LOCALISED DIGITAL TRANSFORMATION SUPPORTING HEALTH AND CARE

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Mike Holden, Project Manager – Better Care Fund/Integrated Care Partnership Programme, City of Wolverhampton Council and **Andrew White**, Director, Predict X.

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In association with

Enabling people to live the best life they can – supported by Technology Enabled Care (TEC)

28th January 2021 - Julie Harrison

**ASC Commissioning – Strategy and Integration
and Dan Stepney - Redgear Solutions LTD**

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Birmingham City Council

Content:

- Local Context
- Adult Social Care Vision and Ambitions
- TEC – Starting Point and Potential going forward
- Value of Collaboration
- Pilot with Redgear – Activity Monitoring
- What would TEC success look like
- Social Work – Eligibility Assessment considerations
- How does this fit with ISO

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Birmingham - Local Context

- Super-diverse city **1.13m** citizens - **42%** of the population are from Black, Asian and Minority Ethnicity groups compared with 15% nationally.

- Relatively young population - **22.7%** are under the age of 16.

- Older adult population (65+) - predicted to increase by **13.2%** by 2029.

- Older adults with a limiting long-term illness whose day-to-day activities are limited a lot – is predicted to increase by **13.8%** by 2030.

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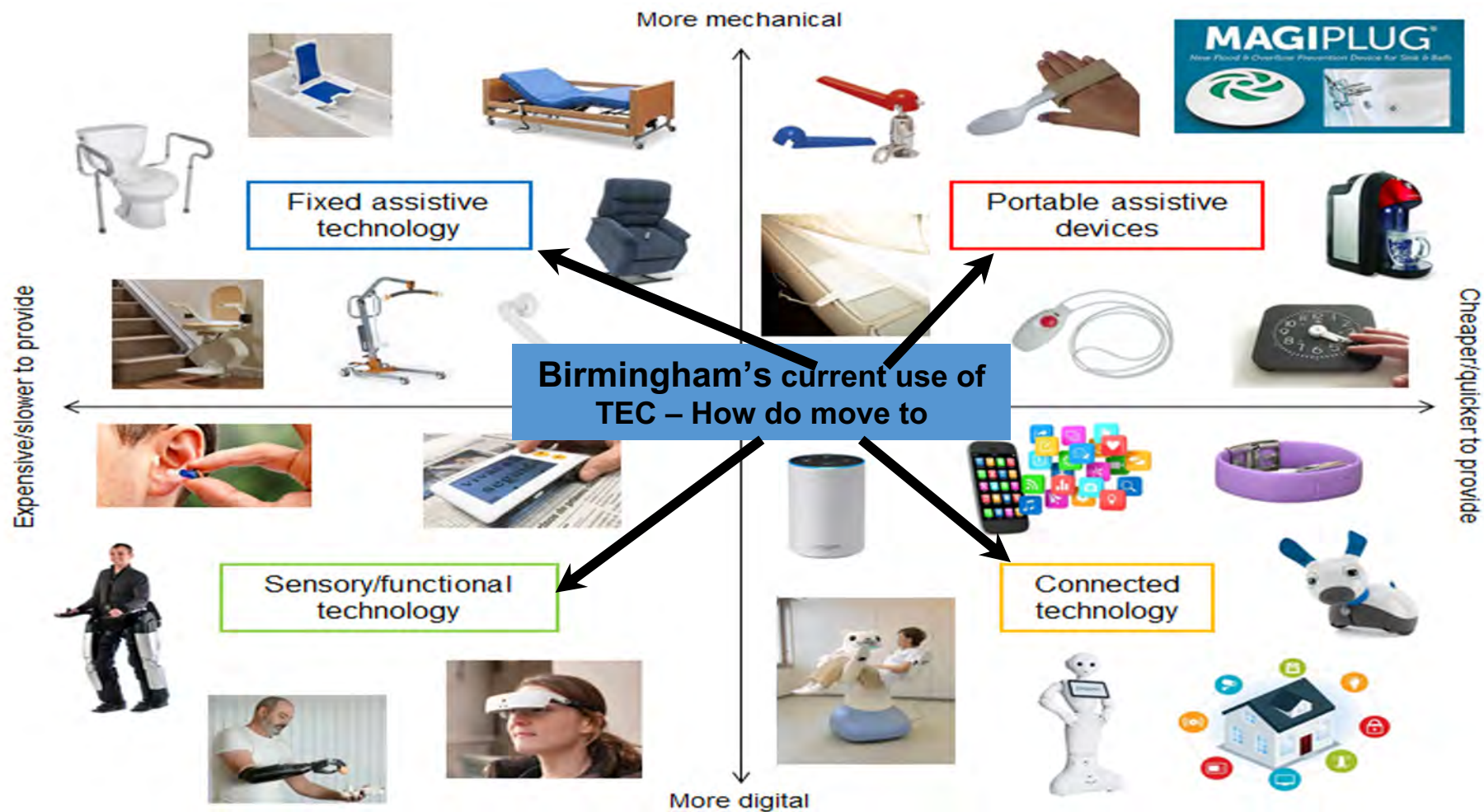# Birmingham - Local Context

