



Lancashire Teaching
Hospitals
NHS Foundation Trust

Digital and Health Informatics Strategy 2021-2025



*“Strategy is coherent action backed
by an argument”*

Richard Rumelt

[https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/the-perils-of-bad-strategy#](https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/the-perils-of-bad-strategy#strategy#)

We will know we've achieved this ambition when...

Patients say:

"I can make appointments using my device"
"My care can be monitored from my home"
"I can have video consultations"
"I know my information is safe"
"As a patient I only need to say things once"
"I see no paper notes or forms being used in my care"

Summarised as:

- Control of my care
- Control of my time
- Control of my information



Managers say:

"I understand the performance of my service compared to other Trusts"
"I have access to the information I need to help inform my decision making"
"I trust the analysis I see and can create and answer queries on the data"

Summarised as:

- Trusted data
- Comparative data
- Actionable data



All staff say:

"I can go anywhere in the Group and have a great internet connection"
"The software and kit I have helps me to do my best work"
"I have all the training I need to use the systems I need"
"When I have a software or hardware problem, it gets fixed rapidly"

Summarised as:

- Universal connectivity
- Great kit
- Amazing support and training



Clinicians say:

"I can provide better care because of the information systems we have"
"I understand what care my patients need and can direct my time to those most in need"
"As a clinician I can view records for my patients from any site"
"As a clinician, I have a single-sign-on two-factor authentication to access the systems I need on either site"

Summarised as:

- Any record
- Any location
- Any device

What does the future look like?

Citizen

- Professionals can see all my records and information in one place and I only have to tell my story once
- I can use information to help me manage my condition and access peer support.
- I can integrate my own data (from wearable sensors) into my health record
- I am supported at home by technology enabled care
- I can see all my health and social care appointments
- I can book my appointments on-line
- I can use technology to be alerted to early signs of problems with my condition
- I can easily access information and key contacts when I need them
- I am able to have video/tele consultations with professionals
- As a carer I can view the whole record of the person I support which reduces pressure to try to remember everything
- When I'm visited at home the visits are well organised and I don't have several people at the same time

Professional

- I am able to access all clinical and social care information relating to the person I am supporting
- I can use video conferencing to interact with service users
- I am alerted about information for individuals who are deteriorating
- I can easily see contact details and availability for H&SC colleagues
- I only enter information once, freeing up time to focus on the individual
- I can see all notes electronically on any of my devices from anywhere in Lancashire
- I can work in any Lancashire H&SC location
- I can access and use systems at other organisations if I need to
- As a social worker I can see if an individual has been admitted to hospital and amend their care package
- I can see information relating to an individual's mental health
- As a pharmacist I can see all medications prescribed for the individual
- Care can be co-ordinated across different organisations and professionals

Organisation / ICP / ICS

- We only need one password to login to multiple ICS H&SC systems
- We only need to enter into one system freeing time
- We can proactively manage capacity and demand
- We are digital where appropriate
- We can easily share expertise and skills across the ICS
- We can see system wide information enabling improved risk stratification
- We can use predictive tools and segmentation, so products and services are better targeted
- Misidentification & avoidable errors are reduced
- We can re-design care services without having to think too much about technology. We can access what we need or get to it easily.
- We are compliant with information governance.
- We can measure our outcomes and relate them to our interventions
- Advances in medical practice are facilitated (e.g. machine learning, advanced analytics for clinical decisions and personalised medicine)

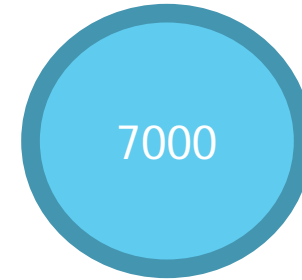
Digital and Health Informatics Opportunities

Digitally Empowered Patients	Digitally Enabled Staff	Hospitals without walls	Smart Buildings	Interoperable and Intelligent Systems
Autonomy over who, when where and how health care services are accessed and health and wellness decisions are made.	Digital tools meet staff needs and optimise system efficiencies supporting a culture of digital by default	Virtual first care models redefine care away from the physical location of a hospital site	Smaller as a result of Virtual first care	Users have access to information they need in real time, with any device
Co-development of personalised care plans within health care services	Training & upskilling programmes give staff confidence in using digital tools and create positive experiences of new digital ways of working.	Hospital reach increases through acute and specialist care available in patients homes and in the community supporting integrated care	Smart sensors maximising environmental comforts	meaningful data driven insights
Reliable, clinically approved patients education resources	Real time access to information needed at any location reduces risk and improves care quality	Remote monitoring, review and management widens access and increases convenience for patients and allows flexible working for staff	Operations and logistics optimised through automation of manual tasks (e.g. automated vehicles transporting, meals and equipment	
Increased awareness of advances in health and wellness opportunities (e.g. clinical trials)	Easy/Quick identification of colleagues within and external to the organisation enables integrated care	Only the most unwell with greatest need are treated as inpatients, reducing hospital size and rates of nosocomial infection	Smart devices & automation capture data for secondary use	
Individual citizen wellness increases population health overall	Intuitive system design and information flow reduces admin, IT burnout and frees time	Capacity and demand can be pro-actively managed. Predictive tools and segmentation enables products and services to be better targeted.		
Technology can alert to early signs of problems.	Virtual first care models facilitate a better work life balance with flexible & remote working			

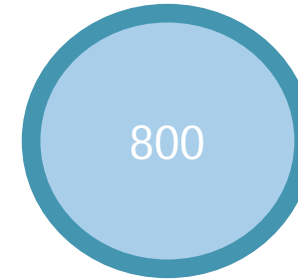
Digital and Health Informatics Principles

Within the world of Digital we continuously look for problems and how to solve them efficiently, in a way that fits with the wider digital architecture. A stand alone system may be the cheapest and quickest to implement, but is it worth it if we can't support it, if the data is locked in and can't be re-used, if we can't extend it to solve other problems or if it causes data privacy and security concerns? Considering the following principles is useful, to ensure that tools introduced provide long term value, often beyond their original intention. These principles recognise both the Wachter report and the NHSX technology vision:

- Coherent design, agile not monolithic
- Interoperable (think Lego bricks)
- Internet/public cloud first/standards based
- Supported and Maintained
- Resilient/high performance/business continuity/disaster recovery
- Secure
- Data Driven
- Meeting the Quadruple aims
 - Best Health and Wellbeing
 - Best Quality of Care
 - Best use of resources
 - Joy, Pride and Resilience in Work for Staff



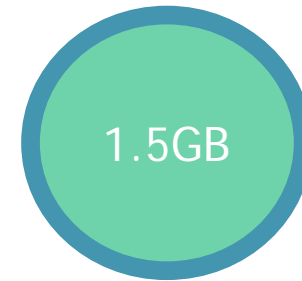
User devices,
managed, supported
and patched every
month



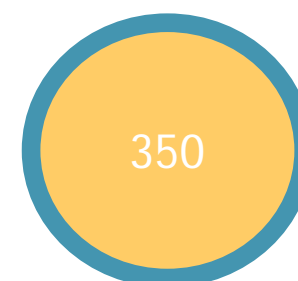
WiFi Access Points



Applications/
systems



Of Data Checked via
security every
second



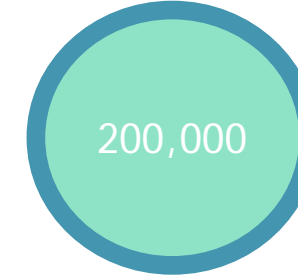
Service desk calls
every day



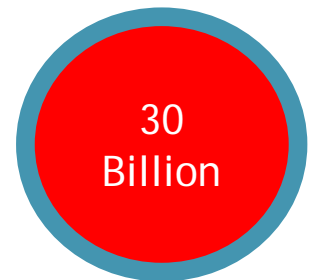
Record Issues
resolved via data
quality per month



Consultant Episodes
Coded per Month



Discharge
Summaries sent to
GP's every year

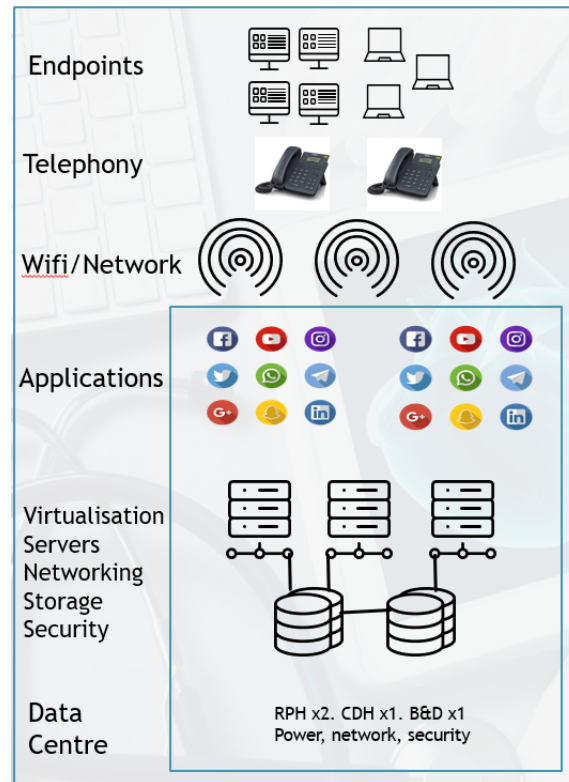


Rows of data across
1600 databases

Robust supported infrastructure is critical to user experience. Without this clinical systems are built on sand. This includes everything from endpoint devices (mobile phone, laptop, desktop, tablet), Wifi, Telephony (desk phones), switches, routers, VPN, servers running clinical applications and associated databases, processing power, security and storage through to network and datacentre. If any of these components are compromised user experience can be poor. It can manifest itself in an inability to access or slow applications, infected systems and lost or corrupted data.

Our strategy ensures we tackle our largest risks while aiming for a long term vision where applications and computer desktops are managed on virtual machines, ensuring that appropriate endpoints have a new trouble free build each day, that clinicians get high performance tap on tap off with a desktop that follows them with minimal passwords required and where appropriate home or remote working is enabled.

Where systems are secure, support business continuity and are recoverable in the event of a disaster and where innovation is supported and encouraged in protected environments.



Risk	Tactical	Strategic
Age, Performance, Support, Maintenance	Physical machines and partnership	Desktop Virtualisation. Follow me desktop, tap on tap off
Hybrid analogue/IP Lack of capacity	Sweat the asset	Internet based/softphones
End of life access points. Limited cabling. Security and capability risks.	Clinical Areas Physical cabling and modern Wifi (particularly at Chorley)	Organisational wide coverage. Triangulation, people, place, product.
Out of support applications. Loss of clinical capability/data or security risk. Limited system management	Supported applications	Effective organisational wide application support. Automated contract management. Agreed levels of support.
End of life. Loss of multiple clinical applications or data for long periods. Security Risk.		Modern hybrid extensible infrastructure Ability to move applications between local infrastructure and cloud. Software Defined Network.
Flooding, fire, power	Partnership with Blackburn with Darwen	Cloud/On-Prem hybrid

