ICT Strategy
5 August 2019

ICT Strategy 2013-2028
Extended 2019-2020

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Contents

1   Executive Summary

This updated ICT Strategy for RWT has been completed following significant input from many areas both internally, support staff, executives and patient facing personnel, and externally, GP's and external DoH publications. It is presented for approval by TMT and Trust Board in July 2013 and will be updated formally on a minimum bi-annual basis, with a formal update on progress each year.

The documents is intended to provide a direction of travel for ICT which will be reviewed as updated as necessary and highlights the key components required for its delivery.

The document starts by summarising key progress against strategy, highlighting both successes and some of the more challenging initiatives. It then introduces the ICT framework which has been developed to structure this strategy and the detail held within.

The ICT framework is made up of the key outcomes, enablers and foundation stones required all of which are essential to ensure success. Detail for each outcome, enabler and foundation can be found within this report.

ICT needs to move to fewer significant initiatives rather than the plethora currently in the portfolio. By setting up the Portfolio Framework and helping to enable true leadership and drive/focus the aim to ensure a move to this during 2013-14.
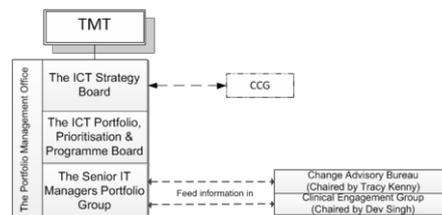
The appendices detail the 5 year plan by outcome, enabler and foundation together with a 5 year financial plan based on must do's and should do's.

2 Background

2.1 Introduction

This document sets out the Information and Communication Technology (ICT) Strategy for the Royal Wolverhampton Hospitals NHS Trust (RWT). The strategy is designed to cover the period 2013 – 2018. Short to medium term goals are more developed while longer term goals are identified as targets for the Trust to work towards.

ICT is important to the Trust as it is no longer a nice to have; it is essential to improving and supporting the patient experience and pathway within the hospital and enables us to focus on patient care rather than administrative processes. ICT is intrinsic to the delivery of the RWT Overall strategy, including the delivery of service reconfiguration within/across the local area and the required efficiency and cost savings required year on year without jeopardising the quality delivered.

This document highlights the intent of direction of travel for ICT across RWT, highlighting the major outcomes and associated actions required.

This document will be reviewed bi-annually, and a revised version agreed by the Board, but with an annual update each year. Additionally the Trust should produce an annual ICT Action Plan that sets-out the activities for the year to deliver the ICT Strategy as agreed with the recently established ICT Strategy Board. To confirm the plan for 2013-14 it has been necessary to review all existing projects and agree which should continue, over the next 6 months the intention is that no new projects will be agreed without the approval of the ICT Strategy Board, this will allow ICT to focus on fewer key transformational projects rather than the plethora of projects currently within the portfolio. As part of this a portfolio framework (below) and a prioritisation framework has been agreed using strategic pillars aligned to the RWT strategy.
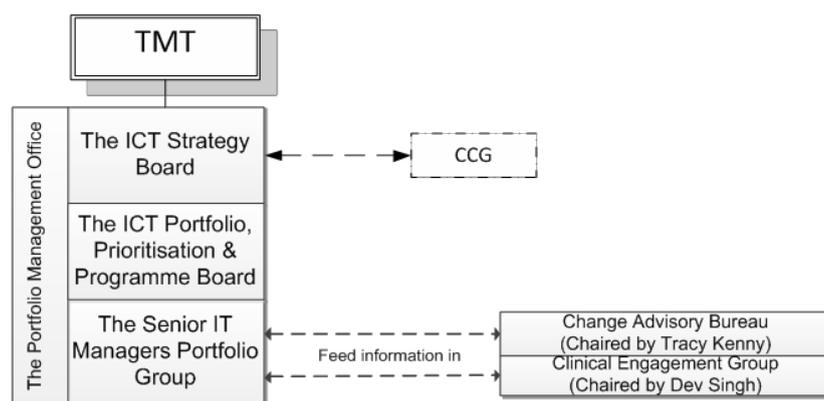
Recommendation: The Trust reviews its ICT Strategy bi-annually so that it always has a minimum of a three year strategy and produces an annual ICT Action Plan to implement the strategy.

Recommendation: The annual plan will be agreed with the ICT Strategy Board and then delivered via the portfolio framework; any new projects will only be approved once agreed by the ICT Strategy Board.

2.2   The Role of an ICT Strategy

The ICT Strategy is designed to identify the direction of travel required to provide the effective use of information technology needed to deliver the Trust's strategic clinical and business objectives and provide input into the financial annual planning and long term planning process.

The ICT Strategy looks at the Trust's use and management of technology rather than the data and information that is held within systems however it is incumbent of the ICT staff to make sure that systems are up to date, robust and have arrangements in place for consistent quality, although inevitably there is some cross over particularly in relation to the consideration of software applications. Data quality remains the responsibility of the person entering/amending the data held within each application.

It is not the role of an ICT Strategy to set-out specific technical plans, policies and procedures for the implementation and use of ICT, but to devise a long term framework with goals and objectives and identify which technical plans, policies and procedures will need to be developed to deliver the strategic objectives.

2.3   Approach

A first draft of this strategy was written by a consultant who conducted a number of interviews across the trust, including executives, and external customers i.e.: GP's and PCT ICT Representatives. The strategy has since been reviewed and appended by the ICT Senior Management Team, co-ordinated by the Head of Portfolio and Programme Services, taking feedback from the newly appointed ICT Strategy Board.

