# Where do we go from here?

Digital Transformation in the Public Sector

Richard Walker

The economic imperative hasn't changed
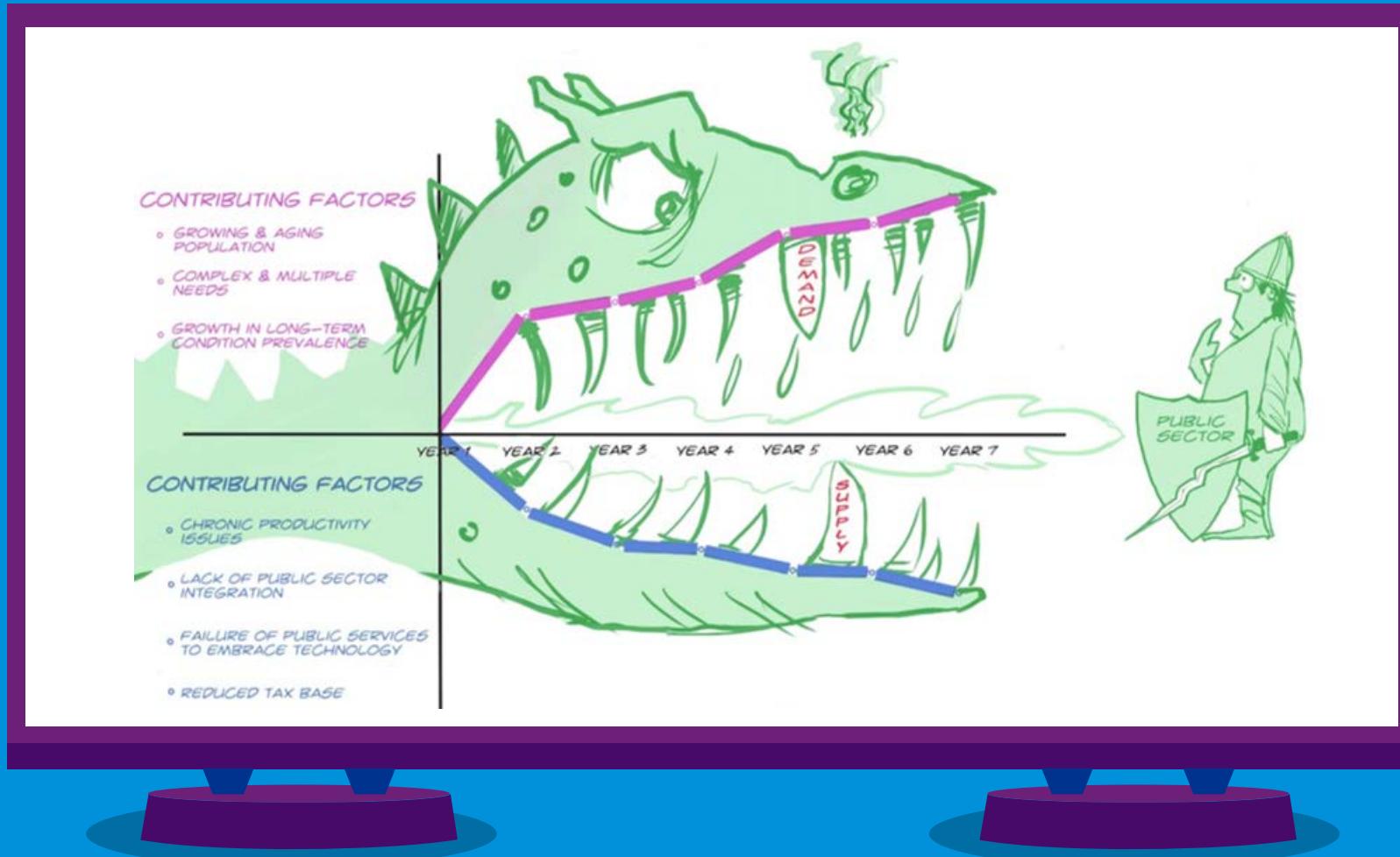
But it's more than just balancing the books ...

