Quality for all

Sherwood Forest Hospitals NHS
NHS Foundation Trust

Sherwood Forest Hospitals' Digital Strategy

2016 - 2021

Ver. 1.0

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Executive Summary

1

Executive Summary

Context

Information Management and Technology (IM&T) will play a central role in supporting the achievement of Sherwood Forest Hospitals (SFH) NHS Foundation Trust's strategic change in the way services are delivered to patients.

This document outlines the 5 year Digital Strategy for SFH and provides a framework for Nottinghamshire Health Informatics Services (NHIS) to deliver digital-enabled transformation initiatives for the Trust.

It is essential that investment in IM&T, and indeed for the implementation of the digital initiatives set out in this strategy, is driven by operational plans in order for the digital solutions to be effectively developed and implemented.

This strategy highlights the IM&T digital initiatives which will facilitate delivery against national and local targets and operational requirements in order to achieve the principle aim to support efficient, seamless and convenient care to patients – by providing the right tools and the right information, in the right place, at the right time.

This strategy links IM&T's strategic initiatives to the Trust's strategic objectives and is underpinned by the operational need for information at the point of care delivery. The strategy will enable SFH to be in a strong position to achieve its new vision while making better use of technology to improve the delivery of care through the advent of digitalisation and the transformative impact of analytics by turning data into information which leads to insights.

In 2016, SFH has achieved positive improvements driven by good leadership and supported by the whole organisation being part of the change. It is now imperative for SFH to become more agile both in its delivery of services as well as its business processes, with the Digital Strategy playing a key role as an enabler. This will help to keep the Trust in a strong position to move from "Good to Outstanding".

With financial challenges likely to continue across the NHS over the coming years, it is vital that the Digital Strategy delivers value for money and also focuses on getting the basics right and that there is strong and well managed engagement from all staff in embracing digital technology and making it work.

Executive Summary – cont.

What is Digital for Sherwood Forest Hospital

The continuous innovation of "the way patients engage with services, improve efficiency and coordination of care, and support people to manage their health and wellbeing, " using cost effective digital solutions

- adapted from The Kings Fund report: A digital NHS? (2016)

From the engagements with the clinical and non-clinical stakeholders, it is clear that "digital" is not about digitisation of existing operations, but about simplification of patients and customer interaction, services and processes.

Digital Strategy

In response for the need for IM&T to improve within SFH, we have agreed the following goal and objective:

Goal: Deliver digital services to support efficient, seamless and convenient care to patients.

Objective: By providing the right tools and the right information, in the right place, at the right time.

1. Build trusted relationships
2. Be agile and responsive
3. Achieve operational excellence
4. Govern and deliver diligently
5. Enable productivity and efficiencies
6. Deliver value through innovation

Executive Summary – cont.

Digital Summary: The Digital Strategy is summarised below

STRATEGIC OBJECTIVES

- Outstanding care to our patients
- Support each other to do a great job
- Inspire excellence
- Get the most from our resources
- Play a leading role in transforming health and care services

DIGITAL GOAL AND OBJECTIVE

Goal: Deliver digital services to support efficient, seamless and convenient care to patients.

Objective: By providing the right tools and the right information, in the right place, at the right time.

STRATEGIC INITIATIVES

1. RESILIENT, STABLE AND SECURED INFRASTRUCTURE
2. INFORMATION-DRIVEN DECISION MAKING
3. INTEROPERABLE SYSTEMS LANDSCAPE
4. TRANSFORMED DIGITAL OPERATING MODEL
5. DIGITAL SERVICE ENABLED CHANGE

GUIDING PRINCIPLES

Resilient and Secure by design
Design and build for continuous operations
Security is embedded and pervasive

Making Digital Technology decisions for the Trust
Think strategically at the Trust/Business level

Data-driven Intelligence
Improve decision making – speed, visibility, impact and effectiveness

Realised Benefits
Did we deliver what we planned? Balance innovation with benefits and risks

Positive Digital Experience
Digital Experiences on users' terms

Perceptions of Responsiveness
Expectation alignment and Customer driven

Strategic Context

2

This section provides details of the Trust's strategy and 'external strategic drivers' for the Digital Strategy.

Sub-sections include:

2.1 Sherwood Forest Hospitals' Strategic Objectives

2.2 National and Local Drivers

2.1

Business Drivers

Sherwood Forest Hospital Strategic Objectives

During 2015/16, we revised our clinical divisional structure, moving from 3 clinical divisions to 5. The 5 divisions – Urgent and Emergency Care, Medicine, Surgery, Women's and Children's and Diagnostics and Outpatients – are now benefitting from enhanced clinical leadership and greater levels of managerial support. The clinical divisions continue to be supported by a corporate division.

SFH is an active partner in the mid-Nottinghamshire Better Together programme, which seeks to provide care closer to patients' homes and aims to ensure that effective care is not inhibited by organisational boundaries.

During 2015/16, the Better Together programme saw the development of a commissioner-provider alliance, which moved into a new phase in 2016/17. The Alliance consists of mid-Nottinghamshire Clinical Commissioning Groups (CCGs), local healthcare providers (including SFH), social care and the third sector. An 'Alliance Agreement', which sets out the aims and objectives for 2016 onwards, was signed in March 2016.

The principles set out in the agreement underpin our collective commitment to work together for the benefit of the community we serve.

Key considerations

The latest Care Quality Commission (CQC) rating highlights the positive improvements driven by good leadership and supported by the whole organisation being part of the change that needed to happen.

Sherwood Forest Hospitals now intends to build further on these successes and become an 'outstanding' Trust.

2.1

Business Drivers

Sherwood Forest Hospital Vision and Objective – cont.

Our strategic priorities are as follows:

1. To provide outstanding care to our patients
2. To support each other to do a great job
3. To inspire excellence
4. To get the most from our resources
5. To play a leading role in transforming health and care services provided to our communities

Key considerations

Adoption and implementation of digital solutions should be able to:

- support electronic pathways of care including decision support
- reduce paperwork and free up time to care
- allow efficient collection and sharing of information
- support integrated working and collaboration across clinical and support departments
- collect views and feedback from all key stakeholders on issues relating to the Trust
- support the continuous development of our staff
- provide a secure and stable infrastructure on which digital solutions can be deployed

2.2 National and Local Drivers for Healthcare

National Drivers

The Five Year Forward View sets the national agenda in achieving fully interoperable, digital healthcare which will transform outcomes for patients and the community we serve.

This was supported by the government's commitment in Personalised Health and Care 2020 that all patient and care records will be digital, interoperable and real time by 2020.

Delivering the Five Year Forward View: NHS Planning guidance 2016/17 – 2020/21 also sets out a vision for the future of the NHS and outlines the need for a 5 year Sustainability and Transformation Plan (STP) at a local level.

These policies and guidelines all require IM&T to:

- Provide secure and resilient information infrastructure required to facilitate clinical operations, communications and business processes
- Provide electronic health records framework and ensure that paper and digital record keeping systems meet clinical and legal, primary and secondary requirements
- Facilitate the delivery of timely and accurate clinical activity, commissioning, statutory and performance reporting information
- Ensure the highest standards of data quality and data collection to both improve and to prove the quality of service provided while maximising service income
- Demonstrating effective clinical, financial and information governance to stakeholders and devolving governance to staff within the Trust
- Provide information fit for planning, risk and market assessment
- Provide safe and effective Trust wide digital solutions and services while facilitating the achievement of Trust cost improvement and efficiency programs.

Key considerations:

Strategic imperatives based on national and local drivers:

- Interoperability - fully interoperable electronic health records and systems to underpin paperless Trusts
- Data and Information – enable improvements to information to which patients have access. Benefit from data assets to support the operational and quality improvements
- Cyber security – strategy should deliver improvements in data and system security while managing new and evolving threats

2.2 National and Local Drivers for Healthcare – cont.

Local Drivers

Within Nottinghamshire, the Sustainability and Transformation Plan (STP) was developed to ensure that the healthcare environment in this region is sustainable and affordable over the next 5 years given that funding cannot keep up with rising demand.

It stated the “fundamental changes are needed to be able to deliver care in more joined-up ways, working across organisational boundaries and thinking less in terms of where care is delivered and more on how it is delivered”.

The STP also recognises the importance of utilising technology to best effect and aims to “maximise the value potential of information technology (IT) and Digital in care delivery, and use technology to help citizens to stay healthy and manage their own care, and to help providers deliver care more productively”.

Key objectives by 2020/21:

- Ensure records are in digital form and are shared via Orion across care settings
- Enable online appointment booking and self-referrals to be electronic
- Enable citizen access to all care records and relevant self-care information
- Achieve savings of £3m per year by 2020/21
- Increased usage of assistive technology by 20% each year within the STP footprint

Key considerations:

Strategic imperatives based on national and local drivers (cont.):

- Enable information to be accessible across care settings
- Foster closer collaboration with wider community and providers
- Rationalise corporate and administration functions (or have plans in place for shared service consolidation with, or outsourcing to, other providers)

Current State of Digital Landscape

This section highlights the current digital state based on the various as-is analysis and diligence activities:

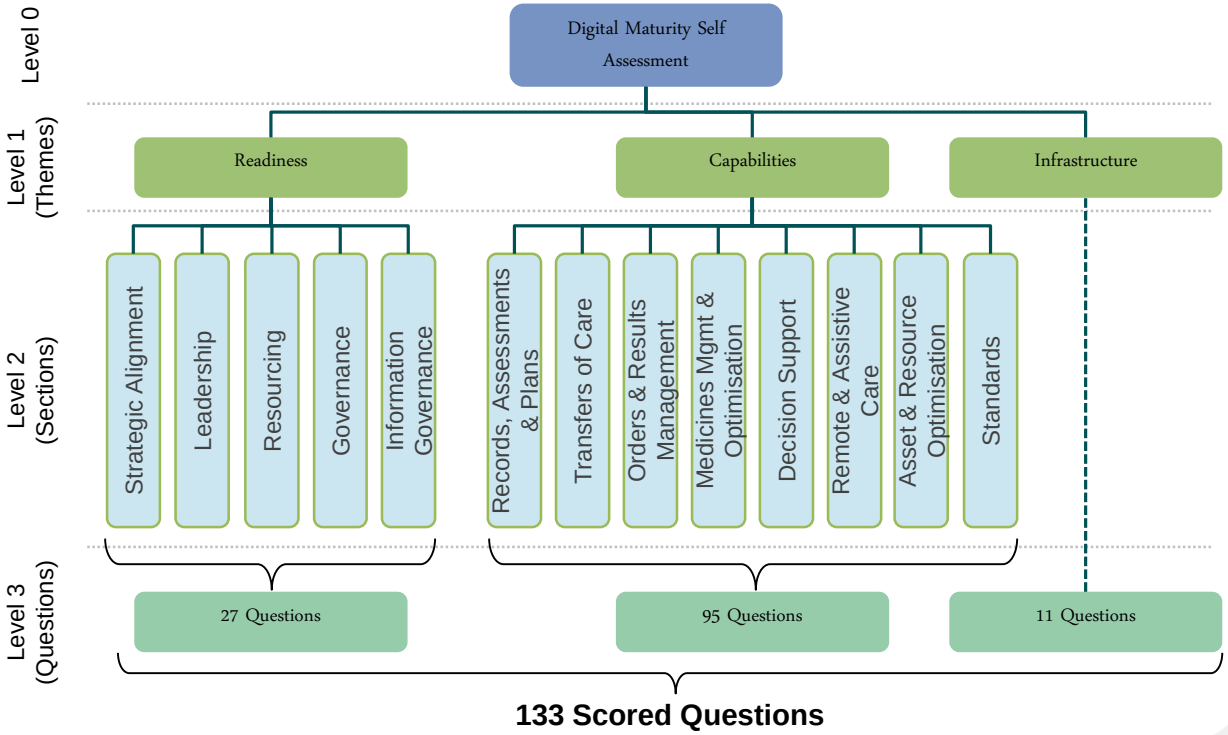
Sub-sections include:

3.1 Digital Maturity and Readiness Assessment
3.2 SFH IM&T Due Diligence
3.3 Clinical and Non-Clinical Information Systems
3.4 Infrastructure Landscape
3.5 Current Operating Model
3.6 Case for Change

3

3.1 SFH IM&T Digital Maturity

NHS England supports the Clinical Digital Maturity Index (CDMI) benchmarking tool which ranks trusts across England in terms of their digital maturity. CDMI is separated out into fourteen separate sections, with a score provided for each section.
The framework is structured as below. The questionnaire element of the tool is structured around these sections and sub-sections.



