Informatics Strategy
(2013/14 to 2018/19)
Royal Bournemouth and Christchurch NHS Foundation Trust
Poole NHS Foundation Trust

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The Poole Hospital Foundation Trust (PHFT) and Royal Bournemouth and Christchurch Foundation Trust (RBCHFT) vision for Informatics follows:

RBCHFT and PHFT will make patient care safer and more efficient and improve the working lives of staff by using modern Informatics. The trusts will achieve paperless patient journeys by the development, purchase and implementation of linked clinical computer systems presenting all appropriate clinical information and functionality at the point of care, seamlessly integrated with primary care systems.

And

RBCH and PHFT will implement digital channels to help patients and carers feel more connected with the Trusts, take less effort in their healthcare transactions, respond to their concerns and improve their control of their care options.

This strategy responds to the internal and external influences on the trusts, particularly the 2010 White Paper, the National Information Strategy, the Francis Report and the renewed emphasis on patient safety, patient choice and GP commissioning.

The kernel of this strategy is the intention to exploit the investment already made in the many departmental clinical systems and bring the data together in a single place for clinicians, to build the Strategic Electronic Patient Record (EPR) for both trusts. By fully implementing this and other systems and ensuring they are used in real time at the point of care the trusts will move steadily towards paperless patient journeys.

This strategy will be delivered by 6 Workstreams and 27 projects as shown below.

Strategy	Workstreams and Projects
6.1	**Workstream 1: Single Informatics Service**
Project 1.	Implement a Single Informatics Service based on best practice (ITIL)
6.2	**Workstream 2: Infrastructure development**
Project 2.	Network replacement
Project 3.	Server Virtualisation
Project 4.	Thin Client Environment
Project 5.	Computer Room Strategy
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Project 8.	Wifi network
Project 9.	Storage, back up and archive strategy
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Project 13.	Electronic Document Management/Scanned Health Records
Project 14.	Electronic National Early Warning Score (eNEWS)
Project 15.	Electronic Discharge Summaries (EDS)
Project 16.	Order Communications/Results Reporting (OCS/RR)
Project 17.	Electronic Prescribing and Medication Administration (EPMA)
Project 18.	Access to primary/community information
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Project 27.	Patient Access to their online records

2   Introduction

This report presents the 5 year[1] Informatics Strategy for RBCHFT and PHFT (hereafter "the trusts").

The trusts need a clinically focused and service-led Informatics strategy to:

- Ensure information about the patient's current situation and relevant history is collected electronically at each point along the journey and made available to all appropriate clinical professionals to maximise safety and clinical quality.

- Develop the potential use of IT system intelligence in supporting and guiding clinical decisions according to best evidence, practice and safety.

- Exploit the opportunities to improve links between organisations to enable the vision of shared care between primary/secondary/tertiary and social care settings to be realised.

- Engage patients, carers and current/future commissioners of care by adding value through Informatics innovations to make the trusts their first choice provider of acute care.

- Help patients and carers make an informed choice about their care options by providing information about the scope, quality and outcomes of our services.

- Support clinician revalidation and the strategic intention to shift from process to outcome measures in the performance management of the healthcare system.

- Maximise the return on the existing investment in Informatics and ensure that best practice IT Service Management is adopted (using ITIL).

- Enable service improvements particularly to improve the trusts' efficiency and respond to the Quality Innovation Prevention and Productivity (QIPP) agenda.

- Achieve the commissioners' intentions and patient quality improvements described in the Commissioning for Quality and Innovation (CQUIN) contract clauses.

2.1   Scope of the Informatics strategy

This strategy focuses on clinical information systems and real-time data retrieval and entry by clinicians and a supporting infrastructure to enable this. Information to manage the core business of trusts will be derived from clinical information systems and they will be designed and implemented to support this critical need.

The kernel of this strategy is to develop a strategic EPR for the trusts based on a best of breed and portal architecture which presents data sets, clinical documents and the functionality of underlying systems to clinicians at the point of care. In parallel the trusts will be pursuing a scanned health record and the combination of these services will present the total captured patient history to the clinicians digitally.

At this stage of the evolution of Informatics the scope of the strategy covers IT Services, Telecoms, Information Governance and Medical Records for both trusts.

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[1] 2013/14 is year 1 of the 5 year strategy and the underpinning work plan. Given the dynamic nature of Informatics the strategy will be refreshed every year.

3   Key local and national strategic drivers

This chapter describes the key clinical and business issues that are now facing the trusts from the national and local agenda and how they impact on Informatics. The strategy responds to these influences.

3.1   The Trusts Vision

The trusts plan to merge and at this time the merger is being scrutinised by the Competition Commission. The strategy is written based on the assumption of the trusts merging and the date of the merger being November 2013, however it is also independent of the merger (in all but one workstream) and as such the bulk of the strategy will be delivered irrespective of the ultimate merger decision.

3.2   Trusts Vision and Objectives

All strategic planning at the trusts is underpinned to the trusts vision and objectives. The Informatics strategy is designed as an enabling strategy for the merged trust's vision and objectives which follow:

"Friendly, excellent care for you"

This will be achieved through continuous improvement in our six key objectives:
1. **Safe, compassionate & dignified** care for our patients
2. **High quality services** for every patient
3. Partnership working to improve the **population's health**
4. Building **centres of excellence and innovation**
5. **Developing & supporting staff**
6. **Delivering value for money** & stewardship of resources

3.3   Liberating the NHS: Equity and Excellence and the Power of Information (2012)

The 2010 White Paper and the 2012 underpinning National Information Strategy "The power of Information.."[2] present the following drivers for the trusts' Strategy.

Paperless Hospitals: The creation of an Acute EPR is now taken as a given by the DoH and remains a key plank of the latest national strategy[1] . Recent announcements by the Secretary of State for Health have strengthened the vision of a paperless NHS and providing a target of 2018 for its achievement. This is only 1 of 5 key strategic themes, the other 4 being:

Putting Patients and the public first: Under the headline of "no decision about me without me" the national strategy commits to extending choice of provider and treatment in planned hospital care and, more specifically, in maternity, end of life care and long term conditions. Patients and members of the public will need access to reliable, user-friendly information on their health; what they can make choices about and when; the treatment, providers they can choose from; and the likely benefits and risks of their choices.

