NHS
Milton Keynes
University Hospital
NHS Foundation Trust

Meeting title	Management Board	**Date:** 21 June 2017
Report title:	Informatics Strategy 2017 – 2020	**Agenda item:**
Lead director **Report author** **Sponsor(s)**		
FoI status:	Public	

Report summary	This document outlines how MKUH will develop capability to improve how we use technology and information to deliver care and services. This includes a roadmap outlining the timeline for each of the core programmes of work proposed.			
Purpose *(tick one box only)*	**Information** ☐	**Approval** [x]	**To note** ☐	**Decision** ☐
Recommendation	The Management Board is asked to approve the MKUH Informatics Strategy.			

Strategic objectives links	1. Improving patient safety 2. Improving patient experience 3. Improving clinical effectiveness 4. Deliver key performance targets 5. Develop a robust and sustainable future 8. Improve workforce effectiveness
Board Assurance Framework links	7.3 Inability to achieve the required levels of financial efficiency within the Transformation Programme 10.1 Failure to appropriately engage with stakeholders and community
CQC outcome/ regulation links	Outcome 21: Records
Identified risks and risk management actions	None identified.
Resource implications	None identified.
Legal implications including equality and diversity assessment	This paper has been assessed to ensure it meets the general equality duty as laid down by the Equality Act 2010.

Report history	This is a new report published to cover the period 2017-2020.
Next steps	None.
Appendices	Supporting information to the report should be listed here.

Milton Keynes University Hospital NHS Foundation Trust

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Informatics Strategy 2017 – 2020

Version 2.0

Document Control

Role	Name	Date	Signature
Senior Responsible Owner			

Approvals

Name	Date	Version
Executive Directors		
Management Board		
Trust Board		

Amendments

Version	Actioned By	Date	Description
0.1		01/07/2016	Initial document
0.2		31/08/2016	Updated document
0.3		24/11/2016	
0.4		02/12/2016	Document updated
0.5		05/12/2016	
0.6		19/12/2016	Technology section updates
0.7		21/12/2016	Updated sections 6 & 7; Reformatted and re-ordered document
0.8		07/02/2017	Technical Updates
0.9			Document review
1.0		14/03/2017	General editing
1.1		22/03/2017	Document restructure
1.2		11/04/2017	General editing
2.0		31/05/2017	Roadmap updated. Published for approval.

Contents

1. Executive Summary

Information and Technology continues to transform the lives of our patients and staff. The next five years will see that transformation continue, with a number of national strategic documents outlining expectations. This document is divided into four sections (what, why, how and when) and outlines the Trusts Informatics strategy through 2016-2020.

2. What we are trying to achieve?

2.1 About the Trust

Milton Keynes University Hospital NHS Foundation Trust provides acute services to a population of circa 300,000 living in Milton Keynes and the surrounding areas. The Trust employs over 3,000 staff and operates primarily from Milton Keynes University Hospital which has 526 beds.

Milton Keynes is one of the fasted growing areas in the UK. In the last year data shows our services provided:

- Over 333,000 outpatient appointments
- 140,000 urgent and emergency care episodes
- 32,200 emergency admissions
- 23,242 elective admissions
- 4,000 births.

Within the local health economy there continues to be significant possibilities for change and opportunity, both nationally and locally, including potential cooperative ventures with neighbouring providers and greater cross boundary working with health and social care providers.

Following an inspection by the Care Quality Commission (CQC), Milton Keynes Hospital has been rated by England's Chief Inspector of Hospitals as "Good" overall.

The rating of Good was awarded to the Trust for being effective, caring, responsive and well-led following an inspection in July 2016.

2.2 Trust Vision and objectives

Our Trust vision is "to be the healthcare provider of choice, growing with Milton Keynes'. As part of this, our goal is to move from a CQC rating of 'Good' to one of 'Outstanding' for being effective, caring, responsive and well-led.

To support this, the Trust has outlined its 10 strategic objectives, which are:

2.3 Informatics Vision

Through the effective use of data, information, knowledge and technology, our services will be fast and efficient, providing excellent patient care and experience, delivered by well-equipped and well-trained staff and in particular:

Our vision is for all front line staff to have access to information and technology which allows them to work efficiently, safely and provides a better patient experience.

To support this, we will deliver technology and clinically led digital innovations which must:

- be clinically usable, resulting in clinicians being able to enter data electronically in a consistent way at the point of care
- allow staff to find/extract data efficiently to support informed decision making, either at an individual or population level
- integrate to support the interpretation of clinical diagnostic and therapeutic information
- integrate into practice to provide transparent, timely and efficient access to real-time data which is contextually relevant at the point of care or when otherwise needed
- provide a positive and efficient human:computer interface, with the shortest log-on times and the ability to work seamlessly across applications
- support real-time patient management, generating efficiencies, removing waste (materials and time), improving quality, safety and outcomes of care
- support real-time coding, in a way which integrates into the clinical process of recording diagnosis, treatment and outcomes, improving data quality for audit and research as well as more timely and accurate data for payment
- build on information management capabilities, reducing the data collection burden on clinicians, providing clinical reporting and easier auditing with data collected through the process of recording care
- support information sharing across boundaries to further enhance efficiency, care delivery and patient experience
- support new ways of working, including the growing demand for two-way digital dialogue with patients (e.g.: virtual clinics, patient apps which send data to clinicians/records and patient control of aspects of their records)

- have undergone a clinical safety assessment which has been signed-off by an appropriately trained clinician (Clinical Safety Officer)
- support clinical standards and best practice.