- Younger adults with a learning disability – predicted to increase by **4.6%** by 2030.

- Younger adults with a physical disability – predicted to increase by **3.1%** by 2030.

- Carers – number of carers equates to about **10%** of the city's population.

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Adult Social Care Vision and Ambition for TEC

Maximising the use of TEC offers tremendous opportunities to enhance the experience and quality of life's both in our homes and those of all our citizens as part of our Home First vision focuses on:

- **Enhancing independence and dignity** by enabling citizens to exercise greater control and choice over their daily lives, live at home and be less dependent upon other people.

- **Reducing isolation** by connecting citizens to their social networks and to opportunities in their communities.

- **Supporting carers** by providing reassurance remotely or allowing a break to go out, easy means of communication, and reducing demands on their capacity.

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TEC – Starting Point and Potential going forward

Kevin Dougherty 2018

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Benefits of Working collaboratively on TEC

- Councils can work with new providers and their products that can significantly help citizens remain supported at home, in a genuine co-production environment

- Working directly with Councils can help to provide a real understanding of social care needs and what information is useful and what citizens and their families and social care teams want to see form this information

Caveat - Council teams do not have lots of time available to work with numerous providers, so who do they select and why?

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RGS Care and BCC - The challenge

The need to provide independent information to support a personalised care plan approach

Provide information daily to social care teams, family members and health professionals

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RGS Care & BCC - The solution

Environmental and movement analysis

Measures 11 variables

Mobile, non-intrusive, no human data collected

Detailed insight into wellbeing, behaviour, routine & environment surrounding resident

Birmingham
City Council

Data + Action = Value

- Dashboards, Reports & Alerts

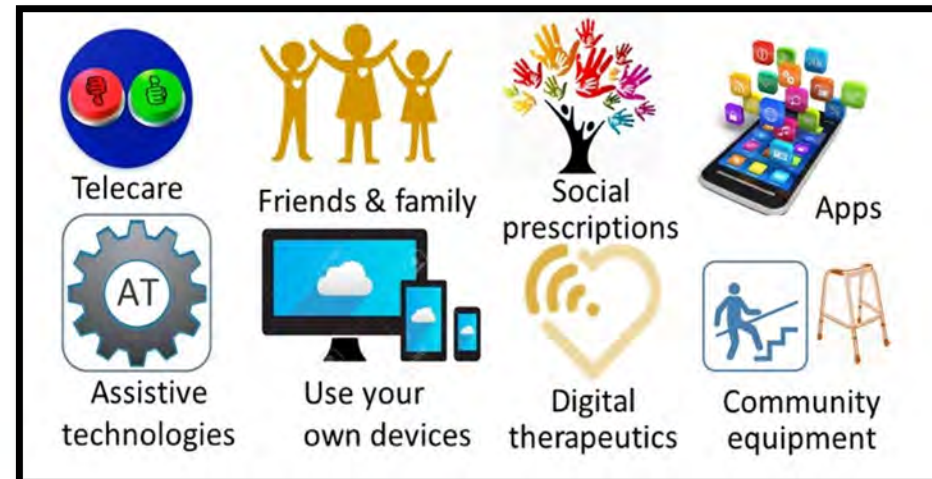- Working with BCC and others to understand how they use and act upon the dashboard and our reports

