Clinical Systems
High-Level Position Report

for

Hinchingbrooke Health Care NHS
NHS Trust

Peterborough and Stamford Hospitals NHS
NHS Foundation Trust

Contents

Executive Summary

This report is the first of three reports into the approach recommended to rationalise systems supporting the clinical processes across the organisation created from the proposed merger of Peterborough and Stamford Hospitals NHS Foundation Trust (PSHFT) and Hinchingbrooke Health Care NHS Trust (HHCT). The report details the findings to date and acts as an early indicator as to the direction of the recommendations and costs to be developed in the subsequent reports.

Libretti Health wish to extend their thanks for the time offered by a significant number of contributors (listed at Appendix 1) whose considered views and input forms the basis for our analysis and recommendations.

System Relationship

Key amongst the systems supporting the clinical processes are those maintaining the single register of patients (the Patient Master Index - PMI) and core movements of patients; notably:

- Admissions, Discharges and Transfers (ADT);
- Outpatient activity; and
- Waiting lists and waiting times, including Referral to Treatment (RTT) management.

These functions are primarily managed within the Patient Administration System (PAS).

It is inconceivable that these functions would be managed, over any reasonable timeframe, via disparate systems within a single organisation; and impractical to maintain synchronisation of two systems to provide a 'virtual' single system.

All other clinical systems are related, to a greater or lesser extent, to the core PAS/PMI. Therefore, any decisions taken on the future provision of PAS functionality will impact and inform the decisions required for the other clinical systems; especially the 'tightly coupled' systems with high degrees of integration (e.g. Emergency Department).

Loosely Coupled Systems	• Pathology • Radiology
Tightly Coupled Systems	• Emergency Department • Order Communications
Core Systems	• PAS • RTT
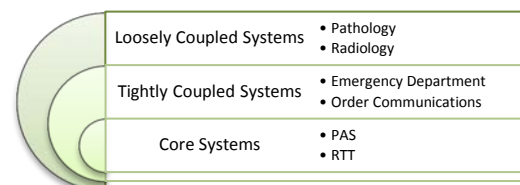
Recommendations for PAS

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Recommendations for Other Systems

Quick Wins

Implementation of the unified PAS is a non-trivial project which will consume considerable clinical and IM&T resource. However, if project bandwidth allows, there is the potential for some early quick wins from system amalgamation. Those identified to date are:

- Maternity ███████████████████████████████;
- Order Communications – ████████████████████████████████
- Further roll out of Nervecentre should include Hinchingbrooke locations in the plan.

eTrack

eTrack is an in-house developed portal that has become a strategic system for Peterborough with tight integration to the PAS and exceptionally high level of acceptance and use by clinical staff. Historically there has been concern about the Trust's reliance on a system which itself relied on a single key member of staff. Additional development resource has been taken on to lessen that reliance on a single resource and the associated risk.

However, if there is to be continued reliance on eTrack as this report recommends, there is a need to 'industrialise' the processes used to manage the development and ongoing support of the eTrack 'product'. While this has cost implications, those costs are considerably less than those associated with redeveloping the functionality with a commercial partner.

A further option that may be worth considering is to investigate whether a commercial partner, with whom the merged Trust is likely to have a long-term relationship, may be prepared to 'adopt' eTrack, taking full responsibility for its future development in return for rights to market the software on the open market. ██
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Change Roadmap and Clinical Direction

The outline Change Roadmap indicates that the integration of clinical systems across the merged organisation will be a programme extending across a minimum of five years, with the notable milestone of the PAS Go-Live in April 2018, given as noted previously a good level of clinical integration. This programme of work will need careful management to ensure momentum is maintained and benefits driven out.

There is an expressed concern in some quarters that a "PAS Plus" approach to integrating systems misses (or even blocks) the opportunity to integrate and develop clinical services; and restricts the ability to further develop the use of information to support new models of care. This concern is addressed in this report.

As part of this report, a set of Critical Success Factors (what needs to happen to ensure success) and Key Performance Indicators (how we will know when we have achieved success) have been developed. Notable amongst these is the recommendation for the appointment of a Chief Clinical Information Officer (CCIO) role to ensure the clinical input to the direction of the programme and assure the clinical outcomes of the programme. The Trust may wish to consider fulfilling this role via a shared appointment covering each site.

The Change Budget

The review has not considered the costs of infrastructure required to support the clinical systems; nor the cost of redesigning and integrating clinical processes.

The review has identified the following outline costs associated with rationalising clinical systems:

- ████████████████████████████████
- ██████████████████████████████
- ████████████████████████

However, it is assumed that the ██████ revenue costs will be offset over time by the cessation of system licences as systems are rationalised. This will be further tested in the subsequent reports.

The Change Budget

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Introduction

The Boards of both PSHFT and HHCT have approved an Outline Business Case, recommending merger of the two Trusts on 1 April 2017.

Libretti Health has been appointed by the two Trusts to advise on options, costs, risks and approaches to support production of the Full Business Case (FBC) for the merger of information systems for both Trusts.

There are three key outputs for this assignment:

1) An initial high-level position report with indicative cost and risk findings;
2) A detailed report on options and recommendations, costings, approaches and risks with regards the PAS/EPR and Emergency Department systems for the merged organisation; and
3) A report, similar to (2) but relating to other clinical and patient-related systems.

This report addresses the first of these outputs (1).

