

Board of Directors (Public)

Item 6.7

Subject: External Review of EPR
Date of meeting: 28th July 2015
Prepared by: David Jago/Chief Finance Officer
Presented by: David Jago/Chief Finance Officer

Board Report

Report	Data Quality Rating	BAF Ref	Impact on BAF risk Rating
External Review of EPR-Summary and Action plan	Silver	2,6	n/a

1. Executive Summary

The purpose of this paper is to update the Board of Directors in respect of the findings from the requested external review of our Allscripts SCM Electronic Patient Record system. The review was tasked with focussing on the following areas;

- Adoption of EPR by staff
- Current risks
- Benefits realisation
- Resilience of current configuration of EPR suite of systems
- Design/Configuration of the IT Operating Model

Through this ATOS utilised three work streams focussing on business and user adoption, technical architecture resilience review and supply side assessment.

Overall ATOS recognise the journey that the Trust is on after going live in June 2013, that digitally enabled healthcare has been achieved, the Trust is almost completely paperless with clinicians ability to access patient records and diagnosis 24 hours a day 7 days a week, enabling decisions to be undertaken outside the traditional ward round.

Where progress to date has not been in line with expectations focuses on benefits realisation, with approximately 49% of original anticipated benefits being realised. The report does acknowledge that the foundations through our EPR platform are in place for the realisation of most of the foreseen benefits but that there are a series of issues that must be addressed which is attached in Appendix A as an executive summary.

2. Background

Liverpool Heart and Chest Hospital (LHCH) went live with the Allscripts SCM Electronic Patient Record (EPR) system some two years ago on the 26th June 2013 after 15 months on planning. Go live was successful with system deployment across the hospital bar some areas i.e. critical care.

Since go live LHCH has from the original business case where there was limited recognition of on-going revenue consequences invested in the EPR team. However, it is clear from progress to date that LHCH has not progressed as far as it anticipated due to a number of constraining factors including;

- Adverse impact of rework and “business as usual”
- Lack of capacity in analysts and project management to support delivery of expected work programme.
- Adoption of EPR by staff
- Loss of training investment since “go live”

3. Issues

Within the executive summary the key findings and risks are identified with key recommendations being set out below

3.1 Adoption of EPR by staff

- Specific training for staff groups (i.e. related to how they use their area of the system) in relation to ‘Minimal acceptable use’ and standards needs to be developed and rolled out. A training needs analysis must be conducted to ensure the training material is developed according to the requirements of specific user cohorts. Suggestion would be to introduce mandatory workshops to get every user up to scratch with using EPR the correctly. This will not only boost momentum for user adoption but also prevent bad practice spreading as a result of the peer to peer training occurring currently.
- The Trust must establish a broader spread of leadership and ownership of EPR delivery to realise the benefits enabled by the system. Accountability for realising these standards needs to begin with the Executive Team and then cascaded through line management, and written into corporate, divisional, specialty and individual objectives. In order to take accountable leadership of objective delivery by their staff, the senior management need to improve their knowledge of the EPR system and its capabilities.
- Appoint a Programme Manager to orchestrate delivery of defined business cases with identified resources.
- A Communications plan to support ‘Minimal acceptable use’ and standards, and the rationale for this need to be developed and implemented. This plan should be ‘signed off’ by the Executive team and be visible to the end users.

3.2 System Reliability

- Informatics Merseyside:- There are some areas in which capacity and capability need to be assessed and additional resources assigned. In particular, SQL database administration skills require enhancement and Mirth knowledge needs dissemination. This may require additional FTEs to be assigned but consideration should be given to rotating staff around from other IM accounts to enrich the embedded team’s knowledge. It is advised to leverage IM as a service rather than named individuals.
- EPR Team:- The team is under constant pressure from BAU and project work. Consideration should be given to splitting the team to provide the two work streams thus allowing each to focus on their own responsibilities it is anticipated changes to the team structure and additional FTE’s will be required and staff should rotate from project to BAU to ensure all staff kept up to date with the required knowledge.