Furthermore external considerations have been taken into account,, these include:
- The NHS Commissioning Board Mandate and planning guidance for commissioners for 2013-14
- Digital Strategy (DoH). Published December 2012
- Any Local Commissioning contracts/agreements as agreed
- Changes to Service Provision resulting from the recent NHS restructuring
- Francis Report (February 2013)

2.4   Strategic Background

One of the key priorities for all health care organisations over the last 15 years has been the development of an integrated Electronic Patient Record (EPR). This vision was set-out in the NHS IT Strategy (Information for Health) published in 1998. The approach proposed is still generally accepted globally as the right approach with publications such as the Electronic Health Record (EHR) Impact Report published by the EU in 20081 supporting this approach. Very similar approaches have been adopted in the USA and Australia. Most major healthcare system vendors have aligned their services and products around patient centric data and the concept of an integrated EPR. The NHS National IT Strategy, published 21st May 2012 reinforces the strategic objective of delivering an EPR and an Electronic Health Record (HER), which has recently been further supported by the NHS Commissioning Board Mandate for 2013-14. The only significant strategic change since 1998 has been in delivery

mechanisms from local responsibility to centrally lead (NPfIT) and now back to local responsibility again.

Currently progress across the UK in delivering an EPR is mixed with some areas such as Primary Care being very advanced. The picture in Secondary Care is very mixed with some Trusts being advanced while others lag behind and Acute Care generally being more advanced than Community Care.

2.5   Strategic Progress at RWT

The RWT IT vision for all clinical informatics is that the information required can be accessed within a minimum of 3 clicks. Whilst clearly some way off it is the long term vision we all aspire too. Significant progress has been made in delivering this, having started some 3-4 years ago with a very poorly maintained base that had experienced significant under investment for a number of years.

As a result, most recent investment has been in the infrastructure which is the critical foundation stone required before any capability can be truly delivered to clinicians. This has seen:

- A formal PC replacement programme which runs every year to ensure that the age of our machines does not inhibit the quality and cost of service
- A programme of work to improve and extend the network facilities across RWT which is now in year 2 of a 3 year programme.
- An update and expansion of the wireless facilities across RWT is now 50% complete with further expansion planned during 2013.
- A programme to set up and expand our existing server set-up to ensure flexibility to expand further as required, to consolidate the infrastructure previously owned by the PCT and to improve robustness of availability/provide Disaster Recovery (DRS) opportunities.
- A successful iTouch pilot for VITALPACS has been followed with an extensive rollout to replace all existing PDA's which were not seen as fit for purpose.
- A programme to rollout additional equipment to wards has commenced to ensure that applications are accessible where-ever and when-ever required within the inpatient areas of the trust.

- Work is in progress to review the future best practice devices for provision across the Trust. The focus is on clinical inpatient areas, but will support both outpatients and supporting services. In the meantime the default equipment provided by ICT is desktops, laptops, C5 tablets and computers on wheels (CoWs).

This investment in the infrastructure will need to continue, particularly in the short term to ensure that it is both appropriate and flexible enough to deliver future requirements as IT and strategic drivers change. Core infrastructure will be required whatever the ICT strategy drives going forward.

Today the Trust is still very heavily reliant on paper records, manual data input and manual intervention in information transfer, but progress on delivering a clinical web portal (CWP), providing a single view of the patient has been impressive. This is consistent and complimentary with the longer term plans to deliver full iEPR functionality. iEPR today is focusing on scanning existing paperwork for read only access via the clinical web portal, where possible it is looking to provide the opportunity to capture data entry but the focus remains removal of the paper records and improved visibility to all of the full record where-ever they may be located. The electronic patient record is presented via the CWP; an in-house developed front-end which presents all available patient information. Access to this has been provided to GP's who can now access their specific patient records and plans are in place to implement in September 2013 a link to the social care applications providing full patient information, including social care. Any further progress must be supported by improvements to the overall infrastructure, being the mechanism that delivers this information to all clinicians, AHP's and others.

At the same time we have significantly reduced the numbers of systems that are within departments outside of IT that are unsupported and/or not connected to PAS as the Trusts master patient index. This now needs to go further particularly with the systems transferred in from community to make sure all data on a patient is linked together seamlessly.

As the Trust seeks to transform, reconfigure and develop its services to support the changes across the NHS, ICT has moved to support these aspirations as can be seen in the recent and on-going work within pathology. This strategy includes an assumption that more service reconfiguration will occur, requiring ICT support, over the next 5 years. Further to this there are changes happening with structures within the NHS, we have seen with the implementation of TCS a move to provide a shared service centre for ICT across more than just RWT. ICT currently operates a Shared Service Centre for Infrastructure which services RWT; WCCCG, Black Country Partnership FT; The Research Network and Compton Hospice. This comprises of:

- approximately 150 sites which have a network availability of over 99%
- Approximately 450 servers of which over 80% have been virtualised with an average server up time of more than 99.5%

As we increase the amount of patient and decision support data available we must also look to ensure that the data is captured in a consistent and useable manner to support decision making across all areas of the Trust. This has begun with the implementation and pilot of Patient Level Costing and over the next few years should be extended to deliver a true data

warehouse capability providing information at the point of care (and support) in a timely and accurate manner.

With increasing reliance on it, IT must be an enabler rather than a blocker, enabling smarter ways of working, integration with others systems, improving data quality and ultimately both the clinicians and patients experience It is this clinical and patient focus that MUST BE maintained, as highlighted in the Power of Information, NHS IT Strategy. Progress has again been made with the creation of a Clinical Engagement Group, the appointment of a Clinical Director to IT and the first stages of the IT Portfolio Management framework. This will be supported by the Portfolio and Programme Services Team which has been developed over the last 3-4 years from a standing start and now has a clear framework for project delivery.

During this time the team has successfully delivered a number of projects, which include: MSS/Patient First into A&E; NHS Patient Wristbands and VitalPACS. Significant effort has been put into the delivery of others which have proved to be more challenging for a variety of reasons, these include: eDischarge (phase 1), ePrescribing and Safe Hands. Whilst it should be acknowledged that challenges will always exist in achieving successful project delivery it is very clear that this will always be aided by a clear and concise view of what is to be delivered, its relative success factors and most importantly full and active support from all service areas. On top of this it is clear that we need clinical focus as described in the IT National Strategy.