Guiding Principles for Merged Systems

The analysis has taken a risk-based approach to driving our recommendations. The risks are set out independently in a section below and draw us to a set of guiding principles. The following sets out those guiding principles (and the rationale for these principles) applied when analysing the scenario of the merged organisation.

The core of the information systems architecture for any trust is the PAS as this will manage the single administrative record of a patient including their demographics, main clinical relationships (GP, responsible Consultant(s) etc.)) and key movements (referrals, appointments, attendances, admissions/discharges, etc.). It is inconceivable that these functions would be managed, over any reasonable timeframe, via disparate systems within a single organisation as the clinical and operational risk of incomplete data at the point of care is very high. Additionally, it is impractical to maintain synchronisation of two systems to provide a 'virtual' single system. Whilst this has been attempted in other organisations it has led to high management costs without eliminating the risk of duplicate or missing core personal, administrative or clinical information.

> Principle 1)   There needs to be a single cross-site system on which the master patient index resides.

The clinical strategy for the merged organisation is still under consideration. However, it is known that the services at each site will be maintained with clinical efficiencies and standardisation of service coming from the sharing of clinical staff across the sites. In some instances, individual clinical staff will be working frequently at each site undertaking similar processes.

To use different systems at each site to support these similar processes would represent a clinical risk and management overhead as individuals would need to be conversant with different, site-based, systems. Additionally, it is likely that individual patients will be treated at each of the sites at different points of their pathway. If disparate systems were maintained this would represent further risk to patient safety and/or the patient experience, where information is held in two (or more) different systems at each of the sites.

> Principle 2)   Similar clinical departments should have similar information systems (or a similar presentation layer such that the clinician has a common interface experience).

It is self-evident that the integration of systems across the two sites cannot be completed prior to the merger (assumed to be April 2017). Indeed, the full programme of work to integrate clinical systems is likely to be a minimum of five years. Therefore, it is not sufficient to nominate whichever system from each site is 'the best' but, rather, find the approach to transition of systems over time that is achievable, compatible and delivers the earliest benefit.

> Principle 3)   Recommendations will be based on the management of risk over the five-year transition timeframe.

Building on the previous statement, any programme of the length that the integration of clinical systems will take risks losing momentum or focus. As such, early engagement of clinical staff with associated early benefits will be imperative for the reduction of this risk.

> Principle 4)   Opportunities for 'quick wins' should be identified where possible.

The merger offers opportunities for the development of new models of care and the development of new, improved, clinical services. The IM&T architecture should enable these future services; and certainly not block such development.

> Principle 5)   The transition path should support the merged trust into the future and not just achieve stability in the short term.

While this assignment is firmly focussed on the rationalisation of clinical systems in the merged organisation, the recommended actions must be compatible with local and national initiatives. Notably pertinent amongst these are the Sustainability and Transformation Plans (STP) and the Local Digital Roadmaps; not least as they may be a source of funding in the future. In the longer term, initiatives such as 'Citizen Access' to their records will place additional demands on the information architecture.

> Principle 6)   The transition path should demonstrate support the STP and LDR.

Stakeholder Consultation

Introduction

The importance of getting input from the various stakeholders across the two Trusts was recognised as a key basis of this work. A first step was thus to arrange to meet as many relevant stakeholders as possible as early as possible in the assignment, within the timeframes available.

With significant help from the IT departments in each Trust we set up a full diary of meetings, spending the first week in PSHFT and the second week in HHCT.

We targeted the key individuals in four main areas:

- Executives;
- Senior Clinicians;
- Heads and senior staff in clinical departments; and
- Informatics staff.

A full list of the stakeholders met during this exercise is given in Appendix 1.

As part of this stakeholder consultation exercise we met with the two main suppliers with regard to the core PAS and associated systems: with System C, for PSHFT and EMIS, for HHCT.

A listing of the current clinical systems used at each organisation, provided by the Trusts as input to this review, is given in Appendix 2. The clinical systems have been assessed and reviewed in three main categories:

1. The core PAS and PMI;
2. Tightly integrated clinical systems, e.g. Order Communications, A&E and Theatres; and
3. More loosely integrated clinical systems, such as Pathology and Maternity.

Detail of these will be given in the subsequent two reports. Here we provide some summary information on the core systems only.

Views from Stakeholders

The full review of the stakeholder views will be delivered in the subsequent reports but in summary the findings were as follows:

In general terms there was felt to be little in the way of existing flows between PSHFT and HHCT, but there was a general willingness to collaborate in both Trusts. The logic and value of working together is generally understood in terms of reducing clinical risk and improving clinical and financial efficiency. However, there are those who question the logic and speed of the proposed merger, especially at HHCT where there is a widely held feeling that they are more naturally aligned with Addenbrookes than with Peterborough.

There was strong support in both Trusts for the formalisation of a CCIO role. It was especially welcomed in the form of having one in each Trust working jointly up to, and through the merger. Some clinical stakeholders mentioned that a 'joint CCIO' would help to ensure equality of emphasis and cultural alignment.

A clear message that came across in both Trusts was that there should be more resource and focus put in to training in terms of clinical systems.

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Patient Administration System

The current PAS is at end of life. Clinicom (now supplied through CSC) will not be developed further and will only be supported after March 2017 on a limited and individually agreed maintenance contract. PSHFT has run a procurement and has selected Medway from System C as their preferred replacement system. ███

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eTrack

Clinicom is significantly enhanced by the in-house developed portal, eTrack. eTrack has a major beneficial impact on the way clinical systems and information is used in the Trust and enjoys a high level of clinical support at Peterborough. The selection of the Medway PAS has been predicated on the integration and continued use of eTrack.