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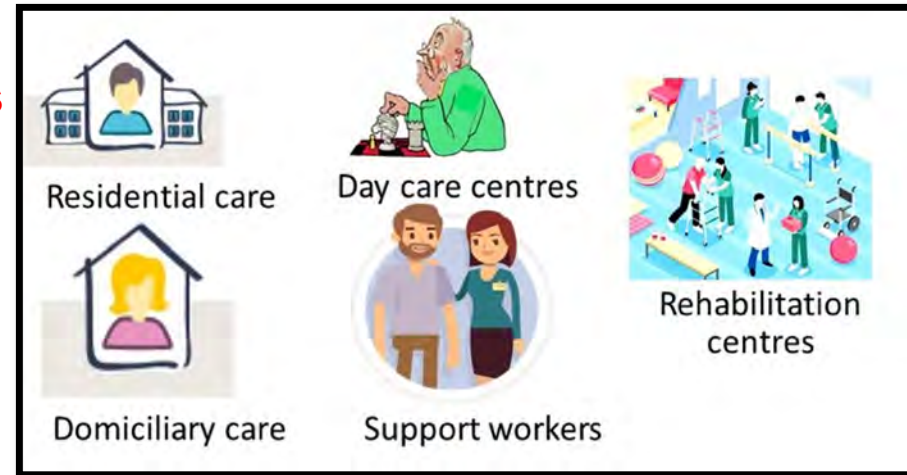
Eligibility Assessment

Solutions

More Independence

Unmet needs

Risks to independence

Concerns

Traditional approaches (expensive, and resource intensive

Light-touch approaches (inexpensive, and Strengths-based)

Residential care

Day care centres

Domiciliary care

Support workers

Rehabilitation centres

Telecare

Friends & family

Social prescriptions

Apps

Assistive technologies

Use your own devices

Digital therapeutics

Community equipment

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What would TEC success look like

- Our citizens are enabled to live independent lives at home for as long as possible with TEC

- Citizens are happy to receive TEC and understand why its being recommended for their use by our SCW Teams

- Hospital Discharge is prompt and supported by the prompt provision of TEC

- Hospital admissions are reduced and/or prevented

- Carers, families and Social Care Practitioners wish to use TEC and receive reassurance from it that our citizens are living the best life they can enabled by TEC.

How does this fit with ISO

- TEC helps to develop thinking around what 'best practice' actually looks like in peoples homes and care settings – (as long as people are happy to have TEC in their homes)

- RGS Care are providing a lot of information to social care practitioners that provide a richer picture on peoples homes and how they are living and if improvements are required and can help with discussions with GP's

- The provision of new ISO Standards should help to identify the baseline and ensure people are living in homes that benefit their health and lives, and therefore reduce or prevent social or healthcare interventions

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Dave Young- City of Sunderland
Keith Chessell- Solcom Limited