Does digital transformation work for everyone?
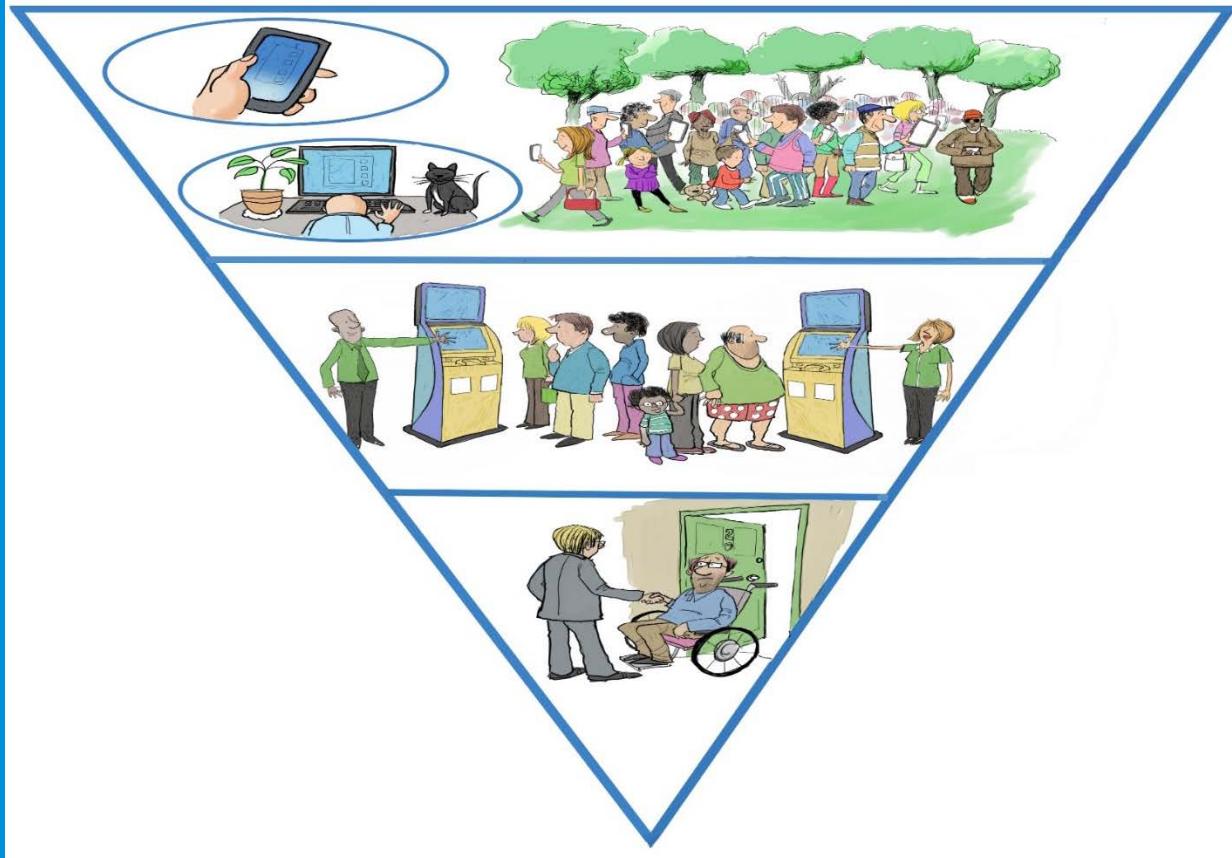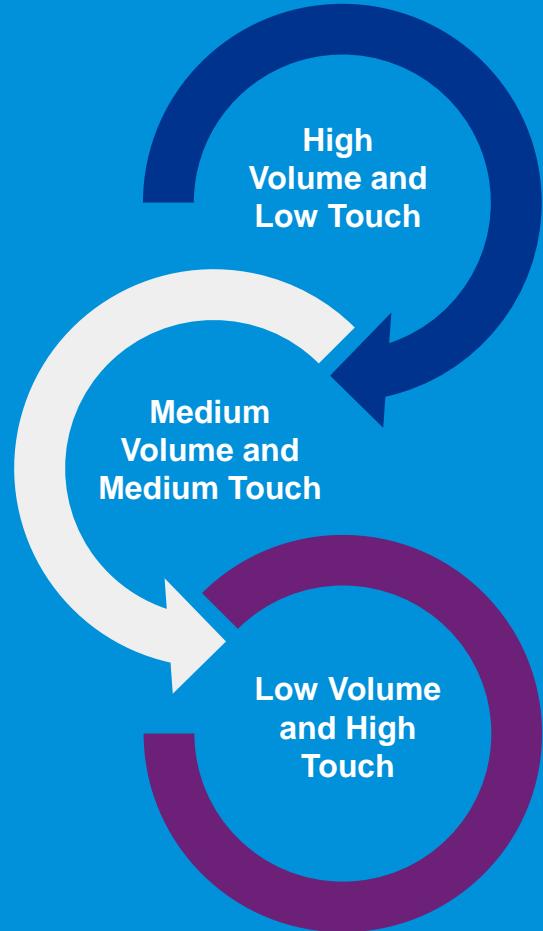