Hardly any of the staff talked about the Clinicom PAS because so many of them use eTrack as their daily tool. Thus the PAS, as with several other systems, is effectively hidden behind eTrack.

There is a general agreement on the importance of installing the Medway system as soon as possible. However, the key eTrack application, has a major positive impact on the way clinical systems and information are used in the Trust. It was widely recognised that this will need to be tied in with the new Medway system.

eTrack has strong clinical and management support and is heavily used on a daily basis. In fact, many staff comment that they could not operate without it. There have been recent occasions when it has been down for 10 minutes or less and clinicians have felt seriously inconvenienced. eTrack effectively masks the shortcomings of several of the systems underneath it.

There is broad praise for Alec Dearden and his skills and knowledge in designing and continuing to develop eTrack.

Overall the benefits of eTrack are clearly seen. It is highly tailored, flexible and dynamic, has great clinical alerts and good functionality. The general feeling is that eTrack should be kept and expanded. The disadvantage is that the expertise and management of the product is effectively a 'one-man band' even though there is now a small team delivering it.

While the speed of implementation of changes to eTrack is highly appreciated by clinicians, what is not so apparent to most users is that there are some significant shortcomings in the way eTrack is tested and rolled out.

Order Communications

The Trust has ICE as the core of its Order Communications. Whilst the system is quite mature and a little "clunky", it does deliver what it is required to do, simply and efficiently and clinicians use ICE

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every day. It, like eTrack, is seen as an essential core of clinical activity. However, there is a general frustration that it does not interface to Nervecentre.

Maternity

The Trust uses the K2 Maternity system. The system is well thought of and the staff feel like they have a close relationship with the supplier. It is easy to use and to extract information and is continuing to be developed (both by the supplier and, in its use, by the Trust).

Electronic Document Management

The Electronic Document Management system (Evolve from Kainos) got off to an unsatisfactory start because of poor implementation planning and execution and lack of clinical involvement. However, the system is now seen as improving and is beginning to regain some credibility. The improvements in the indexing has been a big step forward. Unfortunately, the scanning service has been (as more than one interviewee put it) "a catastrophe". The service from Recall UK has not delivered what was required and its slow turnaround and lack of accuracy and completeness is continuing to cause real problems.

ePrescribing

Several staff noted the lack of an ePrescribing capability. There had been an outline scoping exercise and a Tech Fund bid put together two years ago but the decision was made to hold the project until after the PAS had been deployed. The current Pharmacy system, from Ascribe, is old and was felt should be replaced at the same time ePrescribing was procured.

Pharmacy

Pharmacy have had the Ascribe system in since 1994. The contract for this is up for renewal in 12-18 months. The software is not the most up to date version and the servers currently supporting it need upgrading.   It is clearly acknowledged by Pharmacy and widely throughout the Trust that ePrescribing is a key requirement. Given this need, it is felt that the Trust should be looking at an integrated Pharmacy and ePrescribing system, although this may need a full OJEU procurement.

Observation Management

Nervecentre is a well-regarded application used for recording and communicating Nursing observations and handover. However, it is not yet fully implemented across all wards.

Diagnostic Imaging

In Imaging the Trust uses HSS CRIS and a PACS from Agfa (IMPAX). IMPAX is felt to be good although the contract is up fairly soon. HSS CRIS does what it is supposed to do and is widely used.

Pathology

The Pathology system is Telepath, which is dated. There is recognition that the Trust needs to deploy a new clinical system but there is a broader decision that needs to be taken first on whether to join one of the developing aggregated pathology organisations such as The Pathology Partnership (TPP) or empath.

Theatres

Theatres use Theatreman which is felt to be a reasonable system but there is a lot more that they could do with it, as it is only used for managing theatre bookings. The Trauma module is deemed acceptable, and the Trust uses the emergency booking system.

eMail

The lack of NHSmail was noted on more than one occasion as a problem; particularly in relation to sending patient identifiable information between organisations.

Hinchingbrooke Health Care NHS Trust

HHCT has experienced very little investment with its IT systems over recent years, during the time that Circle ran the Trust. Such investment as did take place was seen as tactical / short-term in nature and it failed to address the core IM&T issues.

There is an acceptance in many parts that Hinchingbrooke needs (for them and for the merged organisation) a clearer informatics strategy and a set of priorities. There is a concern that a "PAS Plus" approach to integrating systems misses (or even blocks) the opportunity to integrate and develop clinical services. Therefore, whatever solutions are proposed, they must allow for future development.

The clinicians at Hinchingbrooke generally have a poor view of the IT systems and services, although the efforts of the IT Department in managing the systems they have to work with is appreciated. There is broad support for rolling out the better systems from PSHFT, but there are some systems in HHCT that have plenty to offer for the future.

Patient Administration System

The main system used to get patient information is eCaMIS. Its use is variable but it provides the basic information for parts of the clinical process. However, there were many comments about the lack of integration between eCaMIS and many of the other clinical systems.

Some clinicians and senior management are aware of eTrack in PSHFT but are nervous about it because of the perceived 'single point of knowledge' in its support. However, none made any negative comment on its clinical applicability.