3.3 Realising the benefits

- A stocktake of the original aims of the 2011 business case needs to be undertaken and validate/modify the aims and benefits in accordance with current Trust strategy. A revised benefits plan can then be fully quantified, profiled and cascaded. This then needs to be incentivised and tracked.
- Accountability for realising benefits from EPR Implementation needs to be cascaded through line management, and written into corporate, divisional, specialty and individual objectives.
- A new Informatics Steering Board should be considered to look further than just the change requests on the current EPR systems. It should have a broader membership and be involved in the wider assessment of the use of digital technology across the trust. It should be the initiator of any projects to enhance or change the systems and technology being used to support the Trust. This should include (but not be limited to) membership from Nursing, Research, Workforce, Transformation, IT and Information.

3.4 Technical

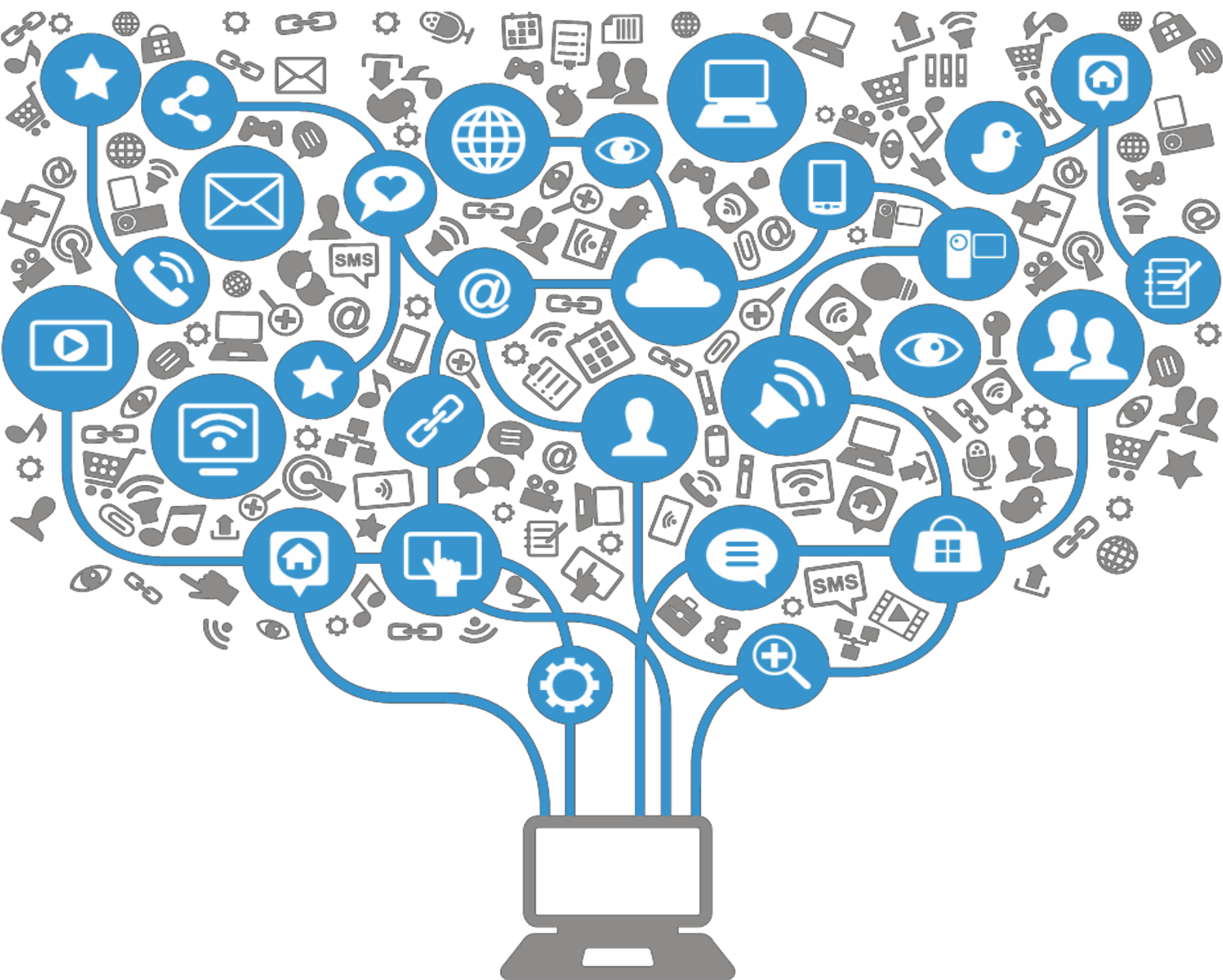
- Helpdesk:-Best practice is to route all calls through a single service desk that will triage the call and assign them as necessary. This approach will free up EPR team time to focus on their core responsibilities, streamline the call logging process for users and enable better reporting.
- Patching:-Ensuring that patches (including firmware and drivers) are up to date is an essential part of system maintenance. The application of firmware, drivers and patches needs to be carefully planned with an analysis of any published known issues, dependences etc. A clear rollback plan should be detailed as part of the overall plan. A strict patch testing and application policy and plan should be developed, detailing a schedule and a process by which all patches will be tested and then applied.
- Business Continuity (BC):-Knowledge of the business continuity processes vary widely between wards and departments. While some departments switch over seamlessly to the BC processes other seem unfamiliar with the process. Further engagement and training is required in these areas.

