NHS
**University Hospitals
of North Midlands**
NHS Trust

Digital Strategy

2022 - 2025

UHNM Digital Strategy
Version 0.5, Date 05 April 2022

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1. Introduction

Our vision at University Hospitals of North Midlands (UHNM) is to deliver exceptional care with exceptional people and it has never been more important to enable this vision with supportive digital and data insight services. The delivery of digital technology and data driven insights can make a significant impact on patient outcomes through supporting service and pathway redesign, clinical decision support, enabling patient self-management, self-service, and increased productivity.

Study Paper for 2nd Lunchtime Seminar for Administrative Staff to be held at 12.30.p.m. on Thursday, 23rd May, 1968, in the H.M.C. Boardroom.

1. Introduction. In many ways the introduction of a computer into an organisation is a similar process to that involving any other new bit of complicated and expensive equipment. The need has to be ascertained by careful study by outside experts; their report has to be scrutinised carefully by management; and if approval is given a plan for introducing the equipment is needed, and a new type of staff have to be employed to work it. When it comes, some people already in post will have to learn how to use it, and its usefulness will have to be evaluated. This process has been followed for a new Maternity hospital, and will be followed again for a new path. lab., training school, and Surgical Block. It is most unlikely that the outside experts will offer to give a course of lectures on how these might work; will ask for many meetings with medical staff to persuade them to use the new tools or ask for their advice in how they are introduced; will assent to and will even start discussions which say that administrators will have to have a new, long, cool look at their jobs. Is the reason for this that computer study teams are normally megalomaniacs? or just that North Staffs has been unlucky in the team it has got? Or is it in fact the case that there are special aspects of a computer project which have wider implications than most other new bits of equipment?

2. The Computer as Information Machine. There is so far no validated evidence about megalomania among systems consultants. There is, however, a fair amount of evidence to show that computer schemes in other contexts have succeeded in meeting their objectives, only if management at all levels has been fully informed about the implications, and staff are ready to do their jobs in new ways. This is particularly so where the attempt has been to establish so-called 'Management Information Systems'. That this should be so becomes apparent as soon as the computer is seen as an information machine, which potentially makes the information resources of the organisation available to be used in a way that has never been possible before. The use of a new memory, thousands of times faster, but in many ways less flexible, than the brain-and-paper systems it replaces, is clearly something which is likely to affect all levels of management, once the premise is granted that managers exercise control and make decisions largely through information which is fed to them (or which they labour to prepare), about how their department has gone on in the past, and what it is likely to be asked to do in the future. We can examine the premise if need be.

UHNM have a pedigree and heritage in leading the way in digital technology as evidenced by a copy of the original Study Paper into the implementation of a new computer system. In 1968 UHNM trail blazed work in the area of health care computer systems being one of the first hospitals in the country to do so. This was followed in the Millennium with the development of the Clinical Information System (CIS) which was one of the first portals specifically for clinical use in England to display clinical data from a range of best of breed systems in a single place. iPortal is the latest incarnation of the CIS and delivers not only a clinical portal but a clinical workspace where data is not just viewed but created. This strategy aims to challenge the organisation to celebrate and respect its digital roots and embrace digital in our pathways and processes.

When responding to the Covid19 pandemic, one of the most impactful tools at our disposal was digital and data. Digital services allowed us to enable staff to work effectively from home, book vaccination appointments and convert face to face appointments to video and telephone consultations to name but a few. Data, facts and analytics enabled us to provide meaningful insights about the health emergency we were managing. Data was essential to our day-to-day response including the management of nosocomial infections and planning Covid19 vaccinations. This strategy aims to build on the digital advancements seen during the Covid19 pandemic and seek out wider opportunities we have in relation to digital and data insights to improve safety, quality and service efficiency.

This digital strategy aims to set out how UHNM will use digital and data insights to enable the delivery of exceptional care including how we develop our exceptional people to be digitally confident. The strategy is grounded in delivering good foundation services for staff and patients in recognition that these core services are the building blocks for our digital ambitions.

As the Integrated Care System (ICS) of Staffordshire matures the development of system wide services and pathways will increase, this strategy will consider how digital services may need to adapt to enable greater cross organisational, frictionless working for the benefits of our patients.

2. Background

The Digital Transformation Strategy 2019 – 2023 set out a range of digital projects which together would improve the digital maturity of the Trust resulting in improved safety, quality and efficiency. A year after the Digital Transformation Strategy was approved Covid19 hit, some projects were accelerated because they supported the Trusts response to Covid19 such as remote consultations and virtual wards, however, some planned projects have been subject to delay as the digital team and clinical stakeholders were understandably reprioritised to develop a range of solutions in response to the pandemic.

The Covid19 pandemic has accelerated the adoption of technology and the demand for digital solutions from clinicians at UHNM has significantly increased and the digital service needs to respond to and build on this enthusiasm ensuring we are investing in the right tools for the job in a strategic and co-ordinated way.

As we adapt to live with Covid-19 we need to consider how we can eradicate the significant waiting lists caused by the pandemic. With big waiting lists and broadly the same numbers of staff to support our patients, we may need to look at reimagining how we can provide the right interventions to the right patients in the most time efficient way. Opportunities to reimagine the clinical pathways enabled by digital services from referral or admission to discharge should be considered which may include a wider use of video consultations, virtual clinics, additional virtual wards, pre-clinic questionnaires, straight to diagnostics, digital preams, post-operative digital guides, patient initiated follow up and self-care support.

With workforce gaps set to be with us for a while yet seeking out ways to make life easier for busy teams would be beneficial. Whilst there is no silver bullet for efficiency the digital teams must be challenged to make life easier. This could include connecting monitoring devices to the electronic observations system to improve accuracy and reduce the need for manual entry, speeding up computer log in times, reducing the number of systems that need to be checked, proactive support services reducing the need for clinicians to log support calls and eradicating dual keying for example. In other words we need to simplify.

At the last count the Trust identified 456 systems in use (clinical systems, enabling services systems and infrastructure systems) this complex array of systems results in confusion, systems contain overlapping capabilities, data is in silos and we don't have one system that tells our patients story. This strategy aims to consolidate the systems and tools we have and answer the key question about the direction of travel for our clinical systems. When do we expand on what we have, replace what we have, when to build systems and when to buy them with the focus on simplification and consolidation.

In 2021 the Trust has developed a clinical strategy which details that the future model of care will include a material shift from hospital care to a whole system approach, with care integrated across providers and locations. Many of the services will be provided in a community or home setting and pathways will be joined up, both in terms of information and care delivery. This hospital without walls approach will require clinical digital systems to be available anytime, anywhere and potentially by people outside of UHNM. Consideration will also need to be given to remote patient monitoring, patient system access and communication tools whilst keeping security and data protection at the forefront of our plans.

During 2021 the system landscape has changed with the establishment of the ICS and with the Integrated Care Board (ICB) coming into legal effect in 2022. Greater clarity over the form, function and responsibility of the ICBs is now available and UHNM are recognised as a key system partner. We recognise our responsibility to work closely with system partners and deliver digital systems and tools which may span the traditional boundaries of our hospital walls. UHNMs participation in the One Health and Care Record (Staffordshire Integrated Care Record) is an example of joint digital working but we will need to do more.

3. Context – where are we now?

Foundation IT

Over the last 2 years the Trust have invested in improving the IT infrastructure ready for the increased adoption of technology. This has included replacing out of date end user computers, data centre storage, single sign on technology to reduce the need for clinicians to remember multiple passwords and the implementation of cyber security solutions. This has been a very welcome investment and has started to make a difference to staff. During the Covid19 pandemic a large number of laptop devices were deployed to aid agile working and the virtual private network (VPN) solution was upgraded to support the increased number of staff working remotely. As more and more workflows turn digital we will need to ensure there is sufficient end user computers available on the wards and in the clinics for staff to use. Likewise as more services are delivered closer to the patients home the need to ensure our remote access services have the capacity to perform well will be critical.

The increased use of digital technology has resulted in an impact on the network which is provided by 2 suppliers.

- Nasstar who provide the network service at the Royal Stoke site through the Trusts private finance initiative (PFI) which is supported by the Estates and Facilities Directorate
- Premier Technical Services Group Ltd (PTSG) who provide the network service at County Hospital which is supported by IM&T.

This disjointed service provision does not currently meet the growing and changing needs of the Trust and is proposed to be addressed in this strategy.

Clinical Systems

The last 3 years has seen a real acceleration in the use and demand on technology. The current digital clinical system model deployed at the Trust is best of breed. Best of breed is described as "The best system in its referenced niche or category. Although it often performs specialised functions better than an integrated system, this type of system is limited to its specialty area only." These systems are connected together (where possible) through an integration engine and data is displayed through an in house developed clinical portal. This is a complex model and can result in some elements of the clinical record only being visible in standalone systems. This silo clinical data is a clinical risk.

There are 456 known IT solutions in use across the Trust some of which are supported by IM&T and others supported locally by divisional teams. Not all systems provide data to the Trusts data warehouse or Clinical Portal (iPortal) which can result in a disjointed record and limited data for reporting and analytic purposes. The way in which divisionally managed clinical systems are supported and maintained differ across the divisions and this results in a varied end user experience and limited system management assurance.

UHNM benefit from an in-house software development team. This skilled team are able to build web based applications to a specification of requirements to support changes to clinical and operational workflows. This benefits the Trust where commercial off the shelf products are not available or where our clinical system providers are unable to support the required changes within an acceptable or timely manner. Whist this self-build approach adds significant value it can also add risk especially when the team is small and as such the decision to build over buy needs to be a conscious decision.

The Trusts main electronic patient record (EPR) is supplied by System C. The following capabilities are deployed across the Trust:-

- CareFlow Patient Administration System (PAS)
- CareFlow Business Intelligence

- CareFlow Order Communications & Results Reporting
- CareFlow Emergency Department
- CareFlow Vitals
- Bluespier Theatres

The Trust also has the following projects in flight:

- CareFlow Connect (clinical communication tool) – live in pilot mode only
- CareFlow Medicines Management (including First Databank's Multilex drug database)
- PDS – the Trust has licensing to enable Patient Demographic Service (PDS)/CP-IS deployment
- Discharge summary, using CareFlow Clinical Narrative

The Trust does not currently use the following System C solutions:

- CareFlow Vitals Maternity and Paediatric modules
- Patient Flow (bed management)
- CareFlow Clinical Narrative (clinical noting)
- CareFlow Care Planning
- CareFlow Clinical Workspace

A number of the systems not in use at UHNM compete with our in-house developed solutions iPortal and Ward Information System (WIS). The benefits of these in-house solutions should be assessed against the benefits of adopting the CareFlow alternatives.

The contract with our current EPR supplier ends in September 2022, to replace this system it is a 4 year process (18 months to produce the required strategic outline case, outline business case, competitive procurement and full business case) and 24 months to implement a Trust wide solution. An extension with our current supplier will be secured and the opportunity will be taken to test the market for one of the options below.

