



ELHT Informatics Strategy (Supporting Clinical Transformational Change)

2016 – 2021

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Forward

“Our values haven’t changed, but our world has. So the NHS needs to adapt to take advantage of the opportunities that science and technology offer patients, carers and those who serve them. But it also needs to evolve to meet new challenges: we live longer, with complex health issues, sometimes of our own making. One in five adults still smoke. A third of us drink too much alcohol. Just under two thirds of us are overweight or obese¹.”

“NHS England sets the direction for NHS information technology and informatics so that commissioners, providers and suppliers can make informed investment decisions, identifying, amongst the alternative approaches, those that deliver the highest quality care for patients. Frontline clinicians leading this agenda will ensure that systems are designed around optimal clinical workflows, enabling health and care professionals to do their jobs more effectively.”²

Digital systems are the foundation upon which we will build a modern, efficient and responsive health service. Enabling information to flow between care providers within and beyond organisational boundaries, and between care providers and patients, is a key means by which we will achieve a safe, convenient and personalised health and care setting.”

Healthcare organisations are becoming critically dependent on information technology whether this is within the hospital setting, a community environment or the patient’s own home. Patients and healthcare providers have enormous expectations of the role of technology and the benefits associated with the availability of high quality, timely information available in the right place at the right time. Integrated health systems must be supported by seamless and integrated information systems if we are to see the benefit from our investments.

East Lancashire Hospitals NHS Trust is committed to providing safe and effective care which is personal to the individual and reflective of need. The Trust is also committed to providing modern up to date technology and information systems in order to support the clinical and business needs of the organisation and the patients and citizens that it serves. These systems will be clinically led and where possible part of a wider pan Lancashire Health and Social Care system, allowing for integration and seamless care delivery.

The strategy must be read in conjunction with and take cognoscente of a number of significant documents, such as the emerging clinical strategy, the enhanced approach to Transformational change, the knowledge management strategy, the wider estates strategy

¹ NHS England – Five Year Forward View

² NHS England – High Quality Care for All

and the Digital Lancashire approach. For a full appreciation of the strategy, readers should also reference the ePR Outline Business case,

Finally, this document is a 'living document' and whilst the overarching strategic direction will remain the same, it is anticipated that the document will be subject to enhancements over its lifetime.

EXECUTIVE SUMMARY

This Informatics Strategy for the years 2016 to 2021, embraces the strategic changes and planned clinical transformation within both East Lancashire Hospitals NHS Trust and the wider pan Lancashire (including Pendle) area. The Strategy, following narrative relating to the Trust, its strategic direction, the current state of Informatics services and the aspirations for the future, sets out 9 key delivery areas.

These delivery areas are:

- Infrastructure
- Systems
- Unified Communications
- User Computer Interfaces
- Information Management
- Governance and Security
- Development
- Health Economy Integration, and
- Procurement

The strategy sets out how the aspirations will be achieved over the next 5 years and how each of the delivery areas fit together. The vast majority of activity takes place in years 1 and 2 as infrastructure is built to prepare the way for the integrated electronic patient record. However, in years 3 to 5, as the Trust consolidates this infrastructure it is able to build on this platform and implement the record. In addition to this, the groundwork is laid, via tactical solutions (eportal, ewhiteboards, video conferencing, unified communications etc), to equip the Trust staff with the skills, knowledge and experience to embrace and deliver the integrated record.

A significant proportion of this strategy focusses upon the patient / citizen and explores how we can use technological advances to increase their involvement in their own health care and support the wider health and social care economy to be aware of their needs and requirements, through such things as population health and 'big data'.

The strategy, does not go into detail around the costs of its implementation, as it is felt that much of the activity can be done within existing budgets and where necessary (as in the case of the ePR) a separate detailed business case will be produced.

Finally, the strategy firmly puts, at the centre of all this activity, the clinician. The governance of the programme sits squarely with the eHealth and Clinical Reference groups, with a commitment made that no major investments or developments will be passed to the Trust Board or Executive, without being fully (and formally) supported by these groups.

THE REALITY – HOW ARE THINGS NOW?

Local context

About East Lancashire Hospitals NHS Trust

1. Established in 2003 and employing over 7500 staff, ELHT is a large integrated care organisation providing acute secondary healthcare for the people of East Lancashire and Blackburn with Darwen and community healthcare services for the population of East Lancashire. The Trust serves a combined population of approximately 530,000, with wide ethnic diversity and includes some of the most socially deprived neighbourhoods of England. The Trust aims to deliver high quality, high value care and contribute to a health gain for our community.
2. A full range of acute hospital and adult community services are provided, alongside being a specialist centre for Hepatobiliary, Head and Neck and Urological cancer and robotic services. In addition, ELHT provides specialist Cardiology services and is a network provider of Level 3 Neonatal Intensive Care.
3. The Trust has a total bed base of 1081 and care is offered across five hospital sites, and in various community locations. Planned annual turnover for 2015/16 is £446m.
4. In 2014/15 the Trust had over 183,000 Accident and Emergency attendances. In the same year 57,000 patients required inpatient emergency admission and over 54,000 patients chose ELHT services for their elective procedures. The obstetric and midwifery teams delivered over 6,000 babies and 600,000 patients were seen across the Trust's outpatient clinics.

ELHT Strategic Objectives

5. East Lancashire Hospital NHS Trust has the following strategic aims:
 - To be a **Safe, Personal, Effective** provider of generalist hospital, community and primary care services, by working in partnership with others.
 - To be integrated in the health and care economy across Pennine Lancashire as part of a **Sustainability and Transformation Plan**.

- To be a **networked provider** of key specialist services in conjunction with other Trusts across all of Lancashire (including mental health, stroke services, maxillofacial services, vascular services, radiology services and cancer services)
 - To be a **regional centre** of excellence for specific services (for example certain urology and hepatobiliary surgery).
6. The Trust's developing Clinical Strategy will drive and deliver:
- Safe, Personal and Effective Care.
 - Sustainable services which demonstrate affordability.
 - Standardised and consolidated services which demonstrate efficiency.
 - Clinical leadership and professional networking, both *within and between* organisations.
7. The Trust's strategic and transformational themes in 2016-20 are:
- Agreeing new system-governance principles with Healthier Lancashire and Pennine Lancashire Partners.
 - Increasing primary care involvement and agreeing new models of care.
 - Increasing standardisation.
 - Improving efficiency in elective care.
 - Changing non-elective pathways.
 - Reviewing and Networking specialist services.
8. Key to the delivery of these objectives is the delivery of the Trust's Clinical Strategy. Although still in development, the fundamental strategic and operation drivers are captured in this document. The diagram below illustrates how the local Clinical Strategy meshes with the wider regional and national strategic direction.

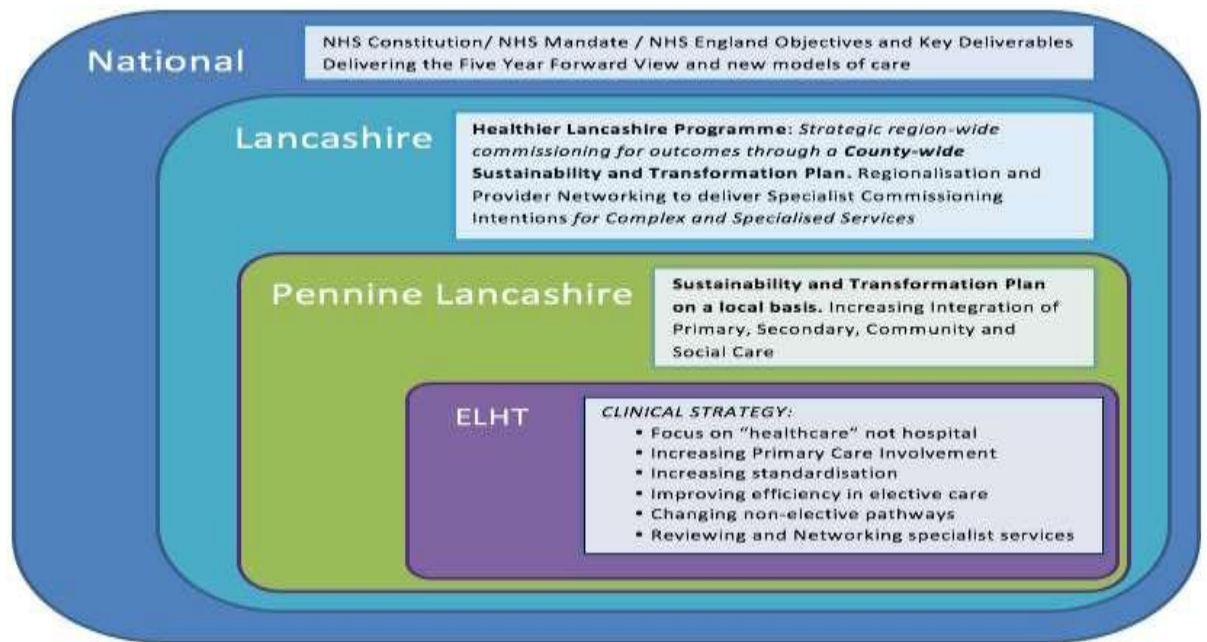


Figure 1 – The context of the Trust’s Clinical Strategy

9. The Trust faces some significant challenges which, whilst recognised by many other acute Trusts around the country, have a particular resonance to ELHT due to its demographic, specific health and social care challenges and wider collaborative objectives moving forward. These are summarised below:



Figure 2 – Drivers for change

10. Within ELHT, our Clinical Strategy develops in line with our evolving business planning and the financial modelling of all proposals and transformation programmes. The governance and priorities for these will increasingly be shaped by the influence of Pennine Lancashire (via the Sustainability and Transformation Plan) and Healthier Lancashire Programmes.