4. Conclusion

The external review has provided valuable external due diligence into the current state of play in respect of EPR. For the EPR team many of the issues raised are not new and key issues of resource and capacity have hampered progress to date exacerbated by the adverse impact of business as usual work. A summary of management responses and action plan which will provide a go forward plan of work will be circulated shortly.

5. Recommendations

The Board of Directors are asked to note the contents of this report and the executive summary attached and accept receipt of the management response and action plan by end of July.



Liverpool Heart and Chest Hospital **NHS**
NHS Foundation Trust

Liverpool Heart and Chest Hospital

EPR Review

March 2015

Atos

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Executive Summary

Introduction

Liverpool Heart and Chest Hospital NHS Foundation Trust went live with AllScripts SCM Electronic Patient Record (EPR) system on Wednesday 26 June 2013. The system was deployed across the hospital and clinically led by Dr Johan Waktare prior to his appointment as the Chief Clinical Information Officer (CCIO).

David Jago (CFO) assumed responsibility for the EPR system in November 2014 and was concerned with a lack of user adoption and the limited benefits realised since Go-Live. He engaged Atos with a view to better understanding the factors that led to these concerns.

Your requirements

The areas you required us to assess and report back on are as follows:

- 1. Adoption of EPR by staff**
- 2. Current risks**
- 3. Benefits realisation**
- 4. Resilience of the current configuration of the EPR suite of systems**
- 5. Design/Configuration of the IT Operating Model**

Approach

Our approach consisted of 3 work streams with core elements as follows:

- ▶ Work stream 1: Business and User Adoption (including Benefits Planning and Realisation):
 - a. Stakeholder interviews
 - b. Surveys to understand user views on how the introduction of EPR has been managed, and their views on EPR itself
 - c. A review of key project documents (e.g. Business Case, Benefits realisation plans, Risk Management, Governance, Training and Communication)
- ▶ Work stream 2: Technical Architecture Resilience Review:
 - a. Stakeholder interviews (see list of people interviewed in Appendix B)
 - b. Technical Workshop with Informatics Merseyside Team
 - c. Review of EPR and technical documentation
- ▶ Work stream 3: Supply-side Assessment:
 - a. Supplier interviews
 - b. Review of AllScripts project and technical documentation
 - c. Analysis and assessment of the key production environment

Findings

To put the EPR undertaking by the Trust into context, a long serving senior Clinician informed us that "This is the biggest pan-Trust change since the introduction of the PAS system in 1991". What has been achieved through the EPR work to date is: that the Trust is now digitally enabled for healthcare; almost completely paperless; allowing clinician's immediate access to patient records and diagnosis 24 hours a day, 7 days a week; enabling decisions to be undertaken outside of the traditional ward round.

However, a review of the overall realisation of benefits from the original October 2011 Final Business Case by Dr Johan Waktare results in ~49% realisation of the total foreseen benefits.

Our assessment is that the EPR foundations are in place for realisation of most of the foreseen benefits, but there are a series of issues that must be addressed in order to do this, which are outlined below:

1. Adoption of EPR by staff

In order to identify factors affecting user adoption, interviews were conducted with a wide variety of staff and senior stakeholders and two surveys were conducted:

- ▶ A Change Management Survey: Designed to identify how well aspects of managing change have been implemented
- ▶ A User Adoption Survey: Designed to identify other issues that may affect user adoption

Findings were as follows:

A common theme throughout our review was that the support to deliver EPR 'fell away' within months of Go-Live in June 2013. This included: Leadership, Governance, Programme/Project Management, Training and Communication.