Key considerations

The NHIS management team have worked alongside key stakeholders in Sherwood Forest Hospital in completing the CDMI benchmarking tool.

This ensures that the responses for each question are accurate reflection of the capabilities being measured – and takes into consideration the views of SFH stakeholders.

3.1 SFH IM&T Digital Maturity – cont.

Digital Maturity Rating vs National Average

	Strategic Alignment	Leadership	Resourcing	Govenance	Info. Govenance	Records, Assessments & Plans	Transfers of Care	Orders & Results Mgmt	Medicines Mgmt & Optimisation	Decision Support	Remote & Assistive Care	Asset & Resource Optimisation	Standards	Enabling Infrastructure
NHIS	69	40	55	70	100	31	67	74	11	50	33	40	54	64
NATIONAL AVE	76	77	66	74	73	44	48	55	30	36	32	42	41	68

Key considerations

There are several themes that need to be addressed to achieve the desired digital maturity, including:

Leadership: The Board does not own SFH's Digital Strategy nor does it expect to receive regular updates. Also, the CCIO (Chief Clinical Information Officer) or equivalent does not have adequate protected time as part of his/her job plan to undertake role requirements.

Resourcing: SFH has limited capabilities to ensure that there is an adequate resource available for technology implementation and change management.

Records Assessment: Limited capabilities to 'digitise' clinical notes and care plans due to unstructured nature of this data. Healthcare professionals do not have easy access to required data.

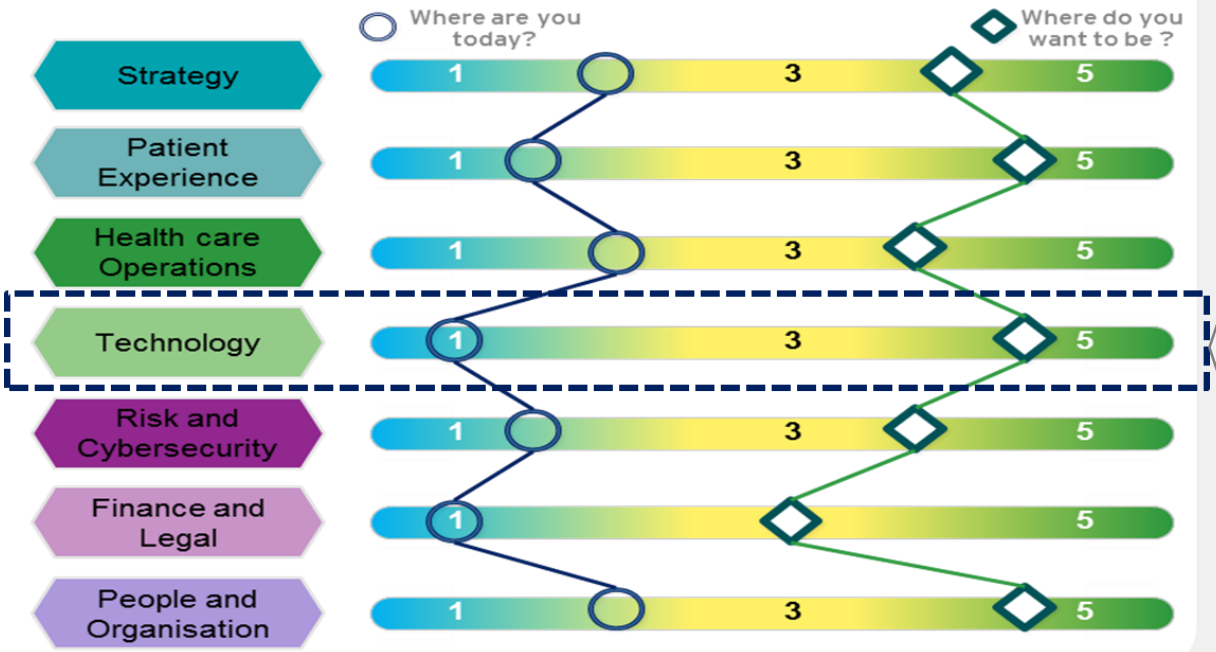
Medicines Management: Professionals do not use digital systems to get a complete view of patients.

There are, however, areas where SFH have shown greater maturity compared to national standards – eg, Information Governance, Transfers, Orders management, decision support and Standards.

3.1 Digital Readiness Assessment

Digital Readiness Assessment was conducted through a series of workshops and interviews with the clinical, non-clinical teams and executives.

Digital Readiness Framework was used to provide an-depth assessment of SFH's digital challenges, risks and gaps – based on seven dimensions of the organisation (evaluated based on indicators that identify current and target level of digital readiness).



Key considerations

Digital Readiness Assessment

Workshops were conducted with the

clinical and non-clinical teams – with over

20 stakeholders involved.

Interviews were also conducted for 5

Executive Board members of the Trust.

The customer's expectation of IM&T to be a key enabler to the business and a transformation partner drives the need to have a high target readiness in the future

Further information available in

Appendix B

3.1 Digital Readiness Assessment – cont.

Sherwood Forest Hospitals NHS
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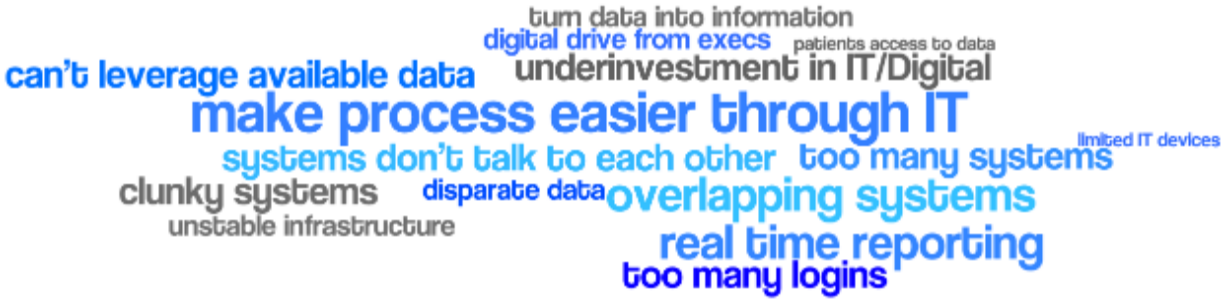
What our Clinical Teams are saying:



Key Risks/Challenges:

- *Limited systems interoperability*
- *Systems and data accessibility (including reporting)*
- *Overlapping (too many) systems*
- *IT underinvestment*

What our Non-clinical Teams are saying:

Key Risks/Challenges:

- *Visibility on the value of services*
- *Overlapping (too many) systems*
- *Systems and operational siloes*
- *Better use of data/information*
- *Limited systems interoperability*

3.1

Digital Readiness Assessment – cont.

What our Executive Teams are saying:

Key Risks/Challenges:

- *Transparency and benefits articulation*
- *Value for money services*
- *IT as an enabler not just a provider*
- *IT should be forward thinking*

What our IT Teams are saying:

Key Risks/Challenges:

- *Further integration of NHIS to SFH*
- *Limited IT procurement governance*
- *Inconsistent business engagement*
- *Outdated systems and infrastructure*

3.2 SFH IM&T Due Diligence

Overview:

An IT Due Diligence was conducted between March to April 2016 to understand in detail the IT delivery challenges and risks within Sherwood Forest Hospitals.

The due diligence covered various aspects of IT within Sherwood Forest Hospitals including – ***Operating Model and Governance, IT Cost and Commercial Model, IT Projects, Applications, Infrastructure and Information Governance*** – and was conducted by external consultants.

Review sessions were held with Sherwood Forest Hospitals and NHIS management teams.

Limitations:

The intention of the Due Diligence report was to assess the 'IT function' and service delivery at Sherwood Forest Hospitals and is not an evaluation of NHIS.

There are several aspects that were not covered during the Due Diligence such as contract terms with Partners, Partner and Customer SLAs, engagement with Skanska (third party engaged as part of the Private Finance Initiative (PFI) agreement), and comprehensive list of IT assets owned by SFH (and therefore unable to comment on future capital requirements).

Key considerations:

Summary of key risk areas in SFH identified during the Due Diligence:

- The true cost of IT spend is difficult to determine due to various IT assets procured by various directorates
- Limited IT governance to ensure services are aligned to strategic priorities and operational requirements
- Ageing infrastructure asset base that is out of support and needs replacing
- Main data centre at KMH, which hosts the majority of IT applications and services, has no geographical resilience
- Medway, the current Patient Administration System (PAS), is heavily customised and requires good version control
- Orion Trust Integration Engine (TIE) has outages due to it being old hardware and an old software version. The hardware has already been addressed with a plan for the software to be addressed in the financial year 2017/18.

3.3 Clinical Information Systems

SFH is dependent on a number of clinical applications that include:

- **Medway Patient Administration System (PAS**): This system holds the Master Patient Index (MPI), and communicates with other Trust systems to ensure patient details are updated.
- **Orion**: This system acts as a portal for providing interoperability, and includes modules such as 'Rhapsody', the Trust's integration engine.
- **Sunquest ICE:** This is the portal for laboratory communications from the clinic to the ancillary departments, including full electronic requesting of Chemistry, Haematology and Immunology blood tests.
- **Vocera:** This is the communications solution currently in use.
- **Bluespier:** This is the theatre system that replaced Ormis in July 2016.
- **SystmOne ED:** Is a solution that enables the sharing of key information including Safeguarding alerts and details of safeguarding plans in the Emergency Department (ED).
- **East Midlands Radiology (EMRAD):** A Picture Archiving and Communication System (PACS) covering all aspects of radiology from appointments to attendances, investigations to reporting.
- **Winpath:** Pathology system.
- **ICE Net:** A deployment of the Integrated Clinical Environment (ICE) system being rolled out in a number of different phases including paperless requesting and paperless reporting.
- **Infoflex:** Cancer pathways system.
- **Winscribe-EPRO:** Digital dictation and letter system.
- **JAC:** Pharmacy stock control.