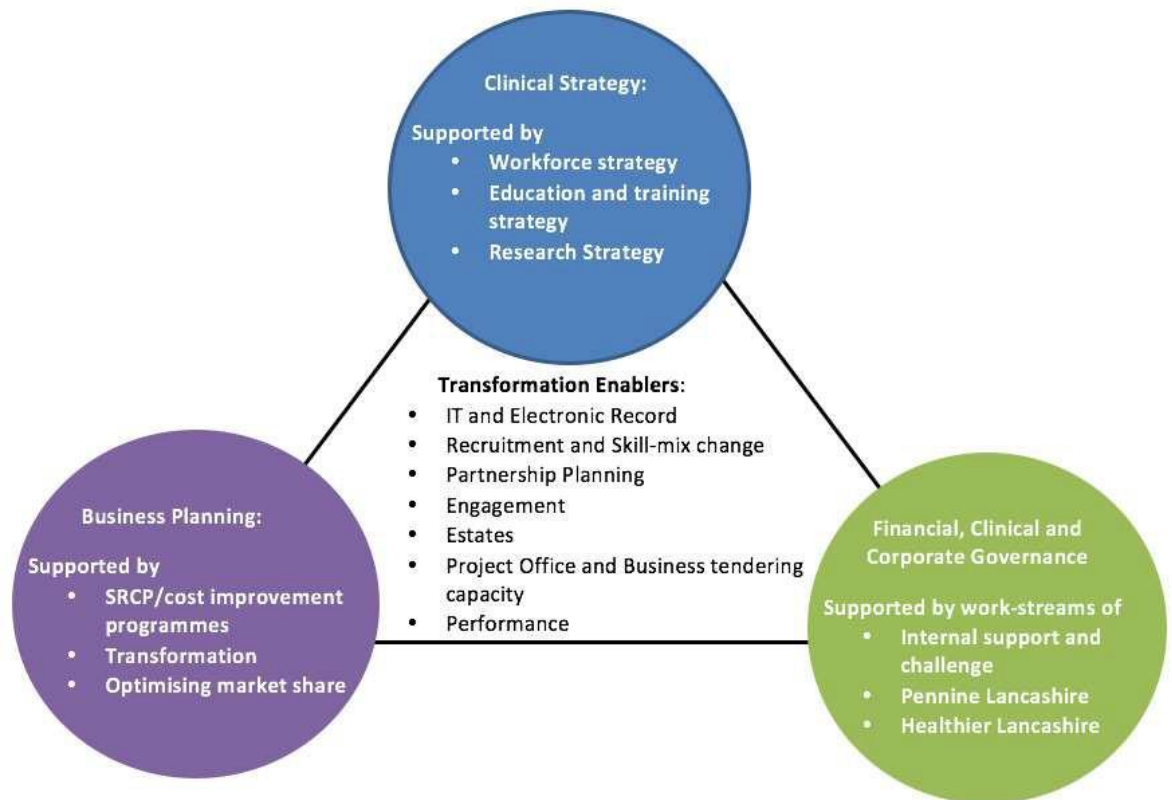


Figure 3 – transformation enablers

11. Specific in each of the key strategic deliverables for the Trust, the Clinical Strategy, the business planning programmes and enhanced financial, clinical and corporate governance, is the requirement to have robust IT infrastructure, enabling and transformational technologies at the point of care which includes an integrated clinical record.
12. In summary, over the coming years the Trust will ensure it continues to improve the patient experience and clinical safety in partnership with colleagues across health and social care. We will continue to do this by clearly understanding and making the links between our Quality Strategy, patient flows and pathways, activity levels, resource requirements and the need for our staff to work differently.
13. In order for the Trust to achieve its strategic goals, particularly transforming care and improving the patient experience, it is recognised that the way services are provided must be transformed. Part of this transformation is to be able to provide seamless care both within the Trust and between the Trust and its partners in the local health economy. This integrated and seamless care can only become a reality if it is underpinned by seamless and integrated information.

14. The Trust Executive is conscious of the importance in ensuring integration of health and social care services to support the local community. Future significant procurements and service enhancements must take advantage of any opportunities for collaboration and thus optimise any available economies of scale that may arise from these partnerships. In addition to this, the emerging Digital Lancashire agenda must be central to future developments.
15. This vision is for a comprehensive patient centric clinical record for each patient, accessible by the patient and by those providing care. Engagement and ownership of the clinical and operational teams is central to choice and deployment of the local health care solution.
16. The key drivers are for: -
 - An intuitive yet sophisticated end user experience
 - A resilient, highly available mobile solution
 - Access to the clinical record in real or near real time
 - Improved communications between the GP, members of the community teams, wider health and social care providers and the hospital
 - Sharing of clinical information that is accurate and timely
 - Reducing the amount of, and reliance on, paper and paper based systems
 - A single version of the truth
 - A shared record across primary, secondary and social care
 - Optimal clinical workflows and more time to care
 - Patient access and patient control
 - A financially viable and sustainable solution
 - Clinical decision support
 - Patient decision support.

Pennine Lancashire Health Informatics Vision

17. The vision for informatics across Pennine Lancashire is for a comprehensive patient-centric ePR which enables clinicians, in partnership with patients, to access the right information, at the right time, in the right place in order to make the right decisions and deliver care which is safe, personal and effective. This vision extends to the sharing of information with relevant clinicians across the health economy and in the future, will extend to support the delivery of health and social care across Lancashire. This vision is built upon a robust and stable infrastructure with high quality support and services.
18. In addition to this, it is recognised that the Trust cannot develop its vision in isolation. The Trust is working alongside local and regional partners to deliver an infrastructure to support the strategic direction with a collaborative approach to procurement and technical consistency across all providers, together with a shared vision of patient information flows which both mirror the fluid patient journey between providers and meet the detailed requirements of our collective Clinical Strategies.

Delivering clinical transformation using informatics – the 10 key element of ELHT strategy

19. In order to provide an optimum environment for the delivery of the clinical strategy and ELHT Business plans (both Trust wide and locally determined), there are 9 key delivery and development areas that this strategy will focus upon, for definition purposes here and in greater detail further in the document. These are represented below.



- **Underlying Infrastructure**
 - Networks
 - Local
 - Wide Area
 - Wireless
 - Data Centres and Servers
 - Storage
- **Systems**
 - Clinical Systems
 - Electronic Patient Records
 - Corporate Systems
- **Unified Communications**
 - Telephony

- Video conferencing
- Mobile telecoms
- Bleep and Pager Systems
- email and Instant Messaging
- Social networks and Inter / Intranet

- User computer Interface
 - Desktops
 - Mobile Devices
 - Clinical Environment Displays
 - Patient facing interfaces

- Information Management
 - National returns
 - Analytical Support
 - Information Portals
 - Data Warehousing
 - Benchmarking
 - Coding

- Governance and Security
 - Information Governance
 - Cyber Security
 - Physical Security
 - ITIL standards
 - Informatics Service Accreditation

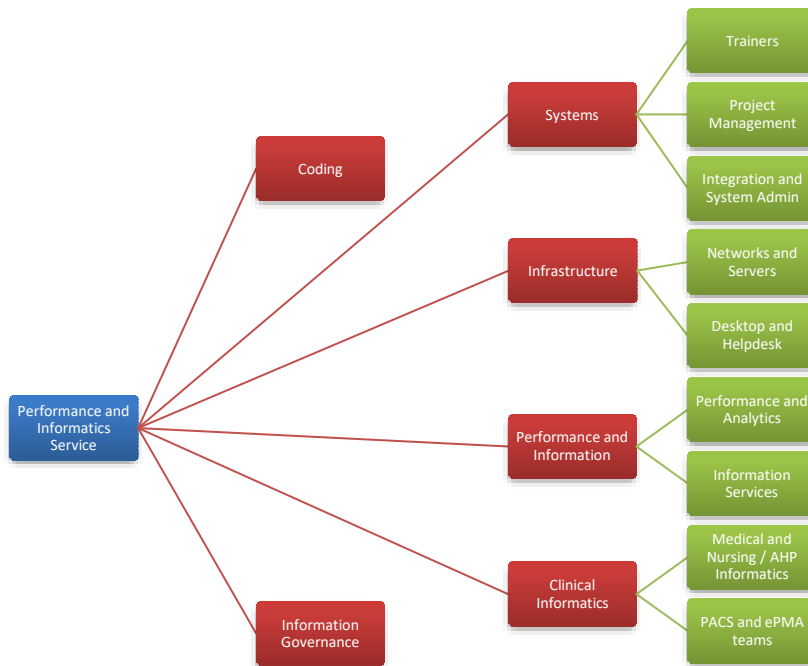
- Change management
 - Financial management
- Development and Testing
 - User Acceptance Testing
 - Software Development
 - Device evaluation and field testing
- Health Economy Integration
 - Sustainability and Transformation Plans
 - Digital Lancashire
 - NWSIS
 - LPRES
 - CIO/CCIO networks
 - Healthier Lancashire (including Pendle / Lancashire)
- Procurement
 - Frameworks and OJEU
 - Joint Procurement
 - Contracts

20. Following a review of the current provision each of these areas will be discussed in some detail.

Current Informatics provision

21. The Informatics infrastructure within the Trust is a complex one, made up of a wide range of function based systems with some integration with only limited interoperability.³ The development of systems has been on a gradual piece-meal basis with deployments being mainly tactical in nature. The next phase of the strategy needs to address interoperability and improved decision making. The current systems in the Trust are not capable of supporting the next level of functionality required to underpin the Trust's strategic goals. This will constrain the ambitions of the Trust in terms of achieving the five high level priorities. It is therefore, timely that a revised Informatics strategy is being published now.
- 22 The Informatics teams responsible for delivering the service has also undergone a number of significant changes recently. These are mainly viewed as being extremely positive with service users detecting some real difference in the quality and timeliness of the current provision. Now the systems and services are provided by an integrated directorate – Performance and Informatics Directorate, with all services reporting, via an Associate Director, through to the Director of Finance and thus to the Trust Executive. This is represented below.

³ Source – Trust IM&T Strategy 2012 / 2017



23. A key benefit of this current structure is that innovation, service development and integration with clinical enhancement, can be done as a single unit. All senior leaders within the Directorate share a common goal and a common responsibility for delivery. Historical barriers relating to systems delivery, infrastructure provision and information feedback are removed, providing a leaner and output focussed service.

The purpose of Informatics at ELHT.

24. The purpose of the Performance and Informatics services within the Trust is:-
- To provide a robust, secure platform upon which to deliver critical clinical and operational systems to facilitate the delivery of services to patients.

- To provide systems that will support the delivery of care to patients and enable clinical teams to make the appropriate decisions based upon the best available evidence.
- To provide patients with relevant and accurate information about their care and the arrangements for the delivery of that care, including effective communication upon admission, throughout their stay and post discharge.
- To develop and document the implementation of the Trust's vision to become a digital hospital with devices connected to an integrated Electronic Patient Record (EPR) which provides clinical and administrative staff with information about their patient wherever and whenever they need it. Furthermore, specific emphasis is given to connectivity between the hospital and its community services, the Trust and primary care and health and social care.
- To provide a reliable, effective technical infrastructure to support a diverse range of technologies which improve communications both within the Trust and across the local care economy in East Lancashire, and deliver step change efficiencies in the process, delivery of care and reductions in variations in practice.
- To support the strategic and business aims of the Trust in terms of its future status as a lead organisation within the local health and social care economy, its service development strategy and the annual business planning process. Once again special emphasis is placed on the ability to innovate and use Informatics as a real enabler to becoming more productive and efficient. Whilst it is recognised that IT and innovation will not solve all the financial challenges of the Trust it is taken for granted that any future IT investment will provide significant returns on investment both financially and in the support of enhanced clinical care. As with a significant proportion of Acute Trusts in the NHS, East Lancashire Hospitals faces a significant financial challenge in the years ahead. This challenge can only be met by a transformational change in the way services are provided. Alongside a new clinical strategy for the Trust, the Informatics strategy is seen as the fundamental enabler in facilitating this transformation which will ultimately support the move towards a more financially viable organisation.

- To work in collaboration with other members of health and social care community and where possible will engage in joint enterprises to optimise the benefit from any investments or developments in the Informatics agenda.
- To encourage information sharing in support of patient pathways and safe care with all healthcare partners notwithstanding the need to recognise the contribution from education services, housing associations, the prison service, charities and the third sector.
- To ensure that the strategic direction of the Trust is in accordance with the wider pan Lancashire health and social community and to be an active part of the 'Digital Lancashire' vision. This includes embracing such developments as the Lancashire Patient Record Exchange System and the Infrastructure platforms such as the Community of Interest Network (COIN).
- To be at all times financially prudent in the investment decisions made supporting the Informatics Agenda.

Our current reality – some practical examples⁴

25. In the majority of clinical departments right across the Trust there is a desire to reduce the amount of paper currently being used. In some areas sets of paper case notes not only overwhelm administrative and secretarial staff but also pose a significant threat to patient safety and the environment.

Medical records

26. There are approximately 500,000 sets of patient case notes in active circulation. The cost of providing, administering and transporting paper is high and problematical. A complete health record is not always readily accessible where and when needed, resulting in increased clinical risk, cancelled appointments/admissions, tests repeated unnecessarily and clinical staff time wasted searching for correct documentation.