Where to place your bets …
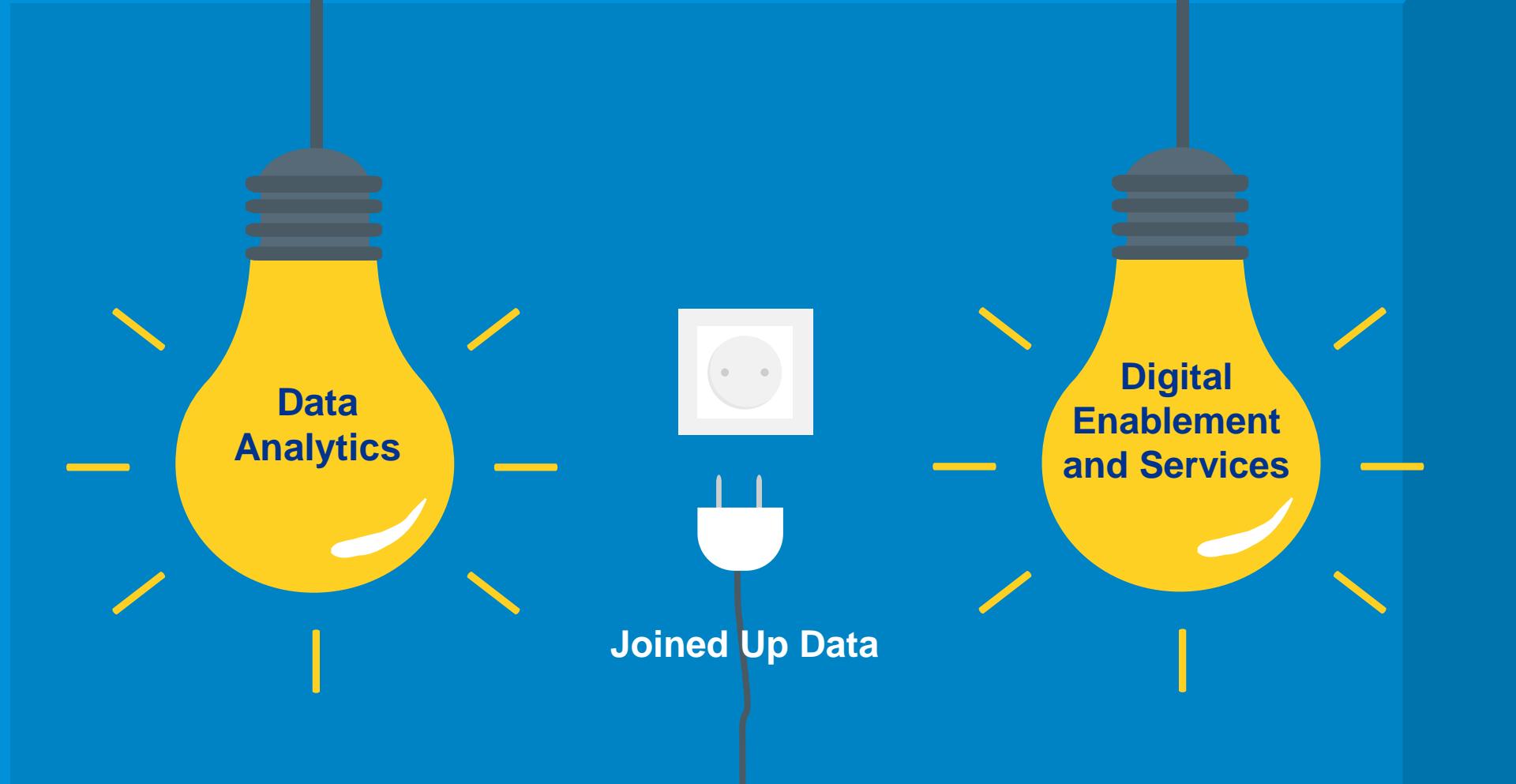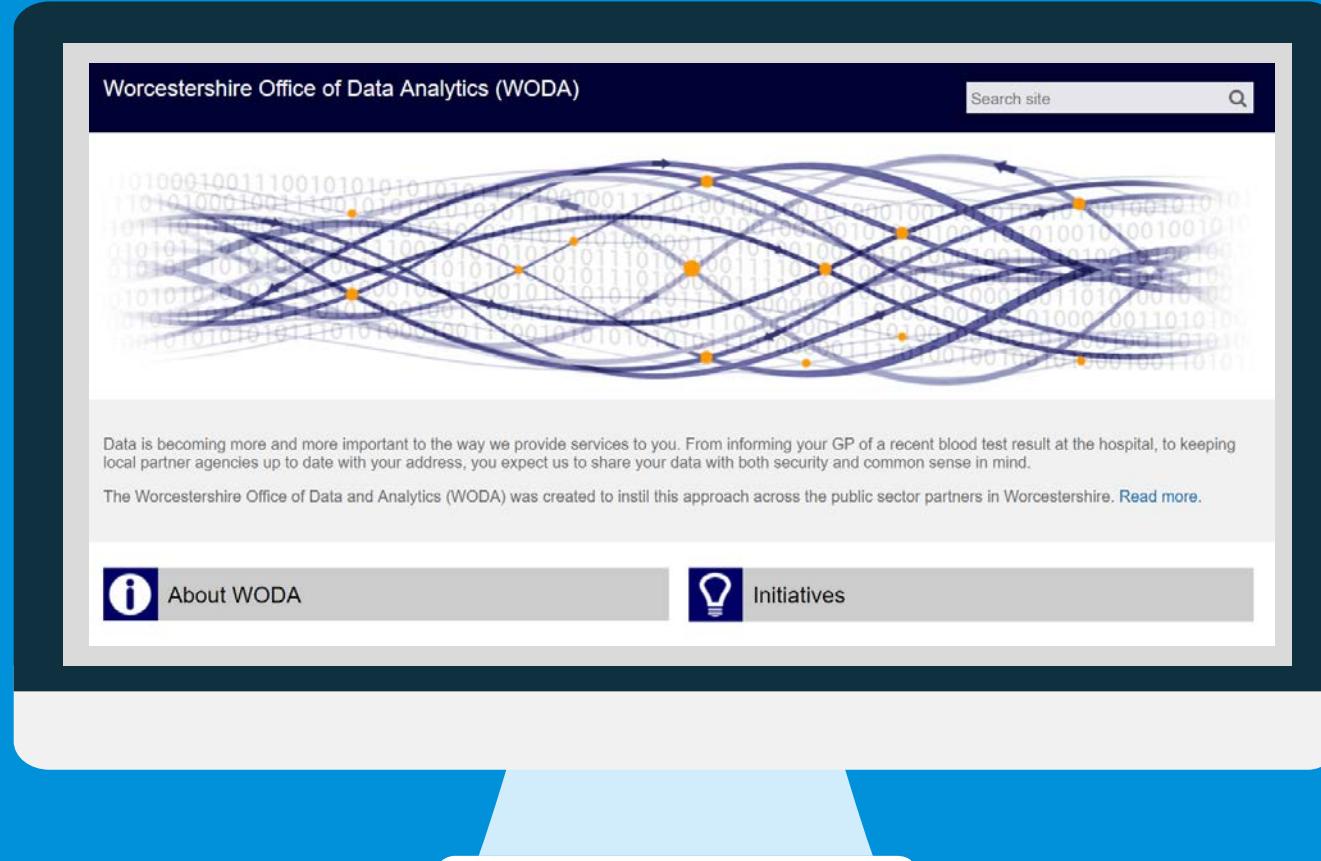
Data Analytics