The change management survey and interviews provided evidence that most aspects of change management are lacking, with the exception that the case for moving to EPR and the benefits it brings are understood and clear to staff (see table below).

Change management element	Summary findings
Case for change	Majority of users understand why the Trust has moved from paper records to EPR and agree that it brings benefits to the Trust, patient and themselves.
Future state	Mixed views from staff on clarity of vision for EPR.
Readiness for change	There was a mixed response to how well people issues have been addressed.
Change leadership	Users are concerned about the timeliness and effectiveness of decisions made.
Stakeholder and resistance management	User resistance needs to be understood and managed. 53% of survey respondents believe they are expected to simply accept system changes rather than being actively encouraged to become involved and committed to EPR changes.
Communications	No clear communications/engagement plan has been visible since Go-Live e.g. staff unclear what improvements are being made in next release.

Change management element	Summary findings
Training	Several interviewees stated that the training around Go-Live and since has been poor, being too generic and too high level. Peer to peer training could perpetuate bad practice regarding data quality and system use.
Organisational alignment	Feedback was that the EPR system is not fully meeting operational needs for all departments/users.
Monitoring change	No visibility of change request process/progress. No tracking of benefits realisation since Go-Live.

The adoption survey and interviews highlighted two key areas to address:

- ▶ Ease of use: 52% of respondents were in disagreement that the system is easy for them to use
- ▶ Reduction of unplanned downtime

2. Current risks

The main risk areas we have noted during our review are:

Operational

Risk	Cause
Data Quality	<ul style="list-style-type: none"> 📄 Lack of organisational focus and performance management on Data Quality within the EPR system. 📄 Lack of specific training and standards on Data Quality.
Risk of poor practice/inappropriate practice in EPR usage	<ul style="list-style-type: none"> 📄 Lack of understanding of the EPR system amongst some Senior Managers and Clinicians. 📄 Lack of line management accountability for use of EPR by staff in their departments. 📄 Lack of specific training and standards for EPR use. 📄 Staff not having an understanding the benefits being pursued.
Risk of failure to realise full Pharmacy benefits	<ul style="list-style-type: none"> 📄 Software changes are required to augment the AllScripts software to allow UK ways of working.
Potential to lose key support staff with AllScripts knowledge and experience	<ul style="list-style-type: none"> 📄 Primarily by 'poaching' of LHCH staff by other Trusts adopting AllScripts as their EPR system provider.
Poor benefits gains in areas of business still refusing to use the system	<ul style="list-style-type: none"> 📄 Lack of engagement and system acceptance from some areas e.g. Critical Care, Day Ward.
Poor benefits realisation	<ul style="list-style-type: none"> 📄 Lack of clear definition/sign-off of benefits currently being targeted. 📄 Lack of adequate governance. 📄 Lack of benefits realisation monitoring and tracking. 📄 Absence of formal process for prioritising EPR changes.
Failure to deliver NHSE funded project benefits	<ul style="list-style-type: none"> 📄 As per Poor benefits realisation above.

Technical

Risk	Cause
Data Security	<ul style="list-style-type: none"> Open access to Business Continuity Plans share (Major concern) Intranet link published to Business Continuity Plans and EDMS shares (Major concern) Proactive security auditing yet to be activated on EPR.
EPR failure or loss of functionality	<ul style="list-style-type: none"> Lack of PAS and associated systems out of hours support No Senior IT Management on-call provision Lack of disaster recovery for PAS and associated systems.
Single points of failure regarding key skill sets	<ul style="list-style-type: none"> Medical Logic Module capability (Bespoke algorithms in AllScripts – Neal Armstrong) MIRTH (Anthony Graham).
Contractual	<ul style="list-style-type: none"> Lack of a formal legally binding contract in place between the Trust, RLBUHT and Informatics Merseyside.

3. Benefits realisation

Three documents identifying benefits were identified:

- ▶ The Final Business Case (we understand this was submitted to the Finance Committee on 31st October 2011).
- ▶ The latest Benefits Realisation Plan linked to the Business Case (dated 27/03/13).
- ▶ A list of 25 benefits was developed by Dr Mark Jackson and presented to the CSA by Johan Waktare in October 2014 (however we understand this has never been approved by the Executive board).