⁴ Source – Conversations with members of ELHT staff and observations by the author

27. There are significant operational issues in managing the paper case notes: i.e. High records handling costs for a 24/7 service (staff, accommodation, transport) In addition: -
- In-house storage facilities are inadequate
 - Increasing volumes of paper records – on average 40 pages of documentation are created for an admission
 - Increasing cost of off-site storage facilities
 - Clinical Coding and Clinical audits extremely difficult when working with the paper case note
28. The use of paper case notes still constitutes an enormous clinical risk. (Information contained on the 'alert sheet' is part of the paper record rather than the electronic record. Any delay with the availability of the case notes could result in patient receiving a drug to which they are allergic or being resuscitated when there is a contraindication or advanced warning in place)

In Patient wards

29. There is a sense of frustration amongst nursing staff that time and effort is being wasted on electronic processes that simply duplicate paper and offer no added value what so ever. There are examples where information is being held electronically but requires printing in order to populate the case note either as a routine task or when a patient is being transferred to a ward that may be less automated. The risk assessment system offered by the current system provides 7 views but with no interoperability between the views. (If for example 2 views require a BMI⁵ record to be added, the BMI score would need to be added twice, rather than once and shared) The computerised Waterlow assessment does not generate orders or alerts but appears to exist as an isolated repository.

Intensive Care Unit

30. "Two ends of the bed" - The amount of technology and sophistication at the head of the bed has increased significantly over the last 15 years. The amount of technology and automated data capture at the foot of the bed has hardly changed at all in the last 15 years. Despite being enabled the ventilator, the syringe drivers, the infusion pumps and the oxygen saturation / vital signs monitors are connected to nothing

⁵ Body Mass Index

apart from a power supply. There is nothing by way of integration or centralised alerting. The near patient testing / bedside testing devices such as the glucometer and blood gas analyser still produce paper which contains the numerical response / result. This is manually transcribed from the ticket to the observation chart.

Pharmacy and medicines administration

31. At the time of reporting five surgical wards in the hospital had been enabled with electronic prescribing and medicines administration functionality. Verification by a clinical pharmacist is becoming more of a mainstream activity but the current system means that not every patient sees a pharmacist and not every medicine gets verified by a pharmacist before it is administered by a nurse. Automation in the dispensary has improved the accuracy and timeliness of 'picking' packets prior to discharge for TTO's⁶ and re-stocking in wards and departments. The Trust is making steady progress with its approach to electronic prescribing and medicines administration.

Pharmacy, Laboratory and Radiology

32. The automation and interoperability within these three major departments together with Order Communications and vital signs monitoring systems can make a significant contribution to patient safety and the effective management of the acutely ill. Whilst the Trust has made an investment in these areas at the moment many of these systems operate in isolation of each other and as a result lose almost all of the value associated with an interoperable environment. In an automated and connected environment the EPMA⁷ system would alert the gentamicin prescriber having being informed by the lab system that the patient has gentamicin toxicity. At present the prescriber must determine this position through a series of manual interventions and may well currently go on to prescribe a drug to which the patient is allergic or could not tolerate.
33. The laboratory is still highly dependent on paper and paper driven processes. This involves transcription from paper to the Laboratory Information System creating risk and some margin for error. There are currently few examples of where technology is being used to assist in the identification of the patient or the sample. Observations carried out in the blood transfusion service confirmed that RFID and bar code

⁶To Take Out

⁷Electronic Prescribing and Medicine's Administration

technology were not being used to identify the unit of blood or any other blood product.

Accident and Emergency department

34. The environment is overwhelmed with paper 'Cas cards' and employs a number of individuals whose responsibility it is to 'push this paper'. The casualty card is a paper record of any treatments and procedures undertaken by medical staff whilst the patient is in the A&E department, it also contains the patient's demographic details and discharge / admission details. Critically, unless informed by the patient / relative, staff working in A&E have little or no access to any clinical information relating to that patient until the case notes arrive.

Current systems inventory

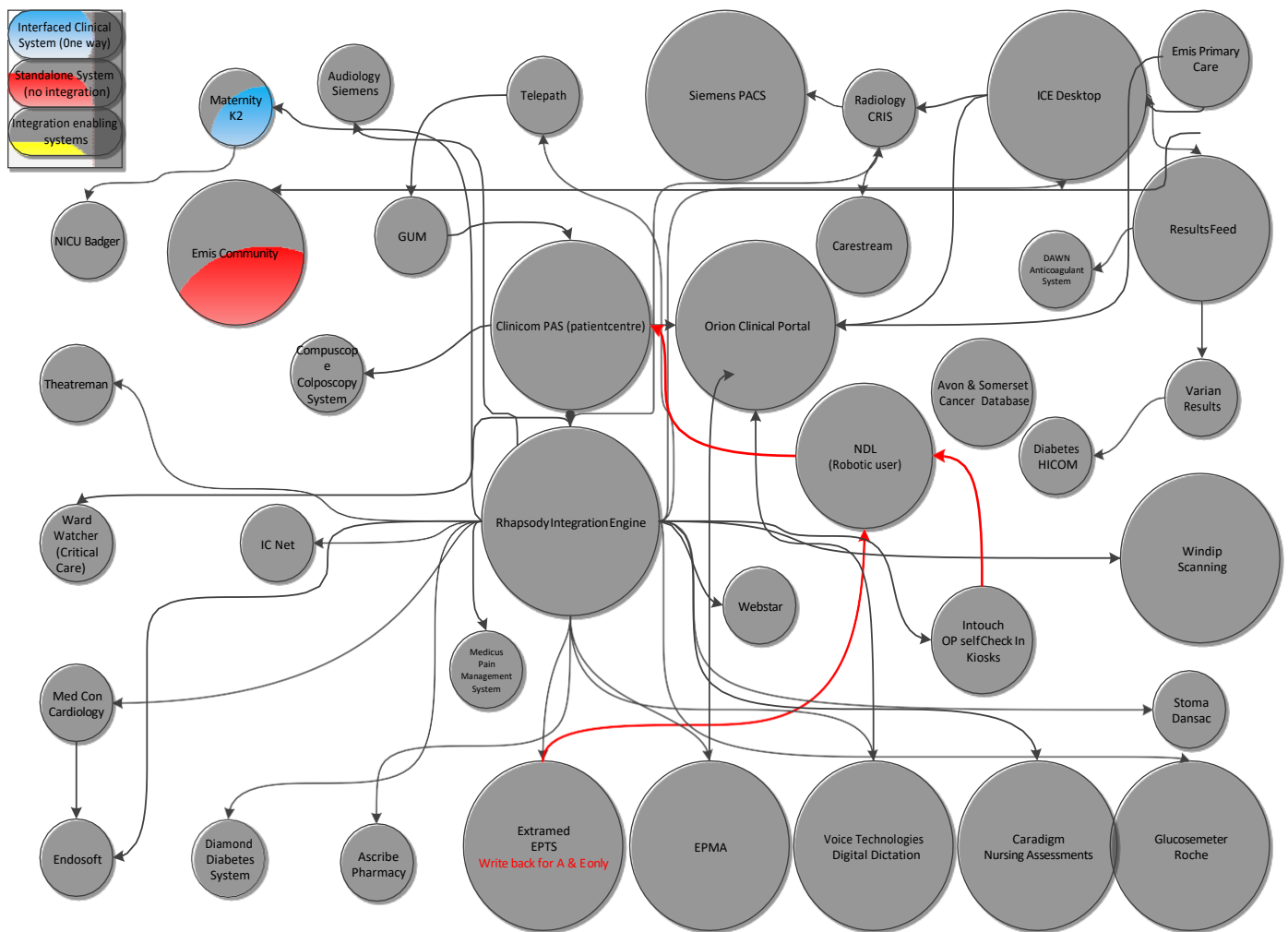
- 35.

36. As mentioned above information systems in the Trust have been developed and deployed over many years. This has resulted in an environment associated with some significant duplication and overlap. Alongside this the price of alternative solutions have continued to decrease, supporting a clearer commercial rationale to migrate to alternative solutions with clear qualitative and financial benefits.

37. The Trust has developed a Strategic Outline Case and Outline Business Case for the replacement of the existing (and aged) PAS system and the procurement of an electronic Patient Record. These reports have been supported by the Trust Board and are now subject to further discussion with NHS Innovation (formally TDA), HSCIC and commissioners

38.

39. The diagram below highlights how the Trust's systems are currently arranged.



The National IM&T Position

40. In January 2013 the Government set out a timetable for making all records and communications in the NHS paperless. The Secretary of State said that “by April 2018 digital information will be fully available across the NHS and social care services”. The strategy is for local hospitals and other health organisations developing their own records, and making systems interoperable, using ‘invest to save’ principles.
41. A report by the UK trade body Intellect⁸ outlines that a paperless NHS is achievable but requires a different way of thinking for users, buyers and suppliers of healthcare information systems. The report, entitled ‘Digitising the NHS by 2018 – Intellect response’, calls for a focus on capturing and using digital information, rather than just removing paper. It argues that without patients wanting a change in services, it will not happen.
42. The report also highlights that open interfaces and joined up processes are key points to making paperless a reality. The report notes that “we have to demonstrate the tangible value to staff, patients and citizens from the application of information and technology. If they do not see the value, they will not demand and embrace change.”
43. The report goes on to note that “the NHS needs to give less priority to improving the digitisation of what is already electronic and more priority to those elements that are not, particularly where information crosses the ‘boundaries’ between care organisations, and with an emphasis on the boundaries between NHS and non-NHS partners, where digitisation tends to be weakest.”
44. A PwC report has claimed that the NHS could find £4 billion of efficiency savings by adopting a short list of big technology measures. These will, of course, only be realised through underpinning changes in the provision of care, which in turn need to underpin the strategic goals of organisations.
45. The overall responsibility for steering this change lies with NHS England. NHS England will set the direction for NHS information technology and informatics “so that commissioners, providers and suppliers can make informed investment decisions, identifying, amongst the alternative approaches, those that deliver highest quality care for patients.

⁸ Intellect represents the UK’s Technology Industry www.intellectuk.org

NHS England and the National Information Board

46. The Five Year Forward View - recently published by NHS England makes some reference of the need to embrace technology but equally recognises that the adoption especially in secondary care remains slow. The paper acknowledges that there have been three major economic transitions in human history – the agricultural revolution, the industrial revolution, and now the information revolution. For example, in Britain 86% of adults use the internet but only 2% report using it to contact their GP, say NHS England.⁹
47. Part of why progress has not been as fast as it should have been being that the NHS has oscillated between two opposite approaches to information technology adoption – neither of which now makes much sense. At times we have tried highly centralised national procurements and implementations. When they have failed due to lack of local engagement and lack of sensitivity to local circumstances, we have veered to the opposite extreme of ‘letting a thousand flowers bloom’. The result has been systems that don’t talk to each other, and a failure to harness the shared benefits that come from interoperable systems.
48. Personalised Health and Care 2020 – makes clear that the better use of data and technology has the power to improve health, transforming the quality and reducing the cost of health and care services. It can give patients and citizens more control over their health and wellbeing, empower carers, reduce the administrative burden for care professionals, and support the development of new medicines and treatments.¹⁰
49. “The Power of Information”, the NHS information Strategy, advocates joined up care and access to patient information for healthcare professionals, patients and carers in care settings. In January 2013, the Health Secretary, Jeremy Hunt, stated that he intends the NHS to be paperless by 2018.¹¹ NHS England’s ‘Safer Hospitals, Safer Wards’ published in July 2013 set out this vision for a fully integrated digital care record (ICDR) across all care settings by 2018:

‘An information rich care system built on innovative and integrated solutions’

⁹ NHS England – Five Year Forward View

¹⁰ NHS England – Personalised Health and Care 2020

¹¹ Defined in Appendix 1

50. “*The NHS belongs to the People: Call to action*” published in July 2013 further defined a vision for the delivery of integrated care centred on the patient rather than aligned to episodes of care. It proposed that £30 billion funding gap can be closed by applying innovation, transformation and technology to change the NHS service delivery model from acute, episodic based care to integrated care closer to home.
51. The National Information Board (NIB) was established in 2014 to set the strategy and direction for the health and care system on information technology and information. The purpose of the NIB is to:-
- Provide leadership across health and care organisations on information technology and information.
 - Design and develop the vision, strategy and direction for the health and care system through engagement with partners and stakeholders, including industry.
 - Ensure that priorities for investment and delivery are clear
 - Provide the annual commissioning priorities for the Health and Social Care Information Centre (HSCIC) and turn these into an agreed delivery plan
52. The NIB has recently published a number of framework milestones. For illustrative purposes only a number of these milestones have been listed below in order to provide further national context for the strategy in East Lancashire Hospitals Trust.
- By June 2015, the NIB will publish proposals on the regulation, accreditation and kite marking of technology and data-enabled services, including apps.
 - By October 2015, the HSCIC will publish enhanced data security standards and requirements and will re-launch the Information Governance Toolkit.
 - By October 2015, Digital Maturity Index key indicators for NHS trusts will be published via NHS Choices.
 - By April 2016, the NIB will agree a core ‘secondary uses’ dataset that all NHS-funded providers will have to make available.
 - From April 2016, the CQC to take performance against the data quality standards into consideration as part of its regulatory regime.
 - By April 2017, core curriculum and associated knowledge frameworks will contain the relevant knowledge, skills and characteristics to enable the workforce to embrace information and technology.
 - By 2018, clinicians in primary care, urgent and emergency care and other key transitions of care contexts will be operating without the use of paper records.