Option	Name	Description
Option A	Best of breed EPR	Each element is sourced from the supplier shown to provide the best capability and value for money for that required functionality
Option B	Best of Suite EPR	A core set of functionality is sourced from a single supplier where these elements are naturally integrated. This core is as large as practicable. Outside of the core systems are procured on a best capability and value for money basis but ensuring they interface tightly with the core EPR
Option C	Single Integrated EPR (Wall to Wall)	The complete range of required functionality is sourced from a single supplier who will provide a fully integrated EPR

This market testing will lead us to answer the question of should we enhance what we have, replace what we have, build systems ourselves or buy commercially available solutions.

The Trust is in the middle of replacing its laboratory information management system (LIMS) which should be finished in the autumn of 2022.

Medical Devices

The Trust deploys a large number of medical devices, as technology advances the line between medical devices and digital clinical systems starts to blur. The integration of medical devices and in particular the

data feed from the device into the patient record stored in the digital clinical system can deliver improved decision making, self-care opportunities and improved safety.

It will be important that as new medical devices are procured this interoperability is considered so the benefits can be exploited. A closer working relationship between Clinical Technology and IM&T will be required going forward to ensure compatibility and security of the devices.

Business Systems

The workforce, procurement, estate management, quality management (incident and risk) and finance systems are operated, supported and trained by the relevant responsible department. The digital workflows vary from department to department. This is an area to further exploit digital opportunities to eradicate paper based processes, manual workflows and repetitive transactional activities. For example in the area of Theatre Stock Management.

Support Arrangements

As the dependency on digital services continues to increase we need solid and resilient infrastructure to be available to enable new digital initiatives and a move away from paper. Delivering highly available IT is just as much about the people, processes and maintenance schedules as it is about the technology. The Trust uses elements of Information Technology Infrastructure Library (ITIL) which is a globally recognised best practice methodology for IT service management. We need to embrace the changes that have come with ITIL V4 and implement elements not currently deployed such as event management, problem management, knowledge management and release management processes. This will help move the support service from a reactive user contact driven support service to a proactive maintenance service. To do this we need to equip our support teams with the skills and knowledge to deliver proactive services. A skills and development framework is required to ensure staff have the skills and experience to move to event and maintenance driven service.

Digital systems outside of IM&T need to be managed to the same standard as those managed by the IM&T team and as such the development of a support framework will set out the business change, support, maintenance and management standards that need to be met.

People & Culture

The IM&T department employs 123 digital, data and records staff covering the following disciplines

- Data protection and security
- Health records (digital and paper)
- Clinical system training
- Clinical system support
- IT operations
- IT service desk

- Programme management and business change
- System development
- Business intelligence
- System integration
- Desktop services
- Telecommunications (inc switchboard)

Historically access to professional training for our digital and data professionals has been limited. The formal recognition and professionalisation of our digital staff will improve the quality of our service and support the recruitment, retention and grow our own skills agenda.

UHNM benefits from a highly engaged Chief Clinical Information Officer (CCIO) who is supported by Divisional Chief Clinical Information Officers (DCCIO), these clinicians are the eyes and ears of their division. Our nursing, midwifery and allied health professional (AHP) colleagues do not benefit from the same level clinical digital representation and we look to address this in this strategy.

The digital confidence and capabilities of staff varies but is yet to be base lined. Formal training is available for the main clinical systems in use across the Trust, however, divisionally managed systems are not subject to formal training. Basic computer confidence and training on Microsoft Windows and Microsoft Office products are not available. The development of digital skills feels like an opportunity

and a necessity for the Trust. Only with improved digital confidence will we foster a digital first culture where people are thinking about how technology can help them resolve a problem they face. We are quite some distance away from digital first thinking.

Data and Insights

The Trust benefits from a clinical data warehouse which contains information from the following systems:-

- CareFlow PAS
- CareFlow Emergency Department
- CareFlow Order Comms and Results Reporting
- CRIS
- Bluespier Theatres
- Red to Green
- WIS

- iPortal
- K2 Maternity
- Picanet
- Badger
- Netcall Friends and Family
- Medisec
- Audibase Audiology Feeds

However, a significant amount of data required by operational, clinical and management teams is collated manually due to the inconsistent use of clinical systems and unavailability of real-time clinical noting. The move to real-time recording would unlock significant potential in the use of data to drive automated workflow, decision making and clinical alerts for example bed management. This will be a significant cultural change.

There is an opportunity for improved data analytics and insights if other clinical system data was to be available in the data warehouse. In addition if we added data from other Trust business systems such as incidents, risks, workforce and finance it would allow the triangulation of data to enable improved insights to support better decision making. This would allow us to move to a self-service reporting model where staff could look for information when they needed it and slice the data to suit their needs. This is dependent on the individual being able to trust the data they see in the dashboards and that is depending on a shift to real-time use of our clinical systems by all.

Analysis Approach

The digital strategy has been informed using 2 analysis frameworks. A Strengths, Weaknesses, Opportunities and Threat (SWOT) analysis which allowed critical reflection of the current digital capabilities in the Trust. A Political Economic, Social, Technological, Legal and Environmental (PESTLE) analysis which enabled the consideration of wider factors which may impact the organisation and the plans.

SWOT Analysis

Strengths	Weaknesses
• Dedicated Workforce • Skilled Digital Workforce • In House Development Capability • Medical Digital Leadership • Improving Foundation Capabilities	• Single Points of Failure (people) • Limited Training and Education Opportunities • Limited Nurse/Midwife/AHP Digital Leadership • Limited Operational Engagement • Inconsistently managed departmental solutions • Inconsistent network service provision • Slow log in times • Reactive support service with a large support call backlog • High number of systems in use leading to silo data and multiple user credentials.
Opportunities	**Threats**
• Cloud • Artificial Intelligence • Robotic Process Automation • Exploit Existing Technology • Genomics • Increased focus on business systems • Move to proactive support services • Regional Digital Approach	• Regional Digital Approach • National Change of Direction • Limited Funding • Cyber Security

PESTLE Analysis

Political	Economic	Social
• ICB • ICP • Placed Based Partnerships • Provider Collaborations • Primary Care Networks • NHSX • NHSD • NHSI/E • CQC	• Annually Set Budgets • Third Party Price Rises • Digital Workforce Gap 32,000 by 2030	• Patient Demand • Patient Digital Capabilities • Patient Self Care Compliance • Low average reading age in Stoke on Trent • 20% most deprived unitary authorities in England • Higher than average citizens with long-term sickness • Below national and regional average hourly pay
Technological	**Environmental**	**Legal/Regulatory**
• Rate of Technical Change • Cyber Security • Artificial Intelligence • Robotic Automation • Technology Obsoleteness • Build or Buy • Data Science	• Net Carbon Neutral • Waste from Electrical and Electronic Equipment Regulations • Protection from Natural Disasters (Flood) • Cooling Data Centres as outside temperatures rise	• GDPR • Data Protection Act • ICO • Information Standards Notices • DCB 1596 • DCB 0160/0129 • Cyber Essentials • Data Security and Protection Toolkit

4. How we have developed this strategy

The development of this strategy started with a review of the Trusts current strategies and where the delivery of these strategies could be enabled and enhanced by technology. The strategy has been developed with our CCIO and DCCIOs and has been reviewed through the Trusts digital governance structure.

A review of our current digital capabilities has also been undertaken. 2 frameworks were assessed;
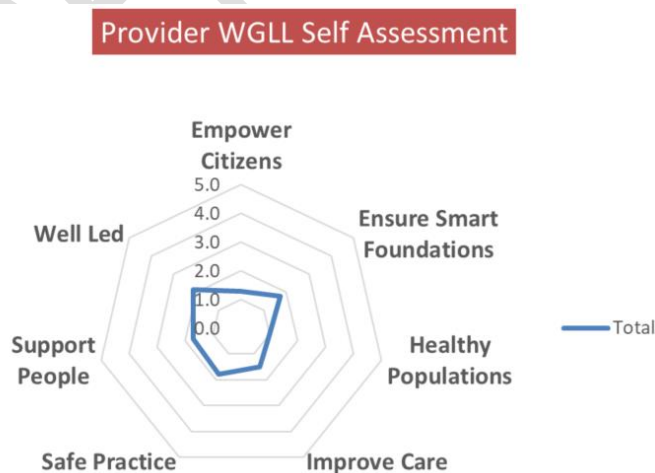
HIMSS - EMRAM
The Electronic Medical Record Adoption Model, EMRAM - is a unique evaluation model, which analyses the maturity of IT environments in hospitals and enables benchmarking during the implementation of Digital Clinical System (DCS) technology. The model identifies the level of DCS capabilities ranging from limited ancillary department systems through to a full paperless DCS environment. This review included a self-assessment exercise in which we self-assessed at 1.8 and an on-site independent assessment which was scored 2 out of a possible 7.

Stage	Clinical Documentation	EMR/CDR	IT Security	Closed Loop Administration
Stage achievement	0	6	0	0
Percent achievement	27%	100%	88%	6%
Stage 6	0%	100%	92%	6%
Stage 5	5%	N/A	100%	N/A
Stage 4	60%	100%	100%	N/A
Stage 3	0%	N/A	100%	N/A
Stage 2	N/A	100%	100%	N/A
Stage 1	N/A	100%	N/A	N/A

NHSX What Good Looks Like Framework
The What Good Looks Like (WGLL) framework is a model that looks at the required digital capabilities across 7 domains. Well Led, Ensure Smart Foundations, Safe Practice, Support People, Improve Care, Healthy Populations, Empower Citizens. It builds on established good practice to provide clear guidance for health and care leaders to digitise, connect and transform services safely and securely. This will improve the outcomes, experience and safety of our citizens. The UHNM average score for the framework is 1.6 out of a possible 5, more details are available in the diagram below.

Provider WGLL Self Assessment

These reviews enabled the Trust to prioritise investments and monitor progress in a structured way.

NHS Digital Hospital Blueprint
In 2021 NHSX released the digital hospital blueprint. This document sets out a Blueprint for Digital Innovation in digitally advanced hospitals. The blueprint capabilities have been assessed and mapped, ✓ = UHNM have the capability, ✗ = UHNM do not have the capability, ½ = UHNM have some capabilities but not all.