A detailed Applications Landscape is available in Appendix C.

Key considerations

e-Prescribing

The prescribing process at SFH is currently heavily paper based, with the majority of prescriptions and drugs being hand written.

E-Prescribing reduces the use of this paper and reduces the risk of medication errors.

Whilst a pilot of e-Prescribing was conducted in one area of the Trust and was deemed to be successful, this was not rolled out further.

A full Business Case is required for the roll out of e-Prescribing across the Trust.

e-Observations

To focus on quality and support the reduction in mortality rates, the Trust initially deployed 'VitalPAC' solution.

VitalPAC uses hand held technology to collect vital observations upon admission and throughout the patient's stay.

Significant challenges were experienced from this deployment so a decision was made in 2016 to replace this system with NerveCentre which provides similar, proven functionality.

This deployment commenced in financial year 2016/17 and will continue.

3.3 Non-Clinical Information Systems

The key non-clinical application for finance reporting is 'Integra' and NHS Supply Chain is used for the procurement of goods. Other non-clinical applications are:

- **Electronic Staff Record (ESR):** The national electronic staff record system, that provides various functionality to the Trust.
- **Integra Financial Management:** Software suite including general, purchase ledger and sales ledgers, purchase order processing system and stock, asset and expenses management.
- **Patient Level Information and Costing System (PLICS)** *Planned launch Q2 2017/18 Financial Year*
- **Crystal reports, QlikView, RUM:** Enterprise Reporting Solutions

Key considerations

e-Rostering

Two solutions currently in use to be considered for rationalisation are:

- SMART – hosted on-site
- Allocate – cloud hosted

3.4 Infrastructure Landscape

IT infrastructure Overview

Whilst the majority of servers and services have been designed to be resilient to component failure within the KMH Data Centre (Core 2), there is no secondary site to protect services against the risk of a major Data Centre failure at KMH.

Server and Storage Infrastructure

The SFH server environment is comprised of physical and virtualised servers. Some application servers have been virtualised, however some older applications remain on rack-mounted servers that NHIS indicated intentions to virtualise.

Servers are running primarily on Windows Operating Systems (OS), although there are application servers running other OS such as Linux. SFH continues to run out of support OS versions for the majority of its application servers, with 110 servers still running Windows 2003 or earlier.

Network

SFH network infrastructure at KMH is comprised of a Local Area Network (LAN) for SFH devices, which has a redundant multipath campus design but based on older out of support hardware. A Community of Interest Network (COIN) provides Wide Area Network (WAN) connectivity to Newark, Mansfield Community Hospital (MCH) and for other organisations in the Nottinghamshire Local Health Community. The COIN also provides connectivity to the National NHS network and the Internet (N3). The COIN is designed to provide geographical resilience based on a 'ring design' using 1Gbs connectivity. This has suffered a number of outages in the past 2 years and is being replaced with a new Multiprotocol Label Switching (MPLS) WAN via N3 service provider. The new KMH gateway for this has just gone live.

The LAN equipment at Newark was fully refreshed in 2015/16 financial year, MCH's refreshed LAN equipment has been purchased pending installation.

Key considerations

The ICT infrastructure must support agility, recognising a changing technology landscape and current/future application requirements where the consumption model may change dramatically in terms of where data is accessed, how it is presented and upon the devices it will be consumed.

Mobility, the right information at the right time on the right device, is recognised to be a major principle of a digitised Trust and is an absolute necessity for operational efficiency.

A stable, resilient and secure core IT infrastructure is an essential building block on which digitised services can be delivered.

The new Community of Interest Network (COIN) deployment provides resilience at a national infrastructure level. It supports organisational security contexts including a dedicated virtual network for Skanska's support requirements.

3.4 Infrastructure Landscape – cont.

Network - cont'd

SFH has a wireless network at its three main sites that has been deployed primarily for clinical usage and is owned by SFH. There are a number of known 'blackspots' within non-clinical areas that have never been targeted for coverage in previous capital schemes. The current wireless infrastructure is 'End of Life' but is due for replacement in the 2016/17 capital plan.

Security

External connections to and from the SFH networks and COIN are provisioned through multi-vendor perimeter firewalls, using the 'depth in defence' methodology. The firewalls have recently been replaced with 'Next Gen' capabilities in line with the increasing complexities of modern cyber threats.

The data centre is also separately secured from the LAN and COIN via additional dedicated 'Next Gen' firewalls.

Remote Access to SFH systems and services is controlled through a number of methods including: Virtual Desktop Infrastructure (VDI), Microsoft Unified Access Gateway (UAG), Virtual Private Network (VPN), each requiring multifactor authentication (using soft or hard tokens).

Endpoint security is accomplished via a combination of Sophos and McAfee products, along with Airwatch in respect of mobile devices. All Cisco equipment is backed up automatically using Cisco Prime.

Backup and Disaster Recovery

The vast majority of application services are hosted in a single data centre, with no failover facility in place locally or geographically.

Wireless capability has become a critical infrastructure over the past couple of years with the deployment of e-observations and historically Vocera. As the Trust becomes digitised and increasingly consumes applications on the go via handheld or mobile devices this only becomes more critical. Therefore the wireless refresh must accommodate both scalability and also increasing bandwidths but also be pervasive.

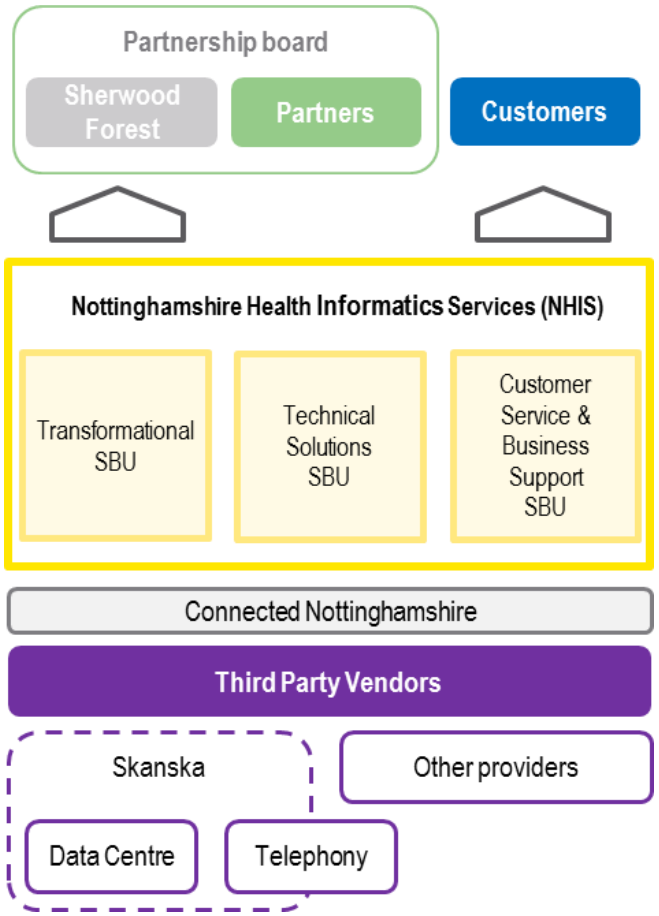
Security must be a key consideration when deploying any new application or infrastructure and be adapted or updated to accommodate the changing threat landscape.

Only Medway PAS, Integra and offsite applications eg, EMRAD and Bluespier are resilient to a data centre failure at present.

Additional information available in Appendix D.

3.5 Current Operating Model

NHIS Structure



Nottinghamshire Health Informatics Services (NHIS) delivers most of the IT services in the Trust.

NHIS has established a Partnership model to provided shared IT services within the local health community and is hosted by Sherwood Forest Hospital.

NHIS currently provide IT services to the eight 'Member' organisations which make up the Partnership Board and a number of 'Customers' who purchase services and solutions from NHIS.

There are three Strategic Business Units (SBU) in NHIS:

- Transformational – focuses on the delivery of new and updated services to the Trust.
- Technical Solutions – responsible for the technical delivery and on-going service management of services to the Trust.
- Customer Service and Business Support – focuses on customer relationship, sales and marketing of services.

NHIS has continuously adapted industry frameworks such as Prince2 (for project delivery) and ITIL V3 (for service delivery) and more recently TOGAF (for enterprise architecture). These practices will continue to be part of the overall digital service delivery.

3.6

Case for Change

The direction of travel for the Digital Strategy should underpin the Trust's Vision and Strategic Priorities, aligned with external strategic drivers (where practical and cost effective)

Vision and Strategic Priorities	What IM&T Should Do
1. To provide outstanding care to our patients	• Deliver technology-enabled transformation that will improve clinical pathways and operational efficiencies. • Increase capabilities to capture key patient information more quickly, more accurately and closer to the point of care. • Provide solutions that enable improvements to information to which patients have access. Use data assets to support the operational and quality improvements. • Provide solutions that allow easy patient feedback (in different channels or platforms).
2. To support each other to do a great job	• Simplification of applications portfolio and improve application interoperability. • Deliver resilient, future proof and high availability infrastructure platforms (in a cost effective way) allowing ICT user access to appropriate applications and information at all times. • Provide users with an engaging experience and easy to use functionality that will drive the right behaviours at all stages of their operation. • Supports real-time access to information eg, Emergency Department (ED) waiting times. • **Supports Single Sign On for ED** (quick win for Year 1).

3.6

Case for Change – cont.

Vision and Strategic Priorities	What IM&T Should Do
3. To inspire excellence	• Integrate NHIS to Sherwood Forest Hospitals to ensure alignment of strategies and service expectation and promote innovation. • 'Move' the IM&T's culture to be a trusted advisor to SFH and easy to do business with. • Champion digital innovation to maximise business opportunities. • Effective management of 'demand' and 'supply' of IT services by reducing complexity, minimising systems and better use of people capability.
4. To get the most from our resources	• Data and information is in one place and can be found and viewed easily. • Choose flexible, adaptable solutions that meet both current and future needs. • Utilise existing solutions – expand capabilities where necessary. • Support the delivery of the cost improvement programme (CIP) year-on-year. • To ensure effective and efficient use of temporary staff.
5. To play a leading role in transforming health and care services provided to our communities	• Take a lead role in the alignment of the Sustainability and Transformation Plan (STP), Better Together and Connected Nottinghamshire IM&T requirements. • Fully interoperable electronic health records, tailored to SFH's needs, to underpin paperless Trusts. • Enable information to be accessible across care settings. • Secure clinical and corporate systems, data and infrastructure from cyber and physical attacks.
	• Implement an operating model that is flexible and can provide robust services to SFH and other members of the care community.