Order Communications

The biggest concern expressed across the board is that there is no electronic Order Communications capability at HHCT. These days this is quite an unusual position for a Trust. The lack of order communications has been raised by the IT team as a significant risk. The lack of order communications exacerbates delayed discharges and increases the risks of clinical errors.

Some clinical staff have used ICE at other Trusts and were happy with it.

Emergency Department

The A&E Department uses Symphony which is seen as a fundamental system although not configured optimally yet at HHCT. All emergency patient activity is managed through Symphony.

Maternity

The Maternity HICCS system is seen as very poor. The lack of functionality and flexibility in the system, together with a lack of training, means that most of the processes in Maternity are still manually carried out and paper based. Whilst there are plans for delivery of the new mandated Maternity dataset from April 2017, HICCS is not yet capable of delivering it. The system requires extensive re-keying of data and has poor audit and reporting capabilities. Furthermore, the links out to the community are poor.

It is worth noting that EMIS has indicated that HICCS is only installed in one other site and is not seen by them as a strategic product.

Observation Management

There is some demand for a nursing observations system as there isn't one in place.

Theatres

The Theatre system in eCaMIS is thought to be too simplistic and not well suited to operational use. Lack of an overview capability for theatre activity was seen as a significant shortcoming.

Pharmacy and ePrescribing

It is widely recognised that ePrescribing is critical. Also that Pharmacy should be linked to discharge. The Pharmacy system, JAC, has been in use for many years and is doing a good job (albeit requiring the latest updates).   It doesn't interface with other systems, other than inside Pharmacy to two robotic systems. The wards make contact with Pharmacy on paper. There are laptops with JAC on around the hospital but no online connection back. Data is entered whilst walking around and then uploaded when back at base. The only use from the wards is to see if drugs are in stock. There is no direct labelling. The HHCT team feels there is not a lot to choose between JAC and Ascribe stock control systems but that JAC is better for ePrescribing, although selection of an ePrescribing system is recognised to most likely need an open procurement exercise.

Diagnostic Imaging

Radiology, as in PSHFT, use HSS CRISS which is felt to be a good system. They have used it here since 2012. The Fuji PACS is about 8 years old, but the Trust has had FUJI for 16-17 years overall. Prior to merger, both sites have identified the need to go to tender for a new system. The contract for the existing PACS runs to the end of 2017, by which time a new contract will need to be in place.

Pathology

The Pathology department in HHCT is now part of The Pathology Partnership (TPP). They have Clinisys Winpath (supplied by TPP) and are moving towards introducing WinPath Enterprise. It has gone live in Suffolk and soon to go live in Colchester. The plan for HHCT is move to WinPath Enterprise about June/July next year. There are concerns with Cambridge University Hospitals (CUH) potentially pulling out of TPP, especially as the rationalisation in the Partnership has seen some tests now only performed at CUH.

Critical Care

Critical Care in the Trust runs with the Philips ICCA (IntelliSpace Critical Care and Anaesthesia) which is just over a year old. There was a broad involvement of departments in choosing the system and good support for it. ICCA is very configurable. It took them about 8 months to fully set up and is now working well.

Views from Suppliers

Meetings were held with the two suppliers of the core clinical systems, EMIS for HHCT and System C the preferred PAS+ supplier selected for PSHFT.

System C

System C are comfortable with the concept of rolling the Medway PAS out to HHCT as part of the overall programme. They have provided examples of where they have achieved this previously, such as the creation of University Hospitals of North Midlands NHS Trust from Stoke and Mid Staffs. There are quite a few similarities in the systems challenges with the requirements here.

Another good example is with Nottingham University Hospitals Trust (NUH) which is a very large multi-site Trust using Medway. NUH is now merging with Sherwood Forest Hospitals NHS Foundation Trust and will be rolling Medway out across the new site.

System C understand the requirements to integrate eTrack over the Medway PAS but have yet to formally agree all the relevant APIs that will make this happen. They are aware that the contract will not be signed until these issues are addressed, as they are fundamental to the viability of the PAS programme.

Medway integrates with a wide range of other clinical and departmental systems (including ICE, Kainos and Symphony).

Medway has been deployed 21 times in the last 5 years.

EMIS

The CaMIS PAS at HHCT was originally supplied by Ascribe, who were subsequently taken over by EMIS. This is part of EMIS's move to extend from primary and community systems into secondary care.

The EMIS team were clear that they did not have any issues with providing or developing APIs to handle eTrack sitting on top of the PAS. They have a full set of ITK HL7 bi-directional interfaces.

They have several sites running eCaMIs including Southampton, Doncaster and Mid Yorkshire. They have worked in Bournemouth and Poole to put a Graphnet portal on top of CaMIS. They have also integrated with ICE as an order communications layer on their PAS elsewhere, and have a link to a Kainos system in Poole.

Conclusions from Stakeholder Discussions

There is a clear understanding of the implications on systems of the two Trusts merging. As the discussions progress regarding the sharing of clinical resource and the rationalisation of some services, it is evident that the clinical systems that underpin this must be rationalised also.

There was much stronger clinical support for the systems in PSHFT than in HHCT, but this is largely due to the presence of eTrack. Both Trusts have several older systems that will not easily support emerging models of care and will not be able to take the merged organisation forward.

However, the fundamental agreement is that there must only be one core Patient Master Index (PMI) and PAS across the merged organisation. This position must also be reached as quickly as possible.

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Risks

As a result of the stakeholder interviews and subsequent analysis, it has been possible to summarise the risks facing the merged organisation in relation to the use of their clinical systems.