Business Capabilities - An abstraction of business functions

Patient, Asset & Resource Admin

- **Patient Administration** ✓
  Patient Identity Management, Patient Flow, Patient Communication Scheduling and Appointment Booking
- **Resource Administration** ✓
  Staff Rostering, Clinic and Theatre List Management, Activity Recording and Clinical Coding
- **Asset Administration** ✗
  Bed Management, Asset Tracking

Patient Digital Care Record

- **Records, Plans and Assessments** ½
  Storage and Access of Notes, Observations, Assessments, Triage and Care Plans
- **Transfer of Care** ½
  Internal / External Digital Handover (Referrals and Discharge Summaries)
- **Medicines Management and Optimisation** ✗
  Prescribing, Dispensing, Drug Administration and Pharmacy Functions
- **Diagnostic Management** ✓
  Diagnostic Test Requests, Test Results, Imaging
- **Integrated Care Service** ½
  Longitudinal Care Record, Cross Coordination, Care Planning and Patient Engagement

Connected Care

- **Remote and Virtual Care** ✓
  Virtual Consultations, Remote Monitoring, Virtual Care Command Centres
- **Self Care** ½
  Self monitoring, self management, self learning, treatment adherence, self referral

Digital Insights

- **Decision Support** ✗
  Automated Detection and Escalation, Compliance alerts/notifications, prompts, predictive models
- **Business and Clinical Intelligence** ½
  Reporting, Forecasting, Planning, modelling, Population Health (Cohort Management, Risk Stratification, Disease Registries)
- **Precision Medicine** ✗
  Clinical Trials, Bioinformatics, Gene sequencing, Drug Discovery, Companion Diagnostics

Estates & Facility Management

- **Ancillary Services** ½
  Catering and Dietary Management, Housekeeping, Laundry, Cleaning Services
- **Building Management** ½
  BIM, HVAC, Power Management, Building Security, CCTV, Environment Management

Dimensions - These support the capabilities

Enabling Digital Technology: AI tools (ML/DL/NLP); Smart Devices, Scanners & Sensors; Integration and Interoperability; On-Premises / Cloud Hosting (Network, Storage, Compute); Workstations, Printers & Mobile Devices ✓; Communications (Wired/Wireless/Email); Data Analytics Platform; Medical Equipment/Devices; Emerging Tech (e.g. RPA, Blockchain)

Security & Information Governance: Ethics ½; De-Id / Re-Id / Anonymise; Patient Privacy Preferences ½; Single Sign-on ✓; Identity Management ½; Cyber Security ✓; Auditing ½; Information Sharing Agreement ✓; Privacy Impact Assessment ✓

Digital, Data and Technology Standards: DSPT ✓; DICOM; GS1; HL7 FHIR / HL7 V2.x/HL7 CDA; NHS Number; ICD 10/11; SNOMED-CT; dm + d ✗; OPCS ✗; DCB 0129/ DCB 0160 ✗; Unified Test List ✗; NHS Data register ✓

Digital Management Services: Training ✓; Vendor Management ½; Business Change/ Benefit Realisation; Data Governance and Collaboration; Enterprise Arch & Development; Project Management ✓; Quality Assurance & Assessment ½; Human Resources & Workforce Mgmt; Service Management ✓; Financial & Commercial Management

Engagement Channels - How staff and citizens engage with digital

Digital Interaction Services: Regional Services; Self-Service Access ½; Patient/Clinical Info Access; Clinical Viewers; Data Visualisation tools; Mobile ✓; Virtual Interaction; Digital Displays; National Services ✓; Collaboration Tools

Users: Citizens ✗; Patients ½; Carers ✗; Clinicians ✓; Operational Staff; Diagnostic Staff; Admin Users; Support Staff; Technical Staff; Researchers ✓

Items in green are classed as foundation capabilities, items in light blue are transformational capabilities and items in dark blue/purple are innovative capabilities. It is proposed that initiatives are prioritised in that order.

Finally we have taken in to account the SWOT and PESTLE analysis looking at how we can build on our strengths, mitigate our threats and exploit our opportunities.

5. Where do we want to get to?

The vision for the digital service is

"Delivering Exceptional Care with Exceptional People enabled by Exceptional Digital Services".

We want to:-

Enable High Quality care through the delivery of a mature clinical digital system capable of:-

- Contributing to delivering exceptional care with exceptional people by putting digital solutions and data insight into the hands of front-line staff and patients to support clinical decision making, increasing clinical safety, process automation and improving clinical outcomes.
- Reducing medication errors with electronic prescribing and medicines administration.
- Reducing the clinical risk of our clinicians not being able to see the whole clinical record, by having all clinical documentation held digitally and being accessible in one place. Consideration will be given to how this is best delivered; enhance or replace, build or buy.
- Ensuring important clinical tasks are not missed through the implementation of clinical task management and clinical communications.
- Supporting improved data quality through championing real time digital record keeping and producing data quality insights.
- Reaching HIMSS EMRAM level 5 in 3 years which will deliver all capabilities from 0 to 5 detailed in the diagram below.

STAGE	HIMSS Analytics EMRAM — EMR Adoption Model Cumulative Capabilities
7	Complete EMR: external HIE, data analytics, governance, disaster recovery, privacy and security
6	Technology enabled medication, blood products, and human milk administration; risk reporting
5	Physician documentation using structured templates; full CDS; intrusion/device protection
4	CPOE; CDS (clinical protocols); Nursing and allied health documentation; basic business continuity
3	Nursing and allied health documentation; eMAR; role-based security
2	CDR; Internal interoperability; basic security
1	Ancillaries - Lab, Rad, Pharmacy, PACS for DICOM & Non-DICOM - All Installed
0	All Three Ancillaries Not Installed

Be Responsive through ensuring our staff can access our digital systems with modern devices which are underpinned by excellent support services:-

- Developing a proactive event and maintenance driven service reducing the need for front line staff to log support calls.
- Reducing the number of network services providers and simplifying the network to improve performance and reduce downtime.
- Increasing the availability of end user computer devices selected by ward staff to best suit their requirements. Proactively support these devices by moving to a proactive maintenance model. Ensuring these devices are refreshed regularly to ensure good performance.
- Minimising the downtime of clinical systems caused due to cyber security threats by operating effective cyber security processes, monitoring and maintenance.
- Ensuring the performance of our systems through ensuring new products and services meet our architectural principals.
- Reducing the time staff spend logging into our systems and services by doing a deep dive on log in times.
- Offering maximum flexibility to our staff by using cloud services to deliver key systems over the internet available on most devices.
- Developing a support framework for systems supported outside of IM&T to ensure they are appropriately and robustly managed including business change.

Improve and Innovate through delivering data insights to clinical and operational staff. Using data to support the prioritisation and monitoring of improvement initiatives:-

- Enabling confident clinical and business decision making through the availability of rich data intelligence.
- Increasing the systems that feed the data warehouse to allow for more data to be available for analysis. This will allow data to be triangulated for improved insight for example performance data with staff data with incident data.
- Enabling more staff to have access to tools and validated data so they can dig into their own data to find insights.
- Adopting an agile development method to give end users early visibility of solutions and dashboards.
- Engaging actively with the Trusts Research and Innovation agenda ensuring any digital innovations are safe, secure and appropriately supported.

Work with Systems and Partners to do the initiatives that make sense to do together, together. Enable integrated pathways with integrated technology and data:-

- Enabling hospitals without walls to support integrated care. As Acute and specialist Trust we will look to enable care being delivered closer to the patient's homes and the local community, breaking down barriers between care settings for an improved patient experience. A 'virtual first' model prioritising remote care will help to manage service demand, optimise triage and be more convenient for some patients.
- Increasing the clinical information that is available in the One Health and Care System to increase its value to clinicians.
- Providing data to enable system level dashboards and data insights to support planning and prioritisation.
- Ensuring solutions meet NHS interoperability standards to enable integration both now and in the future.
- Considering participating in shared services where this maintains or improves quality without increasing the cost to the system or Trust.
- Working as a system on enabling a single co-ordinated offer of digital channels for citizens across the system and roll out remote monitoring technologies to help citizens manage their care at home.

- Contributing to the system plan for embedding population health management capabilities and ensuring these are supported by the necessary data and digital infrastructure, such as linked data and digital interventions
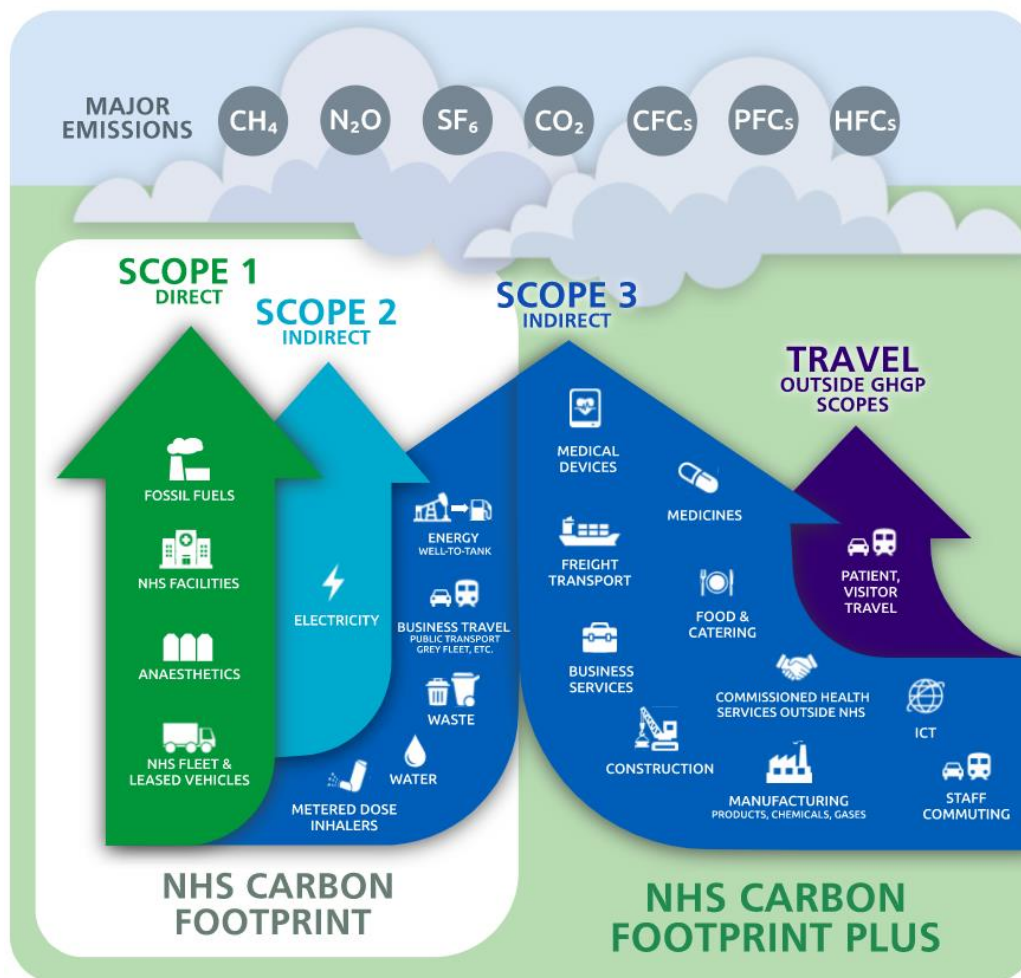
Empower People both patients and staff to make the most to the technology available and to confidently get involved in the future of digital healthcare:-

- Fostering a digitally confident workforce through effective learning, development and inspiring digital clinical leadership. This will include the establishment of technical communities of interest where staff can share hints, tips, ideas and learning.
- Giving our nurses, midwives and AHPs a loud digital voice allowing them to shape the future of digital clinical systems.
- Providing the training and support for staff to use technology to the fullest.
- Recognising the various professions within digital and ensure staff have the opportunity to professionally develop with recognised qualifications and professional body membership, making most of the apprenticeship levy.
- Promoting a culture of digital innovation encouraging all staff to consider digital solutions to clinical problems. Promoting the use of the Improving Together A3 Improvement Tool to really understand the problem or opportunity for improvement and consider if digital solutions could be effective countermeasures.
- Developing a grow our own skills programme of digital staff in anticipation of the digital workforce gap of 32000 staff by 2030.
- Digitally empower patients with a range of instinctive and informative digital tools and services, promote self-care and active engagement with healthcare services reducing the number of times they need to visit our hospital locations to receive care.
- Offering all patients the option of video consultations for appointments that do not require the clinician to undertake a physical examination.
- Giving patients access to their care record, letters, appointments, care plans, condition specific information, surveys, polls and questionnaires.
- Researching existing citizen digital training services available in Staffordshire and work with communications to develop a micro site which details the opportunities. Also ensure front line staff are able to signpost patients to digital skills services to improve their digital confidence and increase the likely hood of them engaging in digital health services. Work with the ICS to support a system approach to citizen digital skills.
- Evaluating our quality impact assessment process to ensure it is effective in evaluating the digital exclusion of patients and undertake a quality impact assessment for all innovations and systems to ensure digitally excluded patients do not receive a reduced service as a result.