Digital and Health Informatics Secure

Information security Governance Body <ul style="list-style-type: none"> Terms of Reference Ensuring relevance of content Member engagement 	Strategy & Business Alignment <ul style="list-style-type: none"> Maturity assessments & Benchmarking Security strategy definition & articulation Security programme: <ul style="list-style-type: none"> Tactical quick wins Long term roadmap 	Stakeholder Relationships <ul style="list-style-type: none"> Alignment with corporate strategy Updates: leadership & staff Conflict management Innovation, value creation Expectations management Coordination with others: CSO, CRO, DPO, General Counsel 	On-Boarding & termination <ul style="list-style-type: none"> Staff Business Partners / Clients Suppliers 	Employee Behaviour <ul style="list-style-type: none"> Employee awareness / risk culture: <ul style="list-style-type: none"> Awareness & training Phishing simulation tests Investigations & forensics 	SOC Design - Outsourced / MSSP / Co-Sourced <ul style="list-style-type: none"> Knowledge transfer Resource commitments Metrics & KPIs Supplier management 	Threat Management <ul style="list-style-type: none"> Alerting from security tools Log analysis, correlation, SIEM Netflow analysis Open Source & commercial threat feeds Threat hunting: automated & manual DNS, Social Media & Dark Web 	Incident Management <ul style="list-style-type: none"> Participation of all stakeholders: <ul style="list-style-type: none"> Exec Board IT, HR, Legal, Comms / Marketing / Media Relations Clients / Customers, Suppliers Incident process Runbooks for critical incident types: ransomware & customer-facing breaches Incident testing Crisis plan: cyber-attack scenario Security Orchestration/SOAR Managed Detection & Response / MDR Integration with related plans <ul style="list-style-type: none"> Crisis plan Personal Data Breach plan Business Continuity Plan Forensics & 24x7 support 			
Organisation Design <ul style="list-style-type: none"> Operating model Roles & Responsibilities Org design Team cohesion Org change management Talent sourcing Talent development: <ul style="list-style-type: none"> Cyber apprenticeships Team development Succession planning 	Metrics & Reporting <ul style="list-style-type: none"> Operational & Exec metrics Key Risk Indicators Validation of metric effectiveness 	Finance <ul style="list-style-type: none"> Business case & ROI Alignment with wider portfolio Budgeting & tracking 	Securing New Business Initiatives <ul style="list-style-type: none"> Identification of new initiatives Engagement with new initiatives 	Mergers & Acquisitions <ul style="list-style-type: none"> Risk management: before, during & after acquisition Integration of acquired targets <ul style="list-style-type: none"> Identity integration Technology integration 	SOC Design - In-House <ul style="list-style-type: none"> Recruitment Development, retention & promotion Knowledge retention Team & shift management Continuous training 	SOC Operations <ul style="list-style-type: none"> SOC Procedures & Runbooks Metrics & KPI reporting SOC / NOC / Svc Desk integration Partnerships with Info Sharing & Analysis Centres DR exercises 	Security Platform Operations <ul style="list-style-type: none"> Platform lock-down, operations & monitoring Technology upgrades 			
Strategy, Leadership & Governance			Securing The Business				Security Operations			
Risk & Controls			<p>The diagram features a central blue hexagon labeled 'CISO'. It is surrounded by six green hexagons: 'Building Relationships', 'Leading Change', 'Managing Finance', 'Managing The Supply Chain', 'Core Behaviours', and 'Leading People'. Each hexagon is associated with specific strategic goals and actions.</p>							
Risk management framework <ul style="list-style-type: none"> Control frameworks: <ul style="list-style-type: none"> COSO/SOX COBIT ISO27000 NIST, FAIR, CIS Control assurance <ul style="list-style-type: none"> Management risk & control reviews & reporting Internal & External Audit 	Risk assessment, treatment & acceptance <ul style="list-style-type: none"> Risk assessment plan Risk ownership & governance Risk articulation & management review Risk acceptance processes 	Continuous Improvement: <ul style="list-style-type: none"> Security health checks: <ul style="list-style-type: none"> Testing Tech risk landscape Remediation roadmaps Incident readiness assessments IT Controls assessments Penetration tests Threat detection capability assessments Prioritised remediation planning 	Stakeholder engagement <ul style="list-style-type: none"> Stakeholder communications Conflict management Simplify the complex 	Commercial & strategic focus <ul style="list-style-type: none"> Collaboration & influencing Driving innovation Driving change 	Building Relationships	Leading Change	Managing Finance	Managing The Supply Chain <ul style="list-style-type: none"> Commercial negotiations Supplier management 	Leading People <ul style="list-style-type: none"> Inspiring leadership Org design Team management Talent development Driving behavioural change Engaging comms 	Core Behaviours <ul style="list-style-type: none"> Resilience Flexibility & pragmatism Focus on results Initiative Difficult decision making Cultural awareness
Cyber Risk Insurance <ul style="list-style-type: none"> Broker & underwriter engagement Covered scenarios Limits & Self-insured retentions Pre-Breach risk & control maturity assessments Post Breach engagement 	Legal & Compliance		Securing The Supply Chain	Securing The Technology	Network security <ul style="list-style-type: none"> DDOS protection Firewalls, IDS, IPS Secure remote access Proxy / Content Filtering Secure Wireless Networks Network function virtualisation & SD WAN 	Cloud security <ul style="list-style-type: none"> SaaS Strategy: <ul style="list-style-type: none"> Governance & compliance enforcement Cloud specific DR & BCP Supplier risks SLAs & performance mgt Data ownership, liability, incidents, privacy compliance Security assurance Mgt of Shadow IT Cloud security controls: <ul style="list-style-type: none"> Cloud security architecture Cloud identity / CASB Virtual Machine security Virtualised security appliances / Cloud-to-Cloud integration Monitoring/log integration Access to corp data from non-corp devices 	Data security <ul style="list-style-type: none"> Data & process mapping Data analytics security Encryption & masking: <ul style="list-style-type: none"> PKI Encryption at rest Encryption in transit Business partner access: <ul style="list-style-type: none"> Access approval Access reviews Access removal Identity federation & access automation Data Loss Prevention: <ul style="list-style-type: none"> DLP & Data classification policy Data loss channels DLP enforcement technologies 			
Compliance Assurance <ul style="list-style-type: none"> External assurance: ISAE3402 / SSAE18 / SOC1 / SOC2 Internal assurance: <ul style="list-style-type: none"> Internal Management Review Internal Audit 	E- Discovery & Legal Hold <ul style="list-style-type: none"> Preparation of data repositories for e-discovery Enforcement of Legal Hold 	Internal Compliance Requirements <ul style="list-style-type: none"> Security policies & standards Project NFRs Publication & awareness Supply chain compliance 	Pre-Contract Due Diligence <ul style="list-style-type: none"> Self-assessment Audits Independent assurance 	Infrastructure & Server OS security <ul style="list-style-type: none"> Service Continuity & Disaster Recovery Hardening Patching Anti-Malware & APT protection Backups, replication, multiple sites HIPS Security monitoring 	BYOD Security <ul style="list-style-type: none"> Policy considerations: <ul style="list-style-type: none"> Commercial opportunities Personal data privacy HR, financial & tax Data security Policy enforcement 	Email security <ul style="list-style-type: none"> Anti-Spam control Phishing & impersonation protections Email encryption 	IOT / Operational Technology security <ul style="list-style-type: none"> IOT Risks: <ul style="list-style-type: none"> Connected office devices Connected medical devices At home Planes, trains & automobiles Industrial control systems, SCADA, PLCs, HMIs IOT Security: <ul style="list-style-type: none"> IOT Frameworks Vulnerability mgt Comms protocols Device authentication & integrity Network segregation Device protection Over The Air updates 			
Externally-imposed Compliance Requirements <ul style="list-style-type: none"> NIST / FISMA / HIPAA / HITECH China CSL PCI Sarbanes Oxley Data Protection Regulations Government Certifications: <ul style="list-style-type: none"> Privacy Shield Cyber Essentials + 	Data Retention & Destruction <ul style="list-style-type: none"> Data retention policies Retention schedules Enforcement within business functions 	Contracts <ul style="list-style-type: none"> New contracts Contract renewals 	Identity & access <ul style="list-style-type: none"> Credential & password management: <ul style="list-style-type: none"> Password strength / complexity Password self-service resets Multi-Factor Authentication Starters, movers, leavers: <ul style="list-style-type: none"> Account creation & approvals Account reviews Account removal HR process integration Single sign-On IAM SaaS solutions IAM Data Analytics Identity repository & federation Mobile app access control IOT device identities 	Application security <ul style="list-style-type: none"> Data access governance: <ul style="list-style-type: none"> Information ownership & custodianship Application access controls Role-Based Access Controls Security monitoring File integrity monitoring 	Innovation - Exploiting Emerging Tech <ul style="list-style-type: none"> AI, ML & Robotics Crypto currencies Blockchain 5G Drones VR & AR Wearables Autonomous vehicles 	Endpoint Security <ul style="list-style-type: none"> Hardening Patching / software updates Anti-Malware HIPS / EDR Security monitoring / UBA Encryption PIN / password enforcement Apps inventory & deployment control Containerisation / data segregation Lost/stolen devices Cloud storage of data Device tracking 	Physical security <ul style="list-style-type: none"> Landlord services Physical access control & monitoring Intrusion detection & response Theft prevention Environmental controls/ Power & HVAC Fire detection & suppression Redundancy BCP / Work Area Recovery sites 			
Securing New Initiatives		Securing The Supply Chain	Reviews & Assurance <ul style="list-style-type: none"> Self-assessment Audits: <ul style="list-style-type: none"> Right to Audit & remediation Independent assurance 	Integrating Security & Risk in SDLC / PMO <ul style="list-style-type: none"> Waterfall, Agile & DevOps 	Security Testing & Assurance <ul style="list-style-type: none"> Code reviews App vulnerability testing Penetration tests Continuous assurance Certification & accreditation requirements 	Design <ul style="list-style-type: none"> Secure coding training & review App development standards Security requirements & NFRs 				

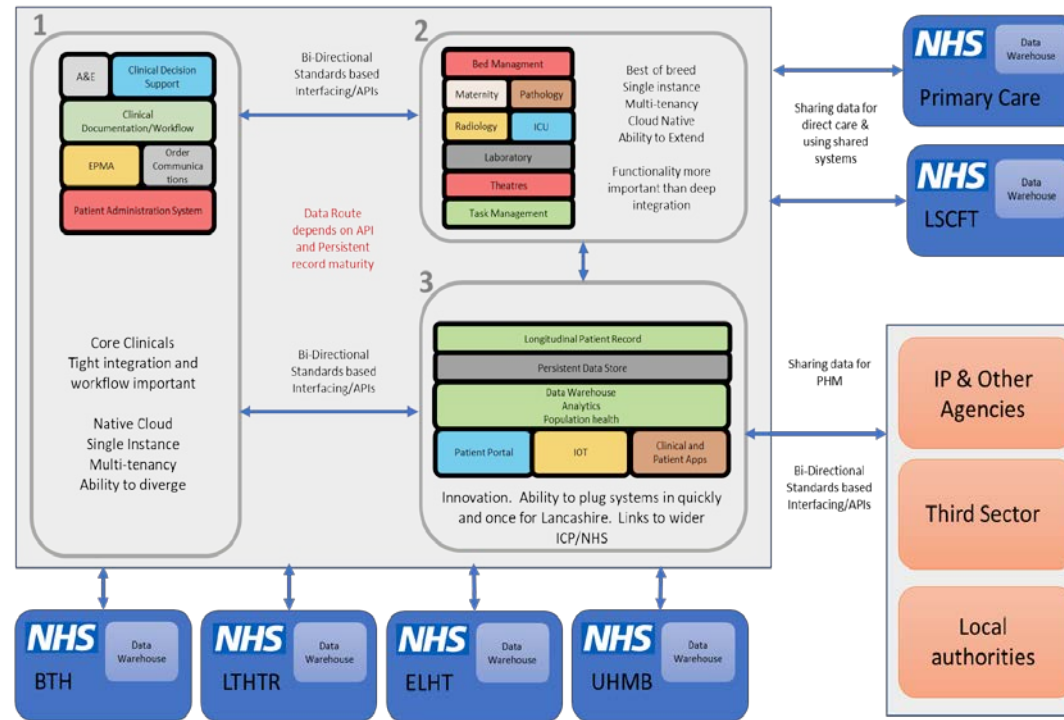
Blueprint for Lancashire wide clinical and operational systems convergence

Together with Lancashire & South Cumbria Integrated Care Systems we have developed a technical architecture that will enable system consolidation across the ICS, including the possibility of an ICS wide EPR. Eventually we will be able to introduce systems once that work for all organisations. Innovations created in any organisation will benefit others and we can enhance and build upon each others capabilities rather than duplicate. As each of our clinical systems depreciates, we will look for opportunities to consolidate across the ICS building on this central architecture

Similar look and feel and similar clinical pathways will support service reconfiguration at an ICS level.

This architecture is extending LPRES and LTHTR is leading on an ICS wide Maternity system procurement, the first major ICS wide departmental system. Ophthalmology will follow shortly afterwards.

This is a multi-year strategy and allows the option of maintaining local or ICS wide architecture where necessary



LTHTR has a mature Electronic patient record with the QuadraMed (QMED) platform, currently at a [HIMSS level 5](#), which will be one of the systems considered for an ICS wide EPR. This system has ensured that LTHTR is within the top 10 digitally mature organisations within the NHS. Any analysis, procurement and implementation of an ICS wide EPR will take several years and safe migration off Quadramed is likely to be a 2 - 3 year process, hence the Quadramed contract has been refreshed in December 2020 for 5 years.

QMED's hardware is end of life and new hardware is critical. The separate Chorley and Preston QMED databases cause patient flow issues and need to be merged into a single instance.

