Health Technologies and Data for patient and NHS support- how can we use personal monitoring for better health and hospital outcomes?

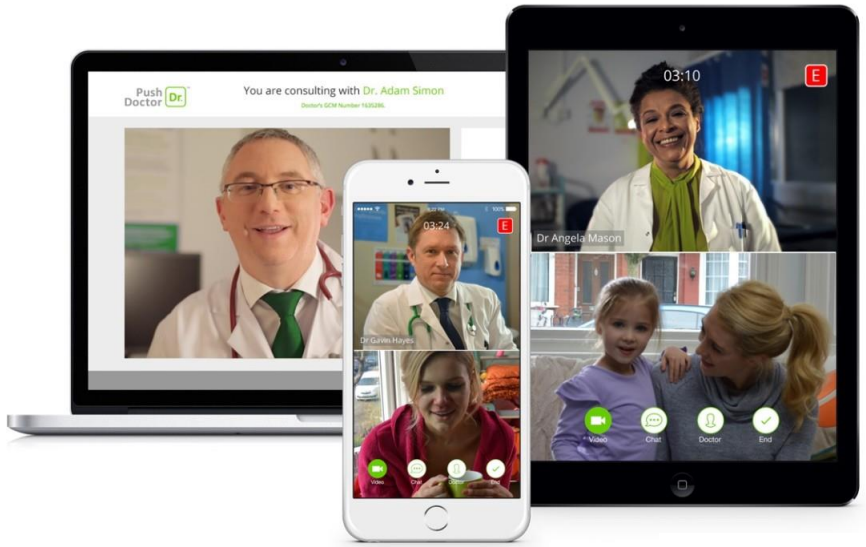
Professor Patricia Connolly
Department of Biomedical Engineering
&
Healthtech Cluster Co-Lead

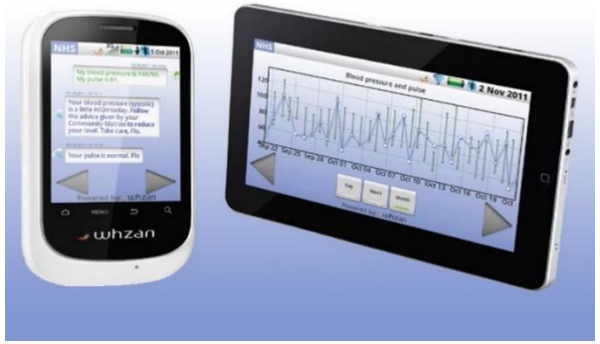
Today

1	Technology for personal monitoring and intervention is here, but there is need for more diagnostic and monitoring devices.
2	AI and data management have come of age
3	There are challenges still to be met in medical monitoring – both for devices and data. Where can they help and who will support the patient?
4	Triple Helix Exemplars – Centre for the Future Hospital, Ohmedics Ltd

A variety of technologies and apps exist for personal monitoring and interventions in the hospital or at home

- BP, O2,ECG, Glucose, Weight, lateral flow tests (Yes/No)