- From March 2018, all individuals will be able to record their own comments and preferences on their care record.
 - By 2020, all care records will be digital real-time and interoperable.
 - By April 2020, the entire health system will adopt SNOMED clinical terminology.
53. We are also aware that digital maturity measurement is likely to be a part of CQC inspections from 2018 onwards and from 2020 providers of health services in the NHS must be able to demonstrate technological improvements in order to retain their licence to operate.¹²

The Electronic Medical Record Adoption Model (EMRAM)

54. Since 2005 the HIMSS Analytics EMR Adoption ModelSM (EMRAM) has tracked the adoption of EMR applications within hospitals and health systems across the globe. Organisations work to complete the 8 stages (0 - 7), with the goal of reaching Stage 7: an environment where paper is no longer used.
55. Trusts who have reached Stage 7 are recognised for having achieved all the steps necessary towards a paperless environment. They have a very real competitive and quality advantage, as they support the true sharing, information exchange and immediate delivery of patient data to improve process performance, quality of care and patient safety.
56. Stage 7 Designees can:
- Share patient clinical information via electronic transaction with all entities within the entire health information exchange network
 - Support the true sharing, widespread and comprehensive use of health and wellness information by consumers and providers
 - Use data warehousing and mining techniques to capture and analyse care data to perfect, advance and institute organisation-wide operational, financial and quality improvements
58. East Lancashire Hospitals Trust currently has elements of functionality up to stage 5, however due to a lack of interoperability is likely to be at stage 1 in that ancillary systems in the Pathology, Radiology and Pharmacy are in place. PACS has been widely adopted in the UK, not so in other countries.

¹² NHS England – Digital Maturity Programme

59. The EMR Adoption Model¹³

Stage	Cumulative Capabilities
Stage 7	Complete EMR, CCD transactions to share data. Data warehousing. Data Continuity with ED and OPD
Stage 6	Medical documentation using structured templates, full CDSS and Closed loop medication administration
Stage 5	Full complement of Radiology PACS
Stage 4	CPOE, Clinical decision support (Clinical protocols)
Stage 3	Nursing / clinical documentation (flow sheets) CDSS error checking. PACS outside Radiology
Stage 2	CDR, Controlled Medical Vocabulary, CDS may have document imaging. HIE capable
Stage 1	Ancillaries – Path Lab, Radiology and Pharmacy
Stage 0	Ancillaries not deployed

THE RESULT – HOW DO WE WANT THINGS TO BE?

IT enabled Transformation – what does good look like?

60. Professor Sir Bruce Keogh has outlined NHS England’s plans for further developing Technology Enabled Care Services (TECS). In a letter written to around 250 key stakeholders, NHS England’s National Medical Director calls on them to support the programme that takes the NHS into a new and exciting technological era that will help empower patients and improve health outcomes.
61. Sir Bruce has told a broad range of organisations from across health, social care, industry, and the third sector:

¹³Himss analytics

“Present and emerging technologies offer opportunities for us to transform the way we engage in, and control, our own healthcare. Imagine the degree of personal control that could be afforded by a smart phone configured for medical applications, coupled with wearable biosensors and capable of sensing, analysing and displaying vital signs and alerting you and your clinicians to significant changes or deterioration wherever you are, rather than through check-ups at a hospital or GP practice. Any escalation in a condition could be identified and addressed in a timely and proactive way. It would lead to better health outcomes while being more convenient for the patient, their carer and their clinician.”

“This is the future of healthcare. Twenty years from now, we will use technology to access our health services as a matter of course. That future is fast approaching as technologies constantly evolve, adapt and improve.”

62. We have a growing older population – with an estimated three million people living with three or more long-term conditions by 2018 – is only going to increase pressure on the NHS, adding:

“One opportunity lies in the fact that people increasingly want to own and control their own healthcare. By harnessing the power of digital technology we can help by empowering people to manager their care in a way that is right for them.”

63. NHS England undertook a review of the programme in April 2013 which has led to a shift in the strategic direction of the TECS programme.

“The TECS programme has been re-focused to address the demand from health and social care professionals for support and practical tools to commission, procure, implement and evaluate technology enabled care services,” writes Sir Bruce. *“Our ambition is to create the right commissioning environment that supports and encourages the innovative use of technology to improve health outcomes, empower patients, and deliver more cost-effective services as part of a modern model of integrated care.*

The TECS Stakeholder Forum’s collective views and proposals on how to address the barriers to wider adoption now form the basis of the TECS Improvement Plan 2014-17.”¹⁴

¹⁴ Sir Bruce Keogh – TECS Programme 20th September 2014

64. HIMSS Analytics¹⁵ measures the digital maturity of hospitals across the globe and as such is perfectly placed to direct any organisation looking to improve its current position towards international best practice. From a HIMSS Stage 7 hospital perspective (There are 3 Stage 7 hospitals in Europe)¹⁶ one would expect Stage 7 hospitals to be completely paperless. Stage 7 healthcare organisations support the sharing and use of patient data that ultimately improves process performance, quality of care and patient safety.
65. Clinical information can be readily shared via standard electronic transactions, with all entities within health information exchange networks. This stage allows the healthcare organisation to support the true sharing and use of health and wellness information by consumers and providers alike. Also at this stage, organisations use data warehousing and mining techniques to capture and analyse care data for performance improvement and advancing clinical decision support protocols.
66. Equally there are over 50 Stage 6 hospitals throughout Europe all of which can be used as reference sites for organisations seeking to improve their current position. Some of these hospitals are in the UK and can clearly demonstrate extremely high levels of technology adoption.
67. For completeness set out in Appendix 1 is a description of stages 0 to 8 in order to provide an appreciation of the areas that HIMSS use across the globe to measure digital maturity and to emphasise to the Trust the art of the possible.

Aspiration and ambitions within and across the Trust

68. The Trust has a level of ambition based partly on its adoption of technology to date and partly on its experiences and knowledge of other organisations in the North West. The Trust recognises that IT enablement will play a critical role in helping realise the benefits associated with the current clinical strategy.

¹⁵ HIMSS Analytics Europe supports improved decision making for healthcare organizations, healthcare IT companies and consulting firms by delivering high quality data and analytical expertise.

¹⁶ Radboudumc Netherlands – Marina Salud, Departamento Salud Denia – University Hospital Hambourg

“We will deliver enabling strategies that support the implementation of our Clinical Strategy. Absolutely essential in this respect is improving our Information Technology Infrastructure and the use of new technology to innovate. This is a ‘golden thread’ throughout all of the above service development/transformation plans and aspirations.”¹⁷

69. The development of new technologies, the demands for more integrated care across organisational boundaries and the increasing expectations of patients to be directly involved and informed in their own care, make this an ideal time to present a forward view.
70. The Trust is clear that central and pivotal to supporting clinicians and patients between now and 2020 will be the procurement of a new electronic patient record, both in a community setting (integrating with primary care and other community services) and in the acute setting (providing enhanced clinical decision support and supporting the seamless flow of patient information through the Trust.
71. The Trust is currently taking steps to improve its infrastructure and Informatics expertise in readiness for the EPR with an aspiration of being one of the most technologically advanced healthcare providers in the region.¹⁸ Divisional and Directorate Business Plans currently describe a need to reduce manual processes, remove paper from clinical processes wherever possible and to have electronic records across the organisation within the next 5 to 10 years.¹⁹ A significant proportion of this strategy relates to this improvement path.
72. There is a recognition within and across the organisation that technology can play a significant role in helping the Divisions and Trust meet some if not all of its current priorities for reduction to harms:
- Pressure Ulcer Reduction
 - Reducing Falls
 - Health Care Associated Infections, including sepsis mortality
 - Medication related incidents
 - Reducing Hospital Acquired Venous Thrombo Embolism (VTE)
 - Mortality Reduction

¹⁷ Trust Operating Plan 2015 - 2016

¹⁸ Trust Operating Plan 2015 - 2016

¹⁹ Children’s services and Women, New Born and Sexual Health Services Business Plan

- Early detection of clinical deterioration

“Having a clever strategy is not enough and successful organisations should proactively develop the internal capacity to implement change faster and more effectively than their competitors.”²⁰

73. Colleagues in the Trust are more likely to understand and energetically support an initiative when they observe leadership behaviour that is both credible and supportive. Typically, assessing and developing the effectiveness of change leaders should be tackled once the shared purpose and intent of the change have been sufficiently defined. The Trust Executive Board in this regard has a unique set of responsibilities that include leading by example, having specific roles on the Transformational Board and generally speaking well of the programme.
74. Effective, early leadership from sponsors and change agents is critical in signalling clear intent, building momentum, raising credibility and overcoming initial resistance before early results are visibly achieved. This predominantly is the domain of the Trust Board, the Director team, Clinical Directors and all those with a responsibility for others.
75. Linking technology-associated change with financial recovery is almost as powerful as linking technology with an increase in patient safety. There is a small but growing body of evidence to support the notion that the organisations that survive in difficult economic times are the ones who successfully innovate. The SOC to support this strategy will make a best case that describes a robust return on the investment and at worst a case that describes a cost neutral transaction.

Emerging Technologies

76. There are many emerging technologies that will change the practice of medicine and nursing in the coming decade. Genetics and genomics, less invasive and more accurate tools for diagnosis and treatment, 3-D printing, robotics, biometrics, electronic health records and computerised order entry with clinical decision support to name but a few.
77. Wearable health technology is drawing serious attention in the press and for good reason. Such devices will likely transform medical care in unimagined ways, turning science fiction in science fact. By helping people lead healthier lives, manage chronic

²⁰ European Business Review

conditions and improve access to care, wearable technology can play a key role in reducing spend. The primary care system costs the UK taxpayer up to £52 billion each year, any technology that engages patients and helps them manage their own symptoms can make a significant difference.²¹

78. A recently commissioned report by Forbes²² put diagnostic testing of basic conditions into the hands of patients: Close to 42% of doctors are comfortable relying on at-home test results to prescribe medication. Increase patient-clinician interaction – 50% of the doctors surveyed said that e-visits could replace more than 10% of surgery visits, and nearly as many patients indicated they would communicate with caregivers online.
79. Promote self-management of chronic disease using health apps: 28% of patients said they have a healthcare, wellness, or medical app on their mobile device, up from 16% last year. Nearly 66% of doctors would prescribe an app to help patients manage chronic diseases such as diabetes. Help caregivers work more as a team: 79% of doctors and close to 50% of patients believe using mobile devices can help clinicians better coordinate care.
80. The Trust will exploit a range of technologies whilst maintaining the principles set out in this paper the main and most important one being *“Every member of staff has access to the information they need, when they need it, and where they need it, without having to look for a piece of paper, wait for a computer or ask the patient or the patient’s relative.”* This will mean that a whole cadre of digital technology will be assessed and deployed in order to meet the individual needs of whole groups of users. These technologies will be assessed on their merits nearer the time of the EPR / EDRM deployment and go live.
81. Where possible the Trust will promote the use of devices that clinicians and others are familiar with and those that align closely with future working practices and patterns. It is likely that these devices will in the main be mobile or bedside devices rather than those that force the clinician away from the patient.

