WELCOME TO

The Digital Hospitals Conference 2022

2022

Check Out Our Agenda Here...

Tuesday 5th July 2022- 08:00am – 15:30pm – Hatfield's Conference Centre

Conference hosted by Convenzis Group Limited

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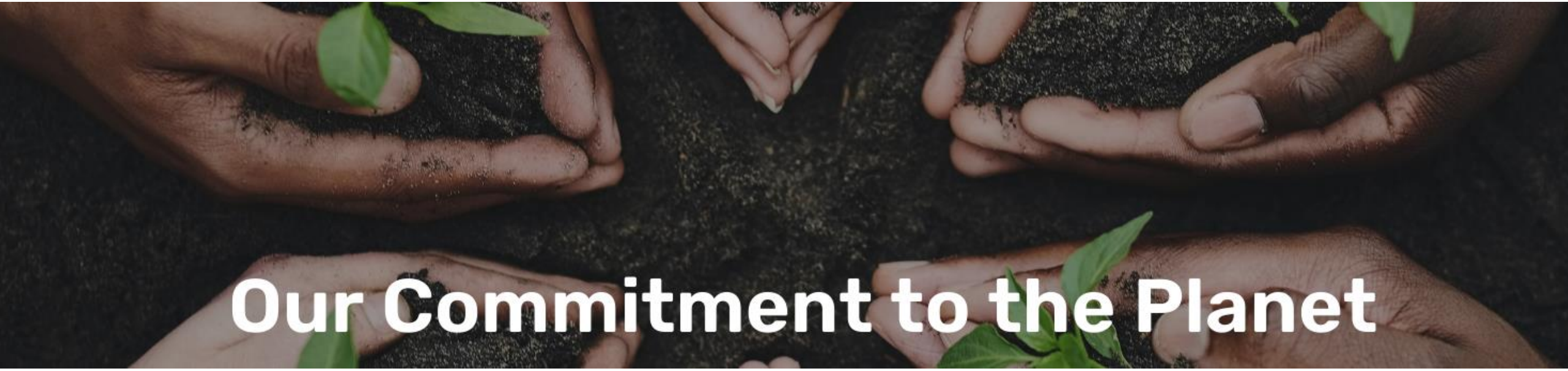

For Each Delegate Attending Our In-Person Event Today, we will be planting 1 tree with our Key Sustainability Partner

PLAY IT GREEN

Slido

Please scan the QR Code on the screen. This will take you through to Slido, where you can interact with us.

SCAN ME

Tuesday 5th July 2022- 2022- 08:00am – 15:30pm – Hatfield's Conference Centre

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The Digital Hospitals Conference 2022

The NHS Digital Hospitals Conference 2022

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Event Chair – Opening Address

Douglas Hamandishe

"Alcidion Clinical Consultant and Broadcaster – Centric Health Media"

The Digital Hospitals Conference 2022

The NHS Digital Hospitals Conference 2022

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SPEAKING NOW

James Freed

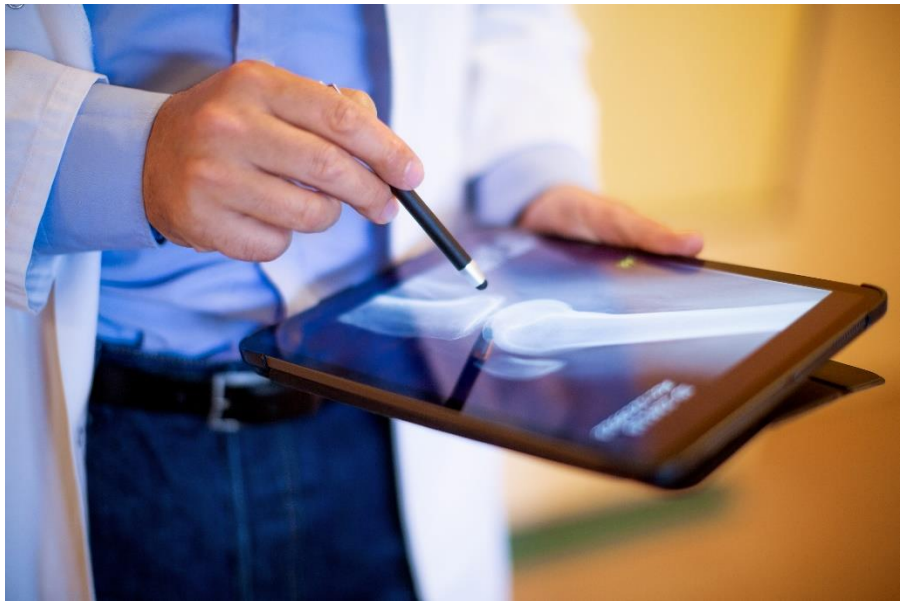
Chief Digital and Information Officer
Health Education England

I will be discussing…

"So…What Exactly Is A Digital Hospital?"

Health Education England

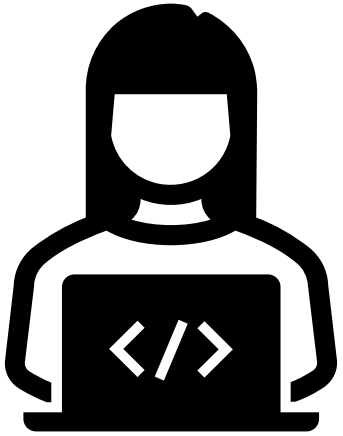
So…What is a Digital Hospital?

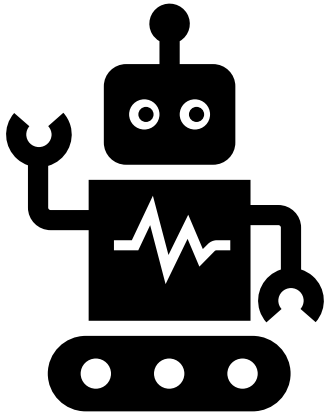


James Freed
Chief Digital and Information Officer, HEE
@jamesfreed5


“…an institution providing medical and surgical treatment and nursing care for sick or injured people.”

What is Digital?





EMR Adoption Model℠

Stage	Cumulative Capabilities
Stage 7	Complete EMR; CCD transactions to share data; Data warehousing; Data continuity with ED, ambulatory, OP
Stage 6	Physician documentation (structured templates), full CDSS (variance & compliance), Closed Loop Medication Administration
Stage 5	Full complement of Radiology PACS
Stage 4	CPOE, Clinical Decision Support (clinical protocols)
Stage 3	Nursing/clinical documentation (flow sheets), CDSS (error checking), PACS available outside Radiology
Stage 2	CDR, Controlled Medical Vocabulary, CDS, may have Document Imaging; HIE capable
Stage 1	Ancillaries – Lab, Rad, Pharmacy - All Installed
Stage 0	All Three Ancillaries Not Installed

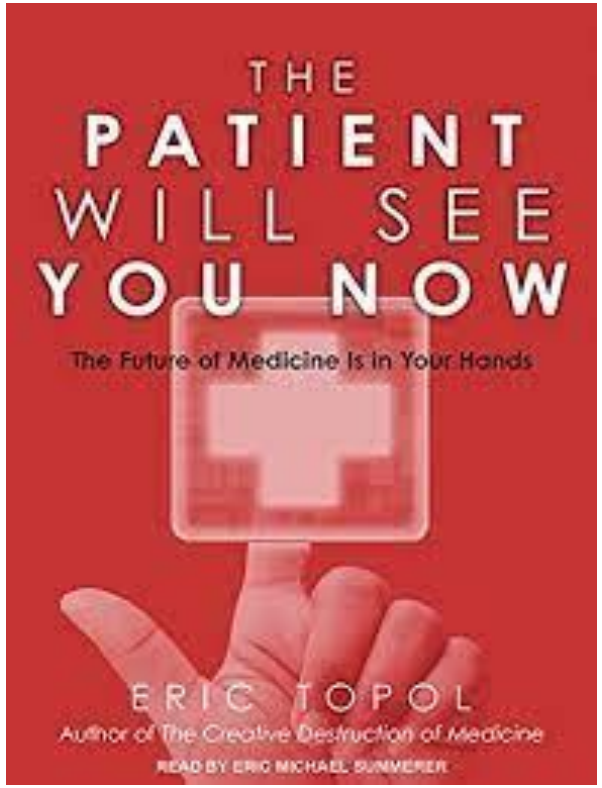
Definition of Digital…

"Digital: Applying the culture, practices, processes & technologies of the Internet-era to respond to people's raised expectations."

-Tom Loosemoore, Former Deputy Director of GDS

An alternate model…

- Technology is a means not an end
- Meeting users' needs better is the ultimate driver
- Best practice techniques are used to repeatably deliver more value more quickly (empowerment, multi-disciplinary team, iterative, data informed)
- A framework exists to balance innovation and safety



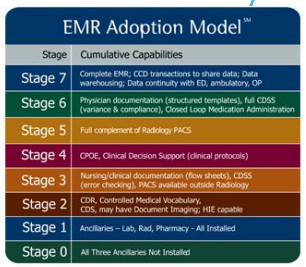
At least three perspectives…

- Behaviours
- Controls
- Environment

Culture

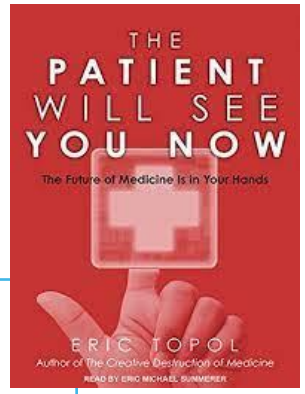
Capability

- Technology
- Data
- Function



- Health
- Satisfaction
- Productivity

Outcome



What are the hallmarks of a Digital Hospital?

- You deliver things that patients and staff need
- You test, measure and learn how its working
- You think long term, but deliver in the short term
- You build trust, not barriers
- You don’t stick to the wrong plan
- You invest in (a) dedicated, cross-functional, in-house digital team(s)

…help?!

NHS Providers

There is no point in undertaking digital transformation unless you are prepared to totally change the culture of your organisation.

Caroline Clarke GROUP CHIEF EXECUTIVE, THE ROYAL FREE LONDON NHS FOUNDATION TRUST

Bespoke board development sessions

Online events

Knowledge hub

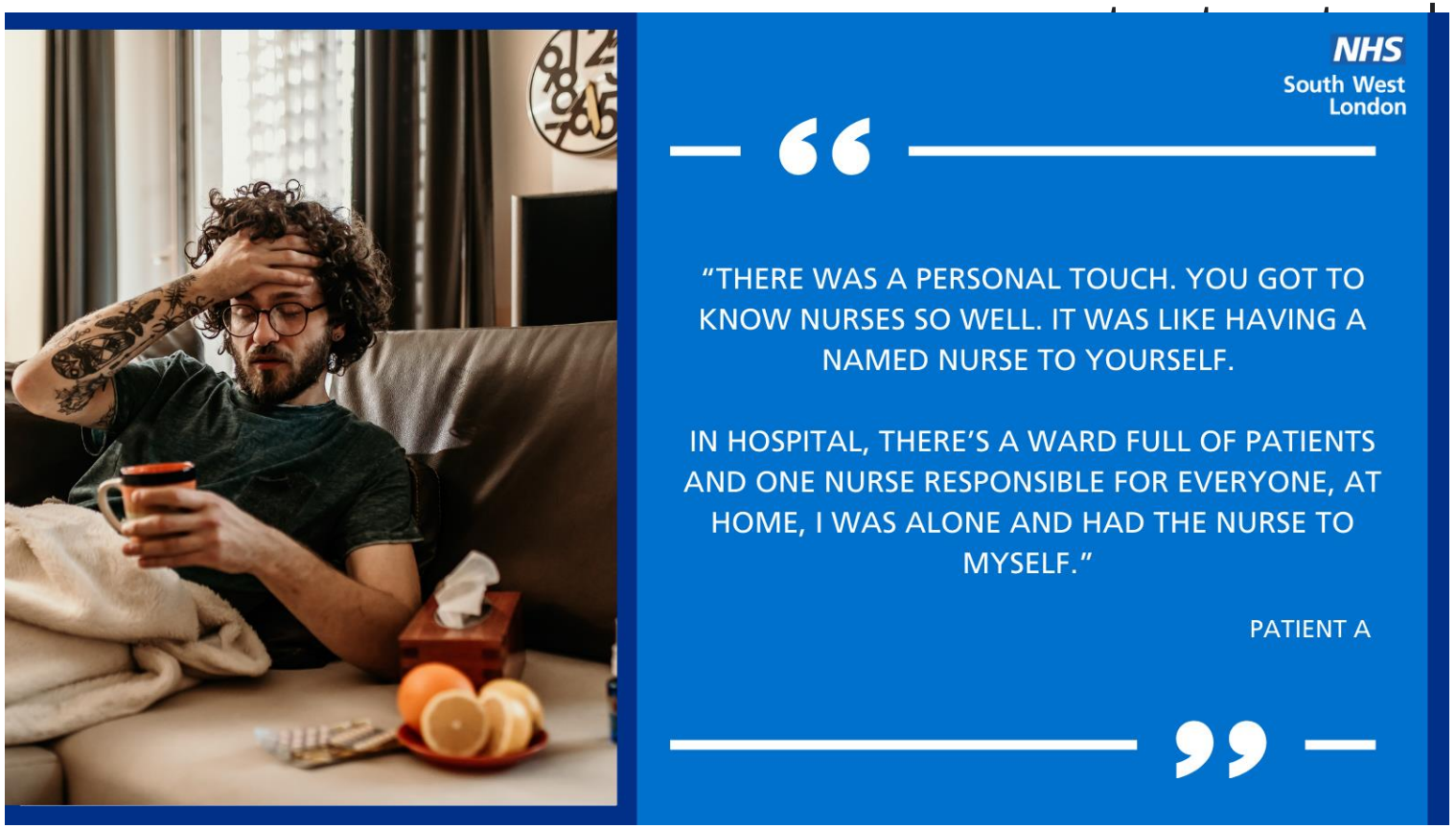
Leadership guides and briefings

Digital Boards leadership network

A network open to all board leaders with an interest or portfolio responsibility for digital. Click here to become a member

So…What is a Digital Hospital?

"…an institution providing medical and surgical
nursing care for sick or injured



Thank you

James.Freed@hee.nhs.uk

@jamesfreed5

The Digital Hospitals Conference 2022

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SPEAKING NOW

Jade Ackers

Director
NHS England and NHS Improvement

I will be discussing…

"Improving Productivity Through Tech"

Improving Productivity through tech

Jade Ackers
Programme Director Digital Productivity
NHS England

The Digital Productivity Programme

NHS England

Our vision

Reduce the burden on the workforce

Improve health and care productivity using digital technology

supporting national commitments of **Her Majesty's Treasury's** (HMT) yearly productivity target

Our aims

- Best practice and buyers guidance
- Financial support
- Communities of practice
- Library of evidence-based case studies

enabling **scale and spread** of productivity-improving technology across the system

Our enablers

- Robotic Process Automation (RPA)
- Radio-frequency Identification (RFID)
- Virtual/ Augmented Reality
- Clinical Communication Tools

supporting digital transformation using **benefit-enabling technologies**

Adopting digital technology

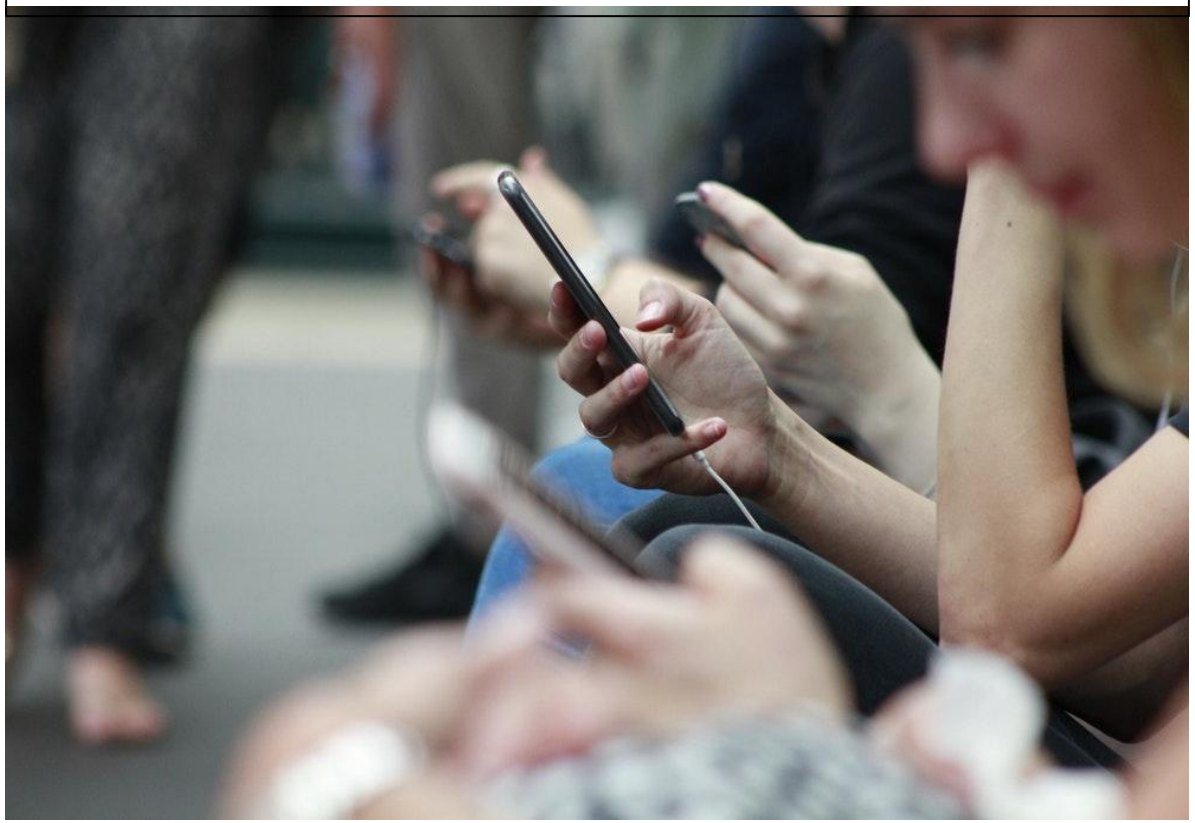
Digital technologies provide the NHS and social care sector with a way to address the challenges faced due to increasing demand. They enable the health and care system to:

- deliver care and treatments to more patients
- save time
- lower costs
- reduce waste
- increase patient satisfaction
- increase staff satisfaction
- Some examples of proven technologies include automation, radio frequency identification and virtual reality.

Use cases for these technologies across the UK and internationally have evidenced their potential to augment, not replace, health care professionals supporting them to provide the best level of care.

Automation

Automation is used to refer to a cluster of technologies including Robotic Process Automation.



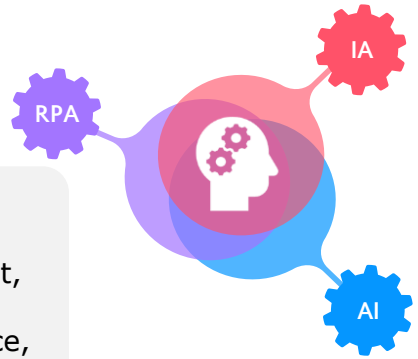
Real Time Location Services (RTLS)

and

Radio Frequency Identification (RFID)

Definition – RPA, IA and AI

Automation can support and enable staff to digitise and/or enhance clinical and business processes across all levels of the organisation.



Increasing technology and process complexity

		Example use cases	Example technologies
RPA	Robotic Process Automation imitates activities carried out by humans. It can automate high volume, rule-based, repeatable tasks, delivered just like its human counterparts. However, RPA can only handle structured and digitised data.	• Front office: Patient administration, Appointment scheduling • Middle office: Operational and service management, Report generation and distribution • Back office: Corporate functions like HR and finance, Claims administration	
IA	Intelligent Automation uses more sophisticated technologies than RPA for structured decision making. It can simulate rule-based decisions to automate more complicated tasks. It mainly handles structured data, but some IA technologies can digitise unstructured data to further enable RPA.	• Front office: FAQs customer assistant, Medical Secretary, OP Call centre • Middle office: Patient enrollment and eligibility, Theatre scheduling • Back office: Physician credentialing	• Intelligent content recognition or extraction • Natural language processing
AI	Artificial Intelligence refers to computer software with the ability to think. It allows examining of large, unstructured, varied data sets to uncover hidden patterns, trends, customer preferences and other useful data that can help inform better decisions.	• Front office: Patient data analysis and triage to assist referrals – eConsult, eTriage • Middle office: Fraud detection and risk management • Back office: Medical imaging analysis support – Clinical administration of diagnostic support services	• Natural language generation • Machine learning

Unpacking RPA – A Change Management enabler

RPA should always be considered as part of a wider, people-focused, transformation that will enable efficient work delivery in the NHS.

Today's technology impact

Emerging technologies used sporadically across the health and care system with ability to scale proving to be a significant challenge.

Continued struggle with volume of work vs continually increasing demand sometimes leading to poor outcomes and substandard experience.

COVID-19 driving existing backlogs, but also accelerating availability and use of technology across the sector.

The way work is delivered is beginning to change creates an opportunity for improving patient and staff experience.

Drivers for change

Changing expectations – connected staff and patients

Increased connectivity – added value

Availability of data – better insights

Future technology impact

Digitally enabled staff using technology to improve care quality, efficiency and maximising time with patients – adding value to patient care, getting it right the first time, with the right clinician, at the right time.

Digitally engaged patients with greater autonomy over their health and wellness with personalised care and empowered patients managing their own care and care plans.

The boundaries of where work is delivered and care is provided are changing as models of care move outside of hospital and care settings with integrated care systems and end to end pathways with seamless handoffs and care with the right professional.

Seamless, real-time access to information in a single view at the point of need.

A people-centred vision

A world working with greater connectivity across care systems and with patients, with empowered staff, enabled by digital technology

Unpacking RPA – Current example use cases

Applications of RPA in the NHS today within front, middle and back office are summarised below:

Front Office

Appointments: Freeing up and matching capacity
- ✓ Rostering
- ✓ Did not attend (DNA) – reminders and rebooking
- ✓ Bed management

Supplementing clinical judgement*
- ✓ Imaging
- ✓ Case note change tracking
- ✓ Coding discharge letters
- ✓ Key controls (for example – end-of-life, drug seeking, child protection)

Transition between different care providers
- ✓ Out-of-hours
- ✓ Anticipatory care plans*
- ✓ Medication mapping or reconciliation
- ✓ Lab results and blood tests

Improving data quality
- ✓ Patient records – registrations updates and reconciliation
- ✓ Patient record analysis for proactive care*
- ✓ Immunisation records
- ✓ Clinical evaluation forms

*Based on scope and output of the use case, **medical device regulations** might be applicable.

Middle Office

Strategy and planning: Analysis of reports, legislation and contracts

Used alongside cognitive technologies to help with:
- ✓ Report intelligence
- ✓ Compliant clauses
- ✓ Contract leakage

Budgets and reporting

Used alongside AI and analytics to better manage:
- ✓ Gathering, cleaning, processing and interpreting data
- ✓ Predictive budgeting and forecasting
- ✓ Approval workflows

Risk management

Used alongside Intelligent Automation to improve:
- ✓ Risk factor monitoring
- ✓ Counter fraud processes
- ✓ Decision making

Programmes and projects
- ✓ Monitoring and responding to data to drive triggers
- ✓ Automated report generation and distribution
- ✓ Support to real time analytics

Back Office

Human resources
- ✓ Joiners and leavers (account creation/privileges)
- ✓ Temporary staff management
- ✓ Employee information maintenance

Finance and accounting (including payroll)
- ✓ Accounts payable and invoicing
- ✓ Reconciliation
- ✓ Operational cost management
- ✓ Reduced approval times

Procurement and supply chain
- ✓ Automated sign off and approval workflow
- ✓ Order confirmation
- ✓ Supply replenishment and inventory control
- ✓ Supplier performance (fulfilment)
- ✓ Inventory management

Informatics and reporting
- ✓ Monitoring and responding to data to drive triggers
- ✓ Automated report generation and distribution
- ✓ Support to real time analytics

Unpacking RPA – Benefits

The primary benefits of RPA are operational efficiencies, which help drive better quality of care with faster turnaround times and reduced cost.

RPA excels in taking away repetitive, manual work from employees, such as scheduling activities, copying and pasting data, and booking timesheets. In addition to operational and cost efficiencies, RPA unlocks the capability of organisations by augmenting their staff. Within the context of the NHS, this will mean freeing up valuable staff time – both clinical and non-clinical, so they can focus on value adding activities that improve patient care and outcomes.

Speed: RPA undertakes tasks 4–10x faster than a person, freeing up staff time to focus on patient care.

Reliability: RPA robots only do what they are told (no human errors) and will never mis-key, miscalculate or have a bad day; provided input data and business rules are correct, output data will be correct and consequently improve patient safety.

Productivity: Available 100% of the time 24/7 – the robots will never need to sleep, they will undertake their work whenever required, giving back time for clinical and non-clinical activities.

Flexibility: Robots are easy to schedule and assign to automations once they have been created. They can also be updated relatively quickly if the process requirements change, increasing responsiveness for patients.

Decoupling growth from labour: Robots increase the capacity of organisations allowing them to do more with less/same resources, which then allow teams to tackle care backlogs faster.

Cost reduction and return-on-investment (ROI): Robots are cheaper, faster, available 24/7 and can improve productivity and data quality, resulting in lower operational costs and hence better value for communities. Most organisations report 20-30% cost reduction and 30-50% ROI on RPA projects.

Auditability: Robots collect information on everything they undertake, allowing for full, retroactive inspection on every transaction they have undertaken.

Light touch: Robots work with existing applications and systems that an organisation has, which enable fast-tracking to digital transformation.

Employee satisfaction: By giving robots the mundane tasks, employees focus on the things that people do best (thinking, deciding, producing, and creating). This improves staff resilience – more time to do transformational work and adopt new ways of working.

Reduced attrition: Better staff satisfaction results in reduced attrition across organisations. Increasingly, companies are focusing on this as a main benefit they seek from RPA.

NHS England

Real Time Location Services (RTLS) and Radio Frequency Identification (RFID)

April 2022

What do we mean by RTLS and RFID

NHS England

Automatic Identification Data Capture

Is a **family of technologies** that automatically identify objects, collects data, and enters the data directly into computer systems, without human involvement

RTLS tracks and identifies the location of objects in real or near-real-time.