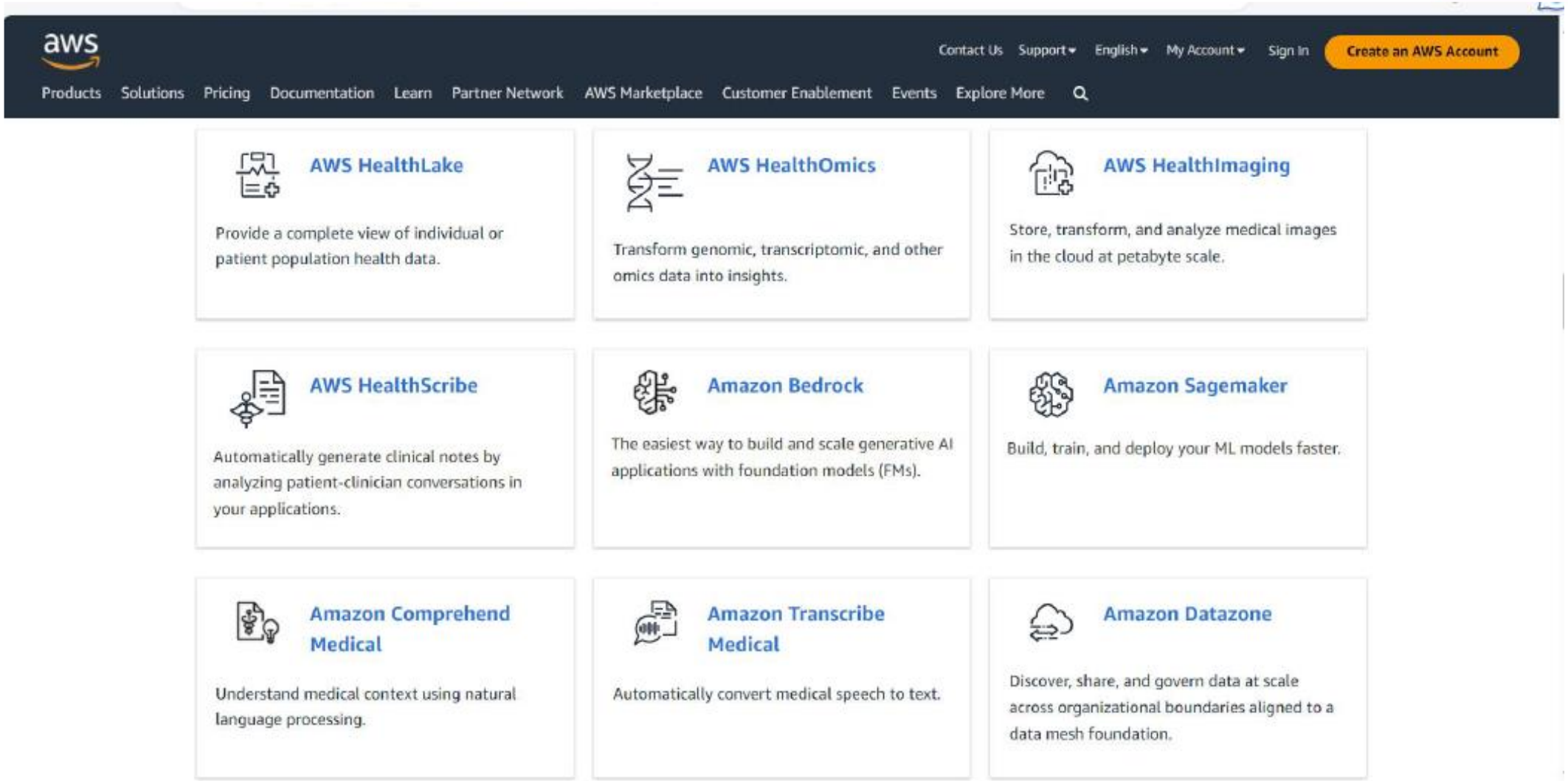




Data collection, manipulation and AI expertise has grown in big tech companies

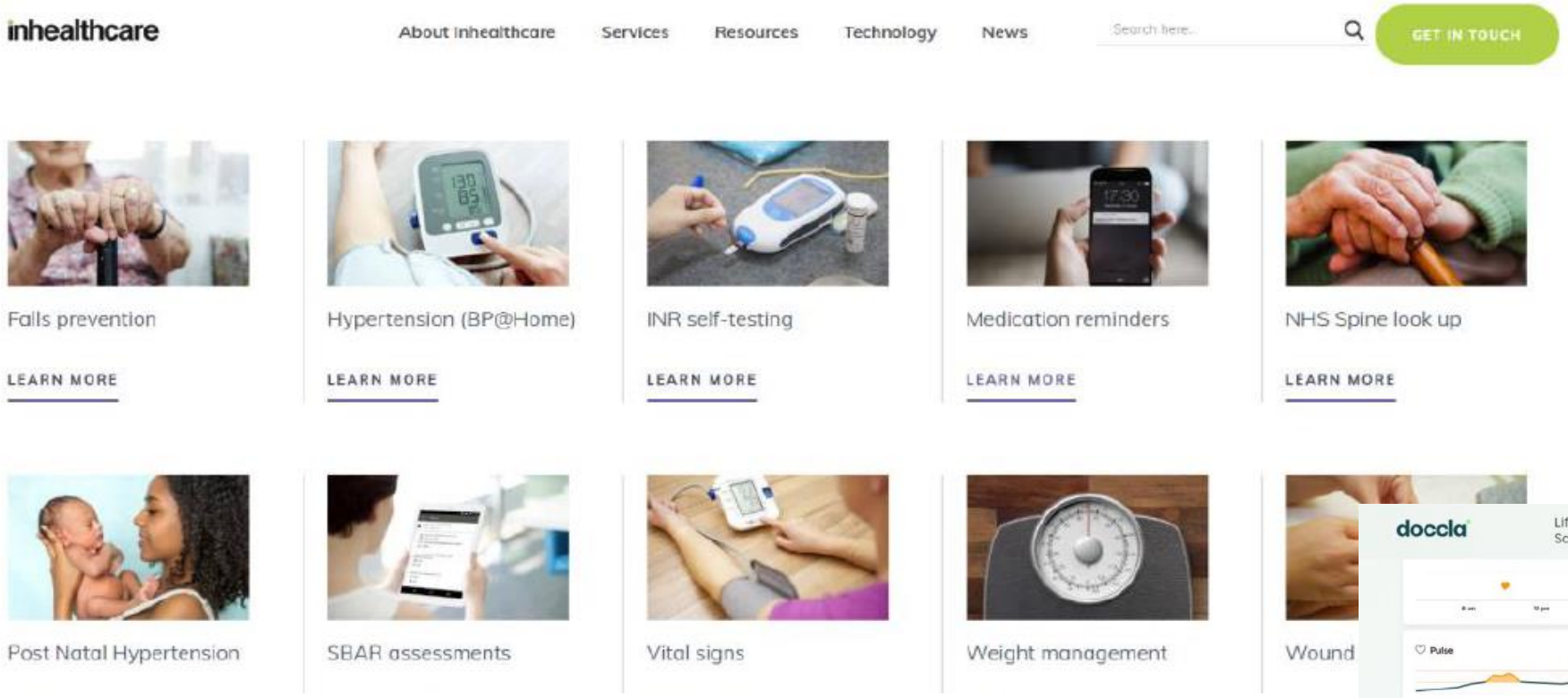
AI and data are commercial

University of Strathclyde Engineering

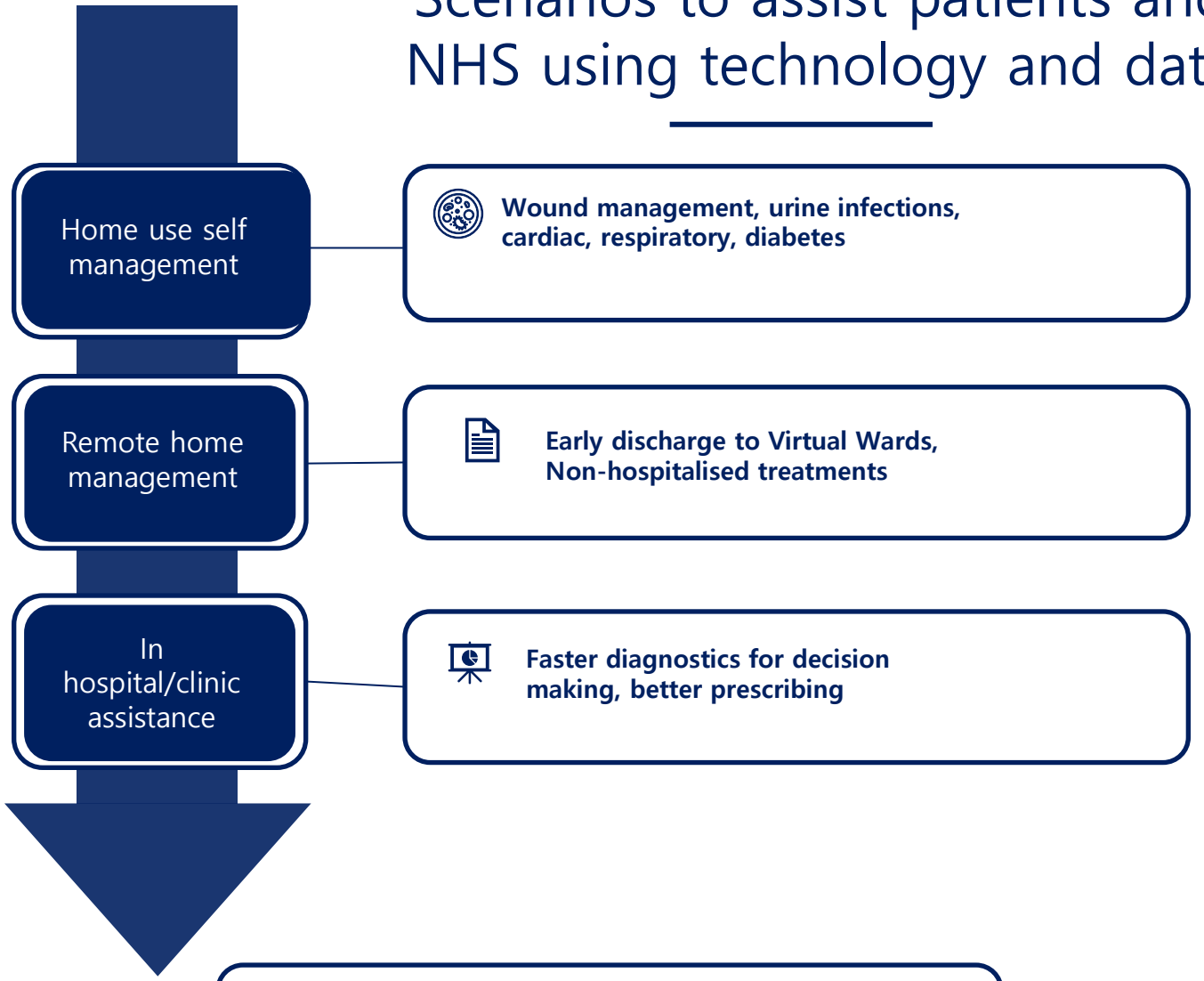


Specialist data and monitoring companies are entering the health space

University of Strathclyde Engineering