Digital Strategy

4.1 Future Role of IM&T Function

4.2 Digital Goal and Objective

4.3 Strategic Principles

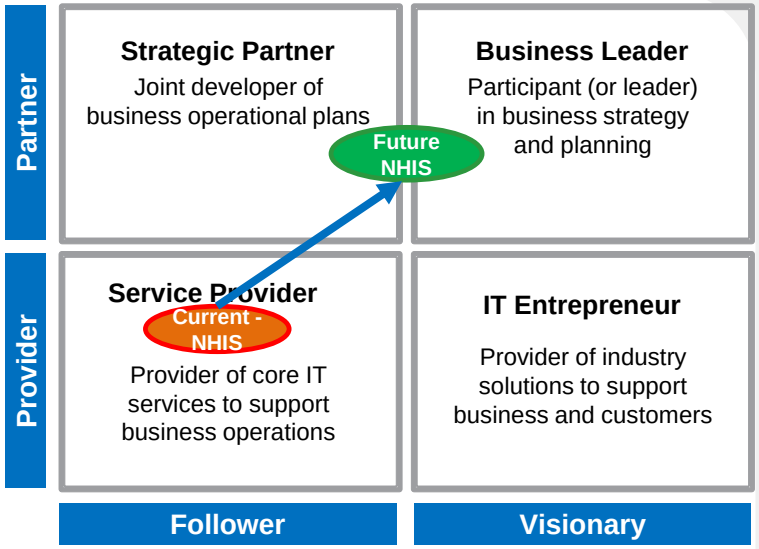
4.4 Strategic Initiatives

4

4.1

Future Role of IM&T Function

- SFH requires an IM&T function that can help the Trust achieve its vision and strategic priorities.
- The role of IM&T should also be a direct reflection of the needs of clinical and non-clinical customers and the general health community.
- Currently, NHIS is predominantly a ***"Service Provider"*** to the Trust. In 5 years' time, NHIS will be more integrated to the Trust and will transform to be a ***"Strategic Partner"***/***"Business Leader"*** - providing innovative solutions in partnership with the Trust.
- It is, therefore, essential for NHIS to rapidly integrate to the Trust and establish good practice governance and processes that enables close collaboration with its customers.



		Service Provider	IT Entrepreneur	Strategic Partner	Business Leader
GENERAL MISSION		Manage technologies effectively	Drive to use of best demonstrated practices	Use technology to achieve business goals	Initiate technology-driven transformation
ALIGNMENT OF VISION OF		Aligned with business planning cycles	Medium to long term planning with business	Medium term planning with business	Long term planning with business
Value and Culture	Philosophy	Use of proven solutions to support business	Leading Edge	Use of proven solutions, but challenge reqts.	Innovative Solutions
	Relationships	Transactional, Reactive and Formal	Advisory, Proactive and Informal	Supportive, Proactive and Informal	Evangelistic, Proactive and semi-formal
	Risk	Failure not tolerated	Appetite for Risk	Failure is OK but not too often	Appetite for Risk
	Style	Respond to requests	Ask the questions	Challenge requests (where necessary)	Lead the changes
GOALS		Reduce costs	Extend the business capabilities	Meet the business objectives	Drive the business possibilities
		Current State NHIS		Target State NHIS	

It is important to note that this model does not reflect 'maturity' – ie, one role is not superior to another.

4.2 Digital Goal and Objective

The goal and objective of the Digital Strategy is to:

Goal: Deliver digital services to support efficient, seamless and convenient care to patients.

Objective: By providing the right tools and the right information, in the right place, at the right time.

4.2 Digital Goal and Objective – cont.

We have defined six key goals and objectives to support and measure our journey towards the Trust's vision:

- Strengthen digital innovation in the Trust
- Facilitate technology-enabled operational changes
- Exploit emerging (and cost effective) technologies to increase business value
- Ensure our digital solutions will make our services safer, more efficient and more effective for patients
- Develop and support our people to be highly skilled, highly motivated, caring and compassionate professionals

- Build stronger relationships with the Trust
- Provide greater insights and enable agile decision making
- Increase involvement in key initiatives and decisions
- Easy to do business with

- Realise operational savings for the Trust
- Continuously strive to reduce the amount of paper generated and move towards a 'paper-free' hospital
- Drive increased asset utilisation
- Deliver improved mobility capability for all users

- Increase responsiveness to Trust's demand
- Share and use information within our organisation, our local health and care system
- Get the right information to the right person at the right time

- Change projects to be delivered on time, on budget and as scoped
- Project portfolio and benefits realisation framework are in place and effective
- Projects achieve defined benefits
- Business change impact is managed

- "Getting our technology foundations right"
- Ensure stability of our core infrastructure, simplifying applications and adapting good practice processes and governance
- Resilient, secure and accessible digital solutions

4.3 Strategic Principles

Our strategic principles will guide the development, deployment and use of digital technology resources and assets across the organisation:

Resilient and Secure by design

Design and build for continuous operations
Security is embedded and pervasive

- Deliver resilient and high availability infrastructure platforms in an efficient way
- Pursue consistency, simplicity and standardisation - through clear architectural standards
- Technology solutions are secure by design – not just an after thought
- Secure clinical and corporate systems, data and infrastructure from cyber and physical attacks

Making Digital Technology decisions for the Trust

Think strategically at the Trust/Business level

- Choose flexible, adaptable solutions that meet both current and future needs
- Fit for purpose and not “gold plated”
- Interoperable solutions
- Prefer strategic over tactical, Trust-wide over business unit specific
- Construct for multi-division capability
- Use existing solutions – expand capabilities where necessary

Information-driven Intelligence

Improve decision making – speed, visibility, impact and effectiveness

- Greater use of technologies to view and record information
- Capture key patient information more quickly, more accurately and closer to the point of care
- Data and information is in one place and can be found and viewed easily
- Information is treated as a valuable organisational asset - easily accessed but securely shared

Realised Benefits

Balance innovation with benefits and risks

- Design solutions that always bring improved quality of care and financial benefits
- Clear ownership and accountability throughout the delivery lifecycle
- Tracked business benefits and risks throughout the project lifecycle

Positive Digital Experience

Digital Experiences on users’ terms

- Enable systems to interact with each other
- Be simple and clear to understand
- Provide users with an engaging experience and easy-to-use functionality that will drive the right behaviours at all stages of their operation

Perceptions of Responsiveness

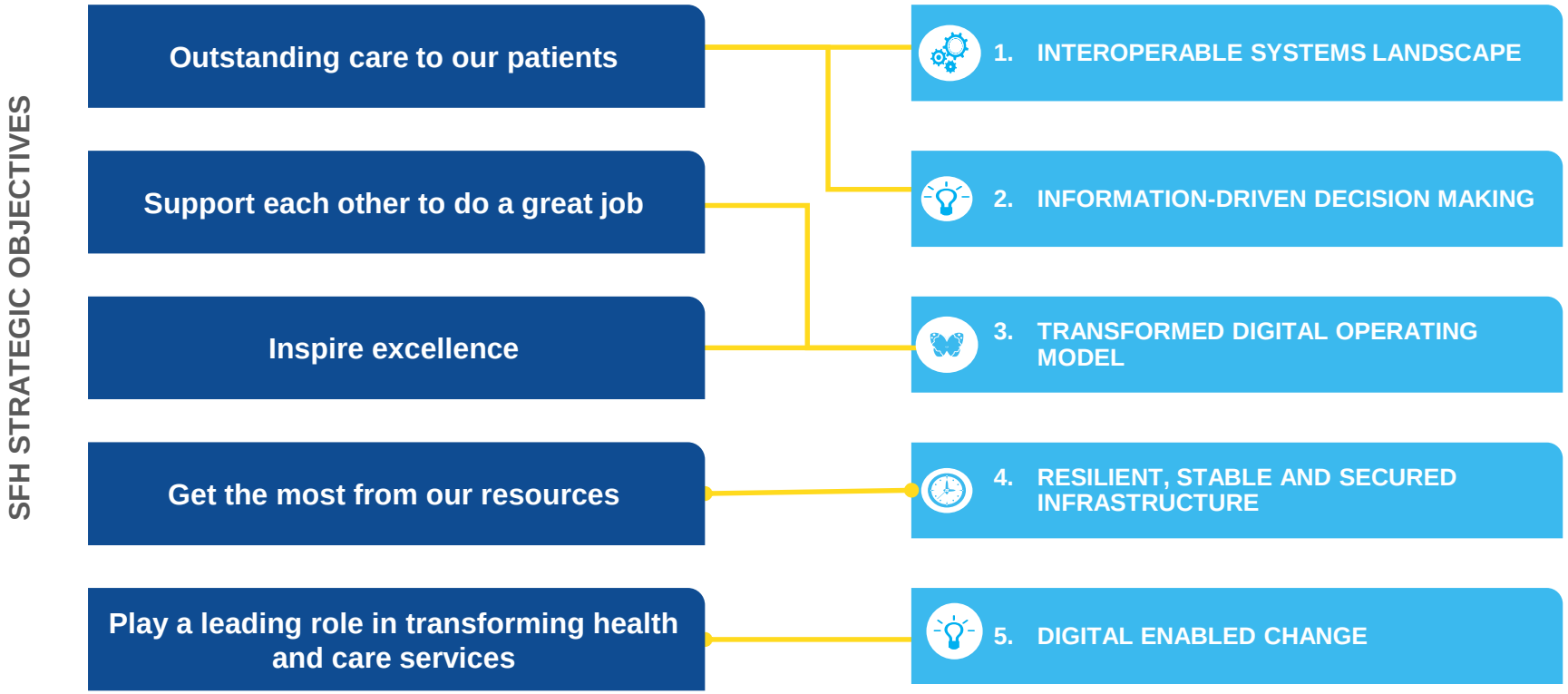
Expectation alignment and Customer driven

- Trusted advisor, easy to do business with
- Drive digital innovation to maximise business opportunities
- Effective management of ‘supply’ and ‘demand’ of IT services
- Continuous improvement to optimise service and cost-effectiveness

4.4 Strategic Initiatives

Strategic initiatives, derived from the Trust's vision and goals, will drive this Digital Strategy.

These initiatives will be underpinned by a number of technology-enabled change projects which will be the building blocks of the digital roadmap.



4.4.1 Strategic Initiatives: Interoperable Systems Landscape

1. INTERCONNECTED SYSTEMS LANDSCAPE
2. DATA-DRIVEN DECISION MAKING
3. TRANSFORMED DIGITAL OPERATING MODEL
4. RESILIENT, STABLE AND SECURED INFRASTRUCTURE

Interoperable Systems Landscape: This initiative will enable inter-operability of various applications, systems and data sources – in order to maximise functionalities and ensure they link together wherever possible to share information, improve communication and avoid functional duplication and maintain patient context.

#	Project	Description	H/L Business Benefits
1	Upgrade Patient Administration System (PAS) and implement additional Medway suite of products eg, clinical documentation	Continue to upgrade the existing version of PAS to the latest version with additional clinical products	To ensure that staff have access to the latest functionality and stability and benefit from reducing clinical applications functionality that could be provided by Medway products
2	Upgrade Bluespier theatres	Continue to upgrade appropriate additional functionality to provide interoperability between Bluespier, PAS and other systems	This will ensure the integration between patients on waiting lists and theatre lists
3	Service Provider lists with Sunquest Integrated Clinical Environment (ICE)	Delivery of Service Provider lists with Sunquest ICE and Paperless Reporting on ICE	To automate workflow where possible across the trust and minimise the risk of the breakdown of paper processes
4	The Sunquest ICE upgrade	Continue to upgrade ICE to the latest version and implement additional functionality	To ensure that staff have access to the latest functionality and stability
5	Business Case for Digital Health Records (DHR)	Analysis and the right approach of DHR and development of the Business case for DHR	Business Case for Digital Health Records, ensuring the solution clearly links with other trust solutions to prevent an additional system to log on to
6	Business Cases for e-Prescribing	Electronic prescribing has only been rolled out in one ward (obstetrics and gynaecology) as a pilot.	A business case is required to outline when it can be rolled out across other departments.
7	Continue the deployment of e-Observations across the Trust	Continue the deployment NerveCentre across the Trust.	To improve recognition of sick patients, and enable access of information for handover and hospital at night

4.4.1

Strategic Initiatives:
Interoperable Systems Landscape – cont.

