Innovation, Informatics & Information (I^3) Strategy

University Hospitals of Morecambe Bay NHS Foundation Trust Innovation, Informatics & Information (I^3) Strategy

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Governance

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Issue	1.0	April 2013	Steve Fairclough	First release

Distribution

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Glossary (delete if unnecessary)

Abbreviation	Description
ePR	Electronic Patient Record
eICP	electronic Integrated Care Pathway

References (delete if unnecessary)

Ref	Document Name	Document Number

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The Internet and its associated technology have changed our lives, expectations and aspirations. We rely on the transfer of secure information for the conduct of our daily lives – from purchasing travel tickets, managing our finances, and storing documents and photographs on the web. We also regularly use the web as a source of information, increasingly on health related topics.

Professor Sir Bruce Keogh KBE
NHS Medical Director and interim Director General for Informatics

1 Forward

I am delighted as University Hospitals of Morecambe Bay NHS Foundation Trust's (UHMB) first Chief Clinical Information Officer, to introduce this new 6 year strategy in 2013, for a new beginning, for the new department of Innovation, Informatics and Information.

It is worth reflecting on how far we have come over the last thirty years and then visioning our intended future journey over the next 6 years, to fully appreciate the "sea change" we have seen in Health Informatics. I started as a doctor in 1985 in a world where secretaries used ribbon typewriters, there were only rudimentary computers in hospital laboratories and the clinical world was supported by pen and paper! Wards didn't have computers! Indeed, on joining UHMB Trust in 1996 one of the biggest weaknesses in my view was a lack of computer systems to support clinical care.

Let's roll forward another 17 years. We now work in an NHS, where patient care is faster, more immediate, more multi-disciplinary, more multi-site, and involving clinical pathways with multiple hospitals and organisations. The single hardcopy paper hospital record of the past can no longer reliably support the needs of patient care, at the point of care.

We launched Lorenzo as our "first of type" main electronic patient record in June 2010 after some early preparatory work over the previous 2 years. This forms the basis of our EPR and supports the organisation of the process of clinical care, and supports "front end" clinical documentation, discharge summary and clinic letters , results, TTO prescribing and ED modules. In coming months we will be launching inpatient prescribing and dispensing, maternity, and test requesting. We also have a major project to turn outpatients into a largely electronic-supported, paper-lite healthcare setting.

One of the main advantages I've appreciated with Lorenzo is that as it is web browser based, the system is capable of easy configuration to "talk" to other systems. This means our midwives can use digital pens in the near future to capture clinical care and we can configure "end of bed" devices such as iPads for use on ward rounds. We can also develop electronic whiteboards on wards and units, to be able to actively manage patient journeys and clinical pathways and to also manage smaller "hot" hospitals" with live bed states.
We can also genuinely deliver the long-term strategy of a local health economy "single patient record" by linking Lorenzo EPR to GP EMIS Web patient records, ambulance service and social services. It also means we can see GP summary screens and in the future, we can provide reciprocal summary views to our GPs and provide intelligent messaging such as serious diagnoses and end of life notifications. In the future, I would like to see our clinical networks "hardwired," with interoperable hospital systems between Morecambe Bay, Blackpool, Preston and East Lancashire. This will support "end to end" clinical pathways and will support services in vascular, cancer and cardiac networks and will support commissioners' needs to manage these networks and pathways, which will be more efficient and effective. Lastly, I'd like to see a world which changes from "patient centred" to "patient-led." Patients need to be empowered to interact much more with their clinical care and make

overt choices for themselves and we need to be more responsive to their needs. Patients should be able to choose their doctors and nurses, based on information freely available to them on quality and safety outcomes. They should be able to book their own appointments, enquire electronically about their own healthcare, view information to help them care for themselves and provide prompt feedback on services. All this is possible over the next few years.

I see significant advantages in consolidating our staff in Informatics, Information and Medical Devices into one team. This will provide clarity of functions for all. I welcome the opportunity to revise our capturing and presentation of information on clinical services, so that in the near future our specialties and divisions will be well placed to lead their own businesses and focus on patient quality and safety outcomes and be agile on clinical service and contract delivery. This really will mean that we have transcended into a “clinically led” organisation.