- combination of wireless, ultra-wideband technologies communicate between tags and GPS systems and readers

RFID uses radio frequency waves to transfer data

-Active tags require a power source (battery)

-Passive tags receives its power from a reading antenna

QR & Bar Codes store information about an item or product in a machine-readable format that can be easily scanned

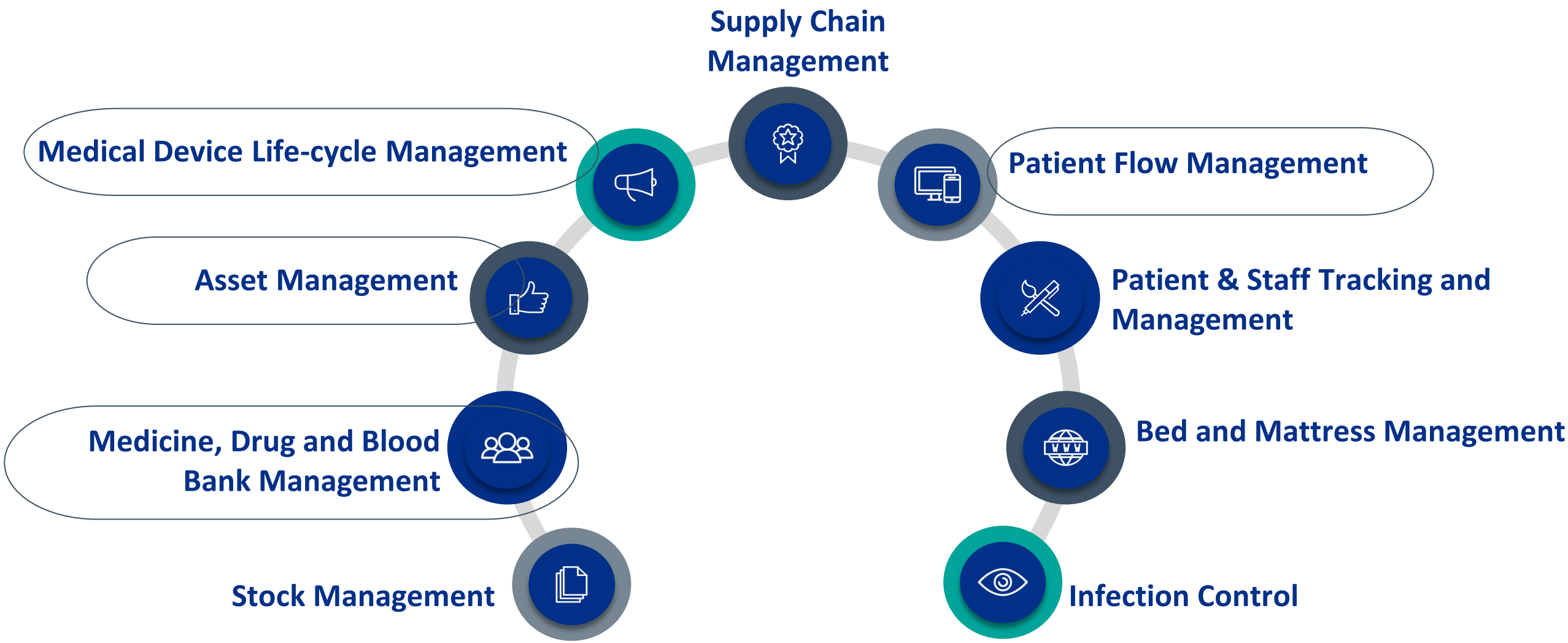
How does RFID/RTLS work?

- Barcodes
- Tags
- Readers
- Scanners

- Wireless
- WiFi
- Bluetooth
- GPS
- Radio-frequency

- Computer system
- Patient database
- Inventory management database

Applications of RFID and RTLS in the NHS



Benefits

Key benefits include reduced hospital outlays, increased staff productivity and staff time saving

Safer care

- ➢ Improved compliance
- ➢ Provides full audit trails
- ➢ Effective reporting

Less-intrusive care

- ❖ Improved efficiency for maintenance
- ❖ Increased patient safety
- ❖ Improved end of life care provision

More-effective care

- Improved inventory management
- Right equipment is always available
- Capital costs avoided and time saved from searches

More patient-centred care

- ❑ Pro-active Care improvements
- ❑ More time to look after patients

More-efficient care

- ➔ Improved device utilisation
- ➔ Cost avoidance
- ➔ Align resources to demand
- ➔ Evidence based practice
- ➔ Operational visibility and real-time data

Case Studies

RFID used for effective paper records management - NHS Tayside

RFID Pilot for bed and hoist tracking - Heart of England NHS Trust

Proof of Concept RFID used to track and trace orthopaedic loan kits - Leeds teaching hospital

RFID aids improvement in managing mobile medical devices - Milton Keynes University Hospital NHS Foundation Trust

Hospital uses RFID to track over 60,000 assets - University Hospitals Plymouth NHS Trust

East Kent Hospitals sees benefits of tracking medical devices with active and passive RFiD - East Kent Hospitals University NHS Foundation Trust

Theatre Inventory Management Streamlined with RFID - Cambridge University Hospitals NHS Trust

RFID used to track patient implants - Royal Cornwall Hospitals NHS Trust

Ambulance service speeds up tracking of life-saving equipment - East Midlands Ambulance Service NHS Foundation Trust

WiFi enabled RTLS saves staff time finding equipment - Newcastle upon Tyne Hospitals NHS Foundation Trust

Join our National Communities

https://future.nhs.uk/RPA/grouphome

https://future.nhs.uk/DigitalProductivityProgramme

Download the National RPA Guidance

https://www.nhsx.nhs.uk/key-tools-and-info/guidance-for-designing-delivering-and-sustaining-rpa-within-the-nhs/

Access our web pages

https://www.nhsx.nhs.uk/key-tools-and-info/digital-productivity/

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SPEAKING NOW

Eghosa Bazuaye

Associate Director of Information – Royal Berkshire NHS Foundation Trust

Claire Burnett

Sepsis Lead Nurse & Critical Care Outreach Nurse – Royal Berkshire NHS Foundation Trust

We will be discuss…

"Advanced Anayltics – Real Time Data Analysis & Actionable Intelligence"

http://tinaapp.azurewebsites.net/

Zoe Dronfield

Client Director - Health Solutions, Trustmarque

Digital Hospital Conference 2022

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NHS
Royal Berkshire
NHS Foundation Trust

Digital Hospital Conference 2022

Advancing Health Analytics
Real Time Data Analytics & Actionable Intelligence

Eghosa Bazuaye
Associate Director of Informatics
Royal Berkshire Hospital

Claire Burnett
Sepsis Lead Nurse
Critical Care Outreach Team
Royal Berkshire NHS Foundation Trust

Compassionate | Aspirational | Resourceful | Excellent

what matters

Agenda

Royal Berkshire NHS Foundation Trust

- The Digital Journey at the Royal Berkshire Hospital
- Real Time Data Analytics and Actionable Intelligence
- Use case – Deteriorating Patient Management

RBH Digital Journey 2014 - 2022

Royal Berkshire NHS Foundation Trust

RBFT digital challenges in 2014:

- **System and Infrastructure**
  - A problematic ‘Go live’ of EPR
  - Multiple dispersed standalone IT systems
  - Assessed as HiMSS level 1

- **Data Quality & Reporting**
  - Data quality flagged as very high risk in the Trust corporate risk register
  - 14yrs old unreliable, undocumented and unsupported Data Warehouse
  - Fragmented reporting and analytics support across the Organization

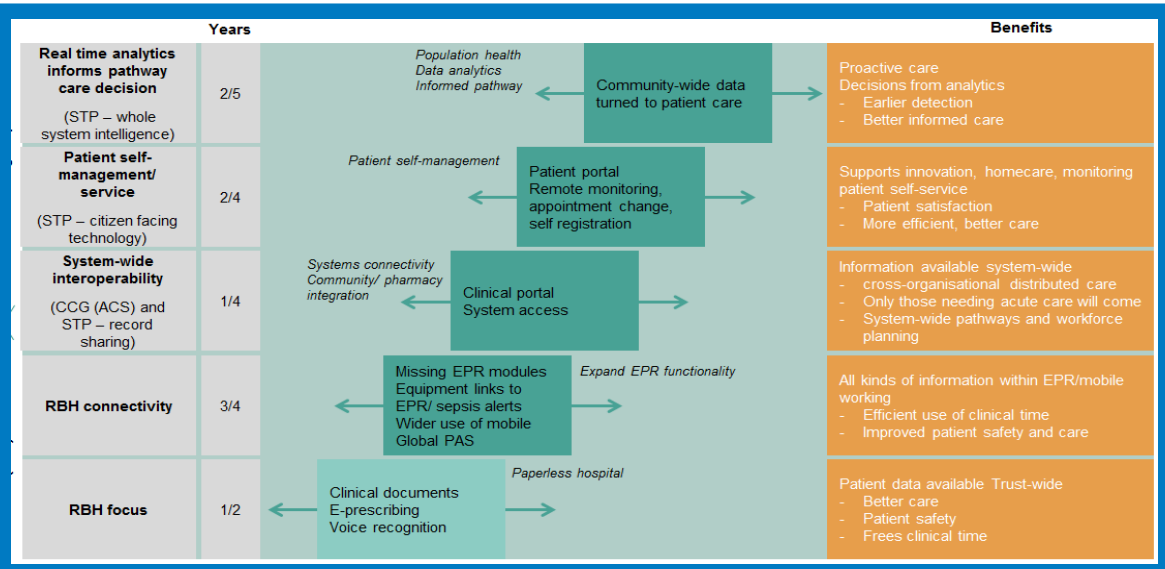
- **System and Connectivity**
  - Limited system wide interoperability
  - Limited patient self management service/technology

RBH Digital Journey 2014 - 2022

Royal Berkshire NHS Foundation Trust

Addressing System and Infrastructure issues

- Developed a 5 year IM&T strategy
- Became a GDE Fast Follower
- Updated infrastructure
  (Cows/ Tap&Go - SSO/VDI in ED)

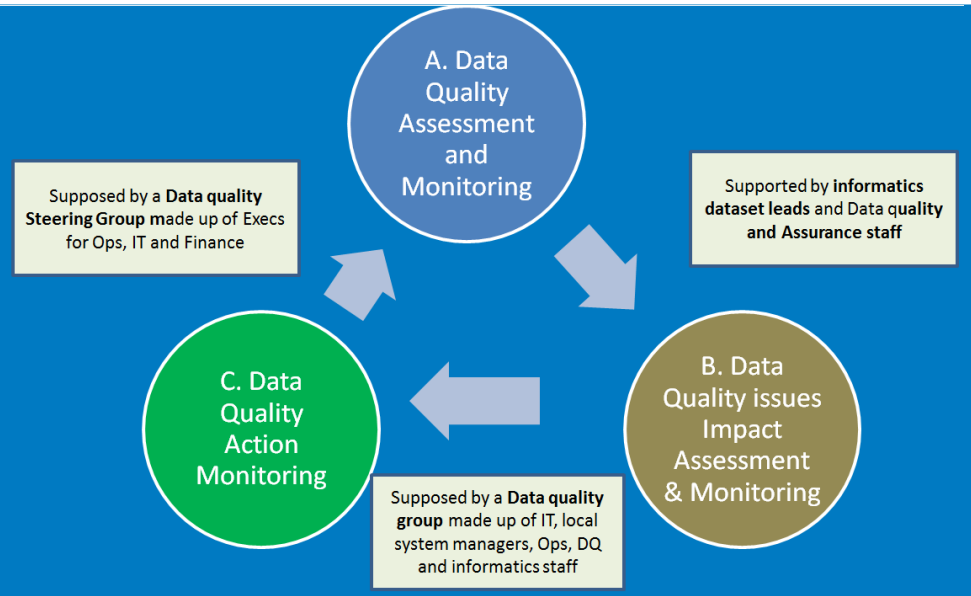


- Successfully Implemented Clin Docs, inpatient E-Prescribing/EPMA and Order Comms
- Paperless in
  - Admitted patients and Outpatients
  - ED, Theatre and Maternity
- **Assessed in 2019 as HIMSS level 5**

RBH Digital Journey 2014 - 2022

Royal Berkshire NHS Foundation Trust

Addressing Data Quality and Assurance issues



- Data Assurance Strategy

We needed a bolder strategy for data quality that was based on a more holistic data assurance methodology rather than a narrow and largely reactive data quality approach

*This would enable us **to better understand** our data, its **use** and the **impact of the data quality issues** affecting it, this in turn would help us **prioritise our DQ issues and actions***

- Implemented Data Assurance Programme driven by an **Integrated Data Assurance model**
- **Data quality has now come off the Trust corporate Risk register**

RBH Digital Journey 2014 - 2022

Royal Berkshire NHS Foundation Trust

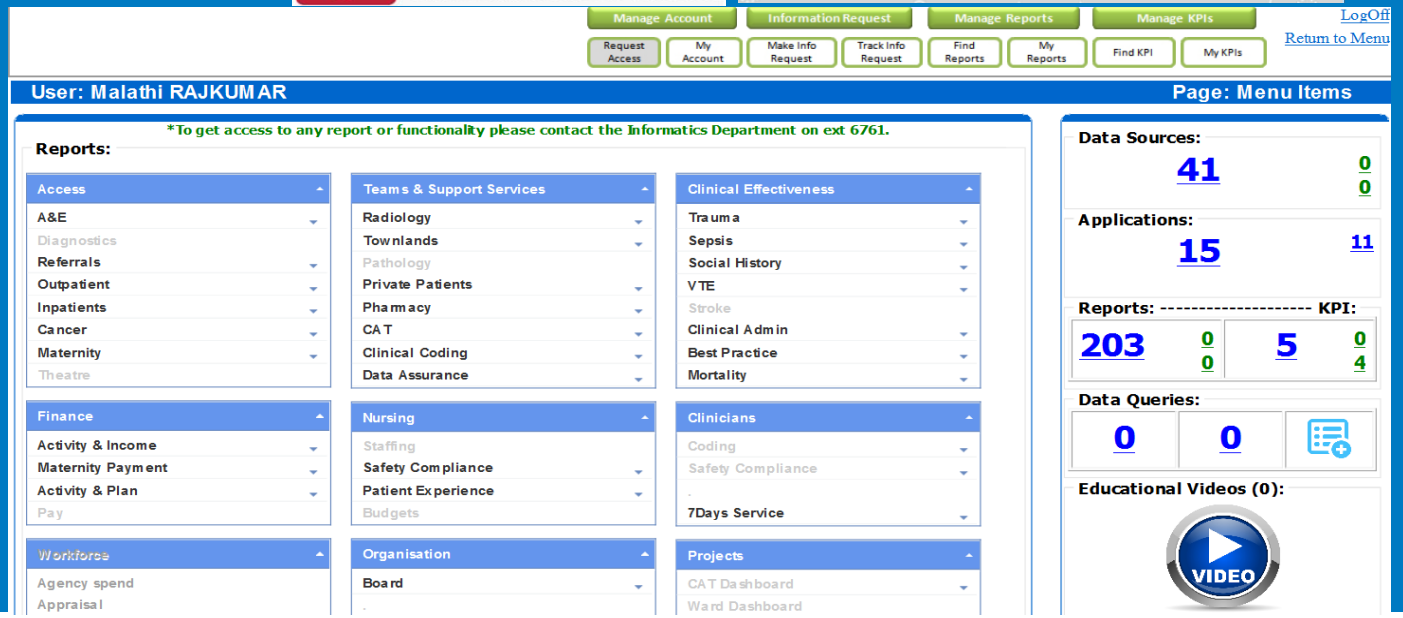
Addressing Data Warehousing and Reporting issues

Replaced our DWH with a framework based and supported solution

Implemented Tableau as main BI solution for the Trust

Developed a web based solution (Trust Informatics Portal) TiPS. To enable effective access to reporting regardless of report type

Over 400 reports and dashboard regularly used by over 450 staff



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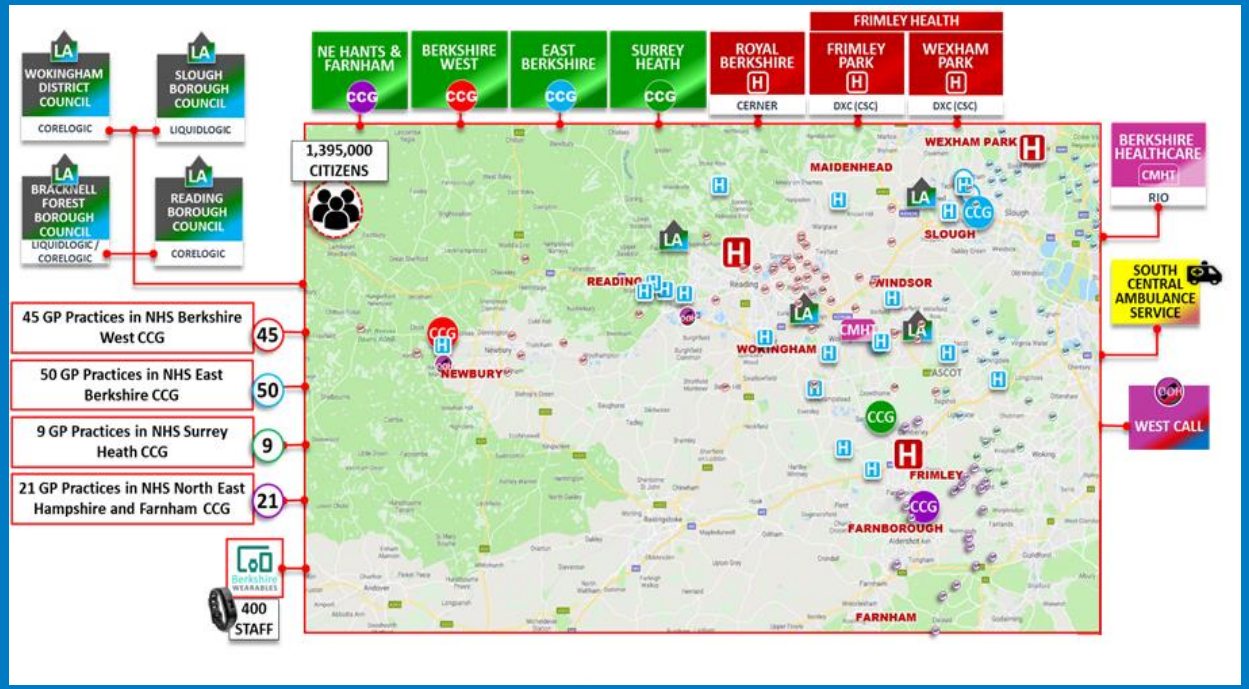
RBH Digital Journey 2014 - 2022

Royal Berkshire NHS Foundation Trust

Improving System connectivity and patient self management

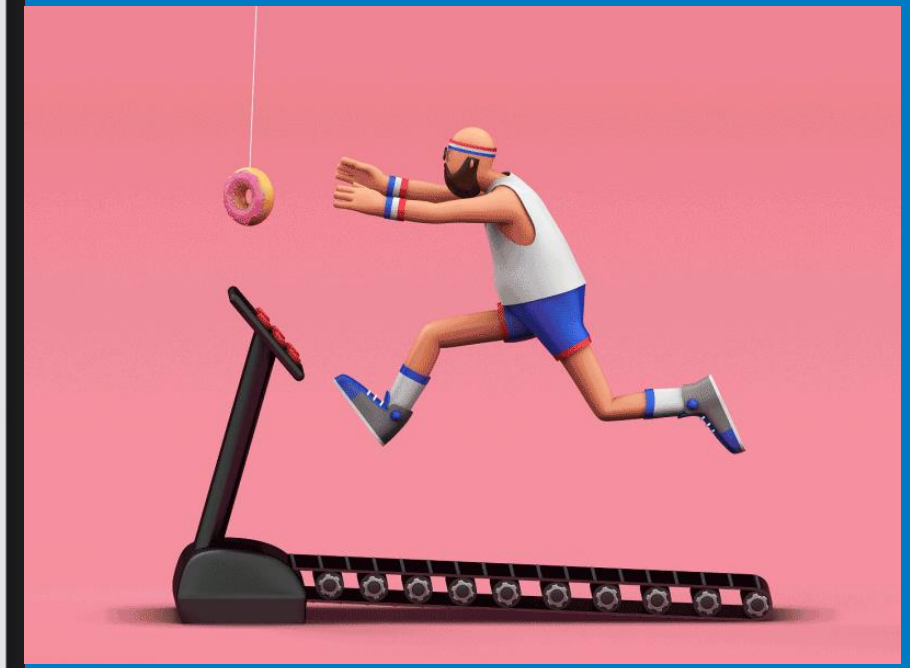
Connectivity
- Connected Care Portal covering 1.5 mil population. Real time dataflow from RBH
- Connected Care accessible from RBH EPR by clinicians

Intelligence
- IG approved for population Health analytics
- Connected Care Intelligence Group set up. Work streams include
  - Live Bed view
  - Patient longitudinal records
  - System insight dashboard



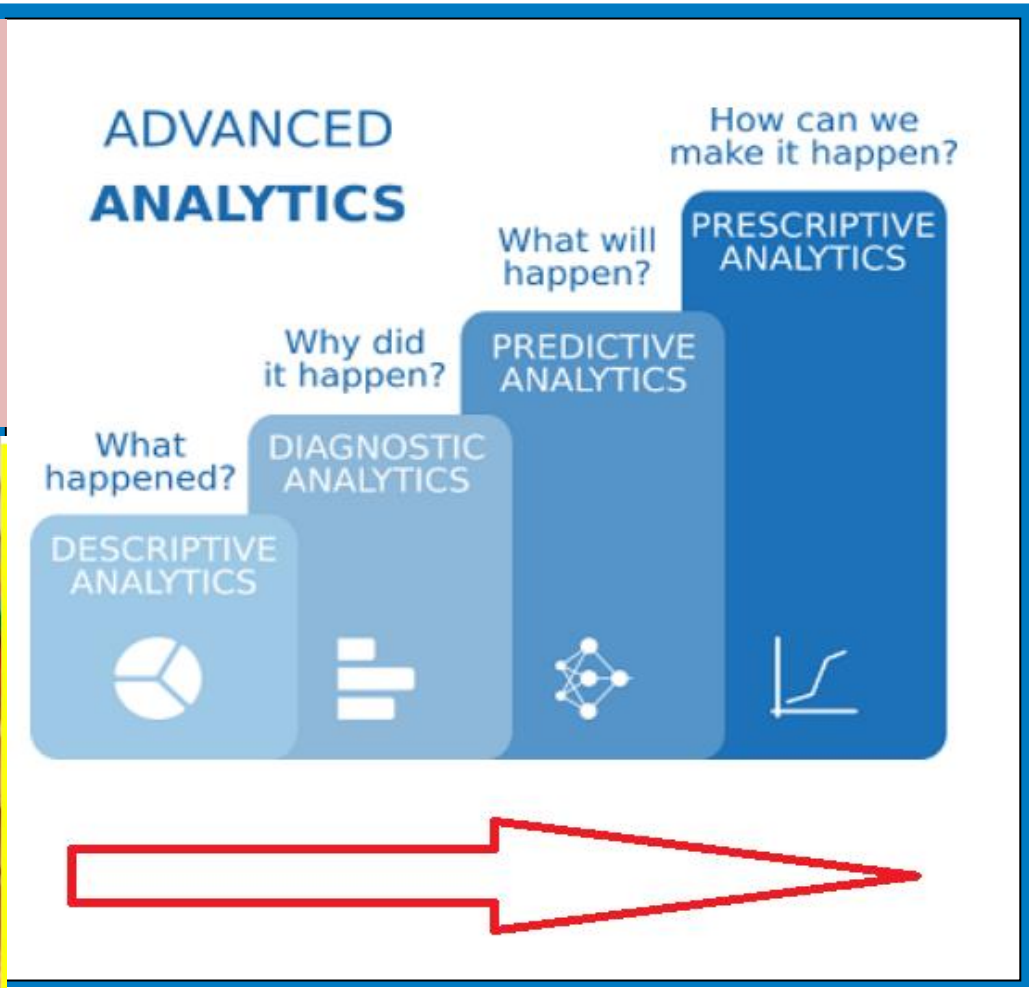
Patient Self Management – Patient Portal
- Patient Portal now live with access to Trust letters and patient history
- Appointment reminders and ability to change appointment directly into EPR
- Online forms to support data and outcome capture

Great! But what next for NHS Acute Informatics



Advancing Health Analytics

Traditional NHS informatics is largely limited to descriptive analytics with a notable amount of resource dedicated to reporting on what has happened. While the digital programme will certainly further increase this demand it also offers the opportunities for us to move beyond descriptive analytics and to transform how the organisation uses data

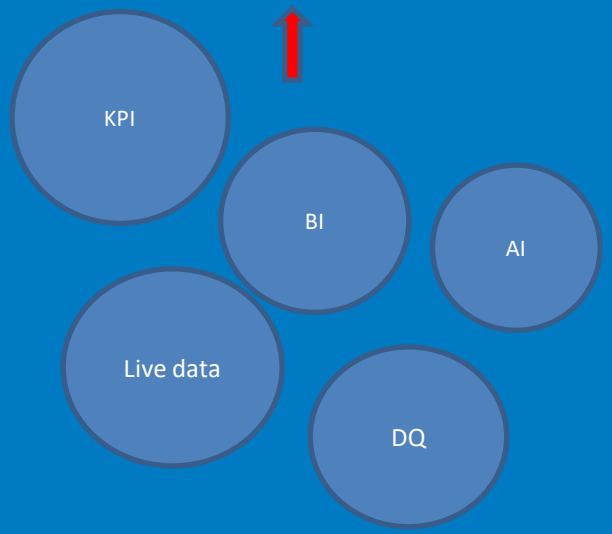


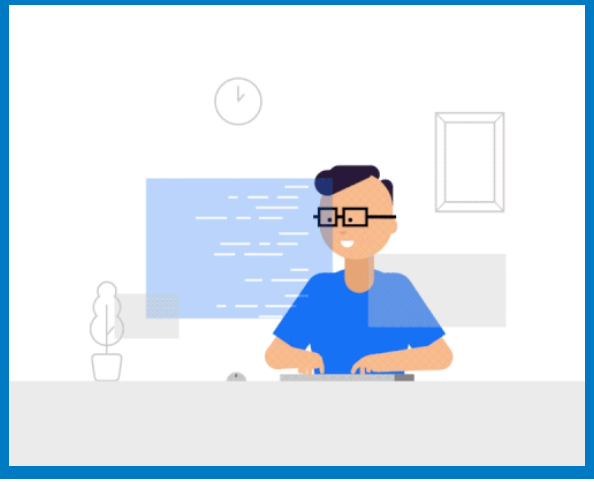
Real Time Data Analytics & Actionable Intelligence

Royal Berkshire NHS Foundation Trust

Real Time Data – The holy grail of NHS analytics for quite some time, gives analytics the opportunity to take a more proactive role in health care provision

But we find that the increasing breath of data due to the digital hospital programme and availability of live data can be **overwhelming** and **paralyzing** for operational and clinical colleagues as well as informatics staff





Data Warehouse

Digital Programme

Compassionate | Aspirational | Resourceful | Excellent

what matters

Real Time Data Analytics & Actionable Intelligence

Royal Berkshire NHS Foundation Trust

Effective use of real time data analytics at RBFT

- **Real time Data** – Presents new opportunities for the use of informatics and analytics in health care
- The most powerful use of real time data was to focus **on Actionable Intelligence,** using **leading indicators**. "**Information that we can act on to get the outcome we want**"

Lagging vs Leading indicators

Lagging indicator:

Number of patients with pressure ulcer

Leading Indicator:

Number of high risk pressure ulcer patients without a pressure ulcer plan

Number of high risk pressure ulcer patients are about to breach their repositioning standard

Real Time Data Analytics & Actionable Intelligence

Royal Berkshire NHS Foundation Trust

How do we develop an efficient process capable of generating and delivering timely leading indicators without overwhelming both informatics and clinician and operational colleagues

Developing the right supportive digital solution that gives staff effective, personalised and timely access to relevant information

That staff are further supported with appropriate personalised and relevant notifications by a **digital data assistant**

Developing a framework to streamline and automate the production of leading indicators

TiNa

(Trust Intelligence and Notification data Assistant)

Royal Berkshire NHS Foundation Trust

- Cerner EPR,
- Clinical systems
- Business systems

Mobile app – TiNA

TiNa – RBFT Automated KPI Processing and Management Framework

Patient waiting Rooms

Desktop app

Control centre(s)