2.4 Scope

In an increasingly integrated and digital health and care environment there is a need for this Informatics Strategy to consider both Technology and Information (Performance and Reporting). Clinical Informatics requirements have been integrated into this document and the strategy should also align with other key areas such as Information Governance, Clinical Coding, Data Quality and Human Resources.

3. Why do we need an Informatics Strategy?

3.1 Strategic Context – National

National IT strategy over the past 10 years has been based around the National Programme for IT (NPfIT) contractual framework established within NHS Connecting for Health (CfH). CfH procured Electronic Patient Record (EPR) and Picture Archiving and Communication System (PACS) solutions centrally for each region. It's generally agreed that this approach has not delivered all of the expected results. In MKUH we had already deployed PACS and therefore when the NPfIT solution was deployed, very few additional benefits were realised. The then new EPR national systems were only partly deployed and again very few benefits were realised.

3.1.1 NHS England

Moving forward, in October 2014, NHS England produced The NHS Five Year Forward View articulated why change was needed and what that change might look like.

For IT there are key themes about the integration of Primary and Acute Hospital Care Systems, Urgent Care and Emergency Care as well as out-of-hospital care.

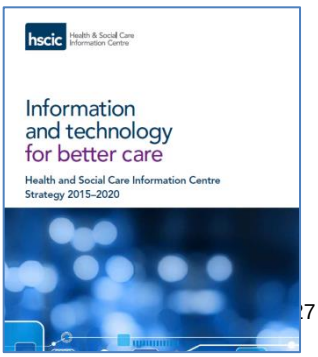
There was a commitment that Electronic Systems would mean that patient care records would become 'paper light' as a minimum, with patients having full access to their records.

3.1.2 NHS Digital

The Health and Social Care Information Centre, now NHS Digital, published their strategy, Information and Technology for Better Care, in March 2015.

NHS Digital have now taken the lead role in the delivery of change. Their strategy sets out 5 objectives for implementation across health, social care and beyond:

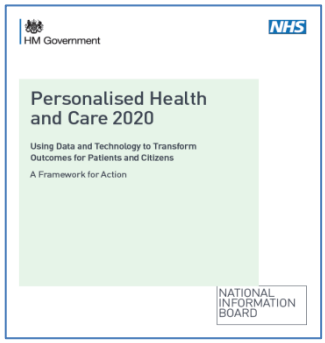
1. Ensuring that every citizen's data is protected



2. Establishing shared architecture and standards so everyone benefits
3. Implementing services that meet national and local needs
4. Supporting health and care organisations to get the best from technology, data and information
5. Making better use of health and care information.

NHS Digital are starting to mandate the use of strict technical standards within our systems. MKUH will need to ensure that it procures and implements systems that are both mature and allow the flexibility to adapt to these changing requirements.

3.1.3 The National Information Board (NIB)



The National Information Board (NIB) published Personalised Health and Care 2020 in November 2014.

The document has been adopted as Government policy and sets out the blueprint for using information and technology to transform health and care services.

Rather than centralised contracts and procurement, NIB argues that local organisations are charged with the implementation of systems consistent with a national set of standards. Standardisation is expected to enable innovation, reduce costs and speed up adoption.

Universal Wi-Fi access is taken for granted and the document also stresses the importance of, for example; strong leadership and the role of Chief Clinical Information Officer (CCIO).

3.1.4 Clinical Leaders

The clinical professional bodies and Clinical Leaders in NHS England are driving forward the informatics and technology agenda, with a number of key appointments and recently published documents.

The Royal College of Physicians has a dedicated Health Informatics Unit and the Royal College of Surgeons published its strategic priorities for 2015-2019 in which Priority one highlights the need to address unwarranted variations in care through improved use of clinical data.

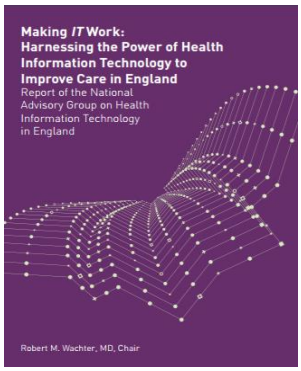
In October 2013 the Academy of Medical Royal Colleges published i-Care: Information, Communication and Technology in the NHS.

In May 2016, the Chief Nurse for England, Jane Cummings, published Leading Change, Adding Value, a national framework for nurses, midwives and other care professionals across all settings.

This framework is directly aligned to the challenges outlined in the Five Year Forward View and contains 10 key commitments.

Whilst technology and information play a role in all, commitment 10 is explicit in its focus on the role of technology and informatics in improving practice, addressing unwarranted variation and enhancing outcomes.

In addition, Dr Robert Wachter was commissioned to conduct a review of the future of NHS Information Systems.



The formal report has recently been published and it is clear that developing clinical informatics leadership both nationally and locally is promoted, as is the close alignment and collaboration between clinicians and Information and Technology professionals.

Partly in response to the report, three key national appointments have been made:

- A senior medical lead as NHS Chief Clinical Information Officer (NHS CCIO)
- An experienced health IT professional as Chief Information Officer (NHS CIO)
- A Director of Digital Experience

Both the NHS CCIO and NHS CIO will report to the National Director – Operations and Information and chair the National Information Board (NIB).

Over recent years, the role of the CCIO has already been developed at MKUH. Nationally both CCIO and CIO networks collaborate both on-line and through events. These new appointments will give greater strategic direction to these roles.

3.2 Strategic Context - Local

It is clear that in order to deliver the national strategic priorities and to enable clinicians to play their essential role in driving improvement through technology. Some organisational specific systems will need to be modified so that they encourage collaboration across the health and social care community.