²¹ PA Consulting

²² Forbes Pharma and Healthcare

THE RESPONSE – HOW DO WE GET THERE?

The 9 delivery areas.

82. A critical part of the ‘How do we get there?’ question recognises what has already been done and what needs to be done. This is an entire programme of IT enabled modernisation managed across 9 delivery areas.

Underlying Infrastructure

Networks

83. Over the past few years the Trust has provided capital investment to underpins a robust network infrastructure. As an active Member of the wider North West Shared Infrastructure Services (NWSIS) group, the Trust is fortunate to have a robust and well managed Wide Area Network (WAN). This provides high speed fibre links to all 5 major hospital sites and over 30 other sites across the East Lancashire and Pendle areas. A diagrammatic representation of this can be seen at appendix 4. In addition to this, the Trust is able to take advantage of the NWSIS developed Community of Interest Network – (COIN) which links the majority of providers of NHS services across Lancashire, Pendle and South Cumbria.
84. This WAN is due for replacement during 2016 / 2017 and the Trust is working with NWSIS and the other partner organisations to specify, evaluate and procure a replacement or an enhancement should the existing supplier be retained. The opportunities for providing enhanced services to the clinical and operational teams due to this reprocurement are significant and working alongside Chief Information Officers (CIO's), Chief Clinical Information Officers (CCIO's) and other Informatics and clinical colleagues across the region, ELHT will ensure the optimum benefit is derived from this development.

85. The Informatics teams have been gradually replacing the core network infrastructure of the Trust so as to offer high speed and reliable access to the operational and corporate teams. Whilst this has been relatively easy to facilitate in most of the new build areas (although some costs have been increased due to changes required within the PFI estate), challenges do occur where services are provided in older buildings, such as Accrington Victoria Hospital for example. The Informatics teams are committed to delivering a comparable level of service to these establishments, it is intended to review such provision in the next 2 years to ensure that parity.
86. In the meantime though, the Informatics team will, where possible, provide short term enhancements to the existing infrastructure until a longer term solution can be identified.

Wireless Access.

87. As part of the wider service delivery offering, the Informatics service has been installing wireless access points around the estate. Wireless networks are available on each main site with continued roll out where feasible.
88. 3 wireless systems are provided by the Trust, these are;
- Corporate Wi-Fi for Trust devices – available only to users of corporate devices. This encrypted system mirrors the ‘wired’ network for functionality and allows access to the full range of Trust services , across the estate.
 - Clinicians Wi-Fi – available across the estate to registered clinical and operational users. This system does not allow access to the Trust systems, but provides unlimited internet access to users via their own devices. This system commenced roll out in February 2016.

- Public Wi-Fi – available in all public areas and on the paediatric wards (due to contractual restrictions from the Trust entertainment system provider). Members of the public are able to use unlimited free Wi-Fi after registering for up to 4 days.

It is the intention of the Trust to invest further in wireless access points and provide uninterrupted signal across the whole estate where possible.

Data Centres and Servers

89. In 2014 an internal audit report indicated that the current primary data centre at the corporate offices at the Royal Blackburn Hospital required investment and relocation. During 2015, working with a range of suppliers, the informatics team have developed a robust plan to both move and enhance the Trust primary data centre. The new data centre will use the latest in hot / cold aisle (cooling) technology and be significantly cheaper to run than the existing centre. The Trust will also use the opportunity to provide faster network links to the main site and provide a location for a new storage area network, improved resilience in the secondary data centre and enhanced storage for disaster recovery on the Burnley site.
90. The Trust has recently undergone a detailed assessment and analysis of its server environment and both its infrastructure and licencing requirements. Whilst this has had some revenue consequences due to new licensing models from Microsoft, it has allowed the teams to consolidate the technology into a more effective and manageable platform. Where possible, the Trust now uses 'virtual' servers, providing both resilience, flexibility and significant cost improvement. The new licencing models

also include 'software assurance' as standard which allows the Trust to upgrade to the latest versions of the software at no additional costs.

Storage

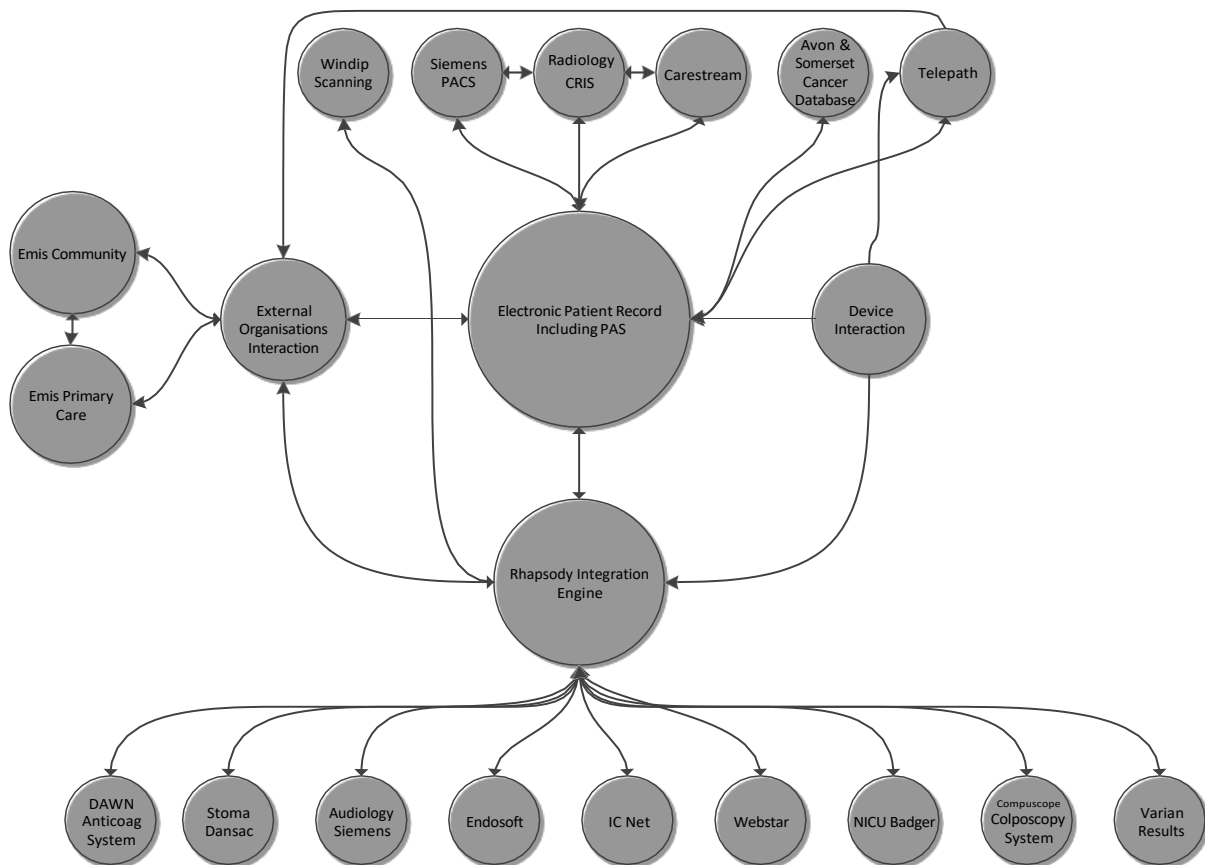
91. As part of the previous audit, it was noted that the Trust was rapidly running out of storage space on its file servers, which not only reduced the availability of storage for clinical applications (i.e. to store images / documents etc.), but also affected system backup, file deletion and application running speed. Measures have been taken to reduce the demand for storage e.g. email archiving, removal of 'deleted items, all staff email re personal document stores etc.), but a more permanent solution was required. A range of solutions have been assessed and working with colleagues at Lancashire Teaching Hospital a solution has been found (and procured) that provides both ample storage, the ability to 'flex' storage as and when required, technologies to reduce the necessity for multiple copies of the same file and the ability to collaborate on resilience and security with other NHS providers, thus supporting a wider future pan Lancashire solution.

Systems

Electronic Patient Records

92. ELHT currently has 24 key standalone clinical IT systems including a legacy Patient Administration System (PAS) initially installed in 1986 and a significant number (circa 100) bespoke databases, spreadsheets and the like held within local clinical teams and services. This can be likened to the model described in the Five Year Forward View as 'letting a thousand flowers bloom' whereby systems do not talk to each other, and where there has been a failure to harness the shared benefits that come from interoperable systems.

93. The case for change is well made in both the recently produced ePR strategic outline case and the Feb 2016 – ePR outline Business Case. Perhaps the most fundamental change to impact upon the information and clinical environment for some years will be the procurement and implementation of an integrated electronic patient record. The diagram below provides an illustration of the potential architecture of the system:



94. The timetable for procurement and implementation is set out in the OBC, however, this is dependent upon financing and associated cultural and technical preparation to ensure successful delivery.

Community Systems

94. ELHT Community Services have historically recorded activity on a legacy PCT Community PAS System (CPAS). Due to the expiry of the Local Service Provider Contract (LSP contract) in July 2016, the current system enables the trust to record activity but will never remove cumbersome paper records from the services. As a result of this a decision was taken to procure the EMIS Community system.
95. The new system will enable the trust to be build a community electronic patient record for community teams, using easily accessible electronic records with the ability to share real-time patient records between primary and secondary care.

Legacy Systems

96. Whilst acknowledging that a future electronic patient record will remove the requirement for a number of the Trust existing systems, some specialist systems will remain in place. Each existing system will be reviewed in light of the successful procurement and evaluation of functionality, migrating to the new EPR where possible.

97. Where departmental (specialised) systems remain, the Trust will ensure that these are correctly interfaced (bi-directional) to the new EPR to minimise duplication of effort and provide a seamless patient record.

Existing Systems

98. The Trust we will continue to support existing systems, ensuring that they are supported and developed, providing 2 bi-directional interfacing as required to support clinical practices.

Electronic Patient Tracking Systems

99. In 2008 the Trust introduced a pilot Electronic Patient Tracking System (EPTS). Since this time the system has 'evolved' into a Trust wide system, with varied usage and functionality. However, the importance of such a system is accepted across the Trust and the opportunity to revisit, upgrade and relaunch is being taken during 2016 and 2017. Alongside this new functions will be introduced, new technologies deployed and new ways of presenting data will be examined. This will be a structured programme, lasting for 2 years and overseen by a distinct project group reporting to the eHealth Board. There are a number of key deliverable which form part of this strategy.

Clinical Portal

100. The previous Trust Informatics strategy was focussed upon the development of a 'Best of Breed' approach whereby multiple systems were presented in a single portal to operational staff. Whilst the new ePR strategy has superseded this, there has been a significant amount of positive development done with the clinical portal which is now proving useful in clinical environments. Not only does the portal provide access to GP records, a subset of PAS data, access to digital dictation, Ice and PACS access, new functionality has allowed the Trust to build data capture forms to support practice. As a tactical solution, before the full implementation of ePR, the intention is to continue to support this approach. Firstly with the development of eCas Cards for the Accident and Emergency Department and thereafter other patient data capture applications as defined by the eHealth Board. The transition of the portal to ePR will be considered by the eHealth and clinical reference groups during 2017 / 2018.