Compassionate | Aspirational | Resourceful | Excellent

what matters

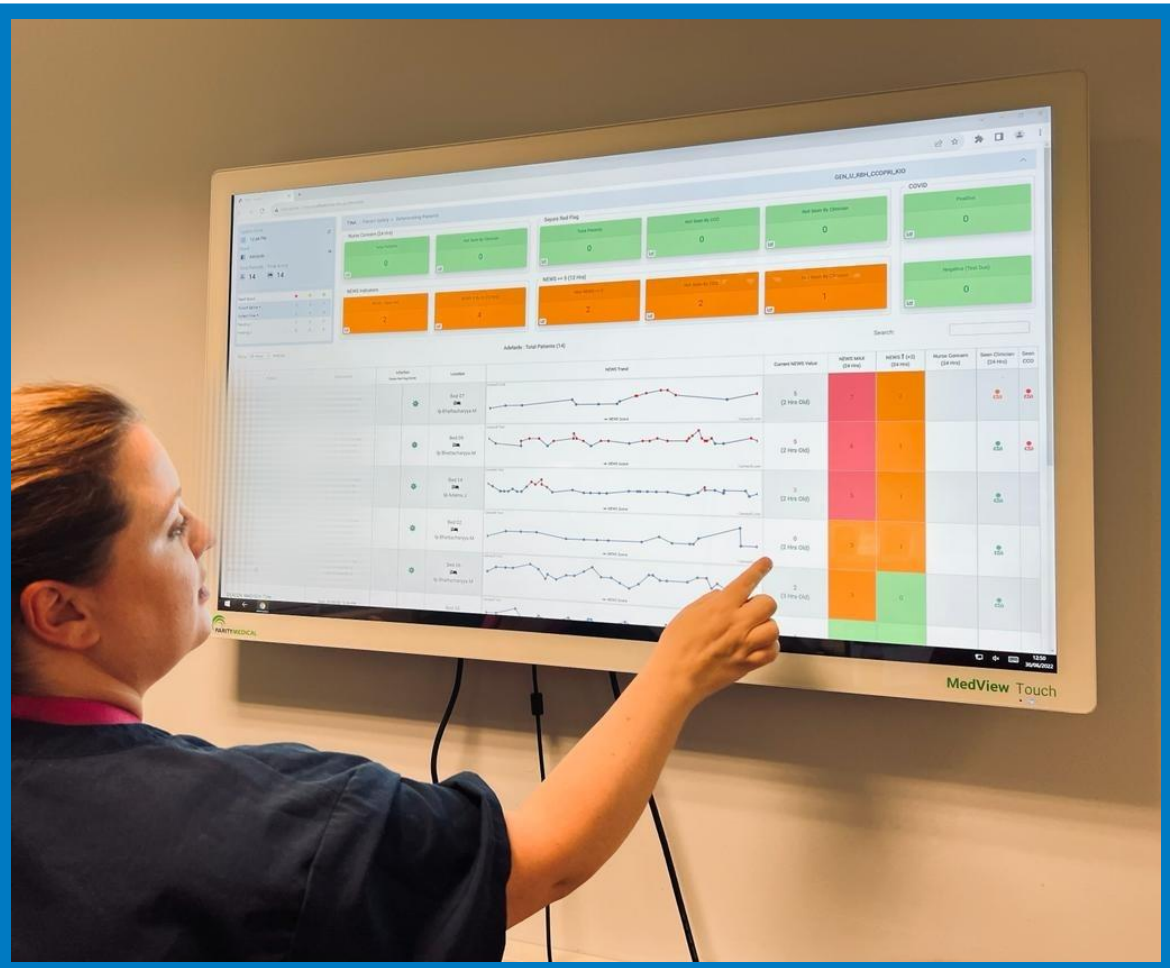
TiNa Use Case – Deteriorating Patients app

Royal Berkshire NHS Foundation Trust

Claire Burnett

Sepsis Lead Nurse and Critical Care Outreach Nurse

Royal Berkshire NHS Foundation Trust



Compassionate | Aspirational | Resourceful | Excellent

what matters

TiNa Use Case – Deteriorating Patients app

Royal Berkshire NHS Foundation Trust

Clinical Need

Ward handovers posed highest risk time for missed information

Ward based communication barriers

Pre-deterioration risk factors are sporadically recognised

Current practices act on deterioration retrospectively

NHS
Royal Berkshire
NHS Foundation Trust

TiNa – Deteriorating Patients Application
LIVE Demo

Compassionate | Aspirational | Resourceful | Excellent

what matters

TiNa Use Case - Feedback

Royal Berkshire NHS Foundation Trust

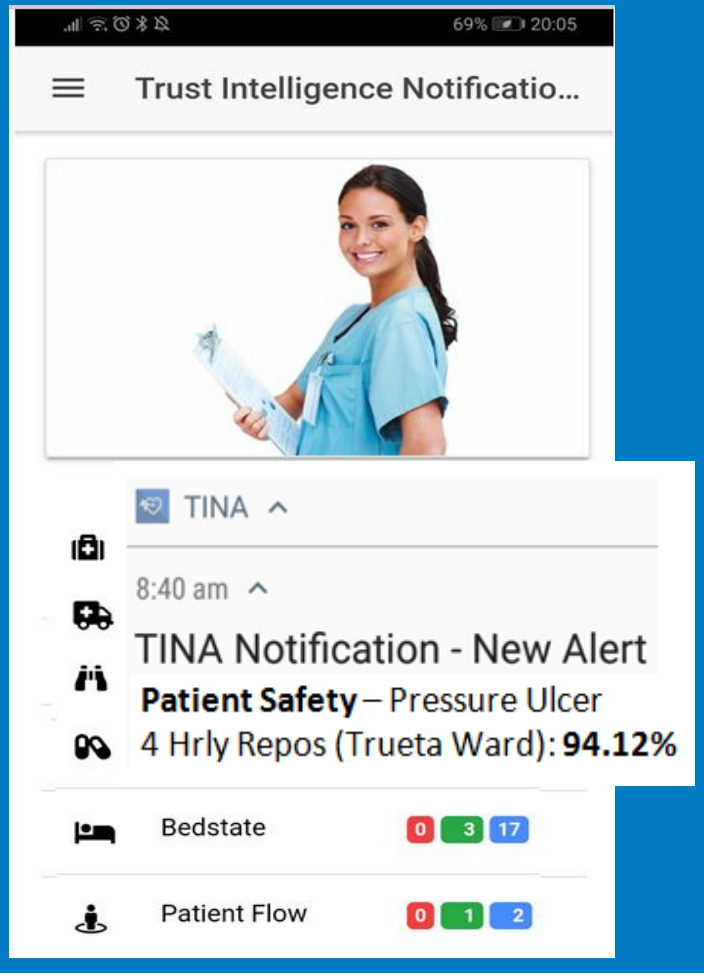
- Visually Appealing and Engaging
- A comprehensive view of all our patients at both ward and Trust level
- Effective prompt to escalation and action
- Improved use of EPR and clinical data quality

TiNa Use Case – Next Steps

- Hardware deployment across all inpatient wards
- Structured TiNa Application Training
- Measurement of Impact on service and patient outcomes
- Measurement of Impact on clinical data quality and clinical processes
- Embedding predictive analytics in TiNa to help:
  - Identify patients with a high risk of deterioration
  - Identify patients suitable for virtual hospital transfer

TiNa - Mobile application

Royal Berkshire NHS Foundation Trust



Ability for <u>any staff</u>

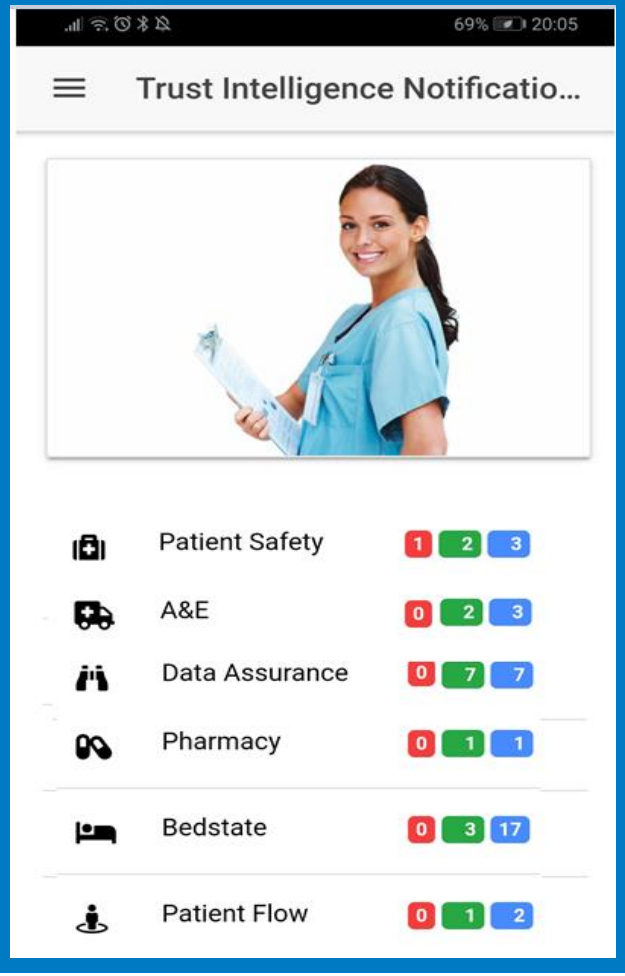
- To pick the Apps they want

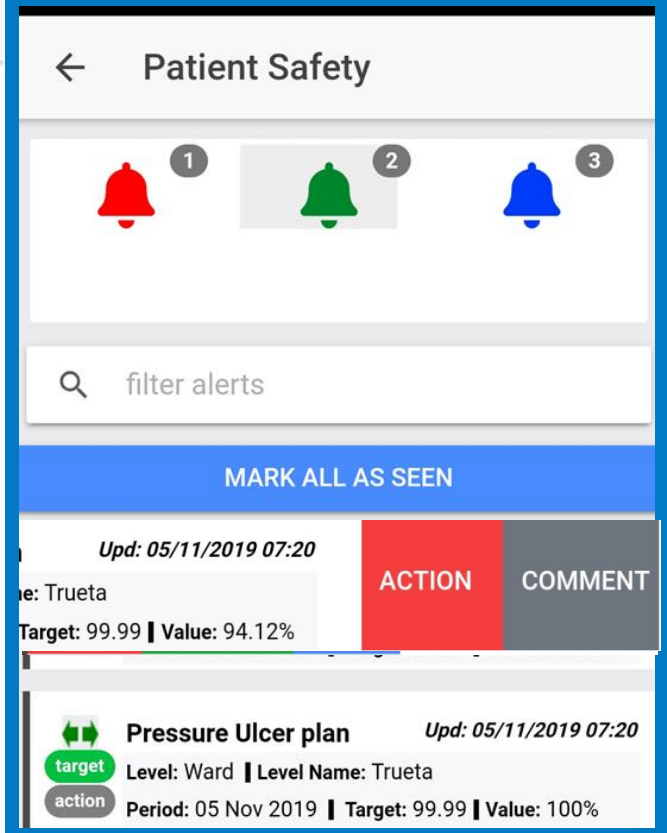
- To pick any KPI and at any level they want

- For teams and Services to set their own standards/escalation points

- To pick which notifications they want to receive and how they want to receive it

TiNa - Mobile application





Ability to filter the KPIs based on

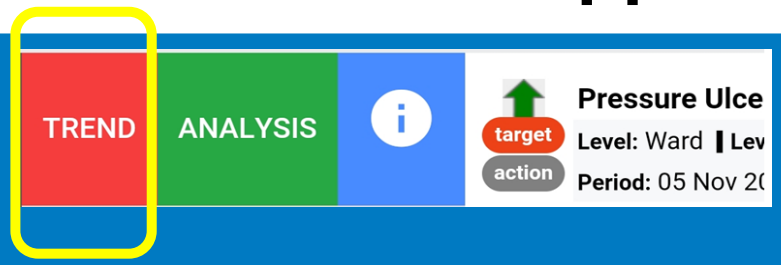
- Seen/Unseen status
- Failed/Pass status
- Trend Status

One click to indicate that all Indicators in an app have been seen. This then moves the app to the bottom of the app list

Ability to see the trend, target and action status for each kpi

Swipe to the right reveal Additional functionality

TiNa - Mobile application



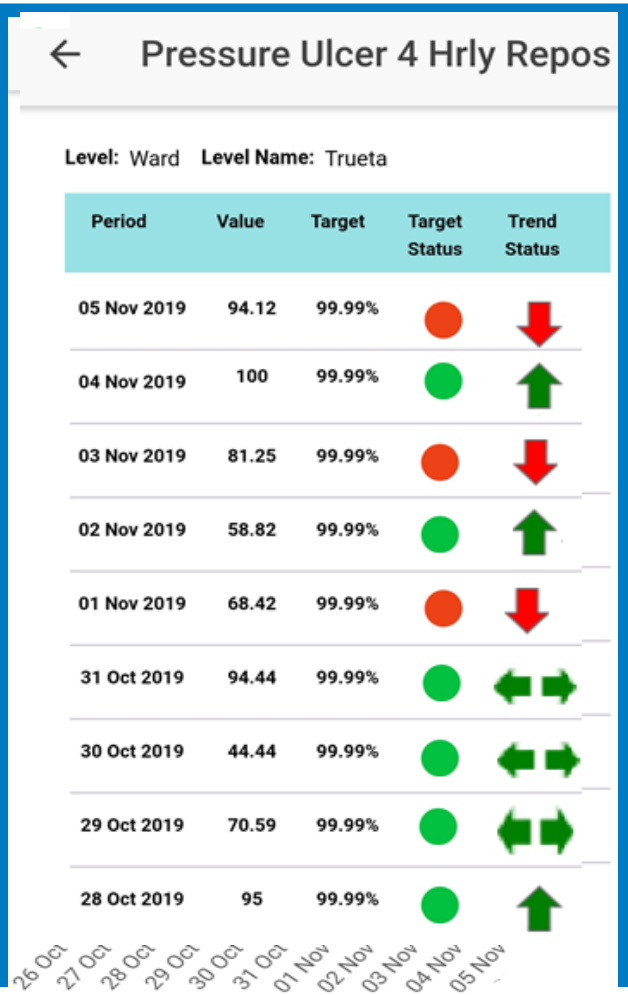
TiNa - Trend Functionality

Enables users to track the previous 12 reported values in either a Graphical or Tabular Format

TiNa also supports

Update frequency of KPis - Can be set to update a KPI value at varying intervals e.g. once every15 mins or once daily

Archive period of KPIs – Can be set to hold a snapshot of a KPI value at different periods e.g. By hour, day, week or month



NHS
Royal Berkshire
NHS Foundation Trust

Data - Innovation - Transformation

TiNA - Trust Indicator & Notification Assistant

Your Data Assistant

TiNA Live Boards

Ward | CAT | Offline ED

TiNA KPIs

Capture | Find | View

5 Key Trust Level KPIs

Name	Period	Value	Trend	Target
A&E 4hr Limit	May 2022	76.37%	↑	●
Appraisal Rate	May 2022	84.90%	↑	●
C.Diff Cases	May 2022	0	↑	●
Cat 3/4 Pressure Ulcers	May 2022	1	↑	●
Mandatory Training	May 2022	88.31%	↑	●

Offline **TiNA Waiting Rooms**

TiNA Mobile App

Compassionate | Aspirational | Resourceful | Excellent

what matters

Royal Berkshire
NHS Foundation Trust

Thank You

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Claire Burnett
Claire.Burnet@RoyalBerkshire.nhs.uk

Thank you

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The Digital Hospitals Conference 2022

The NHS Digital Hospitals Conference 2022:

CONVENZIS

Q&A Panel

Eghosa Bazuaya

Associate Director of Information – Royal Berkshire NHS Foundation Trust

Claire Burnett

Sepsis Lead Nurse & Critical Care Outreach Nurse – Royal Berkshire NHS Foundation Trust

Jade Ackers

Director
NHS England & NHS Improvement

James Freed

Chief Digital & Information Officer
Health Education England

The NHS Digital Hospitals Conference 2022

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MORNING BREAK, NETWORKING & REFRESHMENTS

The Digital Hospitals Conference 2022

The NHS Digital Hospitals Conference 2022

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Chair Morning Reflection

Douglas Hamandishe

"Alcidion Clinical Consultant and Broadcaster – Centric Health Media"

The Digital Hospitals Conference 2022

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UP NEXT...

OWL LABS®

The Digital Hospitals Conference 2022

The NHS Digital Hospitals Conference 2022

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SPEAKING NOW

Nolan Newman

UKI Country Sales Manager
Owl Labs

I will be discussing…

"Better Collaboration for All"

OWL LABS®

Better Collaboration for All

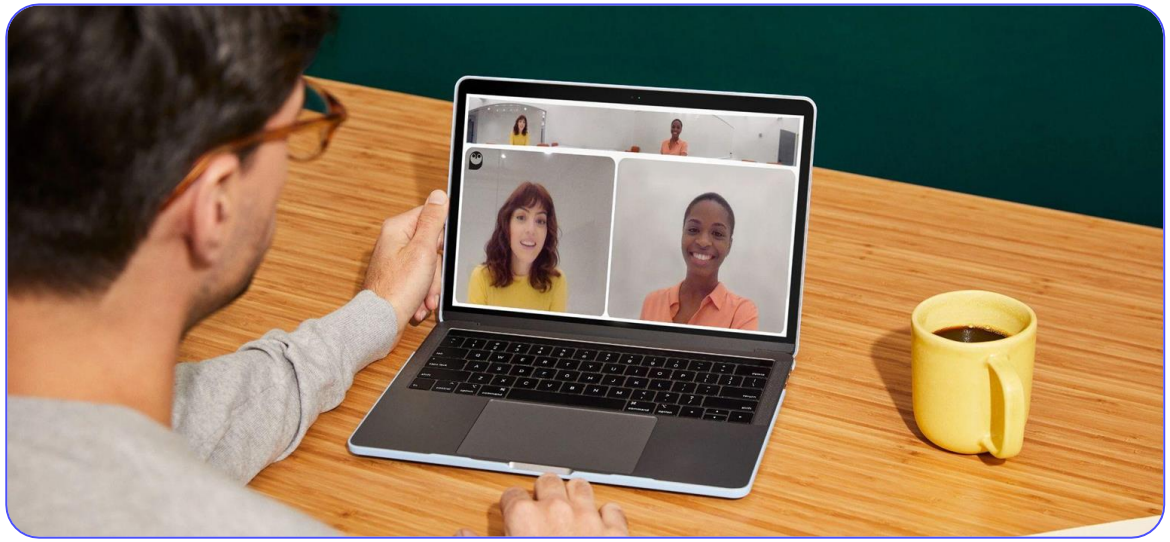
By Nolan Newman
UKI Country Sales Manager

MEETING OWL VIDEO

CURRENT TRENDS

WHAT DOES THE FUTURE OF WORK LOOK LIKE?

The office will never be the same,
that's probably a good thing.



98%

of meetings will have at least
one person joining remotely

Source: Forbes

> “The British Medical Association has now urged ministers to assess the benefits of a hybrid-working model because it was 'hugely beneficial' for doctors.”
>
> BMA

See ref in Slide 37

What employees + employers want

81%

of office workers feel they are just as, or more productive while working remotely compared to working from the office

69%

of employees are worried that their employer will not adapt their workplaces, policies, or in-office requirements for hybrid work

31%

of employees changed jobs in the past two years, and of those that didn't, 25% are actively seeking a new opportunity in 2022

Source:
https://owllabs.co.uk/state-of-hybrid-work/2022

(Frost & Sullivan)

NEXT-LEVEL COLLABORATION

WELCOME TO A WORLD IN 360

Remote experience that feels like you're in the room

360° center of the room technology

AI that automatically focuses on the speaker and gets smarter over time

Technology that adapts and scales to your space

Plug and play simplicity

Transforming the remote worker's hybrid meeting experience

Before Owl Labs - world in which you **watched** the meeting

Typical front-of-room camera experience

After Owl Labs - world in which you **participate** in the meeting

Meeting Owl experience

MEETING OWL PRO

- **Video Quality:** 360° camera in 1080p
- **Microphone:** 8 smart mics that equalize speaking volume, 18-foot radius audio pickup
- **Speaker:** 360° tri-speaker
- **Processing Power:** Qualcomm® Snapdragon™ 605 processor
- **Software Compatibility:** compatible with all popular video conferencing software
- **OS Compatibility:** Mac, Windows, Chrome, Linux
- **WiFi-Enabled** for new features and software improvements SO technology gets smarter over time
- **Meeting Analytics** for reports on your meeting

Value props

- **Easy to deploy** and simple to manage across an organization
- **Platform agnostic;** meet how you want, when you want
- **Equal seat at the table** (or in the classroom) for all participants
- **Helps distributed teams** work together and do their best work
- **Differentiates a business** with intelligent and easy to use technology at an accessible cost
- **Focuses the attention** where it should be, on the people

See the Meeting Owl in action

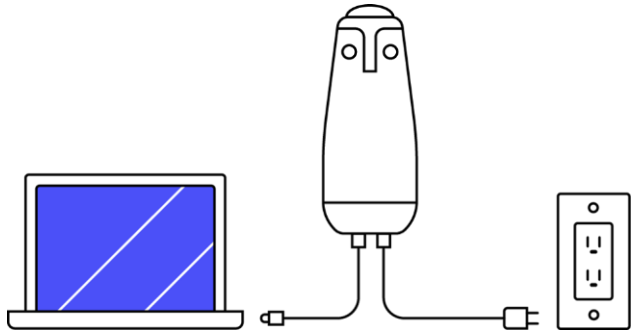
USE CASES

The Meeting Owl has been used in hospitals and medical facilities to help with:

- **Virtual patient rounds:** Connecting doctors to the family members of patients when social distancing measures prevent families from being in the room
- **Meetings:** Keeping hybrid medical facilities and remote attendees connected
- **Care Team Conversations:** Enabling hospitals to hold virtual meetings with a patient's care team providers, such as their PCP and medical specialists
- **Across Campus Conversations:** Bringing healthcare providers together for conversations across larger university campuses and hospital campuses
- **Education:** Enabling medical and nursing students to have immersive remote learning experiences
- **Hybrid Events:** Supporting medical and nursing school panel interviews

How do I host a meeting?

1. **Plug the power adapter** into an outlet.
2. **Plug the USB** into your computer.
3. **Open your video conferencing software** (like MS Teams).
4. **Choose the Meeting Owl** as your camera, microphone, and speakers.
5. **Meet!**



Meeting Owl Pro features

18 FOOT PICKUP RADIUS
With HD video and audio, you can clearly see and hear everyone in the room.

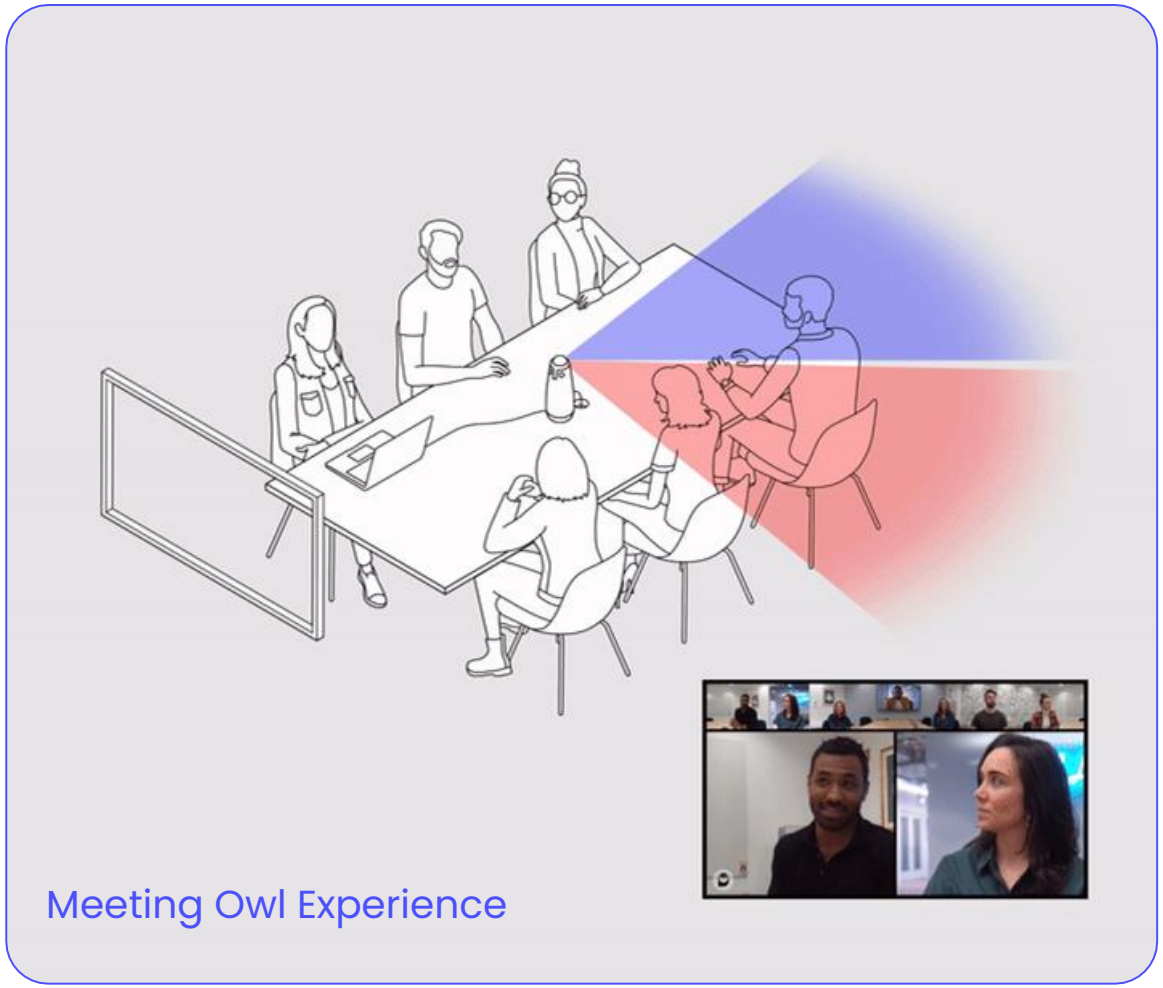
PLUG-AND-PLAY
No need to download any software, simply plug the Meeting Owl into your computer's USB port and head to your video conferencing platform.

WORKS WITH YOUR FAVORITE VIDEO PLATFORMS
Including Microsoft Teams, Zoom, Google Hangouts, GoToMeeting, Slack, BlueJeans, Skype, Webex, Cisco, and Zoom.

WIFI-ENABLED
Owl Intelligence System™ enables the Meeting Owl Pro to become smarter over time with new features and enhancements delivered over-the-air via WiFi. For our customers that prefer to not be connected to WiFi, the connection can be turned off, and the camera, speaker, and mic will still work fine.

AUTOFOCUS
Owl Intelligence System™ includes a close-up view of active participants that automatically switches when new speakers begin talking.

Smart Zooming technology recognizes speakers and automatically zooms in to frame the best view of the speaker.



What do meetings look like for remote participants?

Powered by the Owl Intelligence System™, the Meeting Owl Pro automatically shifts the camera to focus on whoever is speaking. The result is an experience that feels like sitting at the table in the room.

SETUP OPTIONS

MEETING ROOM SETUP

Center of table for more immersive and equalized meeting experiences for remote participants.

MEDICAL FACILITY SETUP

Mounted on a tripod for an in-the-room like experience for remote healthcare providers and family members.