There is a general acknowledgement that historically the ICT services provided within the Trust also lagged behind others and was "playing catch-up". ICT has "come a long way" and services have improved in the last 3-4 years however, this change needs to be accelerated due to the pace of development and change across the NHS and other partnering organisations, all of which have some level of reliance on ICT delivery. Improvements need to be made in the people, processes, communications and overall perception of the ICT service. This is another softer but critical element of our overall foundation stones for the future. The following are some examples where improvements have been made:

- Up skilling of key personnel and teams
- Removal of most single points of failure
- Consolidation of PCT and RWT services
- Phase 1 consolidation of the ICT helpdesk
- Improved security protocols and IG compliance

As with infrastructure above we cannot stop here, more is required to transform the service to ensure that it can continue its journey moving from a 'blocker' to an 'enabler' that is seen as critical to all aspects of future Trust Strategy. Specific areas to focus on might be customer service and service level agreements for service provision and monitoring.

One of the major challenges remaining is cultural change; this includes ICT awareness, acceptance of change of processes, behaviours and structures/work patterns. This will be a focus over the next couple of years as more ICT becomes embedded across the Trust.

The ICT Framework below has been produced to summarise the component parts of the ICT Strategy and the document is structured around this framework.

3 Considerations and Principles

3.1 External Drivers

We have completed a PEST analysis for some of the key external drivers which has been of key consideration in this strategy. The PEST in shown below together with some of the ever changing quotes and statements from the DoH and associated bodies/personnel, which have also been taken into consideration.

Below is a section from the NHS National IT Strategy. The National Strategy concentrates on firm deliverables in General Practice between 2013 and 2015 and for other areas states:

> *"The Department of Health will work with relevant parties to identify and set ambitious but deliverable dates by which we, as users of health and care services, and our health and care professionals, will be able to access the different aspects of our own records online – simply, securely and all in one place (for example via 'portals' or other solutions)."*

Targets from the National IT Strategy are clear:

• *as a health and care professional* – *Greater and better use of IT will help me improve the efficiency and quality of my practice of care, and I will be able to prioritise more of my time for those who need face-to-face care. I recognise that it is my duty to ensure people can access their records online if they wish and have the support they need to understand information in their records.*

• *as a commissioner of care services* – *I will ensure all patients and service users have the opportunity and support to benefit from online access to their own health and care records, and from a growing range of other beneficial online services. I will outline a clear and agreed timetable for providers to deliver this.*

• *as a service provider* – *My organisation will outline a plan and timetable for all of our patients and service users to have online access to their care records and to other beneficial services. Also, we will provide appropriate support to enable everyone to understand and take proper advantage of all these services.*

Other publications, some more recent, include:

"A genuine information revolution is happening, changing the nature of the way we communicate, the way businesses are organised and making more complex information exchange ever easier. However, this revolution has not occurred in social care and in health, despite the huge potential benefits to safety, quality and efficiency."
The Power of Information, Department of Health, 2011

The NHS should go paperless by 2018 to save billions, improve services and help meet the challenges of an ageing population, Health Secretary Jeremy Hunt will say today.
The Department of Health, Jan 2013

"In a digital age, it is crucial that the NHS not only operates at the limits of medical science, but also increasingly at the forefront of new technologies. The (National Commissioning) Board's objective is to achieve a significant increase in the use of technology to help people manage their health and care."
NHS Mandate, Department of Health, 2012

Responding to the Caldicott Review on information governance in health and social care, the Health Secretary outlined that information and technology will only have a transformational effect on healthcare if this agenda respects the relationship of trust between a medical professional and their patient.

3.2   Internal Drivers

To ensure alignment to internal drivers we have confirmed the following to summarise the key strategic themes for RWT. All outcomes detailed within this document have been aligned to the Strategic Themes below and in the ICT framework above

Patient Focused Services

Clinically & Financially Sustainable Services

People Who Feel Valued and Desire Change

The Royal Wolverhampton NHS Trust

Standard Yet Flexible Processes

Mandatory Compliance

Digitally Enabled

An organisation that is fit for the future

Key foundation stones to support the organisational themes
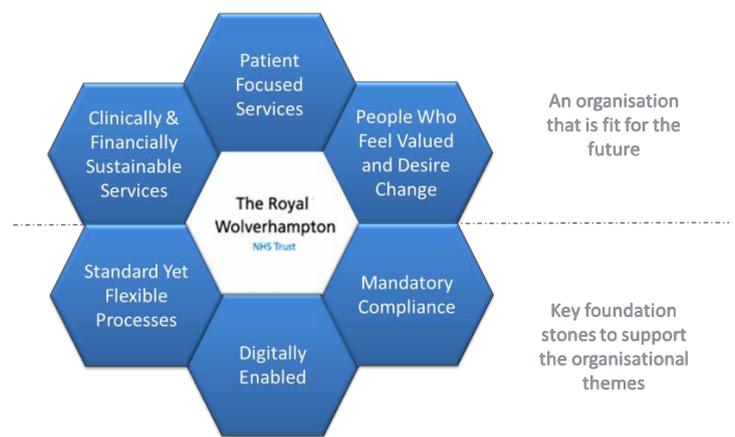
3.3 Basic Principles

Continue to move in the direction we have established over the last 2-3 years. We have delivered the best we can with the money and resources available

Deliver the electronic patient record:
- A desire to move from where we are today to an environment where all patient data is available to those who need it in a timely manner where-ever they need it to ensure a safe and effective patient experience that our staff would view as an indispensable asset

Deliver applications that support decision-making using timely and consistent information

ICT systems that are seamless to the user, fit for purpose and efficient to run
- As few systems as possible
- Robust and secure infrastructure
- An ICT department that is appropriately skilled, structured and focused to deliver the appropriate support and SLA's

3.4 Standard versus bespoke

It is essential that were ever possible we have standard processes across the Trust so that consistent processes are in place trust wide meaning that both clinical staff and IT staff can easily move between areas, as well as making processes and systems less complicated and more affordable.