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[2] http://informationstrategy.dh.gov.uk/

Information is now seen as a healthcare service in its own right and the national strategy will prompt a culture of transparency to make information held by the government and health and social care services more easily available to the public. Perhaps more striking than the government led channels for patient choice (e.g. NHS Choices) and the expected augmentation of these with the future "single trusted ... portal acting as a bridge to quality assured information..."[3] is the emergence of the many privately created social networking groups which are holding the NHS to account (e.g. www.patientopinion.org.uk , www.curethenhs.co.uk).

No decision about me without me: Members of the public are expected to be able to access their full health record on line, correct it, contribute towards it and govern with whom it is shared (including relatives, carers etc.). There will be an emerging nationally infrastructure to enable this (authentication services, a national portal, interoperability standards) and considerable local work to undertake technically.

Improving public experiences using digital channels: In the last 10 years the NHS has invested around £10bn in computing technology during which time members of the UK public have invested £75bn[4] in personal computing technology. The average UK citizen spends 128 minutes per day on their smart phone[5]. A new society has emerged which is being branded as Networked Individualism or and its service expectations transactions transcend anything that the NHS is currently offering. Due to the ubiquitous nature of personal computing and the precedent set by other service industries (e.g. on line shopping, internet banking, social networking etc.) we should reasonably expect a significant pressure from our current and future customers to consume our services using digital channels.

This is reinforced by the national policy documents "Digital First - the Delivery Choice for England's population[6]") and the "3 Million Lives Campaign"[7] which require trusts to make a firm commitment to digital methods to deliver healthcare but expect that face to face contact will remain an essential, core part of our care. A variety of techniques can be applied[8], from (for example)

- **Improving the basics:** Ensuring that information on the trusts' website(s) is up-to-date, accessible and comprehensive

to

- **Digital transactions:** for example receiving the correspondence that are normally sent as paper letters as email, providing online forms to be completed at home following an inpatient discharge to provide feedback on the patient's condition and ensure follow-up appointments are tuned to patient need.

to

- **Telecare**: Patients with Chronic Diseases may have medical devices in their own home sending data to clinical professionals on a regular basis to help in the on-going management of their condition.

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[3] The Power of Information...
[4] Dr Paul Hodgkin, CEO Patient Opinion
[5] Prof George Crooks from NHS 24
[6] www.innovation.nhs.uk
[7] www.3millionlives.co.uk
[8] All of the techniques require the correct level of security to be applied which protects confidential information.

Join systems together rather than replace them: With the demise of the National Programme for IT the expectation is that local health communities will lead local programmes to join up information systems to drive integrated care. National standards will be created using a programme called the Interoperability Toolkit with the expectation that compliance to these standards will assure connectivity of systems throughout healthcare provider networks. This has yet to be tested in any sizeable way and provides a significant challenge for trusts with the care networks constructed in different geographical directions. Emerging new primary care organisations have yet to establish IT strategies for how they plan to lead the creation of population level electronic records but significant progress has been made locally with the use of the NHS Summary Care Record and GP practices accessing the current EPRs of both trusts which are foundations upon which to build.

3.4   Other national drivers:

Clinical Safety

Risk aversion has been an increasingly common thread in the discussion of adverse clinical incidents over the last decade and more in healthcare. Studies have shown that a common factor in the majority of cases is a failure of information & communication. In 2009 the DOH released two new standards relating to Clinical Safety in the manufacture[9] and testing/use of Clinical IT Systems (CITS)[10]. The mechanism by which patient safety is assured is the undertaking of rigorous risk assessment prior to implementation of any CITS. The extent to which a detailed risk assessment is required will vary hugely dependent on the precise nature of the system and the stage of implementation. The risk assessment will usually consist of a Hazards and Operability Study (HAZOP) with specific risk scoring matrices. Where possible, risk should be appropriately mitigated by technical solutions or other measures and these recorded with the HAZOP. Both trusts have appointed Clinical Safety Officers and their leadership will be vital in the implementation of this strategy as we embed clinical safety into our purchasing decisions and implementation plans.

Information Governance (IG)

As more and more clinical data becomes digitised and we respond to the challenges of opening digital channels, having an effective IG framework becomes increasingly important. Nationally, the NHS, and other public organisations, have suffered significant fines and public reputational damage as a result of inadequate controls in this area. This strategy will ensure that the governance arrangements relating to the ownership and use of Information Assets are fully established and supported. We expect the results of the second Caldicott review in 2013 which will need to be considered.

The Francis report

At the time of writing the trusts are considering their responses to the Francis report and there will be a part for Informatics to play centred around the introduction of applications (e.g. eNEWS, Electronic Prescribing) which demonstrably improve patient safety. The report also makes the following specific recommendations:

243: Recording of routine observations: The recording of routine observations on the ward should, where possible, be done automatically as they are taken, with results being immediately accessible to all staff electronically in a form enabling progress to be monitored and interpreted. If this cannot be done, there needs to be a system whereby ward leaders and named nurses are responsible for ensuring that the observations are carried out and recorded.

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[9] DSCN 14/2009
[10] DSCN 19/2009

244: Common information practices, shared data and electronic records: There is a need for all to accept common information practices, and to feed performance information into shared databases for monitoring purposes. The following principles should be applied in considering the introduction of electronic patient information systems:

- Patients need to be granted user friendly, real time and retrospective access to read their records, and a facility to enter comments. They should be enabled to have a copy of records in a form useable by them, if they wish to have one. If possible, the summary care record should be made accessible in this way.
- Systems should be designed to include prompts and defaults where these will contribute to safe and effective care, and to accurate recording of information on first entry.
- Systems should include a facility to alert supervisors where actions which might be expected have not occurred, or where likely inaccuracies have been entered.
- Systems should, where practicable and proportionate, be capable of collecting performance management and audit information automatically, appropriately anonymised direct from entries, to avoid unnecessary duplication of input.
- Systems must be designed by healthcare professionals in partnership with patient groups to secure maximum professional and patient engagement in ensuring accuracy, utility and relevance, both to the needs of the individual patients and collective professional, managerial and regulatory requirements.
- Systems must be capable of reflecting changing needs and local requirements over and above nationally required minimum standards.