Lastly, I’d like to focus on our people. I have always been impressed with colleagues in the Informatics and Information departments, who have always had a “can do” attitude. Nothing is too difficult and all their work is focused on patients. I’d like to lead a department where everyone knows the direction of travel (strategy), everyone works in teams delivering projects which provide benefits linked into the needs of our patients and our organisation (project management and project portfolio management), everyone knows their role and is skilled for it (job plans, appraisal and training) and everyone feels a real sense of worth and purpose in themselves and the job they do.

I feel really excited at what we can achieve in the next 5 to 6 years, by building on our solid base achieved so far. This new Informatics “high speed train” is fuelled, ready and waiting. Last call for passengers!

Dr Colin Brown
Chief Clinical Information Officer
April 2013

In preparation for the production of this strategy the Informatics Senior Management team read all recent National and Local Informatics strategy documents, common themes appeared and seemed to be summarised in the Engagement Analysis of the NHS Next Stage Review. This review sought views from both within the NHS and from patients. The following are a few sound bites extracted from the document:

"There is too much data and too little information. There are too many people collecting data using different formats and professionals are not confident that they can compare apples with pears."

"it is not useful for diagnosis at the moment, there are too many pockets of information. For example a new patient with a kidney tumour, to find scans you use one IT programme, for blood tests results you have to use another … it's all too complicated and you could spend a day trying to gather information for one patient."

A patient observed

"The lack of continuity between GPs and hospitals at present surprised me. I am quite worried that this is not being done"

Solutions need to be acceptable to the NHS. They must demonstrate that they deliver real clinical benefit

2 Executive Summary

There is a view that the transfer and sharing of information in the NHS has lagged behind other industries. The NHS treats around 1.5 million patients a day. Some simply require appointments; some may need a blood test or x-ray, while others may require a series of complex investigations in different locations. Everyone would like the resultant information to be secure, but available to those that need it. Against this background there is a recognition that developing a coherent technical infrastructure to address the issues of data transfer and security, between multiple organisations with a myriad of different systems in one of the world's largest organisations, was never going to be easy.

The NHS has changed significantly since the last UHMB Health Informatics strategy (2008), as has our local understanding as an organisation when applied to this discipline. In 2008 there was still a misunderstanding about the scope of information covered within an Informatics Strategy, the Trust perceived this whole area of work as Information Technology (IT) and pigeon holed all Informatics initiatives in the same sub category, in addition the Trust could not see past its master Patient Record as the case note in any other credible form than paper. As an organisation significant ground has been covered on the Informatics agenda since 2008, now we understand the importance of Information in its broadest sense as absolutely crucial to the safe delivery of patient care, we also see that paper based systems cannot support modern healthcare delivery and there is a real electronic alternative.

Technology enabled healthcare is with us now and is here to stay, this Strategy describes how our Trust can take advantage of both Information and the systems that maintain it, to both improve healthcare delivery and to improve clinical and business processes at all levels.

In the modern NHS in which we work we are now dependant on Science and Technology, to perform tasks we used to think of as exceptional or difficult but now we consider as routine. The weakest link in the healthcare delivery model is not the technology or the supporting information system; in general it is process or people. This key aspect of strategy is addressed within this document under the Governance section, Theme 4, however Change Management and Information Quality or the challenge of seizing the technology-enabled opportunity must be seen as everyone's job at all levels of the Trust.

This Strategy has a similar theme to previous versions as it describes areas of development, deployment, improvements in the business as usual support services; however it also has a significant consolidation component. The Trust has undergone a major transformational change programme over the past 3 years, with the Lorenzo electronic Patient Record (ePR) system as the key enabler or catalyst of that change work. In terms of measuring the impact, size and therefore the opportunities of the Lorenzo programme, the overall scope needs to be understood. The Lorenzo Programme has modernised, changed or at least touched most aspects of the Trust's

Informatics service from: enabling the development or improvement of supporting small systems such as Guru and the electronic clinic request system; changing the culture within Informatics to be more clinical customer facing; improved the quality and presentation of operational and clinical information; improved the interoperability layer within the Trusts core Infrastructure, there are many other examples.

