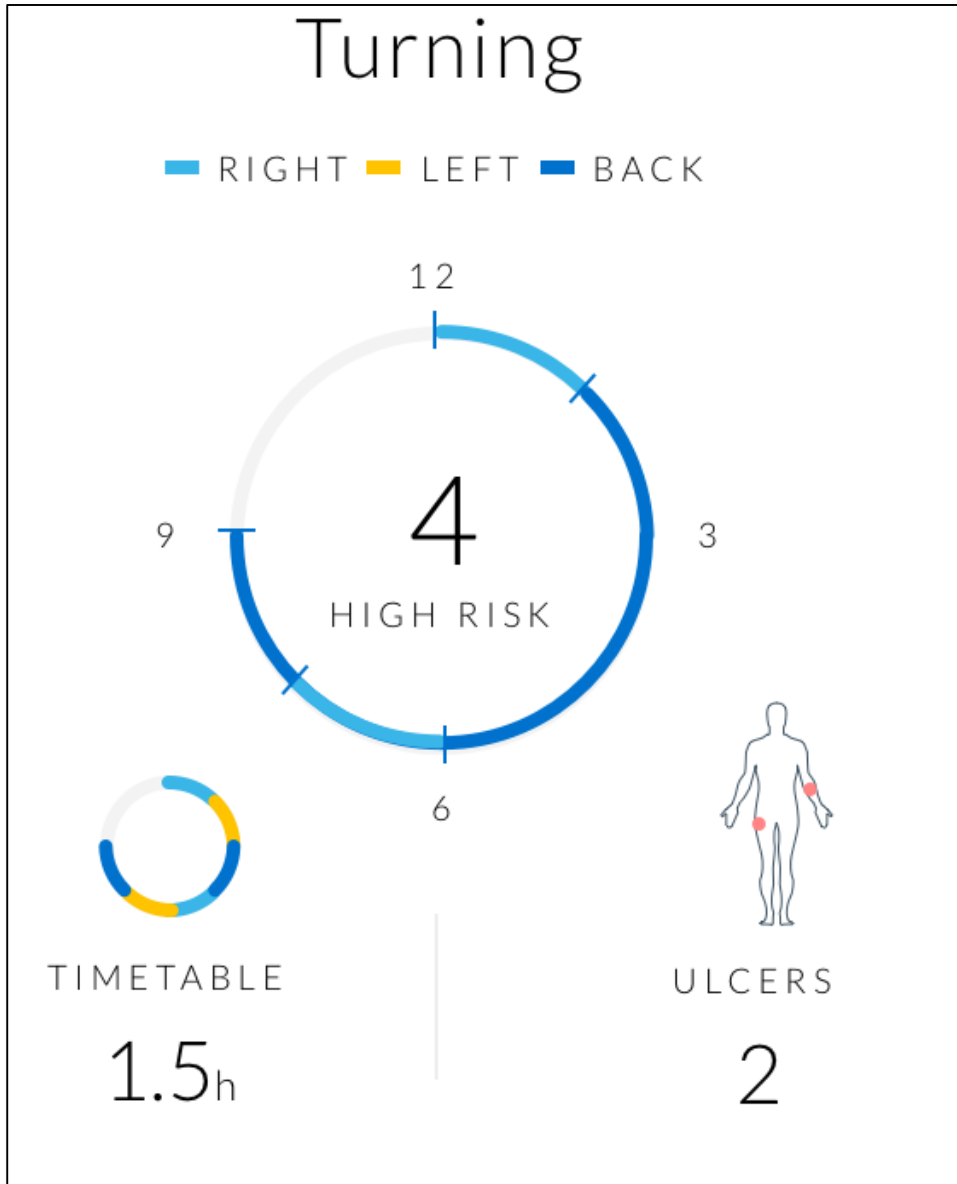
Current risk assessment and care plan carried out by a health care professional and documented appropriate to patients needs

Risk assesment carried out and care plan in place documents but not reviewed as person's needs have changed