3.5   Responding to the Clinical and Non- Clinical Directorates

The directorates within the trusts have increasing need for informatics services to help them achieve important service outcomes driven by their many agendas of quality improvements, cost improvement plans (CIPs), fulfilling regulatory requirements etc. As an enabling strategy, responding to the directorates is the engine room of the Informatics Strategy's contribution to the trusts vision and objectives. This strategy doesn't attempt to list all these requirements but instead focuses on two main things:

- The core programmes of work (e.g. Electronic Patient Record) which will support all directorates in their work.

- Effective governance arrangements to ensure that Informatics understand the requirements, assesses them, prioritizes them and implements them, all the time providing complete visibility of decision making and progress to the stakeholders.

4 Vision for clinical services supported by Informatics

The trust vision for Informatics for the next 5 years:

RBCHFT and PHFT will make patient care safer and more efficient and improve the working lives of staff by using modern Informatics. The trusts will achieve paperless patient journeys by the development, purchase and implementation of linked clinical computer systems presenting all appropriate clinical information and functionality at the point of care, seamlessly integrated with primary care systems.

And

RBCH and PHFT will implement digital channels to help patients and carers feel more connected with the trusts, take less effort in their healthcare transactions, respond to their concerns and improve their control of their care options.

To describe the vision in accessible terms a future patient journey is described below.

4.1 A future patient journey

John Brown, a 42-year-old man with is brought to the Emergency Department (ED) via an ambulance, having collapsed as home with central chest pain.

During the ambulance journey the paramedics access the national Summary Care Record (SCR) and obtain important information (about drug allergies and intolerances) to stabilise John appropriately and they discover that he is a diabetic on insulin and allergic to penicillin. The paramedics are able to transmit electronically, to the ED staff, his ECG heart tracing, their working diagnosis of a possible myocardial infarction together and details of treatments given. The ED staff confirmed that the cardiac intervention unit will pre warned in case they are needed.

The ED staff are fully prepared for John when he arrives. The clinical team are able to access John's past medical history from Symphony and the EPR (as John is known to the trusts) and the primary care systems (including SCR). The ED registration process is virtually complete (pending a data quality check on arrival). A bar-coded bracelet and blood sample labels are created so that John's process through the trust is safe.

A repeat ECG is performed and is sent wirelessly to the ECG archive on the EPR. The clinical team compare it with previous ECGs and confirm an acute myocardial infarction.

John is transferred to the cardiac intervention unit for primary angioplasty to open up the blocked artery in his heart. A record of the procedure is stored on the EPR and a copy of this report is sent directly to his GP, before he has left for the Coronary Care ward.

Throughout John's episode in ED, Coronary Care and Inpatient wards any activity/observations/assessments and plans are fed into the EPR via host departmental system (e.g. Cardiology, Endoscopy) so that any clinician subsequently delivering care will see what has happened and the trends over time. A modern clinical system will calculate an Early Warning Score for John to alert clinical staff if his condition deteriorates. Free text entry to the EPR will be kept to a minimum to keep the data entry swift and an easier retrieval of key facts, e.g. an electronic ward round template will enable ward recording easier.

John's GP is kept informed of his progress and Estimated Date of Discharge via electronic messages directly to the GP system at critical points of his journey and is able to provide input to John's care as necessary.

If clinically indicated, John's care will form part of a predetermined (evidence based) clinical pathway, which, carried by the EPR, will provide prompts and reminders to clinical staff to enable the most effective recovery. In John's case this involved alerting the diabetic nurse specialist to review his insulin treatment.

Investigations will be requested electronically and results will be flagged up on the EPR requiring acknowledgement. Certain test results will be "paged" automatically to the medical firm who will carry suitable handheld devices allowing them to view EPR from wherever they are in the trust.

Throughout the journey John's prescribed drugs will be recorded on an Electronic Prescribing and Medicines Administration system (which in turn feeds a data set to the EPR) with automatic cross referencing for drug interactions allergies and intolerances and other prompts as indicated by the clinical pathway or care bundle.

The rota for all clinical staff will be visible electronically, which will help ward staff access relevant peripatetic staff more efficiently.

When John has recovered sufficiently, the clinical staff will create the discharge summary directly from the EPR system, which will enable the booking of suitable OP appointments. The discharge summary will be automatically sent electronically to the relevant GP.

The structured and standardised nature of the data captured about John's stay allows all aspects to be accurate coded and audited against the expected care pathway for discussion at the regular departmental audit meetings.

The details of John's episode of care captured on EPR will be accessible to appropriate health and social care professionals in the community to support seamless management of John's on going care needs. For example, if John spends some time at a community hospital perhaps undergoing a course of rehabilitation, the EPR will be available to that clinical team to enable a smooth handover of his care.

John will have the choice of services and locations for follow up treatment and may review some data on the national NHS Choices web site to guide him. If he chooses the trust's specialist cardiology outpatient clinic for this aspect of his care, there would be no paper records to retrieve as all of his inpatient care was captured electronically. Clinical staff in outpatients continue to add to John's electronic record during the consultation by a mixture of handwriting (that is converted to a digital input to the EPR directly after the consultation), digital forms, transcribed voice recording files and direct keyboard entry.

At the point of discharge from Outpatients, a summary of John's care is sent electronically to the GP and to John himself, who will be able to securely access his record on CV online for future reference. A copy of all the electronic records captured during the episode will be made available to John for him to upload to one of a range of trusted repositories of Personal Health Records and to present to a future provider of healthcare.

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Jane is John's 17-year-old daughter. She is seen to have a fit by friends whilst on a school trip. One of her friends happened to capture the fit on a video that she was making to record the trip. Jane is taken to the emergency department but recovers within a few hours and is

sent home for outpatient follow-up. Her GP refers her to the first-seizure service where she is seen a few days later. She is sent an electronic reminder of her appointment the day before along with a link to information about how to find the outpatient department where she is to be seen and transport options. She is also given details of what to expect and about what would be helpful for her to bring to clinic and a questionnaire to fill in and return via a secure patient portal.