This also applies to our purchase of systems that as a Trust we aim to purchase the "best of breed" systems for each clinical area and integrate them, to give a holist view, currently there is no one system that would meet the whole Trust's needs.

4 Integrated Electronic Patient Record

4.1 Elements of an EPR

The diagram below shows the conceptual model of an EPR.
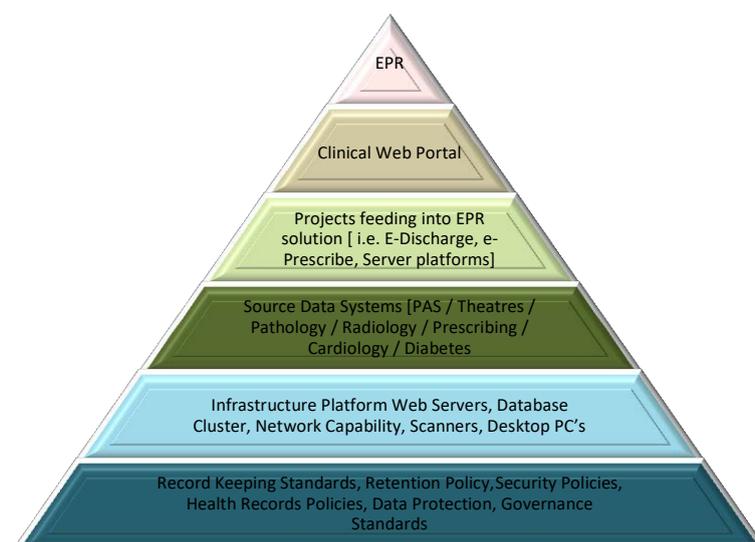
There are two opposing approaches to delivering an EPR: either a single monolithic system is procured that delivers all core and departmental systems in a single integrated application from a single supplier, or a best of breed approach where each element of the EPR is procured separately and then integrated together. What is generally needed is a hybrid or pragmatic approach where there is a core system with additional departmental systems. This model shown above is based on such a pragmatic approach to delivering an EPR system using a mixture of a central systems and departmental best of breed systems plus in-house development and integration of systems.

When implementing an EPR it is typical to implement the modules and systems that have the most impact. These are (and in order of priority) PAS, Order Comms4, Pathology, Imaging, Notes and Documents, Pharmacy. This is the approach we are following.

Significant progress has been made in the delivery of iEPR and we will continue to develop the RWT iEPR over the coming years. The key ambitions of an iEPR are to provide secure information that can be shared both internally and externally to ensure integrated care; becoming the source of core information used to improve care and deliver cost pressures where-ever possible

4.2   Patient Admin System (PAS)

Any PAS must be recognised and utilised as the source of all master patient data and as such is the key foundation stone for any iEPR. Having inherited the community PAS (iPM) following the transfer of Community Provider services, the trust finds itself utilising two separate PAS systems for patient data recording. (IPM Community PAS and Acute Silverlink PAS systems) This is not conducive for alignment of business processes, improvements to data quality or the effectiveness of a single EPR. It also raises issues and risks concerning full visibility of the patient pathway across our services.

Current iEPR focus in on development based on the acute PAS however it will be necessary to consolidate or replace with a single PAS to ensure patient safety, data quality, consolidated contractual reporting, reduced costs/ICT costs going forward and an EPR which presents all patient data/information across all trust services.

PAS is the master patient data for the Trust and the back-bone of all other systems and patient experience. It is critical as we progress that a clear strategy is developed to consolidate into one single view.

Whilst options for the future are being considered regarding the possible consolidation of PAS systems or the introduction of any new enterprise system, it's unlikely that this will occur in the short term i.e.: prior to 2014. Therefore evolvement of either PAS system through upgrades or increased connectivity needs to be embraced and progressed concurrently. Scheduled upgrades of IPM or Silverlink PAS still needs to be accepted and progression towards an NHS spine enabled Silverlink PAS system should continue (Currently the Trust is scheduled as an early adopter for this functionality though timescales are yet to be confirmed by the supplier.

4.3 NHS National Number

The NHS National IT Strategy states:

"All Patient data (in publicly funded health and social care) should be identified by the NHS number as the primary identifier at the point of care by 2015."

This means that every Trust system must contain the NHS number as the primary identifier at the point of care, not retrospectively. This has been further emphasised in the recent documentation from NHS England. There is only one way this can be achieved. The PAS system must contain the NHS number and feed every other system in the Trust. Equally PAS must be NHS number compliant and be able to directly access the personal demographic service held on the NHS data spine in real time while patients are on-site.

The PAS review identified above will take into account the requirement to provide NHS data spine connectivity and real time access to the NHS Personal Demographic Service.

Significant numbers of systems (A&E, Pathology, Radiology etc.) now pull patient information from PAS; we must continue to connect all systems as appropriate to PAS to ensure data quality and consistency for all patient demographics.

Recommendation: The Trust carries out a robust business case and option appraisal to move to a single Master Patient Index and the findings are implemented by 2014.

4.4 Order Communications/Clinical Notes/Referrals

Currently the Trust has implemented electronic ordering for Pathology testing, this was successfully implemented across all acute services and local (Wolverhampton area) GP practices. This now provides quick, easy and effective access for Pathology testing requests negating the previous lengthy paper process which had hand written quality issues.

As part of the overall evolvement of the CWP it has been recognised that the system needed to change from a presentation of patient information to a more interactive product.

Hence a number of interactive clinical functions have already been offered, which include the ability for clinicians to enter Clinical Notes or for a number of clinical specialties to have an electronic solution for Requesting a Test or Internal Referral.

As the EPR progresses then it is envisaged that further electronic requesting functions will be required from a business perspective. High profile services such as Endoscopy and Radiology requesting have already been integrated or planned in the near future.

Future requesting/referral functions can also be considered to compliment GP requirements as the availability of the CWP has been extended to include all GP practices in the local area, Careful consideration would need to be given in regards to replacing or overlapping Choose and Book functionality already implemented.