3.2.1 Sustainability and Transformation Plan (STP)

Milton Keynes University Hospital NHS Foundation Trust is part of the Bedford, Luton and Milton Keynes Sustainability and Transformation Plan (BLMK STP). It is recognised and understood that local developments need to align so as to support the delivery of the STP vision. This involves working in partnership with other local NHS organisations and local authorities across the STP to deliver the five priorities agreed by this partnership.

The BLMK STP has identified and agreed five key priorities. These are:

- **Priority 1: Illness prevention and health promotion:** Preventing ill health and promoting good health by giving people the knowledge and ability, individually and through local communities, to manage their own health effectively

- **Priority 2: Primary, community and social care:** Delivering high quality and resilient primary, community and social care services across Bedfordshire, Luton and Milton Keynes
- **Priority 3: Secondary care:** Delivering high quality and sustainable secondary (hospital) care services across Bedfordshire, Luton and Milton Keynes
- **Priority 4: Digital programme:** Working together to design and deliver a digital programme, maximising the use of information technology to support the delivery of care and services in the community and in primary and secondary care
- **Priority 5: Demand management and commissioning:** Working together to make sure the right services are available in the right place, at the right time for everyone using health and social care in Bedfordshire, Luton and Milton Keynes.

Whilst there is a specific Digital Programme, technology is an underpinning enabler for all of the identified priorities.

As a key enabler, systems within MKUH will need to be extremely agile in order to meet both current needs and also to be able to respond to the emerging New Models of Care. Systems need to support paperless processes which work cross-site and cross organisation in a range of health and care settings.

The Trust has already signed an agreement to deliver an Electronic Patient Record solution from Cerner and as part of that initiative has agreed to deliver modules such as the Health Information Exchange, which will be facilitate sharing of records across organisational boundaries. Until these systems are in place, the Trust may look to implement tactical solutions to share records.

3.2.2 Targets

There have been a number of targets set by the Department of Health for the NHS to move towards being paperless. The most recent guidelines set out in the NHS Five Year Forward View, presents an overarching objective of harnessing the information revolution to make the NHS paperless by 2020. This vision was encompassed in the National Information Board's Personalised Health and Care 2020 Framework.

In 2016 the government commissioned a review of NHS IT by Dr Robert Wachter. In his report he advises that 2020 is unrealistic for some NHS Trusts and recommends that this target should be relaxed to 2023 to allow those Trusts further behind to catch up.

For the purpose of this target, the Department of Health further defined 'paperless' as:

- everyone who wishes will be able to get online access to their own health records held by their GP
- adoption of paperless referrals - instead of sending a letter to the hospital when referring a patient to hospital, the GP can send an email instead (through the e-referral system)
- clear plans in place to enable secure linking of these electronic health and care records wherever they are held, so there is as complete a record as possible of the care someone receives

- clear plans in place for those records to be able to follow individuals, with their consent, to any part of the NHS or social care system
- digital information to be fully available across NHS and social care services, barring any individual opt outs.

This strategy aims to deliver a paperless clinical record within these timescales.

3.2.3 Patients

All patients will be able to access their healthcare records, to enable them to be active partners in their own care.

This will be enabled through:

- a Patient Portal which will allow patients to:
  - View and manage their own appointments
  - Access their test results, letters and key record information
- providing a choice of how to receive appointment reminders (such as text or email message)
- the ability to send self-measured clinical data electronically to their clinician (for example, a diabetic patient sending their blood sugars to their diabetic nurse specialist)
- the ability to make use of telemedicine and virtual clinics where clinically appropriate

This will help ensure that our patients are confident they are receiving the best care which is built around their individual needs.

3.2.4 Clinical and Front Line Staff

Every day, information is collected, managed, used and shared. High quality, safe patient care depends on this. The flow of information needs to be fast and accurate; Technology plays a vital role in ensuring the right information gets to the right person at the right time.

Working collaboratively will develop our understanding of where managing information in a new way will create value, including the use of timely information to improve diagnosis, prognosis, treatment decisions and outcomes.

Our vision is for all front line staff to have access to information and technology which allows them to work efficiently, safely and provides a better patient experience.

Areas of clinical priority are the:

- Roll-out of electronic patient records and support for:
  - integrated electronic documentation and document management
  - Medications Management (electronic prescribing and administration records)
  - Diagnostics – requesting and results reporting
  - patient monitoring and early warning systems for inpatients
  - patient monitoring and early detection for outpatients with long-term conditions

    - patient referral and pathway management, including options to replace face-to-face consultations
- Updating of digital competencies and technical skills of the clinical workforce.
- Upgraded hardware and support for secure and rapid access to systems and information including fast and secure logon
- Safe information sharing, including cross organisational communications, for example, with primary care, other secondary care organisations, social care, patients and carers.

Strong multi-professional clinical informatics leadership will promote and support:

- Clinical collaboration with others (e.g. IT, Information Governance (IG), HR, Education and others) to ensure MKUH develops:
    - clinically appropriate digital solutions
    - a mechanism for evaluating/approving 3rd party clinical apps for use by staff and patients
    - appropriate and robust clinical risk assessments of new technology
    - relevant, effective and timely systems training
    - a digitally enabled clinical workforce (which includes digital professionalism on and off-line)
- Development of professional strategies to address the triple aims of the Five Year Forward View by increasing our shared understanding of how managing information in new ways will:
    - create value
    - improve diagnosis, prognosis and treatment decisions
    - improve outcomes for patients
- The use of technology and safe information sharing as a default position
- Clinical input to all design and solution decisions
- Clinical participation in user acceptance testing for all clinical information systems
- Change management/transformation – to implement new ways of working.

