DATA INNOVATION IN HEALTHCARE

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AGENDA

1. History of IoT
2. Mainstream IoT Device Usage
3. The Eye Is A Window Into Heart Disease
4. Aged Care - Talius
5. Aged Care – Sleep Sense
6. IoT – Alzheimer’s Outcomes
7. Summary

HISTORY OF IOT

INTERNET OF THINGS, THE VAST ARRAY OF PHYSICAL OBJECTS EQUIPPED WITH SENSORS AND SOFTWARE THAT ENABLE THEM TO INTERACT WITH LITTLE HUMAN INTERVENTION BY COLLECTING AND EXCHANGING DATA VIA A NETWORK. IOT INCLUDES THE MANY "SMART," COMPUTER LIKE DEVICES SO COMMONPLACE TODAY, WHICH CAN CONNECT WITH THE INTERNET OR INTERACT VIA WIRELESS NETWORKS. THESE INCLUDES PHONES, APPLIANCES, THERMOSTATS, LIGHTING SYSTEMS, IRRIGATION SYSTEMS, SECURITY CAMERAS, VEHICLES, EVEN ANIMALS AND CITIES.

1830S

TELEGRAPH

1ST LANDLINE

Wired communication across large land spans

1900

WIRELESS TELEGRAPHY

1ST RADIO VOICE TRANSMISSION

Commencement of wireless communication

1940S

COMPUTER

ENIAC 1ST MODERN COMPUTER

ENIAC as the first programmable, electronic, general purpose digital computer completed in 1945

1962-69

DARPA TO ARPANET

1ST WIDE AREA NETWORK

Cold war forced secure communications resulting in DARPA that transformed to ARPANET

1980S

COCA COLA MACHINE

CARNEGIE MELLON UNIVERSITY

Workers would check to see if drink cold and available before visiting the vending machine

1990S

RFID RADIO FREQUENCY IDENTIFICATION

Global internet explosion and capability to connect via microchips and wireless connections

2000S

SMART CITY CONCEPT

In 2012, The Swiss Federal Office of Energy started a pilot program called "Smart City Switzerland"