There are also clinical demands and options that need to be considered for:

- Bed management
- Pharmacy Integration
- Clinical documentation
- Critical Care/Anaesthetic recovery (IMDSoft)
- Emergency Department

While bearing in mind the potential start of an integration with and migration to a new EPR could happen in 2 -3 years.

1 Review Patient Data
• Review panel always present

2 Create or Locate Form
• Optimized and tailored to your organization
• Start new or pick up where you left off

3 Document Your Way
• Pull information from prior documentation
• Annotate interactive body diagrams

NOVUS CLINDOC Functionality

Digital and Health Informatics

LTHTR Clinical Systems

Digital is no longer the preserve of a single team or separate part of the organisation. Today it is how we do business and touches on most areas of the hospital in one form or another. Every part of our business needs to understand why and how they are using technology and work with suppliers to understand future possibilities to improve capability or efficiency within their specialist domains. Digital Health and Informatics also needs to understand the divisions problems, so they can bring solutions the divisions may not have known exist. DHI will partner with you to ensure you have considered all options and that any solutions fit with both the corporate architecture, our technology principles and the ICS digital roadmap. Depending on resource, we have expert teams able to support with business analysis, requirements, procurement, development, integration and system management. The digital roadmap must be clinically/operationally led and will need to be in lockstep with the emerging clinical strategy.

A programme of system upgrades and new functionality with increasing interoperability, usability, functionality and mobility. Each aims to ease the process of information capture, improve quality of care and automate tasks wherever possible.

- Theatre system
- Renal System
- Nursing Documentation
- Organisational wide EPMA
- Digital Health
- Modernised digital dictation and voice recognition
- Electronic Palliative care.
- Bed management/patient flow.
- Outpatient Digitisation
- ICS wide Maternity system
- Ophthalmology system
- Bleep replacement/task management
- Laboratory Information Management system
- Robotic Process Automation
- Corporate Forms
- NHS 111 first

Projects - Implementation - 21/22		March	June	Sept
	Alcidion	[Bar from March to June]		
	Maternity Badgernet EPR	[Bar from March to Sept]		
Qmed	Outpatient Documentation (inc AHP)	[Bar from March to Sept]		
Qmed	Bed management	[Bar from March to June]		
Qmed	Safety Surveillance dashboard	[Bar from March to June]		
	RPA development	[Bar from March to Sept]		
	Mobile Check-in Outpatients	[Bar from June to Sept]		
	Womens Health deep dive (documentation, data, process)	[Bar from March to June]		
Qmed	Pre-op project	[Bar from March to Sept]		
Qmed	News2 Graphs	[Bar from March to June]		
Qmed	Benefits analysis	[Bar from March to Sept]		
QMED	Scanning	[Bar from June to Sept]		
	Opera Theatre system	[Bar from March to Sept]		
	Renal Management System	[Bar from March to Sept]		
Qmed	EPMA CDH	[Bar from June to Sept]		
Qmed	EPMA CRCU Covid red areas	[Bar from March to June]		
Qmed	EPMA ED	[Bar from March to June]		

Digital Transformation Projects aligned with Continuous Improvement

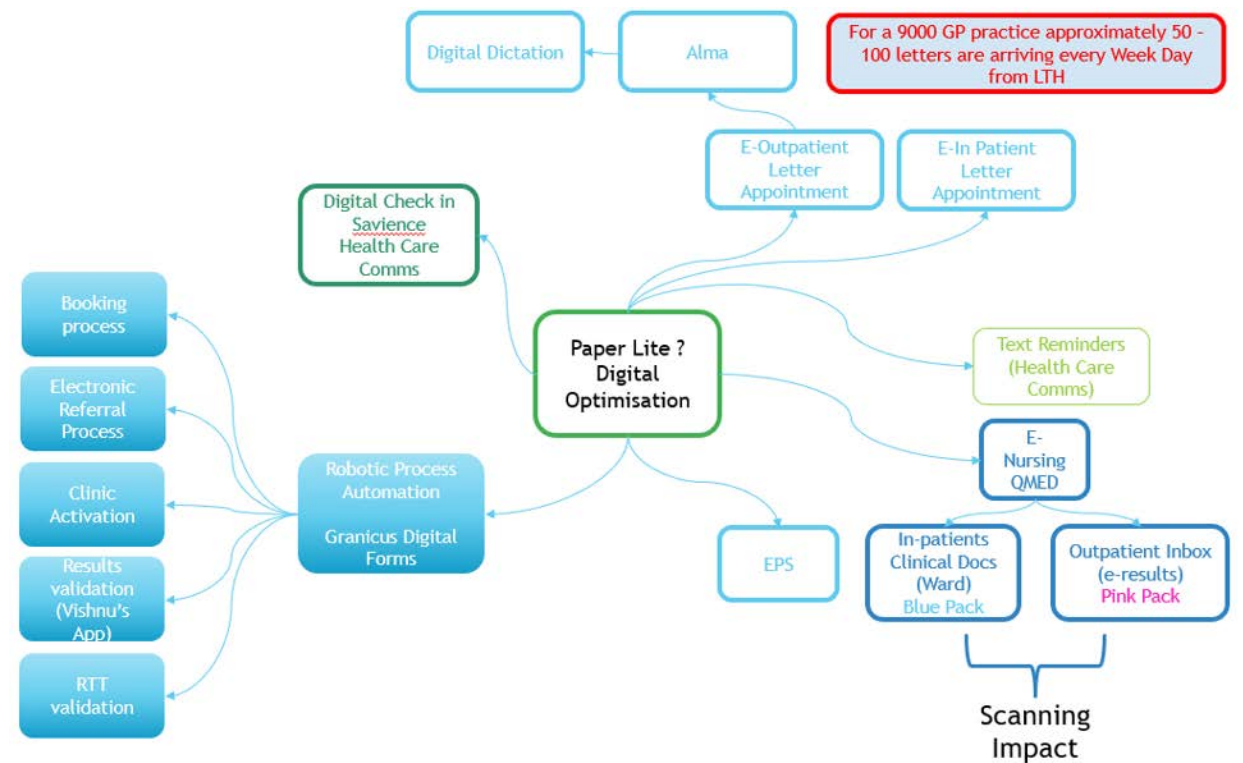
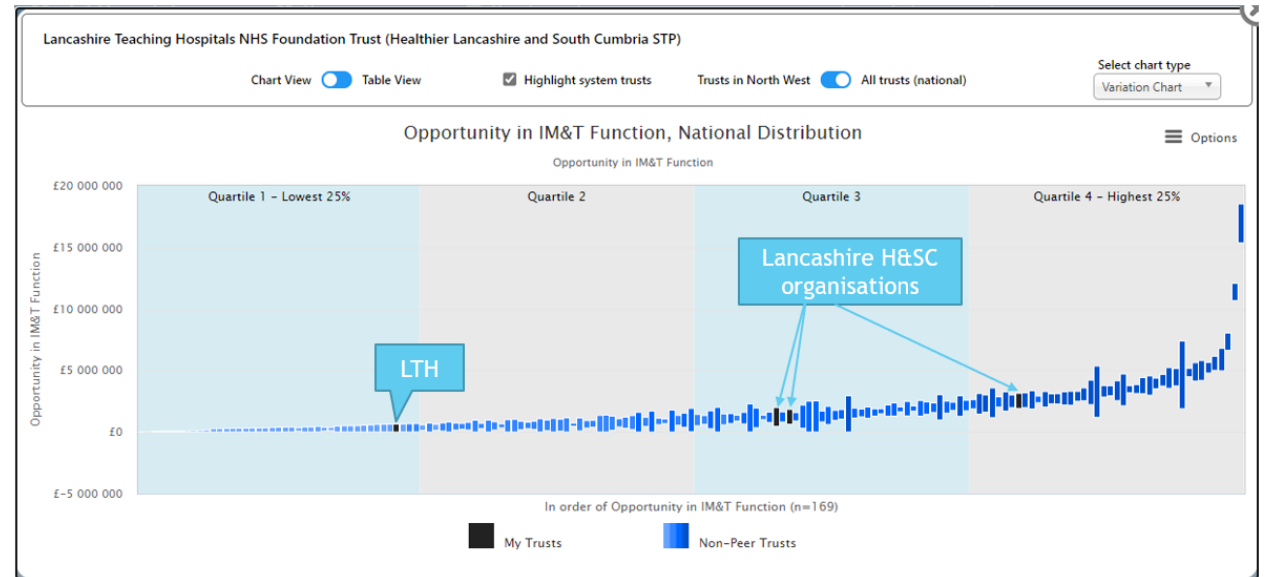
- ▶ Outpatients.
 - ▶ Clinical Documentation Digitisation.
 - ▶ Attend Anywhere
 - ▶ Outpatient Dashboard
- ▶ Urgent Care
 - ▶ Shrewd
 - ▶ Digital Health
- ▶ Elective & Diagnostics
 - ▶ EPMA
 - ▶ Diagnostics inbox
- ▶ Workforce
 - ▶ RPA
 - ▶ Info Path Replacement
 - ▶ Agile/Flexible working policies
 - ▶ Safer Working
- ▶ Voice Recognition/Digital Dictation/Remote transcribing
- ▶ Frailty
- ▶ End of Life
- ▶ Therapies
- ▶ Respiratory
- ▶ Clinical documentation review
 - ▶ Clerking Documents/Ward Round/Handover/SoundBar
- ▶ Big Rooms
 - ▶ Colorectal
 - ▶ Deteriorating Patients
 - ▶ VTE
 - ▶ Women's & Children's review
 - ▶ ...

Digital Optimisation Paper Light

IM&T within Lancashire Teaching Hospital is efficient, within the lowest Quartile for Opportunities based on the Model Hospital and compares favourably with it peers in Lancashire. Unfortunately this reduces the number of opportunities where the digital team itself is able to reduce costs. However, there are many opportunities for digital tools to transform the organisation.

In spite of LTH's digital maturity large amounts of paper is still used within the trust with many paper letter sent to patients and GPs.

Many processes are manual and many repetitive tasks could be replaced by robotic process automation removing admin burden and freeing staff for more valuable activities.