3.2.5 Our Staff

It is not just hospital based, front-line clinical staff who will be enabled to work more efficiently through innovative use of technology. Our strategy is to provide the appropriate technology for all of our staff. For example:

- Our recruitment process will become largely paperless from start to finish through the increased use of on-line forms. For example; ABC HR (starter/change/leaver) forms are already on line.
- Community and social care based staff will be able to work as part of an integrated team, around the individuals they are caring for, with technology including networks that ‘just works’.
- Technical solutions will be implemented to manage support services more efficiently, making better use of our resources such as portering and housekeeping staff.

3.2.6 Community Integration

Technology needs to be agile and able to respond to changes in the way health and care services are provided. This will include the ability to use technology to respond to and support greater community integration across health and social care. This may emerge as an outcome of the STP and as new models of care are identified, e.g. Multispecialty Community Provider (MCP), Accountable Care Organisations (ACO) or a larger scale Primary and Acute Care System (PACS).

3.2.7 Education and Training

The Trust became a University Hospital in 2015, partnered with the University of Buckingham Medical School (UBMS), and it has quickly developed a reputation for innovation. Technology will be a key factor in helping us to build on this reputation, integrating digital innovation with student learning to attract and retain the very best students and staff.

We already use technology to live-stream lectures by national and internationally acclaimed experts. We are also working on how we can use technology such as web-ex to stream our local lecture theatre sessions to a wider audience, either live or recorded for later viewing.

Other requirements will be the enhancement of audio-visual technology, for example in the Simulation Suite. We will also develop other innovations into how we train, for example, live video streaming of theatre procedures, multi-disciplinary team meetings and case conferences, making efficient use of our resources whilst enhancing the learning experience.

3.2.8 Technical Support

With the rapid growth of and reliance of technology to support the delivery of health and care services, there will be a need to consider how users will be supported. This will need to support users and system usage through the 24 hour period.

3.2.9 Communication and Social Media

Whilst communications is not directly an IT responsibility, IT is a key enabler. For example, patients and staff are increasingly communicating on-line and there is a requirement to review how we support this safely and effectively. This includes how we communicate internally with our staff safely and securely and how we provide technology solutions for on-line collaboration. It also includes how we communicate externally, with our patients, local population, prospective employees and local stakeholders.

Key projects will be the development of our Trust website and our internal intranet. We will also develop our mobile communication capability.

In addition, we are progressing with other projects to improve clinical communications and support the STP through:

- The development of electronic GP communications to move beyond email. This will see the introduction of messaging which will enable us to send clinical

correspondence messages (e.g. clinic and discharge letters) direct into the GP systems in a timely and consistent manner.

We also have an opportunity to use technology to build our social engagement within the local community and to extend our reach to attract, recruit and retain the best staff. A survey, published in August 2016 reveals that on-line profiling is also becoming more prevalent:

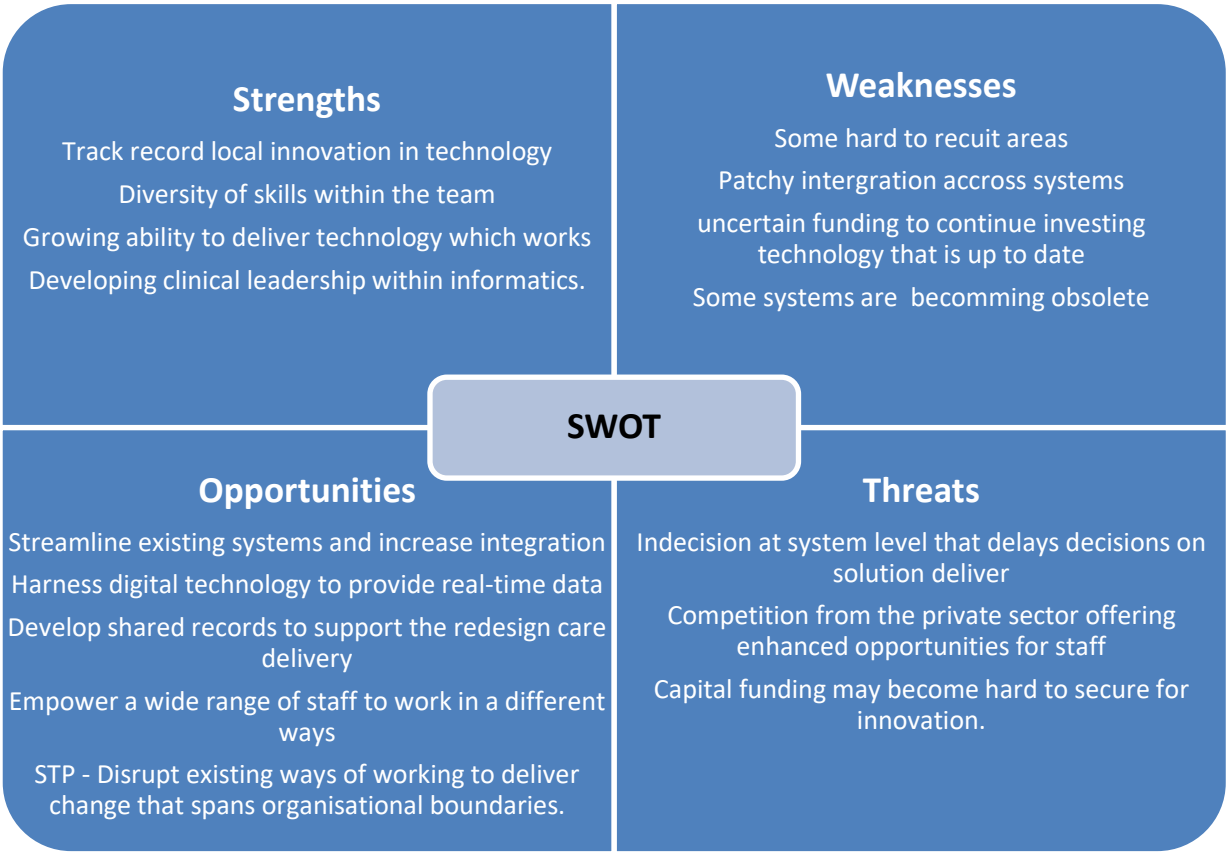
Third of employers have turned down candidates because of their social media profile – Marianne Calnan