The Risk Framework is included at Appendix 3.

Actions recommended as an output of this assessment are based on their positive impact in mitigating the risks inherent in the current mix and configuration of the clinical systems in light of the proposed merger. This section sets out the observed risks pertinent to the assignment in the following categories:

- Clinical Risks (those which impact on patient safety or the patient experience)
- Strategic Risks (those which impact on the safe delivery of strategic intent. In this case, the delivery of the merger)
- Financial Risks (those that may impact assumed budgets and plans)
- Operational Risks (those which impact the smooth operation of normal processes)
- IM&T Risks (those which impact the delivery of IM&T services or projects)
- Reputational Risk (those that impact on the way that the Trust is perceived by its stakeholders)

Clinical Risks

Those risks which impact on patient safety or the patient experience

Descriptor	Likelihood	Impact	Risk Score
The current high number of 'stand-alone' systems across the two Trusts, results in no single view of the patient record; data fragmentation across the merged organisation; an enhanced integration difficulty and a higher business continuity risk. (Also Strategic Risk) Solution is to implement integrated systems from a smaller number of (trusted) suppliers	5:Almost certain	3:Moderate	15: High Risk
Lack of an electronic order communications system for pathology tests at Hinchingbrooke, represents a significant clinical risk. This is due to inherent delays with the (largely) manual system, together with lack of clinical notification when results are posted to the patient's record. Solution is to implement ICE order communications in line with system already in place at Peterborough.	5:Almost certain	3:Moderate	15:High Risk
Hinchingbrooke – Maternity system (HICCS) is massively unpopular amongst clinicians due to poor information and inflexibility of use. Risk of clinical mistakes based on poor information.	3:Possible	3:Moderate	9:Moderate Risk

| Potential solution is to extend Peterborough system (K2) and to appoint a Maternity IT super user to support implementation and training at Hinchingbrooke | | | |

Strategic Risks

Those which impact on the safe delivery of strategic intent. In this case, the delivery of the merger.

Descriptor	Likelihood	Impact	Risk Score
The current high number of 'stand-alone' systems across the two Trusts, results in no single view of the patient record; data fragmentation across the merged organisation; an enhanced integration difficulty and a higher business continuity risk. (Also Clinical Risk) Potential solution is to implement integrated systems from a smaller number of (trusted) suppliers.	5:Almost Certain	3:Moderate	15:High Risk
Under estimation of the change budget required to merge clinical and IT systems over the five-year transition. Current estimates largely driven by system costs and omit business and operational transformation costs. High level of clinical time and disruption should be planned for.	3:Possible	3:Moderate	9:Moderate Risk

Financial Risks

Those that may impact assumed budgets and plans.

Descriptor	Likelihood	Impact	Risk Score
Insufficient funding to achieve the merged systems approach. Current estimates largely driven by system related costs and omit business and operational transformation costs. High level of clinical time and disruption should be planned for.	3:Possible	3:Moderate	9:Moderate Risk

Operational Risks

Those which impact the smooth operation of normal processes.

Descriptor	Likelihood	Impact	Risk Score
Hinchingbrooke RTT calculations are not robust – requires intervention from the information team. (Also Reputational Risk) Potential solution – Replace with eTrack following Medway extension	4:Likely	3:Moderate	12:High Risk
eCAMIS Theatres module does not enable overview screens to compare theatre slots with actual activity. Risk of theatre under-utilisation. Investigate replace with Theatreman (Peterborough) or System C Medway module.	3:Possible	2:Minor	6:Low Risk
Hinchingbrooke over-reliance on paper records, with ensuing lack of availability; occasional misfiling and legibility issues. Potential solution – Roll out Kainos EDM system	3:Possible	2:Minor	6:Low Risk

IM&T Risks

Those which impact the delivery of IM&T services or projects.

Descriptor	Likelihood	Impact	Risk Score
Differential data standards will constrain provision and quality of management information. Potential solution is to review data standards as part of a revised data management policy covering the merged Trust	4:Likely	3:Moderate	12:High Risk
Multiple simultaneous system change projects may overwhelm the IM&T function. Loss of progress and/or direction Potential Solution – Careful Programme Management. Chief Clinical Information Officer to ensure clinical alignment of prioritisation.	4:Likely	3:Moderate	12:High Risk
Two separate IT Strategies are in place for the Trusts. There is a risk that Government policy for achieving a paper-less Trust will not be achieved and that continued development work will not be in the interests of the	3:Possible	2:Low	6:Low Risk

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merged Trust. Potential solution – Implement a revised IT strategy covering the merged organisation to ensure achievement of paperless by 2020			

Reputational Risk

Those that impact on the way that the Trust is perceived by its stakeholders.

Descriptor	Likelihood	Impact	Risk Score
Hinchingbrooke RTT calculations in eCAMIS are not robust – requires intervention from the information team. RTT performance will be a focus for media organisations. (Also Operational Risk) Potential solution – Replace with eTrack following Medway extension	4:Likely	3:Moderate	12:High Risk

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The Transition Programme

The Transition Programme will address the risks identified above by putting in place a series of projects to rationalise the clinical systems estate across the existing two organisations.