MOBILE SETUP

Mounted on a mobile cart via extendable tripod arm for clinical rotations or patient rounds.

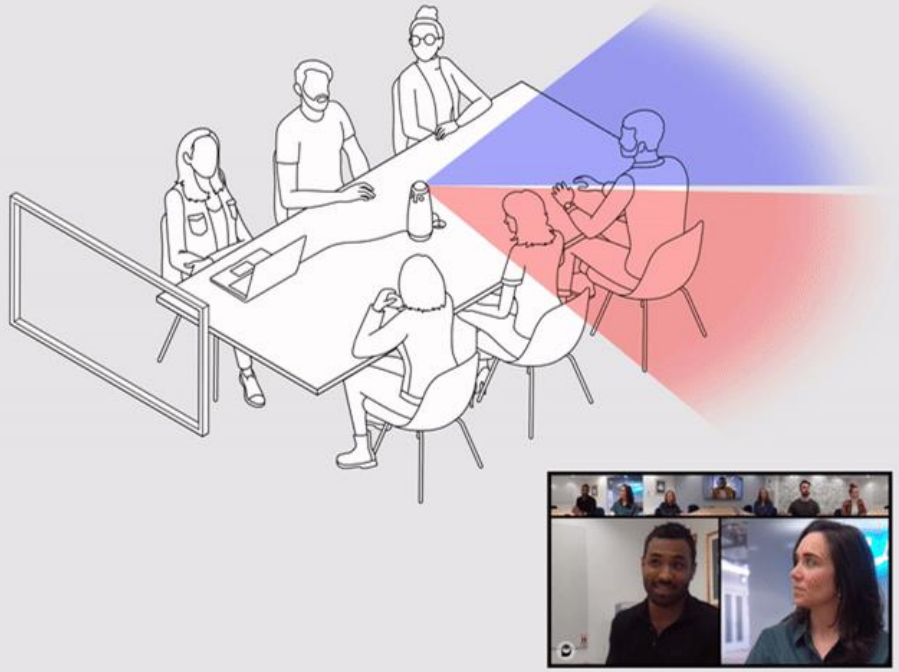
BOARDROOM OR CONFERENCE ROOM SETUP

Place on a large conference table to enable an immersive meeting experience for all participants.

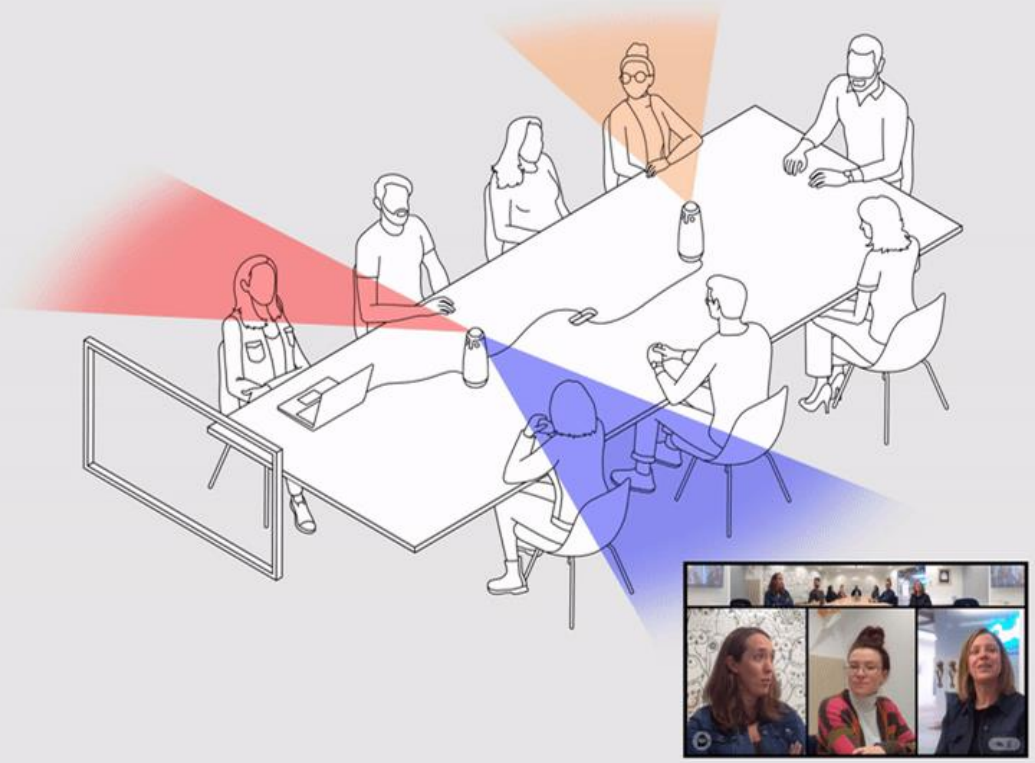
You can connect two Meeting Owl Pros together (Owl Connect) to extend the range of the Meeting Owl Pro by 8 feet to:

- See and hear all of your in-room participants clearly, even in large rooms with many participants
- Support larger meeting rooms with increased video and audio range
- Enable social distancing so in-room participants can sit further apart without remote participants missing out

OWL CONNECT



Single Owl Experience



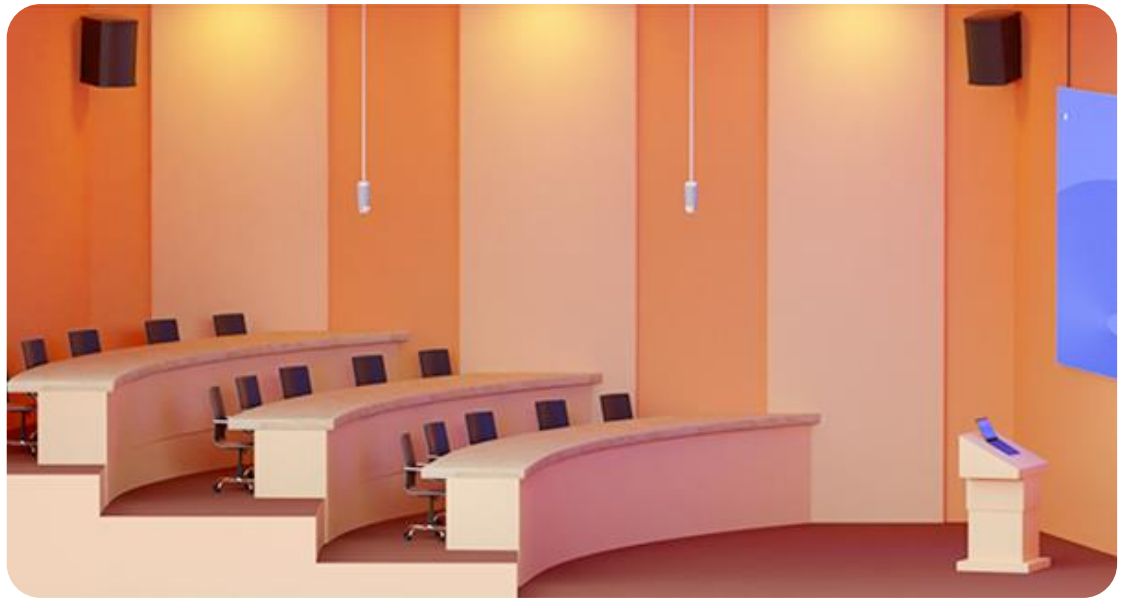
Dual Owl Experience

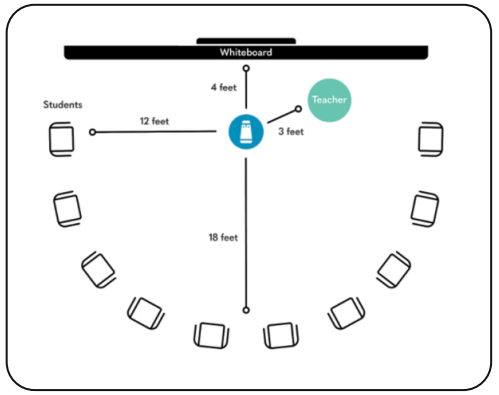
Owl Connect Experience

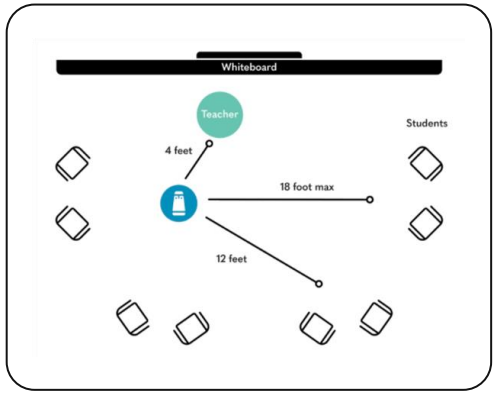
For larger spaces, pair two Meeting Owls and the Owl Intelligence System will seamlessly connect them for an immersive experience for remote participants

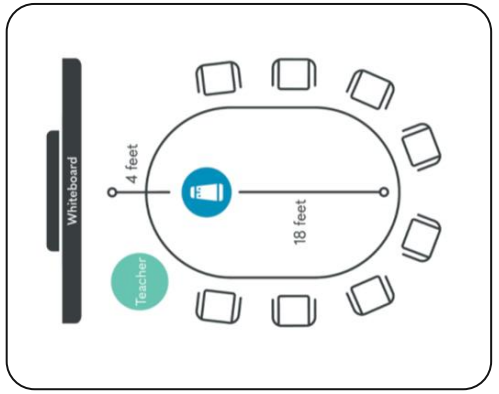
CLASSROOM SETUP

Mount Meeting Owl on a tripod or hang from the ceiling to enable an equalized classroom experience where all participants can be seen and heard.









MEETING OWL APP + FEATURES

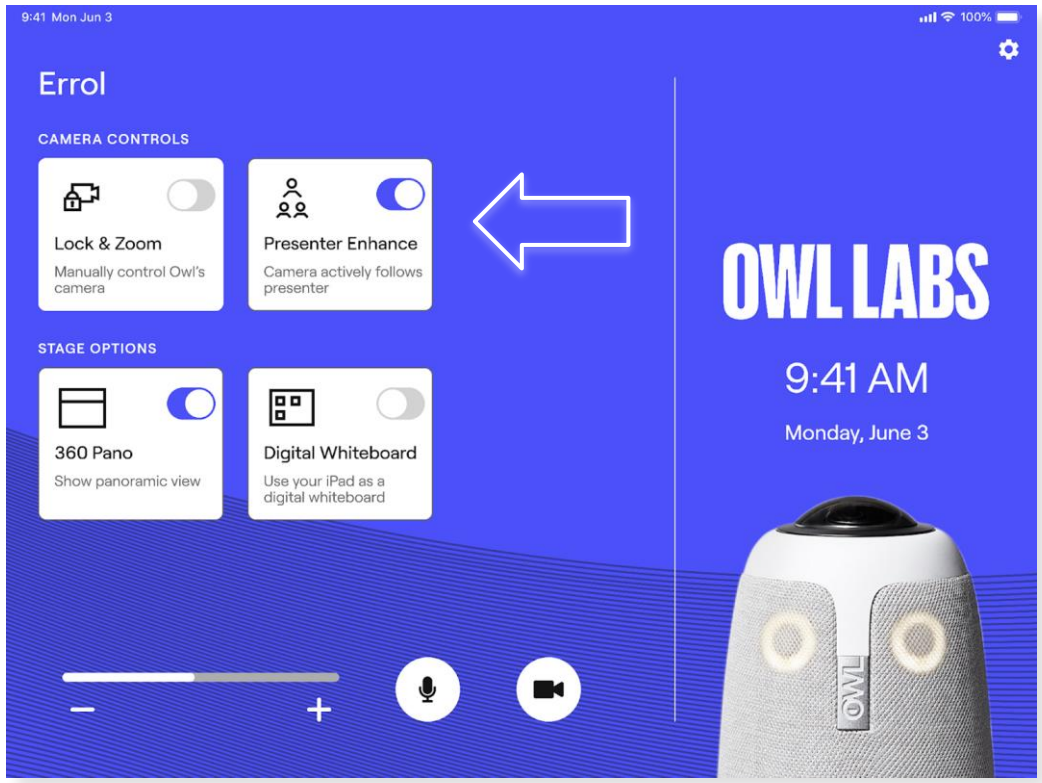
Meeting Owl app

MOBILE & DESKTOP APP

- Control your Meeting Owl Pro experience through personal phone or desktop or with an in-room tablet for increased management flexibility
- Access features such as Lock and Zoom, Remove 360° Pano, Owl Connect, Presenter Enhance.
- App is required for Meeting Owl setup

Presenter Enhance

This feature will lock the Owl's focus on the presenter, so presenters can move around the room or take notes on the whiteboard while keeping the Owl focused on them

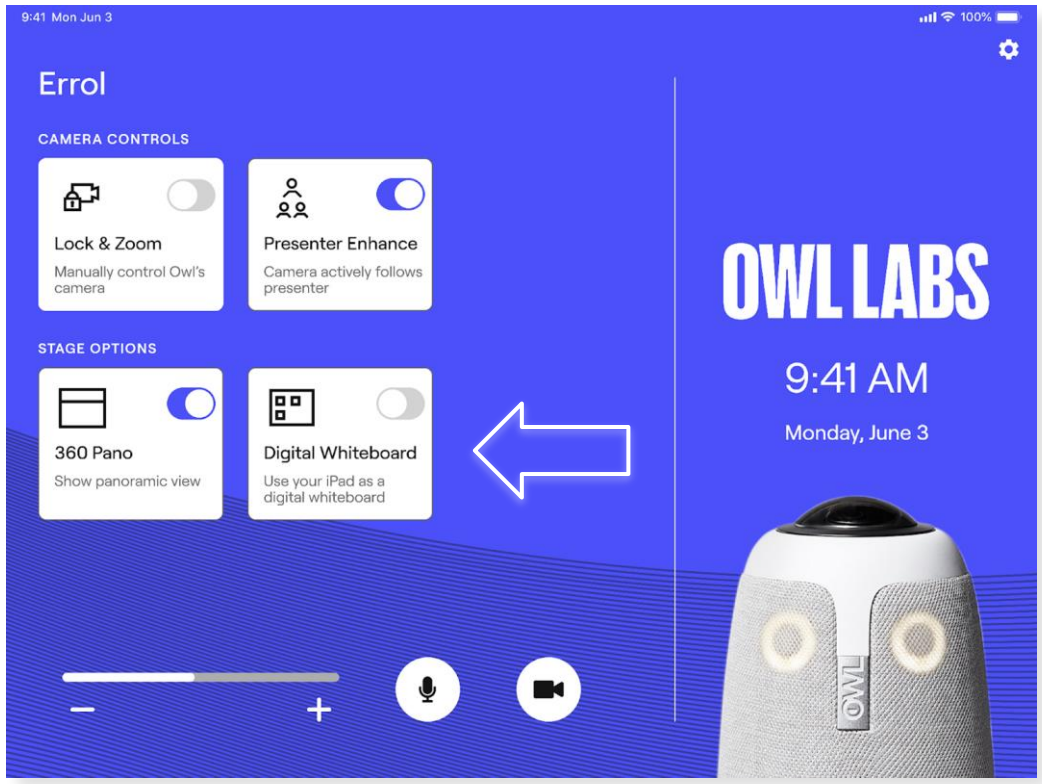


KEY BENEFITS

- Gives teachers and speakers the flexibility to present in their natural style without worrying about if the camera is on them
- Splits the screen between the primary speaker and active participants when an in-room attendee begins speaking
- Can be selected as the default setting to simplify setup, or turned on and off whenever you need it

Digital Whiteboard

Enables users to turn the Meeting Owl Stage View into a live whiteboard



KEY BENEFITS

- In-person and remote attendees can participate in the discussion equally without missing out on any of the content being shared
- Eliminates the need to duplicate notes or take photos of whiteboards at the end of a presentation to share with remote participants or students
- Notes can be edited for color and thickness and easily shared via email or other iOS applications

THE MEETING OWL IN ACTION

What our customers are saying about the Meeting Owl

Transformation tech for office meetings!

The Meeting Owl has transformed our meetings. We meet with a global team, and so adding the owl to our meeting space during our workshops has made the experience for people dialling in far more engaging. Now they are apart of the meeting, rather than watching it from the end of the room. Our first Owl was so successful, we had requests to expand our 'flock', and now we have 10!

DARREN - UNITED KINGDOM

Best Event Web Camera Solution!

We invested in one Owl and are buying a second. In fact I'm sitting in a hotel in Miami looking at it right now. We had to host a UK business meeting on the 13th, with half the attendees at our international conference the Owl was the solution. So packed it up, bought it over, 5-minute set up in a conference room for something that would have been complex, heavy, and terrible with our previous kit. Back to London tomorrow, where we will start testing daisy-chaining for our larger events room.

ANDY MAYER - COO
INSTITUTE OF ECONOMIC AFFAIRS

“Even in times when you don't need to do social distancing, there are instances when we would like to bring people into the hospital environment who are participants in patient care but can't be there in person, such as working parents, referring physicians, and primary care providers. Normally, they don't have an opportunity to talk to the whole team, but a virtual platform can remove that distance barrier.”

Children's HOSPITAL • ST. LOUIS
BJC HealthCare

STUART SWEET, MD
DIRECTOR OF THE PEDIATRIC LUNG TRANSPLANT PROGRAM

LOVED BY

100,000+

companies, organizations globally

2,000+

schools, universities, educational institutions

OUR CUSTOMERS

iea Institute of Economic Affairs

University of Bath

Deloitte.

Durham University

University of Oxford

Deutsche Bank

Lloyds Bank

> The premium capabilities and the ease of use of the Meeting Owl make a great combination. It's plug-and-play so it's simple for anyone to use, but its sophisticated features make the meeting experience immersive and engaging. The feedback from staff has been phenomenal — in fact, when I loan them out to staff members to try out, I have trouble getting them back!"

University of Salford Manchester **CUSTOMER TESTIMONIAL**

> When we acknowledged that meetings with the Meeting Owl were not only just as good, but that they're arguably vastly better in terms of the range of people who could attend and contribute, our ability to work well across our team and our organization was completely transformed."

Ogilvy **CUSTOMER TESTIMONIAL**

Press

THE WALL STREET JOURNAL.

Forbes

WIRED

Inc.

FAST COMPANY

Awards

REFERENCES

QUOTE FROM SLIDE 3

Publication: Mail Online Article
Reporting By: John Ely
Reporter Title: Senior Health Reporter

Published 19th May 2022
Updated 20th May 2022

Link to Full Article:
https://www.dailymail.co.uk/health/article-10832401/NHS-doctors-urge-bosses-let-WFH.html

THANK YOU

CONTACT SALES

sales-ops.owllabs@lsmglobal.com

Slido

Please scan the QR Code on the screen. This will take you through to Slido, where you can interact with us.

SCAN ME

Tuesday 5th July 2022- 2022- 08:00am – 15:30pm – Hatfield's Conference Centre

Conference hosted by Convenzis Group Limited

The Digital Hospitals Conference 2022

The NHS Digital Hospitals Conference 2022

CONVENZIS

UP NEXT...

APOGEE

An HP Company

The Digital Hospitals Conference 2022

The NHS Digital Hospitals Conference 2022

CONVENZIS

SPEAKING NOW

Paul Birekett

Head of Commercial Software Solutions
Apogee

I will be discussing…

"Carer Driven Digital Transformation"

Carer Driven Digital Transformation

The Aftermath of the Pandemic

Enabling Remote Healthcare

70%

DMN3 predicts patients book care online and 77% research their own symptoms before contacting primary care

Driving Digital & automation

47%

of healthcare companies are using patient data to drive predictive analytics but not primary care

Securing every interaction

$1,000

The black market cost of a medical record from a hacking group

Augmented by AI/ ML

84%

Of healthcare leaders think AI will transform primary and secondary patient care

The Future of Care is Distributed

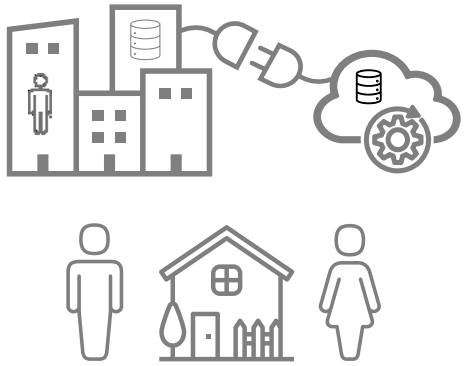
From **Exception to Normal**

PRIMARY CARE / IT CENTRIC

HOME CARE CENTRIC

DIGITAL BY EXCEPTION

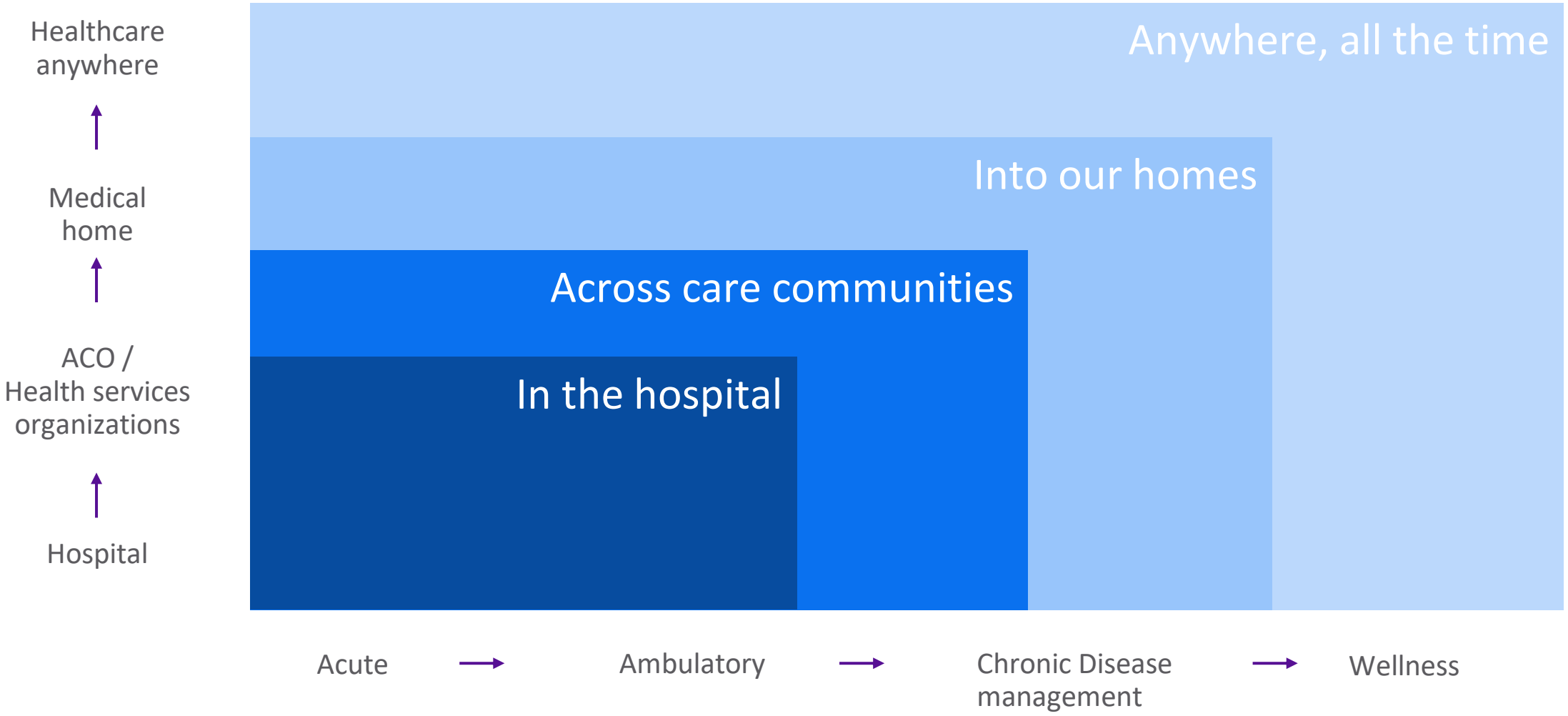
DIGITAL BY NECESSITY



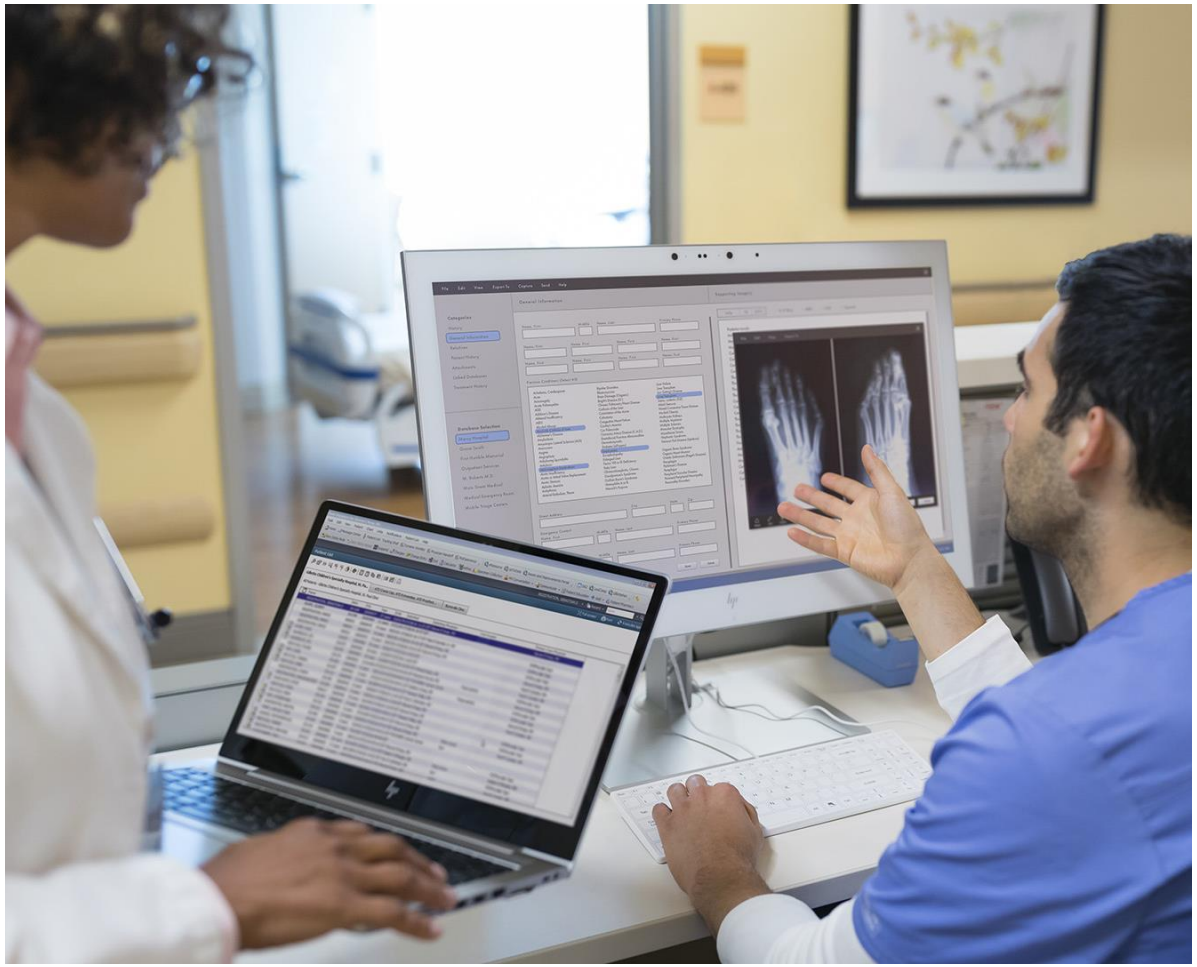
DIGITAL BY DESIGN

IT TASK-DRIVEN MANUAL STANDARDIZED CLOUD-ENABLED PREDICTIVE PATIENT-CENTRIC FLEXIBLE INTEGRATED CLOUD-FIRST CARER-DRIVEN

Transforming the delivery of care and how we help patient populations



The impact of poor care coordination



INSUFFICIENT clinical decision support

GDPR PRIVACY violations

Delayed decisions

Improper treatment plans based on INCOMPLETE information

IMPAIRMENT of desired patient outcomes

Solution: improve care coordination

Get the right information to the right place at the right time

Quickly

access patient information

Single sign-on – use your badge to securely access computing devices and the EMR in one go – as well as printers – anywhere on the network