Recommendation: The Trust PAS is made fully spine compliant and able to directly access the personal demographic service in real-time by 2014.

Recommendation: All systems containing Patient Data are linked to the PAS and Master Patient Index by 2015.

Recommendation: where-ever possible interfaces must be developed reducing the amount of data entry duplication and therefore improving data quality. This should commence with a bi-directional feed from MSS (Patient First – A&E) into Silverlink PAS

Recommendation: The Trust should continue its approach to consolidating order communications and identify and implement an integrated solution by 2015/16 for all areas across the Trust.

4.5   EPrescribing and Enterprise wide Healthcare Applications

Significant effort on ePrescribing over the last few years has resulted in the conclusion that no application currently exists which fully delivers the expected ePrescribing scope. Investigations too have confirmed that whilst there are many applications and suppliers who offer specific elements of the larger enterprise wide health care scope there is no one supplier who truly offers the whole solution. Work needs to be re-energised taking a holistic view of what it isthe Trust needs in this whole arena so that a clear roadmap can be drawn up.

It is the firm belief of the ICT team that it is not appropriate for us to undertake an internal development approach to this but rather to work with suppliers to ensure successful implementation over the next few of years. The approach will be to ensure that supplier offering are fully utilised and the assets purchased sweated to the maximum to achieve as few applications and therefore operational overheads, as possible, within the Trust. The challenge here will be ensuring that the suppliers selected can deliver an appropriate solution that matches the must do's in terms of clinical process and patient engagement ideally for both the acute and community services. It is possible that clinical processes may need to change to be aligned when appropriate.

Recommendation: The Trust should take a holistic view of all clinical applications and pull together a roadmap for delivery utilising a few key suppliers by mid-2014.

5   Electronic Document Management

5.1   Documents and Notes

The final key building block of the "core EPR" is the ability for clinicians to access electronic copies of patient paper documents (perhaps from previous episodes, areas of EPR not yet developed or from external agencies) and to make clinical notes.

Existing paper records are currently being scanned as required for outpatient clinics and loaded up onto the CWP. This is helping to deliver the electronic patient record and noteless outpatient clinics whilst reducing the amount of paperwork being moved around the trust. This is helping to deliver savings but is also putting more pressure on the HR library as historically up to 30% of patient notes have been 'out of the library'. Whilst other scanning and storage options are being investigated to overcome this challenge it is clearly the right approach when supported by a drive to reduce the creation of the paperwork in the first place.

This is the approach proposed by RWT and is included in its Clinical Portal. This is in line with typical NHS practice, with clinical notes being captured by the keyboard, however it is recognised that this is not ideal for all clinicians and investigations are currently on-going around the capturing of handwriting directly into the clinical web portal.

Within the community there is often a need to leave a paper copy of the notes/documents with the patient whatever your location, usually the patient's home. Whilst still part of the PCT digitised pens were implemented to capture contact activity information, replacing administrative iPM data entry and subsequent income generation reporting within some services in the community. It is planned to utilise this significant investment to capture all paper documentation as a read only PDF for visibility via the Trust portal and the community equivalent Clinical Document Suite (CDS).

Recommendation: To rollout digitised documentation to all community services and to integrate CWP and CDS to provide a full view of patient information across the whole of RWT.

Recommendation: To continue a prioritised and planned approach to scanning for patient record whilst working alongside to reduce the paper creation by 2015.

5.2   4.6. Clinical Portal

The Trust delivery mechanism for an EPR is its Clinical Portal. Typically a Clinical Portal sits over the Core EPR and departmental systems and gives a single view of the patient data held within the feeder systems with links for further data held within other systems should this be needed to be accessed. The RWT CWP portal is a key element of what is termed the iEPR project. All scanned patient records are accessible via the portal. Furthermore all new departmental systems should and must be viewable via this route.

6   Service/Trust Transformation

As the trust moves to support the changes within the NHs for both service and trust transformation ICT will support providing flexible and efficient solutions. Wherever possible clinical applications will be updated considering existing supplier options first and foremost to reduce the number of applications and therefore sign-on's, interfaces and overhead costs. Applications will be updated and implemented that allow the most flexibility in terms of expanding footfall and functionality and to support the overall strategic plans of the Trust.

The Trust has many clinical applications some of which are already integrated. As new/replacement applications are required integration with iEPR and the CWP will continue. Most existing applications have been purchased following the traditional capital investment approach for both software and supporting infrastructure. There are a number of smaller in-house developed applications.

Gaps exist in the current applications specifically around trust wide processes, eg: No Live Bed state. Many processes are still undertaken manually eg: hand hygiene audits and family & friends surveys.

Continued integration with iEPR and CWP will be essential eg: Maternity due for completion 2014.

Service specific applications will be updated/replaced prioritised in the main by age. Additional modules with existing suppliers will be considered at all times eg: Patient First/MSS in 2013/4 and VitalPACS in 2014.

Trust transformational initiatives will be supported with increased flexibility and innovative thought eg: Pathology from 2013.

Applications will be prioritised based on benefits delivery, patient care and CQUIN requirements. On-going support and maintenance for exiting applications will remain. SafeHands will deliver increased patient safety and hand hygiene monitoring by 2014.

Recommendation: ICT will continue to link all new applications with the EPR and CWP as they are implemented.

Recommendation: ICT will support transformational and reconfiguration needs as required.

7   Business Intelligence

7.1   Data Warehouse

A Data Warehouse is a single repository in which data is taken from operational systems cleaned, transformed, catalogued, cross-referenced and made available for use by managers, clinicians and other business professionals for business performance analysis, research and decision support.

Typically a Data Warehouse takes data from different operational systems to allow the data to be correlated across systems and data sources in a way that would not be possible in the operational systems alone.

It would be typical for a NHS Trust with modern ICT to operate a Data Warehouse that collates data from the PAS and all major systems (as shown in the section in 4.1) to facilitate performance management and reporting. This must support the needs of managers, clinicians and other business professionals alike, including where appropriate external partners.