Make the most of our Resources through optimising business and communication systems to improve efficiency:-

- Improving business efficiency through reimagining current paper driven or silo processes, simplifying or automating processes.
- Improving clinical communication efficiency through the replacement of non-critical pager services with a fit for purpose communication solution.
- Enabling the ability to take and make Trust phone calls from any location and on many devices (mobile, computer, tablet).
- Developing learning and improvement through developing communities of interest to share good practice, lessons learned and support using digital tools to enable these communities to share in both real time and asynchronously.
- Establishing a programme management solution to enable the visibility and prioritisation of projects across the Trust ensuring they are aligned to the Trusts key priority domains.
- Improving communication across the Trust by giving all staff Office 365 which includes email, Microsoft Teams, Viva (employee experience and engagement platform), Forms, SharePoint online, OneDrive allowing maximum flexibility to staff.

- Reducing stock wastage through the implementation of a Theatre Stock Management Solution
- Contributing to delivering a net zero NHS through improved sourcing, improved compute management e.g. cloud and tools to reduce staff, patient and visitor travel.

Trusts Strategic Initiatives

We want to enable the Trusts Strategic Initiatives with the required digital capabilities.

Positive and inclusive culture will be supported by:-

- Delivering digital tools and services allow staff to work more efficiently and effectively from any location to support agile working.
- Viva (employee experience and engagement platform) as part of Office 365. Microsoft Viva brings together communications, knowledge, learning, resources, and insights into an integrated experience that empowers people and teams to be their best, from anywhere.
- Ensuring digital solutions are evaluated from a quality impact assessment to mitigate against digital exclusion.
- Ensuring technologies such as Artificial Intelligence and Machine Learning are analysed to be assured the solutions are not subject to data, analytical or societal bias.

Improving Together will be supported by:-

- Delivering a programme management solution to enable the visibility and prioritisation of projects across the Trust ensuring they are aligned to the Trusts key priority domains.

- Improving data warehouse services to increase the data available for reporting and analytics to support the Improving Together programme.
- Working with the Improving Together team to support the digitisation of elements of the Improving Together standard work for example looking at a digital strategy deployment room and digital quality improvement boards.

Elective Recovery:-

- Delivering a patient portal to support the elective pathway which would include; patient letters (appointments, discharge, clinical), appointments (calendar, cancellations and rebooking), condition specific libraries of content (videos, leaflets, guides, exercise sheets), patient surveys, polls, questionnaires and clinical forms such as Preams, patient and speciality communication (chat, picture sharing, video sharing), PIFU workflow, care plans and emergency care plans, patient added information such as weight, cigarettes smoked, alcohol consumption, pain levels, blood sugars etc.
- Working with the programme to identify any dashboard or reporting requirements to support elective recovery.
- Working with the programme to identify any digital solutions to support elective recovery.

Waits and Flows:-

- Delivering a clinical system and data insights to enable visibility of the pathway and any bottle necks.
- Delivering data insights that allow the detailed analysis of medically fit for discharge patient journeys and right to reside data.
- Evaluating the current multidisciplinary approach to complex discharges and identify if these could be improved with enhanced digital solutions and data insight.

System Alignment:-

- See System and Partners section

6. How we will get there

This strategy will be delivered as a series of interdependent and interlinked programmes and projects managed by the digital programme office. Projects will be delivered adopting either the Prince2 project management methodology or Agile Project Management (APM) whichever is proportionate and appropriate for each project.

Each project will have a defined project organisation/structure and governance arrangements established which will direct the project and ensure delivery. These projects will report into the IT Programmes Operational Group and up to the Executive Digital and Data Security and Protection Group.

Where projects are new and investment is significant, complex or contentious a business case will be produced in line with the Trusts standing financial instructions. The business case will be processed for approval in line with the standing financial instructions and is a gateway to ensure the initiative is clearly defined and benefits and costs are understood.

Where projects are aligned to the ICS, digital joint governance, reporting and delivery work streams will be established to ensure alignment and skills sharing.

Essential to the delivery of this strategy is the effective engagement of clinicians as well as operational leaders. Clinical engagement is essential if Digital and Data Insight projects and changes are to be seen

as enablers to clinical and service improvements. Large projects will benefit from the creation of stakeholder engagement groups and Clinicians and Business Leaders will:-

- Drive the design and introduction of new technology and clinical systems
- Become responsible for the ownership of systems, and
- Be held accountable for the realisation of benefits associated with the implementation of clinical and business systems.

Clinicians are the public face of the organisation. They have considerable experience of the NHS. This gives them a wealth of knowledge about the strengths and weaknesses of Trust systems and processes, and also puts them in a good position to determine what will work. They should have a clear understanding of how developments in Digital and Data Insights could help improve the quality of care and patient safety. We will build upon relationships with the professional groups who are affected by the large projects as these will be responsible for, and deliver, much towards the success of this strategy.

The clinical voice will be heard and their views will be incorporated in the case for change, and in articulating clinical, business and patient benefits.

An integral part of the delivery of the strategy will be our relationships with our supplier partners. In 2021 the Trust Executives agreed a new IT Commercial Manager post for the Trust. This post aims to improve our relationships and drive value with our suppliers. The post holder will map our current suppliers to the matrix below and set up supplier management processes and routines for each quadrant and the suppliers will be engaged in line with the routines.
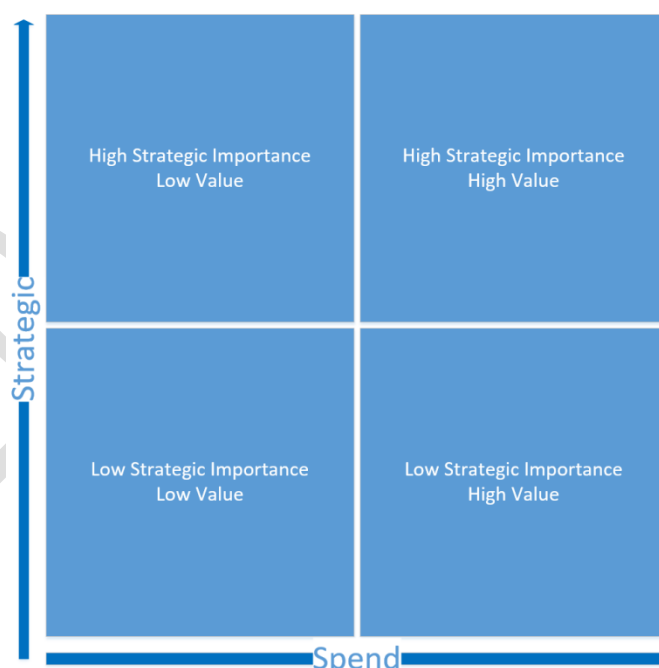

The IT Commercial Manager will also ensure that suppliers have effective contracts and are procured through a competitive procurement process.

This focus on supplier relationships will enable us to drive value and quality of our digital services.

UHNM have over 450 systems in use (as identified during the Log4J cyber security incident), these standalone silo systems can result in increased risk in the following areas:-

- Incomplete clinical record due to silo solutions not feeding the Trusts clinical portal, digital clinical system, patient held record and ICS wide population health management system.
- Duplicate clinical system functionality due to local purchasing decisions.
- Increase in Cyber Security vulnerabilities which if exploited could result in IT services being unable to staff and patients resulting in the cancellation of clinical activity.
- Increased complexity for clinical staff, multiple systems to use and update which can lead to information being missed.

A number of these systems deliver similar or competing features and all require support, maintenance and upgrades. The strategy aims to reduce the number of systems in use through improved system introduction governance on the back of the nationally mandated digital technology assessment criteria (DTAC).

7.   Alignment to our Trust Strategy

This digital strategy is directly aligned to the Trust Strategy and the connections to the vision, values, key priority domains and Trust Strategic Initiatives have been drawn out in the document.

The illustration below provides an overview of how the enabling projects align to the Trusts key priority domains.

7.1 Alignment to our Key Enabling Strategies

The digital strategy directly underpins the Trusts other enabling strategies providing the technology, innovation and data insights to support the delivery of the vision.

Delivering high quality clinical system services and HIMSS EMRAM level 5 digital clinical systems supports both the Clinical Strategy and Quality Strategy.

Delivering responsive foundation IT and support services supports the Estate Strategy and People Strategy.

Delivering the range of projects under the people key priority domain focused on both patients and staff supports the People Strategy and Clinical Strategy.

Delivering improved data insights and innovation as detailed in the improving and innovating key domain supports the Quality Strategy, Clinical Strategy, People Strategy and Research and Innovation Strategy.

Delivering initiatives outlined in the system and partners key priority domain supports the Clinical Strategy as we look to move to a hospital without walls approach to care.

Delivering the improved communication tools and paper free business processes as detailed in the resources key priority domain supports the People Strategy and Finance Strategy.

8. Alignment to System Plans

As the Integrated Care System (ICS) of Staffordshire matures the development of system wide services and pathways will increase, this strategy will consider how digital services may need to adapt to enable greater cross organisational, frictionless working for the benefits of our patients.

To date UHNM have participated in:-

- Providing data to the One Health and Care record which is an integrated care record for people living in Staffordshire and Stoke on Trent.
- Providing the digital solutions for the Community Rapid Intervention Service which is leading to a reduction in Emergency Department attendances.
- Shrewd system dashboard.

Further joint work will be required as more integrated pathways are developed.

In June 2021 the Integrated Care Systems: design framework was published by NHS England and NHS Improvement which sets out in the section on data and digital standards and requirements, the obligations and expectations of digital and data. As an Acute provider we will need to support and collaborate with our ICS digital colleagues to enable these standards and expectations.