Jane and her parents have previously found the large hospital campus confusing to navigate and car parking difficult which made them late and stressed for a previous appointment. On this occasion the patient portal has recently been upgraded to include a way-finding application which uses her smart phone's GPS and WiFi to direct them to a vacant car parking space and then the quickest walking route to the outpatient reception she needs. As such she arrives in the outpatient department without stress and she checks in electronically. The nurse comes to find her a few minutes later and records her routine observations and an ECG. She then sees the consultant neurologist who has already reviewed her questionnaire and the clip of the fit taken by her friend which she has uploaded to the patient portal. During the consultation Jane mentions that there have been a number of episodes of feeling odd with word-finding difficulties in the last year or two. The history and examination details are recorded electronically on Jane's electronic patient record and with her consent the video is also uploaded to her record. The consultant explains what investigations are needed and offers possible appointments for MRI & EEG, including later the same day. Jane elects to have tests done the same day and a further appointment to see the consultant later the same day is arranged to feedback results. The consultant enters the outcome details from the consultation into the EPR including coding information and a natural language letter is generated from the entries.

Jane is sent details electronically of where to go for the MRI scan & EEG. The investigations are completed and Jane is seen later the same afternoon by the consultant who explains that there is an area of abnormality on the left side of her brain which is the likely cause for her seizure and may have caused her previous briefer episodes. He explains what further investigations and treatment may be needed and the medical options. He provides advice covering first aid, safety and other relevant advice to Jane and her parents as well as contact details for the telephone and e-mail advice line, with additional electronic copies for Jane and leaflets for her parents. Jane reviews some patient-recorded videos of the treatment options available to her which have been posted to her portal page and links in to patients on the community website (patients like me.com) to discuss the options with her peers. After which, Jane decides that she wants to start on medication and is given the initial prescription from clinic with a detailed description of how to build it up with reminders sent to her mobile phone's electronic diary via the patient portal. Copies of all the letters and information are sent securely to her patient portal. A further appointment is arranged for after her next MRI scan.

Jane remains well and seizure free on medication, and interval scans show no change in the appearance of the area of abnormality on her scan, which is thought to be a form of tumour. She continues with interval imaging and as she grows older, her clinic reviews are conducted by videoconferencing as this fits in better with her work. Her details are provided to her and uploaded to her patient portal which she is able to use when she needs information for insurance or work purposes.

13 years later Jane is 38 weeks pregnant with her 1st child when she has a further seizure. She has been counselled about epilepsy and pregnancy and has been kept under close review. Eclampsia is excluded and a further MRI is arranged. Her healthy baby is delivered just before term. Throughout her admission she and her baby are provided with patient identification labels with RFID technology which allows ward staff to let her doctors and family to know where she is. The same technology automatically informs portering staff

when she is ready to be brought back from the MRI department and for her consultant to know that she is back on the ward to discuss her scan results. Her consultant sees her on the maternity ward and discusses the repeat imaging which shows that there has been progression of the tumour. Jane's consultant shows her the scans and discusses the options.

Jane's case is discussed in the MDT with the regional neuro-oncology & epilepsy surgery centre by video link and surgery is recommended following additional assessment. This is then discussed with Jane and she decides to be assessed for surgery. Her local scans and records are sent to the regional unit in preparation for surgery.

Jane undergoes assessment and surgery at the regional epilepsy surgery centre, where they are able to remove most of the area of abnormality without causing any permanent deficit. However, as the area is near speech areas, not all of the embryological tumour could be removed and Jane is told that she will need long-term follow-up. The scans and clinical information from the surgery are copied to Jane's local hospital and she is followed up locally with interval imaging. She remains seizure free on adjusted medication following surgery and returns to work after the end of her maternity leave.

4.2 Vision Themes

The themes that emerge from the future patient journey are listed below:

Access to information (instant, 24/7, anywhere): Subject to Role Based Access Control, members of staff will have appropriate access to all the relevant information held about the patient to enable them to deliver care safely and efficiently. The access to information will cross traditional organisational boundaries and continuity of services will be greatly improved. This access will be 24 hours, from any part of the trust, health community and beyond if necessary. Users can expect the results of diagnostic tests and specialist consultations to be sent back more quickly to the GP/key worker in an electronic format and to be quickly ascribed to their electronic record. The patients, who are willing and capable[11], can expect to be able to view this information as part of their online record at a time convenient to them.

Automation and process improvement: Service users can expect the current out of date processes associated with being referred for treatment/assessment to a specialist to be replaced with more efficient booking systems which enable the referrer to agree a date, instantly, with the user, for access to the specialist service. Within hospitals clinicians can expect the current paper referral based processes to be replaced by electronic booking processes – e.g. a nurse books a time in the OT's diary for a stairs assessment rather than faxes a referral form and waits for a response.

System intelligence/memory: Access to evidence, guidelines, clinical pathways, alerts, reminders and prompts will all serve to make the patient's journey through an acute hospital (and beyond) safer, more efficient with improved healthcare outcomes.

Patient in control: Access to online records and other repositories of information will put patients more in control of their healthcare choices.

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[11] The provisions of the Data Protection Act will continue to ensure that a copy of the paper record is available for patients who wish to access it this way.

5   Where are we now?

The recent St Helens and the Knowsley (STHK) report provided a useful baseline for this strategy and headlines from this are shown here. The full copy of the report is available from Informatics. A simple analysis of the clinical 5 is also presented as a baseline.

5.1   STHK review

Infrastructure Standardisation

- Standardisation is far from satisfactory and where it has been attempted it has not been successfully implemented.
- The diversity of make and model of server was reasonably managed. However the desktop environment was a lot more diverse.
- Both IT departments had a large list of projects for completion but few appeared to have directive from the board. As such they failed to have scope and targets attached to them and without broad organisational commitment they were continually allowed to slip due to fire fighting pressures from operational duties.

Networks

- The current situation is that each trust has an independently structured and maintained network based on different technologies, although the networks are linked together to a degree. The different technologies will present a barrier to efficient interworking in future.
- The current networks are performing reasonably well supporting the current load however both are nearing the end of their maintainable life and it should be recognised that implementing a full EPR will significantly increase network traffic and the need for the network to be available.

Data Centres

- As Bournemouth have only one data centre available they operate a contract with a 3rd party to provide disaster recovery facilities delivered to site following a disaster. This practice would be a slow highly intensive operation and would not meet the future requirements of the organisation.
- Poole supports three datacentres. However two are well below the specification required, as both rooms were not purpose built but modified to hold IT equipment. These rooms provide limited growth and it will not be cost effective to redesign them to bring them in line with best practice.
- The backup arrangements both provide a single point of failure in the use of a single tape library and do not provide enough capacity to enact fast data recovery, in that only a limited amount of backup is held on disk.