Interoperable Systems Landscape – cont'd.

#	Project	Description	H/L Business Benefits
8	Application rationalisation	A project to document and review the current applications landscape would help to identify where systems overlap and/or cost savings could be achieved	Better interoperability of systems Decreased cost Greater awareness of systems and/or interdependencies of systems
9	Assessment conducted of Medway Clinicals	Pilot of Medway Clinicals	Conduct a pilot of Medway Clinicals to clearly understand the benefits
10	Clinical Document Architecture (CDA) Interoperability Toolkit (ITK) Implementation	Implementation of the CDA-ITK standard for the deployment of e-Discharges into GP practices	Required to ensure interoperability of 'to take out' (TTO) Pathway rewrite is achieved
11	Business case for electronic Blood Tracking	Production of a Business case for Blood Tracking	A business case is required to outline high level business benefits
12	Sunset / retire JONAH	Providing this functionality within Medway PAS	This will reduce the number of systems that clinicians log onto
13	Winscribe-EPRO solution	Upgrade existing Winscribe-EPRO solution	The upgrade will provide additional benefits to the Trust
14	e-Learning roll out	Roll out the full programme of e-Learning for clinicians to conduct the relevant training on clinical systems at a convenient time	For convenience and ease of access
15	Winpath replacement options	Investigate the options and potential business case for the replacement of Winpath.	To be determined based on investigation

4.4.1

Strategic Initiatives:
Interoperable Systems Landscape – cont.

Interoperable Systems Landscape – cont'd.

#	Project	Description	H/L Business Benefits
16	NHSMail Deployment	Replacement of the current exchange solution for e-mail with NHSMail for all SFH users	Provide a secure and newer version of email that allows the sharing of personal identifiable data (PID)
17	Outpatient Check-in	Deployment of a solution for outpatient check in across both Kings Mill Hospital and Newark	For patients to self check -in quickly and easily
18	SFH-Nottinghamshire County Council (NCC) Interoperability Project	Further develop the interoperability already achieved with social care within the trust, following the patient journey up to and including the transfer of care.	Increased interoperability of systems
19	Relaunch Vocera	Implementing the application on iPhones. Investigate and deploy other functionality	Reduce the need for multiple devices carried and ensure maximum benefits are achieved
20	Rewrite of the 'to take out' (TTO) pathway	Rewrite of the TTO pathway currently held in Orion	By sending e-Discharges over messaging exchange for social care and health (MESH) to go directly into GP systems, can provide true interoperability.

4.4.2

Strategic Initiatives:
Information-driven Decision Making

1. INTERCONNECTED SYSTEMS LANDSCAPE
2. DATA-DRIVEN DECISION MAKING
3. TRANSFORMED DIGITAL OPERATING MODEL
4. RESILIENT, STABLE AND SECURED INFRASTRUCTURE

Information-driven Decision Making: This initiative will help the Trust to use data and information to drive decision making and improve patient care. In order to maximise the data generated throughout the trust and ensure the link between data generation and insights, the Trust will need to improve upon how data is transformed to meaningful information.

#	Project	Description	H/L Business Benefits
1	Patient Administration System (PAS) Personal Demographics Service (PDS) Business Case	This business case will provide the benefits of connecting the Medway PAS to the PDS service on the national spine.	Medway PAS PDS expected to provide improved data quality and up-to-date patient demographics.
2	SystmOne Emergency Department (ED) information capture	Investigate the capture of clinical information within SystmOne ED	Improved information capture and decision making ability
3	Health Community Portal	Deployment of the Health community portal into SFH and the provision of SFH data to the portal	Easy sharing of information across the local care community
4	Enterprise Reporting Solution	Providing insights from data and information across all key platforms	Easy access to decision making insights

4.4.3

Strategic Initiatives:
Transformed Digital Operating model

1. INTERCONNECTED SYSTEMS LANDSCAPE
2. DATA-DRIVEN DECISION MAKING
3. TRANSFORMED DIGITAL OPERATING MODEL
4. RESILIENT, STABLE AND SECURED INFRASTRUCTURE

Transformed Digital Operating model: This initiative will enable our people and teams to support each other and work together to deliver outstanding care. We constantly seek out and promote innovation that will enhance our practice by optimising the use of technology for the benefit of patients and staff.

#	Project	Description	H/L Business Benefits
1	Further develop the interoperability	Build on what is already achieved with social care within the trust by following the patient journey up to and including the transfer of care	Further develop the interoperability can help decrease the need for more systems and save cost
2	Single sign-on (SSO) implementation	Implement the use of a single sign-on (SSO) to ensure minimal logons within the trust	SSO enables seamless transition between apps and saves clinical time. Additionally it can enable the analysis of user and usage data for future improvements and audits
3	Account creation tool implementation	Implementation of an account creation tool for managers to be able to automatically request accounts to be created.	Reduces calls to service desk, which in turn frees up more time for other issues to be addressed
4	Vendor Neutral Archiving (VNA) implementation	Implement VNA to provide the trust with the ability to view patient associated images through the Orion Portal.	Consolidation of data into one place for easy access to enable better workflows
5	Commercial model refresh	The current Partnership model may no longer be appropriate. An evaluation of the current model and alternatives should be completed	Commercial Model will be updated in line with the new Service Catalogue and Rate Card
6	Integrate NHIS within SFHFT	NHIS are currently seen to act as an outside provider of IT and should be actively integrated within the Trust	There will be synergies by integrating NHIS into SFH and gaps in service provision will be removed
7	End user remote access	Solution selected and implemented for the replacement of BMS's solution, allowing users to access clinical systems from home	Remote access enables flexible working as well as improves the joint working conditions with other trusts

4.4.4 Strategic Initiatives: Resilient, stable and secured Infrastructure

1. INTERCONNECTED SYSTEMS LANDSCAPE
2. DATA-DRIVEN DECISION MAKING
3. TRANSFORMED DIGITAL OPERATING MODEL
4. RESILIENT, STABLE AND SECURED INFRASTRUCTURE

Resilient, stable and secured Infrastructure: This initiative will help us to get the most from our time and resources. In order to play a leading role, with our partners in health, local government and other sectors, in transforming services to improve the health and wellbeing of our communities, we must ensure that we have the foundations right first.

#	Project	Description	H/L Business Benefits
1	Refreshed Local Area Network (LAN) and Wireless Infrastructure	Refresh of the campus LAN at KMH to ensure fit for purpose, supportable, scalable, highly available and secure by design. Refresh of wireless infrastructure at all sites to ensure fit for purpose, supportable, scalable, highly available and secure by design. Deployment of wireless in non-clinical areas (Black Spots)	Reliable and Stable base infrastructure on which all digital services are accessed. Pervasive wireless supports the use of hand held devices minimising the risk of clinicians not being able to access systems and solutions or being alerted by systems and solutions
2	PC Replacement Programme and Device Strategy (including wearables and assistive technologies)	Implement a PC replacement programme to replace all 760 PCs and below. Replace any PCs currently using Window XP that have not been upgraded due to old software or medical devices being attached that do not operate on other later versions of windows. Access to information, any time, any place, any device	PCs currently running on Windows XP introduces a risk to the trust in terms of security. Seamless communication and collaboration across the care setting
3	Review and implement Business Continuity Plans	The main data centre at Kings Mill Hospital which hosts the majority of IT applications and services, has no geographical resilience. A review of business continuity plans in the short term is required which will also inform the scale and requirement of the secondary back up site for applications and services	Standalone physical servers often do not have any failover or high availability and represent a serious risk to NHIS and the Trust as a hardware failure results in a system outage until rectification or replacement

4.4.4 Strategic Initiatives: Resilient, stable and secured Infrastructure – cont.

Resilient, stable and secured Infrastructure-cont'd

#	Project	Description	H/L Business Benefits
4	Data Centre Disaster Recovery Capability	Selection of a solution for the provision of data centre off site solution including compute and storage platforms. Provision of additional uninterruptible power supply (UPS) for the main data centre	Key applications remain operable in the event of a total datacentre failure at KMH. Security of data and backups by geographical separation. Primary Data Centre becomes Tier 4 and highly resilient.
5	Primary Data Centre Refresh	Selection of compute and storage platforms to replace end of life platforms, ensuring fit for purpose, scalable and highly resilient. Accommodates the increasing storage requirements, currently 48% per annum and provides long term storage capabilities.	Core infrastructure requirement that meets the needs of the Trusts increasing server and storage requirements. Highly available, scalable and secure by design.
6	Backup Technology Refresh	Selection of a replacement backup solution to replace end of life platform.	Backup is a necessary capability in order to protect the Trusts key data in the event of a disaster recovery scenario.
7	COIN Replacement and Telephony and Communications Strategy	Migration of connections to a new Multi-Protocol Label Switching (MPLS) based Wide Area Network (WAN). Investigation of layered voice and communication services over new WAN and LAN.	Highly available, secure, resilient national infrastructure. Supports connections to MCH and Newark as well as to N3, internet and partners. Supports dedicated network for Skanska. Integrated and responsive patient facing communications.
8	Microsoft Licencing	Selection of a Microsoft Agreement to cover necessary server access licencing, operating system licencing and office suite licensing.	Ensures latest applications and security considerations are met and the Trust is in support.

Roadmap and Governance

5

5.1 High Level Digital Strategy Roadmap
5.2 Benefits Realisation
5.3 Implementation Risks

5.1 High Level Digital Strategy Roadmap

	INFO-DRIVEN DECISION MAKING	INTEROPERABLE SYSTEMS LANDSCAPE	TRANSFORMED DIGITAL OPERATING MODEL	RESILIENT, STABLE AND SECURED INFRASTRUCTURE	DIGITAL ENABLED CHANGE
Year 1	• Patient Level Information and Costing Systems (PLICS) selection • Business Intelligence (BI)	• Health Community Portal • PAS Upgrade and implement additional Medway suite of products eg, clinical documentation • Business Cases for e-Prescribing • Relaunch Vocera • Orion Implementation • Outpatient Check in • Business case for electronic blood tracking • ED Single Sign-on	• Vendor Neutral Archiving (VNA) implementation • New SLAs for Partners and Customers • Commercial model refresh • Integrate NHIS within SFHFT • Refreshed Partnership model • Review and implement business continuity plans	• End user remote access • Implement Refreshed LAN and Wireless Infrastructure • Implement Datacentre Disaster Recovery Capabilities • Community of Interest Network (COIN) Replacement • PC replacement programme	• NerveCentre Implementation
Year 2		• Theatres PAS Interoperability • Winpath replacement options • Application rationalisation • e-Learning roll out • Digitisation Interoperability		• Care Systems Upgrades • Virtual Desktop • Implement Primary Datacentre Refresh	• Digital Health Records
Year 3		• Single sign-on • Patient Access		• Datacentre Backup Technology Refresh	• ePrescribing • Patient wi-fi and patient entertainment system
Year 4	• PAS Personal Demographics Service (PDS) Business Case	• SystmOne ED information capture			
Year 5	• Report and data consolidation				• Tele-care / Tele-health / eHealth

The Digital Strategy roadmap will be clinically owned and led. Therefore, this means that the order of implementation will be determined by clinical stakeholders.