Benefits tracking is one of the key project management processes that fell away in early 2013 (evidenced by the last dated tracker above). Our assessment of benefits delivery was based on the Final Business Case, the last Executive approved set of benefits/aims. As stated earlier, following a review with Dr Johan Waktare, the estimate is that there has been a ~49% realisation of the total foreseen benefits.

Several issues were identified which will have contributed to this:

- ▶ Lack of integrated Governance oversight for proposed changes to the Trust's digital infrastructure and systems (not just EPR, which has had no form of governance since November 14, and a fragmented governance history since August 13).
- ▶ No process or tools to capture, plan and monitor benefits delivery since March 13, (There was an attempt to prioritise EPR change requests introduced by Dr Mark Jackson and Dr Mark Hall during March to November 2014).
- ▶ Lack of project management of the EPR development since soon after Go-Live.
- ▶ No evidence of line management ownership and performance management of benefits delivery.

Thus, EPR system development has largely been in the hands of the CCIO, and EPR team lead, without governance or robust process for aligning EPR development to Trust strategy. What has been achieved given the above points is impressive and is largely attributable to the CCIO and EPR Team lead, supported by a small group of users who evangelise and spread knowledge.

The issues above need to be addressed in order to create a more rigorous, better strategically aligned, and user facing approach to realise the full potential of the digitally enabled healthcare system available to the Trust.

4. Resilience of the current configuration of our EPR suite of systems

The resilience of the current configuration is good and is appropriate for a mission critical system like the AllScripts EPR solution suite. There are a number of areas in which the solution can be improved, each of which need a cost benefit analysis performed, and these are detailed in section 3.4.7 Resilience Improvement Plan.

A summary of the findings by your requirement categories:

- ▶ **Infrastructure/Hosting**
Both datacenters are fit for purpose and of a very good standard.
- ▶ **Storage**
Good, implementation follows best practice and is fully resilient.
- ▶ **Disaster Recovery**
Good, tested and works well.
- ▶ **Interfaces – Historical instability**
Monitoring and alerting now in place. There is now much better understanding of the solution within support teams.
- ▶ **Backup/Recovery**
The backup solution which has been implemented is a best of breed solution.
- ▶ **Clients/endpoints**
PCs have recently been updated and are fit for purpose but there is notable lack of mobile device use due to a lack of EPR functionality.
- ▶ **Server architecture – physical and virtual**
Good, some improvements could be made with database server configuration to improve resilience.
- ▶ **Business Continuity**
The Business Continuity Process works well and has been ‘used in anger’ but there are user training issues in some areas.
- ▶ **Network infrastructure**
A sound, if dated, solution but only a memorandum of understanding is in place for support from RLBUHT.
- ▶ **Downstream systems and applications**
Significant misalignment exists in support arrangements for interfaced system's business continuity/disaster recovery provision. In particular the PAS system, on which the EPR system is dependent on for some functionality, is of concern.
- ▶ **Testing/Validation**
Testing/validation of the infrastructure to prove that the configuration is correct and delivers the expected level of resilience is advisable.

5. Design/Configuration (of the IT Operating Model)

There are several issues that became evident as we learnt more about LHCH and its IT suppliers. It is clear that a significant amount of progress has been made in the last two years and so many issues of concern are now historical, however there are some data security issues which do require urgent attention. A summary of the current issues are as follows:

- ▶ **Relationship between EPR and IM teams**
Historically there was a disconnect between the teams and a 'them and us' culture. This has improved and a good working relationship now exists. The two teams now share their accommodation and this is helping to encourage better interaction between the teams.
- ▶ **Senior managers out of hours on-call arrangements**
It is clear that the lack of senior staff on-call is an issue of concern for the IM and EPR teams. The decision to invoke the disaster recovery protocols can have a significant impact on Trust operations and should not be taken lightly.
- ▶ **Support desk**
EPR calls are currently made direct to the EPR team not via the IM service desk. This puts the onus on the user to triage the issue and decide which number they should call to get support, i.e. is it an IT or EPR issue? This model also leads to additional, unnecessary effort by the EPR team.
- ▶ **Capacity and capability of the EPR and IM team to deliver the required support and services:**
 - **Formal Governance/Architectural function and Design Authority**
There is a notable lack of evidence of these functions in either IM or LHCH IT.
 - **EPR**
The EPR team are overstretched trying to cover both business as usual and the continuous ongoing development of the EPR.
 - **IM capacity and capability**
There are capacity and capability issues, some single points of failure and a lack of formally trained staff in some areas.
- ▶ **Contractual arrangements**
The relationship with IM and RLBUHT are non-contractual, the current SLA/MoU arrangements put risk on all parties concerned.
- ▶ **Documentation**
Formal documentation is almost entirely lacking with the exception of the disaster recovery and business continuity processes, where documentation is in place.
- ▶ **Data Security**
Three major concerns exist in this area, all are on the Trust's IT risk log:
 - Open access to BCP share – Patient data is visible to LHCH domain user without restriction.
 - A link to the above data has been published on the LCH Intranet, a link to the EDMS system also exists.
 - Proactive security auditing is yet to be activated on the EPR.