More easily

get clinical decision support data

Digital messaging solutions – get lab and diagnostic information to and from specialists using trackable, instant digitization instead of chasing an unsecured paper trail

Securely

log in – review – and share

Control access to endpoints – whether scanning, computing, or printing – use industry-leading security solutions with badge access, auto sign-out protocols, privacy screens, and secure printing, labeling, and Rx solutions

Anywhere

care needs to be coordinated

Mobile access –computing and printing solutions designed for how clinicians work use cloud-based technologies to untether care providers from a single station, building, campus, or geography

Telehealth – HIPAA-compliant, in-home access to care providers for diagnostics and evaluation

Remote Access – in-home computing and printing solutions for visiting nurses

Anytime

care decision support is needed

EMR access – cloud-based solutions can leverage reliable computing and printing platforms and enable remote monitoring for “always-on” reliability

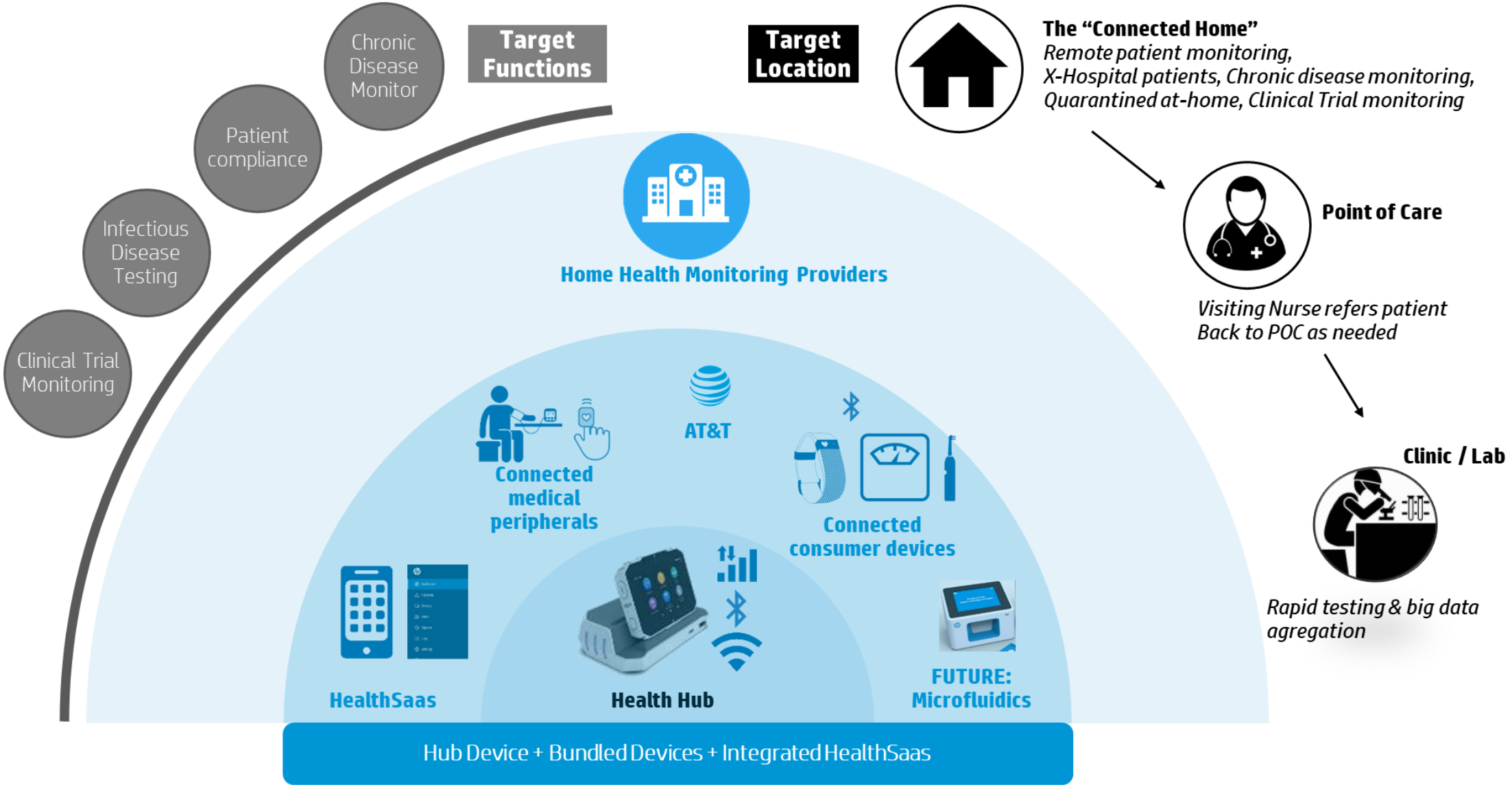
Digital Healthcare Tennent's

Remote Patient Monitoring
Using smart devices to manage patient care outside the primary care setting

Care focused design
Building solutions that address specific user pain points from the broader IT market

Persistent patient security
Quantum resistant encryption with zero trust principles

Remote patient monitoring

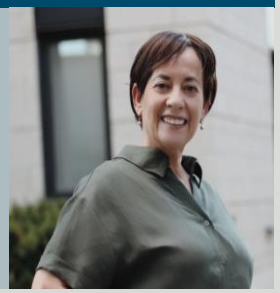


Digital Healthcare is still about people

One Size Doesn't Fit All

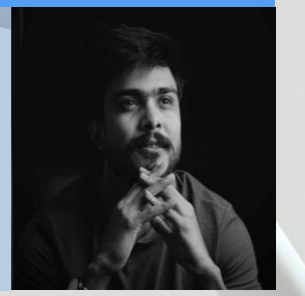
#1 The Generral Practitioner

"In a 10 minute consultation I have to undersdtand the past, deal with the present and document for the future. Often the patient has become a Google MD and already has an idea of what is wrong."



#2 The Nurse

"Its all about patient care, the patients are used to constantly being updated in their everyday life and the lack of communication and transparency in care can make it really hard for them to trust."



#3 The First Responder

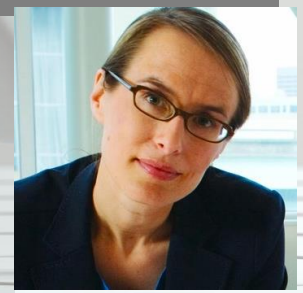
"Never knowing who or where we will need to access patient information is critical and life and death decisions are often based upon patient feedback rather than medical facts. If I can do everything else on my phone why not this."

#4 The Consultant

"The devil is in the detail and knowing all the core elements of a patient history is critical to make the right diagnosis. Getting this in a consumable format and then cross referencing it with other similar cases takes far too long"

#5 The Pharmacist

"Increasingly patients come to us for first care and often use Google to know what to do. With the access they have to on wrist medical grade devices why cant we do more working with the doctor on remote monitoring."



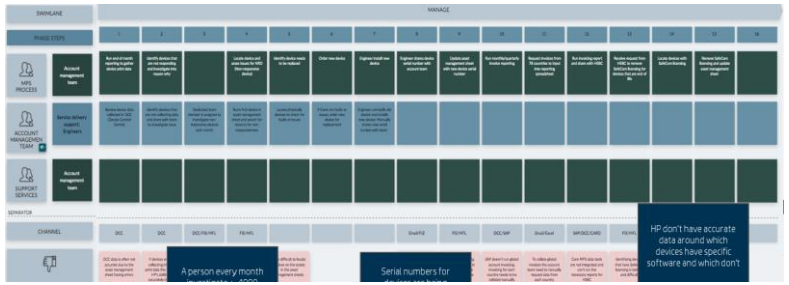
HP Intelligent Transformation – 1H FY 23

Driving patient and care provider centric digital transformation

USER PERSONA'S

Multiple resolution view of the care community and their needs and challenges

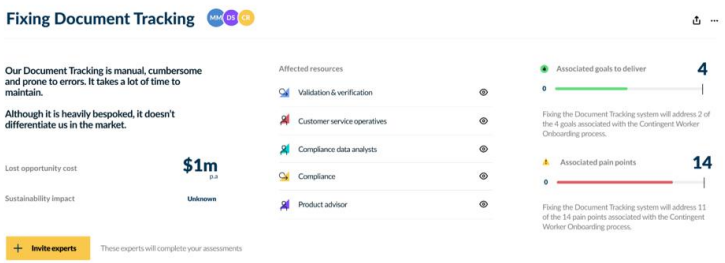
- Challenge Driven
- Network Effect
- Automated Creation
- Insights on needs and drivers



SERVICE BLUEPRINTS

Map and understand healthcare operations from patients to platforms

- User designed
- Client, Front office, Back Office & System
- Defects & Barriers
- Experience & outcome measures



DIGITAL SOLUTIONS

Connect the problem to the solution with full success management

- As A Service delivery models
- Automated business cases
- Customer success management
- Client portfolio view

Data from HP services and 3rd party sources

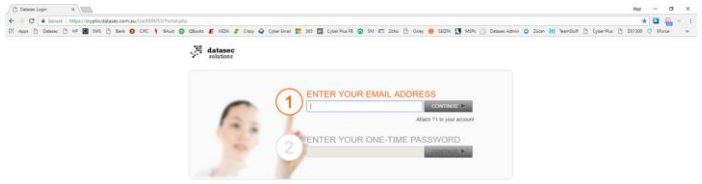
Delivery from certified HP channel

Specialist consulting from Gig based market

Zero Trust Platform Independent Security – 1H 23

cryptix platform

8165E6D3-72F9-46D5-B2B8-274CD608E662.cryptix



Uncrackable Hacker Resistant Authentication

Mental Air Gap

Crypto Key

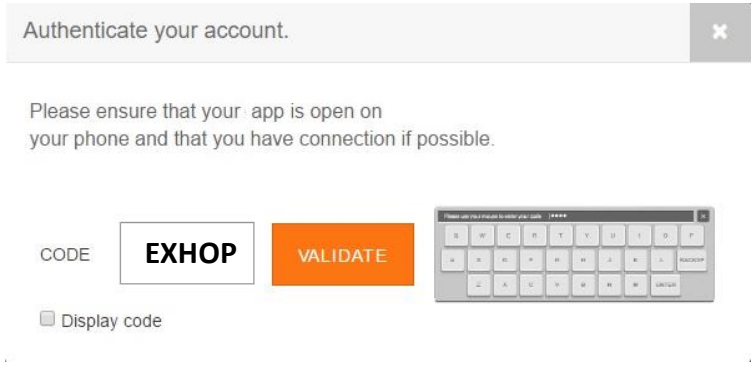
15349 = EXHOP

cryptix platform

EXHOP

Secure Documents

Decrypt



Smarter technology for primary care

Sanitizable
MEDICAL GRADE
to help prevent the
spread of infection

Time saving
RFID Single sign-on
with IMPRIVATA

Most secure
HP JETADVANTAGE
SECURITY
SOLUTIONS

Medical Grade Certified to Meet
EN/IEC 60601-1-2 Standards

Intelligent machines
that clinicians can rely upon
SMART DEVICE SERVICES

Integrated with how I work
HP WORKPATH PLATFORM WITH
BISCOM FOR HEALTHCARE

Truly mobile enabled –
for anywhere healthcare happens
HP CLOUD SOLUTION
WITH CERNER

RESILIENT TO 10,000 WIPES
while **71%** of Infection Control Clinicians perceive **computers, displays, control panels and keyboards** to be the **most prone to carrying infection** in a clinical setting[4]

SAFE AROUND SENSITIVE MEDICAL EQUIPMENT & PATIENTS
EN/IEC 60601-1-2 EMI Certified

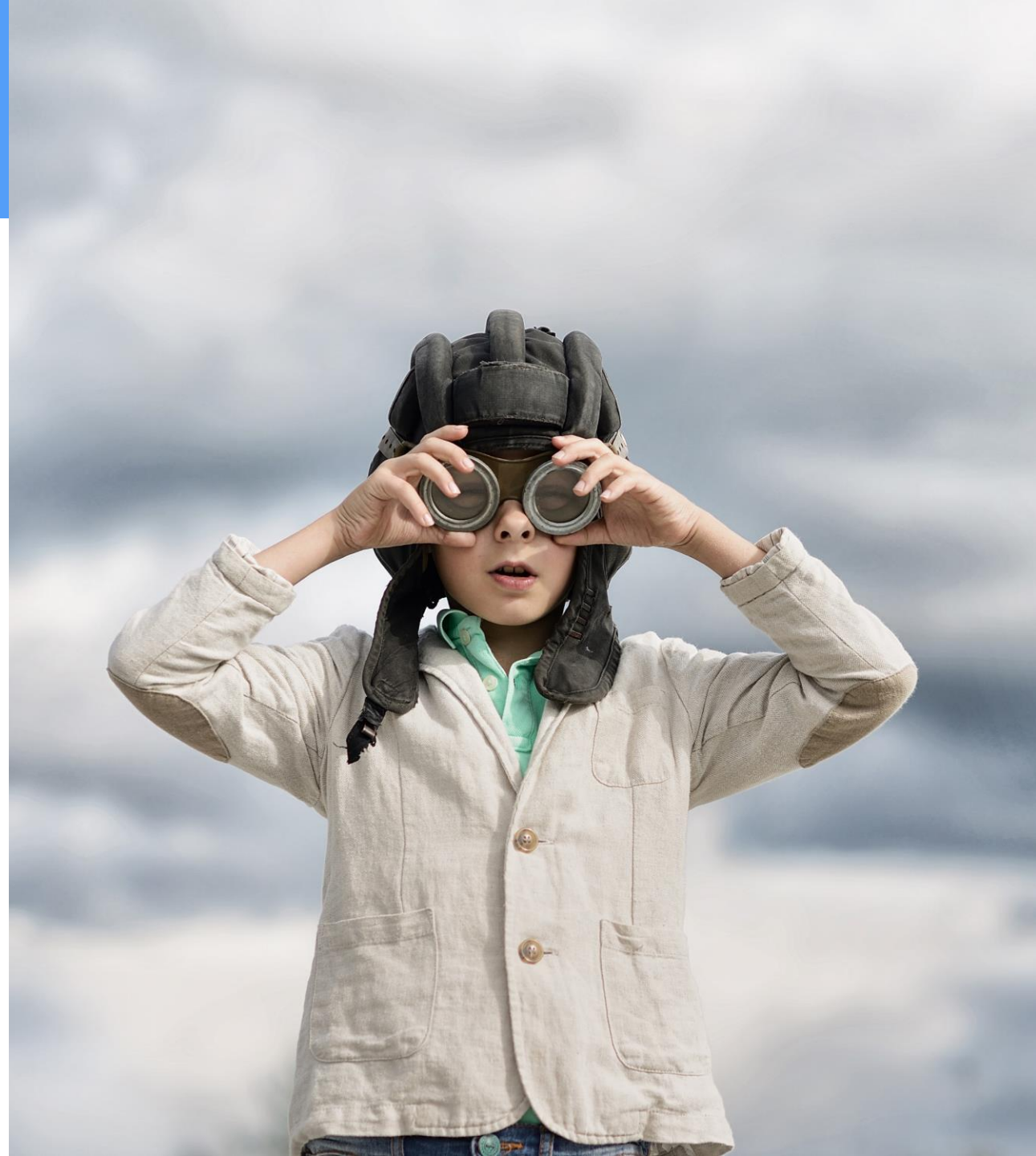
PROTECTING vs. the ***2x***
occurrence of cyber attacks on healthcare vs. other industries

Digital Health Vision

Deliver the next-generation of Healthcare that harness the power of smart devices, cloud, AI and Big Data to power remote care

Key Tenets

Human first	Human-centric centric care designed to empower the patient and foster trust
Flexible	Accessible by primary and secondary care with dynamic security in every location
Phygital	Solutions to help bridge the Physical and Digital worlds to enrich the patient experience
Data-driven	Leveraging Big Data to understand and optimize expert care delivery
Sustainable	Dramatically reducing the primary care burden for persistent conditions



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Tuesday 5th July 2022- 2022- 08:00am – 15:30pm – Hatfield's Conference Centre

Conference hosted by Convenzis Group Limited

The Digital Hospitals Conference 2022

The NHS Digital Hospitals Conference 2022

SPEAKING NOW

Andrew Davies

Digital Health Lead
ABHI

I will be discussing…

"Regulation: Driving Growth & Supporting Innovation"

ABHI

Regulation:

Driving growth & supporting innovation

July 2022

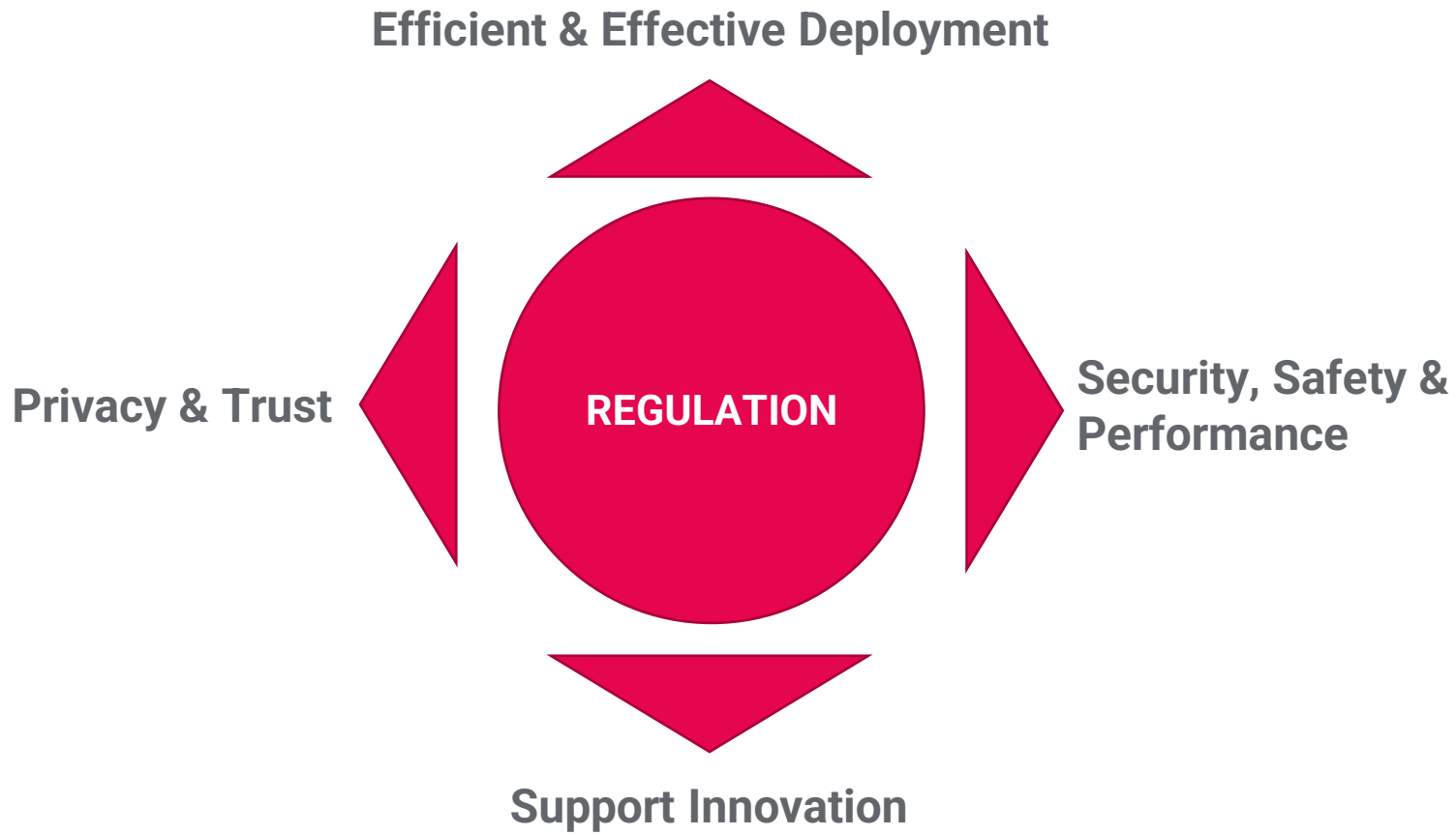
Who is ABHI?

- Association of British HealthTech Industries (ABHI) is the UK's leading industry association for health technology
- 330 members include both multinationals and small & medium sized enterprises (SMEs)
- ABHI members supply products from syringes and wound dressings, through implantable devices, surgical robots to digitally enhanced and AI technologies.

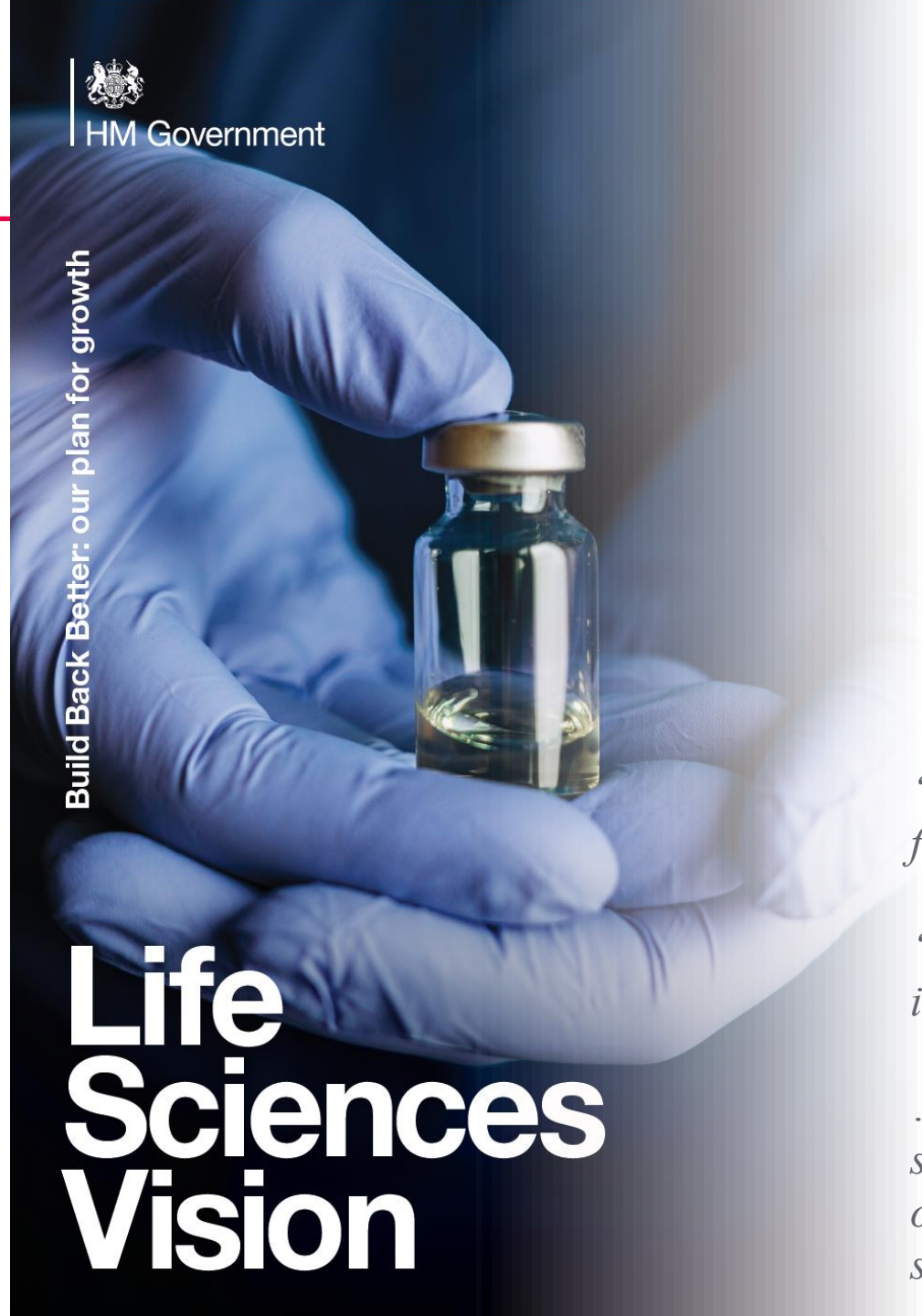
Broad Technology Representation

ABHI

Role of Regulation



ABHI



Policy Landscape

- Life Science Vision
- Digital Strategy
- Levelling Up the UK
- National AI Strategy
- Medicines and Medical Devices Act

"Create an outstanding business environment for HealthTech companies"

"Position the UK as a world-leader in innovation and life sciences"

...have regard to the likelihood of the UK being seen as a favourable place in which to carry out research, development, manufacture and supply of medical devices

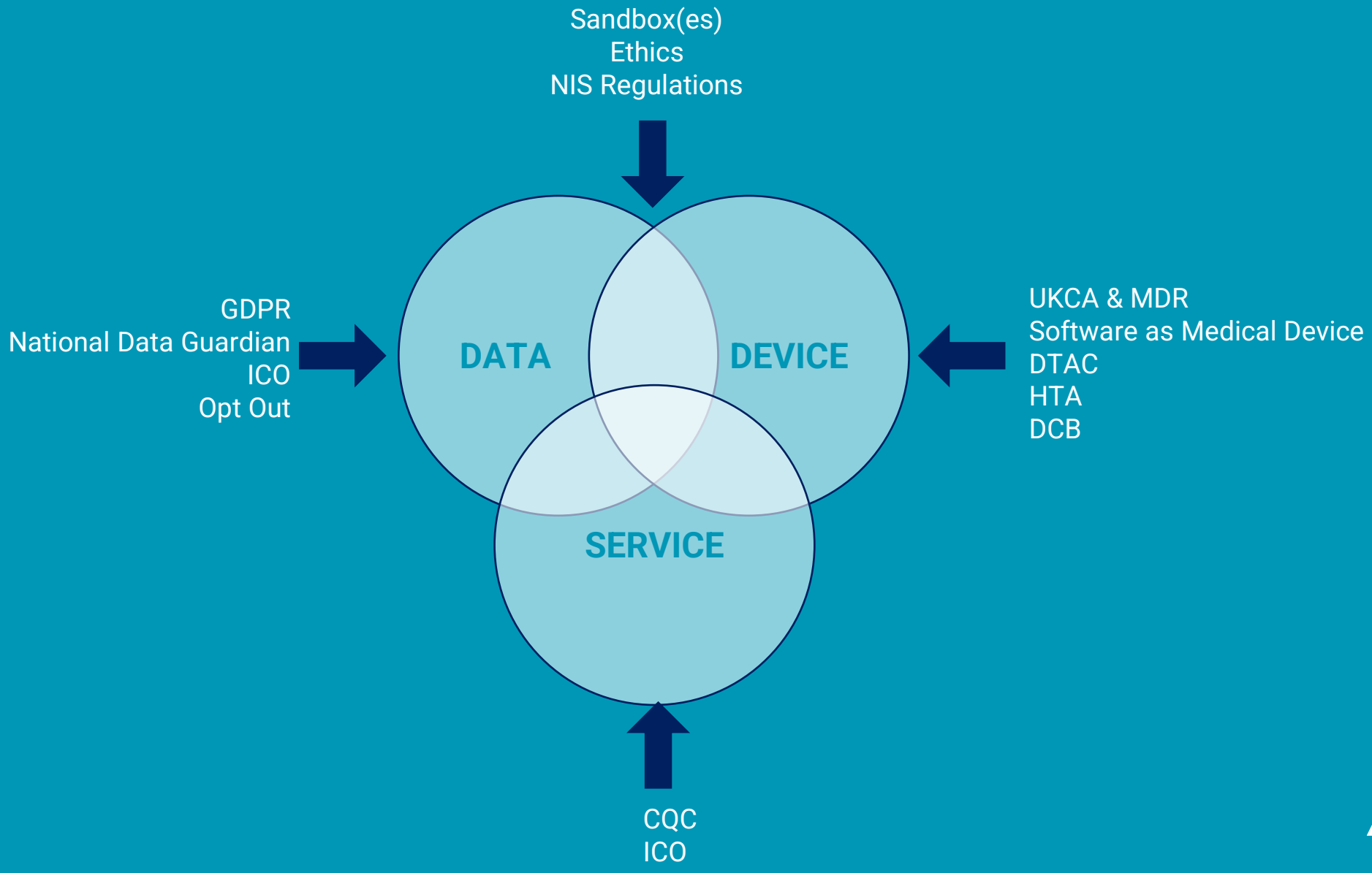
ABHI

Industry, Data and AI in Healthcare

- INCREASING DIGITAL SOLUTIONS
  - Everyone has an App
  - Digital solutions not always regulated as a Medical Device
- REGULATION
  - Potential for change after EU Exit - International alignment
  - Broad based EU actions: AI Act, data Strategy, EHDS
  - Use of guidelines and standards
  - Avoiding AI exceptionalism
- DATA ACCESS
  - Lots of data (generally ''owned' by health system/insurers)…poorly organised/silo'd access….
  - Technical measures - TREs, pseudonymisation etc
  - Change the governance (see below)…use flexibilities in legislation
- GOVERNANCE
  - Consistent approach needed at local level…template approach
  - Cultural conservatism & historical issues
  - Algorithmo-vigilance' - UK claimed world first…self-assessment & patient participation (scalable?)