Digital and Health Informatics Information/Intelligence

	Source	Metric	Target	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Trend	
95% Patients < Within 4 Hrs. A&E, LTHTR	NHSE	% < 4 Hours	95%	83.8%	84.5%	84.7%	82.7%	78.7%	79.8%	76.4%	80.1%	80.1%	83.0%	88.7%	91.1%	88.9%		
		% Trajectory		87.0%	88.0%	89.0%	90.0%	90.0%	88.0%	85.0%	86.0%	-	-	-	-	-	-	
		No. Attends		13,305	14,376	13,538	13,532	13,849	13,776	14,160	14,094	12,985	10,525	8,865	9,638	10,789		
NHS111 - Call Outcome A&E CSR & GP CCGs	NWAS	% of Calls	-	9.9%	11.0%	9.9%	9.9%	9.9%	9.1%	8.4%	9.2%	9.6%	5.6%	8.5%	11.0%	12.9%		
		No.		655	679	642	582	594	593	660	606	569	301	506	780	876		
NHS 999 - See & Convey (CSR & GP CCG Patients)	NWAS	% of Calls	<70%	57.7%	56.7%	59.7%	58.8%	56.0%	55.6%	54.9%	59.9%	57.5%	42.9%	n/a	n/a	n/a		
		No.		2951	3129	3056	2931	3185	3088	3360	3089	2794	2579	n/a	n/a	n/a	n/a	
Ambulance Handovers > 30 & 60 Mins	NHSE	No. > 30 Mins	0	20	23	8	18	52	77	83	52	48	32	236	121	80		
		No. > 60 Mins	0	2	3	1	0	14	17	33	15	8	16	41	1	2		
12 Hr Trolley Breaches	LTHTR	No.	0	22	37	33	9	23	37	68	120	172	21	0	1	1		
MH 12 Hr Breaches	LCFT	No.	0	2	7	7	3	5	5	3	4	4	5	2	0	3		
% Type 1 A&E Activity < 4 Hours (RPH - ED Activity)	NHSE	% < 4 Hours	95%	56.2%	58.3%	58.2%	54.7%	46.7%	48.3%	56.6%	54.6%	56.2%	54.4%	75.8%	78.0%	71.0%		
		Attends		4368	4566	4449	4579	4903	4703	4871	4538	4088	3653	3084	3764	4000		
% A&E Activity < 4 Hours (ED Activity - RPH & CDH)	LTHTR	% < 4 Hours	95%	68.8%	70.0%	69.8%	67.0%	60.2%	61.7%	55.2%	59.0%	58.3%	70.6%	78.8%	81.6%	71.0%		
		Attends		6601	6896	6535	6765	7134	6895	7049	6652	6008	5177	3518	4484	4791		
% of Patients < 4 Hours A&E Minors HRGs UB07,08, 09,11	SUS	% < 4 Hours	95%	76.1%	76.2%	74.7%	74.1%	66.7%	66.9%	63.3%	66.2%	65.4%	72.5%	80.4%	84.1%	n/a		
		Attends		4942	5110	4882	4978	5138	5079	5100	4887	4506	3748	2285	3085	n/a		
% of Patients < 4 Hours UCC Minors (RPH & CDH)	LTHTR / GTD	% < 4 Hours	98%	98.9%	98.7%	98.6%	98.4%	98.5%	98.1%	97.5%	98.9%	98.8%	99.6%	99.0%	99.5%	99.3%		
		Attends		6688	7426	7003	6768	6717	6884	7111	6524	6315	4692	2872	4475	5366		
A&E Attendance to Admission Conversion Rate	NHSE	%	-	20.2%	19.2%	19.9%	20.1%	20.5%	20.3%	20.4%	18.1%	18.1%	20.6%	25.8%	22.0%	18.4%		
Total Emergency Admissions to LTHTR	NHSE	All Emg Adms	-	4000	4170	3829	3964	4209	4237	4231	3903	3666	3227	2572	3175	2994		
Acute Bed Utilisation (Excl. Escalation Beds)	LTHTR	% Available	85%	98.3%	98.7%	97.6%	98.3%	99.3%	99.1%	99.6%	99.6%	99.0%	90.1%	57.5%	75.7%	84.8%		
		No.		830	833	832	832	806	806	806	821	818	799	748	647	674		
Delayed Transfers of Care	LTHTR	% Delayed Days	3.5%	4.9%	6.9%	6.4%	6.2%	6.2%	7.2%	7.2%	7.2%	7.6%	4.5%	2.3%	2.7%	2.4%		
		No.		1633	1460	1526	1779	1766	1569	1569	1569	1569	1569	1569	1569	1569	1569	1569
% Stranded Patients (>7 Days) LTHTR Snapshot	LTHTR	% Daily Sitrep	-	49.1%	47.6%	47.9%	48.5%	47.4%	46.1%	54.8%	54.8%	54.8%	49.0%	42.3%	63.2%	49.7%		
		No.		406	393	377	381	384	370	447	447	447	447	218	183	296	263	
% Super Stranded Patients (21+ Days) LTHTR Snapshot	LTHTR	% Daily Sitrep	139	19.1%	14.4%	16.8%	16.6%	15.1%	19.0%	20.0%	22.1%	22.1%	22.1%	10.9%	17.7%	17.4%		
		No.		158	119	132	130	122	152	163	177	177	177	177	47	83	92	
Combined Community Bed Utilisation	LCFT, LCC	% Available	95%	81.7%	83.3%	67.4%	80.9%	70.0%	87.4%	89.2%	89.8%	89.8%	89.8%	89.8%	89.8%	89.8%		
		No.		2460	2542	2542	2460	1798	1729	1798	1798	1682	1682	1682	1682	1682	1682	

LTHTR has been digital for many years and has a wealth of electronic data.

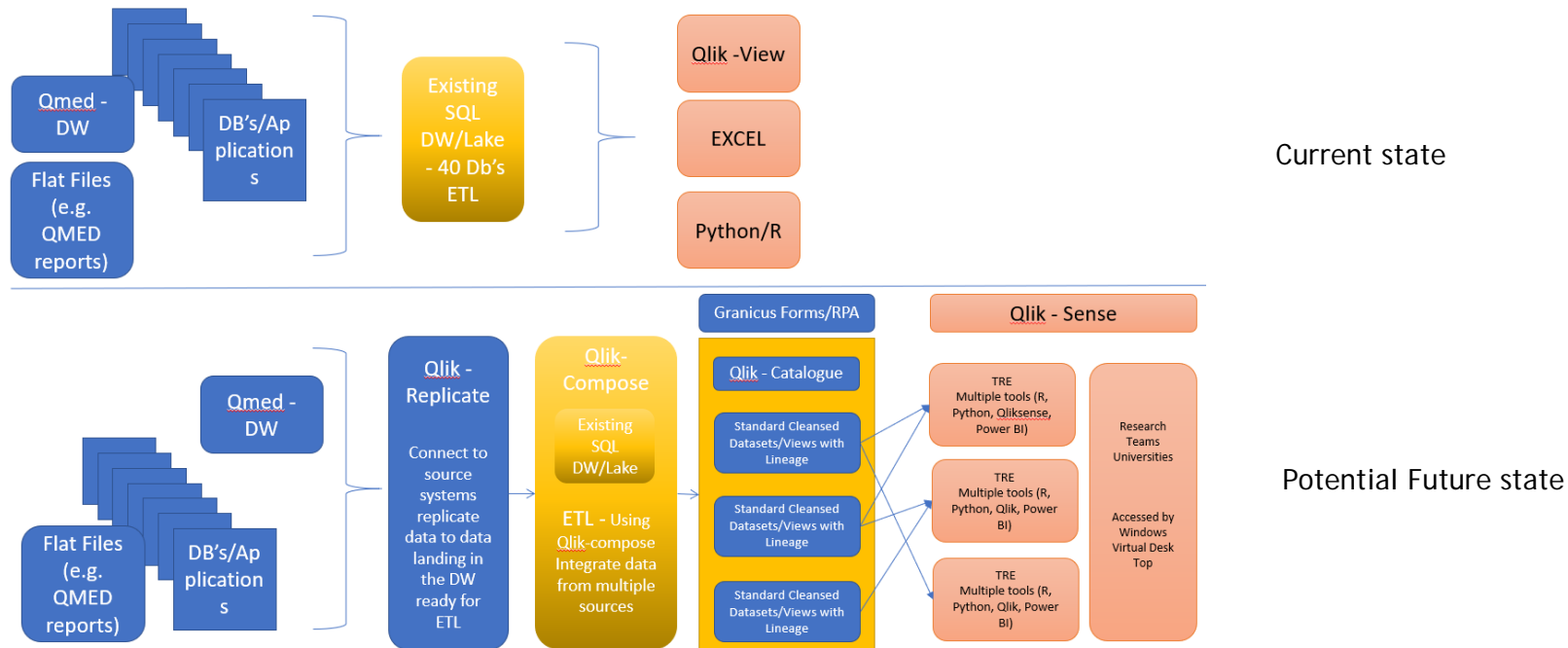
Timely accurate information capture, Data Quality Checks and consistent and reliable coding are vital tools to ensure we can make the most of our information to benefit care, and improve our efficiency

Continuously Improving accessibility of data to the wider organisation, the ability to rapidly spot trends and issues, to understand our clinical processes, to drill down to root causes and to ensure decisions are driven and supported by data and intelligence.

We will continue to move our focus from descriptive to predictive to prescriptive as we aim to deliver intelligence as well as data and work collaboratively with the ICS to deliver system wide performance, quality, population health and inequalities information.

Metric Name	Variation	Assurance	Target	Latest Value	Lower Process Limit	Upper Process Limit	Mean Avg.
111 Total Calls Triaged		n/a	-	6800	4904	8012	6458
2 Call Outcome, A&E Recommendation		n/a	-	12.9%	7.2%	11.5%	9.4%
3 NHS 999 See and Convey			<70%	42.9%	53.3%	68.3%	60.8%
4 Ambulance Handovers (Severe 60mins+)			0	2	-26	129	51
5 Time to Initial Assessment (Avg. Wait Mins)			<15	8	10	20	15
6 12 Hour Trolley Breaches			0	1	-28	75	23
7 Delayed Transfers of Care (DToc)			3.5%	2.4%	3.9%	9.4%	6.6%
8 Acute Bed Utilisation			85%	84.8%	88.5%	104.4%	96.5%
9 Community Bed Utilisation			85%	53.9%	70.7%	100.6%	85.7%
10 4 Hour Target			95%	88.9%	77.6%	88.7%	83.2%

Business Intelligence resource is currently tied up continuously generating Board, sub-board, divisional reports and scorecards or with statutory reporting. There is little time to devote to interesting questions associated with our data or to build relationships with data science and research communities. We need to invest in tools that allow data re-use, automation of narrative capture and modernisation of our business intelligence software to reduce the pressure on our limited resource, to improve our applications look and feel, increase our ability to build enterprise applications, to adopt mobile technology and to increase the ability for consumers to self serve. We also need to be able to surface data to research and non-Trust organisations in a way that means this data remains secure and meets IG requirements.

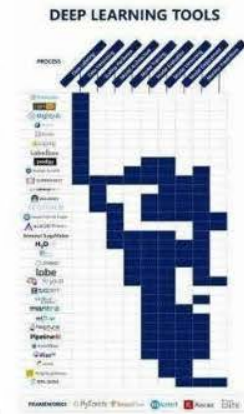
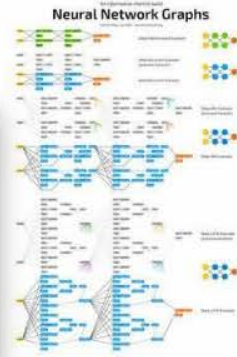


What is data science?

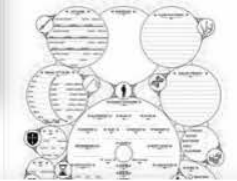
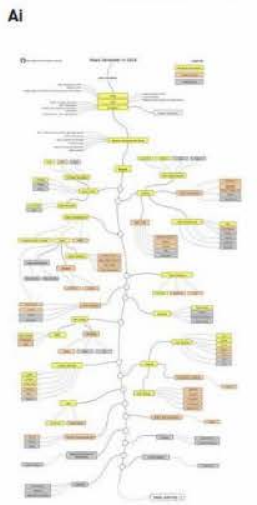
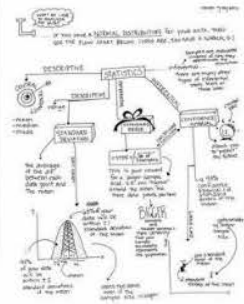
Data science is the process of using algorithms, methods, and systems to extract actionable insights from structured and unstructured data.

It uses analytics and machine learning to help users make predictions, enhance optimization, and improve operations and decision making.

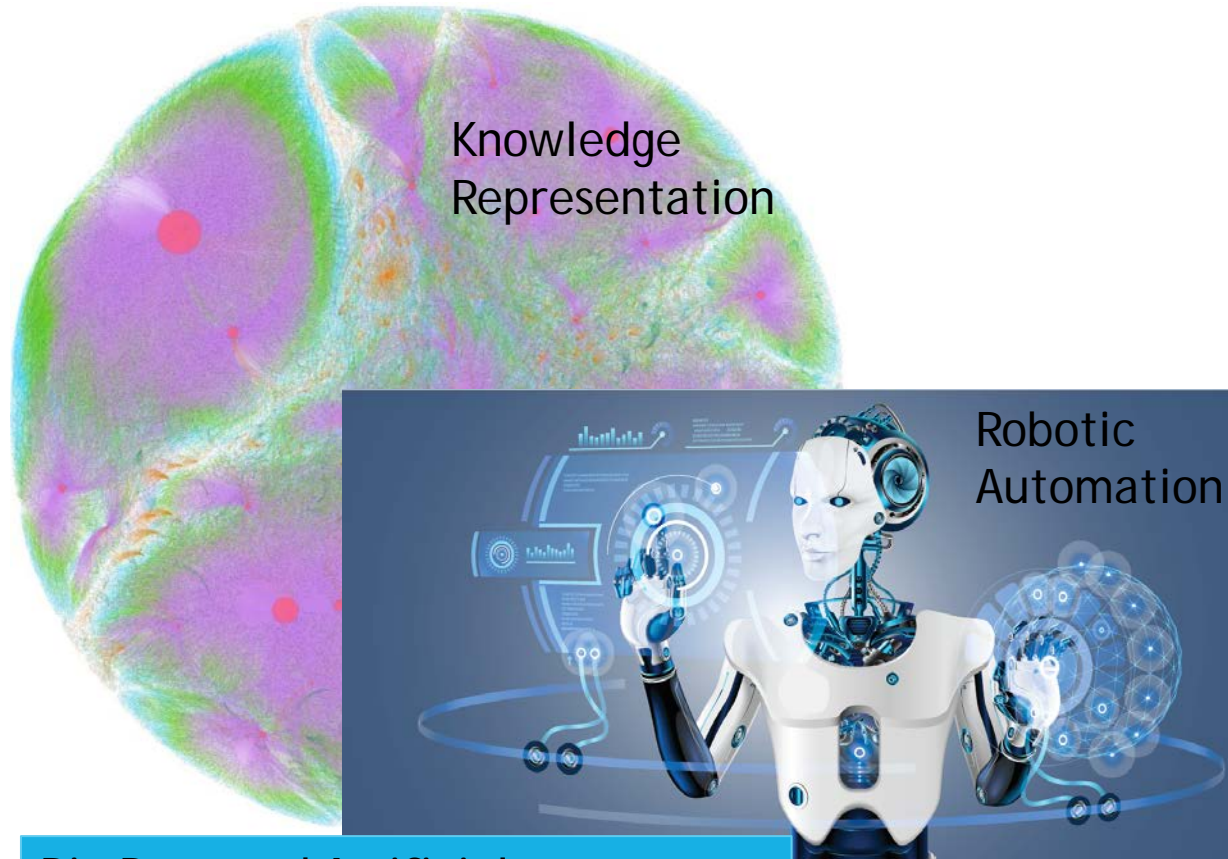
<https://www.ibm.com/analytics/data-science>