Recommendations

Our recommendations fall into two phases:

1. First phase is to increase user adoption and increase system reliability.
2. Second phase is to then to realise the benefits based on the above foundation.

The full recommendations can be found in section 4 of this report.

Establishing the foundations: Adoption and system reliability

Adoption

1. Set a clear vision and standards for 'Minimal acceptable use' use of the EPR system, including data quality standards. Develop a prioritised strategy and standards for realising this.
2. Specific training for staff groups regarding 'Minimal acceptable use' and standards needs to be developed and rolled out.
3. A Communications plan to support 'Minimal acceptable use' and standards needs to be developed and implemented.
4. The Trust must establish a broader spread of leadership and ownership of EPR delivery to realise the benefits enabled by the system. Accountability for realising these standards needs to begin with the Executive Team and then cascaded through line management.
5. Appoint a Programme Manager to orchestrate delivery of defined business cases with identified resources.
6. The Trust would benefit from arbitration and resolution of the reasons why some departments (for example, Pharmacy, Critical Care and Day Ward) are not adopting EPR and address these issues.
7. A system needs to be developed and implemented that makes progress on user change requests visible.

System reliability

1. Formalise contractual arrangements with Informatics Merseyside and RLBUHT.
2. Enhance capability and capacity in Informatics Merseyside and the EPR team where issue have been identified.
3. Key system environments on which EPR functionality is reliant should have their support contracts reviewed to ensure they are fit for purpose.

Realising the benefits

Organisation and leadership

1. The Executive need to take stock of the original aims of the 2011 business case and validate/modify the aims and benefits in accordance with current Trust strategy.
2. A revised benefits plan can then be fully quantified, profiled and cascaded. This then needs to be incentivised and tracked.
3. Accountability for realising benefits from EPR Implementation needs to be cascaded through line management.
4. The roles described in the Report (CG, SIRO, CCIO, CNIO, etc.) should not be held by a single individual as this will significantly dilute the checks and balances established between assurance roles and change and transformation roles.
5. The executive responsible for EPR system delivery should have a single management report for the provision of digital technology and the clinical systems including EPR. The EPR programme manager should also be asked to report into this single management reporting line.
6. A new Informatics Steering Board should be considered with a broader membership and be involved in the wider assessment of the use of digital technology across the Trust. It should be the initiator of any projects to enhance or change the systems and technology being used to support the Trust.
7. This should include (but not be limited to) membership from Nursing, Research, Workforce Transformation, IT and Information.
8. Consideration should be given to this group reporting directly to the Risk Management/Corporate Governance group, to act as a peer to the Clinical Standards Group (CSG).
9. The EPR programme manager should be implementing Business Cases agreed at this group.
10. Resources for business as usual system optimisation need to be separate to those engaged in defined project work.

Technical recommendations

The recommendations outlined in section 4.0 of this report cover:

1. **Helpdesk**
Route all calls through a single service desk.
2. **End-user devices**
Explore potential to build a number of mobile apps.
3. **Patching**
Ensuring that patches are up to date with a strict testing and application policy and plan.
4. **Software Upgrades**
Upgrades should be performed by the supplier to minimise the risk to service.

5. **Administrative account control**
Control of administrative domain accounts should be aligned with best practice.
6. **SQL Maintenance**
Maintenance should be proactive and automated/scripted where possible.
7. **Business Continuity (BC)**
Further engagement and training is required in these areas and security and patient confidentiality risks need to be addressed.
8. **See Resilience Improvement Plan**
Section 3.4.7 for detailed technical recommendations focused on system resilience.