Electronic Prescribing and Medicines Administration

101. Working with Egerton Medical Information Systems (EMIS), the Trust has been implementing electronic prescribing and medicines administration (ePMA) across clinical areas in the Trust. Progress has been relatively slow, due to a range of factors including system speed and operational functionality. However, the feedback from the wards deploying the system has been on the whole positive, with most areas not wishing to return to paper systems. Alongside this, deployment of the system has provided significant benefits due to the ability to interrogate the data relating to medicines administration such as monitoring missed doses, antibiotic

stewardship and supporting discharge medications. Some work still needs to be done with the system and this is ongoing. The intention is, though, to continue roll out of the system, once enhanced functionality promised for the system in terms of usability and speed are embedded. The choice of ePMA system has been influenced by the fact that the same platform is used within the Pharmacy Department allowing a direct link between Medicines Management and Stock control and the prescribing and administration of the products, leading to efficiencies in stock control and procurement.

102. Development of the Trust electronic patient record will have an impact upon the deployment and operation of the current ePMA solution. There is no doubt that the implementation of ePMA is a valuable and vital tactical solution to both improve patient safety and prepare the Trust for a more integrated solution. Given the timescales for the procurement and implementation of the ePR it is unlikely that the current ePMA solution will be replaced or integrated into the ePR itself before 2019 (as PAS replacement is the initial priority). A final decision relation to the future of the current system within the ePR will be made in by April 2018.

PACS services

103. The current Picture Archiving and Communications System (PACS) is supplied by Siemens Healthcare Limited and is part of the wider Managed

Equipment Service (MES) delivered as part of the wider managed services arrangements under the Trust PFI deal. This arrangement allows for upgrades and updates to the system as part of the life span of the contract. Since the deployment of the initial PACS system, there have been a number of issues relating to image retrieval, system stability and software functionality. Working with Siemens Healthcare, the Trust has agreed a network and storage upgrade and enhancement package which will demonstrate significant improvements in PACS resilience and functionality, moving towards a 'world class' product.

Departmental Systems

104. The Trust will continue to support specific departmental systems during the length of this strategy. However, when systems are due for renewal, or if the functionality identified in the ePR will fully meet the requirements of the department, it is the intention to review the system and decide on a migration path (if appropriate) to the single ePR. The principle of the ePR is that as far as possible, unique departmental systems will be absorbed into the ePR with only those that the ePR cannot replicate their functionality sitting outside.

Office systems

105. In March 2016 the Trust signed a 3 year contract with Microsoft to continue to supply Windows and Office based products to the Trust. The Trust is currently licenced for

5900 individual devices and 400 Office 365 products. With a user base of around 8000 staff the option for individual licencing of products would have added significantly to the annual costs for the Trust. As part of the previous PSA 12 agreement, the Trust is able to continue to deploy Microsoft Office 2010 into areas at no additional costs. However, as Office software moves on, the opportunities for providing enhanced functionality (cloud services, integration with other applications, etc) within the office type software will be reduced. The Trust will need to continuously review its system requirements as services develop and requirements change. The nature of the new licence agreement with Microsoft allows for an annual review of requirements and the ability to flex the contract to meet these new challenges. The development of a virtualised environment in the future (as mentioned in the user computer interface section of this document), necessitates a complete review of the licencing model as the current model does not clearly fit with this new approach. As new technologies and operating systems are developed, for example open source software, cloud based operating systems and storage the current strategy of single vendor procurement for such office systems will need to be reviewed.

106. In addition to this, the current blanket coverage policy for office systems, whereby every computer gets a similar build and level of functionality, is neither sustainable or efficient. In the future system builds and machine deployments will be based upon the requirements of the service.

Mobile and remote working

107. The ability to work from multiple device, but maintaining the same working environment is expected, not desired. The ability to work from anywhere at any time

will assist in making the ELHT workforce more productive, creative and effective. By focusing on the Trust mobile working system and ensuring it integrates with any end user device of our choosing whilst maintaining a high level of encryption on the device and in flight to another device.

This not only gives ELHT the flexibility on where and how they work, but it is also a major contributor to moving towards a paperless environment.

108. The Trust will continue to support the use of mobile devices (tablets, iPads, Smart Phones), but this will be in managed environment. In addition to this, there are licence implications relating to access to email via these devices and other back end and patient centric systems. In order to facilitate these innovations, the Trust will develop a 'Bring your own device (BYOD)' strategy whilst, alongside this, enhancing the use of Trust owned mobile devices to facilitate care delivery.

Unifed Communcations

Telephony

109. ELHT currently run three telephony systems, BT iSDX, Meridian iSDX and Cisco Call Manager. The BT and Meridian systems are what are referred to as Analogue Private Business Exchange (PBX) and are over twenty years old. The functionality of these two systems is limited to mainly sending and receiving calls.
110. The Cisco Call Manager is referred to as a Digital PBX with enhanced functionality which will allow the system to integrate into our NHS neighbours telephone systems which will give the Trust the ability to login to any Cisco phone around the area with their own extension number, link into Video Conferencing suites, act as the infrastructure for enabling Telehealth, interlink with Active Directory to enable cross site extension mobility and a whole lot more. It is this technology that ELHT will be investing in to stay ahead of the technology curve.
111. To ensure continuity of service in the event of a network outage one of the Meridian switches will remain in service to act as an emergency phone in key locations. The remainder of the analogy systems will be decommissioned.

Mobile Telecoms

112. ELHT has two mobile phone contracts. All the Trust smart phones and devices are managed through Airwatch Mobile Device Management (MDM) Software.
113. The Trust has lone workers, working right across East Lancashire which is largely rural, therefore good signal coverage is essential to ensure the safety of our staff. One provider currently has the largest coverage in our area and has won the emergency services contract for the UK which commits that service to covering 90% voice and data and 99% voice only coverage by 2017. It is based on these facts that

it is the Directorates intention to move the Trust to single mobile phone contract with this provider.

Email, instant messaging and Presence (Video)

114. In late October 2015 ELHT implemented Lync IM&P commonly known as Skype for business. Currently the system is setup for internal use only. 2016 will see a focus on opening up access to other organisation both public and private and to the general public. By opening the door to direct communication via video, voice, or instant messaging between a patient at home and a clinician, moves the ELHT a long way down the path to meeting the governments objectives of moving care back into the community.

Bleep and Pager Systems

115. The main communication method for alerting and contacting clinical staff and senior managers, is the Trust Bleep and Pager system. Purchased 10 years ago the system is reliant upon an analogue radio system, using large antennae on each hospital site. Whilst currently safe and functional, this system does not support the myriad of digital innovations currently available to health care organisations to help support the delivery of care and enhanced communications.
116. The Trust is fortunate that it is now almost entirely covered with a wifi network, through which data may be sent to enhance paging and messaging services via smart devices. The Trust is committed to ensuring that clinical staff have

reliable access to information to support care and effectively coordinate response in times of need. It is the intention of the Directorate to explore further the opportunities for using the emerging digital technologies and working with senior clinical and operational colleagues, present a business case for the replacement or enhancement of the current system.

Action – By April 2017, dependent upon an investment business case being accepted by the Board, a new paging system will be in operation across the Trust.

User Computer Interface

Desktop and Virtual Desktops

117. Like all NHS organisations, the PC and desktop estate has 'evolved' rather than been part of a planned expansion and upgrade. With currently 5900 devices operating in the Trust across all hospital and community site, managing and updating this diverse asset can be problematic. Whilst the service deploys software 'agents' to deliver upgrades etc, some of the machines require physical intervention. Trust staff often express tension where machines either take too long to start, work slowly or do not have the correct configuration to run particular software configurations. It is the intention of the Directorate to develop a solution that allows roaming profiles (ie users have the same desktop from every PC), rapid startup and access, enhanced remote working and 'hot swappable' machines should a particular unit fail without intensive engineer support. The use of a Virtual Desktop environment (VDI), will support the Trust in this journey. However, transition to this state is both costly and technologically challenging and requires a degree of 'housekeeping' before being implemented.
118. Currently ELHT has 2965 PC's still on Windows XP, this not only creates a threat to our Trust, but to all Health Care organisations connected to the NWSIS CoIN. An aggressive upgrade path from Windows XP to Windows 7/10 will need to be

undertaken to ensure the safety of the Trust digital information, assets and giving assurances to the other organisation on the CoIN that ELHT is not a security liability.

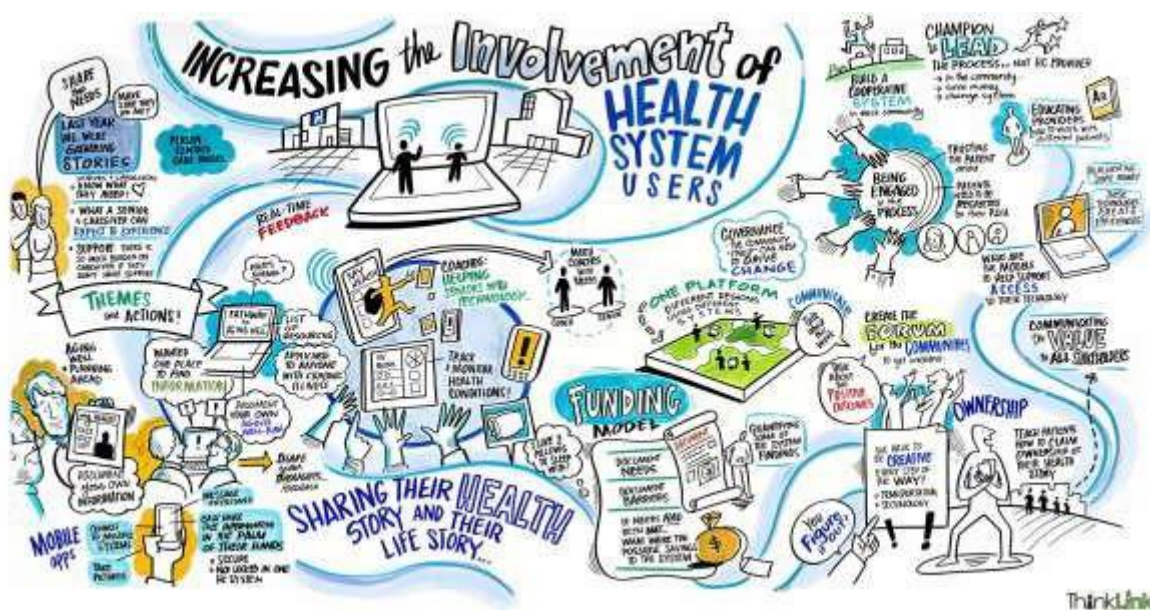
119. Once ELHT has moved to a secure stable end user computer platform can the focus change to offering our users greater flexibility by moving to a virtual desktop environment supported by single sign on.

Clinical Environment Displays

120. As the Trust moves towards a more 'digital' environment, there is a requirement to communicate specific elements of information to the wider operational teams within the clinical areas. There is ample evidence that interactive display in clinical areas improve access to information and data. It is the intention of the Directorate, working with clinical and operational colleagues to install interactive displays in all clinical areas, starting with ward areas. This will allow real time access to electronic patient tracking systems, patient information (with due regard to confidentiality) and provide facilities for training and service reviews. The directorate is also keen to explore the use of short throw projectors for areas that require a larger display and enhanced training facilities.

Patient Facing Interfaces and clinical support.