No or incomplete risk assessment and / or care plan carried out

Add Evidence

Cyril



ULCER RISK SCORE	BED NUMBER	NHS NUMBER
25	1	943 476 5929

---

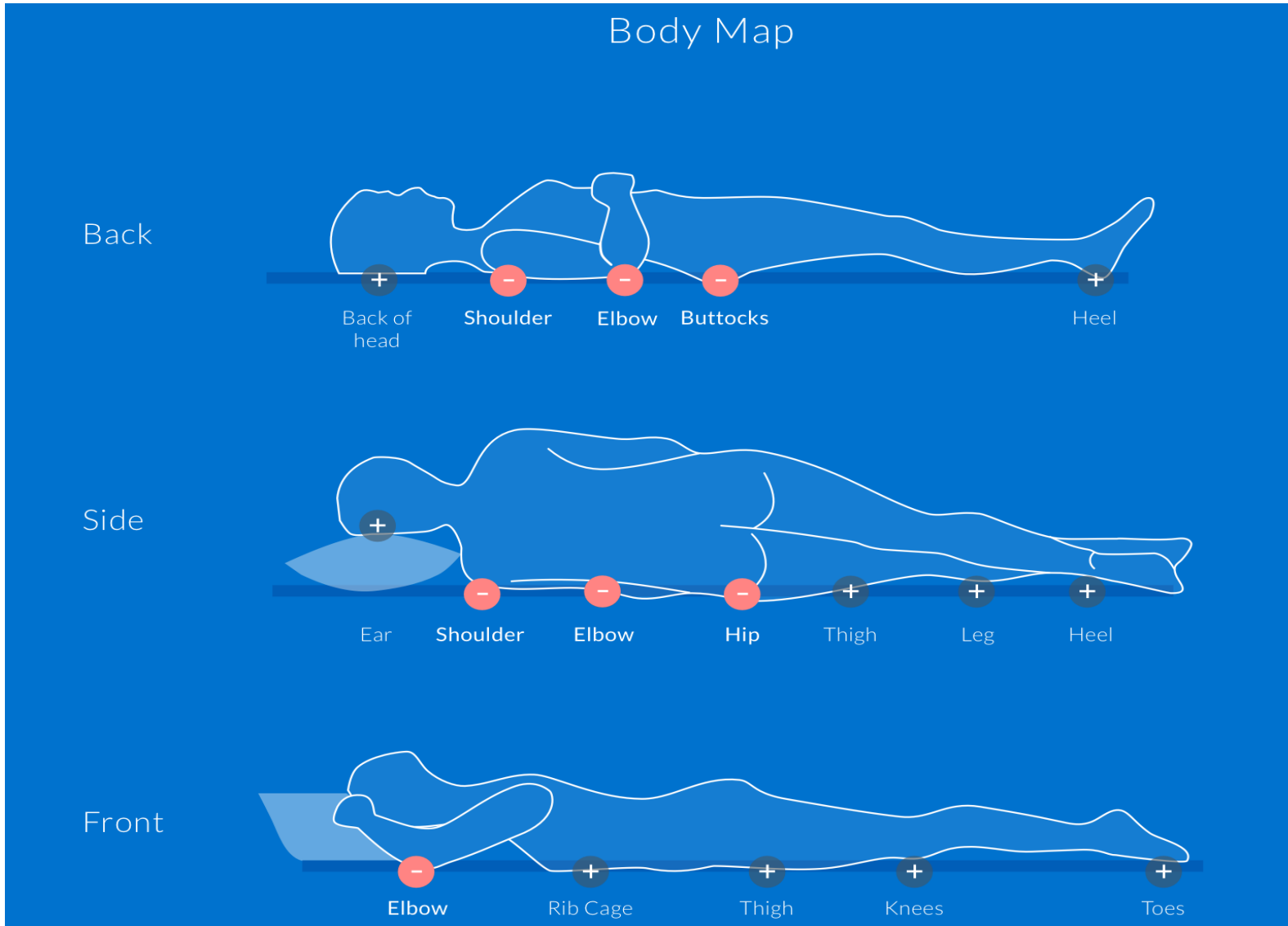
Height	6'2"
Weight	11st 9lbs
BMI	20.93
Turning Timetable	1.5hrs
Sensor no.	7

---

Back	 Shoulder Buttocks
Side	 Hip
Front	



# Cyril





# Next Steps

Validation and delivery





---

## Next steps

---

- ◆ More research and full delivery with CNWL
- ◆ Integrate into LIFEstyle by ENGIE optional services
- ◆ Introduce to Adult Social Care and Extra Care housing partnerships