ABHI

A Broad View of Regulation



ABHI

Regulatory Interactions

‘horizontal’ legislation <> sector specific

AIaMD <> SaMD

Regulation <> market access

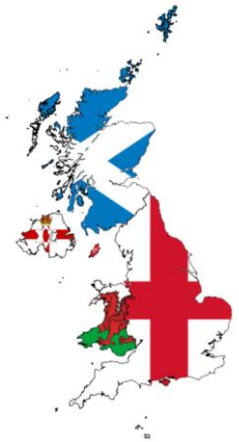
Regulation <> standards & guidelines

UK <> RoW

ABHI

State of Play - Devices Regulations

- Medicines and Medical Devices Act and secondary legislation (UK MDR, CTR, CTDA etc)
- Associated UK legislation (Chemical, Electrical & Biological Safety, Data Protection, Sustainability etc)
- Relevant EU legislation (MDR, IVDR)
- Global systems (FDA, IMDRF, MDSAP)



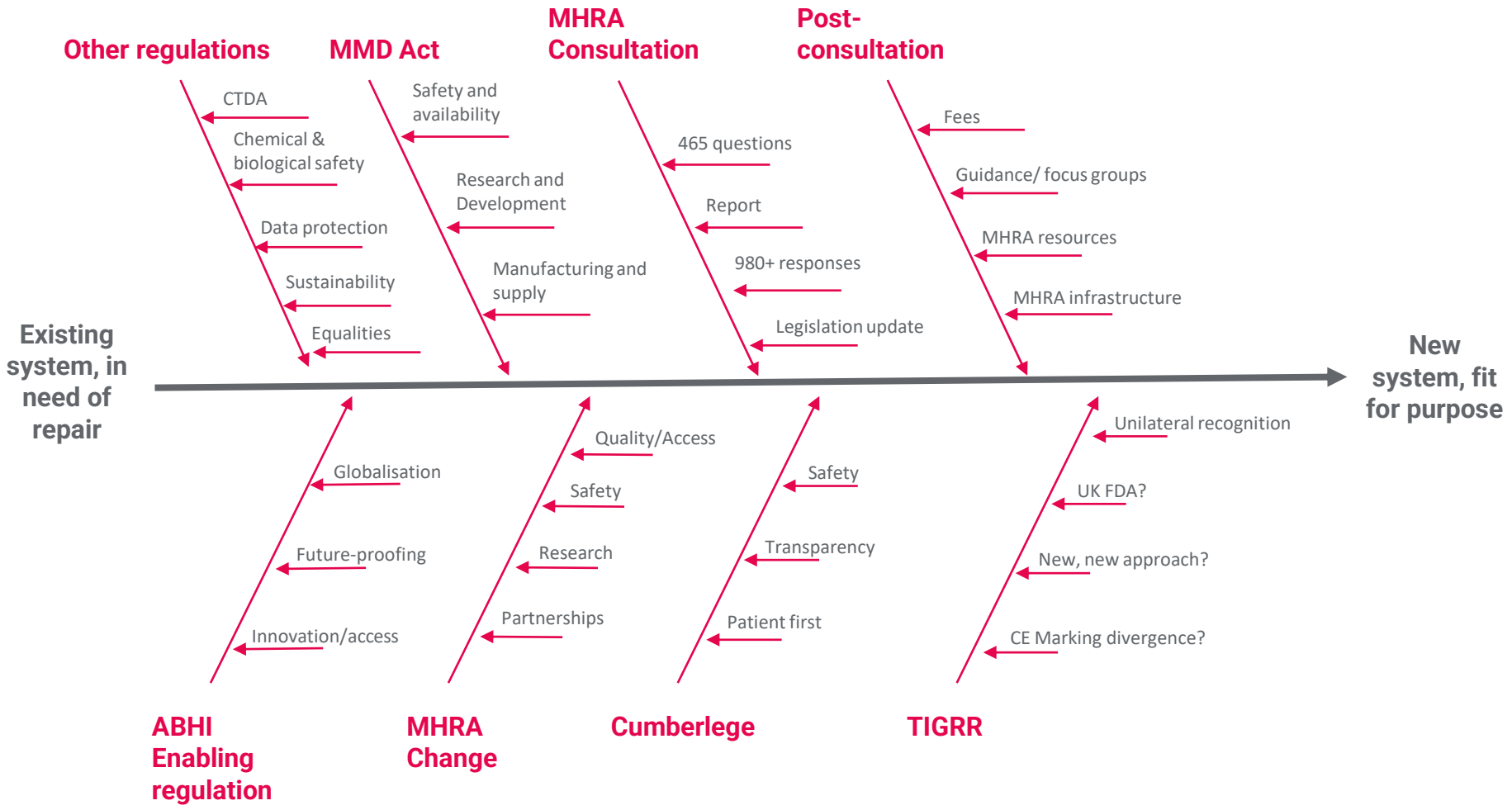
ABHI

State of Play - Devices Regulations

- UK Statutory Instruments based on last iteration of the Medical Device Directive
- SI to be updated rather than repealed
- Consultation on CA Marking completed in November
- Written response from Government and MHRA expected very soon
- Current timeline for mandated application of CA Mark; 1st July 2023
    - https://www.gov.uk/guidance/regulating-medical-devices-in-the-uk

ABHI

Complex Environment



Shorter term priorities (1-3 years)

- Transition planning
- Consultation response and draft legislation
- Focus groups and guidance
- MHRA resource and funding
- Implementation matters

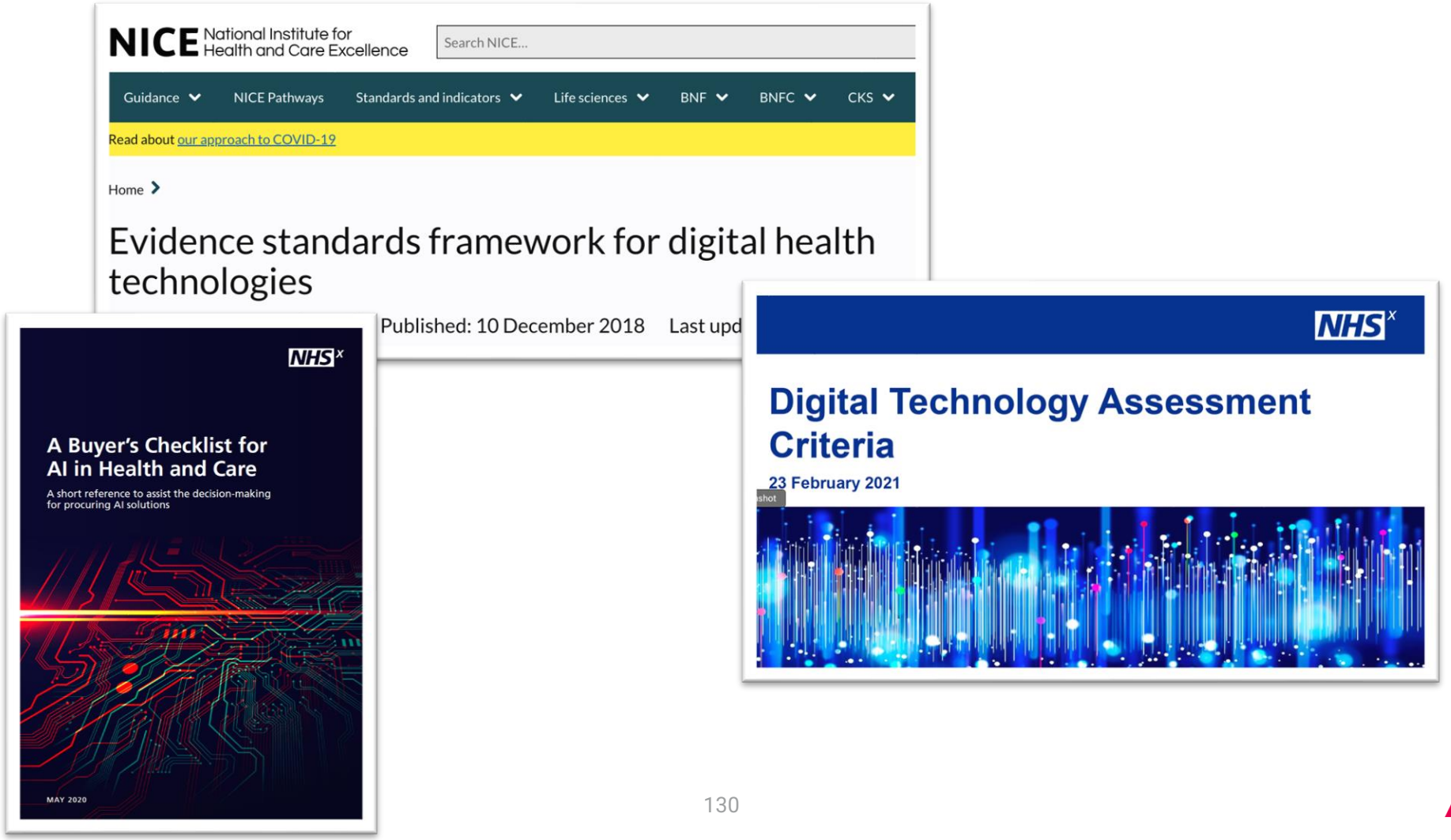
ABHI

Consultation Response

- Extended transition period: extra 5 years for MDR/IVDR CE marked products. Extra 3 years for those CE marked under MDD and 5 years under IVDD
- A new definition of Software to be added to the UK medical device regulations.
- MHRA will further consider the scope to clarify and strengthen regulatory requirements and guidance applicable to medical devices sold via distance sales.
- Amend the classification rules in UK medical devices regulations to include the IMDRF SaMD classification rule (general medical devices not IVDs)
- Further consideration of airlock classification rule for SaMD
- Further essential requirements for SaMD – largely mirroring MDR/IVDR
  - Include cyber security as an essential requirement.
  - Data protection, privacy, or confidentiality work with DCMS, ICO, NDG and HRA to ensure that patient data is protected.
  - Better alignment to Data Coordination Board (DCB) standards. Map and align where possible, also using guidance to better harmonise with these standards.
- Enable predetermined change control plans (PCCPs) but no mandatory link for adverse events
- Alignment with EU on cybersecurity measures
- No additional requirements for AI beyond those being considered for SaMD

ABHI

Market Access



ABHI

ABHI
HealthTech for Life

THANK YOU

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@UK_ABHI
Suite 2, 4th Floor, 1 Duchess St, London, W1W 6AN

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UP NEXT...

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SPEAKING NOW

Baldur Johnsen

VP International Business
DNV Imatis AS

I will be discussing…

"Silent Hospital"

DNV Imatis

Silent Hospital

Digital Hospitals Conference July 5, 2022

Agenda

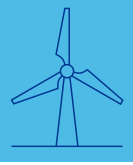
- Introduction
- Our client’s projects
  - Construction and transformation
- The impact of noise
- Customer case
  - Østfold Hospital, Kalnes
    Norway
- Our design thinking
- Benefits view
  - What have our clients realised?
- Questions and (hopefully) answers

DNV - A foundation owned and independent assurance and risk management company

158	~12,000	100,000	100+	5% R&D
years	employees	customers	countries	of annual revenue

Ship and offshore classification and advisory

Energy advisory, certification, verification, inspection and monitoring



Management system certification, business and product assurance

Software, platforms and digital solutions

Our purpose: To safeguard life, property, and the environment

Our vision: A trusted voice to tackle global transformations

DNV

DNV Digital Health - Accelerating healthcare's digital transformation

Data protection

Data management

Data sharing

Real time connectivity

Ambition: Establish trust in technologies, systems and data, so that healthcare professionals can improve more lives, more efficiently

DNV Imatis – A DNV subsidiary

Scandinavian Health-IT software company

1991 / 2003 / 2007 / 2021

E-health solutions since 2003

Part of DNV Group
Norway, Denmark, Switzerland, Australia, Italy, Vietnam

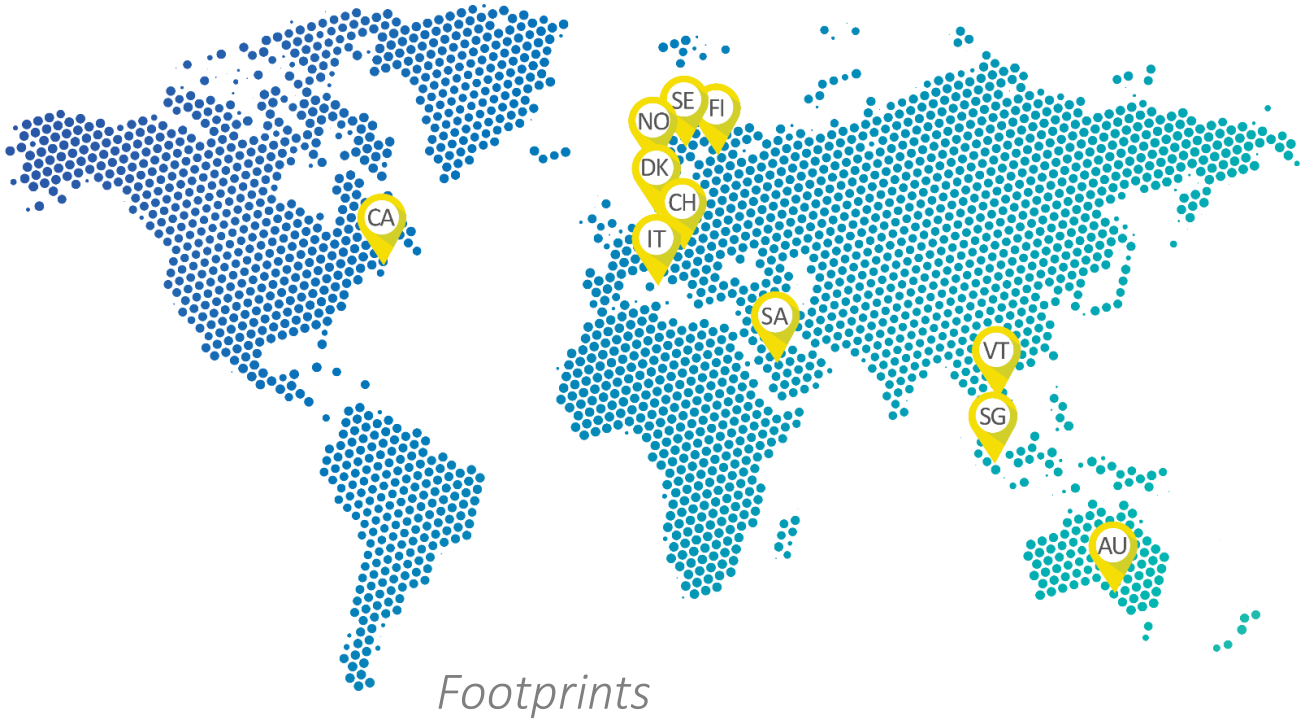
Head office in Porsgrunn, Norway

Special operating unit of DNV Accelerator

Approved Business apprenticeships
15 certified apprentices since 2009

Eco-Lighthouse certified

Solid economy



DNV Imatis

Our client’s projects

New hospital projects for over 20 years

DNV Imatis

Digital hospitals – selection of new build customer references

St. Olav's Hospital
Trondheim, Norway (2005)

Akershus University Hospital
Oslo, Norway (2008)

Colchester Hospital
Nova Scotia, Canada (2013)

Østfold Hospital
Norway (2015)

Nordland Hospital
Bodø, Norway (2016)

Royal Adelaide Hospital
Adelaide, Australia (2017)

Haraldsplass Hospital
Bergen, Norway (2018)

Kainuu Hospital
Kajaani, Finland (2019)

Hospitals in development & redevelopment

Stavanger University Hospital
Norway (2023)

Ny Storbylegevakt
Oslo, Norway (2023)

Møre og Romsdal Hospital
Molde, Norway (2025)

Vestre Viken Hospital
Drammen, Norway (2024)

Nye Radiumhospitalet
Oslo, Norway (2024)

Nye Aker
Oslo, Norway (2030)

DNV Imatis

The impact of noise

A major contributor to fatigue and burnout

Noise pollution

A well recognised risk to physical and mental health

- Sources:
  - Telephones
  - Medical equipment alarms
  - Nurse call systems
- Effects:
  - Increased likelihood of mistakes
  - Reduced concentration
  - Disruption of cognitive function
  - Increased blood pressure and heart rate
- Reduction in productivity
- Reduced staff and patient satisfaction
- WHO recommends not to exceed 30 dB and peaks not more then 40 dB.

Østfold Hospital, Kalnes Norway

SYKEHUSET ØSTFOLD

Customer case

Facts

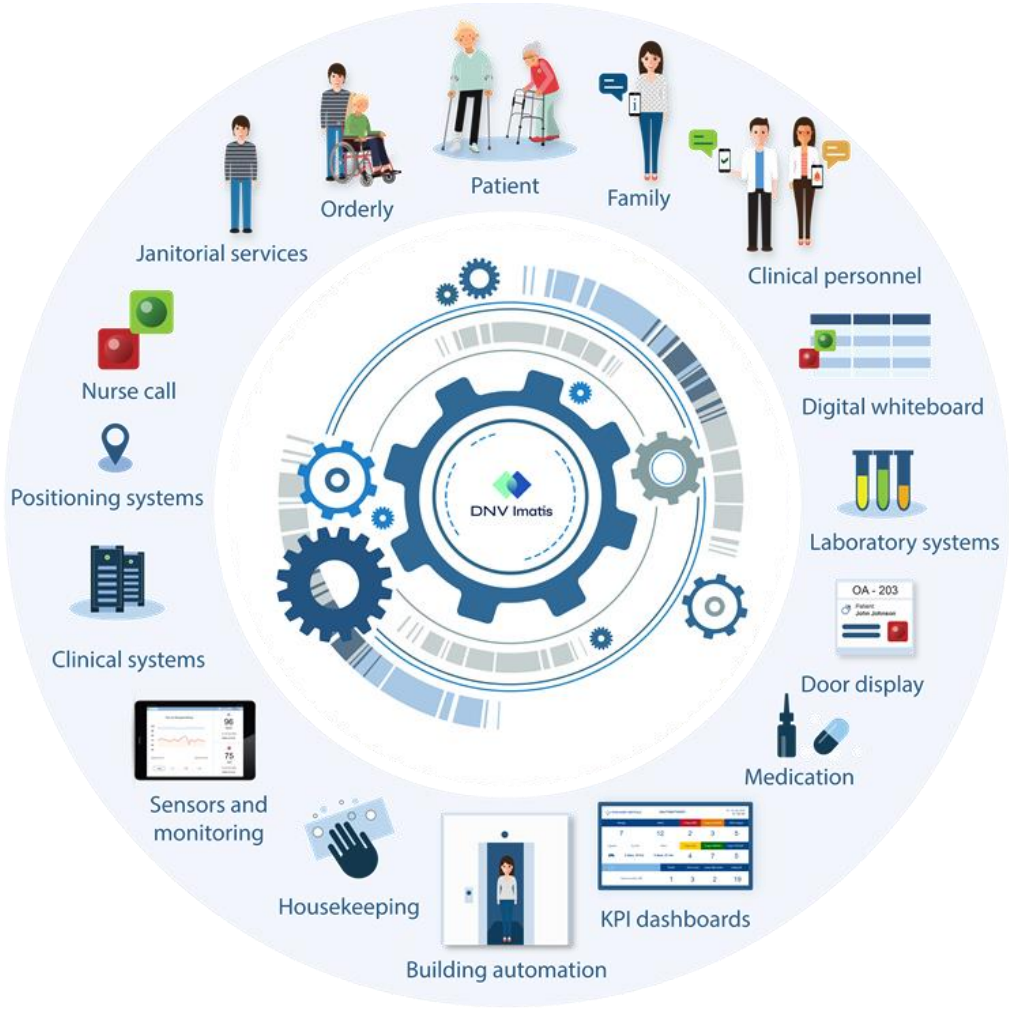
- 720 beds (504 somatics / 216 mental health)
- 420 000 outpatients consultations (2020)
- 46 000 in-patients (2020)
- 41 000 patients in day care (2020)
- 23 operating theaters
- 5730 employees (2020)
- Opened: 2015

HIMSS Analytics EMRAM Stage 6

Purpose of DNV Imatis at Østfold Hospital

- *«IMATIS is our main tool for supporting important work processes, patient flow, coordination, logistics and interaction internally in the hospital»*

Ostfold hospital presentation



DNV Imatis

Silent Hospital @Ostfold

“DNV IMATIS has given us a completely «silent hospital». All patient alerts go directly to the staff’s role-based cell phones, and we avoid notification noise in wards and patient rooms.

How important this is, we only discovered when we had to turn on the audio system in connection with an upgrade in 2019.”

Executive Director of Development
~ Helge Stene Johansen

DNV Imatis

Silent Hospital

- Alarm audio switched off
- Alert audio switched off
- Patient alarms routed directly to mobile
  - Responsible team
  - Responsible role
- Alerts directly on mobile
- Overview on digital whiteboards in wards

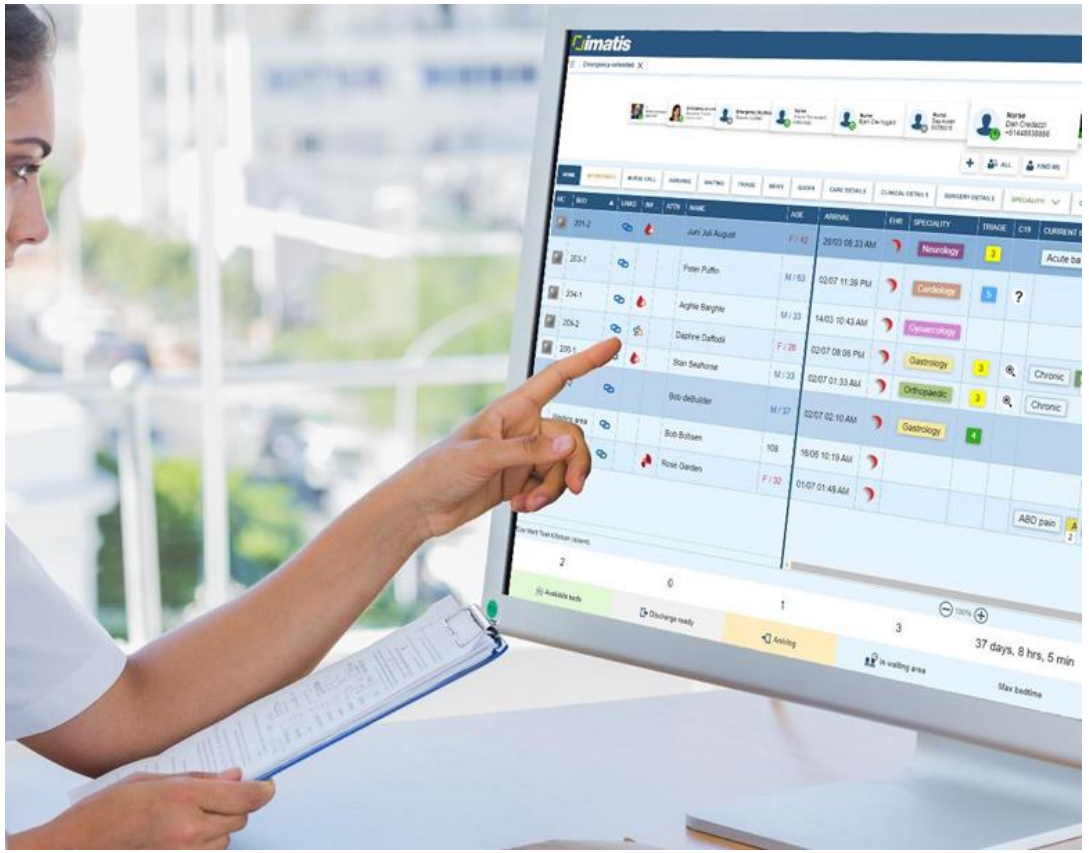
Benefits @Ostfold

- Quieter, more serene environment
- Better work environment
- Better healing environment
- Reduced rate of sick leave
- Increased quality of care
- More efficient hospital operations - higher productivity

Østfold Hospital Kalnes

Aiming to be on the leading edge of service innovation

- One of the first in Norway to implement a silent work environment
- DNV Imatis platform integration connects more than 50 subsystems
- End-users customize workflows and user interfaces
- Without IT expertise assistance using low-code tools



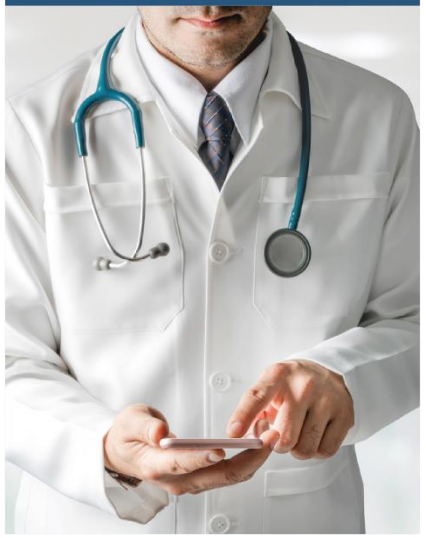
Our design thinking

Conceptual level

Healthcare Technology Convergence

The foundation of a Digital Hospital

Using technology convergence in healthcare, to apply pervasive integration that enables a real-time information environment for intelligent workflows, and care orchestration