Joined Up Data

Digital Enablement and Services

Case Study: The Worcestershire Office of Data & Analytics

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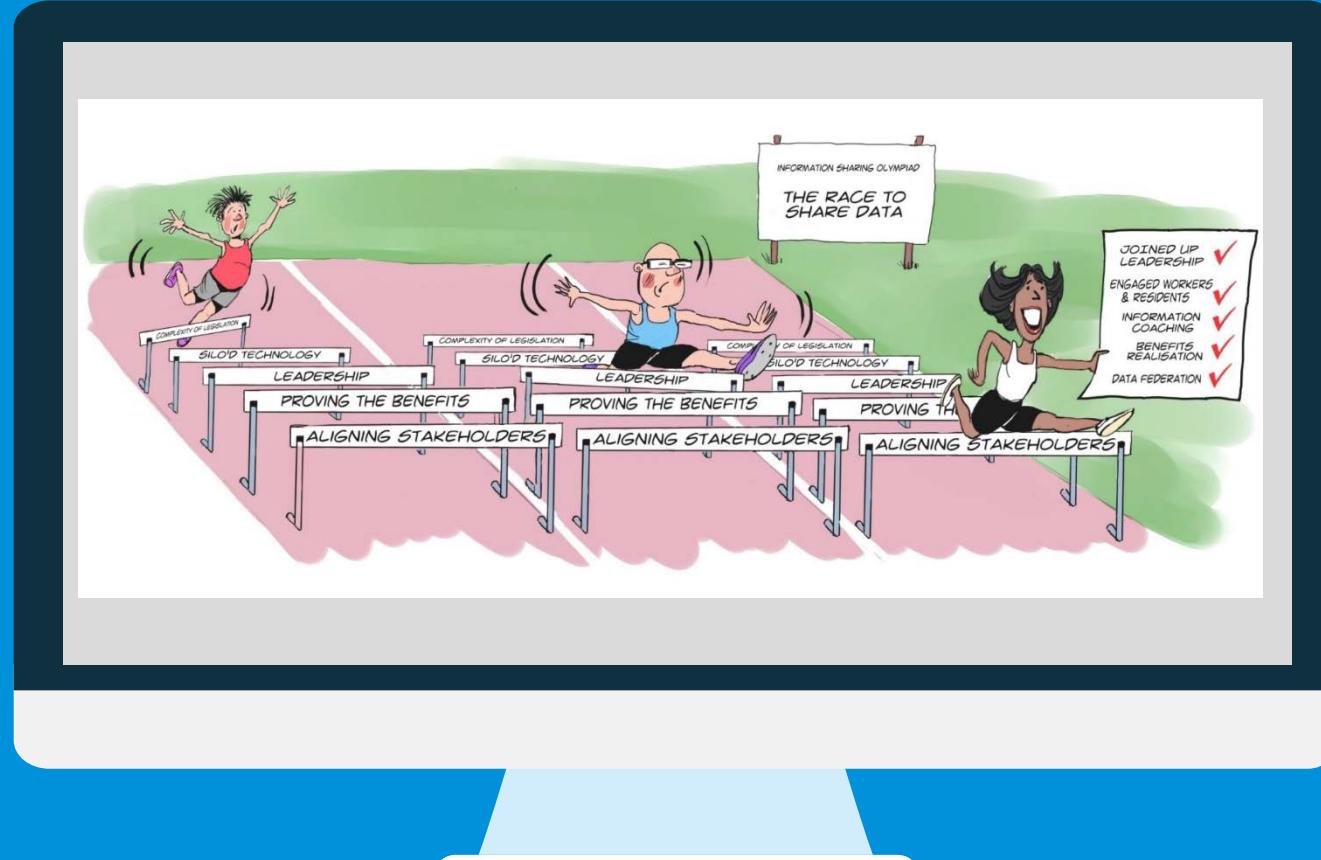
Applied Analytics: Asking the right questions

How can I pinpoint the children and families who are most in need of support or most at-risk of escalating need to hit crisis or require child protection or safeguarding services?

What can I do to support the adult social care market to ensure it remains economically viable, whilst still getting a good price and service?
How can I monitor adult social care quality of provision more effectively and more in real time?

How can I make sure that we share and analyse information effectively with other agencies to keep children safe?

How can better analysis / insight drive more personalised and innovative commissioning practice?
How can I hold providers to account more effectively?

How can we use real time analytics to increase worker effectiveness and efficiency?
How can I improve social worker recruitment and retention?
What will increased demand mean for case loads on the ground?

How can I balance the clear need and benefits of investment in early intervention and prevention with the unrelenting financial position and need to make savings?

How can I make sure that we share and analyse information effectively with other agencies to keep children safe?
What is happening to my looked after children who are living at the other end of the country?

What is the scope for improvement in our costs?
How do I know I am getting value for money for outcomes?
What are the effects on other agencies of decisions I take when commissioning services?