- Over 56% of UK employers admitted that a candidates on-line profile actively influences hiring decisions, consulting sites such as Twitter, LinkedIn and Facebook
- About 36% said they had declined to interview or rejected a candidate post-interview after checking their social media profile
- Around 65% had done a general google search on prospective employees
- 28% of job seekers said their view of an organisation was influenced by what they read on websites such as Glassdoor – they were less likely to apply if they formed an unfavourable impression.

This suggests a significant opportunity with regards to recruitment. Most NHS organisations advertise through NHS Jobs. Increasingly, it is not just employers who are seeking a good cultural fit, this is becoming increasingly important for job seekers. The NHS Jobs website is not intended to promote Milton Keynes as a great place to work and there is an opportunity for us to consider how we might utilise on-line social networking sites to build our 'employer brand' as well as proactively point potential employees to our career opportunities.

In summary, both employees and employers are looking for a good cultural fit and are turning to on-line profiling to help their decision making. External 'employer brand' is really significant when it comes to attracting talent and we need to ensure we enable our recruiting staff to leverage new technology to attract the best and reduce our vacancy rates.

3.3 How well are we doing?



4. What are we planning to do?

4.1 Integrated Electronic Patient Record

Our goal is for all services to be part of an integrated electronic patient record by 2023. This will be comprised of a core EPR system (Cerner Millennium), supplemented by a streamlined group of other specialist systems, including:

- The Summary Care Record Service (national system)
- The Child Protection Information Service (national system)
- Local Social Care Record
- Picture Archiving and Communication System (PACS)
- Specialised clinical systems (for example, Aria for Chemotherapy or Unisoft for Endoscopy)
- Operating room systems (for example, endoscopy stacks).

In order to create an integrated EPR, the Trust will need to evaluate all current systems to agree how there functionality will be replicated going forward.

Those systems which need to be retained must be capable of a two-way interface with Cerner Millennium. Those which cannot achieve this will need to be replaced.

Our core clinical information systems will be complimented by the provision of technology and reporting systems to provide us with the analytics needed to constantly drive quality improvement, give assurance we are meeting quality targets and that we are meeting the needs of the local population.

4.1.1 Cerner Millennium

In 2014 the Trust signed a contract with Cerner to implement core modules of the Millennium EPR. In 2015 as part of Phase A the Trust migrated the existing national Cerner Millennium system away from the NPfIT hosted platform, to a Cerner hosted platform. In early 2016 the Trust then upgraded their core software to provide an updated platform for further developments.

During 2016 through to late 2019, The Trust will focus on delivering significant additions to the core EPR. These will be split into two main phases (phases B and C).

Phase B will run through to early 2018 and will deliver:

1. PAS enhancements
2. FirstNet for the Accident & Emergency Department
3. Maternity System
4. Full Order Communications
5. Electronic Prescribing and Medication Administration (ePMA, Adult inpatients)
6. Clinical Documentation (Adult inpatients)
7. Device Integration for vital signs
8. A 'Business Continuity ' back up system (724)
9. Health Information Exchange (HIE)

In addition, the Trust has purchased the licence for Cerner's MPage development toolkit, which will allow the Trust to build its own localised views, forms and dashboards.

Phase C will then run through to late 2019 and will deliver:

1. Theatre Enhancements (Pre-op & Recovery)
2. Anaesthetics Module
3. Critical Care (+ further device Integration)
4. Clinical Documentation (Paediatrics)
5. ePMA (Paediatrics)

This will provide the ability for all healthcare professionals to have access to context relevant information when needed and ensure that all appropriate clinicians can electronically request tests and investigations and share results as relevant for patient care.

Once Phase C is implemented in late 2019 the focus will be on developing the system further locally to deliver against the Trusts paperless by 2023 vision.

4.2 Additional Systems

As the role of technology becomes more prevalent, there is a need to develop capability for clinical data integration. Whilst this is a highly technical piece of work, there is a more practical stage required, which is the need to review the existing governance process to ensure that:

- We are progressing towards our goal of streamlining the number of systems in the Trust, assimilating functions into existing systems and checking first if we can provide newly required functions before procuring additional systems
- We prevent/mitigate the risks of silo projects and that no individual or department buys a system that connects to the Trust network, without first checking against the Trust strategy and roadmap, via the IT department
- Where assimilation is not possible and new systems are introduced, those systems must be interfaced at a system level to ensure maximum integration and efficiency.

Work has already been undertaken to identify the systems currently in use and to validate the information about those systems (e.g.: contractual information, users, data flows and whether or not it could be replaced by EPR).

The current list of systems and/or databases in the Trust exceeds 150, used either to support business or clinical functions. This includes local systems that are either in-house or procured systems/databases, regional/shared systems and databases, national systems and databases and ad-hoc systems and databases, some of which we use for defined durations (for example, for the life of a research project).

Once the validation is complete it will be possible to identify:

- Those systems which are already (or will become) redundant
- Systems which could potentially be replaced
- Systems which need to be maintained either for full use or as a ‘read only’ (for historical information).