Servers

- Although there was evidence of some standardisation, within the server estate of both organisations, there appeared to be no standard hardware policy.
- Both sites have recently migrated their PAS to a new server cluster; however failover still remains a manual process to the secondary server.
- Poole is further down the road than Bournemouth in providing highly available solutions, with more virtualisation and a comprehensive Microsoft clustered environment built across two rooms. However neither has adequate disaster recovery solutions.

End User computing

- As a result of end users purchasing their own equipment without authority from IT, both trusts have found themselves managing a range of Dell, Viglen and Toshiba desktops and laptops. User experience was noted as diverse.
- Both trusts also use an application packaging tool, which introduces standardisation and remote deployment. However Bournemouth is using an older version which does not offer the functionality of the version used at Poole.

Monitoring and maintenance

- In any IT environment monitoring of system is essential and without it the service will continually find itself fire fighting problems. Unfortunately both trusts are deficient in this area.
- The only alarms that appeared to be monitored were the environmental alerts for the datacentres and the use of SNMPc to poll hardware to ensure it is available.
- The service desks also failed to produce regular reports to identify operational workload.

Disaster Recovery Planning

- RBCH only host a single data centre and rely on a third party to provide a second mobile data centre delivered to site following a disaster. Due to the nature of this solution the process of recovering systems to the temporary data centre would be invoke an extremely lengthy process and totally unsuitable for the organisations aspirations
- PHFT have displayed a more mature design by using two of their datacentres, to provide a readily available second room. However, it is estimated due to lack of pre-test evidence that recovery of core systems would take a number of hours.

Telephony and Voice over IP (VOIP)

- There is a small deployment of VOIP telephone extensions within PHFT. These are linked into the traditional telephone system, but there is no holistic approach, comprehensive rollout plan or projected date by which existing telephony services will be totally replaced. No evidence was provided of audio/video conferencing solutions in use on the VOIP solution.

Service Desk and Technical Support

- Neither current Service Desk is equipped to; be a single point of contact for all customers IT needs, to prioritise calls effectively based on impact, to progress track outstanding calls nor to effectively remotely access IT equipment and fix the majority of non-application problems whilst the user is on the phone.

IT Systems

- Current functionality across both sites is achieved through numerous interfaces between multiple systems.
- It appeared that care professionals have to access a multitude of separate systems to perform their routine day to day work. Time out issues were being experienced on a daily basis by users with user perception that the systems are unreliable, difficult to access and difficult to use.
- It is recognised from the evaluation process that both trusts have put a lot of effort into developing their "clinical portal" applications and it is clear from the users' comments that this has provided improvements to information availability.
- The introduction of Clinical Viewer does not appear to fully support clinicians as observations seemed to indicate that all required information was not readily available.

- Poole currently uses Graphnet as their solution to create user defined data capture templates. The users' perspective is that system is quick and easy to use, has easy access and is found to be reliable and performs well. It is clear that this system is well used and well liked and provides benefits to the users at Poole Hospital and certainly demonstrates positive potential for EPR functionality.
- The electronic ordering and results project has incurred significant delays for both organisations.

Reporting

- The current information systems are supporting the trusts, but there is little evidence of efficient working or automation as status and performance reports are still being produced manually, often requiring separate access to information across a number of different systems.
- The full information requirement is not available from one extract, analysts have to obtain from various sources, data feed, manual paper, and clinical system interrogation to get a full picture.

Training

- There was no significant assurance that the granting of systems access is being followed in line with training procedure.
- Both sites demonstrated users being trained outside of process and in some cases it appeared that responsibility for training is undertaken by staff outside of IT control. User Survey results indicated dissatisfaction with the training provided, with 30% of respondents stating they were not well trained in the use of systems.
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System Administration

- There are indications that adequate processes are in place across both organisations to prevent unauthorised access.
- Some users, outside of IT, appeared to have administration rights allowing them to create user accounts. There appeared to be unmanaged risks which are due to the nature of the transient staff and flexible working environments i.e. bank staff, locums.
- System configuration (clinic templates/changes etc.) was not robustly governed and centrally controlled.
- Survey results show 47% of people do not feel that they are engaged when a new system is implemented.

Data Quality

- The roles and responsibilities of the two data quality teams seemed very limited and appeared to primarily concentrate on PMI checks.
- There was no description given on how staff are made aware of errors they are making and how this is managed. There does not appear to be any process in place for refresher training for staff who appear to be causing regular data quality errors.

Governance and IT Security

- Each organisation has provided evidence which demonstrates adequate policies and procedures are in place to support the principals of sound Information Governance.

- Information Asset Owners should be in place and regular updates provided to SIRO relating to any threats, vulnerability or weaknesses for the systems they are responsible for have been provided. It is mandated that this should be done annually. PHFT and RBCH have both confirmed the commencement of this process
- There are many positive similarities between the trusts; both have implemented the centrally purchased hard drive encryption solution for laptop computers, a proven email encryption platform, both offer secure remote access solutions and both have at least one modern fit for purpose data centre.
- Policies were out of date and required review
- Both trusts keep a manual IT asset inventory and have real time tracking tools (SCCM/SMS) however there is no evidence of software asset management from the policies or interviews and the accuracy of the manual inventories is not verified.
- PHFT commission regular network penetration tests from external auditors however RBCH do not. RBCH prevent use of unencrypted removable storage using the centrally purchased solution however PHFT have this facility within their Antivirus solution and do not use it

Health Records

- Although the current operational performance of the traditional Health Records Libraries was not being assessed, they were both found to be performing well and the general opinion of the departments is high, with 88% of respondents to the User Survey finding the Health Records service responsive and supportive.
- RBCH has high quality modern accommodation and a range of facilities including moveable racking that facilitates more storage capacity. PHFT has seen little modernisation and facilities are poor quality; they have traditional fixed racking that has a lack of capacity
- Capacity is an issue for both trusts
- Each trust has its own Health Records Committee governing and managing the service provided by its Health Records Library. There is no consultation or coordination with the other trust. The result of this is that each Health Records Library has its own procedures and processes with no generic processes in place common to both sites.
- Both management teams support move to EDM and openly recognise this is the future for health records at RBCH and PHFT.