5.2 Benefits Realisation

Benefits management aims to be a whole life-cycle approach to getting favourable returns on our investments, as well as understanding where and why benefits were not realised as expected.

It is essential that initiatives within this Digital Strategy will realise the benefits set out prior to the implementation

In the past…

- Organisations doing change projects concentrated on delivering 'outputs' such as implementing IT systems.
- They had decided that delivering these outputs would solve a problem …
- They did not know if these outputs had solved the problem, or if there were any unintended consequences

In the future…

- By identifying what benefits stakeholders want to see, organisations identify better solutions – and they know whether the solution worked.
- Helps organisations weigh up whether a change is worth the cost, now and long term, looking at it from different people's perspective.

Benefits Realisation

1. Identify benefits and the work / changes needed to achieve them – drawing maps and writing profiles.
2. Plan the project to achieve the benefits and minimise the dis-benefits.
3. Collect a baseline so as to compare future performance with pre-change performance.

Steps of benefits realisation

"…it is only possible to be sure that change has worked if we can measure the delivery of benefits it is supposed to bring…"

– Cabinet Office

5.3 Implementation Risks

Successful implementation of the Digital Strategy will be dependent on the Trust's ability to mitigate risks:

Risk	Description	Mitigation
1. Trust buy-in to the Digital Strategy	There is a risk that without sufficient support, notably from senior stakeholders, patients and staff will not buy-in to the Digital Strategy	• Consistent communication about the Digital Strategy, explaining how it fits within the overall Trust's strategy as well as NHS strategy • Make the Trust a part of the development of the final Digital Strategy and implementation planning • Ensure Executive and key opinion leaders support the Digital Strategy
2. Resistance to change	Despite recognition of a need, there is a risk that employees may be reluctant to changes to current ways of working, processes, and/or procedures	• Communicate regularly to staff about changes and timescales • Offer means of support, such as extra training, to help staff cope • Listen to staff and try to understand the true nature of resistance prior to implementation
3. Availability of resources	Implementing a Digital Strategy will require the time and attention from certain key employees. There is a risk that the availability of these key resources could delay or deter implementation	• Work with key resources to understand their time constraints and commitments early on • Identify a 'deputy' that can contribute to the implementation in the absence of key resources • Use backfill if/where required to free up the time of key resources
4. Accessibility to funding	There is a risk that without adequate funding, the Digital Strategy will not be effectively implemented	• Appropriate planning and budgeting for the implementation is required, but must be tracked throughout the implementation

Top Four Implementation Risks

1. Trust buy-in
2. Resistance to change
3. Availability of resources
4. Accessibility to funding
5. Lack of clinical leadership

Appendices

A. External Strategic Drivers
   - A.1 National Drivers
   - A.2 Local Drivers

B. Digital Readiness Assessment
C. Applications Landscape
D. Infrastructure Landscape

6

A.1

National Drivers

NHS England: *Five Year Forward View*

The NHS Five Year Forward View (published in October 2014) will continue to be the NHS England framework for action over 2016/17.

The NHS England business plan sets out 10 priorities, in three themes

Theme One: Improving health – closing the health and wellbeing gap

1. *Improving the quality of care and access to cancer treatment* – drive down waiting times, increase diagnostic capacity and develop a modern national radiotherapy network
2. *Upgrading the quality of care and access to mental health and dementia services* - increase early intervention, shorten waits for treatment and expand crisis services
3. *Transforming care for people with learning disabilities* – increase the number of people living in homes in the community
4. *Tackling obesity and preventing diabetes* – national roll out of a programme aimed at lowering the risk for individuals and slowing the rise in incidence of the disease

Theme Two: Transforming care - closing the care and quality gap

5. *Strengthening primary care services* – strengthen NHS 111 service to urgent care services outside hospital, reforming the 999 ambulance service, support hospitals to extend emergency consultant cover and diagnostic services seven days a week

The SFH digital agenda should align to the following principles stated in the Five Year Forward View:

- *Digital solutions should enable improvements to information to which patients have access - not only clinical advice, but also information about their condition and history.*
- *Development of health applications that patients will be able to use to organise and manage their own health and care.*
- *Fully interoperable electronic health records so that patients' records are largely paperless.*
- *Use data assets to support the quality improvement, research, and the identification of patients who most need health and social care support.*

A.1

National Drivers

NHS England: *Five Year Forward View – cont.*

Theme Two: Transforming care - closing the care and quality gap

6. *Redesigning urgent and emergency care services* – support GPs, widen the workforce, harness digital technology and increase use of pharmacists
7. *Providing timely access to high quality elective care* - support hospitals to hold down waiting times, including through patient choice.
8. *Ensuring high quality and affordable specialised care* - tackle unwarranted variations in costs, implement a prioritisation framework and develop funding allocations based on population, while using national leverage to drive improved outcomes
9. *Transforming commissioning* – support continued development, encourage demonstrative integration of primary and acute care to bring services together for local populations and invest in priority services. We will support new care models in the Vanguards and plan for wider spread.

Theme Three: Controlling costs and enabling change – closing the finance and efficiency gap

10. *Controlling costs and enabling change* - ensure delivery of NHS England's contribution to the NHS efficiency target and support NHS Improvement to implement the recommendations of the Carter Review, delivering year-on-year trust deficit reduction plans, and reducing spending on agency staff. Transforming care through harnessing information and technology

The SFH digital agenda should align to the following principles stated in the Five Year Forward View – cont.:

- *Electronic and repeat prescribing available routinely on-line everywhere*
- *Comprehensive transparency of performance data*
- *Provisioning of innovative and cost effective solutions*

A.1

National Drivers

Health and Social Care Information Centre (NHS Digital) *– Strategy 2015–2020*

NHS Digital (formerly The Health and Social Care Information Centre (HSCIC)) was formed in April 2013 as an executive, non-departmental public body and the national provider. HSCIC's role is to improve health and social care in England by putting technology, data and information to work.

NHS Digital is part of the Government's Statistical Service and manages many of the nation's critical health and care data assets, collected data from a range of care providers. In March 2015, NHS Digital published the Health and Social Care Information Centre Strategy 2015–2020.

Their Strategy sets out five objectives for the next five years:

1. Ensuring that every citizen's data is protected: By 2020, citizens will routinely make decisions about who sees their data with complete confidence that it is kept confidential, secure and shared only when appropriate and for their benefit.
2. Establishing shared architecture and standards so everyone benefits: By 2020, care professionals will have access to data and analytic tools that will help them provide better services.
3. Implementing services that meet national and local needs: By 2020, citizens will use national systems routinely to access information, select care, order services and deal with administrative tasks quickly. Care professionals will be able to access national systems much more easily. Citizens will use innovative new services, 'apps' and wearable devices developed by a wide range of organisations.

The SFH digital agenda should align to the following principles stated in the Strategy 2015-2020:

- *Adoption of model for sharing personal data based on citizens' own preferences*
- *Cyber Security strategy will continue to help deliver improvements in data and system security while managing new and evolving threats*
- *Services should be designed around standards and principles that allow records and information to flow freely between care settings*
- *Continue to develop and operate the core national technology and data services and build on flexibility, expertise and capability*

Health and Social Care Information Centre (NHS Digital)

– Strategy 2015–2020 – cont.

4. Supporting health and care organisations to get the best from technology, data and information: By 2020, technology and data in the form of digitally enabled care will be used by most citizens and will help to meet their demand for better and safer care. We will be routinely helping health and care organisations to get the best out of their investments in technology and data.
5. Making better use of health and care information: By 2020, much more data will be available, more accessible and the burden of collection will be reduced. Clinicians and care professionals will have access to more and better information to inform better care.

The SFH digital agenda should align to the following principles stated in the Strategy 2015-2020 – cont.

- *Accelerate the 'joining-up' of individual local initiatives in a common, harmonized way*
- *Increase the speed at which local health and care organisations adopt emerging technologies*
- *Ensure that value of past investments is maximised and future investments help deliver improvements in quality and productivity*
- *Champion the importance of national data, by moving towards open data, collection through 'apps' and wearables*
- *Clinicians and care professionals will have access to more and better information to inform better care*

A.1

National Drivers

Lord Carter Report

In June 2014 the Secretary of Health asked Lord Carter what could be done to improve efficiency in hospitals in England and how efficiencies can be achieved by 2020.

At the time of the report, £55.6bn was spent by acute hospitals in England and the NHS is expected to deliver efficiencies of 2-3% per year, (or 10-15% real terms cost reduction by April 2021).

The report makes 15 recommendations designed to tackle the 'unwarranted variation' between hospitals and move towards a best in class model across England

Lord Carter's recommendations are:

1. Develop a national people strategy and implementation plan
2. Develop and implement measures for analysing staff deployment
3. Through a Hospital Pharmacy Transformation Programme (HPTP), develop plans to achieve benchmarks
4. Achieve acute pathology model hospital benchmarks or have agreed plans for consolidation with, or outsourcing to, other pathology providers
5. Report procurement information monthly to NHSI, collaborate with NHS Supply Chain, and commit to the Department of Health's NHS Procurement Transformation Programme
6. Estates and facilities departments should operate at or above benchmarks for operational management

The SFH digital agenda should align to the following recommendations stated in the report:

- *Use digital solutions that optimise resources and improve quality, efficiency and performance*
- *Real-time monitoring and reporting that enables rapid decisions*
- *Fully integrated and utilised e-rostering, e-prescribing, patient-level costing and accounting systems, e-catalogue and inventory systems for procurement,* Radio-Frequency Identification (*RFID) systems where appropriate, and electronic health records;*
- *Achieve seamless, real-time data*
- *Innovative use of systems that support clinical processes, with the aim of improving the quality, efficiency and safety of the care delivered*

Lord Carter Report – cont.