Retaining for historical information reduces the need for significant and risky data migration when data quality may not always be assured, but may reduce the benefits of retiring the system until such time the historical information is no longer required.

Once the dataset is complete it will be aligned to the Trust Roadmap (Section 11).

4.3 Information Management and Reporting

4.3.1 Information and Reporting Context

The provision of business critical data, information and performance reports have evolved immensely in recent times, with the development of new online tools and steadily improving data quality.

Over the last few years these developments have largely been delivered using existing in-house resources, technology and information and with little or no investment in information management or business intelligence (BI).

Now investment is needed to ensure that the Trust has data and information to use as a focal point to support process re-design for both business and clinical decision making.

There are three broad areas:

1. Information and data flows – this is the flow of information through multiple systems and back to the user
2. Reporting tools – the tools used to visualise data and analysis to aid effective decision making
3. Business intelligence portal – this is a way of distributing reports to all those who need them.

4.3.2 Information data flows and reporting

Our goal is to centralise all of the reporting from a single data warehouse (the BI reporting data warehouse). In addition, the Cerner Power insight Enterprise Data Warehouse (PIEDW) has reached end of life and needs replacing. This will to accomplished throuogh the new generation Cerner toolset (using Tableau) as well as a direct link to the EPR data tables where real-time data reporting is operationally necessary.

Reporting has moved from traditional paginated reports to dashboards and scorecards which allows users to 'drill-through' from the organisational level to the lowest granular) often patient) level.

The direction of travel will be to use the native reporting tools built into SQL Server 2016 supported by products such as Power BI. This allows for both generic and affordable reporting for all areas of data that the Trust holds and ensures that there is a ready trained and skilled workforce that can be recruited as required.

There is a need to distribute information and reports in a user-friendly manner to achieve maximum usability and effectiveness. There is a need for a one-stop solution for all information needs, but one which can be customised and targeted based on user needs and profiles. There are several options available, detailed below.

4.3.3 Reporting tool options

Selecting an appropriate technology depends on various characteristics including volumes of data, adaptability and integration with other systems, visualisation ability, drill-ability, cost and capability of users in the organisation.

4.3.4 Business Intelligence portal / website options

The Business Intelligence portal will be the one-stop solution for all information for users across the Trust. The site will be hosted on the Trust intranet and will contain dashboards, scorecards, reports and also serve as a self-service information tool. The tool can be

customised to individual user groups and will be focused on and aligned to user groups. The user will be able to interact with the site and store their favourites. The Trust already has invested in earlier versions of SharePoint and proposes to continue this investment over time.

4.4 Technology

4.4.1 Desktop

In order to compliment the current Microsoft licencing agreement and make best use of modern technology, the Trust is moving to a Windows 10 “Evergreen” desktop environment. This will provide the Trust with a significantly improved security layer, whilst providing more functionality, particularly for remote workers. We will also take advantage of improvement to centrally managed and deployed software, allowing the IT department to be more agile and efficient.

The Trust has made use of the DoH licencing for Microsoft Office products, but this will be migrated over time to allow the Trust to makes use of supported software and integrate with other providers using industry standard tools. For low intensity users the Trust will continue to utilise Open Source software where it make economic sense and integration issues can be overcome.

During the lifetime of this strategy a decision will be made on the desirability of moving to cloud based solutions such as Microsoft Office 365.

A Persistent desktop (with Tap and Go) for some clinical users will be piloted in the calendar year 2017 with a decision to be rolled out to a wider group of clinicians to be made.

The Trust has invested in its Exchange email servers, completing its migration to Exchange 2016. The Trust still needs to meet the national requirements of running email platforms so as to comply with the last security and encryption standards and will look to complete this as soon as possible.

4.4.2 Mobility

Mobile technology enables our staff to work effectively wherever they are as part of developing an agile and mobile workforce. The Trust has invested in new switchboard technology that will be able to support home working in tandem with the new VPN solutions.

We will also look to improve the mobility of staff further through investment in remote access, ‘always on’ VPN technology and upgrades of Outlook Web Access.

A key project in support of this mobility is already progressing is the introduction of Cisco Jabber, which will:

- enable continuous mobile reception across the site.
- enable conference/video calling to become the norm in the Trust
- support timely care and improve staff collaboration

It is anticipated that Jabber will be fully operational in 2017.

There will be a programme to introduce more mobile workstations to support the introduction of EPR and the use of EPR compatible devices is also being explored where this would support staff who are highly mobile.

4.4.3 Servers

The Trust has approximately 350 servers, with 60% being 'virtual' and a number of externally supported servers in our computer rooms for example for PACS and Pathology. It's anticipated that the trend of virtualisation will continue and we will ensure that sufficient storage and compute is available to support business requirements.

There is a concerted effort to migrate server operating systems towards current versions, so as to reduce the cyber security risk. In the future assessment of Cyber Risk is a key part of all CQC inspections.

The Trust has started to invest in cloud based infrastructure and will look to extend this where needed to meet user requirements. This will allow the Trust to make an informed decision as to whether to solutions should be locally or cloud based.

4.4.4 Printing

The Trust has recently exited a managed service contract for printing. This has been replaced by a Trust IT lead solution with HP standardisation throughout.

Centralised printing will however be explored in conjunction with STP colleagues for high volume distributions such as EPR outpatient letters.

4.4.5 Telephony

The Trust has deployed Cisco Call Manager, which has been a significant success with 2000+ extension in use. In addition to this, other services, such as video/audio conferencing, Interactive Voice Response (IVR) have been made available. The Trust will need to ensure continued investment, to maintain a supported platform. Opportunities to be investigated remain, such as conferencing control services, Session Initiated Protocol (SIP) calling for B2B and remote workers. We intend to offer support for video calling services to and from other healthcare providers.