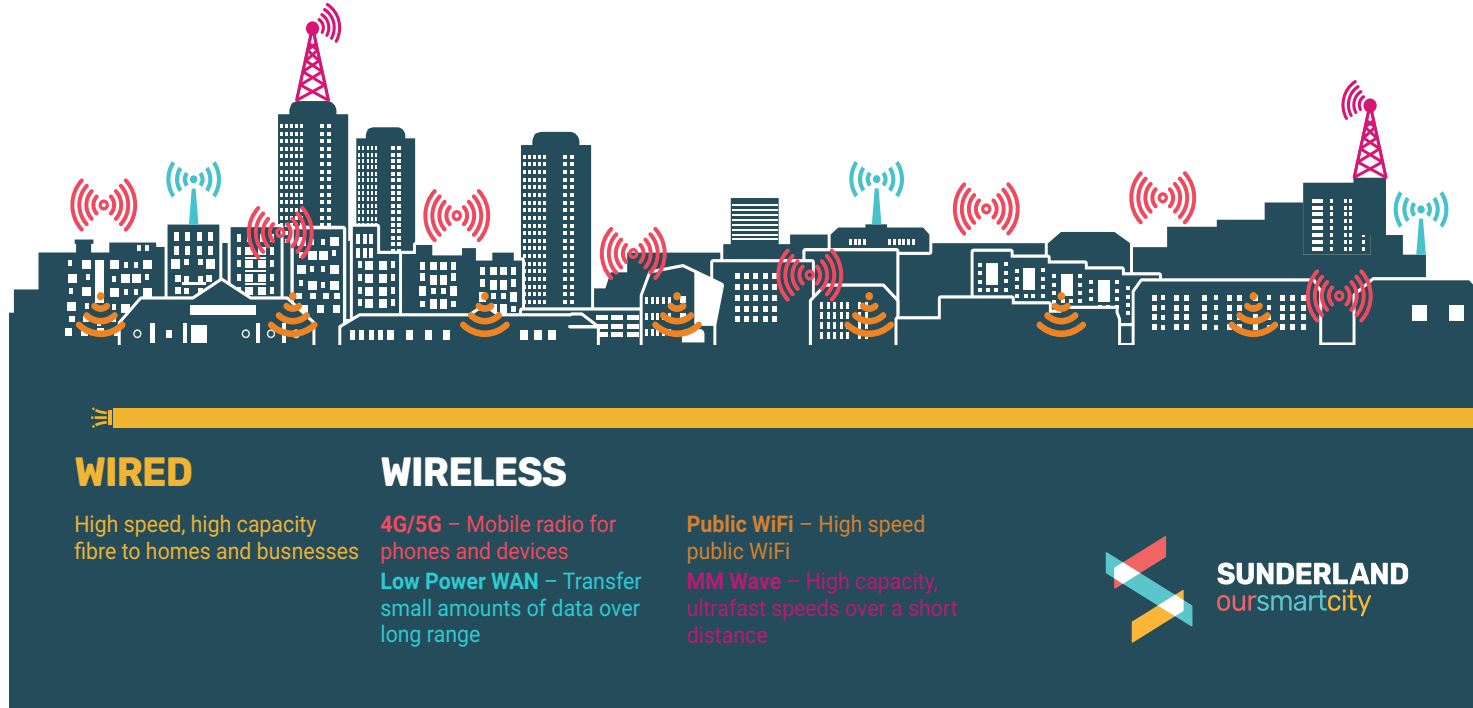A SUPER-CONNECTED CITY WHERE PEOPLE AND BUSINESSES THRIVE

Sunderland City Council

Smart City Developments – Connectivity Infrastructure

- 5G Pilot launched Dec 2019 – delivering free, ultrafast wi-fi to a number of city centre locations

- We have received a grant of £4.5m to extend the 5G in the City Centre and Riverside areas.

- Alongside the 5G a city-wide Low Powered Network (LoRaWAN) is being built to support the Internet of Things which will be up and running March 2022

- Sunderland is to benefit from an investment of £62m to help replace the city's legacy fibre connectivity.

DIFFERENT LAYERS OF CONNECTIVITY

Providing ubiquitous connectivity, wired via fibre in the ground and wireless across the airwaves

WIRED

High speed, high capacity fibre to homes and busnesses

WIRELESS

4G/5G – Mobile radio for phones and devices

Low Power WAN – Transfer small amounts of data over long range

Public WiFi – High speed public WiFi

MM Wave – High capacity, ultrafast speeds over a short distance

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# Smart City Developments – Local Perspective + Vision for the Future

- We have performed a number of studies into the use of IOT since 2018 including our national testbed project.

- We have set up an Assistive Technology team to oversee assessment, installation and maintenance.

- We have amalgamated the provision of all Telehealth, Telecare and Telemedicine hardware via the city's Community Equipment Service.

- Next steps we are looking to develop a collaborative operations centre, accessed virtually by the city's service providers and organisations.

- We plan to use the high level data to better address the city's current and future needs.

SUNDERLAND OUR SMART CITY OPERATIONS CENTRE

Emergency Services Control Room

Public Transport Management

Environment Management

Smart Building Management

Housing Management

Location Services

Street Lighting Control

Traffic Management

CCTV

Telecare

Refuse Management

City Security/Public Safety

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Smart City Developments – Local Perspective + Vision for the Future

- Assistive Technologies – now deployed to over 550 homes across the city helping to keep people safe in their own homes.

- Supported by our jointly developed software the Social Health Enabling Independent Living App (S.H.E.I.L.A).

- This will be deployed in over 1500 homes over the next three years.

- We think S.H.E.I.L.A is suitable for deployment in different settings including for people living alone or in supported living schemes or in multigenerational living.