7. Corporate and administrative functions should be rationalised so costs do not exceed 7% of income (Apr 2018) moving to 6% of income (Apr 2020) or have plans in place to outsource (Jan 2017)
8. NHSI and NHS England should establish a joint clinical governance standard
9. All trusts should have key digital information systems in place, fully integrated and utilised
10. Ensure patient care is focussed equally upon their recovery and how they can leave acute hospital beds or transfer to a suitable step down facility asap
11. Trust boards to work with NHSI and NHS England to identify where there are quality and efficiency opportunities for collaboration and co-ordination of clinical services across their local health economies
12. Develop a 'model hospital' and underlying metrics, to identify one source of data, benchmarks and good practice
13. NHSI and NHS England should develop an integrated performance framework to ensure one set of metrics and an approach to reporting
14. Acute trusts should make preparations to implement the recommendations of the Carter Report
15. National bodies should engage with trusts to develop their timetable of efficiency and productive improvements and overlay a benefits realisation system to track the delivery of savings themselves

The SFH digital agenda should align to the following recommendations stated in the report – cont.:

- *Optimise systems to allow the capture of patient data across a variety of care settings – eg, acute, community, and care homes*
- *Identify opportunities for better collaboration and co-ordination of services*
- *Ensuring consistency in costing and budgeting approaches including a common Chart of Accounts and the use of a standard Patient Level Costing System (PLICS)*
- *Move some of the transactional components of the corporate back-office function into a shared service model across the service*

A.1

National Drivers

National Information Board: *Personalised Health and Care 2020*

The Five Year Forward View set out a clear direction for the NHS – showing why change is needed and what it should look like.

In November 2014, the National Information Board (NIB) published its framework for action - *Personalised Health and Care 2020: Using data and technology to transform outcomes for patients and citizens*.

The framework, which has been adopted as Government policy, broadly covers the following areas:

- enable patients to make the right health and care choices,
- give care professionals and carers access to all the data they need,
- make the quality of care transparent,
- build and sustain public trust,
- bring forward life-saving treatments and support innovation and growth,
- support care professionals to make the best use of data and technology,
- assure best value for taxpayers and open up existing infrastructure.

The SFH digital agenda should align to the following principles stated in the report :

- *Enable patients to access their records and data through 'apps' and digital platforms of their choice*
- *Collaborate to ensure that care systems adopt to national standards*
- *Safe use of personal health and care information*
- *Alignment to the national strategy focused on removing barriers to innovation*
- *Support the new knowledge and skills framework for all levels to exploit information, data and technology*
- *Support local buying consortia to optimise procurement decisions, and publish security and interoperability standards for common services*

A.1

National Drivers

National Information Board: *Delivering the Five Year Forward View*

The National Information Board (NIB) developed roadmaps for each of these areas and identified six clear priority domains for delivery. These six core priority domains are described in the June 2015 report, *Delivering the Five Year Forward View* with the objective to help transform health and care services through data and technology.

These six domains are:

1. Enable me to make the right health and care choices: supporting digital services for patients and citizens. At the heart will be the development of nhs.uk into a new integrated health and care digital platform that will be a source of access to information, directorate, national services and locally accredited applications.
2. Transforming General Practice (GP) - The NIB aims to support this through transforming general practices' experience of technology and digital services, including General Practice Systems of Choice, (GPSoC).
3. Out of hospital care and integration with social care - will support NHS England's New Models of Care Vanguard sites and test bed initiatives. Programmes covered include: ePrescribing, ePharmacy, integration with Social care online.
4. Acute and hospital services - digital innovation offers considerable benefits in terms of driving efficiencies in day-to-day working and continued progress in key patient safety areas. Programmes covered include: Elective/non elective care, eHospitals, Asset tracking with Radio-Frequency IDentification (RFID).

The SFH digital agenda should align to the following principles stated in the report :

- *Improvement on the digital maturity index and towards achieving paper-free at the point of care*
- *Patients to be offered e-consultation and other digital services and 95% of tests to be digitally transferred between organisations*
- *Set trajectory and plan for achieving a significant increase of patients actively accessing primary care services online or through 'apps'*
- *Ensure high quality appointment booking 'app' with access to full medical record and agreed data sharing opt-out*

A.2

Local Drivers

Nottinghamshire Sustainability and Transformation Plan

Collective resources to support patients are increasingly limited and challenges our health and care systems to operate in a better, more sustainable way, and to do so quickly.

This will be achieved by developing a new model of shared responsibility for health and wellbeing between our citizens and communities and our services, and by developing new models of working together across health and care organisations.

Six main aims are:

1. Organise care around individuals and populations - not organisations - and deliver the right type of care based on people's needs
2. Help people remain independent through prevention programmes and offering proactive rather than reactive care, which will also reduce avoidable demand for health and care services
3. Support and provide care for people at home and in the community as much as possible – which implies shifting resources into those settings – and ensure that hospital, care home beds, and supported housing are available for people who need them
4. Work in multi-disciplinary teams across organisational boundaries to deliver integrated care as simply and effectively as possible
5. Minimise inappropriate variations in access, quality, and cost, and deliver care and support as efficiently as possible so that we can maximise the proportion of our budget spent on improving health and wellbeing
6. Maximise the social value that health and social care can add to our communities

The SFH digital agenda should align to the following principles stated in the SPT:

- *Use technology to help citizens stay healthy and manage their own care, and to help clinicians and other staff deliver care more efficiently, resulting in:*
- *Improved access to information for citizens, including availability of services and ; all records and relevant self-care information*
- *Availability of patient information at all care organisations – so patients and service users no longer require to repeat the same information multiple times to different health and care professionals*

A.2

Local Drivers

Nottinghamshire Sustainability and Transformation Plan – cont.

Five high impact areas:

1. Promote wellbeing, prevention, independence and self-care
2. Strengthen primary, community, social care and carer services
3. Simplify and improve urgent and emergency care
4. Deliver technology enabled care
5. Ensure consistent, evidence based pathways in planned care

Three areas for continuous improvement:

1. Improve housing and environment
2. Strengthen acute services
3. Drive system efficiency and effectiveness

Three main enablers:

1. Future proof workforce and organisational development
2. Maximise estates utilisation
3. Proactive communication and engagement

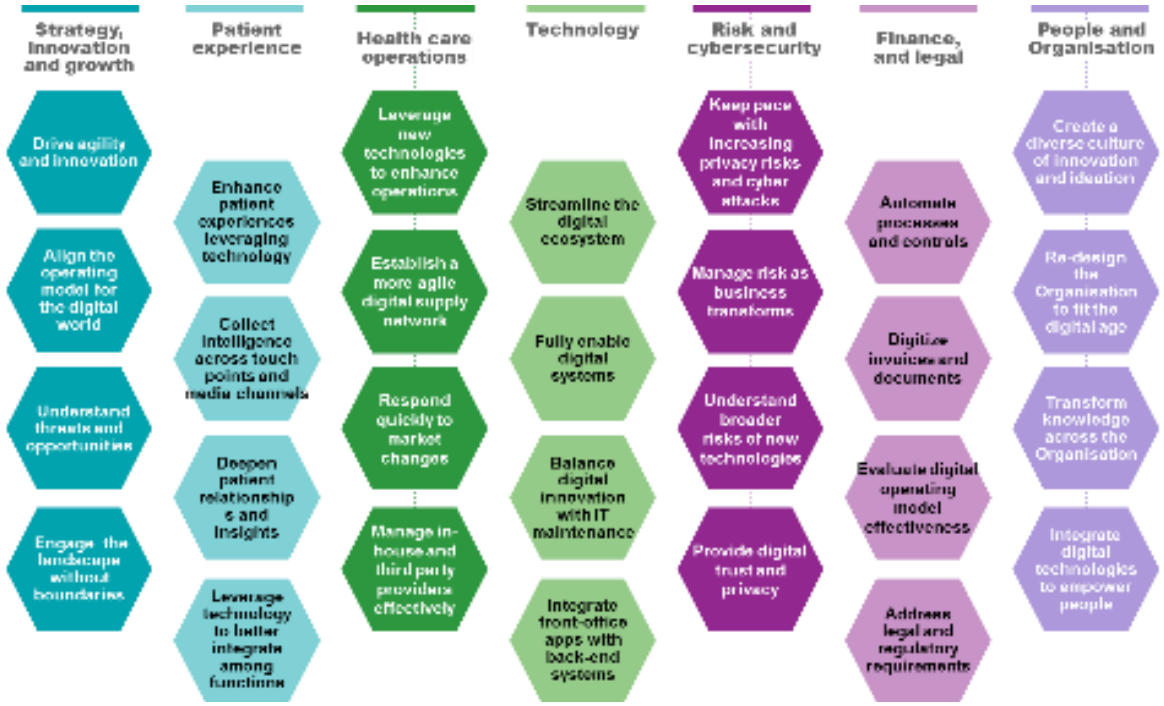
The SFH digital agenda should align to the following principles stated in the SPT – cont.

- *Clinical and care staff able to access and share information to support individuals' health and care needs*
- *Availability of new technologies to support independent living, care at home and better self-management of conditions*
- *Savings of £3m per year by 2020/21 as a result of making better use of technology*

B

Digital Readiness Assessment

Digital Readiness Assessment was conducted by looking at the seven (7) dimensions of a digital enterprise.



This assessment framework provided an in-depth assessment of SFH's and NHIS' digital strengths, weaknesses and gaps.

Key questions:

- What are the key challenges and risks in your area related to each dimension?
- How can digital solutions address these operational challenges and risks?
- In terms of readiness, where are you today and where do you want to be (3-5 year horizon)?

Applications Landscape

Partial view only – not all applications included

- Bookwise — Oncology Scheduling
- CRIS — Dep RIS
- Dawn — Anti-coagulant system
- Dendrite — Clinical benchmarking
- Diamond — Diabetes System
- Endobase — Endoscopy apps & reporting
- ePAQ — Personal assessment
- ChemoCare — Oncology e-prescribing
- Epro — Clinical info management
- ICNarc — Critical Care
- ICNet — Infection Control System
- Image Exchange Portal
- InfoFlex — Cancer pathways
- JAC — Pharmacy stock control
- Lilie — GU med
- eMEDrenal — Renal care
- Medcon — Cardiology
- Savience — Booking in system
- Bluespire — Theatre System
- GE - EMRAD PACS — Image storage and sharing
- PRISM — Imaging (Cardiology)
- RAPA — Alerting system A&E
- Sunquest ICE — Diagnostic comms, clinical integration, discharge letters
- KTC Whiteboard — Patient lists
- Medway — Patient Admin System
- E-referrals — Choose and book
- VitalPac — Mobile E-Obs
- Vocera — communications
- Ward Reporting — employeesing levels
- WinPath — Pathology
- Winscribe — Digital dictation
- Hibrow — Audiology system
- Care Fusion — Infusion management
- OCT — Retinal Imaging
- Practice Navigator — Audiology
- Therapy Manager — Orthotics/ Physio/ OT
- Badger — Special care baby unit
- Patient Lists — Handover mgt ED
- ROCHE — Glucose meter connection
- ORION SDM — Maternity clinical workflows & discharge letters
- ORION CDR — Diagnostic Reporting
- SystmOne — Community
- SystmOne — A&E
- MIG — Medical Interoperability gateway
- SCR — Summary care record

Non-Clinical

Back Office

- AMS — Absence Management
- Airwatch — Mobile security
- Datix — Risk reporting
- ESR — employees records
- Integra — Finance Service and Procurement
- FairWarning — Patient info monitoring
- SiteKit Extranet — Extranet
- SLAM — Finance & billing
- Preview
- SMART — Workforce planning
- Websence
- IG Toolkit — IG Management
- NHS Supply Chain — Procurement
- NHS SPINE — Info exchange
- Q Pulse — Document Mgt
- Perspective — Content management

Performance Reporting

- SAP BO — BI Reporting
- SSRS — Business Intelligence
- Medway BI — Business Intelligence
- Meridian — Friends & family