To **harness data's potential** we need to ask the **right questions**

Source: DataWell – consent prototype

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Applied Analytics: Considering Analytical Maturity

Stage 1 Collate and describe	Stage 2 Analyse for insight	Stage 3 Data driven decisions	Stage 4 Operationalised analytics
— Benchmarking — Cross Tabulation — Trend Analysis — Descriptive Statistics — Static Reporting	— Scenario Modelling — Geospatial Analysis — Demand Forecasting — Hypotheses Testing — Population Stratification	— Record Level Linkage — Person Level Risk Strat — Probabilistic Forecasting — Clustering/Segmentation — Appraisal & Evaluation	— Machine Learning — Real-time Risk Strat — Semantic Analytics — Decision Science — Prescriptive Analytics
— Simple Charts — Reports & Presentations — Narrative Development — Key Facts Publications — Statutory Returns	— Interactive Maps — Dynamic Dashboards — Multi-variate Models — Projections & Estimates — Population Stratification	— Multi-Agency Views — Person Level Risk Scores — Predictive Models — Decision Support — Rigorous Cost:Benefit	— Real-time Person Flags — Diagnostic Support — Prescriptive Apps — Dynamic Risk Profiles — Cost & Quality Models

Worked Example: Understanding the Demand for services

— Snapshot reports describing point in time patterns in demand — High level evidence with limited ability to provide insight to determinants of current & future demand	— Compelling visualisation of data and insights to system demand — Demand led scenario models to estimate impacts on quality, cost and workforce	— Triangulated view of demand source & complex predictive models — Intelligent commissioning enabled by detailed mutli-agency evidence base & decision optimisation.	— Person level risk-based understanding of determinents of demand — Prescriptive and personalised decision support in real-time to mitigate acute demand
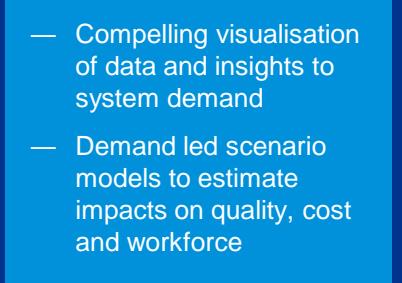
Source: DataWell – consent prototype

Applied Analytics: Case Study – Complex Dependency

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Applied Analytics: Case Study – Complex Dependency

Digital Transformation: Case Study - Worker Enablement

Retrieve medical records, print documents

Travel

Conduct Stage 5 Assessment Visit

Travel

Parents 'Did Not Attend'

Travel & Lunch

Stage 5 Assessment with a referral

Referral form & notes written in car

Travel

Review notes, document action plans

Rescheduled DNA, submit referral, type up notes, file records

5:00pm

Diona Mobile Visit's allows a Health Visitor to organise their caseloads by location, automatically populating the records

Calendar updates alert Health Visitors to appointment changes in real-time

Families can be shown the Children Centre's Facebook page as a key education resource

Referrals are instantly sent email, notes are updated live during visits and videos/images are attached as evidence