SUNDERLAND OUR SMART CITY MODEL
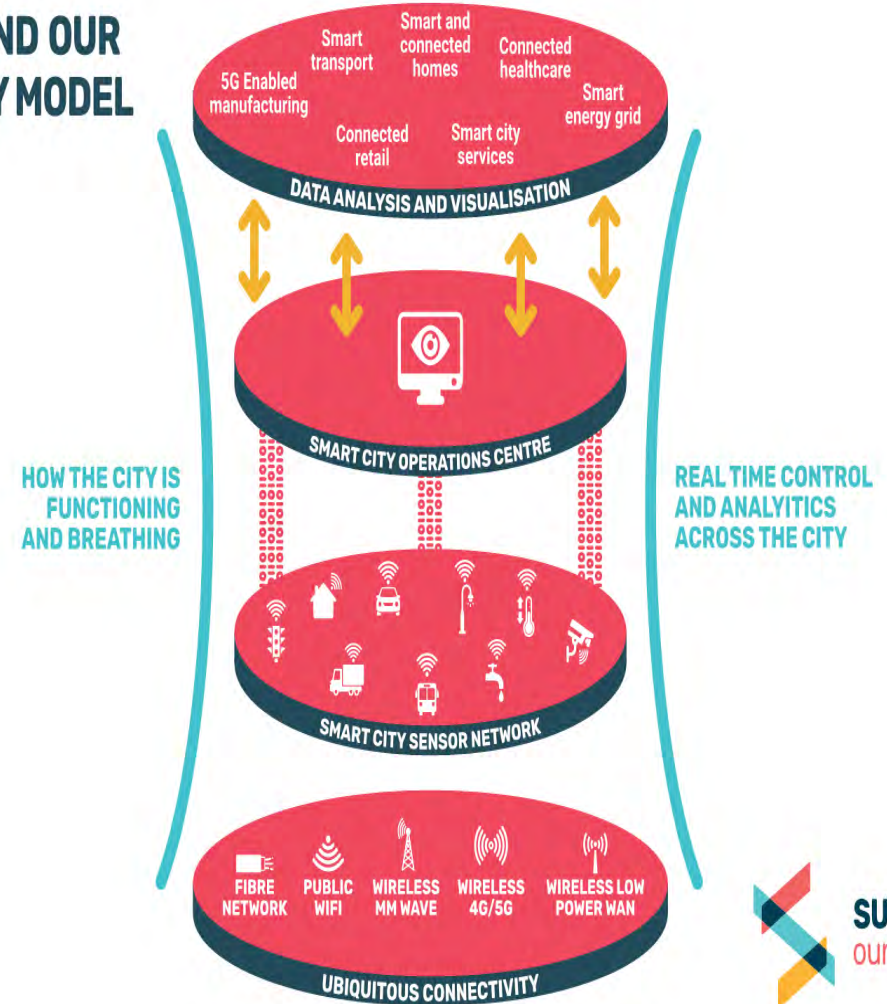
# Potential Of Big Data And Assistive Technology To Support People In Their Homes

- Currently, the Council are supporting 2,300 individuals with care services. It is predicted that the number of residents aged 65 and over in Sunderland will increase by 25% by 2030.

- To mitigate some of this forecasted increase we felt assistive technology may be a partial solution.

- We advertised a tender opportunity to software companies to work with us to develop an IOT solution that families, carers and social care professionals could use.

- That's where SHEILA and Solcom come in

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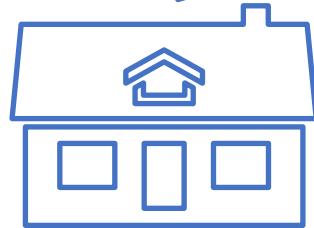# Solcom Limited – Technology Partner and System Developers

LoRaWAN Sensors
- Doors
- Motion
- Appliances
- Location
- etc.
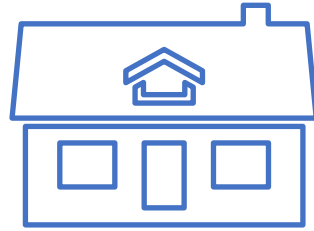
IoT Sensors
- Doors
- Motion
- Appliances
- Location
- etc.