5.2 Assessment against "the Clinical 5"

The national Informatics planning guidance for 2009/10 identified a minimum specification of functionality that would make a system acceptable to secondary care clinicians creating a 'tipping point' in the acceptability and demand for the clinical IT systems. This has been re-enforced with the subsequent national strategy. The table below shows the trusts' current position against the "clinical 5":

No.	Item	Current status	Achievement
1	Patient Administration System (PAS) integrated with other systems and sophisticated reporting	The trusts have PAS systems which have a one way demographic feed to other systems and a 2 way feed to the ED system (enabling ED registrations). Reporting is predominantly done via Data Warehouses. The PASs are linked together so the demographic data is consistent	High
2	Order Communications and Diagnostics Reporting (including all pathology and radiology tests and tests ordered in	Pathology and Radiology results reporting has been implemented using an in-house solution and direct access to the pathology system. A project to establish electronic requesting of pathology from primary care is live in a small number of GP practices. The internal Order Communications project	Low

	Primary Care).	has not yet established a live service	
3	Letters with coding (discharge summaries, clinic and Accident and Emergency letters)	Discharge Summaries are created electronically for both trusts but sent to GPs in paper format due to the current restrictions in primary care and concerns about the reliability of the process. Other clinical correspondence is also transmitted on paper.	Medium
4	Scheduling (for beds, tests, theatres, etc)	Outpatient Appointments and Theatre scheduling (including electronic To Come In functionality) is carried out in the PAS modules. There is also scheduling functionality within the endoscopy, cardiology and radiology systems.	Medium
5	e-Prescribing (including 'To Take Out' (TTO) medicines).	There is no ePrescribing system for the trusts currently with the exception of a small deployment of e-prescribing for cancer services (as part of the cancer network application) and ITU at PHFT.	Low

5.3   SWOT/PEST

As a useful baselining tool a Strengths, Weaknesses, Opportunities and Threats analysis is presented cross referenced with Political, Economic, Social and Technological dimensions.

Informatics Directorate SWOT/PEST Analysis

	Political	Environmental	Social	Technological
Strengths	Clinical engagement in Informatics is extremely strong at both RBCH/PHFT. Good relationship with corporate leaders Collaborative approach to Informatics project management (i.e. engaging the service stakeholders). Strong governance arrangements	RBCH/PHFT Informatics is fairly insulated from any major competition.	Highly skilled and motivated staff in all aspects of Informatics Open culture Good risk management record Stable workforce Ability to recruit Low turnover	Pragmatic innovation – i.e. not at the leading edge but adopting proven technology reasonably early. Energetic cycle of innovation appraisal, testing and adoption.
Weaknesses	The priority setting process for major Informatics developments is insufficiently overt or effective and can cause customer dissatisfaction. User dissatisfaction at RBCH particularly, mainly based on supplier behaviour	Insufficient space to accommodate growth in Informatics staff and resilient Infrastructure.	Ability to influence staff to behave responsibly (i.e. full implementation of the IAA agenda) in their consumption of Informatics' services. Insufficient access to training for Informatics staff and stakeholders.	The lack of a Thin Client desktop environment has pushed us into a PC rolling stock replacement approach and increased bandwidth demands on mobile and remote access services. Supplier proprietary technical platforms have locked down the development and prevented Informatics responding effectively. Software asset management.
Opportunities	To support the board and other senior stakeholders to benefit from the available Informatics services. To turn around the relationship with main supplier. Trust Boards acknowledge the need for significant investment in Informatics. To improve communication channels (Informatics briefings, Newsletters, Directorate liaisons).	National Strategies ("The power of Information…"; Digital First etc) promote the value of Informatics to the NHS.	Best practice implementation (ITIL) has been recognised as valuable amongst IT leaders	Technical solutions environment for all aspects of Informatics services is fast moving.
Threats	Informatics has a national poor reputation following the NPfIT difficulties and is seen by some boards as "toxic"	National strategies raise expectations and requirements without commensurate funds to address	The "digitisation of life" brings challenges for the appropriate safeguarding of RBCH/PHFT information assets (e.g. use of Twitter, Facebook etc)	The high speed of technical change brings challenges about managing user's expectations and priority setting difficulties.

6   Developments for 2013/14 and beyond

This section shows the projects for the next 5 years to achieve real momentum towards the vision, under relevant headings. The priorities are set and reviewed by the Informatics Steering Board (ISB) with clinical input from the Informatics Programme Clinical Advisory Group (IPCAG).

The existing workstreams' organisation has been preserved and adapted where necessary

6.1   Workstream 1: Single Informatics Service

As agreed by the Trust Boards in 2012 a single Informatics service will be formed to achieve the following.

- To increase the value of IT services deployed at either of the trusts by making them available for users at both trusts
- To reduce the duplication of IT services between RBCHFT and PHFT and consequently achieve better overall value for money for the taxpayer
- To deliver more services to our customers within our existing resources by optimising the roles and departmental structures.
- To strengthen the support for operational services to assure the service warranty for our customers and users as they (and in turn our patients and other stakeholders) become more critically dependent on IT services.
- To strengthen the development aspects of the Informatics service by bringing the skills and capacity of the two departments together.

The scope[12] of this service will be

- The IT services
- The telecom services and switchboard
- The medical records services[13]
- Information Governance (currently at PHFT only).

High Priority

Project 1.   Implement a Single Informatics Service based on ITIL[14] . Re-organise the employment, management structure, leadership and standard processes of the Informatics functions to deliver a single Informatics Service and review the hours of operation and the on call arrangements in liaison with stakeholders. A Service Level Agreement will be developed between RBCH and PHFT for the provision of Informatics.

6.2   Workstream 2: Infrastructure development

To support the implementation of the Clinical Application workstream the trusts need a modern and dependable underpinning IT infrastructure. The following projects are proposed to achieve this:

High Priority

Project 2.   Network replacement. The current networks in both trusts will be replaced and the intersite links augmented (increased speed and resilience) to provide the data speeds necessary to run paperless hospitals.

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[12] The scope will be reconsidered in light of the merger decision.
[13] Records library, clinic prep and medico legal at PHFT; Records library and medico legal at RBCHFT.
[14] ITIL is the IT Infrastructure Library: an internationally recognised best practice framework for the management of IT services.

Project 3. Server Virtualisation. The movement of physical individual servers to virtual hosts will continue until around 90% of all the trusts server are delivered in this way.

Project 4. Thin Client Environment. A business case will be created to assess the financial and service management benefits of delivering server based computing, extending the life of the client PC and providing a consistent user experience. Rolling stock PC replacement will continue until the PC estate is fit for purpose.