Critical Success Factors

To be successful the Transition Programme must, in addition to merging individual clinical systems:

- Achieve a single cross-site system on which the master patient index resides.
- Ensure all major areas of clinical activity have similar access to information systems, irrespective of hospital site location across the merged Trust.
- Ensure patient data will be entered once and used across all relevant systems in the merged Trust. This approach will be extended, as closer integration is achieved (e.g. with community or social care organisations).
- Maintain options for IT systems to support multi-disciplinary team working across the merged Trust, and local health economy.
- Reduce the number of clinical systems/applications in the merged Trust and hence simplify the integration complexity and management support overhead.
- Achieve a common IT governance approach including a single: IT Steering Group; security model; unified set of data management standards (including data audit).
- Designate a Chief Clinical Information Officer (CCIO) post to be filled jointly, by an existing, practicing clinician from each Trust. Working in partnership, these clinicians will work to a single set of objectives and provide clinical perspectives and leadership advice to the senior IT Team.
- Ensure future IT investment requests should be assessed as part of the common IT Governance approach and should be judged with reference to the critical success factors (CSFs).
- Provide a single-sign-on to IT systems and services across the merged Trust.
- Unify the current IM&CT departments to achieve a single set of development priorities and a single approach to programme leadership. This will lead to efficient planning and systems deployment, whilst maintaining the strategic direction of the merged Trust.
- Develop a merged IM&T strategy for the merged Trust.

Quick Wins

The programme to plan and implement the new PAS will be lengthy. The estimate is approximately 12 months for PSHFT and a further three or six months to roll out into HHCT. This is from the start of the programme which, of course, requires the contract to be signed.

It is recognised that there are urgent requirements for improvements in clinical systems and any manner in which part(s) of the future solution could be implemented quickly without impacting on the PAS programme would be of real value.

The key systems identified for early implementation to provide visible quick wins for clinicians and for the efficiency of the patient experience and pathway are as follows.

Order Communications for HHCT

The complete lack of order communications in HHCT is having a very significant impact on the efficiency of the clinical process.

The ICE system in PSHFT is doing an acceptable job and is still widely used in the NHS. It will be worth reviewing use of this solution at some time in the future, but not before the PAS has been rolled out and bedded in.

Thus it is recommended that a project is set up to implement ICE in HHCT as quickly as possible, and to interface it to CaMIS ███████████████████████████████.

Maternity at HHCT

The HICCS Maternity system at HHCT is not supporting the operation of the department and is taking unnecessary resources and introducing unnecessary risk in the clinical process.

The K2 system in use at PSHFT is well liked and is providing the department with the support they need. There is also a good relationship between the staff in PSFT and the supplier so that local requests for development are treated favourably.

It is recommended that the K2 Maternity system is taken in HHCT as quickly as possible, and to interface it to CaMIS ████████████████████████████.

It is important to note, though, that this project will need to ensure that comprehensive training takes place as well as the selection of a small number of 'super users' to maximize the effectiveness of the solution.

Other potential quick wins

There are other systems that will be part of the overall strategic solution that could be procured and implemented in parallel to the PAS programme as long as there is available resource and the business cases can be constructed. They key one noted at this stage of the review is Nervecentre nursing observations in HHCT.

It is clear that ePrescribing across both Trusts' sites, together with an integrated Pharmacy stock control system would be of great benefit. It would be technically feasible to run a procurement and implement this alongside the PAS programme in order to try to gain the benefits more quickly but, in reality, this would be highly complex and potentially introduce additional risks. With neither Trust currently having ePrescribing this project is not directly linked to the merger. With these various considerations in mind, this is not being proposed to take forward as a quick win.

eTrack

It is clearly recognised that eTrack is a vital part of the future solution set. However, it requires more robust governance, testing and a separate development and testing environment to make it a safe investment.

It is important to note at this point that there are very few commercial solutions that would come close to the functionality of eTrack. Those that might are, for the most part, embedded in large full-blown and very expensive EPR systems. So whilst there is a significant cost in stabilising the eTrack environment, it is a small percentage of the cost of procuring this functionality elsewhere.

The current reliance on one individual is far too great a risk to take forward. Whilst a team of four eTrack analysts and programmers is now in place, their developing skills are still a long way from being able to support and develop the product in the way that Alec Dearden does.

Thus the key recommendations are that the following be put in place around eTrack:

- A team structure that provides some more immediate succession planning
- A formalised governance structure, including mechanisms for setting development priorities going forward, for software development and for the release process
- A compliant testing environment to allow safe transfer into live
- A stronger training programme to make sure users understand how to get the most out of the system.
- An accompanying communications programme to inform users of the plans, keep them updated on progress, and reset expectations for the way in which eTrack will deliver its services in the future.

As a final point, there still exists the possibility that eTrack could be managed through a joint venture with a private sector supplier. This has pros and cons but can be investigated further if the Executive teams have any appetite for this.

PAS Merger Options

At this stage of the review the options for clinical systems in the merged organisation have focused on the core PAS and integrated systems. Operationally, eTrack cannot simply be removed, and is so tightly integrated with the PAS, that our PAS options assume its presence in each case.

The options that were reviewed are:

1. Extend the selected System C Medway system to HHCT together with eTrack
2. Extend the current EMIS eCaMIS implementation in HHCT across to PSHFT and layer eTrack across both sites
3. Go out to a fresh re-procurement for the merged organisation.

Option 3 was discounted because it would take too long and would leave both Trusts very exposed with their current core systems' capabilities to support the merged organisation and its intentions to increase the flexibility of clinical care.

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[REDACTED]

Options for other Clinical Information Systems

These will be looked at fully in the third report that is part of the planned output from this work. As part of this review a vitally important sequencing of systems will be drawn up.