Model	Classification	Regression	Clustering
Linear	Scatter plot with a straight line fit	Scatter plot with a straight line fit	Scatter plot with a straight line fit
Logistic	Scatter plot with a curved line fit	Scatter plot with a curved line fit	Scatter plot with a curved line fit
Decision Tree	Scatter plot with a piecewise linear fit	Scatter plot with a piecewise linear fit	Scatter plot with a piecewise linear fit
Support Vector	Scatter plot with a curved line fit	Scatter plot with a curved line fit	Scatter plot with a curved line fit



Progress is accelerated by bringing disparate teams together. Our Data Science forum brings Clinicians, Developers, System configuration experts, Data Scientists, Business Intelligence and Information Governance together to understand and share data science related problems. We aim to unlock data, enable clinicians to understand their impact, share capabilities and increase the skills of people across the organisation in a safe environment and cover topics from Population health to precision medicine. As we show benefits we hope to re-invest in the acceleration of this capability.



Big Data and Artificial Intelligence in Cancer Trials

PRINCIPLES

- Inclusive
- Collaborative
- Sharing
- Experimental
- Innovative
- Fail Fast
- Grass Roots
- Multi-Disciplinary

- Rigorous
- Delivery Focussed
- Prioritised
- Ethical
- IG compliant
- Clinically Focussed
- Educational
- Supporting Research

New Hospitals Programme

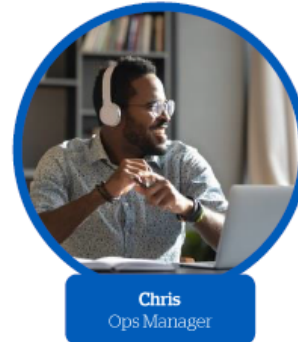
Current State Patient and Staff Challenges

The current (2020) challenges that the personas face, which are solved through the future state journeys.

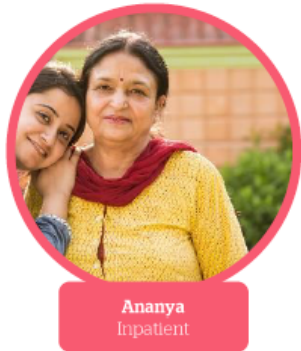
The new solutions to these challenges are identified as the moments of truth in the future state journeys (★)



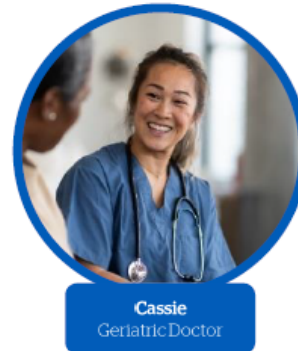
- ★ Wheelchair accessibility
- ★ Not being able to choose the time and place of his appointments
- ★ Long waiting times



- ★ Too many different systems to get oversight on hospital operations
- ★ Consumables often go out of stock before they are reordered and delivered
- ★ Some staff are not supportive of digital transformation – they are concerned about job loss as a result of automation or find digital tools and services difficult to use



- ★ Language barrier
- ★ Visual impairment
- ★ Only comfortable receiving care at home



- ★ Improved work-life balance
- ★ Increased patient facing time
- ★ Access to the information she needs wherever and whenever she needs it

FUTURE STATE - 2030

Greg - Paediatric Orthopaedic Outpatient

STAGES



STEPS

The steps that the user takes in their journey, interacting with different services and technologies along the way

PATIENT BENEFITS

Patient benefits that will close the experience gap between the current state and future state of the patient journey

★ = Moment of truth, where the user's previous challenges are addressed and solutionised

DIGITAL TECHNOLOGIES UTILISED

FABRIC



FOOTPRINT



FLOW



BOOKING AND COMMUNICATION

Greg is due in hospital to have his cast removed, so he logs into his patient portal and uses the chat bot to book in his outpatient appointment at a time that suits. He informs the hospital that he has accessibility needs

Before his appointment, Greg is nervous as he's unsure what a cast removal involves, however there are videos on the portal to prepare him, including AR to experience it.

Greg's dad drives him to the hospital making use of the smart parking system that recognises his number plate from a previous visit and automatically identifies the nearest accessible space, taking automatic payment from his phone.

CHECK-IN

Greg is greeted by a digital receptionist, who instructs him where to go for his appointment. Greg is a bit early, so he makes the most out of playing the interactive games in the waiting area on his phone. 15 minutes prior to Greg's appointment, his patient portal app prompts him to check in.

WAYFINDING

Greg receives notifications via his app which provides wheelchair accessible directions to the Orthopaedic clinic, utilising the smart lift.

APPOINTMENT

When he arrives in the OPC, Greg has a robotic cast removal and then gets an x-ray.

Greg has a consultation with the Doctor to discuss his wrist management and is shown his x-ray images on the computer. They then discuss wrist rehabilitation specific to his wheelchair needs and the provision of a wrist support.

REMOTE FOLLOW-UP

The doctor discharges Greg as the fracture has healed well. Greg has a follow up video consultation with a physio for wrist rehabilitation

Greg uses the recommended AR app to carry out his physio at home. After each session, he can update his personalised care plan progress in his patient portal

★ Greg loves the patient portal as it allows him to take responsibility for his own healthcare, allowing him to book an appointment when it suits him

The portal offers incredibly innovative learning resources which comforts Greg as he feels much more prepared for his appointment.

★ Being able to park without the stress of searching for a suitable parking space makes the journey to the hospital quicker and less stressful.

★ Greg hates the queues and waiting in hospitals, so he is so pleased he can quickly check in using his phone and get on with playing FIFA whilst charging his phone.

★ Greg usually gets stressed about travelling around the hospital due to his wheelchair, he fears obstacles like small doors etc. Thankfully, his app directs him to clinic via a completely wheelchair friendly route.

Greg is impressed by the speed and ease of the cast removal!

Greg is interested in going through his x-ray with the doctor and thinks it will be cool to show his friends the fracture when he is back at school

★ Being able to have the video consultation has been fantastic for Greg as it means he can have the appointment in the comfort of his own home. It also means he receives regular communication and updates about his care plan

As Greg is really keen to take more responsibility of his own healthcare and loves that he can update his own health record. He found the physio resources really useful to remind him how to do his exercises after the appointment

Smart Parking
Automatic number plate recognition and digital wayfinding to the accessible parking spaces

Renewable Generation
Accessible chargers throughout the hospital to support the use of mobile devices

Thermal Cameras
Used to check if a patient is febrile, flagging those for review and appointment rebooking avoiding infection spread

Digital Front Door
Portal used to book outpatient appointment at a place and time that suits patient

Digital Front Door
Used to find personalised educational content to help prepare patients

Digital Front Door
Mobile app check in for user convenience. Linked to smart appointment scheduling to reduce waiting times

Digital Wayfinding
Floorplans on smartphone app embedded via WIFI to ensure wayfinding efficiency

Virtual Assistant
Help patient navigate to what they need, reducing inbound calls

Immersive Technologies
Helps patients experience procedures prior to treatment to prepare them

Self-service check-in kiosks
If a user chooses not to check-in using their smartphone, they can choose check-in kiosk

Digital Front Door
Portal used to access imaging at home.

Digital Front Door
Portal used to connect patient to physician through a video conference at a time that it suits them. Additionally, it can be used to track progress.

Immersive Technologies
Portal used to connect patient to physiotherapist through a remote video consultation at a time that it suits them

Digital Front Door
Patient has access to patient health record on portal and can easily update

Conversational Agent
Engage in two-way dialogue with the user via speech recognition. The receptionist conversational agent presents a human image to provide a richer interactive experience

Robotics
Cast removal is quick and easy with the aid of automation

Digital Imaging System
Doctor accesses x-ray results using digital imaging system

3D/4D Printing
Supports and splints can be 3D printed to provide personalised care for patients with specialist needs

STAGES

ADMISSION

INPATIENT CARE

WAYFINDING

DISCHARGE

FOLLOW-UP

STEPS

The steps that the user takes in their journey, interacting with different services and technologies along the way



Ananya's GP is notified that her oxygen levels are lower than normal via remote monitoring. The GP notifies Kavya (Ananya's family carer) who then goes to visit Ananya and realises she is short of breath and unwell.

Kavya has a video call with the GP who assesses Ananya with the aid of connected devices and decides to call an ambulance as Ananya's oxygen levels are very low. In A&E Ananya is diagnosed with chest sepsis and she is admitted to the ward for IV antibiotics and oxygen.

When Ananya arrives on the ward, she is a little bit confused and repeatedly tries to get out of bed. The smart dust on Ananya's bed alerts the nursing staff who attend to comfort her and check she is okay.

Whilst in the ward, Ananya has access to a bedside entertainment system, which offers Indian translation and accessible design. Ananya can also use the inbuilt Alexa voice system to control the room temperature and lights, which is helpful with her visual impairment.

Ananya is monitored in the ward for 2 days, using connected devices to provide real-time updates of her recovery. When Ananya is talking with the doctor, translation technology is used to ensure that she can fully understand.

When Ananya is feeling better, she decides to meet Kavya in the atrium for a coffee. On route, she utilises the multilingual signage throughout the hospital on the smart screens to locate the Atrium, which are displayed using accessible design.

Ananya is reviewed by the geriatric team and they then contact Kavya to organise Ananya being sent home, for remote care provided by the hospital. The team has access to same remote monitoring devices that her GP has.

Ananya continues to use her remote monitoring tools, whilst resting. After 2 more days of remote review by the hospital team, they are happy with progress and discharges Ananya back to GP for community care.

Ananya benefits from her VR headset in the form of 'telehealth in a box' to improve the quality of communication with her GP to discuss her personalised care plan. This technology also offers translation technology.

PATIENT BENEFITS

Patient benefits that will close the experience gap between the current state and future state of the patient journey

★ = Moment of truth, where the user's previous challenges are addressed and solutionised

The GP monitoring Ananya's care means that Ananya's health is no longer dependent on Ananya making a call. This ensures that Ananya is at lower risk.

Ananya is apprehensive of going into the hospital, however due to the medical team assessing her via video beforehand, she feels confident that it is the correct decision due to the quality of care.

Whilst Ananya is feeling confused and out of place, having the nurses come and help her immediately when she needs comforting reassures her and keeps her calm despite the unfamiliar environment

Ananya loves being able to control the room and make it as comfortable as possible. Having technology that she is familiar with (Alexa) which she can connect to her own Audible account makes the experience feel very personalised and reduces anxiety over finding environment controls with her vision impairment

Having translation technology makes Ananya feel like she can fully express her feelings and that she is completely understood

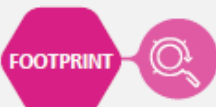
Ananya finds the accessible wayfinding very helpful as it makes her feel independent, taking time away from the ward when she wants to.

In the past, Ananya spent much longer in hospital when she felt well enough to be at home. The virtual ward allows her to go home safely but still be cared for by a specialist team in the hospital

Being discharged was so easy - everything was sent automatically to Ananya's GP and to her family carer, Kavya. Ananya received her discharge medications in the post via same day delivery

Ananya loves that she no longer has the onerous processes to gather and clarify information about her health, her GP communicates with her regularly using her portal

DIGITAL TECHNOLOGIES UTILISED



IoT Sensors
Sensor alerts can be activated for confused patients which are triggered when they try to get out of bed

IoT Sensors
Patients can adjust lighting and temperature in their environment by motion and voice.