Project 5. Computer Room Strategy. There will be a proactive review of all the dedicated rooms housing the trusts core computing infrastructure (aka computer rooms) to determine an architecture which will provide the trusts the best possible resilience with the least cost and service interruption.

Project 6. Mobile Devices. As ward based use of the EPR and other clinical applications develops the demand for bed side computing will grow. The latest advances in mobile computing and lessons learnt from leading NHS trusts will be studied to ensure the trusts invest wisely in this complex area. Mobile clients will also be required to support the roll out of the offline Maternity system to the community midwives. It is expected that Windows based devices (netbooks, laptops, Computers on Wheels) and Apple based devices (iPADs, iPAD minis and iPOD touches) will be supported to ensure that clinical areas have the appropriate tool for the task.

Project 7. Single Active Directory. The two trusts will consolidate onto one Active Directory "forest" which will mean that users will be able to login with the same credentials at any of the sites of the trusts and gain access to their IT resources consistently.

Medium Priority

Project 8. Wifi network. The Wireless networks will be augmented and replaced where necessary to enable effective mobile computing, particularly targeting clinical areas.

Project 9. Storage, back up and archive strategy. With the new SANs there are opportunities to improve the speed of backup, restoration and Disaster Recovery and apply a tiered storage model – so that older data is consuming less expensive disks. A strategy will be developed that balances these new functions with the cost of consuming our primary storage area at a greater rate.

6.3 Workstream 3: Clinical applications developments

Electronic Patient Record (EPR)

A definition of an EPR follows:

An EPR is a seamless, user-friendly, human/computer interface which brings together the following groups of functionality in both a user centric and a patient centric approach:

- the ability to collect and display clinical datasets of structured clinical information, ideally using an internationally recognized (e.g. Snomed clinical terms) ontology supporting the ability to move away from handwriting and paper capture at the point of care for all clinical scenarios in an acute hospital.
- The ability to import and display unstructured clinical information (e.g. images, scanned documents, outputs from medical devices, unstructured clinical correspondence) for easy retrieval by clinicians at the point of care.

- Functionality that supports clinical transactions of care (e.g. booking, requesting, referring, scheduling, handover, receiving results and feedback)
- Integrated access to evidence, guidelines, clinical pathways, alerts, reminders and prompts. This enables the clinical transactions to be cross referenced with the structured clinical information and provide decision support to the users (e.g. to tell a clinician when they are about to prescribe a drug for which there is a contraindication in the previous clinical history).

It is widely acknowledged that there are 3 different approaches to delivering an EPR:

1. A portal with Best of Breed (BoB) interfacing:
   a. To select and retain individual "best of breed" clinical departmental systems (e.g. cardiology, pharmacy, ED, Cancer) and to interface them together using portal technology so that a context sensitive view is presented to the user.

2. Fully Integrated:
   a. where all legacy systems in time are switched off and their functions replaced by a single supplier solution e.g. EPIC or Cerner Millennium

3. Hybrid:
   a. The hybrid approach, as per the STHK recommendations with decisions being made at the point of each system renewal: should a best of breed system approach be maintained for the department or should it be now absorbed into the single integrated system?

The IPCAG has reviewed these architectural options for the strategic EPR by engaging with the market leaders providing solutions for each approach. The conclusion from this review is that the preferred option is option1: A portal with Best of Breed (BoB) interfacing.

It may take up to 3 years before the strategic EPR is live and clinical staff want to improve the current situation of digital data captured at trust 1 being unavailable to trust 2 (and vice versa). Consequently an Interim EPR will be pursued to combine the data from both Graphnet EPR and Clinical Viewer to overcome this patient safety issue in the short term.

These workstreams and other clinical application workstreams are shown in priority order below.

High Priority

Project 10. Interim EPR. Within 13/14 an interim EPR will be launched that presents data collected uniquely at RBCH to PHFT clinicians and vice versa. This will also deliver the XDOCs (electronic clinical data capture forms) functionality that has been deployed successfully at PHFT to RBCH clinicians

Project 11. Strategic EPR. A new, strategic EPR will be specified, procured and implemented based on Best of Breed and Portal architecture to transform the clinicians' current experience of enterprise wide clinical systems. Single Sign On and Patient Context Management[15] services will be implemented alongside this strategic EPR to enable seamless access to underlying departmental systems where appropriate.

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[15] This could be seen as an enabler to speed access to disparate systems while the agreed architecture is being developed (i.e. as a separate service) or an integral part of the new Strategic EPR. These options will be considered by the IPCAG and ISB.

All the following clinical systems will be standalone[16] system during the persistence of the interim EPR and will be tightly integrated into the strategic EPR when available to present a seamless user experience.

Project 12.   Picture Archive and Communication System (PACS) re-procurement. The PACS contract ends on 30 June 2013. The trusts will implement a single PACS and RIS service for both sites and safely migrate all the historic data to this new service.

Project 13.   Electronic Document Management/Scanned Health Records. Health Records will be scanned and delivered to clinicians using the Electronic Document Management software such that no paper leaves the libraries from 1 April 2015.

Project 14.   Electronic National Early Warning Score (eNEWS). This service will enable the electronic capture of patient vital signs (e.g. temperature, pulse, and respiratory) at the point of care and the automatic calculation and escalation of an Early Warning Score for patient deterioration in line with the national approach (NEWS). This will be progressed at RBCH first with PHFT deploying the solution as a second wave.

Medium Priority

Project 15.   Electronic Discharge Summaries (EDS). This project will enhance the existing Inpatient Discharge Summary (at PHFT) to integrate with the To Take Out (TTO) prescribing and send the combined report directly to GP practices systems electronically. The contents of the EDS will be available on the interim and strategic EPR.

Project 16.   Order Communications/Results Reporting (OCS/RR). The rollout of GP order comms will continue at PHFT and be broadened to cover RBCH services. An option appraisal will be considered in early 2013/14 to decide the arrangement for the interim and strategic internal OCS/RR service.

Project 17.   Electronic Prescribing and Medication Administration (EPMA). This project will manage the purchase and implementation of a system to achieve electronic transmission of prescription information from a prescriber to the pharmacy, integrate to the current electronic dispensing process and achieve paperless administration of drugs.