121. Information systems are seen as the key enabler in ensuring that patients are at the centre of the care relationship. Never before have patients been able to use information to the degree they can now in both informing health professionals of progress, engaging with services and making informed decisions about their own care. This is clearly demonstrated in the graphic below, developed by the Change Foundation (2014)

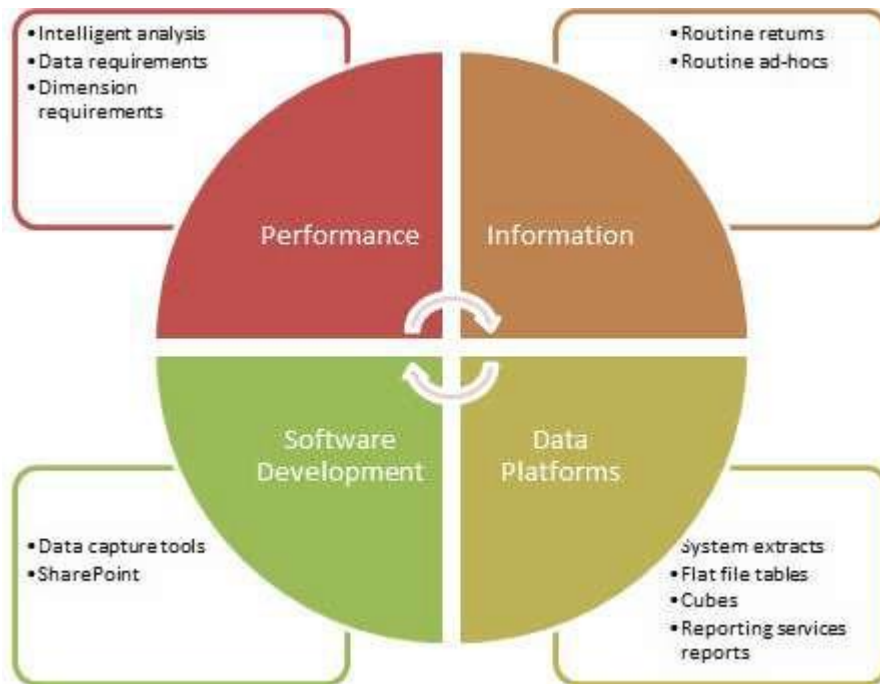


122. The Directorate is committed to building and supporting these relationships and interfaces. Central to this, is the development of the ePR, however in the meantime there is a range of initiatives that the Trust will be engaged in the support these developments (alongside that done by the Lancashire Digital Health Board and the Pennine Lancashire teams).

Information Management

123. The management of information and performance has been centralised into one team during 2015/16. This now provides a single point of contact for data capture, data warehousing, reporting and performance management. The teams are split into four key areas:

- Corporate information
- Performance management
- Data platforms
- Software development



124. The procurement of an electronic patient record in 2017/18 will have a significant impact on the role of information management. The team are currently part of the group reviewing systems and will be involved throughout the life of the project.

National returns and commissioning data

125. The corporate information team are responsible for the management of routine information flows. This ensures that all mandated and local information flows are managed by a standard process including data quality checks and timeliness management.
126. The majority of national submissions are through the department of health online Unify2 tool. All contracted data flows from schedule 6 are reviewed monthly with the commissioners at the contracting and activity sub group.

127. The National and contracted data flows have a robust process with no significant issues escalated through 2015/16. The local internal data flows are undergoing review and enhancement. There are some improvements that can be made to rationalise the production of data flows which will be supported by the improvements in the data warehousing and information areas.
128. The implementation of the ePR will have some impact on the assurance and capture of data but the data flows will still need to be maintained and managed.

Analytical support for services

129. The Trust analysts were transferred into the central team early in 2015/16 to ensure a consistent resource was available to all services. The Divisions have a dedicated named information and performance manager that attends relevant meetings to present and support information. Over the last year the team have been reviewing the work the analysts have been producing, to further understand the needs of individual services and the similarities of each.
130. The team is now reviewing the demands of the service and whether the structure of the four teams is appropriate to service the requirements of operational and corporate teams. It has been initially identified that some highly skilled staff are producing routine work (which could be done either automatically or by other staff), there is requirement for dedicated contracting analysis and a gap have been identified relating to a quality improvement analyst for detailed statistical analysis.

Information access and portals

131. There is a requirement for information self-service and interactive reporting identified across many areas of the Trust . This requirement is supported by the informatics teams who are developing reports using new technology and approaches. Previously, however, the creation of reports was unstructured and a substantial unmanaged list of data sources, online reports and self-serve data existed across the organisation. The Directorate is in the process of reviewing all of the current report offerings and planning the migration of these into a single unified, clear and concise platform. This single point of access will have information and links to reports grouped into relevant areas. The current systems of data presentation and analysis within the Trust have limitations in relation to their drill though capability and visualisation of information, during the next 12 months the teams will, working with operational managers and clinicians, review options for presenting data in a more interactive manner.

Scorecards

132. Specific pre-built scorecards are being developed which contain an agreed selection of measures at an agreed level of detail. The scorecard will have a standard look and functionality including the capability to display a suite of graphs for the each measure. Each measure will be part of the assurance framework which will include a detailed specification. These will support Trust committee meeting, Divisional

performance meetings, projects and all other requirements where a fixed measure needs to be monitored.

Online reports

133. Dedicated reports that allows the end user to investigate the data within a controlled environment have been produced. These reports will support numerous trust areas that require further 'drill down' into specific areas. Where possible the data will align with the assurance framework and have signed off measures.

134. The majority of these type of reports are current operational reports used across all services. There are currently over 700 online reports that need review and migration to the new data warehouse structure.

Excel reports

135. There will be dedicated excel reports utilising data directly from the data warehouse and taking advantage of functionality in excel. These reports will be accessed through the single point of access but local copies can be stored. Although similar in functionality to the online reports they allow us to provide a much wider scope on data items and interactivity. The majority of these reports will use data from a 'cube' which will provide specific data set with agreed calculated fields and filters. This will allow the detailed analysis of the specific area while removing the complexity of joining data together and creating calculations.

136. As part of the review of the current online reports were appropriate reports will be migrated into excel reports.

137. The implementation of the ePR could have significant impact on the operational reports as this information would be directly accessible from within the ePR. Once the system has been agreed the team will review which reports will need migrating and which can be archived.

Data warehousing

138. This is the underlying structure to all of the reporting requirements. The data warehousing team have made substantial progress during 2015/16 to develop a reliable structure however a system of this size and nature is complex and although not yet complete work is progressing well. The team review the planned warehouse build and prioritise this alongside the requirements of the clinical and operational teams. The build requires incorporation of all the Trust systems that data is required from for reporting and monitoring purposes. For each system an understanding of the underlying data structure is necessary and the ability to draw this into the DataWarehouse through a reliable process required. This data then needs processing to make it available for any reporting requirements.
139. The team is 'future proofing' the data warehouse by producing complete data dictionaries and developing the structure based on Trust requirements instead of system outputs.

140. The full impact of an ePR will be accounted for when a specific system has been identified. It is anticipated that the majority of data flows will migrate from current systems to the new ePR ensuring the continuity of reporting.

Benchmarking services

141. The Trust is currently engaged in a procurement exercise (March 2016) to purchase a clinical benchmarking tool benchmarking tool. The requirement is to procure a system that supports both the Trusts high level benchmarking requirements and individual clinical team needs (specifically focussing upon outcomes and revalidation).
142. This procurement is led by a project group which includes clinical, divisional, procurement and corporate representation. The group have developed an Output based specification for the system of essential and desirable requirements and will be choosing a compatible system following representation by the suppliers during 2016. Recognising the importance of having a longer term relationship with suppliers, the challenges of implementation and the requirements to obtain the best value for money, the Trust will be looking at a long term (5 years) investment and commitment. Upon selection and contracting the teams are committed to ensure the benefits are realised by fully utilising the functionality, supporting divisional use and maximising the support from the supplier.

Clinical Coding

143. The Clinical Coding department currently uses the paper case note to code approximately 170,000 Inpatient discharges per year. Clinical data must be accurately and consistently recorded to well defined national standards to enable it to be used for statistical analysis and to enable payment through pBR. Information drawn from accurate Clinical Coding better reflects the pattern of practice of Clinicians and provides a sound basis for the decision making process.
144. Accurate documentation, clinical engagement in the coding process and robust Clinical Coding audit / training programmes are key to ensuring that the trust is able to provide accurate and timely clinically coded data. Over the past twelve months the department has looked to increase its establishment in order to provide; audit, training and clinical engagement functions, whilst also continuing to meet pBR deadlines and achieving Level 3 IG Toolkit scores in the most recent IG Toolkit external audit.
145. Coding from electronic systems provides significant opportunities to improve the documentation and share information more easily. By 2020 SNOMED CT will have to be embedded into electronic systems. This means the coding process can be started at the point electronic documentation is created. The potential for clinicians to be more directly involved in the coding process and the creation of an EPR containing; accurate, complete and timely data, will mean the Coding department needs to adapt. The most important part of this adaptation will involve improving its coding audit function in order to support future coding systems and ensure the trust continues to produce accurate and consistent coded data to support statistical analysis.

Governance and Security

Information Governance

146. Information Governance (IG) is key to the successful procurement, delivery and running of systems. This is because effective IG delivers assurance around the handling of information and data by staff, by I.T systems and related processes. ELHT has been building up its information governance function so that it is embedded in the delivery of all projects and programmes. This means it is now mandatory for all informatics programmes and projects to complete Information and information security risk assessments at the start and to consider and mitigate any information security and management risks. IG assurance also extends to the use of correct project and programme management methodology as this is central to information risk and assurance. To this end guidance has been produced for project managers on good project management practice and ensuring quality. Given the importance of IG this is seen as an area for action and where additional resources will need to be reallocated compared to other areas in informatics.

Cybersecurity

147. Today's world is more interconnected than ever before. Yet, for all its advantages, increased connectivity brings increased risk of theft, fraud and abuse. As the NHS become more reliant on modern technology, the Trust also become more vulnerable to cyberattacks such as information security breaches, spear phishing, and social media abuse. Working closely with HSCIC's Care Computer Emergency Response Team (CareCert) ELHT will embark on a major review of its information security, policies, processes and training to ensure the Trusts information is only accessible to authorised persons and our staff are trained to identify potential attacks and have a clearly defined escalation path into IT and Information Governance.

Informatics Skills Development Network (ISDN) Accreditation

148. The Trust is an active member of the ISDN, part of the North West Skills Development Network which also incorporates Finance (FSD) and Procurement (PSD). The network is funded by North West Organisations and its aim is to deliver excellent value for money for NHS organisations across the North West on a range of learning and development activities.

149. In 2014, the network developed an overarching accreditation model to measure the effectiveness of an informatics organisation in working towards becoming an excellent learning and development service. The accreditation model is based on a series of standards for informatics departments, including development pathways for informatics staff as agreed by ISDN Strategic Group.

150. The Trust has undertaken an initial gap analysis against the accreditation framework, with initial assessment by the ISDN accreditation leads planned for June 2016 with a view to completing the final assessment by November 2016.

eHealth and Clinical Reference Groups

151. Central to any informatics development in the Trust (and any service for that matter), is the active engagement and involvement of clinical and operational staff. Previously in many organisations, informatics developments we've progressed with the main drive being from the IT department rather than the clinical teams. These developments had limited success and in almost all cases withered after a relatively short period of time. The input and ownership of operational staff cannot be understated or underestimated. To that end, the prominence and influence of the eHealth Board and the Clinical reference groups at the Trust is being significantly strengthened and enhanced. In the future these groups will always be chaired by a practising clinician or operational lead and as from 1st April 2016, no significant procurement decision or informatics initiative will be taken or commenced without the express permission or support of these groups.