At present RWT does not have such a Data Warehouse, instead data extracts are provided to information from many disparate systems that are not fully joined and correlated resulting in much manual intervention, re-work and duplication of effort.

However the start of this for the Trust is obtaining a Data Warehouse for Patient Level Costing and Information System (PLICS), in the future this should be expanded to include all data from other system to create a trust wide data warehouse.

Recommendation: The Trust should implement a corporate data warehouse solution based on best practice by 2015.

Recommendation: The Trust should have a best practice based implementation of Active Directory by the end of 2013.

7.2   Data Quality

Data quality is critical as is driven by those entering the data at source following agreed policies and processes. It is essential that as the amount of data grows in line with this strategy that data quality too improves.

All new ICT applications will consider data quality as a prerequisite and must ensure that processes are implemented to support the quality of that entered. Monitoring of data quality will continue. Data quality should improve as more data is used in a consistent and joined up manner via the data warehouse.

Recommendation: Data quality must remain a top priority for the Trust and all ICT implementations; this will need to be supported by process and behavioural changes.

8   Commercial Opportunities

We are recognised as a Trust that is making significant progress with the electronic patient record amongst other things across the NHS and as the focus on electronic solutions continues there are opportunities to gain revenue for the Trust as part of this work. We will at all times, assuming capacity allows, to consider these opportunities and report to the RWT TMT.

A non-recurring R&D and innovation fund is allocated annually to ICT, recent initiatives include a proof of concept for mobile tablet devices - Apple iPads and Windows slates devices.

We currently operate an ICT Shared Service Centre, servicing the WCCCG and Mental Health which brings in significant revenue to the division.

Opportunities to develop commercially viable offering to external parties are considered when appropriate an example would be Caseload Allocation for District Nurses which we are developing jointly with an external consultancy. Further opportunities for commercial gain will be explored, starting with Glustats and iEPR in 2014.

Outsourcing will be considered as part the overall roadmap.

Opportunities to extend the shared service centre offering will be considered, including formal benchmarking of our current service with other NHS bodies to establish our baseline requirements.

Opportunities to support other commercial offerings as part of Service and Trust Transformation will also be part of the overall prioritisation. Pathology GP Direct Access is the first example of this.

R&D/Innovation will continue as prioritised year on year.

9   Information Access and ICT Infrastructure

9.1   General

The infrastructure is crucial to the Trust ICT and no ICT projects, application delivery or data project will be successful if the infrastructure is not robust. The Infrastructure in the Acute Hospital has historically lagged behind the levels expected of an NHS Acute Hospital in terms of technology and processes such as standards, security, support and documentation, however significant progress has been made in this area.

The Trust has been going through a process of integration of two infrastructures post TCS which is actually achieving two objectives: it is moving the merged Trust onto a single set of infrastructure platforms that makes support and maintenance easier; and it is adopting the best systems and infrastructure from each organisation.

9.2   Desktop Systems

The PC platform is designed to have a life of 3-4 years and with advances in applications, security and technology older PCs become slow, unreliable and unable to run the more recent application software. The majority of the clinical applications on the market today have minimum specifications for PCs and it is highly unlikely any PC over 5 years old will be able to meet such minimum specifications, which in turn means that older applications have to be run.

Currently the Trust has many old desktop computers some are up to 6 years old, these will be included in the current replacement programme. There is currently a plan to bring the age of the PC estate down to 4 years by April 2015

Recommendation: The Trust continues the project to "align to product set" in particular to improve standardisation and security and this project is suitably resourced. By 2014 the Trust should aim to have an infrastructure that meets good industry practice.

Recommendation: The maximum age for a Trust PC should be 4 years and this should be achieved within 2 years.

9.3   Devices

The standard current devices available are Desktop PC's, C5 tablets, laptops or CoWS (Computer on Wheels). In addition to this a further device, the iPod Touch, is offered for the sole collection of VitalPACS observations.

Additional equipment is currently being rolled out following a CBP wards agreed default model.

As more IT enabled applications are rolled out across the Trust and the personal provision of mobile devices becomes more and more prevalent it is planned to review all devices and produce a strategy which details the preferred devices based on the intended use. This strategy will need to include both mobile and static devices and as importantly define the link with telephones and bleep devices. It will need to fully support the overall IT strategy, ensure that suppliers/applications do not drive device usage and fundamentally the iEPR

programme of work which will see data being collected and viewed real-time at the patient's bedside, in clinic or in the patient's home. While this can be successfully achieved in clinics with desktop computers, these devices are less suitable in other settings. It is intended that these devices will all be in the position to run multiple application, supporting interoperability, as required and that the overall strategy will limit the overall investment made by the Trust to best practice devices rather than 'trendy' fashion accessories.

Recommendation: That the Trust develops an IT device strategy/policy which will support the replacement and increase of devices as appropriate.

9.4   Wired Network:

A business case submitted in 2011 outlines the network strategy for the next three years. It recommended replacing the current Nortel hardware and the upgrade of key areas of the network infrastructure at New Cross Hospital in order to address the current under performance issues and to provide the necessary future proof bandwidth to support the optimal performance of current and future IT systems.

Phase one is now complete which included the Server Distribution layer, Edge Distribution layer , with a plan to complete the strategy by March 2014. This will be supported by a significant amount of configuration changes including changing the IP address range across the New Cross campus.

The areas of the network are broken down into several building blocks that form the overall campus network at New Cross Hospital. These areas are known as the Server Distribution layer, Edge Distribution layer and edge switches. The edge switches being the outlying switches that PC's and other network devices directly connect to (See diagram below).

Once complete it is anticipated that a hardware refresh will be required between 5-7 years.