9. Alignment to National Policy and Plans

Strategy has its origins in a number of Government policy initiatives and NHSx papers, as now described.
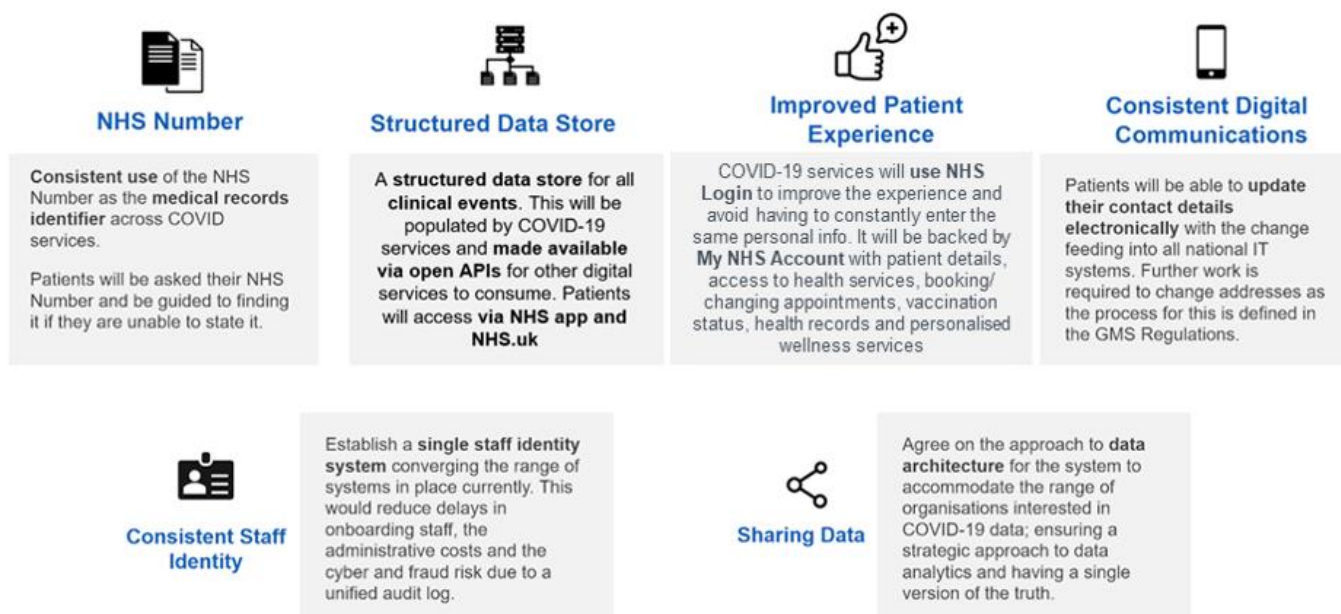
- Data Saves Lives: Reshaping Health and Social Care with Data - June 2021
- What Good Looks Like (WGLL) Framework - August 2021
- Future of human resources and organisational development report - November 2021
- The NHS Long Term Plan – August 2019
- Integrated Care Systems: design framework – June 2021
- Digital Technology Assessment Criteria (DTAC)
- NHS England - Cyber Security Programme
- Delivering a net zero NHS
- Joining up care for people, places and populations – February 2022

Data Saves Lives: Reshaping Health and Social Care with Data

This NHSx strategy sets out 7 goals to improving care through the exploitation of data.
- Bringing people closer to their data
- Giving health and care professionals the data they need to provide the best possible care
- Supporting local and national decision makers with data
- Improving data for adult social care
- Empowering researchers with the data they need to develop life-saving treatments, models of care and insights
- Helping colleagues develop the right technical infrastructure
- Helping developers and innovators to improve health and care

As an acute and specialist Trust there are a number of areas where we can support this NHSx strategy and these have been included in this Strategy including the delivery of patient portal technology, enhanced data warehouse and analytics services, enforcement of interoperability standards and improvements in the transfer of care documentation.

NHS Number

Consistent use of the NHS Number as the **medical records identifier** across COVID services.

Patients will be asked their NHS Number and be guided to finding it if they are unable to state it.

Structured Data Store

A **structured data store** for all **clinical events**. This will be populated by COVID-19 services and **made available via open APIs** for other digital services to consume. Patients will access **via NHS app and NHS.uk**

Improved Patient Experience

COVID-19 services will use NHS Login to improve the experience and avoid having to constantly enter the same personal info. It will be backed by **My NHS Account** with patient details, access to health services, booking/changing appointments, vaccination status, health records and personalised wellness services

Consistent Digital Communications

Patients will be able to **update their contact details electronically** with the change feeding into all national IT systems. Further work is required to change addresses as the process for this is defined in the GMS Regulations.

Consistent Staff Identity

Establish a **single staff identity system** converging the range of systems in place currently. This would reduce delays in onboarding staff, the administrative costs and the cyber and fraud risk due to a unified audit log.

Sharing Data

Agree on the approach to **data architecture** for the system to accommodate the range of organisations interested in COVID-19 data; ensuring a strategic approach to data analytics and having a single version of the truth.

What Good Looks Like Framework

The 'What Good Looks Like' framework was published to build on good practice and to provide guidance for the safe and secure digitisation of health and care services in support of the Long Term Plan aspirations.

The WGLL has been included by NHSE/I in both the ICS design framework and the NHS Operational Planning and Contracting Guidance, reflecting the expectation that the standards in the WGLL framework will be used to accelerate digital and data transformation across the NHS.

The WGLL framework has 7 success measures:

- Well led
- Ensure smart foundations
- Safe practice
- Support people
- Empower citizens
- Improve care
- Healthy populations

Future of human resources and organisational development report

The Future of human resources and organisational development report details how the NHS of 2030 will be fundamentally different from the service we work in today – as set out in the NHS Long Term Plan. The world of work is changing at a pace never imagined, with growing evidence of links between staff wellbeing, care quality and retention. This is evolving alongside digital technologies, automating tasks, remote working and new advances based on artificial intelligence. Meanwhile, existing ways of working, models of care and organisational boundaries are being transformed, as the NHS adapts to the changing needs and expectations of our population.

It sets out 8 strategic themes many of which can be enabled or enhanced by the use of technology. The report also details the need to support people in the development of their skills including digital skills.

Prioritising the **health** and **wellbeing** of all **our people**	We take a positive and proactive approach in supporting the health, safety and wellbeing of our NHS people, ensuring that work has a positive impact. We address health inequalities at work and in our communities.
Creating a **great employee experience**	We understand the diverse needs, expectations and experiences of our NHS people, and use that insight to tailor our people services. We attract and retain people in health and care, creating a positive impact on our communities.
Ensuring **inclusion** and **belonging** for all	We use our expertise and influence to create an inclusive culture, which values and celebrates our diversity. We listen to our people and take action to ensure there is equity for everyone.
Supporting and **developing** the **people profession**	We support everyone working in the people profession to be their very best and reach their full potential. Together we provide outstanding people practices.
Harnessing the **talents** of all our **people**	We help all our people to fulfil their ambition and potential. We build strong leadership and management capability at all levels.
Leading **improvement, change** and **innovation**	The people profession is productive, efficient and responsive. Our operating model delivers transformation and embeds innovation across organisations and systems.
Embedding **digitally** enabled **solutions**	We make best use of technology and digital solutions to deliver great people services. We develop our digital capability to equip ourselves for the future.
Enabling new ways of **working** and **planning** for the **future**	We enable our people to work differently, to support new models of care. We anticipate the needs of the health and care system, and play our part in creating a sustainable supply of workforce which meets the needs our patients now and for the future.

The NHS Long Term Plan

Chapter Five of the NHS Long Term Plan sets out a wide-ranging programme to upgrade technology and digitally enabled care across the NHS. These investments enable many of the wider service changes set out in the NHS Long Term Plan. Over the next ten years they will result in an NHS where digital access to services is widespread. Where patients and their carers can better manage their health and condition. Where clinicians can access and interact with patient records and care plans wherever they are, with ready access to decision support and AI, and without the administrative hassle of today. Where predictive techniques support local Integrated Care Systems to plan and optimise care for their populations. And where secure linked clinical, genomic and other data support new medical breakthroughs and consistent quality of care.

Practical priorities will drive NHS digital transformation

- Create straightforward digital access to NHS services, and help patients and their carers manage their health.
- Ensure that clinicians can access and interact with patient records and care plans wherever they are.
- Use decision support and artificial intelligence (AI) to help clinicians in applying best practice, eliminate unwarranted variation across the whole pathway of care, and support patients in managing their health and condition.
- Use predictive techniques to support local health systems to plan care for populations.
- Use intuitive tools to capture data as a by-product of care in ways that empower clinicians and reduce the administrative burden.
- Protect patients' privacy and give them control over their medical record.
- Link clinical, genomic and other data to support the development of new treatments to improve the NHS, making data captured for care available for clinical research, and publish, as open data, aggregate metrics about NHS performance and services.
- Ensure NHS systems and NHS data are secure through implementation of security, monitoring systems and staff education.
- Mandate and rigorously enforce technology standards (as described in The Future of Healthcare) to ensure data is interoperable and accessible.
- Encourage a world leading health IT industry in England with a supportive environment for software developers and innovators.

Integrated Care Systems: design framework

The Integrated Care Systems: design framework proposes that systems will need to have smart digital and data foundations in place. The System will need to locally determine the right way to develop these capabilities and to ensure they are available at system and place level, and across provider collaboratives. Specifically, ICS NHS bodies are expected to:-

- Have a renewed digital and data transformation plan that is embedded within the ICS NHS body plan and details the roadmap to achieve 'What Good Looks Like'; and enables a cross system approach to transformation, so that changes to models of care and service redesign involve digital and data experts working with partners from all relevant sectors.
- Have clear accountability for digital and data, with a named SRO with the appropriate expertise, (registered professional or with equivalent experience), underpinned by governance arrangements that have clear oversight and responsibility for digital and data standards and requirements for the ICS and enabling partner organisation programmes and services.
- Invest in levelling-up and consolidation of infrastructure, linked to the future ICS reference target architecture and data model, adopting a simplified cloud-first infrastructure that provides agility and frictionless cross-site working experience for the workforce. 48 | Integrated Care Systems: design framework
- Implement a shared care record, that allows information to follow the patient and flow across the ICS to ensure that clinical and care decisions are made with the fullest of information.
- Ensure adherence by constituent partners to standards and processes that allow for interoperability across the ICS, and alignment to forthcoming national guidance.

- Enable a single co-ordinated offer of digital channels for citizens across the system and roll out remote monitoring technologies to help citizens manage their care at home.
- Cultivate a cross-system intelligence function to support operational and strategic conversations, as well as building platforms to enable better clinical decisions. This will require ICSs to have linked data, accessible by a shared analytical resource that can work on crosssystem priorities.
- Agree a plan for embedding population health management capabilities and ensuring these are supported by the necessary data and digital infrastructure, such as linked data and digital interventions.

DTAC

DTAC is the new national baseline criteria for digital health technologies entering into the NHS and social care.

The DTAC is designed to be used by healthcare organisations to assess suppliers at the point of procurement or as part of a due diligence process. The DTAC will ensure products meet our standards in: clinical safety, data protection, cyber security, interoperability and accessibility. The DTAC brings together legislation and recognised good practice into one place, helping the system to assess products quickly and consistently and the Trust must consider the legislative requirements in any build. This will result in a change of policy whereby all digital purchases are approved by IM&T.