Real-time location systems
RFID technology and data used to track patients around hospital

Remote Monitoring (Telehealth)
remote patient monitoring (RPM) tools that identify early signs of COPD exacerbations in order to act early and avoid admission

Digital Front Door
Virtual first care models allow remote access to healthcare services for accurate triage and planning

Smart Triage
AI-enabled triage tool that facilitates bespoke care pathway identification

Control Command Centre
Bed and resource management are reviewed centrally

Integrated Bedside Terminals
Devices that provide information and entertainment during inpatient stay

Integrated Bedside Terminals
devices that update the patient's EHR in real-time

Digital Wayfinding
Wayfinding screens that are fed data about patients to ensure the most relevant and accessible information is provided by the approaching patient, who is tracked using the patient's location e.g. language and any accessibility needs

Remote Monitoring (Telehealth)
Enables existing in-patients to be discharged home from hospital earlier through the ability to monitor remotely

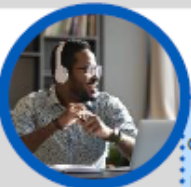
Robotics
Robots disinfect patient areas following discharge

Digital Transfer of Care
eDischarge summaries and digital outcome summaries sent for ease based on patient preferred communication method

Immersive Technologies
supports early discharge of patients from hospital and into their own homes

Remote Monitoring (Telehealth)
Facilitates translation when patients speak different languages

STAGES



STAFF MANAGEMENT

PATHWAY OPTIMISATION

SUPPLY MANAGEMENT

STAFF SKILL DEVELOPMENT

PROCUREMENT

STEPS

The steps that the user takes in their journey, interacting with different services and technologies along the way

One of Chris's key roles is to manage his staff, which he is finding much easier using smart scheduling. Predictive analytics are used to manage staffing levels and develop rotas that are responsive to changing need.

As well as managing the smart rota, Chris uses the virtual staff collaboration space to check in with his staff, including those working from home.

A Key part of Chris's day is checking in with the Command Control Centre to check daily stats in the hospital, for example Bed turnover, readmission rate and occupancy rate. Chris uses an analytics platform which produces data visuals to help him identify problems.

As well as analyzing the data in real-time, which is collected through intelligent devices throughout the hospital, the platform predicts trends. This allows Chris to be proactive e.g. prepare for higher occupancy at a specific time

Chris is responsible for ensuring that the hospital always has the supplies necessary to carry out all services. Supply levels can be predicted using predictive analysis

Chris uses smart technology and data such as RTLS to track consumables and supplies. Chris uses RPA to automatically re-order supplies which are low

Chris is an advocate for staff development, and he manages a digital upskilling program for staff to learn how to use technology and data to improve their role e.g. James the porter

To ensure that the training is effective, Chris has invested in a learning platform that uses realistic simulations, using different interactive learning methods such as AR.

Due to Chris using 5G via his smartphone, Chris can work from anywhere, so he chooses to take a supplier call from a local coffee shop next to his sons' nursery for ease

With single sign on (SSO), Chris can log onto his procurement system to access the supplier details instantly, without the need of remembering and re-entering different details for each system

STAFF BENEFITS

Staff benefits that will close the experience gap between the current state and future state of the staff journey

★ = Moment of truth, where the user's previous challenges are addressed and solutionised

Having smart scheduling means that there is less stress trying to get shifts covered and Chris is always confident that he has a full workforce on shift. It also allows for flexibility in emergencies.

Being able to collaborate with staff on shift, share files, create groups and video call means that Chris can always be up to date with resourcing and staff wellbeing.

★ Having automated data visuals allows Chris to view the data quickly, on demand and in real-time. This means Getting data out of the system for secondary use is simple and provides insights on productivity.

Using AI to predict events before they occur allows Chris to be ahead of the game and plan effectively e.g. Rota on extra staff for higher occupancy

Using tracking technology and data is useful for locating items, meaning that Chris doesn't need to waste staff time looking, he can locate instantly.

★ Chris finds that consumables go out of stock before they are reordered - using RPA to re-stock automatically ensures this doesn't happen.

★ Launching the digital upskilling programme is helping Chris to engage with staff who are apprehensive about the technology and data

★ Innovative learning technology, such as AR, is allowing Chris to develop staff into new positions, e.g. James the porter into a specialist role managing the AGVs

Chris loves being able to work from wherever suits him as it means he can have much more control over his work life balance

Being able to seamlessly sign onto the different applications he works with makes his job much quicker and eliminates the frustration of not being able to get logged in

DIGITAL TECHNOLOGIES UTILISED

FABRIC



FOOTPRINT



FLOW



IoT Sensors
Installed throughout the hospital to capture data continuously

Real-time location systems
RFID based inventory systems monitor the current stock of various assets

4G/5G
New generation of wireless technology creating new opportunities for working anywhere

Digital Workplace
Being able to quickly communicate via a tool will save staff time

Digital workplace
ensuring critical information is easy to access, even in emergency situations

Real-time location systems
automatically identify and track the location of objects or people in real time

RPA
Automatic reordering of stock

Immersive Technologies
Using AR to create real-life simulations to aid learning

Digital whiteboard
Interactive digital tool to aid collaboration in the learning space

Smart Rostering
This solution is capable of meeting the diverse needs of the system and staff e.g. managing unexpected events/adapting timetables for those working from home

Analytics platform
Platform that produces easy to understand data visuals in real-time

Artificial Intelligence
AI used to predict trends in data, to help with future planning

Digital Twin
Ability to see how actions will impact system functionality in a virtual environment e.g. how adjusting the number of staff in different departments will impact waiting times

Control Command Centre
Control Centre staff provide updates on hospital functioning throughout the hospital

SSO Proximity Readers
Single sign on allowing staff to sign into several related, yet independent, software systems with a single log in, for quicker access

STAGES



WARD ROUND

MDT

MEDICAL STUDENT TEACHING

ADMIN

REMOTE OUTPATIENT CLINIC

STEPS

The steps that the user takes in their journey, interacting with different services and technologies along the way

Cassie arrives at the hospital for her shift, utilizing the smart parking, meaning she can go straight in and begin her ward round. Cassie receives a notification on her smartphone to call her to check on a patient.

Cassie completes a ward round, which is quick due to the connected patient devices and e-observations, allowing her to view the real-time clinical record and data on her smartphone

Cassie attends the weekly MDT meeting and presents a complex ward patient for discussion. To ensure full team is present, a digital whiteboard is used, allowing some to dial in via video.

Using a collaboration space prior to, during and after the MDT allows for sharing files e.g. clinical research related to case. This interactive virtual space opens up opportunities for sharing content and patient data to discuss and store

Before lunch, Cassie gives a lecture on decision support, ethics and AI to medical students at the local university through remote collaboration tools

During Cassie's sessions, she shares a real consultation of her explaining the 'black box' to a patient that she recorded with consent.

After lunch, Cassie goes to work from home for the afternoon. Whilst she has time, Cassie responds to come patient requests through a real-time clinician communication platform

Cassie's SSO is blocked due to a cyber security threat, therefore she needs to contact IT. Thankfully IT support is instantly accessible in multiple formats (email, text, virtual chat, call etc.)

Cassie carries out a remote outpatient clinic for the rest of the afternoon. She has instant access to remote patient's integrated EHR which is updated through monitoring tools

One of Cassie's patients lives in a rural town in Suffolk, and they need emergency antibiotics. Cassie can use e-prescribing to deliver medicine to this patient by drone.

STAFF BENEFITS

Staff benefits that will close the experience gap between the current state and future state of the staff journey

★ = Moment of truth, where the user's previous challenges are addressed and solved

★ The smart parking always ensures that she has a space allocated to her, even though her shift patterns change regularly. Additionally, Cassie loves having her smartphone replacing the disruptive bleeps

★ Having the necessary data to hand on her smartphone allows Cassie to spend more time chatting to patients and finding out how they are. Voice recognition saves her even more time!

Being able to dial in medical specialists from different locations reduces the risk to the patient as a full team has input to their care.

★ Being able to access and share data relevant to a case will reduce time spent on research e.g. info from the Health Information Exchange can be shared on the collab tool for relevant specialists to analyse

★ It's great that Cassie doesn't have to spend an hour getting to and from the medical school campus for teaching

Sharing real consultations from clinic ensures that the students are familiar with realistic, real-life scenarios making them more prepared for clinical work.

★ Cassie wasn't sure about instant messaging patients via an online chat platform, but it's saved her a lot of time in writing letters and even reduced the need for follow up in some cases

Cassie feels more secure about SSO due to the reactive block to threats. Having quick, easy access to IT as well means that she has more time back to be productive

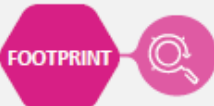
★ Cassie loves that data no longer exists in silos, meaning she can access all relevant info about patients from any provider

Cassie loves the different options of reaching her patients, meaning she knows they will get the best care available and she can track the medicine on route to them

DIGITAL TECHNOLOGIES UTILISED



Smart Parking
Smart parking technology is connected to other software, e.g. smart scheduling, ensuring there is always a space for those who need it



Digital Workplace
Notifications sent to smartphone, instead of bleeps, which is less disruptive



Connected Medical Devices
Providing real-time data on how patients are doing e.g. oxygen levels

Voice Recognition Tools
Rapid data entry directly into the clinical notes from WR review

Digital Workplace
Being able to quickly communicate via a tool will save staff time

Longitudinal Care Record Systems
patient data across the healthcare system in a secure manner, embedding a single aggregated longitudinal view of the patient natively in each EHR system.

HIMSS Level 7 EPR
Having all patient data to hand and documenting MDT outcomes directly in the EHR saves time and makes information available at the point of need

4G/5G
Strong connectivity across the hospital supports remote collaboration and sharing of high-resolution videos for teaching

Digital Workplace
Allowing students to share learning and log into webinars

AI Ethical Toolkit
Guidelines and clarifications on the ethical use of AI in clinical settings

Digital Workplace
Instant messaging with the option of delayed e-mail response from the clinician allows direct patient contact

Voice Recognition Tools
Using voice recognition results in higher productivity and less human error

SSO Proximity Readers
Single sign on allowing staff to sign into several related, yet independent, software systems with a single log in, for quicker access

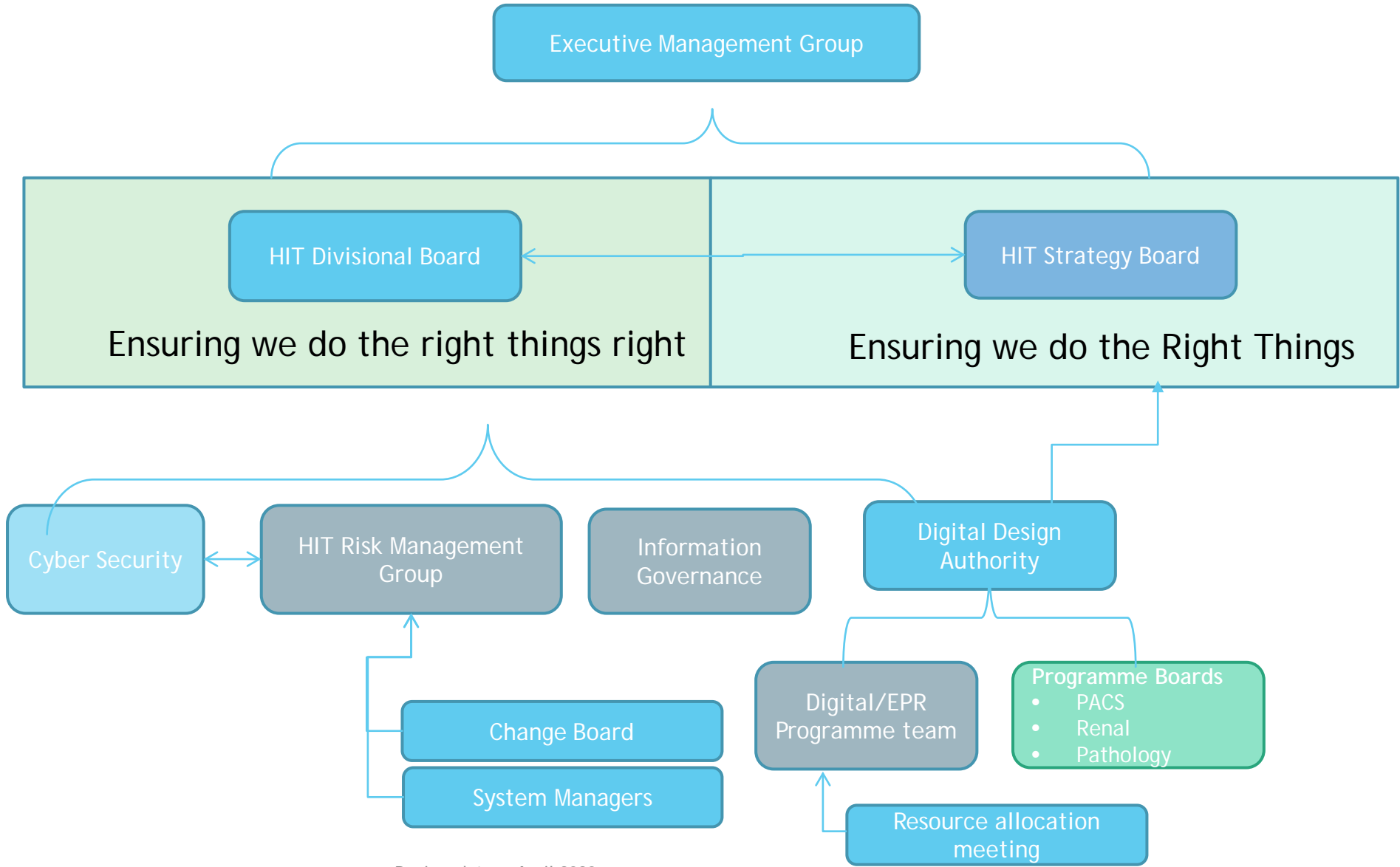
Remote Monitoring (Telehealth)
Remote tools that are used to monitor patients health and feed data into their EHR