4.4.6 Licencing

The Trust will need to make some significant decisions over the next few years in regards to Microsoft licencing. Licencing currently includes Windows clients, Office 2010 and SQL 2008. In 2015 the Trust entered an Enterprise Agreement (EA) with Microsoft to cover Client Access Licences on an ongoing basis, but this excludes Office and SQL.

4.5 Infrastructure & Security

4.5.1 Network

The Trust completely replaced its network, including LAN, wireless and phone systems in 2014, procuring Cisco equipment in all areas. Significant bandwidth was added to allow for growth over the next 5-7 years.

The Trust took the opportunity to provide free public Wi-Fi to staff, patients and visitors and is now looking to improve the Wi-Fi density including outside coverage.

NHS Digital have announced that the N3 contract will not be renewed in its current form, but rather transitioned to a new service, Health and Social Care Network (HSCN). The Trust has committed to re-providing this service.

With MKUH having a significant presence off site, as well as increased demand from smaller sites and remote workers, we will ensure suitable connectivity with “always-on” VPN and RDS services to be available in 2017.

4.5.2 Integration

The Trust’s Integration Engine (TIE) is Mirth Connect, which has been in place since 2010. The number of interfaces continues to grow annual with more systems being able to integrate via HL7. It’s anticipated that this trend will continue as EPR development allows for more enriched clinical integration. e.g. inbound documents, inbound modification of EPR data from downstream systems.

Although an Open Source platform, the Trust runs Mirth Connect on 2 x E2000 Enterprise appliances and purchases annual support from Mirth Corp. Mirth Corp has recently been purchased itself, by NextGen Healthcare, an EHR provider.

As part of the EPR programme, each existing clinical IT system will be reviewed. Any system that is required to remain outside of core EPR should be integrated with it, looking to achieve full 2-way data exchange.

4.5.3 Storage

The Trust currently has a NetApp metro cluster, which provides campus wide resilience. Growth has been significant and as well investment, the IT department are also using de-duplication to better manage capacity. As the requirements continue to increase, we are looking towards cloud provision as a possible means of expansion. Cloud technologies offer a cost effective and secure long term data storage, which is ideal for medical imaging, such as PACS.

4.5.4 Backup

The Trust makes use of a backup solution from CommVault, with tiered storage allowing for both rapid restoration and long-term retention. There has been exponential growth of backup

requirements and continued investment will be required, although cloud offers will be considered if economically advantageous.

4.5.5 Cyber Security

There have been a number of high profile attacks of hospitals recently, in some cases significantly affecting clinical services. It is clear that further reasonable mitigation must be considered to protect the data the Trust currently holds.

Areas for considerations are; Firewalls, CareCERT, Virus/Ransomware mitigation, depreciation of generic accounts, Building management access, CCTV on IP, Whitelisting of software, Non domain devices firewalled etc, usb restrictions.

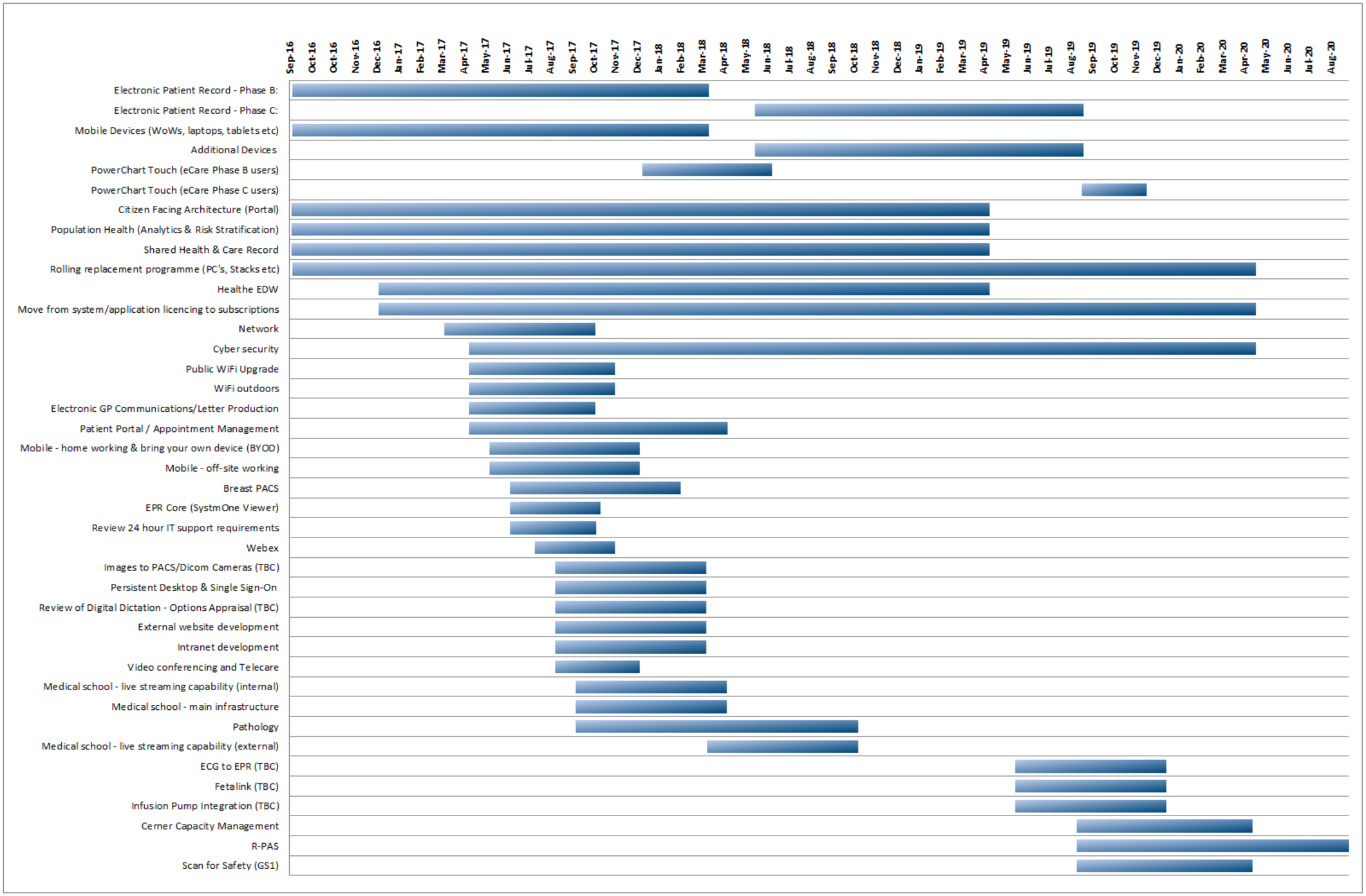
The Trust will investigate virtual smartcards and other systems, to allow staff to use the most efficient form of authentication to allow access to national infrastructure.