5:00pm

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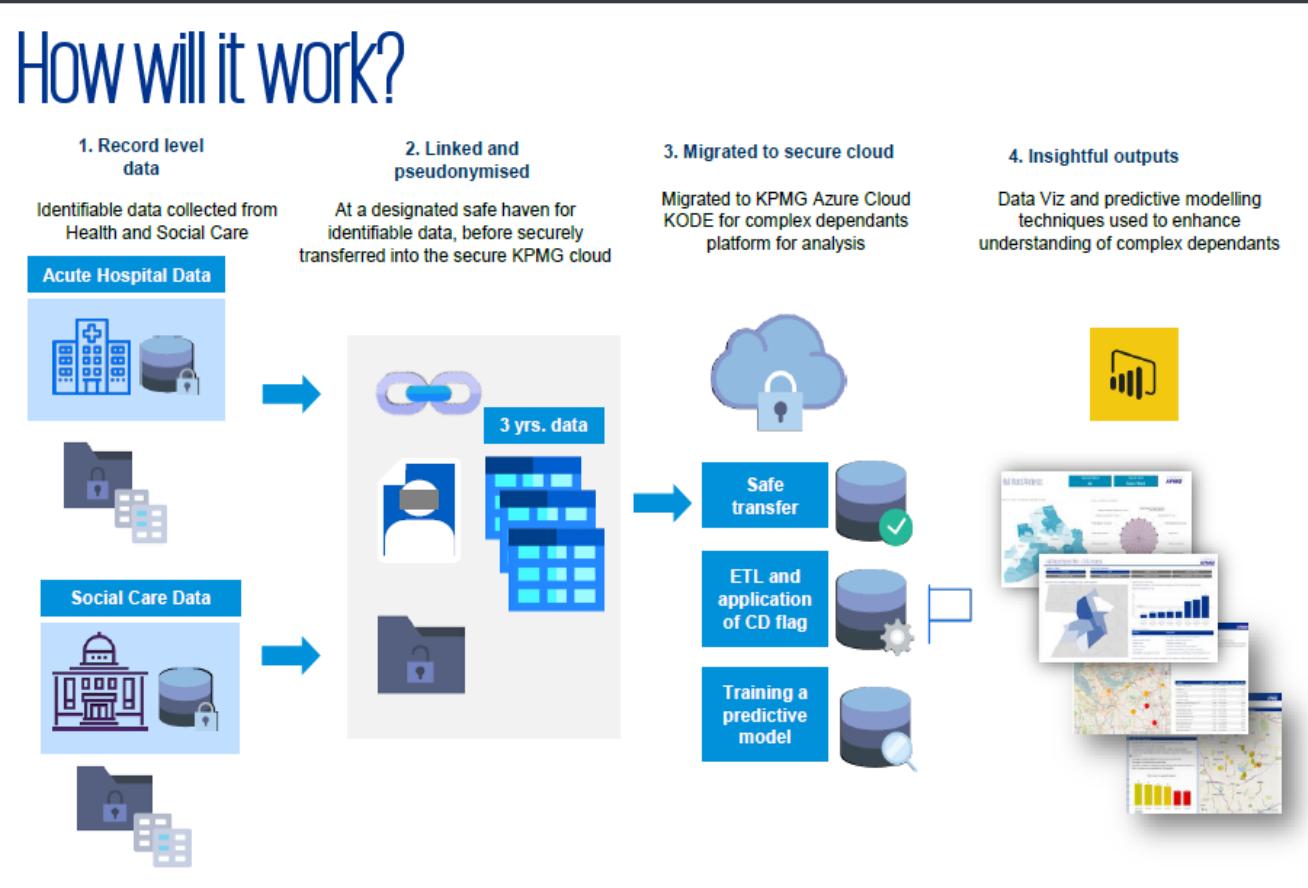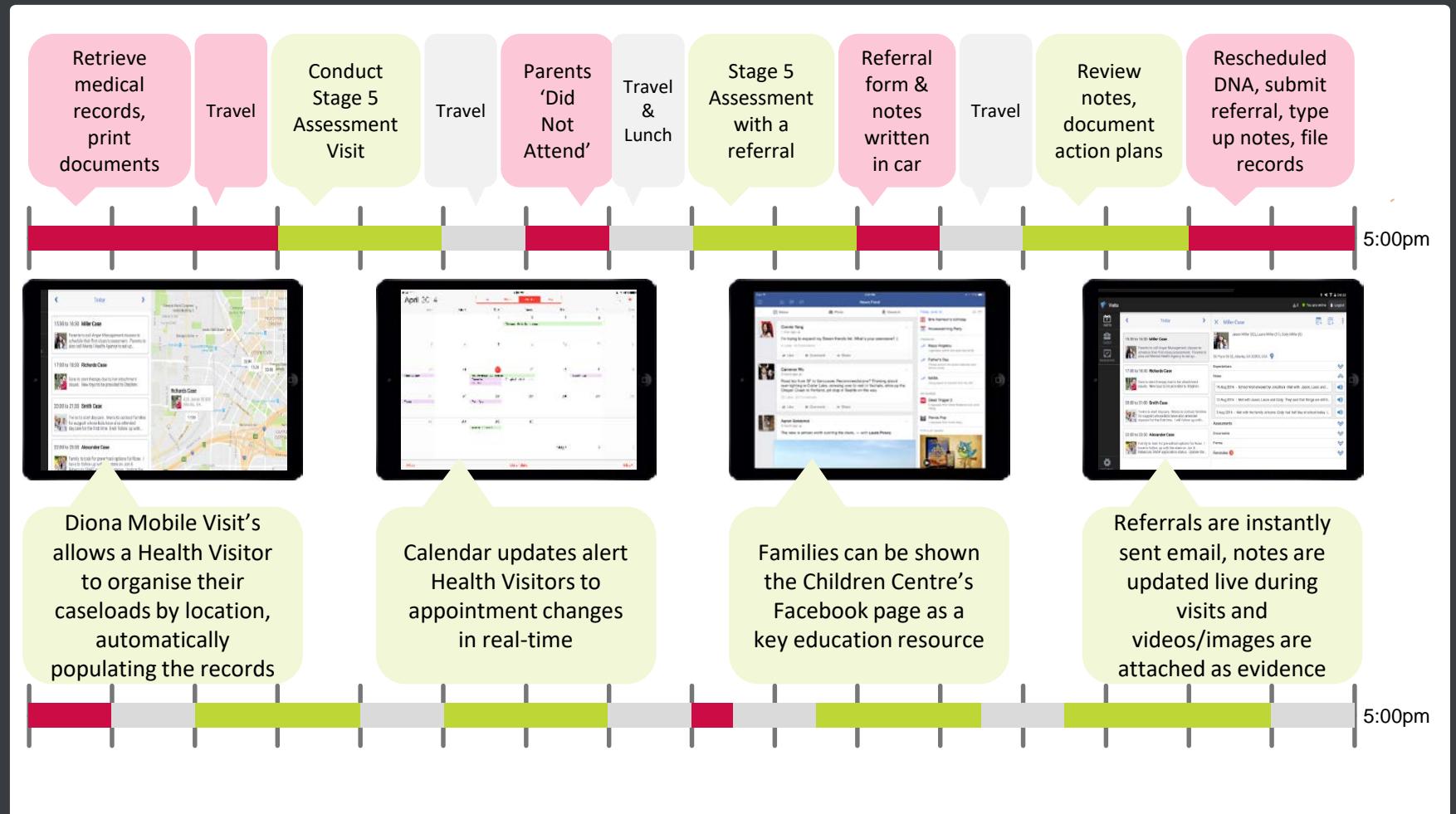
Digital Transformation: Case Study - Worker Enablement

Enterprise mobility and operational efficiency – a worked example

407
Workers delivery care

Across the council, there are 407 workers delivering care to residents.

1.5
Hours per day saved by enterprise mobility

Deployment of enterprise mobility enabled assessments as consistently shown to generate efficiencies of 1.5 hours per day per worker.

200
Days worked on per social care worker

Assuming each worker completes 200 days per annum, this equates to 122,100 hours saved per year, or 17,443 days.

17,443
Days saved across the council's social care workforce.

£198
Cost of one social worker per day

The cost of employing a social care worker (salary + on costs) is approximately £198 per day.

£3.5m
Total monetised saving per annum

In monetised terms, the total saving is therefore £3.5m per annum.

35%
Cashable element

Assuming that 65 per cent of the time saved is re-allocated, this leaves a cashable share of 35 per cent.

£1.2m
Cashable saving per annum

Cashable savings are therefore estimated at £1.2m per annum against the current state.

Technology to keep an eye on?