MS Azure
Cloud Platform

Family Carer App
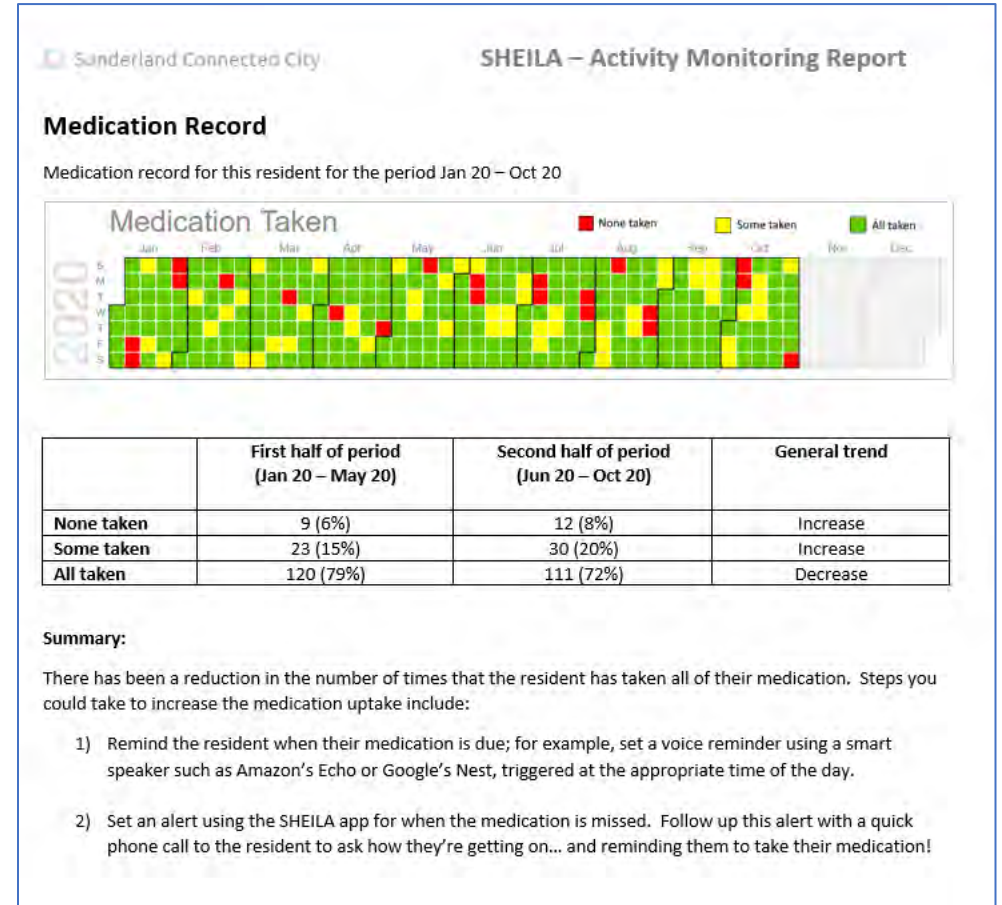
Social Worker Website

solcom

Solcom Limited – Technology Partner and System Developers

- Low cost, easy to install IoT and LoRaWAN sensors monitor people in their homes

- Family and friend carers use a phone App to see what's going on, receive alerts and share the care duties

- The council team can also share care and monitoring duties.

- AI generated reports tell Social workers about changing behavior pattern that indicate changes in health or wellbeing

- The platform is integrated with Solcom's whzan DIGITAL HEALTH telehealth systems

SHEILA – Activity Monitoring Report

Medication Record

Medication record for this resident for the period Jan 20 – Oct 20

	First half of period (Jan 20 – May 20)	Second half of period (Jun 20 – Oct 20)	General trend
None taken	9 (6%)	12 (8%)	Increase
Some taken	23 (15%)	30 (20%)	Increase
All taken	120 (79%)	111 (72%)	Decrease

Summary:

There has been a reduction in the number of times that the resident has taken all of their medication. Steps you could take to increase the medication uptake include:

1) Remind the resident when their medication is due; for example, set a voice reminder using a smart speaker such as Amazon's Echo or Google's Nest, triggered at the appropriate time of the day.

2) Set an alert using the SHEILA app for when the medication is missed. Follow up this alert with a quick phone call to the resident to ask how they're getting on… and reminding them to take their medication!

Solcom Limited – Technology Partner and System Developers

- S.H.E.I.L.A is suitable for deployment in different settings including for people living alone or in supported living schemes or in multigenerational living.

- Our journey in developing the software to match the differing IOT device protocols and identifying secure hardware sensors has been challenging. Thankfully the UK Government is attempting to standardise some aspects of that particularly around cyber security.

- Many other organisations nationally and internationally are plotting a similar journey to ours.

- Perhaps to help those organisations which follow there needs to be a standard operating model not just on hardware or software security. But one which guides organisations through legal, ethical and monitoring considerations to best use the technology for good.

Assistive Technology- IOT Testbed Outcomes

The National Testbed Pilot Business Case told us that if we roll out the assistive technology to 1,500 individuals it could result in a cashable saving for Sunderland City Council of nearly £3.7 million over 3 years.

Feedback from users and their family carers was generally positive. One family user said:

"*We reside in a different part of the city and we were able to identify patterns where our Mum had low mood. We were able to co-ordinate visits around these patterns.*"

One care professional said:

"*The technology allowed me as the worker to identify patterns, which in turn led to service user having their medication reviewed to a more appropriate dose*"

Assistive Technology- Case Studies

Mrs C lives in her home with her son and his family. Mrs C has Dementia and she is supported by her son and the extended family to manage this. Mrs C does wander on occasion, but reliably takes her handbag with her. The family though have become increasingly concerned around Mrs C's ability to continue to live independently and were considering residential care, but would prefer if Mrs C can remain in her home with the family for as long as possible.