HIMSS Level 7 EPR
Having all patient data to hand when carrying out consultations reduces the time of the consultation, improving productivity

AI & Robotics
Drones used to deliver medicine to those who have limited access, mobility or support e.g. patients in rural locations

Electronic Prescribing & Medicines Admin
E-prescribing allows for increased access to patient prescription records, and improved pharmacy workflow

Digital and Health Informatics Governance



Review date: - April 2020

Health Informatics Strategy Group

Outline Terms of Reference (Doing the Right Things)

PURPOSE:

The purpose of the IM&T Strategy Group is to ensure that Lancashire teaching hospital is harnessing the power of technology to improve patient outcomes, increase the wellbeing and engagement of the workforce, improve productivity, enhance the experience of care and improve the health and wellbeing of the population.

ROLES AND RESPONSIBILITIES

- To ensure that IM&T introduces the right technologies to meet the needs of the organization's strategic and operational plans.
- To Develop and maintain an IM&T Strategy for Lancashire Teaching Hospitals NHS FT in alignment with the Trust 'Big Plan' , local digital roadmap and NHS Digital initiatives.
- Work collaboratively with the ICS to deliver the Healthier Lancashire & South Cumbria (L&SC), "Our Digital Future" strategic plan.
- Accountable for prioritizing and allocating funding to support the IM&T strategy.
- Ensure that all work streams are aligned with core clinical systems and processes in the development of one intelligent and comprehensive strategic electronic patient record.
- Monitor the components of any National initiatives relating to Health Informatics that directly affect the Trust and the IM&T strategy.

MEMBERSHIP:

CCIO - Duncan Hancox Chair
 ACIO - Beng So
 ACIO - Vishnu Chandrabalan
 CNIO - Mandy Barker
 Operations representative - Faith Button
 Chief Pharmacist - Gareth Price
 Associate Director AHPs - Claire Granato
 Director of Continuous Improvement - Ailsa Brotherton
 Clinical Informatics Fellow - Dr Omer Ali
 SIRO / FD - Jonathan Wood
 CIO - Stephen Dobson
 Head of Business Intelligence - Dee Hudson
 Head of Digital Programmes - Janet Young
 Head of Technical Services - Saeed Umar
 Head of Enterprise Wide Applications - Venkata Padala
 Head of Information Governance - Alison Stockton
 EPR Governance & Risk Lead - Christine Simpson

NED Geoff Rossington
 NED James Walker

To Meet three times a year and ensuring alignment with the budget planning cycle.

Digital and Health Informatics Divisional Board (Doing the Right Things Right)

PURPOSE:

The purpose of the Divisional Board is to ensure Lancashire teaching hospitals Executives have oversight of the IM&T portfolio and business required to deliver the IM&T strategy and role.

ROLES AND RESPONSIBILITIES:

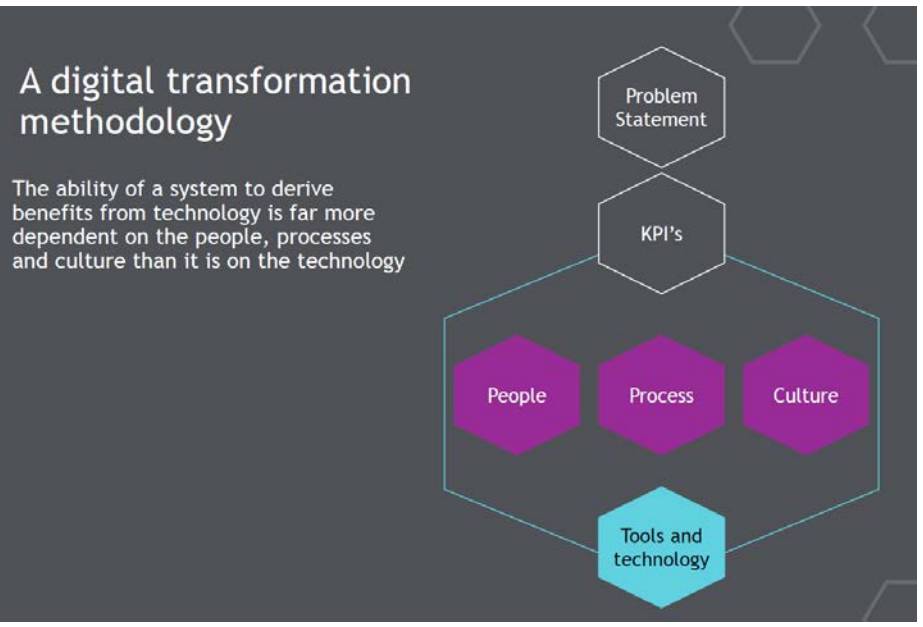
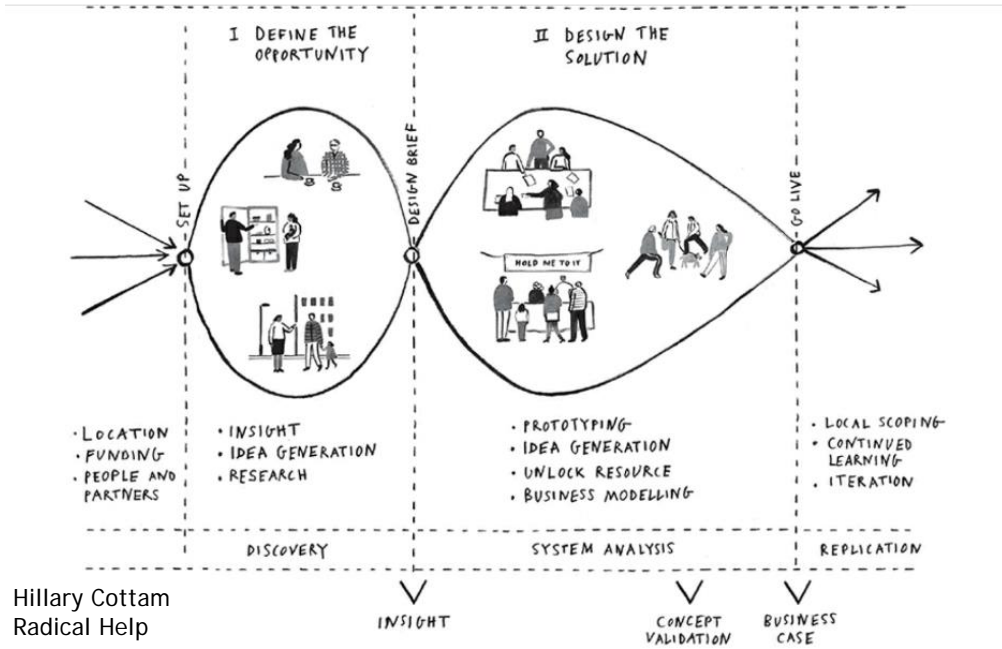
- To ensure that IM&T introduces, monitors and maintains technologies in the right way to meet the trusts strategic and operational goals.
- Manage and oversee the Implementation of the Trust IMT Strategy and digital work plans.
- Review and monitor budgetary activities against the agreed Capital Plan
- Provide direction and leadership for the Digital & Health Informatics Division
- Ensure adherence to Trust key workforce metrics through review and monitoring.
- Oversee Trust compliance with the Data Security and Protection Toolkit to ensure 'Standards are met'.
- Ensure that the Caldicott function is supported by a 'privacy by design' approach and that all relevant legislation is adhered to.
- Resolve strategic and operational issues between business as usual and projects which may impact on the delivery of the IM&T Strategy
- Accountable for management of IM&T related risks.
- Ensure the Trust is supported with accurate, effective and efficiently generated metrics
- Provide escalation reports to Executive Management Group and /or IM&T Clinical Strategy Board on issues which impact on the Trust Strategic and Operational Goals.
- Review as required escalation reports from Cyber Security , IM&T Risk Management Group, Design Authority, Business Intelligence. Data Quality and Clinical Coding.
- Escalate to the Executive Management Group any issues or deviations from any of the above plans
- Ensure that all Health Informatics Policies and Procedures are agreed and ratified and submitted to the Trust Policy Ratification Group.
- Ensure that business (investment) cases are presented to the Executive Management Group as necessary for proposed Health Informatics developments.

MEMBERSHIP:

SIRO. Finance Director - Jonathan Wood - Chair
Chief Information Officer - Stephen Dobson
Head of BI - Dee Hudson
Head of Digital Programme - Janet Young
Head of Technical Services - Saeed Umar
Head of Enterprise Wide Applications - Venkata Padala
Chief Clinical Information Officer - Duncan Hancox
Chief Clinical Nursing Officer - Mandy Barker
Head of Information Governance/DPO - Alison Stockton
EPR Governance and Risk Lead - Christine Simpson
Technical Architect - Stephen Keyton
Pathology IT Manager - Dave Johnson
Technical Services Manager - Paul Ingham
Senior Financial Advisor - Ellie Forsyth
Service Development Manager - Ann-marie Fisher
Financial Accountant - Capital - Stephen Duerden
Workforce Senior Business Partner - Alison Higgins
Digital EPR Development Manager - Barry Hale
Technical Services Applications Manager - Ross Oliphant
Clinical Applications Training and Support Manager - Suhail Patel
Data Quality Manager - Tracy Caton
Operational Representation

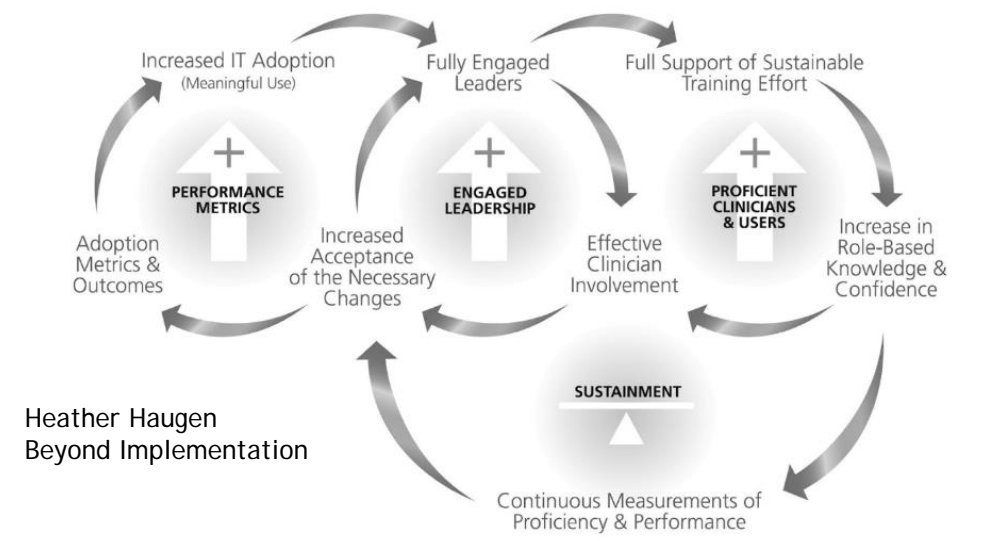
To Meet monthly or at least 8 times a year