Mobility & App based services

Babylon (UK)
— NHS application allowing virtual GP visits and conferences by video
— Broader implications for global health in countries without strong GP networks (Rwanda)

Talking Tiles (USA)
— The app customizes a tablet or smartphone according to the disabled individual
— It can teach vital life skills such as paying at a checkout, or allow a non-verbal user to express needs by pointing to pictures

Be My Eyes (Denmark)
— Connects blind people to sighted volunteers
— Uses live video chat allowing the blind person to 'borrow' the sighted persons vision to navigate surroundings, read instructions, read the expiry date on a milk carton, or get other visual information as needed

eRedbook (UK)
— NHS application allowing parents to keep a digital health record for their child including vaccinations and other health milestones on a smart phone or other device

Apps as new front doors for services and **consent**
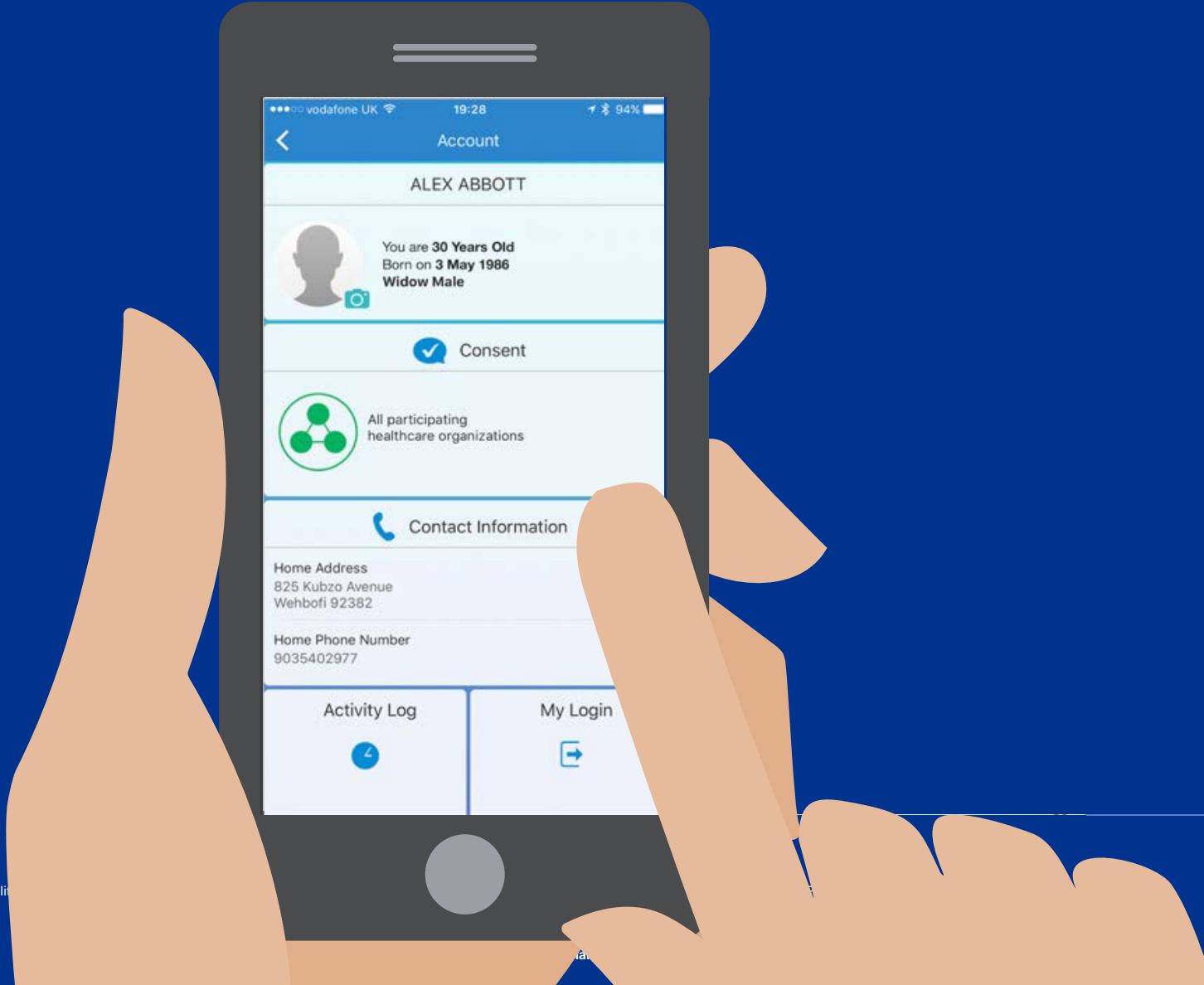
Internet of Huh? Examples of Internet of Things

Homelessness Outreach Glasgow

— Health and wellbeing for rough sleepers

— High use of mobile; intimidating health system

— Street team of nurse and social worker with devices; Medical professional in support

— Free phone with app provided to those who sign up

— Direct contact with health professionals; early warning of health issues; relationship building

HOWZ: Support for frail elderly, long term conditions, and their carers

— Track and share information about an individual's well-being, particularly their functional ability, every day

— Those in regular contact with the elderly person (e.g. families, care providers, home delivery, social services and the UK National Health Service) can record their visits as observations for the benefit of others involved in that person's care