NHS England – Cyber Programme

The project is working with colleagues in NHS Digital and NHS Improvement to ensure that Trusts are aware of their accountabilities and responsibilities and undertake cyber security actions, including:-
- Completing independent assessments organised through NHS Digital.
- Ensure the outcome of cyber security assessments are acted upon, to mitigate risks
- Ensure that Critical alerts are actioned within 14 days.
- Ensure that organisations subscribe to NHS Digital CareCERT Collect, act on advisories when they are issued, and submit remediation plans.

Delivering a net zero NHS

The national target as set out in Delivering a net zero NHS released in October 2020 is to be the world's first net zero national health service. 2 targets have been set:-

- For the emissions the NHS control directly (the NHS Carbon Footprint), we will reach net zero by 2040, with an ambition to reach an 80% reduction by 2028 to 2032;
- For the emissions the NHS can influence (our NHS Carbon Footprint Plus), we will reach net zero by 2045, with an ambition to reach an 80% reduction by 2036 to 2039.

Digital has a role to play in reaching this target in ensuring the devices we deploy and support are carbon efficient, infrastructure is delivered to enable agile working, tools are deployed to enable the reduction in travel such as video conferencing, processes are reinvented to be paperlite or paperless, remote monitoring applications support a reduction in hospital visits.

Joining up care for people, places and populations

The national vision is to have a core minimum digital capability across all Trusts to enable transformed models of care.

Digital tools should be deployed to empower people to look after their health and take greater control of their own care, offering flexibility and support through the NHS App and NHS.uk, remote monitoring and digital health apps. The vision is to have a shared care records for all citizens by 2024 that provide a single, functional health and care record which citizens, caregivers and care teams can all safely access.

Digital transformation should be supported by formally recognising the Digital Data and Technology profession within the NHS Agenda for Change and including basic digital, data and technology skills in the training of all health and care staff.

Support all health and care staff to be confident when recommending digital interventions to patients and individuals using services, based on what we know works and what people want to access.

Support place-based organisations, Integrated Care Systems (ICSs) will develop digital investment plans for bringing all organisations to the same level of digital maturity. These plans will outline how ICSs will ensure data flows seamlessly across all care settings and use tech to transform care so that it is person-centred and proactive at place level.
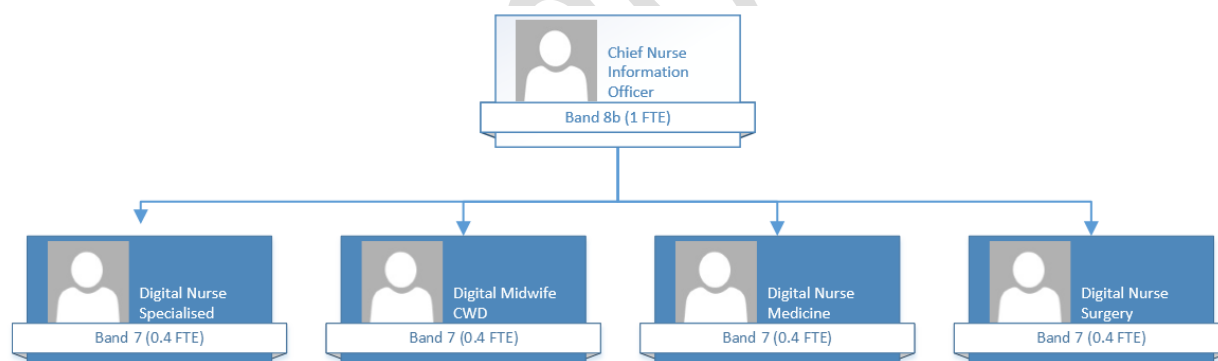
10. Resources Required

As detailed in section 6 - How will we get there, it is intended that each initiative or project will be supported by a business case. This business case will identify any additional resources required for the delivery and on-going operating of the new service. The business case will consider infrastructure, software, equipment, training and people when evaluating the resources alongside the benefits and return on investment.

In addition to the project specific business cases there is an on-going requirement for some business as usual investment this is detailed below.

Clinical Leadership
We require experienced clinical leadership representing nurses, midwives and allied health professionals. The structure below provides further detail.

The cost of this on-going structure will be £144,944 per annum. £53,587 of the required funding is available through the nursing teaching fund but the remaining £91,357 which will be a recurrent pressure.

Business Intelligence Team
In the past 6 months we have really seen the benefit of good data insights for planning, assurance and decision making. This has been proven with the development of the Trusts Winter Coordination Centre Dashboard. The team would be able to create and support additional dashboards to support decision making and planning if it had more capacity. Whilst a business case will be produced for an increased data warehouse with data feeds from more systems, if the team were increased by 2 straight away we would be able to support clinicians and operational managers with relevant and supporting dashboards without delay. The recurrent cost of this would be £117,294.

Business Relationship Managers
IM&T staff are keen to support the divisions with all things digital, from getting the most out of existing systems or from supporting digital investments when an idea is first thought of. This will allow us to look and see if we already have the capabilities in our existing systems or in use across other divisions, if we need to purchase something we look at solutions the technical and security requirements are baked in, if

solutions don't exist that we build solutions that fit in our technical environment and are supportable. We also would like to support divisions develop their digital innovation plan and support the consolidation of solutions. To support this we would like 3 digital business relationship managers (BRM) at band 7. These BRMs will work closely with the division, the DCCIO and DCNIO to understand their services and build relationships work up digital plans, co-ordinate bids for digital projects, help with the development of business cases, contract renewals and specifications. The recurrent cost of this would be £154,230.

Technical Training
To get the most out of technology we need to know how to set it up and support it well. The IM&T teams do not routinely benefit from industry standard technical training in the systems they support. It is important that we change this so they can offer the best possible solutions to the organisation. It is planned that a programme of Microsoft training is made available to our service desk, desktop, operations, BI and development teams allowing them to exploit the Trusts investment. To make this affordable we are working with a supplier who can offer Microsoft this as a series of apprenticeships. Whilst we will need to allow time for staff to undertake their training it is expected that we will see the benefits quickly in terms of improved support and solutions. The apprenticeships will be funded from the apprenticeship levy.

Digital Clinical Leadership Training
It is important that our clinical digital leaders embark on personal development in the arena of digital health. There are a number of digital leadership events during the year that will contribute to clinicians continuing professional development (CPD) in the area of digital. The cost of these events is £550 per person. The estimated total cost of this CPD will be a maximum of £11,000.

11. How we will measure our success

As detailed in section 6 - How will we get there, it is intended that each initiative or project will be supported by a business case. This business case will identify KPIs and detailed benefits realisation plans and measures for each project or initiative. These KPIs will be managed by the project and reported to the Executives through business case update reports.

As the plans come together we will see our:-

- HIMSS EMRAM score increase from 2 to 5.
- WGLL score increase from 1.6 to 5.
- number of foundation services as detailed in the NHSX Digital Hospital Model be 100% compliant.
- KLAS score improvement (we will receive the base line for this from NHSX in early 2022).
- number of silo systems reduce from 456 to under 400.
- spend on paper and print will reduce by 15%
- number of systems feeding into the data warehouse increase by 20%.
- clinicians will not need to log into as many independent systems seeing a reduction of 15%.

Most importantly the quality and safety of our care will improve. We will see a reduction in our medication incidents; reduction in hospital acquired acute kidney injury and increased time to care. We will see our patients engaging in their own care through technology and only coming to the hospital where their intervention requires it.

It is anticipated that conversations will switch from:-

Workforce

Now	To Be
I have to wait ages for a computer to become available.	I can always find a working computer to work on.
It takes ages to log into a computer so sometimes I don't bother.	I can log in to a computer in less than 30 seconds.
I have to log into loads of different systems to see all the clinical information about my patient.	I can see the clinical information I need about a patient to help me make safe decisions.
Our paper processes waste time and are not good for the environment.	I can complete electronic forms for processes which is quicker and more visible.
I update the computer at the end of my shift.	I can effectively keep contemporaneous clinical records allowing real time information to benefit my colleagues and kick off other workflows automatically.
I have to duplicate information into different systems which is very frustrating.	I can update the system once and the data flows to where it needs to be.
I have to print off a digital image, scan it in and attach it to the patient record.	Images are all stored in PACS regardless of type so I know where they are all.
I don't have time to log a support call for the broken kit we have.	Computer equipment just works.
I have passwords coming out of my ears.	I can use the same password or my smartcard to get into systems.
I don't have access to information or data to enable me to do my job better.	I have access to dashboards and data that help me make decisions.
I can't believe I am recording annual leave on a sheet of paper in the year 2022.	I can request and have my annual leave approved electronically and the days taken/left are automatically calculated.
I can't read the prescription or doctor's signature.	Prescriptions are electronic and clear.
My phone, laptop, tablet, iPod does not always connect to the network everywhere in the hospital.	I am always connected when in the hospital.
My patients don't always turn up for their appointments.	My patients receive appointment information, reminders, pre appointment questions and condition specific information which results in them turning up for their appointment.
I am not very good with a computer.	I am confident to use a computer and recognise it is a key tool to do my job.
I have a desk phone, VOIP phone, Teams, pager, WIFI phone, mobile phone and Vocera - Aghhhhhh	I have one number for people to reach me!
Don't come to work at UHNM the IT is not good.	Come and work at UHNM the technology is an enabler of exceptional care.

Patients and Carers

Now	To Be
I have lost my appointment letter and need to ring the hospital to find out when my appointment is.	I have my appointment details on my patient held record. I also received a reminder for my appointment a couple of days before the appointment.
I want to talk to my clinician or clinical service and struggle to get through on the telephone.	I can send my clinician or clinical service a secure message to ask my question.
I have to run the telephone gauntlet to get my test results.	I can see my test results on my patient held record.
I get anxious before my visit to the hospital because I have a difficult journey and when I get there the appointment did not require a physical examination.	I can attend my appointment by video from the comfort of my own home.
I am asked a lot of questions at my appointment some of which I cannot remember the answer. If I had known I would have brought the information with me.	I can complete a pre-appointment questionnaire at home and find the information I need to complete it properly.
I feel like I have to tell my medical history to every clinician I meet, it is very tiring.	I can show clinicians my medical record on my patient held app or they can look it up on the One Health One Care portal.
I wish I could see the letters that are sent to my GP about me.	I can see all letters on my patient held record.

I get confused when I am given lots of advice at an appointment and my son lives down south so is unable to come with me to my appointment.	Advice and videos about my condition are available on the patient held record and I can share it with my Son so he can help me with my self-care.
I get confused when I am given lots of advice at an appointment and my son lives down south so is unable to come with me to my appointment.	My son can join me over video for the appointment, he reminds me of the advice I am given to help me with my self-care.