THE DESIGN PROCESS



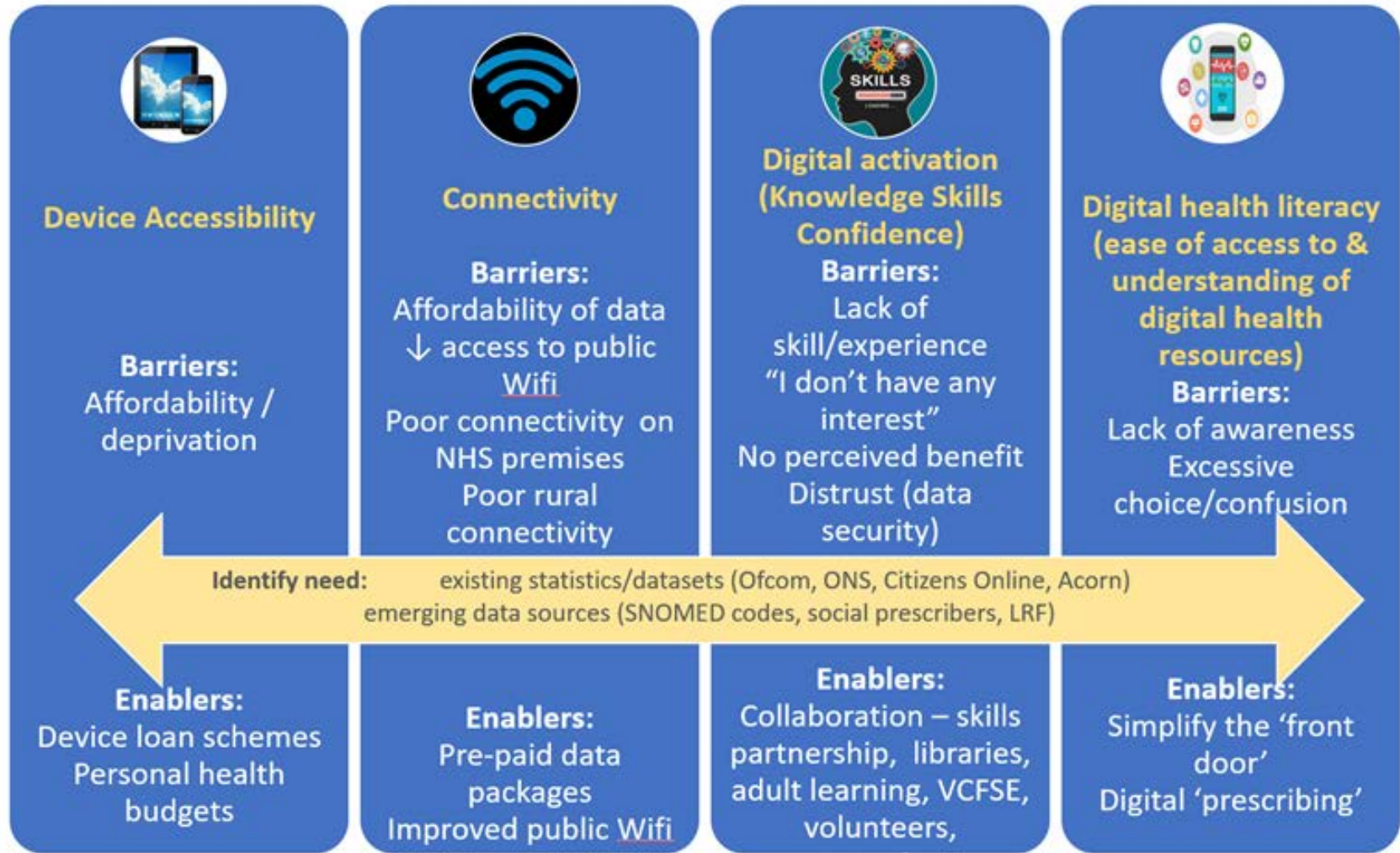
Using digital to increase value or reduce time to value creates digital transformation. Tools and technology are just a part of this and transformation depends more on co-creation, people, process and culture to design and adopt any technology.

Going live is just the beginning. Improving capabilities and maintaining adoption requires continuous training, clinician involvement, leadership support and clear metrics.

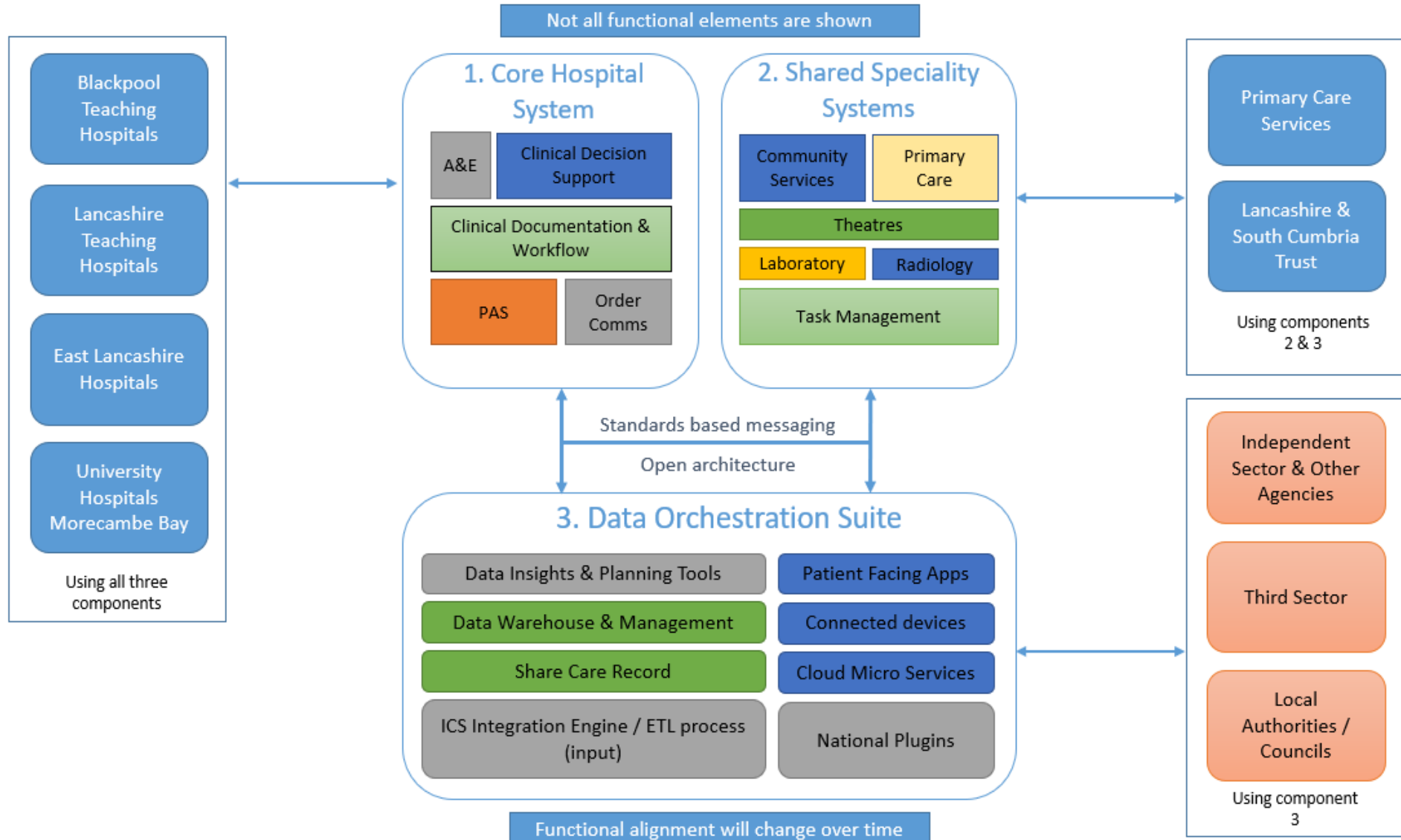


Digital and Health Informatics
Adoption
Digital Transformation/Maintaining

Digital and Health Informatics Tackling Digital Exclusion In Partnership with the ICS



Clinical System Convergence Framework



2020-2021

2022-2023

2024 - 2025

Digital Hospital

Fit for the Future

A great place to work

Current State

Value for money

Continually deliver excellent care

Video Consultations.
Virtual Wards

HIP2 Future Hospital

Hospital wide EPMA

Miya Precision

Follow me Desktop
Tap on Tap Off/Single Sign on/Patient Entertainment

SPC analytics

Enterprise Data Operations

Local/Regional/Industry/Research/Academic **Data Science Collaborations**

Hybrid/Cloud/Shared Datacentres

Digital Forms and Workflow

Continuous Training
Adoption/Diffusion

Soft Phones/MS Teams Integration/Telephone Infrastructure

Robotic Process Automation

Digital Dictation/VR

Chorley/Preston
Software Defined Network Wifi and Security.

Alcidion
Task Management and Bleep Replacement

Shrewd
ED flow
(health
resilience
early
warning)

Savience
Mobile
Check in

QMED
Pharmacy
Integration

Qmed
Critical Care
Anaesthetic
Recovery

Hyperconverged
Infrastructure Replacement

Telephony Refresh

Windows 2010

SQL Server 2008

Cybersecurity

Office 365

Bed
Management

Opera
Theatre/Pre-op
system

Complete
In/Out
patient
Digitisation
(ClinDocs)

QMED
Emergency
Department

Renal
Replacement

Completion
of Results
management

Quadramed
Upgrades
associated
with
continuous
improvement.
Approximately
60 every 2
months.
Database
Merge
Infrastructure
modernisation

2020 – 2021

2022 - 2023

2024- 2025

ICS Wide Digital
-
Central
Lancashire
Focus

Continuous development of Orchestration layer and workflow capabilities allowing messaging and information sharing/Information reuse across organisations
Ability to plug in multiple applications once for the ICS (Internet of things/Patient Portals/Patient Apps)

ICS Wide Winter Planning (Automated U&EC HUB)
ICS Wide Shared Reporting Capability

ICS Wide Unified Medications Record

ICS Wide Universal Referrals System

Continuous alignment of ICS wide Specialist/Corporate Systems. Over 100 possible

Scan for Safety

ICS wide Pathology

ICS Wide Cardiology

Patient Portals/Patient Booking Services/Patient Well Being/PROMS/PREMS/PIFU
Patient to Primary/Secondary Care communication.
Tied to the orchestration layer

ICS Wide Corporate Systems
workforce/audit/risk

Primary
Care Image
Sharing

ICS Wide Core
Clinicals
Procurement &
Implementation

ICS Wide Tertiary Referrals

ICS wide Ophthalmology

ICS wide maternity

Current State

Shared Clinical Systems
Continually Deliver Excellent Care/Great Place to Work

System Wide Capabilities
Fit for the Future/Value for Money

2020 – 2021

2022 - 2023

2024- 2025

Central Lancashire
ICP Focus

Digitised Frailty/ Respiratory and End of Life Pathways
Deteriorating patients/**Diabetic care?**

Population Health and Population Health Management
Linking District Council data to Health Care
Risk Stratification and Population Segmentation
NEXUS and ARISTOTLE. Integration with Data Science

ICP wide Performance Management
Problem Statements
Business Intelligence and Data Science
How do we know if our ICP is performing well and continuing to improve

Digital Health (U&EC Digital front door) links to LA/Care
Homes/Mental Health and Community/NHS 111

Patient Group Video
Consultations

CCG/GP/PCN communications
Clarity Teams net

Telehealth/Telecare

Lloyd George Paper Replacement

Nursing Home/Care Homes/Domiciliary Care
Digitisation

Mental Health and Community Digitisation
Improved access to Mental Health Services

Continuous
LPRES
enhancements
(Pathology,
Radiology, End
of life)

GP
Telephony

GP Total Front
Door
Triage/Signposting
/DOS/Social
Prescribing

GP Video Consultation/MDTs/Virtual
Wards

Digital Pathways/Digital Capabilities
Fit for the Future/Value for Money

Current State

Clinical Systems
Continually Deliver Excellent Care/Great Place to Work

Key Partnerships