There are plans to review the cabling infrastructure which has a number of issues including, outdated cabling technology and non- conformance of standards and increase of capacity in local areas. This will be completed over the next two financial years.
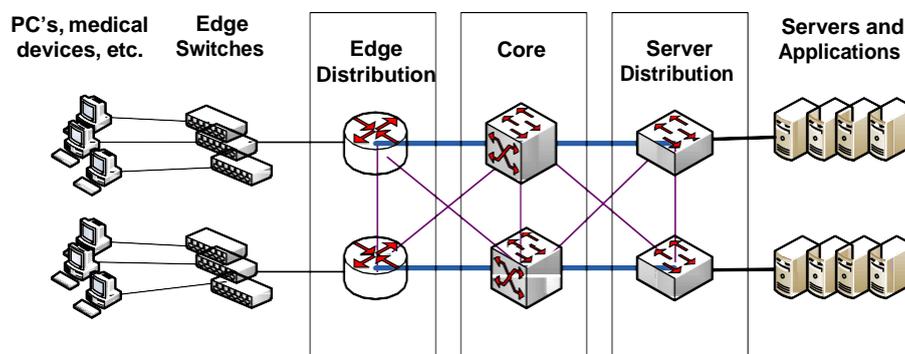
Recommendation: The network hardware and cabling is refreshed in 2017 based on a 1 GB desktop standard.

9.5   Servers and SAN(s)

Today, as a result of TCS, the Trust has four SANs. All the SANs are circa 3 years old.

The Trust is undergoing a programme to consolidate and replace (where required) its server capacity and is following good practice in using blade servers and virtualisation where appropriate. The plan is to consolidate all services and data across two redundant datacentres each capable of supporting the other.

Over the next 12 months hardware from the Community network will be integrated, replaced or decommissioned where appropriate, whilst working towards this consolidation. Significant progress has been made here following the decommissioning of Coniston House and the move to new locations.

During the next financial year the plans for a replacement SAN will be completed to be submitted in 2014/15. At this point options for cloud storage will be reviewed.

Recommendation: No Server or SAN is older than 5 years meaning that 60% of the existing server base and all SANs will need to be replaced by 2015.

9.6   Telephony

The Trust currently operates two telephone systems – a Cisco system in Community that uses Voice Over IP (VoIP) Technology and a Nortel analogue System that uses traditional telephony at the Acute. The current Nortel analogue system in place is now out of date and requires replacement.

The strategy is currently being reviewed with a view to consolidate the current phone systems to a common platform. This will be Cisco Unified Communications based due to the recent investment within Community which is based on this vendor's technology. This is further supported by plans to replace the Choose and Book call centre with this technology.

The Strategy will be completed during 2013 and will outline the plans for the next three years.

Recommendation: The Trust replaces the Nortel telephony system in use at the Acute Hospital by extending the Cisco system already in use, and this project is completed by 2016.

9.7   Wi-Fi

The strategy is to consolidate the two current different vendors installed at the New Cross campus and Community sites to a common platform. It has been decided to expand the Cisco wireless network to replace the current Aruba wireless network, to support interoperability between all RWT locations.

In addition the number of transmitters (APs) is being increased to improve coverage across all areas required by the business subject to capital funding.

As part of the on-going strategy once the hardware has been standardised wireless access for patients will be reviewed.

Recommendation: On completion of the wireless network upgrade a full coverage study should be carried out.

9.8   Desktop and Server Licensing

The NHS has stopped its national funding for Microsoft products and Trusts will have to pay for software licences themselves. This means that all upgrades to products such as Microsoft office, Windows Operating systems and Microsoft Server applications will have to be paid for by the Trust.

We are currently fully licensed up to Windows 7, Office 2010 and Windows Server 2008 , however as these products are updated (normally on a three year cycle with updates on all three products likely to happen in the next 12 months) the trust will now incur costs of these upgrades which are likely to be circa 1 Million pounds.

Recommendation: The Trust must identify and plan when it will be rolling out these new Microsoft Products so that provision can be made for the software licensing costs.

9.9   Email and Groupware

The Trust has recently consolidated from two email and groupware systems NHSMail.

Email and groupware are the most basic organisation based collaboration tools: using separate systems is a barrier to collaboration and inefficient. Equally, groupware systems are the basic foundation of cross-organisation collaboration and in more developed implementations would typically link to instant messaging, telephony and video, presence, mobiles etc. Now the Trust has a single email and groupware system more use needs to be implemented in the use of these collaboration tools across the organisation.

The Trust (along with other NHS organisations) is lobbying hard for additional functionality to be included in NHS mail to enable greater collaboration, if this isn't achieved the trust would need to consider other email systems providers.

Recommendation: The Trust must review its approach to email taking into account (a) the interrelationship between Groupware systems and other systems.

10 People Governance and Policies

10.1   Portfolio Management

The Trust has made significant progress in IT project management over the last 3-4 years and now supports around 50 projects with a standard framework for delivery. Portfolio Governance recognises that there is only a limited amount of resource, both people and money, to any organisation. As such projects or programmes need to be prioritised and agreed. IT delivery will always be more successful when the focus is on a smaller number of significant change initiatives. This ensures that all resource is focused on the agreed big strategic drivers and resource planning can be undertaken to support its delivery. Planning for this needs to be done on a 1, 3 and 5 year basis, linked to the overall ICT strategy. A Trust portfolio framework agreed by the newly formed ICT Strategy Board and will be fully implemented during 2013-14.

Successful implementation will result in higher visibility of the ICT portfolio of work, assistance where risks/issues need to be escalated and resolved and an improved knowledge of ICT work supported by communications on progress and deliverables.

The portfolio management process also aims to formally establish the link/dependencies with any other change programmes being undertaken across the Trust by groups such as service improvement and R&D.

Recommendation: The Trust must implement a robust portfolio management framework during 2013 to ensure the focused delivery of the ICT strategy.

10.2   Governance and communication of ICT

In any organisation, ICT must be business directed and mapped onto the business goals of the organisation. In terms of RWT, ICT should be directed and managed to achieve the business and clinical priorities of the Trust. In other words ICT should be directed so as to support the aim of RWT to be "a first class Trust providing top quality care in every way".