However, there are some initial pointers that are being further investigated. These interim recommendations include:

- **ED –** [REDACTED]

    - patient flow benefits
        - On A&E disposal, able to book follow-on outpatients, potentially reducing DNA's
        - A&E disposal into a bed, is seamless, removing duplicate data entry requirement and time delay
    - A&E integration with inpatients module provides real-time bed requests to the bed management team, promoting efficient admissions
    - quick registration for ambulance handover
    - reportable views of non-returned equipment given to patients through treatment
    - quick clinician identification functionality (fob instant log-in)
    - Clinical Noting - All the clinical text against the patient is fully auditable (non-deletable) and viewable from PAS if necessary
    - Alerts for child protection - reportable also
    - Fully compliant majax - supports multiple major incidents
    - Real-time dashboards

- **RTT –** there is no IT-based RTT system actively used by clinicians in HHCT. In PSHFT this is currently run in eTrack. [REDACTED]

- **Theatres –** [REDACTED]

- **Nursing observations –** it is recommended to consider deploying Nervecentre into HHCT, which could be implemented before the PAS is rolled out
- **Electronic Document Management –** the Kainos Evolve system is beginning to deliver against the desired functionality. Further time and effort will see this become increasingly

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supportive of the clinical processes. It is recommended that this be rolled out across the HHCT site as well.

- **Maternity –** it is recommended that K2 is implemented in HHCT as quickly as possible to provide genuine benefits as a 'quick win'
- **Radiology and Imaging**. It is recommended that both Trusts retain HSS CRISS but jointly look to procure a new PACS system. This is not seen as being on the critical path of the PAS replacement
- **Pharmacy –** the need for ePrescribing is well recognised. It is recommended that consideration is given to the procurement options of rolling out JAC to both sites and taking the JAC ePrescribing system to integrate with the Pharmacy stock control. If the ePrescribing system have to be procured through an open tender process, then the Pharmacy system will need to be selected at the same time as part of one process.
- **Pathology -** The Pathology operation must first decide on its operational future. If, as is felt sensible, PSHFT decides to work with The Pathology Partnership then the new systems would be implemented as part of this.
- **Information Management Systems –** The Trust should move to a merged infrastructure to ensure the consistent and efficient production of commissioning data sets, returns, KPIs, etc.

Key Performance Indicators

The Trust will know that the Transition Programme has been successful if the following Key Performance Indicators have been met.

- Clinicians can access patient histories irrespective of the patient's or clinician's location within the merged Trust.
- Clinicians will experience the same 'look and feel' of IT across the merged Trust.
- Clinicians and admin staff will have access to the same patient demographics without the need to re-key/duplicate information.
- There should be a saving in clinical time spent logging on to the merged Trust IT.
- A single vision and management for IM&CT is in place across the merged Trust.
- Improved clinical input to, and credibility and relevance of, IT to the merged Trust.
- Clinical systems readily support development of new models of care across the Trust and with care partners.
- Achieve smooth electronic handover and digital recording of clinical observations at ward – level across the merged Trust
- Efficient and timely electronic ordering and reporting of pathology tests, with results notified to the clinician on receipt.
- Improve maternity systems provision and standardise system across the merged Trust
- All patient discharge letters between hospital and GP's will be sent electronically
- Electronic medicines management across the Trust allows for ordering, prescribing, dispensing and administration regardless of site.
- Medical records, including correspondence, can be accessed electronically regardless of location.

Outline Costs

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PAS/PMI/ED Replacement and Merger

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eTrack

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Quick Wins

Other Clinical Systems

Transition Programme

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Conclusions

This report was intended to detail the findings to date, and act as an early indicator as to the direction of the recommendations and costs to be developed in the subsequent reports. The following recommendations and conclusions will be taken forward to the subsequent reports for further validation and refinement.

Recommendations for PAS

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Recommendations for Other Systems

Quick Wins

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Clinical Direction for a Five-Year Programme

The outline Change Roadmap indicates that the integration of clinical systems across the merged organisation will be a programme extending across a minimum of five years. This programme of work will need careful management to ensure momentum is maintained and benefits driven out.

It is recommended that a Chief Clinical Information Officer (CCIO) role is established to ensure the clinical input to the direction of the programme and assure the clinical outcomes of the programme. The Trust may wish to consider fulfilling this role via shared appointments covering each site.

The Change Budget

The review has not considered the costs of infrastructure required to support the clinical systems; nor the cost of redesigning and integrating clinical processes.

The review has identified the following outline costs associated with rationalising clinical systems which will be further validated in the subsequent reports:

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However, it is assumed that the £342K revenue costs will be offset over time by the cessation of system licences as systems are rationalised. This will be further tested in the subsequent reports.

Appendix 1 - Interviewees

Libretti Health wish to extend their thanks for the time offered by a significant number of contributor whose considered views and input forms the basis for our analysis and recommendations.

The table below lists all the interviewees in the Stakeholder Consultation up to 31st August 2016.