AT Solution

IOT Gateway/Hub x1, Door contacts x2, Motion sensors x2, Presence Sensor x1, GPS device. Checking App shared and installed on the phones of Mrs C's son and family members.

Cost of AT Solution
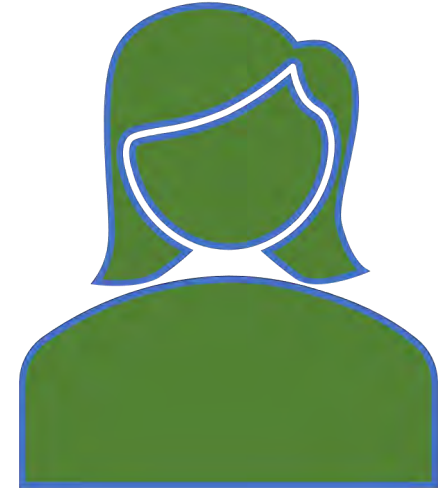Internet connection = Nil (as Mrs C's property had broadband)
Hardware & Software = £458.48 one off cost

Cost of Traditional Solution
Residential EMI care admission = £665 per week, Annual cost £ 34,570.50

Cost Avoidance to the Council
Mrs C remaining at home for 12 months longer = £34,570.50 - £458.48 = **£ 34,112.02**

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Thank you!

Q & A's

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Creating a Health and Care data system to predict the future care pathways of our local population

PREDICT·X

CITY OF WOLVERHAMPTON COUNCIL

Introductions

Mike Holden
Project Manager

City of Wolverhampton Council

Andy White
VP Solutions Engineering

PredictX

The local concept …

- There are significant links between Health and Social Care activity however **sharing information about patients and people accessing services when it isn't for direct care can be a challenge.**

- Additionally, it is **unusual for a local authority to become actively involved in a 'data science' project**.

- Our innovation work has centred on the **use of merged pseudonymised health and social care datasets** to create a set of local dashboards using the software and knowledge provided by Predict X.

- These **provide a holistic view of local health and social care data** in order to provide the ability to understand and improve existing care pathways.

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The approach

- Our ongoing programme of work has developed into a **significant collaboration partnership** between the City Council and local and regional health organisations.

- Risk, issues, priorities and milestones are managed through regular partnership meetings a **formal programme governance structure**.

- Central to the extended life of our work has been the demonstration that certain aspects of people's journeys through the health and social care system **can be predicted to a high level of accuracy**.

- This has **led to significant interest** in and grant funding for the project from the digital arm of the NHS.

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Building on the potential of big data

- We aim to enable the **early identification of conditions** that may require people to be supported with health and care services using predictive analytics.

- Alongside the development of predictive modelling, the work has helped us to **develop People Profiles and map where there may be local hotspots**.

- **We are identifying discernible patterns of activity** that will enable support to focus on strengthening community networks, improving outcomes and enabling earlier intervention in multigenerational neighbourhoods.

- **We continue to develop a 'big data' approach** across the wider Black Country area and through the collaboration partnership **to ensure the work is also relevant regionally and nationally**.

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Mapping of local data by Council Ward, Primary Care Network and GP Practice