Scenarios to assist patients and NHS using technology and data

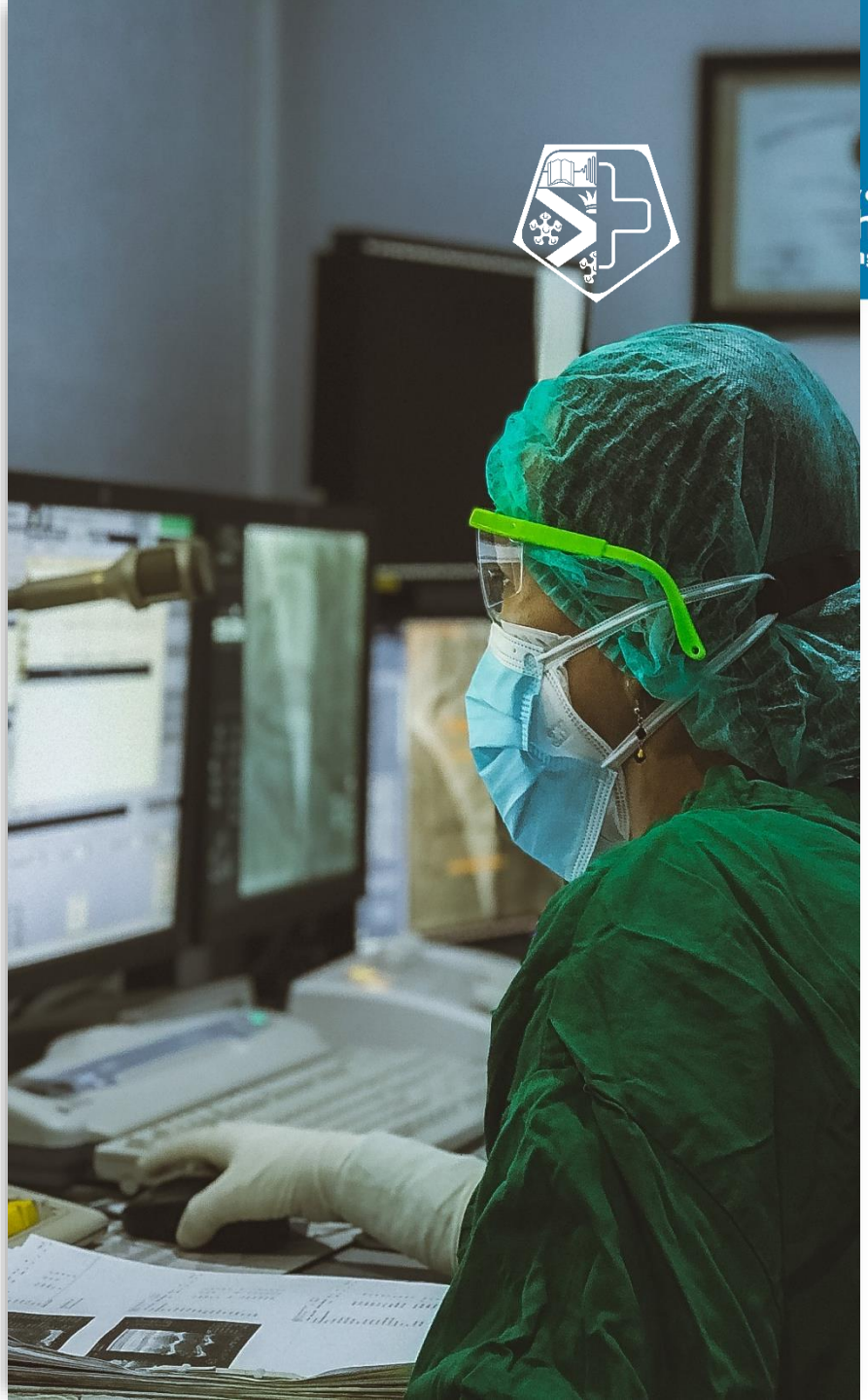


University of Strathclyde -The Centre for the Future Hospital

Mission

An inter-disciplinary research hub leveraging the triple helix of academia, industry, and NHS to deliver world-leading research.

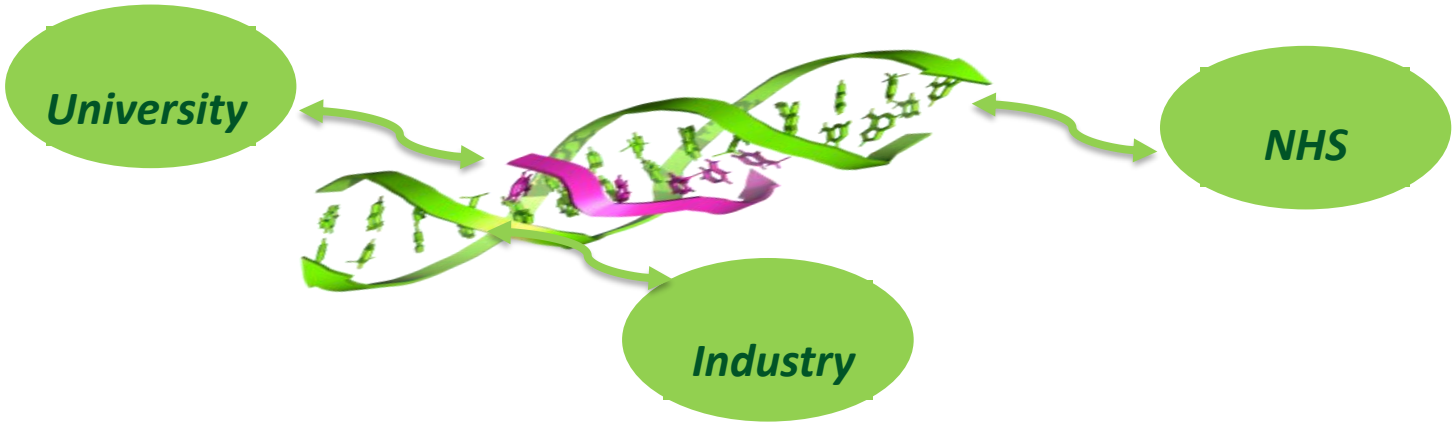
Developing a transformative vision with staff and service users for the future of health and social care.



CENTRE FOR THE FUTURE HOSPITAL

Proactive – Predictive – Preventive – Personal – Sustainable

Wellness? **Virtual Wards** **Virtual Clinics** **Rehabilitation**



Three platform technologies needed for wearable or remote diagnostics are being researched, developed and commercialised by the Medical Diagnostics & Wearables Group in collaboration with the Strathclyde spin-out, Ohmedics Ltd.

University of Strathclyde Engineering

1. WoundSense™. A CE –marked medical device. Wound monitoring and diagnostics with an 'in dressing sensor' for moisture measurement and dressing change control. An 'in dressing' infection monitor will be the next product from this platform.

2. Bioelectronic based cell and bacterial reagentless monitoring and detection for infection detection, urine, blood, lung etc.