This will be achieved by the new portfolio (governance) framework where IT resources will be prioritised to achieve the strategic aims and drivers of the Trust.

In summary the framework will initially comprise of 3 layers as identified in the diagram below. It is expected that the terms of reference and attendees for each group to support the framework will evolve over the coming years.
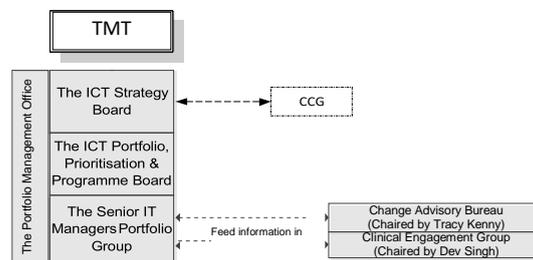
This framework will be supported by the individual programmes and projects who will report appropriately to each group. Over the coming years the recommendation is that this will also be further supported by business partners who will engage with key areas of the Trust, sitting at their table, to fully understand their needs and direction and then represent them at the IT table

Recommendation: The Trust should immediately implement the Governance structure set out above and move towards a business partnering role for ICT over the coming years.

10.3   Security

There is an increasing focus on IT Security, Information Governance and associated issues across the public sector and whilst the Trust has policies and processes in place these need to be continually kept up to date and defences put in against the latest threats to the trust. Security must be appropriate in that it ensures the security of our data and staff but also is designed to ensure that the users gain access required to do their job.

At present within ICT the security area is under resourced and understaffed. This must be rectified or the Trust risks an information security breach or failure to meet legal obligations. Additionally the Trust should adopt a structured approach to information security and it is recommended the Trust adopts the ISO IEC 27002 security standard.

The Trust has regular penetration testing and it is recommended that all new systems or services before going live are subjected to penetration testing.

Recommendation: The Trust must develop and expand its ICT security function and look to adopt the ISO IEC 27002 security standard.

Recommendation: The Trust continue undertake and ICT security Audits and repeat these regularly.

10.4   Testing

Testing is an essential element of all ICT implementations and must be undertaken to ensure that any application is both fit for purpose and complies with IG and NHSLA mandated requirements.

Historically testing has been undertaken as 'just another task' during implementation. A test manager has now been appointed and is working hard to set up best practice processes to support implementations going forward. A test strategy will be produced during 2013-14 for consideration and implementation as appropriate.

Recommendation: The Trust must develop and implement a robust and appropriate testing strategy which ensures standards are maintained.

10.5   6.5. Single sign-on (SSO)

The issue of a single sign-on to access all systems is considered a goal in all NHS organisations where there are numerous different systems. However, the costs of these are significant and both the Executive Directors and Clinical Engagement Group have seen demonstrations of potential software and are keen to progress.

The implementation of a single sign on (SSO) product will streamline the login process for use by clinicians and their use of multiple clinical systems each requiring separate user names and passwords. Currently the number of systems a user needs access to on average is 4, but this figure can be far greater depending on specialty and the number of systems required to perform patient administration or treatment.

By introducing these technologies the Trust will meet several other requirements in terms of Information Governance and the Care Records Service.

The Trust is currently reviewing products and plans to submit a business case for review in the 2013/14 financial year.

10.6   ICT People and Structure

The key elements to delivering the recommendations within this strategy will be to ensure that the capability and capacity exists within the Trust to meet the strategic developments, projects and day to day demands.

10.6.1 Resources – Staff

It has already been highlighted in section 6.6 the work in relation to portfolio management. The need to produce an overall ICT Department resources plan remains. This plan should include not only projects and day-to-day activity but also the delivery of the recommendations within this report and be based on providing sufficient resources to deliver a realistic annual programme of work. Appendix 1 details the current 5 year plan by project by year and a financial plan will be added once a clinical strategy is completed and priorities confirmed.

11 Culture, Process Change and Data Quality

These enablers are crucial for all whether transformational or small changes within one area and are often the element that is missed. Data quality issues are the result of people not following process whether new process change or existing. It is essential that we ensure that "our people come with us" and the inevitable changes take place.

Currently, ICT perception across the Trust is not good however service statistics suggest improvements. Staff across the Trust have little awareness of ICT SLA's, plans and achievements and often feel that ICT just adds to their workload when implemented and have no time for the appropriate training. Staff have a very varied degree of confidence when it comes to using ICT. GP's are getting access to more and more RWT patient electronic information and feedback is very positive. Data quality issues exist due to too many disparate systems and lack of adherence to process. The helpdesk is located across 2 sites. SLA's are recorded and reported as part of the SLA Shared Service Centre agreements. Access to internet sites has been relaxed. Social Media is becoming more and more prevalent.

The desired future state should see significantly improved perception of ICT via clearer communications, SLA achievements and prioritisation of plans. Appropriate ICT training that is both appreciated and 'welcomed'. ICT awareness plans to include training when appropriate. Closer communications are required with GP's both within and outside WCCCG and focus needs to be on 2-way electronic communications. Improved belief and trust in data/information and processes to ensure data quality is embedded. Fully integrated customer service focused helpdesk. Security, which addresses the risks but also recognises the needs of all users. Social Media available for formal and controlled Trust Communications

11.1 Training and Skills

Currently ICT training is not universal across the trust and benefits of ICT systems will not be realised unless users know how to use systems properly. The Trust must address this issue. It is recommended that the Trust carries out a detailed ICT training and skills audit and on the back of this produces an ICT training strategy for agreement by the ICT Portfolio Groups.

11.2   7.4. Social Media and Public Interaction

The Trust is currently considering its position regarding all social media. This iniative is being owned and run by Human resources. ICT will ICT would support the policy but does see itself as custodians.

Appendix 1 – Roadmaps by Outcome, Enabler and Foundation Stones

See attached ICT Strategy 2013-14 Appendices 1 and 2

Appendix 2 – Financials

See attached ICT Strategy 2013-14 Appendices 1 and 2