Business Productivity

- MS Outlook — Email
- Captivate 9 — E-learning
- Microsoft Office — Document Production and Management
- SharePoint — Document repository & collaboration
- Signature Recording
- Enterprise Yammer — Collaboration
- Skype — IM & VC
- MMG — Text Messaging

IT

- ORION (Rhapsody) — Trust & Community integration
- Sophos — Anti Virus
- CfH identity Agent Client
- Focus IT — Nursing Metrics
- Terminal Emulation — PC imaging
- MS Windows XP, Windows 7 & 8.1
- Vmware — Virtualization

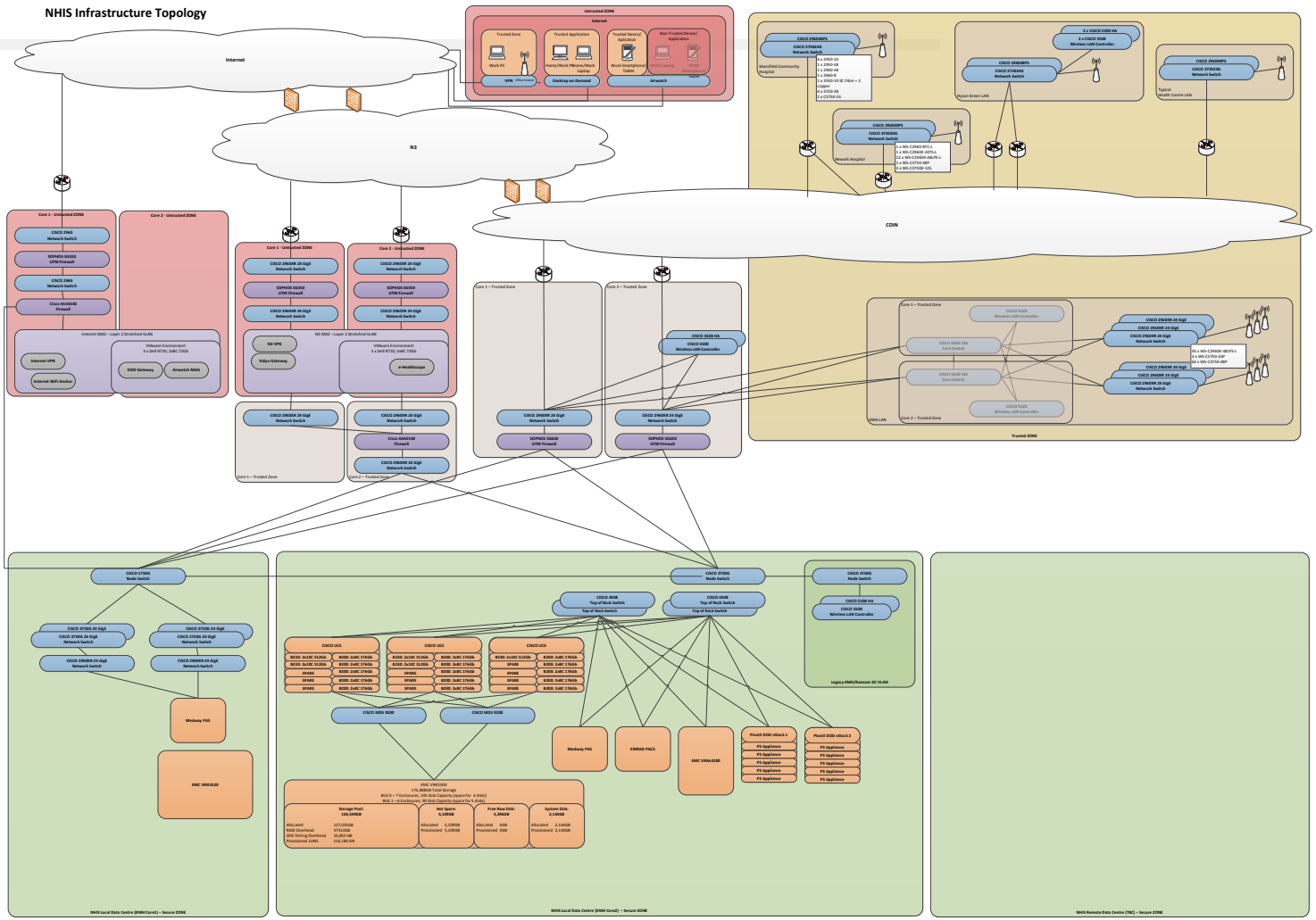
NHIS IT

- MS Dynamics — CRM
- Office 365 — Productivity
- SharePoint — Collaboration
- Manage Engine — Service Support

NHIS hosted & supported national system
Hosting/Support unknown
NHIS Applications
NHIS hosted & supported
Nationally hosted
NUH hosted
NHIS hosted/externally supported

D

Infrastructure Landscape



Security

External connections to and from the SFH networks and COIN are provisioned through multi-vendor perimeter firewalls, using the 'depth in defence' methodology using Next Gen capabilities..

The datacentre is also separately secured from the LAN and COIN via additional dedicated 'Next Gen' firewalls.

Remote Access to SFH systems and services is controlled through a number of methods, including: Virtual Desktop Infrastructure (VDI), Microsoft Unified Access Gateway (UAG), Virtual Private Network (VPN), each requiring multifactor authentication (using soft or hard tokens).

The network is classified into 3 zones;

1. Un-Trusted (internet and N3)
2. Trusted (KMH LAN and COIN)
3. Secured (Datacentre)

Server and storage infrastructure

The SFH server environment is comprised of physical and virtualised servers. Some application servers have been virtualised, however some older applications remain on rack-mounted servers that NHIS indicated intentions to virtualise.

Servers are running primarily on Windows Operating Systems (OS), although there are application servers running other OS' such as Linux. SFH continues to run out of support OS versions for the majority of its application servers, with 110 servers running Windows 2003 or earlier.

D

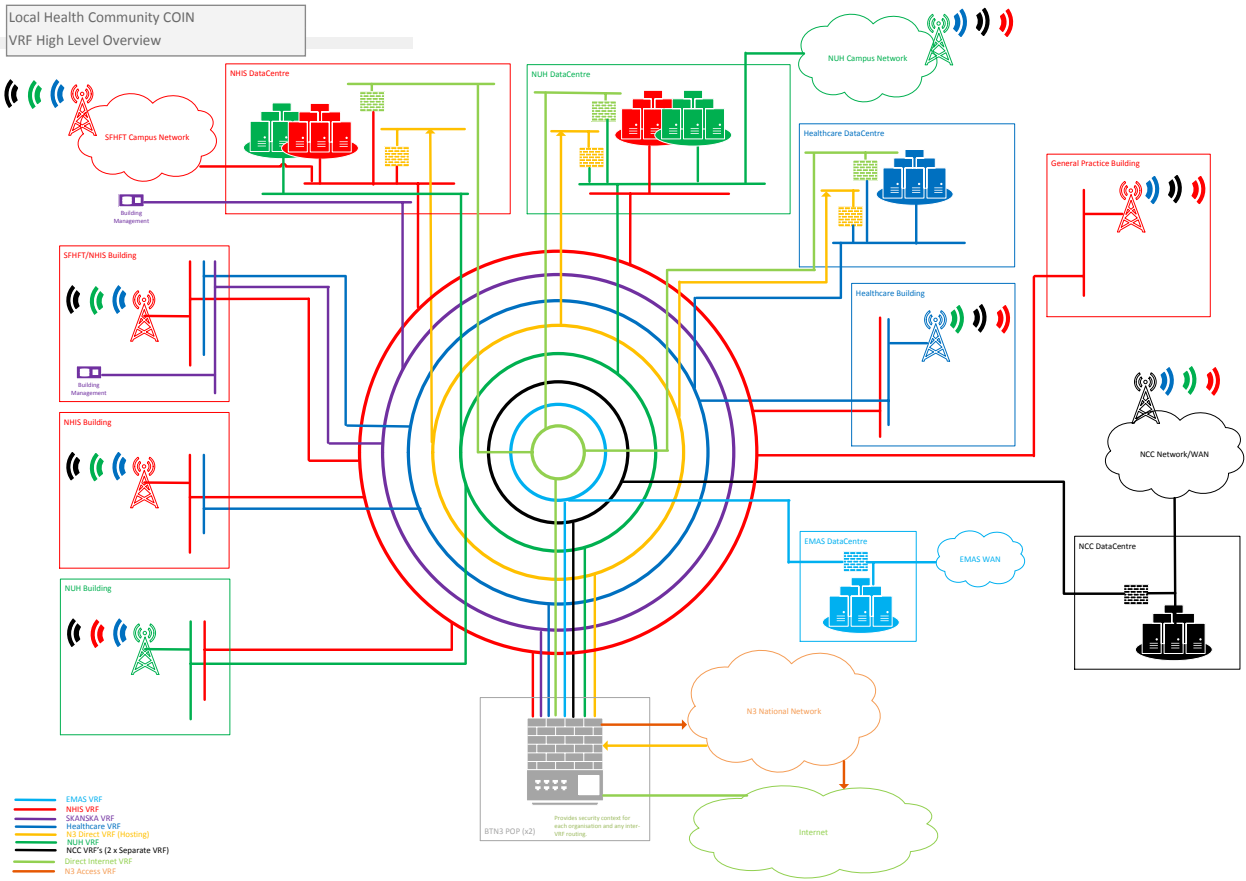
Infrastructure Landscape - cont.

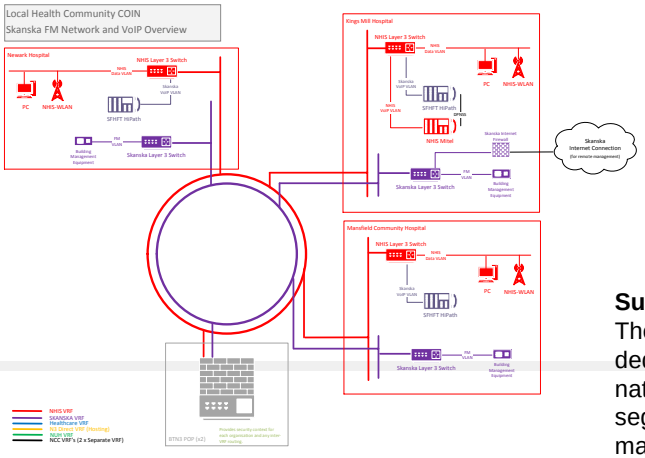
The New COIN

The COIN provides secure and highly resilient connections between KMH, Newark and MCH, it also connects to all members of the local health community and those within the STP. All connectivity is secured using MPLS technologies and dedicated VRF's to contain organisational traffic.

The COIN supports reciprocal Wireless capabilities meaning 'NHIS-WLAN' is available at all COIN connected locations, even those run by other members of the STP. Likewise SFH is able to broadcast the wireless SSIPD's of all other organisations in its own locations to facilitate those staff to work seamlessly when on site.

The COIN also provides connectivity to the national N3 network and onwards to the internet.





Supporting Skanska

The new COIN also provides Skanska with a dedicated VRF using the same highly resilient national infrastructure but allowing a total segregation for security and operational and management domains.