Facilities	Medical	Communications	Logistics	Sensors/IoT
				

Information Technology - Systems of Record

Technology integration

The healthcare workforce - mobile, using office worker IT

The source of real-time information

Healthcare Communications

- Synchronous
  - Acknowledgement is key
- Voice based
  - Source of misunderstanding
- Point to point
  - One person to another
- No record
  - No ability to trace or review again
- Ambiguous
  - Source of error

DNV Imatis message system for communications, task management, and workflow

DNV Imatis

Visualisation & immersive interaction

Effortless information consumption at the point of care

- Situational awareness
- Coordinate logistics, patient flow, and clinical resources
- Care quality assurance
- Context data retrieval
- Different form of mobility

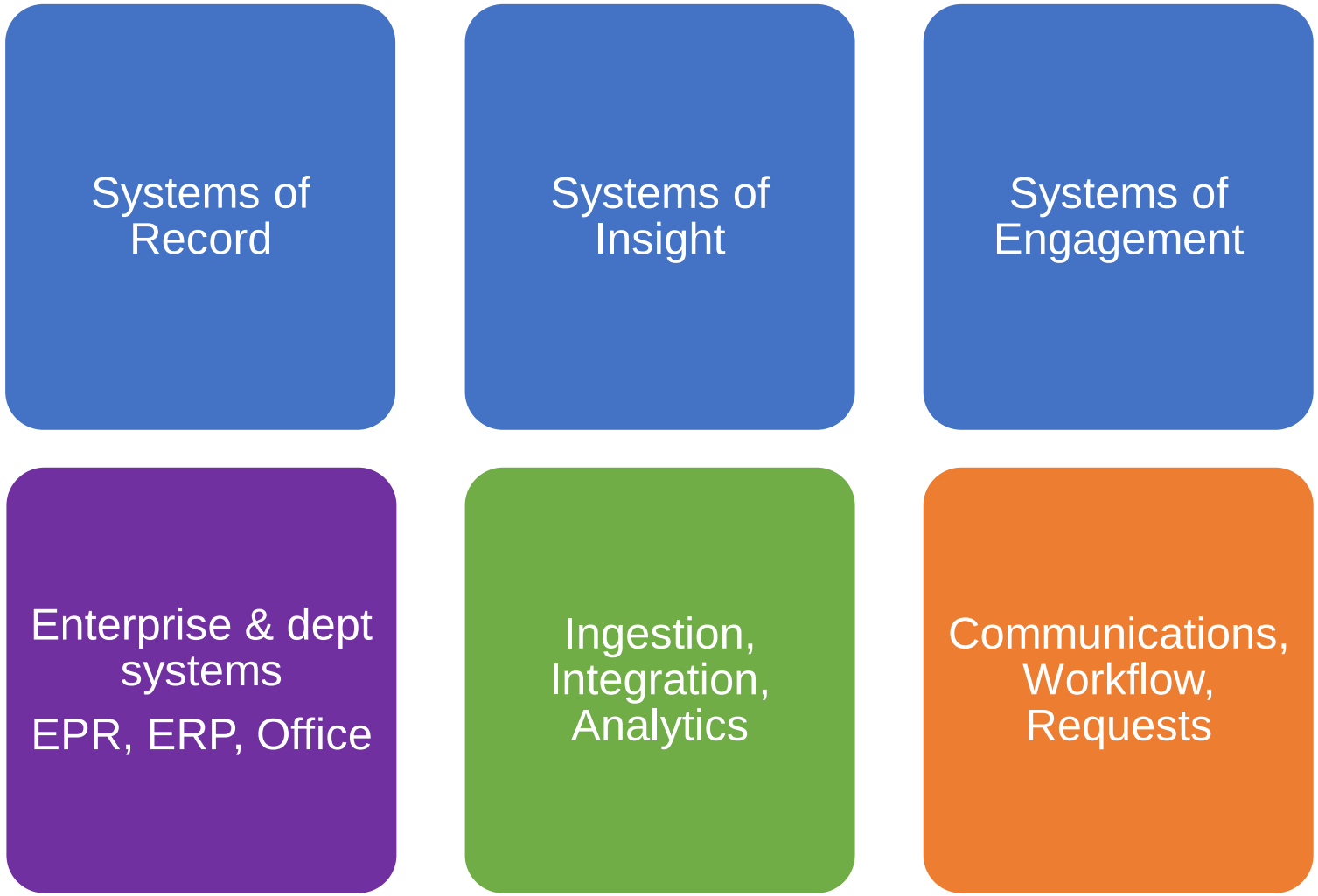
Configurability - Low code platform

Ability to respond to unpredictability with agility

- Empower users to develop own apps
- Enables innovation and continuous improvement
- Does not require IT specialists to create Apps
- Applications deployed into apps repository

DNV Imatis

Modern Architectural view



Summary

- Noise is not a friend of healing
- A silent hospital is possible
- Design principles
  - Healthcare Technology Convergence
  - Systems of engagement
- Benefits
  - Better work and healing environment
  - Happier staff, more satisfied patients

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The NHS Digital Hospitals Conference 2022:

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Q&A Panel

Nolan Newman

UKI Country Sales Manager
Owl Labs

Paul Birkett

Head of Commercial Software Solutions HP Apogee

Andrew Davies

Digital Health Lead
ABHI

Baldur Johnsen

VP International Business
DNV Imatis AS

The Digital Hospitals Conference 2022

The NHS Digital Hospitals Conference 2022:

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NETWORKING & LUNCH

The Digital Hospitals Conference 2022

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Chair Afternoon Reflection

Douglas Hamandishe

"Alcidion Clinical Consultant and Broadcaster – Centric Health Media"

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UP NEXT...

ZIO®

BY iRHYTHM

The Digital Hospitals Conference 2022

The NHS Digital Hospitals Conference 2022

SPEAKING NOW

Amy Lovegrove

Clinical Operations Director from Zio by iRhythm

I will be discussing…

"Utilising ECG Patch Technology for Operational Efficiency"

ZIO® BY iRHYTHM

Ambulatory ECG Pathway Transformation

Amy Lovegrove
Director, UK Clinical Operations
5th July 2022

Zio XT – A Digital Hospital Solution

The Zio service is a complete ambulatory ECG monitoring solution built with the patient in mind — reinforced with clinical evidence.

- Pathway transformation
- User-friendly device - doesn't disrupt a patient's life.
- Continuous monitoring for up to 14 days – will document patient triggered events / symptoms
- Diagnostic analysis service utilising proprietary AI algorithm
- Complete and accurate report provided electronically to the clinician
- Reduces patient footfall, reduces hospital resource and significantly reduces waiting times

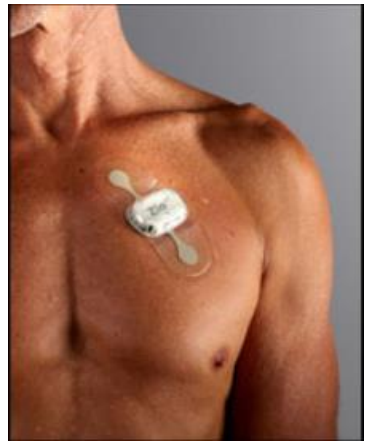
Transforming Patient Care

Traditional monitoring – unchanged for decades:

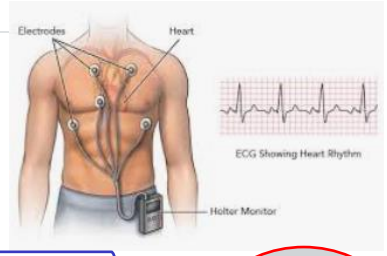
- Long waiting times
- Cumbersome / uncomfortable to wear
- Difficult to carry out normal daily duties
- Relatively unreliable – higher noise level / low diagnostic yield
- Relatively high use of NHS resource
- Requires multiple appointments for fitting / removal
- Often repeated multiple times before getting a diagnosis
- Wasted outpatient appointments with no results available

ZIO XT – patch technology:

- Single use item – removes waiting times
- Patient friendly device / comfortable to wear
- Continue normal duties including bath / shower
- Continuous 14-day recording, low noise level / high diagnostic yield
- Reduction in hospital resource use
- Rule in / rule out diagnosis in one test
- Returned to iRUK via postal service
- Report provided to clinician electronically



Average time from referral to result 79 days (HIN Trial data*)



Referral to Cardiology

Pt see's Cardiologist

Pt attends GP

Referral for test

Average time to fitting 46 days (HIN Trial data)

4 -6 week wait for availability of device and clinic resource

Attend appointment for Holter fitting

Attend following day for removal

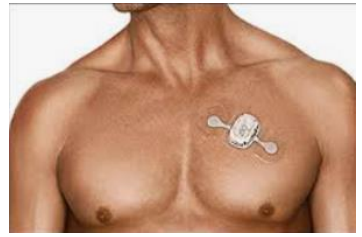
Data uploaded and filed for analysis

2 -4 week report turnaround

Data analysed and report sent to requestor

Pt attends clinic appt for result

Average time from referral to result 20.5 days (HIN Trial data*)



Referral to Cardiology

Pt see's Cardiologist

Pt attends GP

Decision for Zio

Average time to fitting 0 days (HIN Trial data*)

AI, personnel, training, competency, QA

Zio fitted on the day by the patient or clinic

14-day Zio wear-time

Pt removes device and posts back to iRhythm

Data uploaded and analysed

4-day report turnaround

Report posted and requestor decides on next steps

Heath Innovation Network (HIN) - Improving stroke pathways using an adhesive ambulatory ECG patch: reducing time for patients to ECGs and subsequent results: Future Healthcare Journal 2022, Alex Lang et al

High Quality and Accuracy - helping healthcare professionals achieve a definitive diagnosis with 1 test

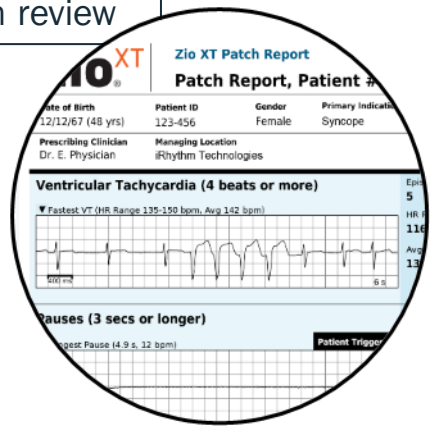
Combining our AI technology with expert cardiac physiologist review, Zio by iRhythm gives clinicians the assurance of expert-level accuracy in arrhythmia detection.

Highly specific proprietary AI algorithm developed utilising ECG strips from a database of over 2 million records

First pass data analysis performed through the iR algorithm - increases accuracy and timeliness of completing ECG analysis

Analysis overseen and final report generated by UK Cardiac Physiologists

Comprehensive report posted to iR proprietary web-based platform – interactive pdf for clinician review



NICE National Institute for Health and Care Excellence

December 2020: ZIO XT received positive NICE Guidance

To date, iRhythm is the only service of this type to receive NICE Guidance

AI in Health and Care Award

Funding from the NHS Accelerated Access Collaborative (AAC) to generate real-world evidence

Partnering with NHS Trusts throughout the UK to generate real world evidence to support the use of Zio as a standard model of care:

- Barts Health NHS Trust
- University Hospital Southampton NHS Trust
- Liverpool Heart and Chest Hospital
- North Bristol Hospitals NHS Trust
- Gloucestershire Hospitals NHS Trust
- East Kent Hospitals University NHS Trust

Data and Evidence

Health Innovation Network – Improving Stroke Pathways using an Adhesive Patch, reducing time for patients to ECGs and subsequent results

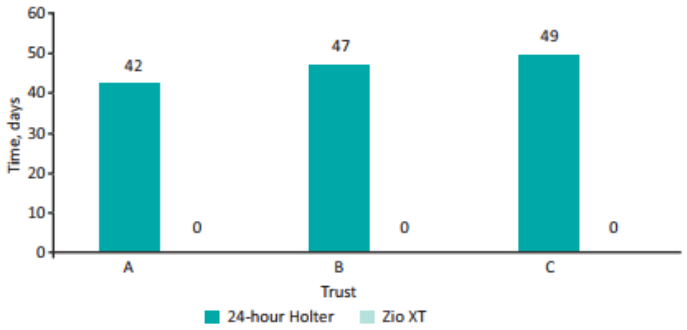


Fig 1. Median time between the clinical decision for ambulatory electrocardiography monitoring being made and the patient having it fitted.

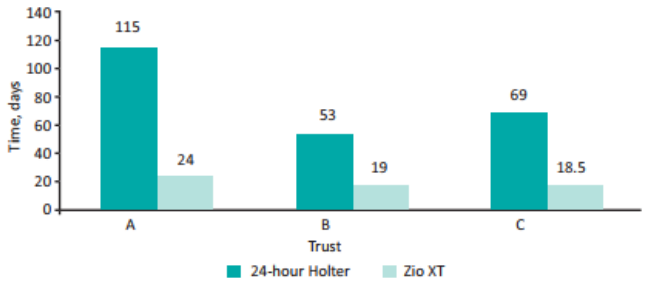


Fig 2. Median time between the clinical decision for ambulatory electrocardiography monitoring being made and the report being available.

Table 3. Patient satisfaction scores from the Zio XT survey

Zio XT	Patient response, %
Easy to use	85%
Comfortable to wear	82%
Ability for normal activity	88%
Would wear Zio XT again	82%

Table 2. Patients whose results were not available at follow-up

	Patients for whom 24-hour Holter results were not available at their follow-up appointment, n (%)	Patients for whom Zio XT results were not available at their follow-up appointment, n (%)	Significance using chi-squared test
Trust A	10 (28%)	3 (25%)	p=0.84
Trust B	12 (34%)	0 (0%)	p=0.02
Trust C	17 (31%)	0 (0%)	p=0.03

Improving stroke pathways using an adhesive ambulatory ECG patch: reducing time for patients to ECGs and subsequent results: Future Healthcare Journal 2022, Alex Lang et al

Data and Evidence

Barts Health NHS Trust – Real world evaluation – Ambulatory Monitoring for Stroke patients from 2019 to 2022

"2 week results come back really fast and in time for clinic. This really helps the workflow"

"It has been amazingly tolerated by our patients"

"The Zio service has revolutionised our clinics"

"The monitors are picking up a lot of arrhythmia which us stroke physicians are not used to detecting on Holter, and therefore managing. Some clinicians are arranging regular meetings with cardiology to make plans for the unexpected arrhythmias"

	Holter 2019	Zio XT 2021
Wait: referral to report	60 days (mean)	19 days (mean)
Repeat testing (due to inconclusive results)	16%	1%
Total AF yield	3%	3.4%
Monitor wear time	24h – 72h	14 days
Analysable time (of wear time)	90%	96%
Failed monitoring	1%	3%
Repeat stroke OP FUs (when monitor results not available)	37%	9.5%

Courtesy of Dr Nolan Stain – Barts NHS Trust. June 2022

Next step - EHR Integration

1

Improve workflows in the administration of the care pathway by enabling automated initial patient registration, reducing duplication and Zio Report Posting

2

Mitigate risk of human error by reducing data entry requirements into Patient Administration System, Local Trackers and Zioreports.com

3

Expedite the Zio Patch Report by publishing directly to EHR/Patient Timeline

Summary

As we look to move towards ‘Digital Hospitals’, Zio has the potential to transform the patient pathway for diagnostic ambulatory ECG monitoring whilst providing:

- an improved experience for patients and clinicians
- quicker access to tests and results
- lower cost or cost neutral to current model of care

Thank you for listening:

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Tuesday 5th July 2022- 2022- 08:00am – 15:30pm – Hatfield's Conference Centre

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The Digital Hospitals Conference 2022

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UP NEXT...

PrinterLogic
a VASION solution

The Digital Hospitals Conference 2022

The NHS Digital Hospitals Conference 2022

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SPEAKING NOW

Matt Mahoney

Regional Sales Manager EMEA Vasion Printerlogic

I will be discussing…

"Eliminate Your Print Servers & Make Digital Transformation Available For Everybody"

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The NHS Digital Hospitals Conference 2022

SPEAKING NOW

I will be discussing…

"Stepping Up – Using Robots Gait Training to Improve Walking Outcomes in People with Stroke"

University Hospitals Dorset
NHS Foundation Trust

Stepping Up – using robotic gait training to improve walking outcomes in people with stroke

Alahna Cullen
Consultant Physiotherapist
July 2022

Technology is changing healthcare…

Stroke Rehabilitation

Stroke Rehabilitation

High Intensity **Repetitive** **Task Specific**

Technology and Rehabilitation

Based on the same sound scientific principles as rehabilitation

- Neural Plasticity

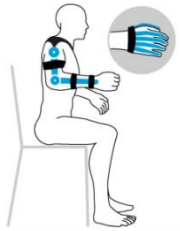
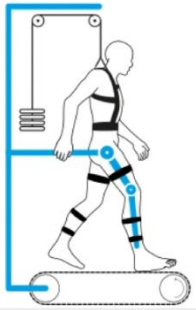
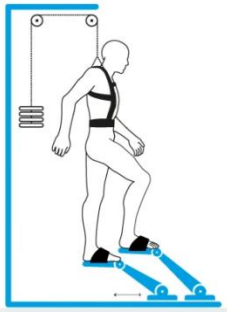
- Motor Learning

- Behaviour Change

What are rehabilitation robotics?

Devices (machines) that help people with physical disability to move, for therapeutic or assistive purposes.

Classification of Robotics

	Grounded Exoskeleton	Grounded End-Effector	Wearable Exoskeleton
Upper Extremity			
Development Status	Established	Established	Emerging
Technology Reviews	**Upper Limb:** Loureiro 2011, Maciejasz 2014, Sheng 2016 (bilateral) | **Hand:** Lum 2012, Bos 2016		
Clinical Evidence	**Grounded:** Klamroth, 2014 | **End-Effector:** Lo 2010 | **Both:** Kwakkel 2008, Mehrholz 2015, Veerbeek 2017 **Hand:** Balasubramanian 2010, Lambercy 2011		
Lower Extremity			
Development Status	Established	Established	Emerging
Technology Reviews	**Grounded and Wearable:** Diaz 2011		
Clinical Evidence	**Grounded:** Tefertiller 2011, Benito-Penalva 2012, Nam 2017 | **Wearable:** Louie 2016 | **Both:** Mehrholz 2017		

Gassert, (2018)

Classification of Robotics

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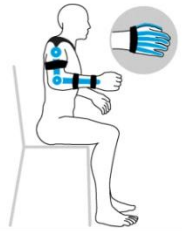
Upper Extremity			
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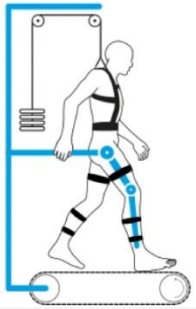
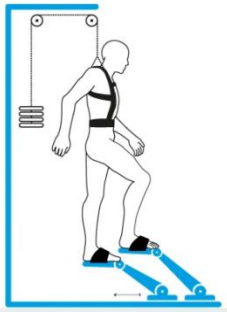
Lower Extremity			
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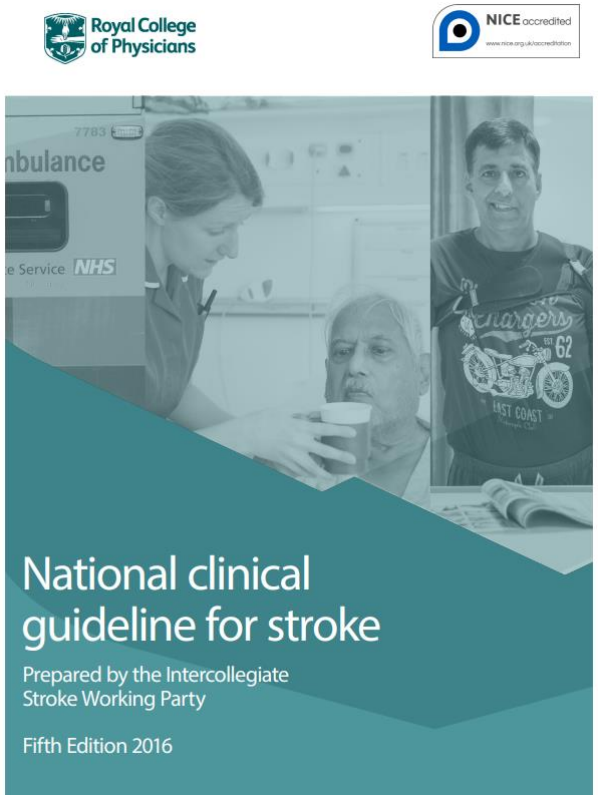
Gassert, (2018)

Lower Limb Robotics

RCP Guidelines (2016)

‘People who cannot walk independently after stroke should be considered for electromechanical-assisted gait training including body weight support’



The Evidence Base – Cochrane Review

(last updated 2020)

- → 62 RCT's with 2440 participants
- → EMGT and physiotherapy
  - → increased odds of participants becoming independent in walking (high quality evidence); **NNT = 8**
  - → increased mean walking velocity (low quality evidence)
  - → no increase in walking capacity (6MWT) (moderate quality evidence)
  - → safe and acceptable to most participants
- → people in first 3 months post stroke, and those who are unable to walk, are most likely to benefit.

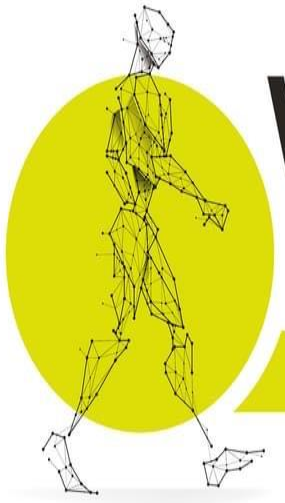
Robotics in Real Life!

- Combined acute stroke and stroke recovery units
- 8 Hyper Acute Beds
- 38 recovery beds split across 2 sites
- Early Supported Discharge Team
- 1300 patients per year

Are we delivering high intensity, high repetition, functional task practice?

What challenges did we face?

- Cost - no budget for equipment
- Space - limited gym space already
- Staff resources - time to learn new skills and implement new technology limited
- Knowledge and expertise in this area - we hadn’t used equipment like this before
- No other NHS Trusts have EMGT – why?!



WALKERBOT APPEAL

BEHIND THE SCENES

WE RECENTLY ANNOUNCED THE ARRIVAL OF THE WALKERBOT, FOLLOWING A 20 MONTH FUNDRAISING APPEAL TO RAISE

£365,000

THE STATE OF THE ART ROBOTICS ARE NOW IN USE AT THE RBH STROKE UNIT, HELPING STROKE PATIENTS RELEARN TO WALK.

...AND YOU

1,179 donations were received

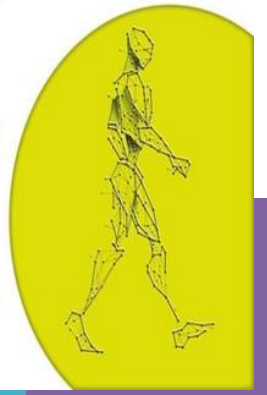
£55,000 was received in charitable grants

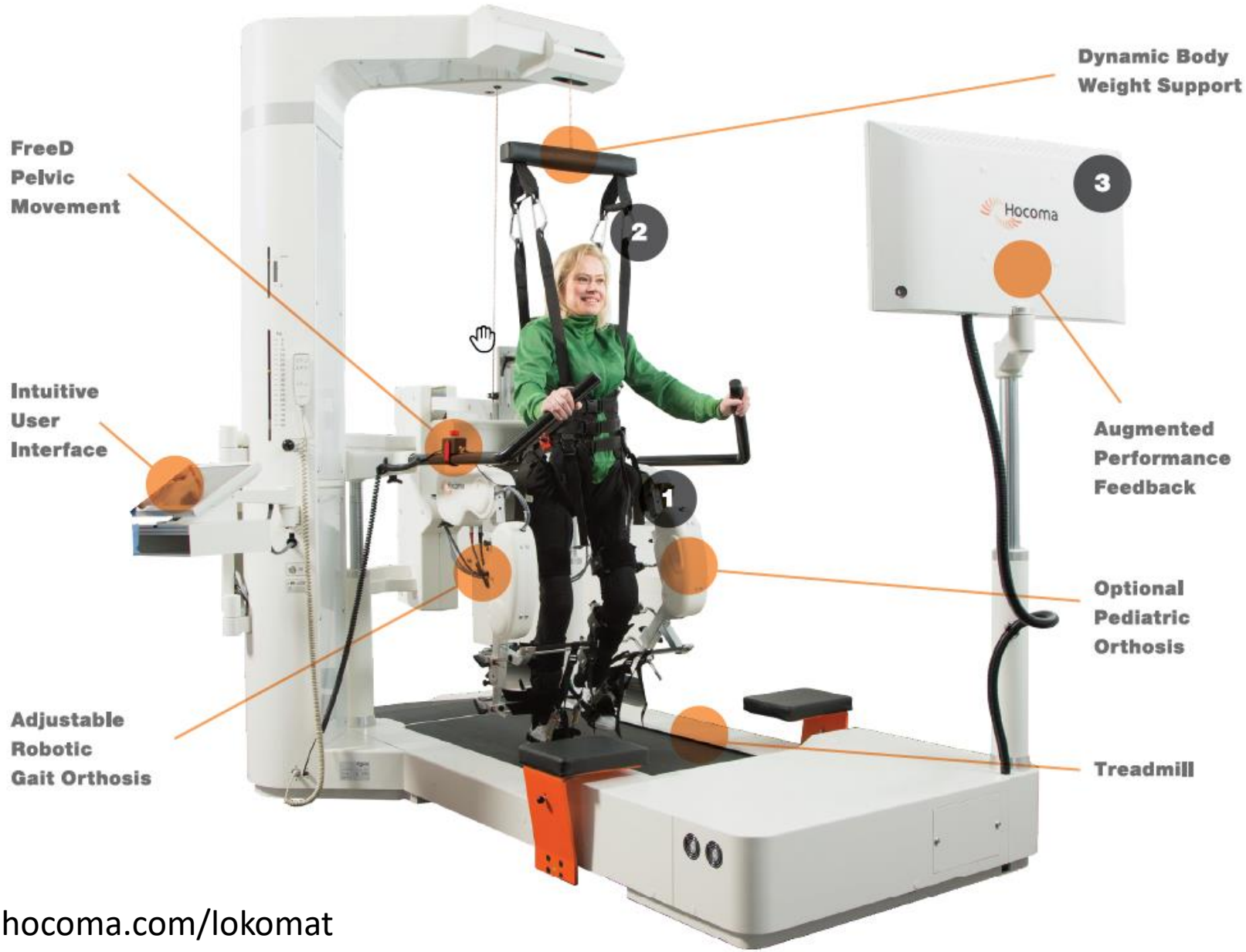
18 corporate and community group donations