12. How we will monitor our progress

This strategy sets out a range of projects and programmes that will deliver a range benefits to the business. Business priorities and technology advancements can change quickly and as such this Digital Strategy will be a living document that will be subject to formal change control.
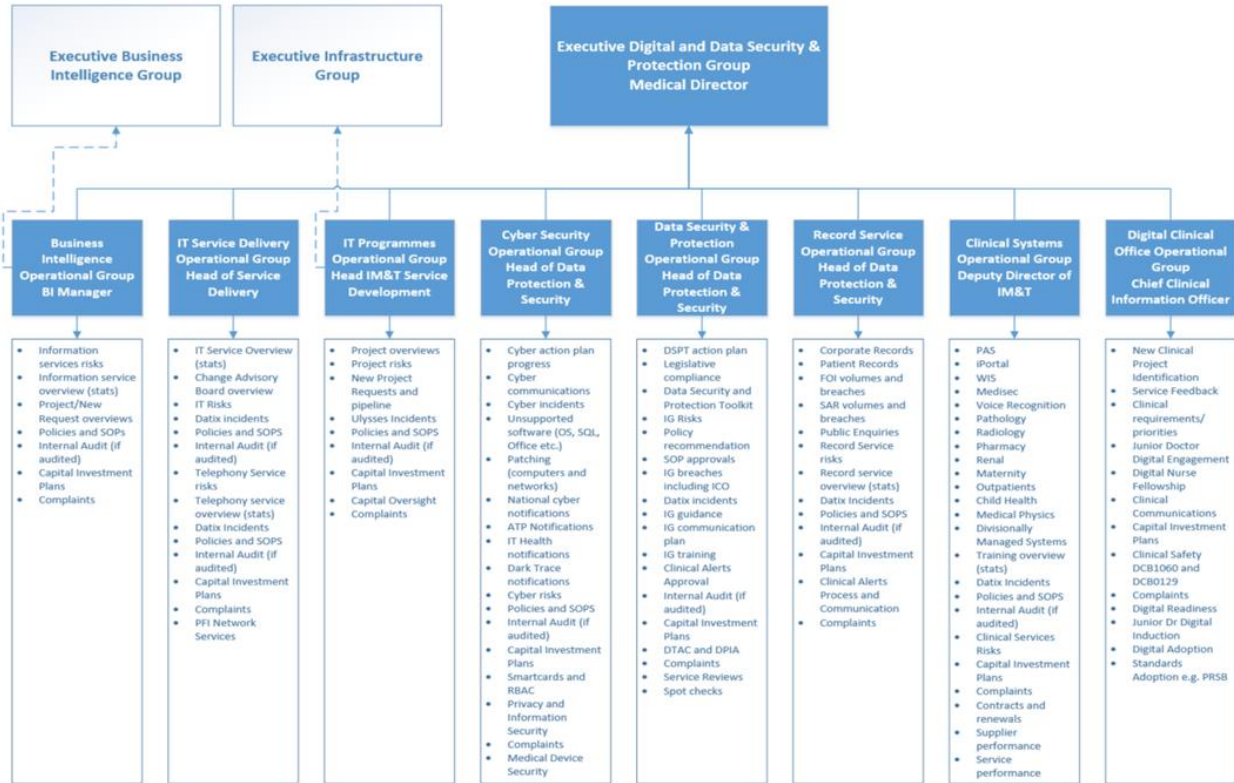
Governance arrangements in the form of Executive Digital and Data Security and Protection Group will hold IM&T Services to account for the execution of the strategy. This executive level group will be charged with steering, governing and performance managing the Digital Projects in order to achieve the targets, objectives and benefits set out in the strategy through the IT Programmes Operational Group.

It is proposed that because the Digital Strategy will require significant business transformation and people development the Executive Digital and Data Security and Protection Group report through the Transformation and People Committee (TAP) to the Trust Board with clear terms of reference.

IT User Groups will be established for specific IT systems/services or initiatives for example the Careflow Medicines Management Steering Group.

The success of the Digital strategy and on-going long term digital journey will require on-going continuous improvement, this will require clinical stewardship from a mature clinical informatics capability. An Office of the CCIO (OCCIO) will be established to directly support the clinically led, digitally enabled vision. The OCCIO will be chaired by the CCIO. The group will provide clinical informaticians a framework to develop and drive clinical development of new digital clinical systems. In addition the OCCIO will enhance skills of staff and deliver new opportunities to wider their experience. This group will build on and add to the existing clinical informatics workforce which currently exists in Pharmacy, Pathology, Radiology and Maternity. Wrapping a structure, support and process framework around the clinical informaticians will allow them to lead our digital journey.

The digital governance structure is shown below.

Currently the Executive Digital and Data Security and Protection Group reports to the Executive Infrastructure Group and then onwards to Performance and Finance Committee. The success of digital strategy will be highly dependent on our staff, transformation of our services and our culture. This digital strategy recommends that the Executive Digital and Data Security and Protection Group reports to the Transformation and People Committee. All business cases would continue to be presented at the Performance and Finance Committee as per the Trusts Standing Financial Instructions.

Risk Management

The delivery of projects in this Digital Strategy is critical as it is a key enabler to deliver our Service Developments, on-going clinical systems development, ICS and Trust plans.

IM&T follows the Trust's processes for the management of its risks. Components of this strategy will be managed in accordance with Trust's risk management practice, risks will be reviewed and managed at the relevant operational groups. A departmental risk register is in place which provides the description of risk, impact, probability, overall risk score, details of risk control, actions planned, action progress, impact, probability, residual risk, lead officer and lead director. A risk and issues log is also maintained at project level as per our project management methodologies.

Risks scored above the corporate threshold are escalated in to the corporate risk process which will help asses any wider dependencies particularly where the risk may impact the delivery of key health service improvements.

The departments current risk profile is shown in the table below:-

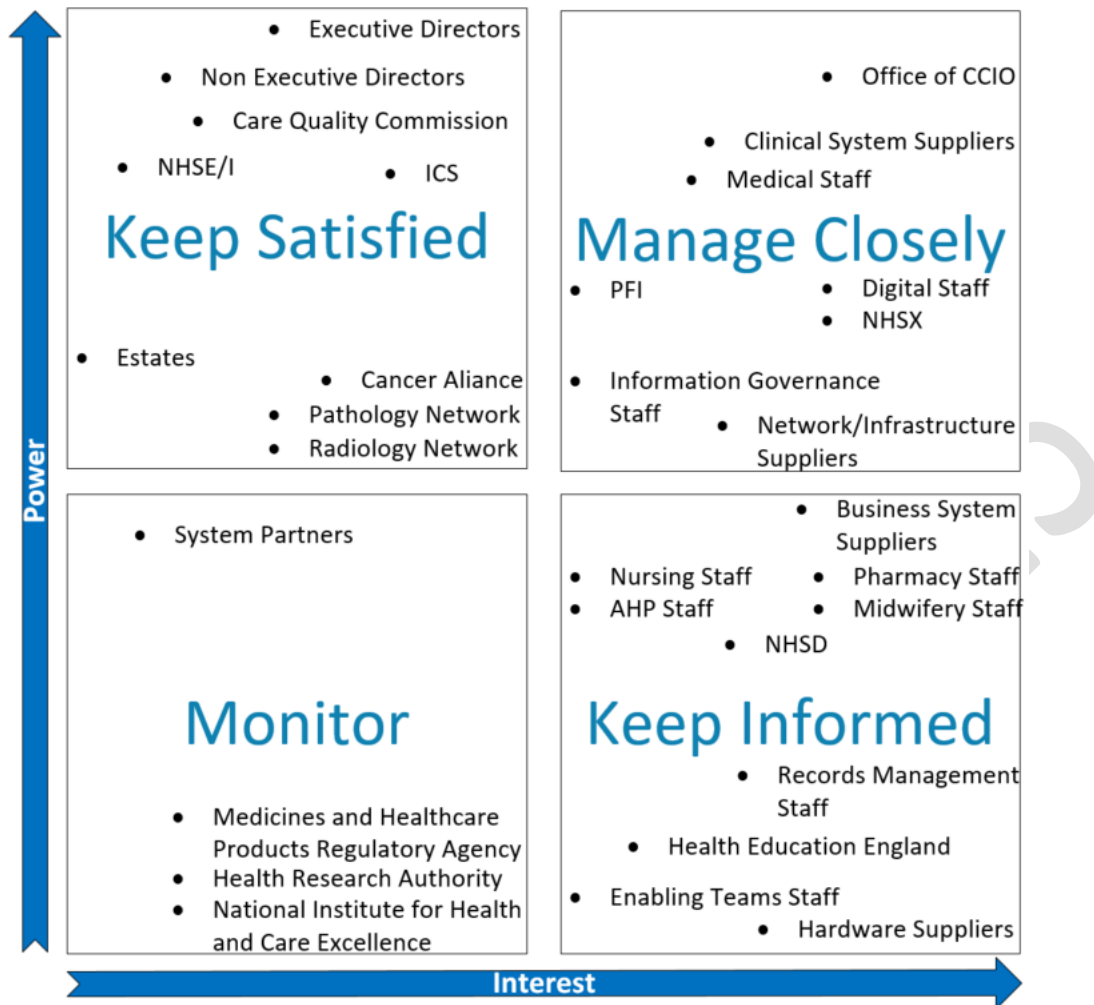| Current Risk Rating	Number of Risks
Extreme (15)	2
High (10)	2
High (12)	8
High (8)	2
High (9)	2
Moderate (4)	3
Moderate (5)	1
Moderate (6)	5
Grand Total	25

The 2 current extreme risks are:-

ID	Title	If (Cause)	Then (Event)	Resulting In (Effect)	Controls	Assurances	Risk level (initial)	Risk level (current)
22938	Log4j Vulnerability	the appropriate technical controls are not put in place to patch this vulnerability	a threat actor can infiltrate and have full access to all of the trust systems	loss of systems manipulation of systems for ransom inability to access systems to support patient care business interruption/ disruption as appointments are cancelled potential manipulation of data within systems leading to data quality issues reputational damage as inappropriate technical controls were not in place	firewall blocking list of suppliers with contact made to ensure they patch the vulnerability software tools in use to identify if servers have vulnerability which will link back to the supplier to patch the vulnerability	perimeter control by the firewall to block this vulnerability 259 suppliers(as at 15.12.2021): 153 contacted with 83 responses 104 suppliers to be contacted	Extreme (20)	Extreme (15)
9036	Vulnerability to Cyber Attack	If the organisations infrastructure and clinical systems not not adequately protected from either a targeted or indirect attack	Then this would compromise the operation and delivery of care within the hospital	Resulting in a loss of IT systems for potentially a prolonged period, and potential cancellation of some services, as well as reputational damage, increased backlog of patients and operations and potential fines of upto 4% of trust budegt by NHS England if a cyber 'even' causes impact to the operating of the hospital.	Intercept-X (anti ransomware) in place to protect against wannacry type attacks. Server and PC patching process Implementation of next generation firewalls technology DarkTrace is a machine learning based cyber security technology which monitors network traffic and actively blocks malicious activity Annual external Penetration Testing Governance Pack developed for DSP with Cyber Lead membership Windows 10 build incorporating national cyber security centre baseline recommendations	External Auditing from NHS Digitial and other internal/external assessments. Cyber Action Plan Incident reporting Penetration test report - actions of which are incorporated into the cyber plan DSP toolkit self assessment Bitsight cyber rating report IT Health dashboard monitoring	Extreme (15)	Extreme (15)

Both of which are directly improved as a result of delivering this strategy.