MAINSTREAM IOT DEVICE USAGE

Sleep Pattern

Calorie Intake

Step Count

Heart Rate

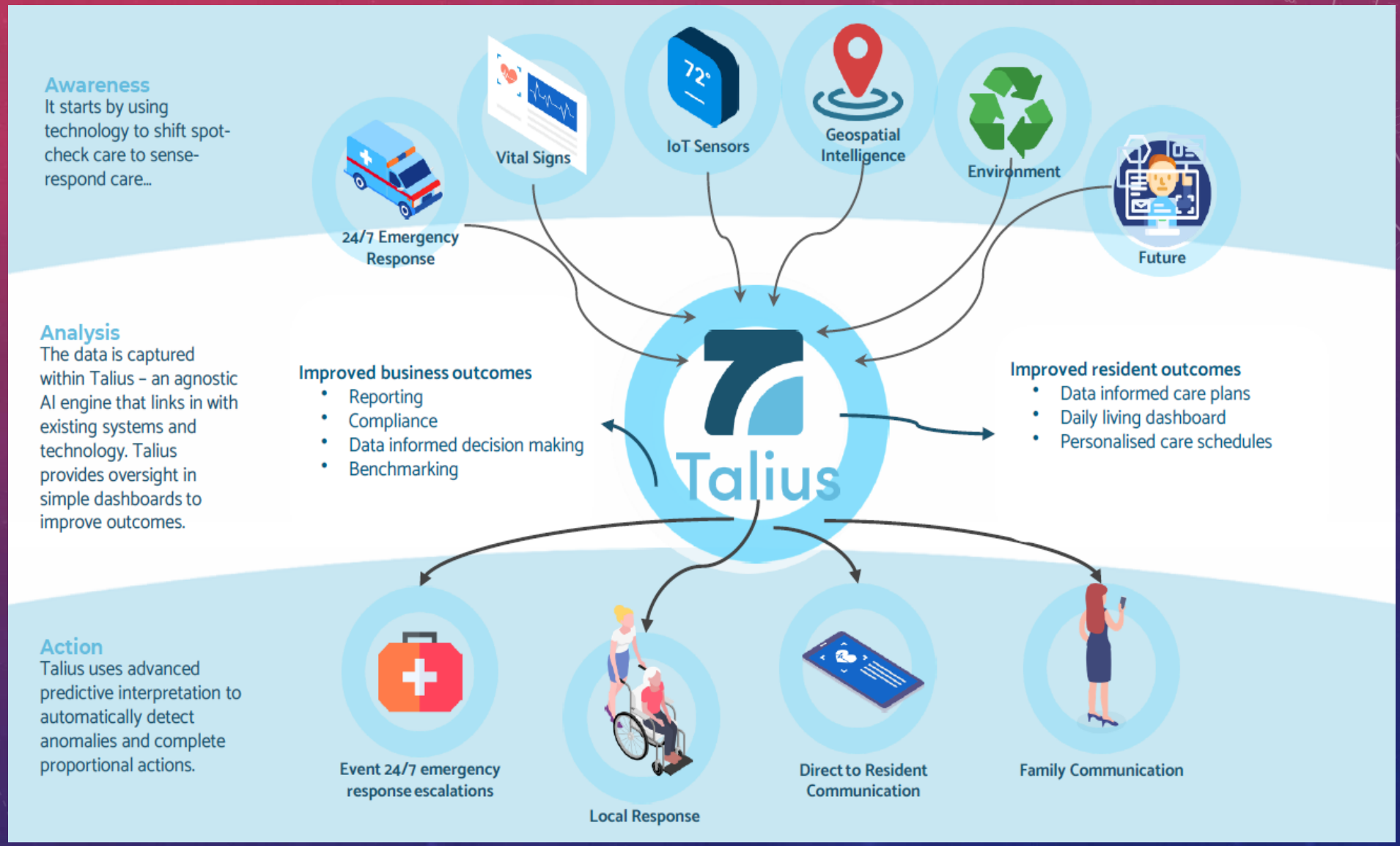
THE EYE IS A WINDOW INTO HEART DISEASE

Eye Exam Could Predict Heart Attack Risk, Says Study | World Economic Forum (weforum.org)

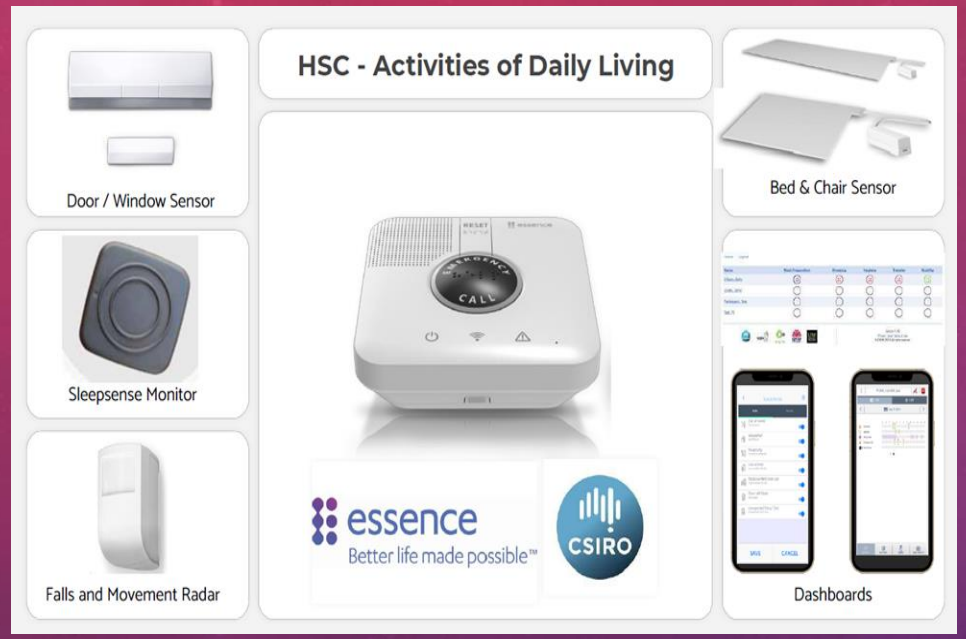
Improve clinical and operational outcomes

EyeInspect is retinal screening that uses Artificial Intelligence to identify underlying eye and health problems. Early detection of problems, and intervention can make a huge difference.)