5. When do we plan to introduce these changes?

5.1 Roadmap

The Trust roadmap can be seen on the next page:

Trust Roadmap

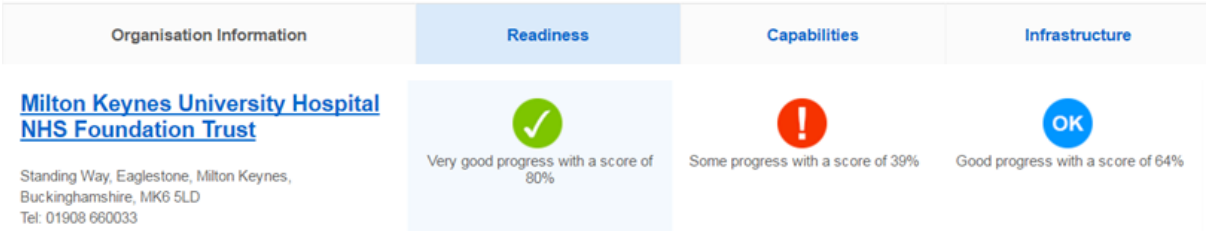


This roadmap will be regularly updated to reflect emerging priorities (for example, priorities associated with the BLMK STP and any projects approved under the Global Digital Exemplar Fast Follower Programme).

6. Supporting Information

6.1 Digital Maturity Index

The Digital Maturity Assessment measures, through self-assessment the extent to which healthcare services in England are supported by the effective use of digital technology. The Trust assessed itself at the beginning of 2016 as follows:



6.2 Staffing

The IT department currently provides support between 08:00 and 17:00 and has a single technician on call outside of these times. There is some demand for specialist skills sets outside of normal working hours, as we will consider if running multiple groups of on call, similar to the groups available in hours. E.g. Support, Engineering, Back Office, Development, Integration. The expectation is that there will be a single STP solution to extended availability hours that will over time lead to a shared technical resource.

6.3 Finance

Projected 2016/17 turnover for the Trust is £205,993,000. The IT budget is 0.89% of this value (IT pay and non-pay only). Including non-recurrent income that IT currently generates, this value equals 0.86%. This percentage is low by industry standards.

7. Glossary

Abbreviation	Description
A&E	Accident and Emergency
AHP	Allied Health Professionals
AHSN	Academic Health Science Network (Oxford AHSN)
BI	Business Intelligence system
BLMK	Beds Luton and Milton Keynes
CCG	Clinical Commissioning Group
CRS	NHS Care Record Service
CQUIN	Commissioning for Quality and Innovation
EDM	Electronic Document Management (scanned paper records)
EPR	Electronic Patient Record
GP	General Practitioner
HL7	Health Level 7
HRG	Health Resource Group
HSCIC	Health and Social Care Information Centre (now NHS Digital)
HSCN	Health and Social Care Network
IT	Information Technology
ITIL	Information Technology Infrastructure Library
LDR	Local Digital Roadmap
N3	New NHS Network
NIB	National Health Board
NHS	National Health Service
NHS Digital	NHS Digital (formally HSCIC)
NPfIT	(NHS) National Programme for Information Technology
PACS	Picture Archiving and Communication System (Digital Images)
SCR	Summary Care Record
STP	Sustainability and Transformation Plan
TTO	“To Take Out” (Drugs provide to a patient on discharge)

7.1 References

Reference	Description
Five Year Forward View	www.england.nhs.uk/ourwork/futurenhs/
Personalised Health and Care 2020	www.gov.uk/government/publications/personalised-health-and-care-2020
HSCIC's Strategy 2015-2020	www.gov.uk/government/publications/hscic-strategy-2015-20
BLMK STP	www.blmkstp.co.uk
AHSN Informatics Strategy	
Leading Change, Adding Value	www.england.nhs.uk/ourwork/leading-change/
Royal College of Surgeons Strategic Priorities 2015-2019	www.rcseng.ac.uk/about/docs/rcs-strategic-priorities
Royal College of Physicians Health Informatics Unit	www.rcplondon.ac.uk/health-informatics-unit-hiu
CQC MKUH Page	http://www.cqc.org.uk/location/RD816