3. Transdermal (skin-wearable) sensors for blood parameters such as glucose, lactate and hydration testing.

Ohmedics

WoundSense

CHANGE THE PRACTICE NOT THE DRESSING

University of Strathclyde Engineering

‘In-Dressing’ real time monitoring for;

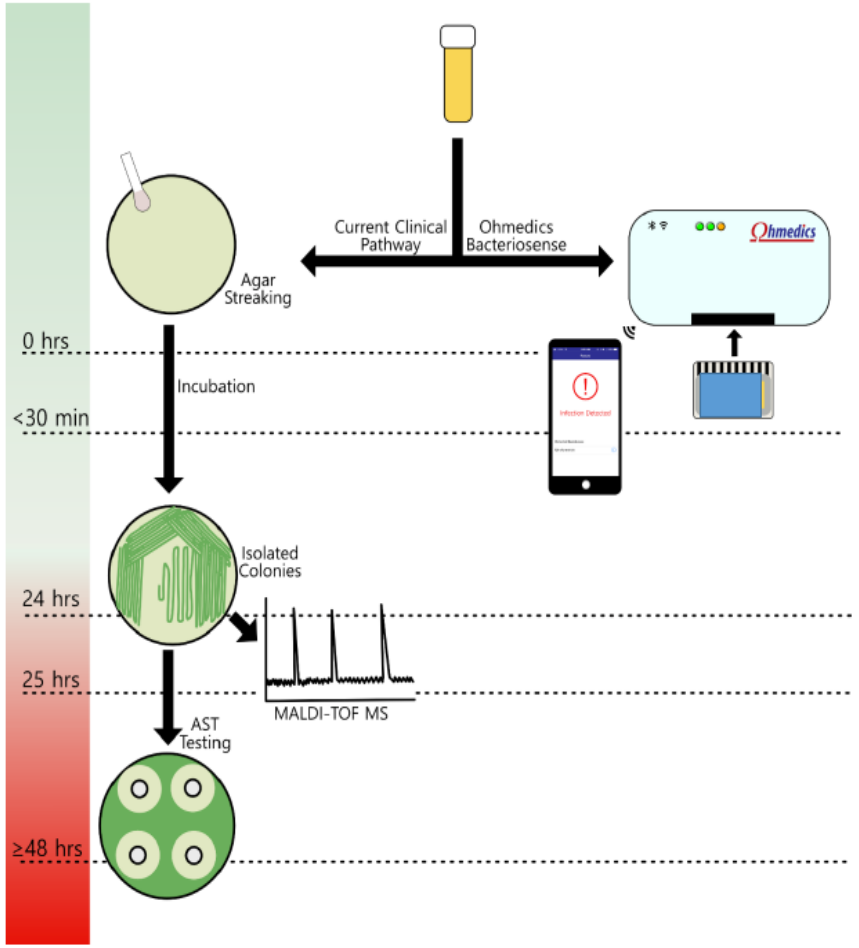
- Wound moisture –optimal dressing selection and healing
- Dressing change need - for home or hospital use by patients, carers and clinicians
- Pipeline product - real time ‘In-Dressing’ infection monitoring
- IP protected in the USA, Canada, EU, China, Japan

Hand held meter reads a ‘drop’ moisture scale from the in-dressing sensor

The disposable, sterile sensor is placed in the dressing for up to 7 days

Ohmedics

Home infection sensing



An infection sensor based on a swab sample for wounds or urine sample has been developed. Suitable for home, pharmacy or GP use with results in 20 minutes including AMR.

Cost-Effective

Faster

Easier to use

Our Transdermal Technology platform has allowed us to develop a wireless, wearable sensor capable of sensing ions and small molecules through the skin e.g. glucose, lactate, electrolytes.
At advanced development stage we have a skin mounted hydration sensor.

University of Strathclyde Engineering

The wearable hydration sensor communicates hydration status to the user's mobile phone

Hydration is an important part of nutrition and affects mental & physical performance.

- Until now hydration was either monitored medically or by imprecise scales such as urine colour.
- Our skin-mounted device allows non-invasive monitoring of hydration for up to 12 hours per session.
- The device will have wide consumer appeal across sports enthusiasts, office workers and those tracking their wellbeing status.

Ohmedics

University of Strathclyde Engineering

THANK YOU

patricia.connolly@strath.ac.uk