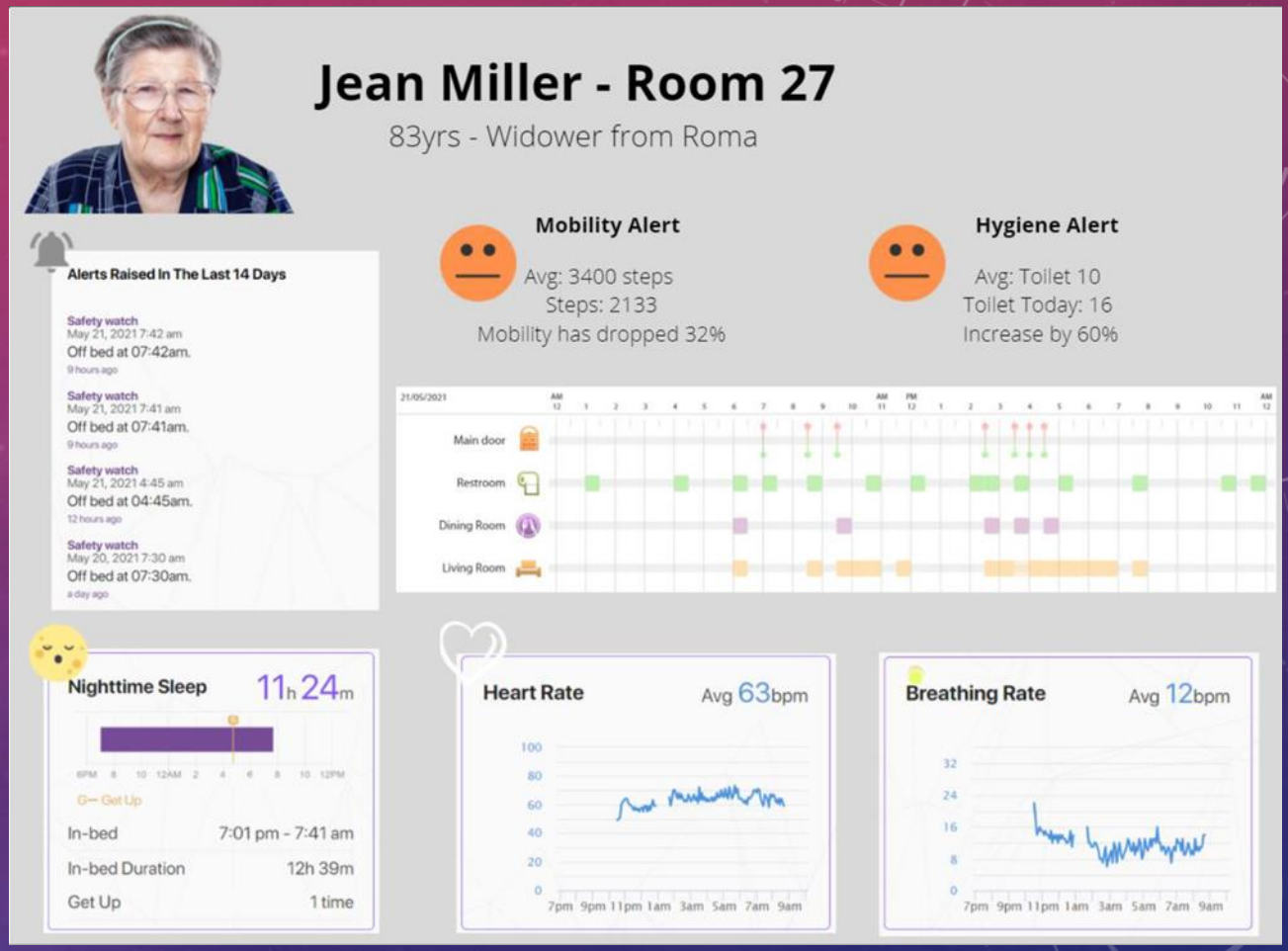
AGED CARE - TALIUS



AGED CARE - TALIUS



- Collection of sensors (typically wireless) in the IoT category
- Compatible devices can be added or upgraded as required
- One base station per room and then multiple devices connect to that
- Already in use in care home and independent living settings in Australia