Project 18.   Access to primary/community information. In the first instance read only access to the local GP clinical systems will be pursued to enhance the current use of the Summary Care Record in the longer term datasets will be imported from the local community, primary care and Social Service systems into the Strategic EPR.

6.4   Workstream 4: Effective support

Within this workstream the Informatics services will significantly improve the experience of their customers and users in the two key areas of:

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[16] They will have a demographic data feed from the PAS and feed data back into the interim EPR but they will not be tightly integrated (i.e using Single Sign On and Patient Context Management), until the Strategic EPR is in place

- Resolving incidents in the operation of live services

- Achieving the launch of new services or developments to existing ones.

Largely this will be achieved by the implementation of ITIL and the NHS Infrastructure Maturity Matrix (NIMM) and the consolidation of the two IT services into one. To achieve this, the following discrete projects will be pursued.

High Priority

Project 19. **New Service Desk system.** A single service desk system will be procured and implemented providing modern tools which support best practice IT operations and provide users with multiple channels for raising incidents and have visibility of their progress.

Project 20. **Service Catalogue and Service Pipeline.** A service catalogue will be developed to communicate the live services that are offered by Informatics to all customers. The service pipeline will show the services that are in development and a likely go live date.

Project 21. **Improve communications with customers.** Newsletters, briefings, intranet pages, the role of the Business Relationship Manager and other methods will be used to improve customers' understanding of the Informatics Services: e.g. operational issues that are being tackled, where their requests are in the pipeline, launches of new or changed services, new entries to the service catalogue (e.g. innovative client devices that are now available for their purchase) etc.

Project 22. **Innovative skill building.** The training department will continue to implement innovative/blended training solutions that respond to the needs of customers - including e-learning, floor walking and peripatetic training support (solving work based problems).

The trust will continue with the vital work to provide assurance to the Boards, via the Senior Information Risk Owners (SIRO) that all Information Risks are effectively managed by compliance to the IG toolkit.

Over the next two years the fundamental work will be to embed the IG roles of Information Asset Owners (IAOs) and Information Asset Administrators.

Project 23. **IG Assurance.** A governance system will be implemented and reviewed that ensures all critical assets are owned, administered effectively and the full range of assurance activities are completed.

Medium Priority

Project 24. **Service Level Agreements.** With the implementation of the new service desk will come the opportunity to agree service levels with trusts' departments which can be measured, reported on and subject to escalation if necessary.

6.5 Workstream 5: Merger Support

This section of the strategy is obviously sensitive to the decision that will be made in summer 2013 regarding the merger. In advance of this decision Informatics planning work will continue, as permitted into the Integrated Business Plan (IBP) and the Post Transaction Implementation Plan (PTIP), particularly in supporting the shadow directorates confirm their plans and requirements for Informatics support and the creation of a priority list for this work.

6.6   Workstream 6: The Digital consumer

The strategic intention is that the trusts progress steadily with the development of digital channels in line with the Digital First national direction. These new services will be a significant challenge to the way the trust currently works so, to begin with, relatively straightforward services will be offered, becoming more complex as experience is gained. In this workstream it would be appropriate to engage a patient/carer panel via the existing mechanisms of the trusts to ensure that our new services are designed with patient and carer input.

High Priority

Project 25.   Electronic Transmission of patient letters. Letters that are already captured electronically will be sent directly to patients electronically where patients enrol into this service. It is expected that the choice of paper letters will be preserved.

Medium Priority

Project 26.   Patient held medical devices. A project will be established to explore the use of patient held medical devices that are capable of sending electronic information to care organisations. The trusts will support the current primary care work in this area and progress pilot areas in some clinical areas in the medium term to support the clinical areas (e.g. Diabetes and Cancer) who wish to move this forward.

Project 27.   Patient Access to their online records. As a feature of the strategic EPR a facility will be purchased that will enable patients to access their records. This will, naturally, be towards the end of the deployment stage of the strategic EPR and there will be lessons learnt from other trusts in the establishment of the correct security and governance arrangements.

7 Funding of the strategy

In line with the expectations set at the Trust Boards in 2012 when the STHK review was accepted, the following 5 year capital and revenue budgets are proposed to deliver this strategy. Inevitably the next 2 years are easier to predict than the following 3 years and these projections will be refreshed annually along with the rest of the strategy.

7.1 Capital

The combined (PHFT & RBCH) capital programme for the strategy totals £21.9M over 5 years of which each trust's contribution is shown below by year.

Year	13/14	14/15	15/16	16/17	16/17
Capital (£'000s) - PHFT	2,380	2,707	1,933	2,073	2,310
Capital (£'000s) - RBCH	2,440	2,127	1,873	1,873	2,210

7.2 Revenue

The table below shows the proposed net additional revenue for both trusts.

Year	13/14	14/15	15/16	16/17	17/18
Net additional revenue costs[17] (£'000s) - PHFT	453	1729	1788	1787	1634
Net additional revenue costs (£'000s) - RBCH	713	1246	1348	1388	1235

8 Governance of the Strategy

The following governance bodies exist or are emerging to ensure effective decision making, delivery and control of the Informatics agenda:

- Change Advisory Board (CAB). Chaired by the Informatics Director, which considers the feasibility and policy compliance of Requests for Change (new services or developments to existing ones)

- IT Senior Managers (ITSM). Chaired by the Informatics Director, which decides on the priority of minor and medium sized requests for change (<50k or < 2months effort) and schedules the work.

- Project Management Boards (PMB). Chaired by Project Executives, which are responsible for achieving the project aims within the budget and time constraints agreed at ITSM and ISB.

- Informatics Programme Clinical Advisory Board (IPCAG). Chaired by the Clinical Leads for Informatics, ensures there is sufficient clinical input to the workstreams and projects.

- Informatics Steering Board (ISB). Chaired by the Medical Director, which is responsible for balancing the priorities for the total programme of work and monitoring progress.

- Hospital Executive Group (PHFT) and Trust Management Board (RBCHFT) chaired by the Chief Executives which act as escalation and assurance points for the ISB

Clearly this strategy cannot predict all the future strategic workstreams that will emerge within the next 5 years. Major new workstreams will be proposed using the IT Change Request Form and submitted to ISB for their consideration. ISB will consider the impact on the existing programme of work and prioritise the work accordingly or escalate to HEG/TMB if the new work will significantly put the current strategy off course.

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[17] The revenue costs are net of cash releasing (CR) savings