— Electricity Monitoring, smart sensors, app
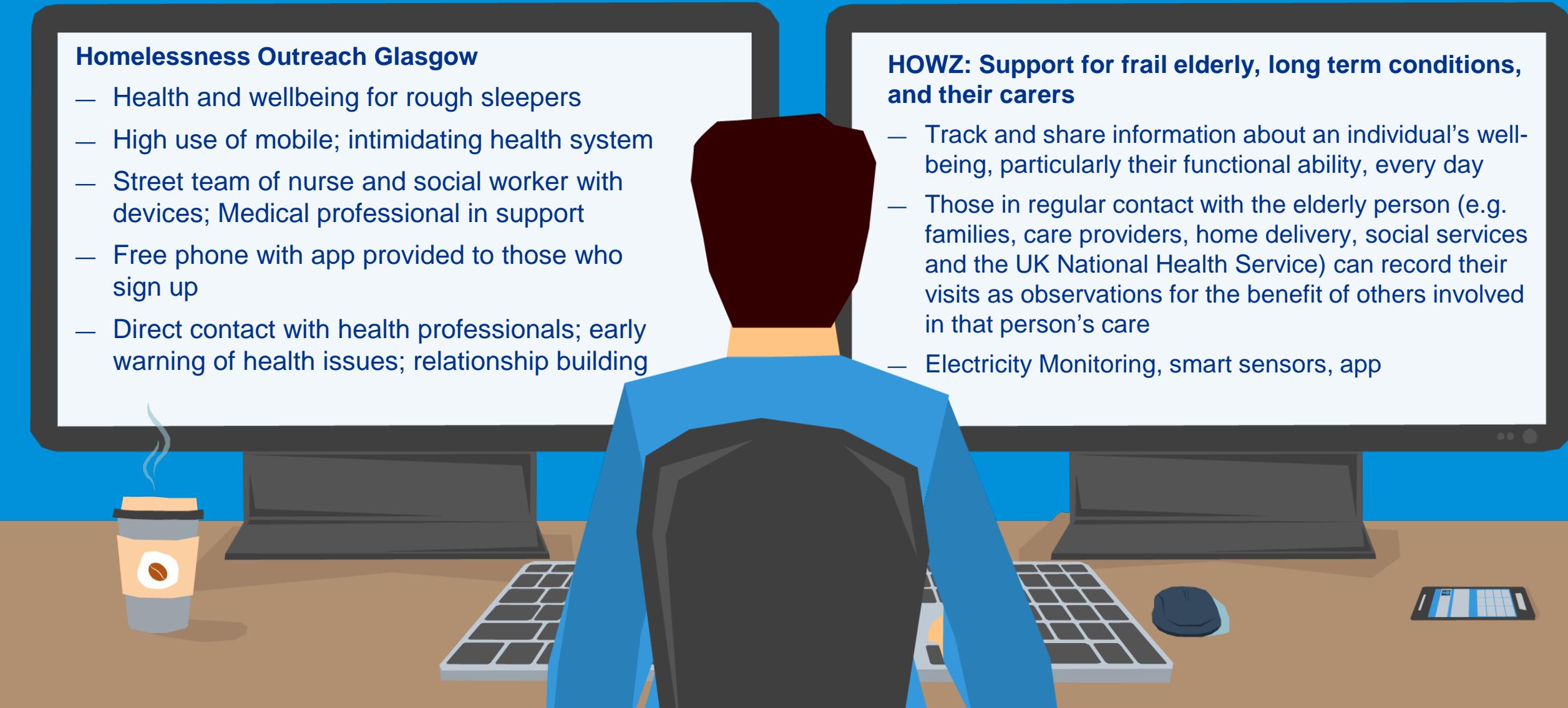
Cognitive machine learning and artificial intelligence

What is it?

— Cognitive computing systems like IBM Watson and Google DeepMind that can read and learn from unstructured data such as natural language

How does it work?

— They can read academic papers, reports, case notes, articles and web content and is eventually able to handle exponentially more information than a human can. The system can then help inform decisions at a tactical level

Can you share an example?

— A compelling example is IBM's Watson tool that has been 'taught' Oncology and is currently deployed in several hospitals in the US, supporting consultants and patients with both diagnosis and treatment paths

— Xantura is attempting to use machine learning for Children's Services

Helpful links

— Watson: https://m.youtube.com/watch?v=338CIHlVi7A

— Xantura: https://www.xantura.com/points-of-view

Distributed ledger and block chain

What is it?

— Block Chain or Distributed Ledger technology is an emerging enabler for public services. It's more than just a technology that enables Bitcoin and e-currency; it's a way of encrypting data in pieces and providing the key to those pieces to an individual or set of data owners

How does it work?

— Block Chain can be used as a game changer to both securely record and allow for the sharing and verification of data between trusted parties

— There are also challenges with Block Chain due to the newness of the technology and the emerging infrastructure requirements

Can you share an example?

Block Chain Pilots (https://www.linkedin.com/pulse/blockchain-age-distributed-energy-noman-rana

Citizen identification   Accountability and auditability

Integrated Digital Care Records   Distributed Energy/P2P networks

Helpful links

— Start ups https://letstalkpayments.com/public-and-private-blockchain-concepts-and-examples/

— 4 use cases: https://www.multichain.com/blog/2016/05/four-genuine-blockchain-use-cases/

Personal data stores

What is it?

— Emerging technologies increasingly allow residents to view and control their digital profiles in terms of data. Residents can use them to manage their own data and consent online and even donate or sell their data to interested parties (Data Markets, Trusts, and Charities)

How does it work?

— Personal data stores show you your 'digital selves' in terms of data and what is known about you. There are new models for health and social care that allow residents to decide when and how they wish to share data with both the public and private sector

Can you share an example?

Copenhagen is taking a step further to become one of the first public sector entities to try and monetize its data in a citywide information marketplace http://www.networkworld.com/article/3079810/software/copenhagen-to-sell-public-and-private-city-data-via-exchange-marketplace.html

Helpful links

— Mydex (a personal data store controlled by the individual) and Hub of All Things (the HAT – a platform enabling individuals to trade and exchange their personal data) are good examples of what is emerging in that space today

Contact

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