152. To further support the prominence of these groups, as from March 2016, the eHealth Board will report all minutes to the Trust Finance and Performance Committee.

153. In addition to this, the Trust will continue to support a full time Chief Nursing Information Officer and a part time Chief Clinical Information Officer. The Trust will also explore the addition of Divisional Chief Clinical Information Officers as the informatics agenda moves forwards towards full ePR.

Development

Software development

154. No one solution bought 'off the shelf' can hope to meet all the requirements of a complex organisation such as ELHT. There is a requirement to develop small 'bespoke' solutions (which integrate with the wider systems), to deliver to specific challenges. The software development team, provide this facility. Using a range of industry standard tools, the team will, if required, create unique solutions to the specifications agreed with services. However, ultimately, it is intended that these unique solutions are kept to a minimum as software suppliers develop open API's (Application programme interfaces – connectivity), open source solutions and mobile applications. These will allow enhanced integration and a reduced reliance upon complex 'from scratch' developments.

155. The software development team are creating data capture solutions to support the Trust until the full implementation of an ePR. The majority of developments are to support clinical care that ELHT current systems do not have the functionality to capture. The biggest projects are the agreed care bundles and the accident and emergency complete electronic record.

Service development and education

156. The Directorate is committed to continuously developing its staff and thereby its offer to the clinical and operational community. 2015 / 2016 saw the introduction of an apprentice scheme in the department with the teams taking on pre and post graduates from local universities for the first time for long term placements.
157. A range of staff in the teams have access to over 3500 online training courses and this access is set to increase during the next few years. The Directorate actively supports staff in continuing professional education and is committed to continue this moving forward.
158. The new licence agreement with Microsoft allows access to a range of training resources, not just for Performance and Informatics staff but also all staff in the Trust.

Health Economy Integration

Sustainability and Transformation Plans

159. ELHT will be part of the Lancashire and South Cumbria Sustainability and Transformation Plan (STP). This is line with the Healthier Lancashire transformation programme. Within Lancashire and South Cumbria there are five health economies. ELHT is part of the 'Pennine Lancashire' health economy.
160. Lancashire and South Cumbria has some significant issues of health inequality with an average life expectancy which is significantly worse than the national average. It is recognised that the majority of the required transformation will need to be owned and driven within these health economies. There will be a need in some areas to transform service across Lancashire and potentially beyond.

There are 3 key objectives;

161. **Financial improvement** - It is estimated that there is a recurrent resource gap of £800m facing the Lancashire health and care community over the next five years (£250m in Pennine Lancashire, £100m in ELHT). The intention is to close this gap by greater standardisation of clinical processes, by rationalising our estates and continuing to transform our workforce.
162. **Access standards** – With the exception of the four hour standard, ELHT performance is robust. In the course of 2015-16 the Trust has altered the acute pathway which has seen a marked improvement in performance, the Trust needs to continue to drive improved access to out of general hospital beds and find more resilient solutions to workforce needs. Improvements to seven day services will continue to help (particularly in weekend diagnostics) and the ability of partners to provide an equality of services through the entire week.
163. **Transformation** – As a health economy the variability of the services that are provided and the duplication across a range of providers across health and care is problematic. The Trust is keen to accelerate transformation in those areas where it is pragmatic to do so. Programme Management Offices have been established at organisational, area and County level. The case for change has been described and services are now entering the 'solutions phase'. This is likely to lead to a consultation phase in 2017 followed by implementation from 2017 through to 2020.

Local health and care system vision

164. The Pennine Lancashire leadership (ELHT, ELCCG, BWDCCG, Lancashire Care FT, BWD Local Authority and Lancashire County Council) have confirmed an intention to work together on the formation of an accountable care system. Within this it is currently assumed that ELHT will continue as the single largest provider of secondary care services to the community of Pennine Lancashire. Working with key partners ELHT is likely to help to provide solutions in element of primary care and the development of neighbourhood services. In line with the five year forward view this is likely to involve the inclusion of adult social services.
165. Such service reviews and transformations require access to robust, accurate and timely data sets for planning and monitoring, high resilience informatics infrastructure for care delivery and enhanced communication systems for service coordination. Working alongside partners the Performance and Informatics Teams are part of a wider 'Systems Enablers Group' that will support and facilitate change.

Digital Lancashire

166. Lancashire has an established Digital Health Board which draws representation from health and social care providers, the third sector, Universities and the Lancashire Enterprise Partnership. This Board and the associated programme of work, forms part of a system-wide transformation programme called Healthier Lancashire. Through this governance structure a mechanism has been established that links into the Lancashire Collaborative Commissioning Board, local Vanguard programmes and other regional partnerships.
167. To ensure there is strong clinical leadership and co-production in the design and implementation of our digital roadmap, Lancashire has an established Digital Health Clinical Advisory Group which forms part of the governance described above.

168. The Lancashire Roadmap will seek to ensure the continuity of care for patients flowing into and out of Lancashire through collaboration on interoperability, alignment of clinical documentation and sharing of our technical plans with boundary partners.
169. Many aspects of our digital roadmap are already being developed through the Lancashire Digital Health Board, which has been established for over 12 months, as part of the Healthier Lancashire Programme. The membership of this group draws representation from across the health economy, to support the delivery of projects, such as the Lancashire Person Record Exchange Service (LPRES). The Board also acts as a coordination point for projects that are delivered at a local level and into individual organisations.

NWSIS

170. The North West Shared Infrastructure Service (NWSIS) Management Board is responsible for the management of the North West SIS Programme of Work. The NWSIS Management Board oversees the programme of work being undertaken in each of the agreed task and Finish groups.
171. The NWSIS Management Board agrees in the first instance projects within the Programme portfolio that meet with the Digital Health Board Strategy. Projects outside of the Digital Health Board Strategy are agreed on a case by case basis by the North West SIS Management Board voting members and will be ratified by the Digital Health Board.
172. Current programmes of work being discussed within the NWSIS management board include;

Data Centre

- a) Cloud
- b) Hybrid
- c) On Premises
- d) BI

Interoperability

- a) LPRES
- b) MIG
- c) EDT Hub

d) IG

Harmonised end user computing

- a) AD group policy rationalisation
- b) Standardised Desktop
- c) Application Delivery
- d) Desktop Presentation i.e. VDI, Citrix etc.

Unified Communications

- a) Email (with HSCIC support)
- b) UC
- c) Voice

WAN Services Re-Procurement and alignment

- a) Definition (with HSCN support)
- b) Procurement
- c) Inter-Connects (with HSCN support)

Identity Management

Population Health

173. Integrated care has become a key focus of health service reform in England in recent years, as a response to fragmentation within the NHS and social care system. Yet efforts to integrate care services have rarely extended into a concern for the broader health of local populations and the impact of the wider determinants of health. A recent document from the Kings fund challenges those involved in integrated care and public health to 'join up the dots'. This challenge recognises that population health is affected by a wide range of influences across society and within communities. The authors state that improving population health is not just the responsibility of health and social care services, or of public health professionals. Instead, they argue that it requires co-ordinated efforts across population health systems²³.
174. They also show that integration of care is supported by population risk stratification, an emphasis on prevention and self-management, disease management and the use

²³ Alderwick, Ham, Buck (Feb 2015) Population Health Systems, Kings Fund, London

of care pathways for common conditions, case management for patients with complex needs, extensive use of technology and population data, and a model of multispecialty medical practice where unplanned hospital admissions are seen as a 'system failure'. They indicate that successful systems use data about the population they serve, available through system-wide electronic health record, to understand members' health needs and the distribution of health outcomes. Using these data other health systems offer a range of interventions tailored to the needs of different individuals and population groups to support people to remain healthy and to deliver the right treatments when they become ill. They also identify the requirement to promote the sharing and pooling of data across organisations to identify challenges and needs.

175. Working alongside the Greater Manchester Academic Health Sciences network and the Lancashire Digital Health Board, the Trust will, via the Performance and Informatics Directorate, support development in the collection, collation and analysis of data to support population health analysis and promote positive change through the effective use of such data.

Procurement

176. Currently (as at 2016), the Performance and Informatics team spends around £4m annually both maintaining the Trust current systems and procuring new items of computing and equipment to support clinical practice and the operation of services. The directorate recognises the necessity to ensure that the Trust operates with high levels of probity and transparency whilst optimising value for money and return on this significant investment. Working alongside the Trust procurement department, a dedicated procurement link has been identified and provides both expertise and advice relating to all matters of purchase.
177. In addition to this, a monthly procurement meeting is held where all decisions relating to the direction of purchasing, opportunities for savings or cost efficiencies and technology developments are discussed. Feedback from this meeting is presented to the eHealth board which is the ultimate arbiter as to whether a significant investment

is to be made by the Directorate prior to forwarding to the Executive team and Board for sign off.

Frameworks and OJEU

178. Where available the Division will use Framework contracts to support major procurement decisions. These frameworks not only expedite the procurement process but provide assurance as to the quality of service and product delivered.

Joint Procurement / Collaboration

179. In line with the recently agreed Memorandum of Understanding (MOU) with other local health care providers, the Trust will, in future, explore every opportunity to collaborate on procurement for major items of equipment and services. This approach both ensures value for money (through economies of scale) and provides opportunities for future joint service provision should the requirement arise.
(Appendix 6)
180. Joint procurement and collaboration will not be limited to other local health care providers, but extended to other organisations where opportunities present themselves (eg Crown Commercial Services).

Contracts

181. Historically, performance and Informatics procurement decisions and contracts have been developed through a 'proof of concept' arrangement with suppliers and then moving towards a more formalised contractual arrangement following a period of time (based around a statement of works). In the future, these arrangements will be kept to a bare minimum (in only exceptional circumstances) and where the Trust needs to commission a service, software system or major infrastructure investment, a formal, monitored and time limited contract will be developed and signed. Whilst this may

increase the procurement times, the benefits of such formal arrangements outweigh this.

182. By consolidating ELHT's printers and working closely with our NHS neighbours on procuring a single managed service will reduce printer costs, improve efficiency and reduce the amount of call incurred by the Technical Support Technicians enabling them to focus on the strategic deployments of the Trust.

High level benefits

183. There are a number of benefits associated with this multifaceted programme of IT enabled transformation that are both cash and non- cash releasing in nature.

Quantitative Benefits associated with the strategy

184. The quantitative benefits associated with the strategy can be summarised as:

- Reduction in workforce costs associated with medical records storage
- Reduction in workforce costs associated with clinic preparation.
- Reduction in costs associated with transporting medical records
- Reduction in the costs of third party storage requirements for deceased records
- Reduction in costs associated with storage of all records
- Reduction in stationary expenditure required for paper document and record creation
- Reduction in the costs of printing bespoke paper forms and records
- Reduction in the licensing costs for existing clinical applications.
- The potential to close beds and wards as LOS is reduced
- Reduction in travel costs and non-value added time in community services

Qualitative Benefits associated with the strategy

185. The qualitative benefits associated with the strategy are summarised as:

- Improved patient care and clinical safety/effectiveness through the reduction of documentation and transcribing errors and improved quality of clinical effectiveness in line with CQC recommendations.
- Improved clinical efficiency through having the information in one place, providing a single electronic view to a patient's case note and current episode.
- Improved patient care and clinical safety through the simultaneous access to a single document or record in multiple locations, ensuring a consistent understanding of the progress of the patient's care.
- A secure store, minimising the risk of loss of key information (putting the patient care at risk).

- Enhanced accountability, due to having a robust audit trail for any appropriate document or record within the trust.
- The Trust being future proofed to deliver the paperless/paper light elements of the IT enabled transformation programme
- Clinical users being keen to adopt a full EPR, after having a positive experience of a paper light solution through EMDS
- Reduced environmental risks issues associated with the storage of large volumes of paper i.e. Health & Safety, Fire risk etc.