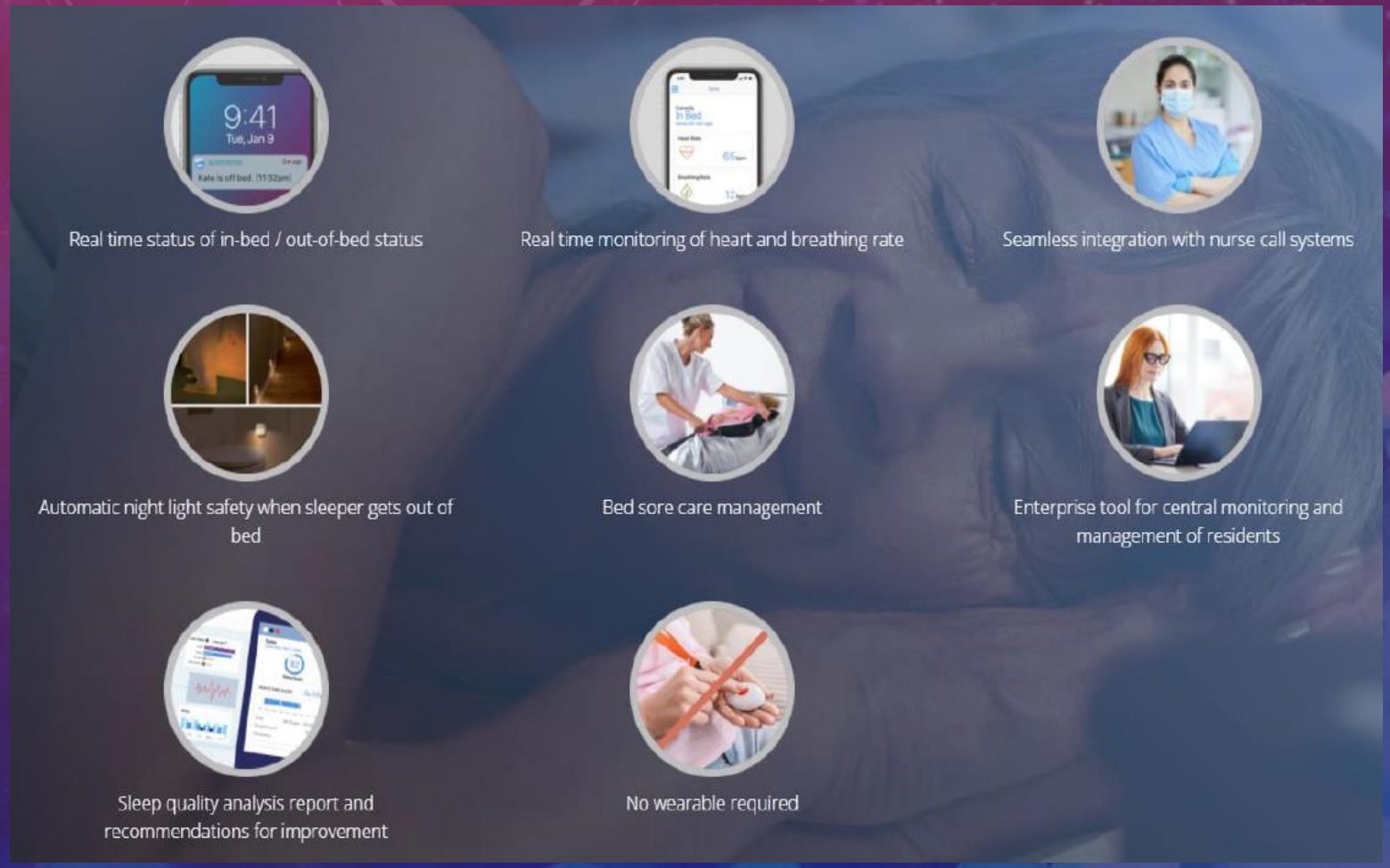


- Alerts / Sleep / Activities / Mobility / HR & Respiration

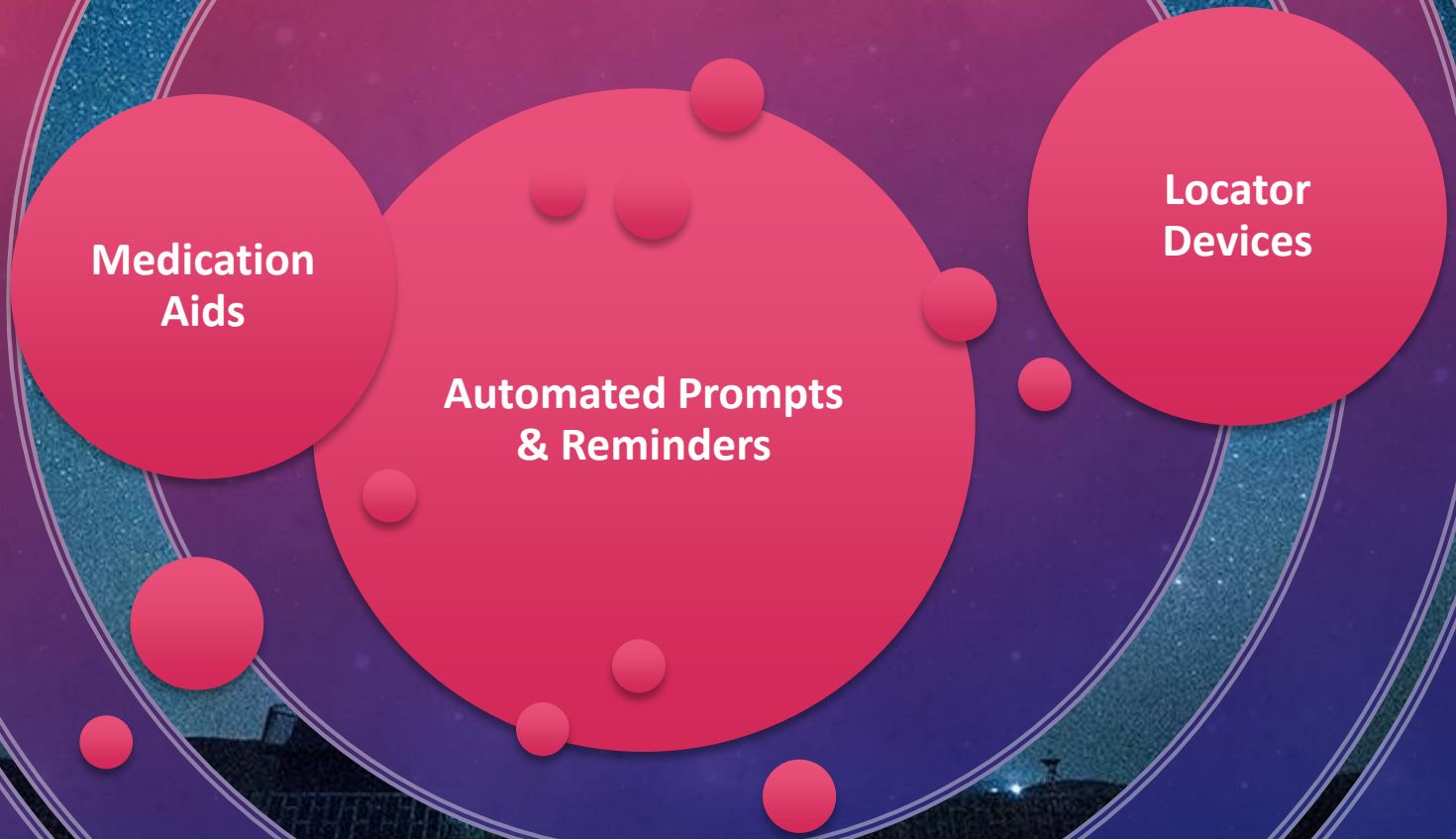
NB. This is an example only, from a larger implementation (i.e.. with more devices). Our pilot will not have all of this information as we are testing only the one sensor/device.

AGED CARE – SLEEP SENSE

- Real time status of in/out of bed
- Real time monitoring of heart rate and respiration rate
- Integration with nurse call system can provide immediate alerts (e.g. falls risk or unexplained absence risk)
- Bed sore care management
- Centralise view of a community, a care home or the entire portfolio
- Can provide an auditable log of events that capture activities of daily living



IOT – ALZHEIMER'S OUTCOMES



SUMMARY

- Artificial Intelligence (AI) should augment Human Intelligence, Not replace it
- Internet of Things (IoT) devices will become increasingly prevalent in healthcare
- Quantum computing will be the next step change, based on the exponential improvements in accurately processing substantial data volumes at speeds previously unheard of.

THANK YOU!

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