13. How we will communicate this strategy

The development of the communications strategy commenced with evaluating stakeholders and creating a stakeholder map shown below. For each group of stakeholders different communication and engagement approaches will be required.

The strategy will be communicated using a number of communication mediums including but not limited to:

- Twitter
- Facebook (UHNM staff page)
- Publish the strategy on the Trusts website
- UHNM Live
- Presentations at Digital Governance Meetings
- Project specific workshops
- suppliers and meetings with strategic suppliers

- Monday Message
- Time to Talk
- Presentation at the ICS Digital Group
- Email to NHSD, NHSx and System Partners
- Email to third party

The full strategy, strategy on a page and summary version will be made available to stakeholders.

14. How we will ensure equality, diversity and inclusion

The implementation of digital health services requires explicit consideration to equality, diversity and inclusion. We deliver care to patients who are unique and we must ensure that the services we offer can cater for those unique needs. We will respect patient's digital capabilities and ensure we do not create barriers to receiving or engaging in their care and where possible use technology to support overcoming some of the barriers that exist today. For example electronic letter delivery can enable those with reading difficulties to use screen readers and patient held records solutions could be available in a wide range of languages.

We will design services based upon patient's digital preferences for example always offering video consultations for clinics that do not require a physical examination but also offer a more traditional option if that is preferred. We will seek to assure ourselves that any new technology deployed is inclusive including considering how those with protected characteristics might be impacted. Web based solutions will meet the Web Content Accessibility Guidelines (WCAG) 2 Level AAA Conformance. In addition we will assure ourselves that suppliers who provide systems which are artificially intelligent or undertake machine learning have taken steps to mitigate against the risk of data bias, societal bias and algorithmic bias in their solution.

For those motivated to use digital health services but lack the confidence we will sign post to appropriate learning and support services.

Each project business case will undertake an equality impact assessment which will assure the Trust that consideration has been given to equality, diversity and inclusion.

Throughout its activities, the Trust will seek to treat all people equally and fairly. This includes those seeking and using the services, employees and potential employees. No-one will receive less favourable treatment on the grounds of sex/gender (including Trans People), disability, marital status, race/colour/ethnicity/nationally, sexual orientation, age, social status, their trade union activities, religion/beliefs or caring responsibilities nor will they be disadvantaged by conditions or requirements which cannot be shown to be justifiable. All staff, whether part time, full-time, temporary, job share or volunteer; service users and partners will be treated fairly and with dignity and respect.

Our responsibilities to equality and inclusion do not end at the considerations given to the digital systems we are implementing and the digitally enabled care pathways we are developing. We can improve equality and inclusion through increasing the data feeds the Trust provides to the population health management system of the integrated care system. This additional data will allow richer population health intelligence which in turn will support more inclusive care planning.

15. Plan on a Page

Influences

Trust
- Trust Strategy
- Clinical Strategy
- People Plan
- Divisional Plans
- Improving Together
- Estates Strategy
- Research and Innovation Strategy

ICS/Regional
- Together We're Better
- Staffordshire and Stoke on Trent Digital Strategy
- MPFT Digital Strategy
- Combined Healthcare Digital Strategy

National
- NHSX What Good Looks Like
- NHSX Data saves lives: reshaping health and social care with data
- NHSX Digital Hospitals Blue Print
- NHS People Plan
- The future of NHS human resources and organisational development
- Harnessing the information revolution
- Making IT Work
- The future of healthcare: our vision for digital, data and technology in health and care
- Digital transformation in the NHS
- Delivering a net zero NHS
- Joining up care for people, places and populations

Digital Strategy on a Page

Resources Business & Comms
- Office 365
- Viva (communication and engagement)
- Microsoft Teams & Telephone Integration
- Pager Replacement
- Programme Management Solution
- Paper Process Replacement
- Workforce System Enhancement and Integration
- Net Zero Carbon Footprint
- Theatres Stock Management

High Quality Clinical Services
- HIMSS Level 5
- Nurse & AHP Documentation
- Medical Documentation
- Electronic Prescribing
- Scans & Image Viewing
- Task Management & Clinical Comms
- EPR Procurement Planning
- Improved End User Experience
- Laboratory Management Information System
- Digital Pathology

Responsive Foundation IT
- Network Service Improvements
- End User Computer Availability
- Ongoing Refresh Programme
- Exploiting Cloud
- Proactive Support Model
- Log in Performance
- Cyber Security Services
- Architectural Principals & Standards
- Virtual Desktop

System & Partners
- One Health and Care System Enhancements
- System Dashboards and Intelligence
- Technology to support integrated pathways
- West Midlands Imaging Network
- North Midlands and Cheshire Pathology Network
- Cancer Alliance

People
- Establishing the Office of CCIO & CNIO
- Digital Confidence Programme
- Digital Team Professionalisation
- IT System Management Standards
- Digital Workforce Gap
- Patient and Carers Portal
- Patient Digital Letters
- Patient Self-care
- Patient Virtual Interactions
- Patient and Carers Digital Skills
- Patient and Carers Digital Exclusion

Improving and Innovating Data Insights
- Data Warehouse Refresh
- Increased Data Feeds
- Power BI – Cloud
- Clinical Insights
- Business Insights
- Agile Development Adoption
- Digital Research and Innovation

Vision:
Delivering Exceptional Care with Exceptional People enabled and supported by Exceptional Digital and Communication Services

16. Strategic Delivery Plan

The strategic delivery plan is wholly dependent on funding being available. The planned approach is to have business cases produced and approved subject to funding, and as funding becomes available either nationally, regionally or internally the priority cases most closely aligned with the funding aims will be selected. Due to the funding arrangements the plan will need to be fluid with the exception of a number of agreed and currently funded programmes or programmes which are not dependant on additional funding, the list below details all the projects the funding position and when ideally we would like the work to commence.

Initiative	Funding	Project Start	Improving Together	Risk Reference	Rough Order of Magnitude (ROM) Cost Capital/One Off	Rough Order of Magnitude (ROM) Recurrent
EPR Procurement Planning	Not Funded	2022	High Quality	22949 / 17505 / 22201	150,000	
LIMS	Business Case Agreed	2022	High Quality		Funds Agreed	
On-going Refresh Programme	Not Funded	2022	Responsive	14092 / 22201		825,000
Proactive Support Model	No Additional Funds Required	2022	Responsive	9145	No Additional Funds Required	
Log In Performance	Not Funded	2022	Responsive		100,000	
Cyber Security Services	NHSE/I Funding	2022	Responsive	21784 / 23538 / 9897 / 8852 / 22938 / 17542 / 8849 / 9036 / 22201	No Additional Funds Required	
Digital Team Professionalisation	Apprenticeship Levy	2022	People	8846	No Additional Funds Required	
Digital Workforce Gap (Grow our own)	Apprenticeship Levy	2022	People	8846 / 9144	No Additional Funds Required	
Patient & Carers Portal	NHSE/I Funding	2022	People		250,000	144000
Patient Digital Letters	NHSE/I Funding	2022	People		No Additional Funds Required	
Patient Self Care	NHSE/I Funding	2022	People		No Additional Funds Required	
Patient Surveys and Questionnaires	NHSE/I Funding	2022	People		No Additional Funds Required	
Patient Virtual Interactions (PIFU)	NHSE/I Funding	2022	People		No Additional Funds Required	
Digital Research and Innovation	Not Funded	2022	Improving and Innovating		250,000	
System Dashboards and Intelligence	System Funded	2022	System and Partners		No Additional Funds Required	
Office 365	Business Case Agreed	2022	Resources	20689 / 8849	Funds Agreed	
Microsoft Teams & Telephone Integration	Not Funded	2022	Resources	17542		100,000
Programme Management Solution	Not Funded	2022	Resources		30,000	50,000
HIMSS EMRAM Level 3	Not Funded	2023	High Quality	9144 / 22201	20,000	
Nurse & AHP Documentation	Not Funded	2023	High Quality		<<add inpatient digitisation cost>>	
Electronic Prescribing & Medication Administration	Business Case Agreed	2023	High Quality		Funds Agreed	
Improved End User Experience	Not Funded	2023	High Quality	10278		30,000
Digital Pathology	NHSE/I Funding	2023	High Quality		No Additional Funds Required	
Network Service Improvements	Not Funded	2023	Responsive		2,000,000	1,400,000
End User Computer Availability	NHSE/I Funding	2023	Responsive	22094	No Additional Funds Required	
Exploit Cloud	Not Funded	2023	Responsive	13760 / 12536 / 22235	200,000	250,000
Architectural Principals & Standards	No Additional Funds Required	2023	Responsive	10387	No Additional Funds Required	
Virtual Desktop Assessment	Not Funded	2023	Responsive	9897 / 22094 / 17542	50,000	25,000
Office of the CCIO & CNIO	Not Funded	2023	People			<<add updated costs>>
Digital Confidence Programme	Partially Funded	2023	People			80,000
IT System Management Standards	Not Funded	2023	People		60,000	
Patient & Carers Digital Skills	Not Funded	2023	People		45,000	
Patient & Carers Digital Exclusion	Not Funded	2023	People		-	
Data Warehouse Refresh	Not Funded	2023	Improving and Innovating		500,000	100,000
Increased Data Feeds	Not Funded	2023	Improving and Innovating		150,000	50,000
PowerBi - Cloud	Not Funded	2023	Improving and Innovating	22235		48,000
Clinical Insights	Not Funded	2023	Improving and Innovating		-	
Agile Development Approach	Not Funded	2023	Improving and Innovating		20,000	
One Health & Care System Enhancements	Not Funded	2023	System and Partners		20,000	10,000
Viva	Business Case Agreed	2023	Resources		70,000	
Paper Process Replacement	Not Funded	2023	Resources		-	
Workforce System Enhancement and Integration	Not Funded	2023	Resources		80,000	45,000
HIMSS EMRAM Level 5	Not Funded	2024	High Quality	9144 / 22201	60,000	
Medical Documentation	Not Funded	2024	High Quality		100,000	
Business Insights	Not Funded	2024	Improving and Innovating		40,000	
Technology to Support Integrated Pathways	Not Funded	2024	System and Partners		No Additional Funds Required	
Pager Replacement	Not Funded	2024	Resources		700,000	300,000
Theatre Stock Management System	Not Funded	2024	Resources		500,000	120,000
Net Zero Carbon Footprint	Not Funded	2024	Resources		45,000	
Scans & Image Viewing	Not Funded	2025	High Quality		400,000	100,000
Task Management and Clinical Communications	Not Funded	2025	High Quality		300,000	80,000
West Midlands Imaging Network	Not Funded	On-going	System and Partners		No Additional Funds Required	
North Midlands & Cheshire Pathology Network	Not Funded	On-going	System and Partners		No Additional Funds Required	
Cancer Alliance	Not Funded	On-going	System and Partners		No Additional Funds Required	
					Total	Total
					6,140,000	3,757,000