Geographic Activity Hotspots
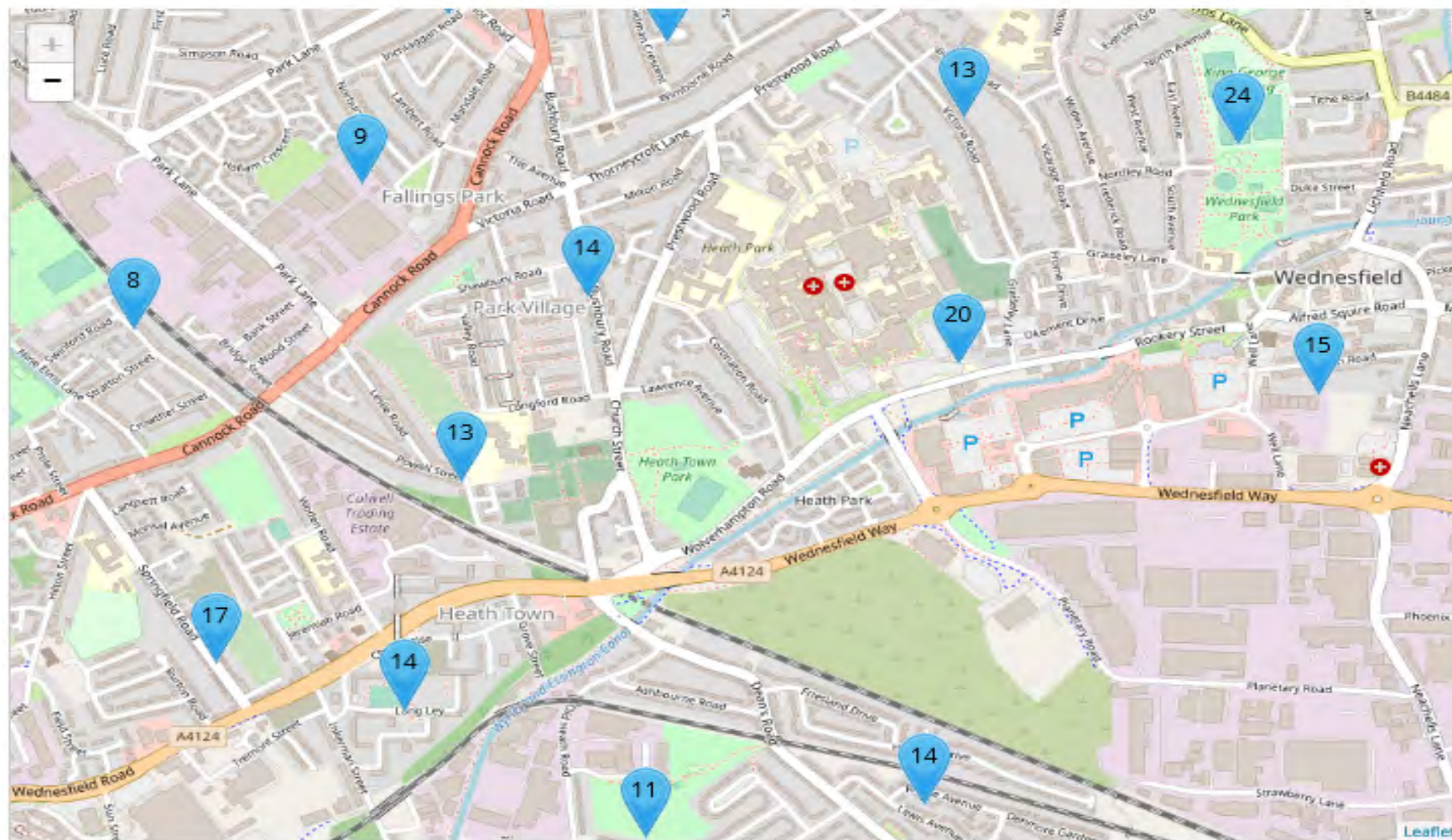
Innovate UK Demonstrator Project - Challenges

- Our ambitions originally **focussed on improving the commissioning process** and identifying greater opportunities for earlier prevention at a local level.

- Many social care providers **cannot easily analyse why patients access the services they do**, both in terms of what underlying health conditions are involved or the impact that services have on their future.

- The **long-term effect that Covid-19 will have on population health is still under investigation** and the pandemic has also placed greater focus on the ongoing care provided after hospital discharge.

- Tasked with helping patients remain independent in their homes for longer, **social care organisations need better data to monitor the effectiveness of the care packages** they provide and commission.

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Innovate UK Demonstrator Project - Insight Opportunities

- **A holistic view of care pathways** to assess, in an ongoing way, the health of patients after hospital discharge in relation to their care packages, health conditions like **Covid-19** and patient demographics.

- **Predictive analytics** to see what effect patient conditions and the services patients access today will have on future population health.

- By bringing together health and social care data, which are disparate systems that don't talk to each other, **makes this ground breaking in terms of the insight it can provide.**

- The continuous monitoring of data following discharge into reablement services across the year can act as an "**early warning system**" instead of a relying on national indicators published nationally much later.

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Innovate UK Project – Measuring Impact & Success

- Local authorities and adult social care services are **able to see when performance indicators are trending away from their agreed targets** and so implement preventative measures.

- Once robust preventative Covid-19 measures are introduced, such as the vaccine, care providers can **track the effectiveness of these measures on populations continuously**.

- With a deeper understanding of the medium to long-term effects of Covid-19 and how it interacts with existing patient conditions, morbidities and care services; **local systems can better plan and commission for the future**.

- Use the working models and data insights to **test, measure and improve care services** to ensure people are independent and healthier for longer and also encourage care providers to meet ISO 9001 standards.

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Any Questions?