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Appendix 2 – Current Systems

Below are listed the current clinical applications in each Trust

System	PSHFT	HHCT
EPR	eTrack	eCamis (EMIS)
PAS	iSoft Clinicom	CAMIS / eCAMIS
ED	eTrack/iSoft Clinicom	Symphony (EMIS)
RTT	eTrack	eCamis (EMIS)
Bed Management	eTrack	eCamis (EMIS) - bits of it
Therapies	eTrack	None
EDM	Kainos Evolve	Casenotes (EMIS)
Notes Tracking	eTrack / Locator	eCamis - eCRT
Maternity	K2MS	HICCS (EMIS)
Outpatient Letters	ePro / Winscribe	eCamis
Order Comms	Sunquest/Anglia ICE	None
Discharge Letters	Sunquest/Anglia ICE	eDischarge & Sharepoint
ePrescribing	None	None
Pharmacy	Ascribe	JAC
Doctors Handover	eTrack / Nervecenter	Sharepoint (EMIS - in development)
Nursing Observations	Nervecenter	Infohub - In house system
Ophthalmology	Medisoft	Medisoft
Cardiology	Philips CVIS TomCat	Philips ICE
ICU	Ward Watcher	Philips ICE/Ward Watcher
Reporting	CXAIR/SQL/SSRS	SQL/SSRS/excel/access/in house web developments
Endoscopy	Olympus Endobase	HICCS (EMIS)
Diagnostic Imaging	HSS CRIS	HSS CRIS
PACS	Agfa IMPAX	FUJI
Dental	Planmeca Dimaxis	
Pathology	iSoft Telepath	TPP - systems. Winpath for internal pathology
Clinical Coding	iSoft Clinicom / 3M Medicode	3M Medicode
Radiotherapy	ARIA	
Theatres	Trisoft Theatreman	eCamis (EMIS)
Audiology	Auditbase	Auditbase
Integration Engine (TIE)	Intersystems (Ensemble)	Orion (Rhapsody)
Oncology	ARIA	Chemocare

Appendix 3 - Risk Framework

Actions recommended as an output of this assessment are based on their positive impact in mitigating the risks inherent in the current mix and configuration of the clinical systems in light of the proposed merger. This section sets out the observed risks pertinent to the assignment in the following categories:

- Clinical Risks (those which impact on patient safety or the patient experience)
- Strategic Risks (those which impact on the safe delivery of strategic intent. In this case, the delivery of the merger)
- Financial Risks (those that may impact assumed budgets and plans)
- Operational Risks (those which impact the smooth operation of normal processes)
- IM&T Risks (those which impact the delivery of IM&T services or projects)
- Reputational Risk (those that impact on the way that the Trust is perceived by its stakeholders)

The risks are assessed as they exist before mitigating action. As such, they represent the risks associated with inaction or significant delay to implementation.

Residual Risk

Following the implementation of the actions recommended, there will remain a level of residual risk. The risk assessment is, therefore, repeated to demonstrate the reduction in risks.

Risk Grading

Step 1 – Likelihood

The likelihood of the event within the Trust is selected from the table below. Although this is subjective, knowledge and expertise from others will be sought if appropriate.

Measures of Likelihood/Probability		

LEVEL	DESCRIPTOR	DESCRIPTION
1	Rare	The event may only happen in exceptional circumstances.
2	Unlikely	The event could occur (recur) at some time.
3	Possible	The event may well occur (recur) at some time.
4	Likely	The event is expected to occur (recur) in most circumstances.
5	Almost Certain	The event will occur (recur) in most circumstances.

Step 2 – Impact

The most likely impact of the incident should then be selected from the table. If there is any doubt, the grade should be graded up, not down and advice should be taken.

If there is any doubt, the grade should be graded up and not down. The risk grading is then determined using the matrix below:

Measures of Impact		
LEVEL	**DESCRIPTOR**	**DESCRIPTION**
1	None	None or very minor injury
		Minimal or no service disruption
		No financial loss
		No impact but current systems could be improved
2	Minor	Minor injury or illness, requiring first aid or medical treatment e.g. Cuts, bruises etc
		Some delay in provision of services
		Minor financial loss (£0 - £10,000)
		Slight possibility of complaint or litigation
3	Moderate	Moderate injury or illness, requiring first aid or medical treatment e.g. fractures
		Some delay in provision of services
		Moderate financial loss (£10,000 - £50,000)
		Likely complaint or litigation
		Could result in legal action or prosecution
		Local external attention e.g. media, HSE
4	Major	Permanent injury or disability
		Major financial loss (£50,000 - £250,000)
		Major service disruption or closure
		Certain chance of litigation or prosecution
		Likely to result in legal action or prosecution

		National external attention e.g. media, HCC, NHSLA
5	Catastrophic	Fatality (ies)
		Significant financial loss (> £250,000)
		Extended service disruption / closure
		High value litigation
		Certain chance of litigation or prosecution
		Extensive external attention e.g. media, CHI, NHSLA
		Significant impact on achievement of Trusts performance targets

Step 3 – Risk Score

The risks are then stratified according to the impact and likelihood of the risk to give a risk grading:

Likelihood	1: None	2: Minor	3: Moderate	4: Major	5: Catastrophic
5:Almost certain	5	10	15	20	25
4:Likely	4	8	12	16	20
3Possible	3	6	9	12	15
2:Unlikely	2	4	6	8	10
1: Rare	1	2	3	4	5

Risk Score	Risk Score Description
1 to 3	Very low risk (Action only if inexpensive / easy to implement -managed by routine procedures)
4 to 7	Low risk (Action that is cost effective in reducing risk and planned within a reasonable timescale -managed by Department Manager)
8 to 11	Moderate risk
12 to 25	High risk (Immediate action to remove / reduce risk/ - managed by Department Manager/Executive Director)