11 incredible individuals took on challenges to raise funds

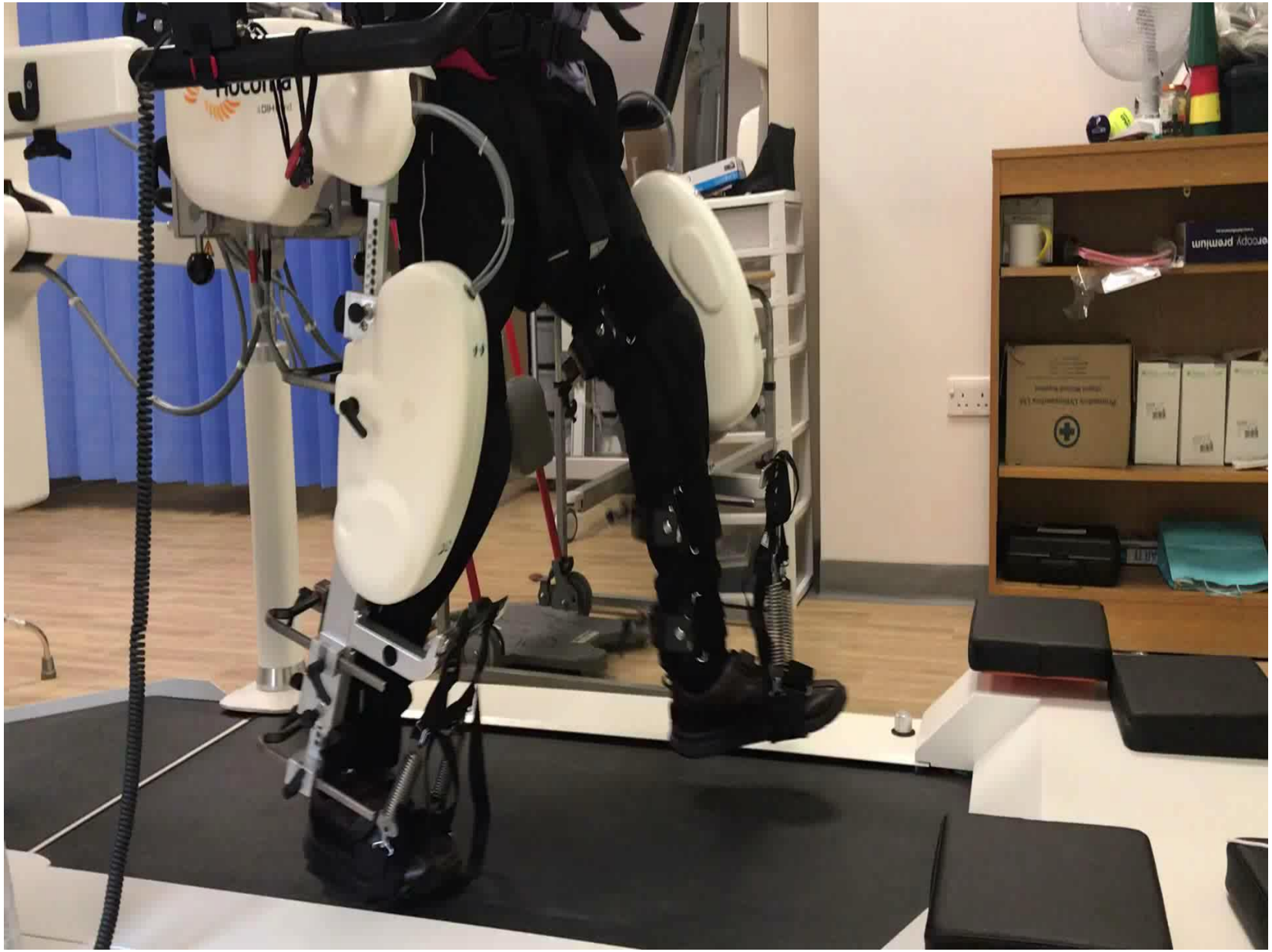
£209,000 received in legacy donations

To find out more about the Walkerbot appeal visit UHDcharity.org

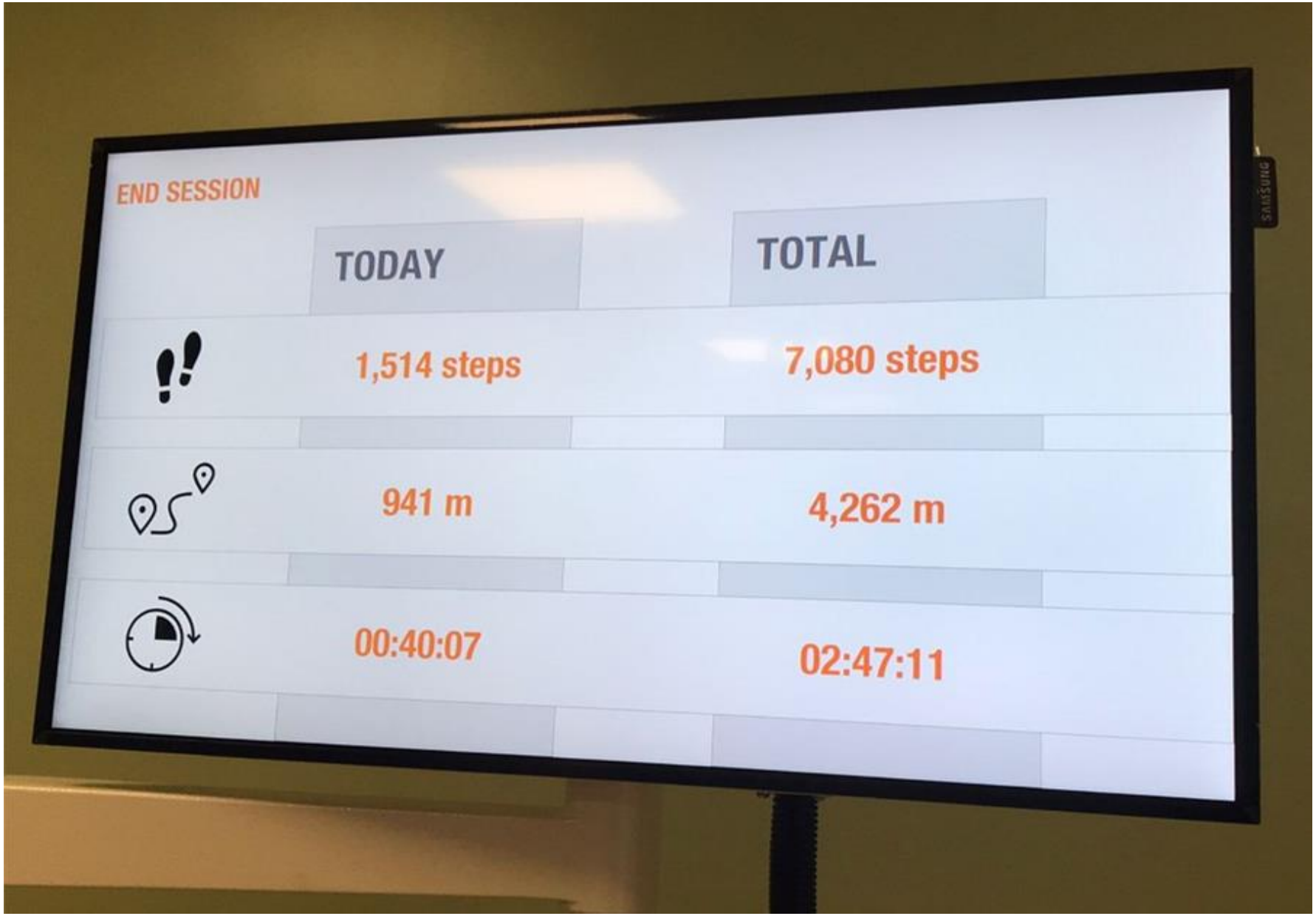




www.hocoma.com/lokomat



- Interactive Challenge – Immediate Feedback + Motivation


END SESSION
TODAY
TOTAL
1,514 steps
7,080 steps
941 m
4,262 m
00:40:07
02:47:11
SAMSUNG

Our Experience So Far…

- ✓ Game changer for gait rehabilitation
- ✓ Truly intensive therapy
- ✓ Specific and tailored
- ✓ Interactive challenge – feedback and motivation
- ✓ Select patients carefully

Summary

- **Improved outcomes**– technology can complement conventional therapy, improving clinical outcomes
- **Efficient** – one solution to the intensity challenge
- **Expectations** – increasingly, patients expect to use technology in their rehabilitation

The Future

Questions and Discussion

Huge thanks to…

University Hospitals Dorset NHS Charity

The Digital Hospitals Conference 2022

The NHS Digital Hospitals Conference 2022

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UP NEXT...

BIOME

Digital Innovation Lab by Novartis

The Digital Hospitals Conference 2022

The NHS Digital Hospitals Conference 2022

SPEAKING NOW

Jack Porter

Biome – Care from Home Solutions
Novartis Biome

I will be discussing…

"The Novartis Biome – A U.K. Case Study"

Biome
Novartis Digital

The Novartis Biome – A U.K. case study

September 2021 – updated May 2022

With material from: 128326 | May 2021 & COR20-E118 October 2020

NOVARTIS | Reimagining Medicine

The Novartis Biome key to delivering on our four digital priorities

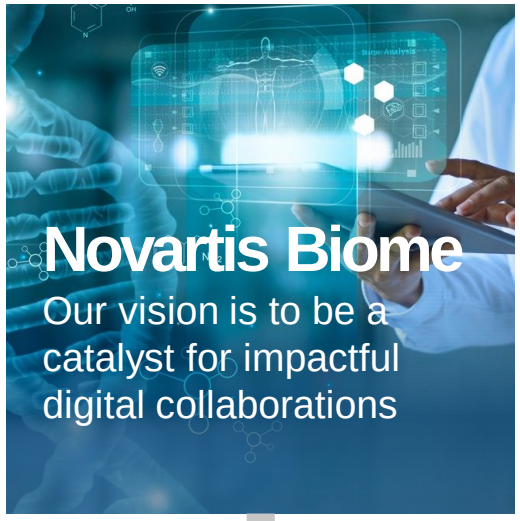
The Novartis Biome is the catalyst

- To help us find and collaborate with the best partners in the tech ecosystem
- To make partnering with us easier and more productive

The Novartis Biome vision

A catalyst for impactful collaboration,
the Novartis Biome brings together Novartis' deep scientific experience with the expertise of the tech ecosystem to develop and scale digital solutions that improve and extend people's lives

Novartis
deep scientific experience



Digital ecosystem
expertise

Delivering better healthcare solutions
Creating better patient experiences
Improving and extending people's lives

NOVARTIS | Reimagining Medicine

..internally & externally we are focused on

Helping health and tech entrepreneurs to...

Collaborate
with us more easily

Connect
to our network of Digital Innovation hubs around the world

Access
our global resources and reach to scale up good ideas as fast as possible

Collaborating with our Novartis teams to...

Connect
with partners in the right way

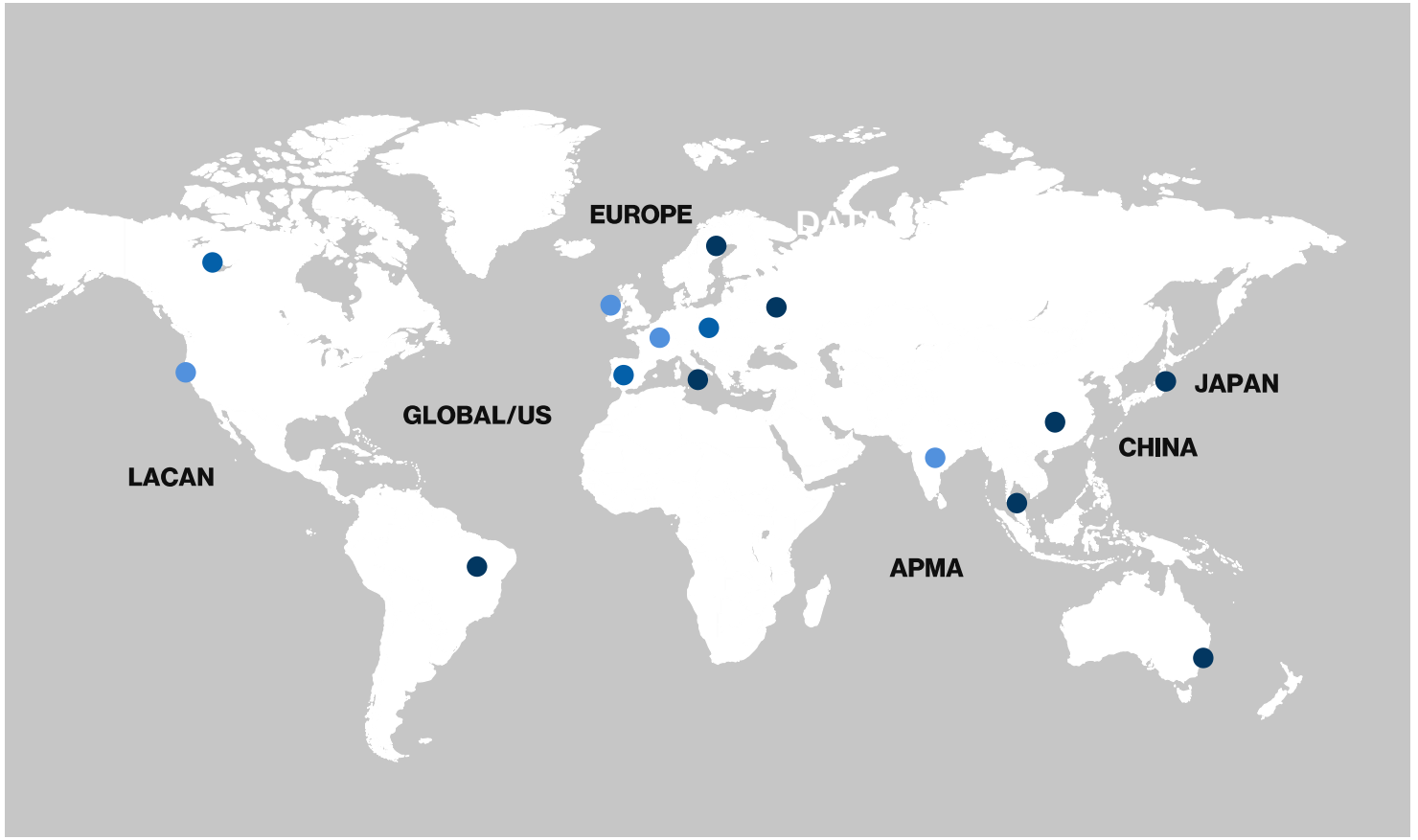
Transform
innovative ideas into impactful solutions

Discover, develop & drive
even more successful collaborations at scale

Connected via a global network of digital innovation labs

We unite across regions to democratize access to data, resources and local ecosystem expertise

- **Launched**
  UK, France, India, San Francisco, Singapore, Spain, Canada, Germany, China
- **Planning to launch & in discussion**
  The Nordics, Brazil, Japan & Australia



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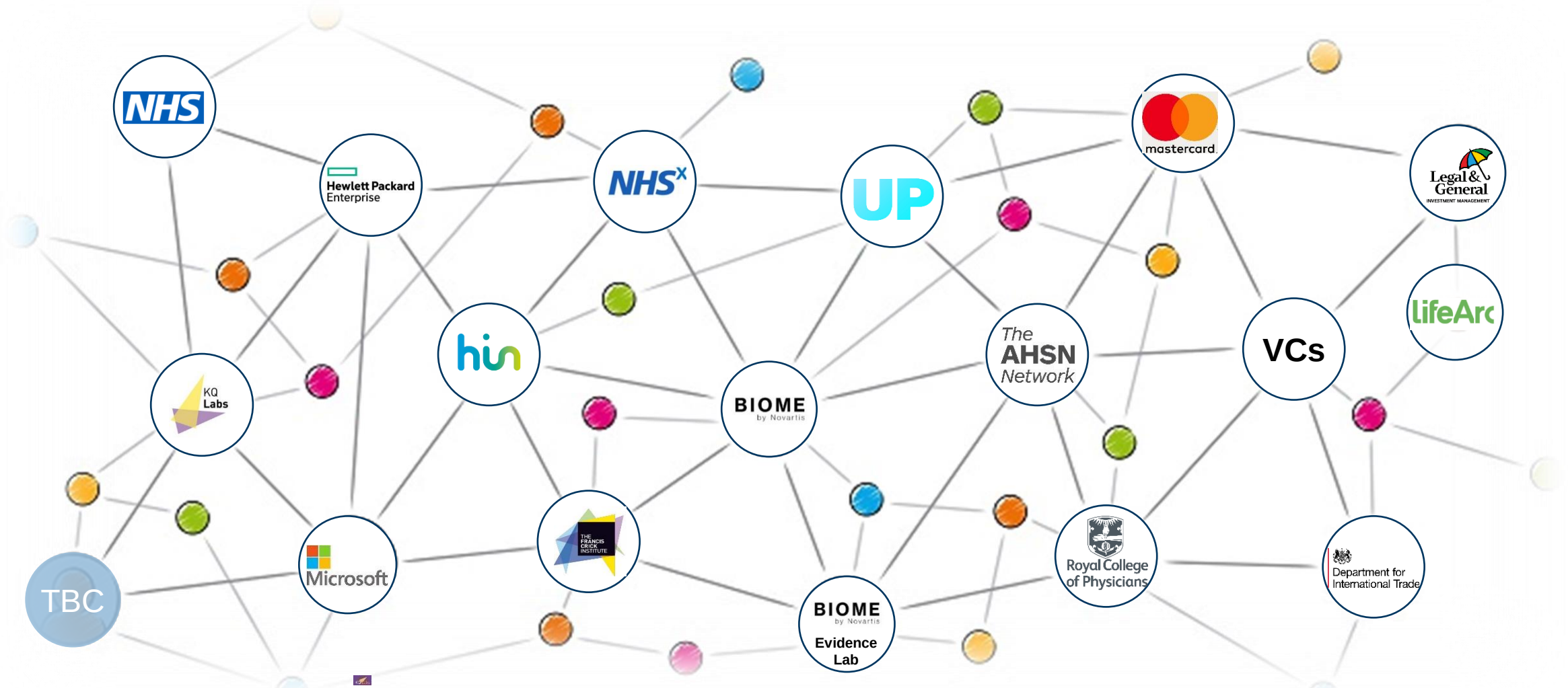
The BIOME UK *enablement network...*



NOVARTIS | Reimagining Medicine

The Biome is also engaged with local ecosystems and partners solving broader health challenges

HealthHub21 was a new and unique collaboration between **KQ Labs** of the Francis Crick Institute initiative, **LifeArc** and Novartis Biome UK. Co-designed with the NHS, HealthHub21 aims to empower and enable health-tech companies to accelerate innovative solutions which can address key challenges in the healthcare sector. The Novartis Biome is **partner agnostic;** where collaboration can be sought based on customer, system and patient needs.

BIOME by Novartis

lifeArc

KQ Labs

THE FRANCIS CRICK INSTITUTE

Goal: Digitising patient pathways and advancing remote care in a Covid era.

NOVARTIS | Reimagining Medicine

Via Biome, Novartis can support you in this co-creation journey

Problem Identification
Access to the best design thinking and digital innovation practices; working with leading strategic partners

Partner Identification
Support in landscaping and identifying digital technologies and partners to develop the solution

Solution Development
Support in rapidly onboarding and bringing together, including advising on the **business case** to articulate and track the value to patients and the healthcare system

Pressure-Testing
Process to test and validate solutions through our **Evidence Lab** network to ensure smooth end-user adoption

Scaling for Impact
Solution implementation services to accelerate scale and impact

More details on next slides

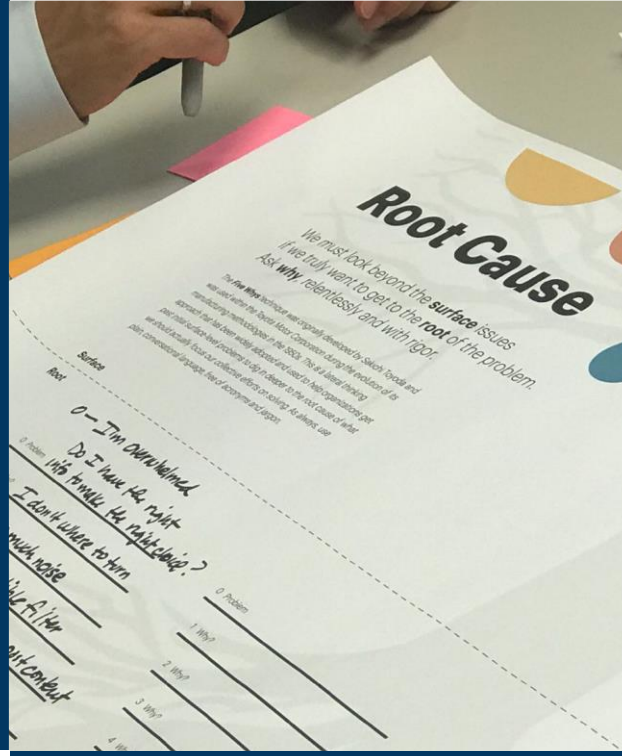
Problem identification – get it right from the start

At the core of a successful digital health solution is solving the right problem – addressing the root cause of a healthcare challenge in a way that mutually benefits patients, providers and the entire ecosystem.

A strong problem identification approach supports teams to construct detailed patient and healthcare professional journeys with personas that bring to life the key challenges that need to be solved.

Design Thinking Methodology

We work with world class partners such as Accenture and Duke Innovations in Healthcare to leverage proven methods to reframe what is important and deep dive to the root causes – providing the structured environment to ideate and co-create with a range of stakeholders



Liquid Expectations

We define the art of the possible by pulling inspiration from outside cases – in healthcare and other industries. We can help infuse the evolving digital context of our patients' lives and how that impacts their hopes and expectations for their healthcare experience

Storytelling and Visualization

Real change requires bringing a broad base of stakeholders onboard – we can help to build a brief, but visual and compelling story to help drive momentum and support with key stakeholders

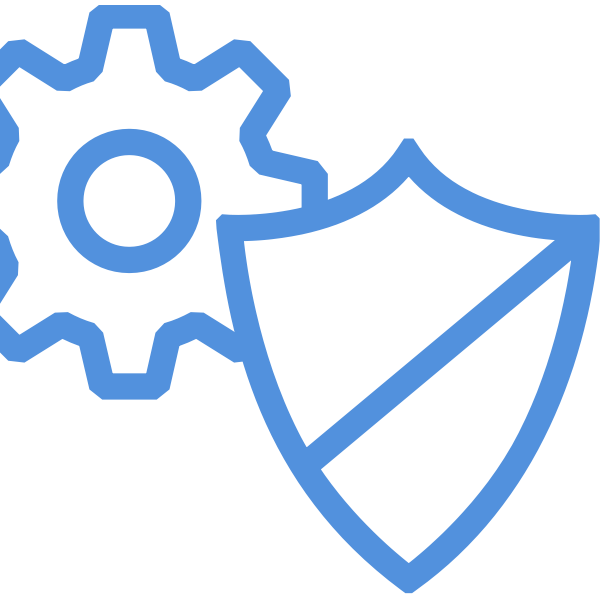
Pressure testing..

… most teams do not have a systematic approach to test and validate solutions, particularly with end users (customers).

Unlike other industries, life sciences has restricted interactions with its end users therefore presenting a significant challenge to beta test digital products to generate evidence to validate and refine the solution.

What if …

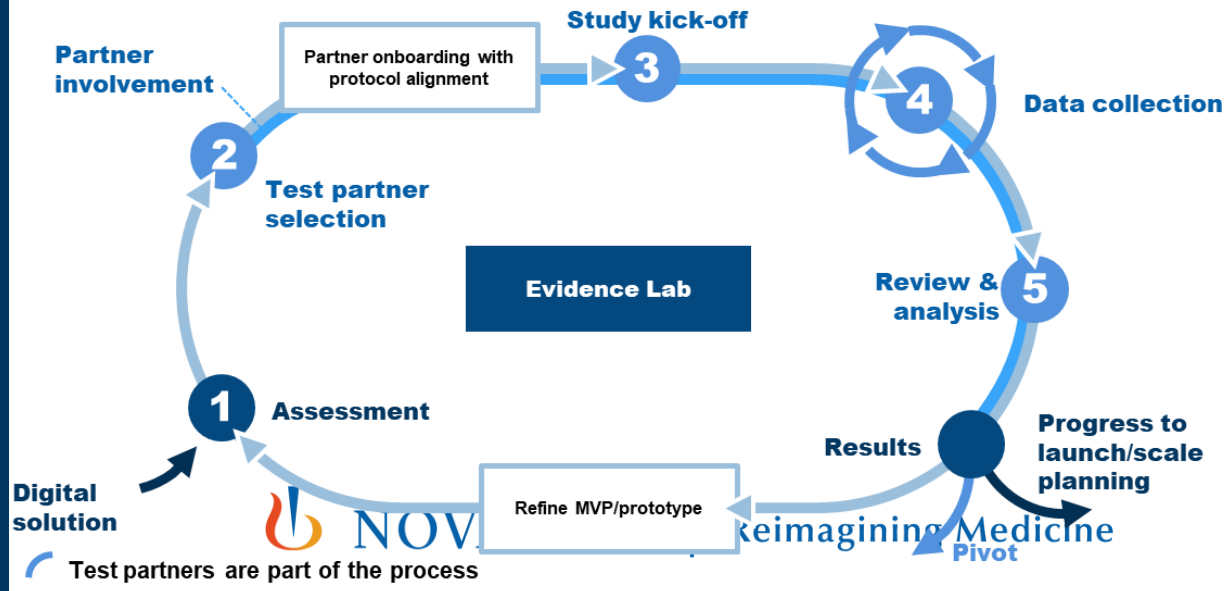
… before scaling, you could quickly de-risk your solution and confirm the expected value by pressure-testing your hypothesis with a standardized process?



Get access to cutting edge innovation and The BIOME enablement network combined with hands on help to roll out solutions (*ABPI code applies*). - Healthcare System Partners

Derive critical data needed to decide whether to scale, refine or pivot from a solution - Novartis

A standardized process to collect critical data and test the value of a digital solution, with speed and agility - Digital Partner



Case study

Improving remote chronic disease management – Rheumatology & Dermatology

penguin

The situation

To enable effective virtual or face to face consultations, patient-centred outcome analytics, as well as clinical data is increasingly essential to monitor disease progression and inform treatment decisions. Current access to limited data sets means Health Care Professionals (HCPs) can not identify those patients that may benefit from a virtual consultation, makes resulting face to face consultation longer in duration, potentially less focussed and less clinically valuable than could otherwise have been possible.

How can we optimise care for patients by capturing patient centred and clinical assessments from different sources into a single digital platform?

Key partners: Cievert, NHS, Novartis business partners

The solution

Penguin – A Cievert solution in partnership with Novartis

The solution captures patient digital health records in one platform to reduce misalignment among healthcare teams. It works with **PROMs** and **PIFUs.**

Secondly, the solution coordinates and prioritises appointments based on patient need, rather than routinely scheduled reviews.

Media coverage:
http://www.pharmatimes.com/news/novartis_uk_signs_digital_partnership_with_cievert_for_chronic_disease_management_1365974

Result: A better management of capacity in hospitals and treatment pathway.

Sources: British Medical Journal, Sept 2019 – DOI:10.1136/bmj.l4923

#letsmakeithappen

Get in touch: Biome.uk@novartis.com
Find out more about the BIOME UK here: https://www.biome.novartis.com/innovation-hubs/novartis-biome-uk

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UP NEXT...

Phillipa-Rose Hodgson

Head of National Digital Product
NHSX

Lauren Harkins

Assistant Director of Programmes
NHSX

Rhod Joyce

Deputy Director of Innovation Development
NHSX

THANKS FOR ATTENDING

The NHS Digital Hospitals Conference 2022

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