As the strategic direction for Informatics service delivery has not yet been agreed across Cumbria and North Lancashire, this document will require a major review within the next 12 - 24 months, as the delivery options for this strategy will be radically influenced by the type of Informatics organisation employed to deliver the contents of this Plan.

The strategy clearly demonstrates that there are the tools and skills available within the Morecambe Bay area to deliver a professional day to day service and cope with the interim/tactical developments needed from I^3 during the life of this strategy. Specifically this strategy shows a clear and pragmatic staged delivery of a single Patient Record (sPR) vision within UHMB itself, to assist it with its change and modernisation agenda.

The vision embedded within this strategy is the deployment of a single Patient Record, supported by local systems and services that are able to offer benefit to both clinicians and the population of the Morecambe Bay area. It recognises that the deployment challenge of a whole Hospital wide system is huge, however now the initial phases are complete and the ePR platform has been established future stages of development and deployment can be governed at a pace to suite the Trusts ambition. The strategy demonstrates a comprehensive understanding of the dynamics associated with a complex cross organisation deployment, whole Informatics commitment and a professional approach to the support services required pre and post deployment.

The strategy also describes the requirement to develop 'local business' services. These are all systems and services that fall outside the scope of the clinical ePR agenda and includes the Electronic Staff Record; Oracle Financials, effective data warehousing etc.

Much analysis and consultation work has been undertaken in the preparation of this strategy. The framework or approach for this work can be seen at Fig 1 Analysis Approach to derive Strategy. This framework embraced and includes the output from the recent Price Waterhouse Cooper (PWC) Informatics and Information Assessment, the full PWC assessment report can be found at Appendix A. The detailed analysis has concluded with 8 very clear themes bound in this strategy that have been documented against a 3 phase time scale, short, medium and long term delivery.

The Analysis started with capturing the Trusts Business Objectives from the highest level down to objectives of operational teams. These objectives have underpinned this whole strategy and will result in I^3 projects bound by a project portfolio that is directly linked to key business objectives (drivers), thereby demonstrating the whole I^3 agenda delivering real business and clinical benefit. The Strategy itself has concluded with 8 key themes:

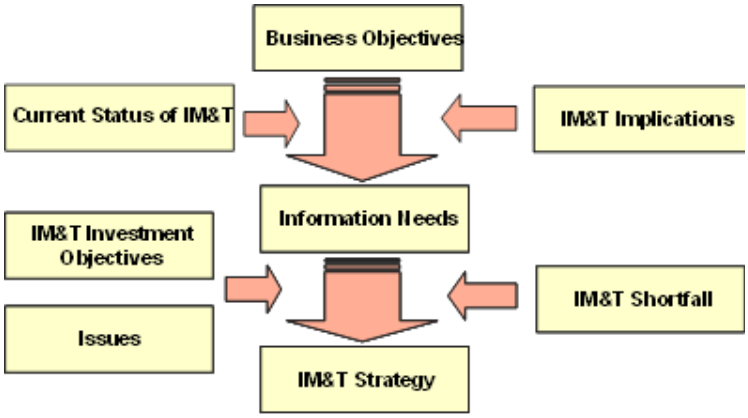


Figure 1 Analysis approach to derive strategy

Theme 1: the need to reorganise the way we manage our Informatics and Information resources to eradicate the confusion that exists of who does what and where the organisation commissions I^3 work from. In essence this theme describes the need for a single function tasked with this whole agenda, giving the Trust a single point of contact for anything and everything to do with this complex agenda. See section 13.1

Theme 2: Complete the Lorenzo Patient Record deployment and rollout The Trust over the last 4 years has deployed a significant Patient Record platform. However 3 key components are still to be put in place. During 2013 full ePrescribing, Maternity and electronic requesting of diagnostic capabilities will be introduced. Once these are in place and fully operational as an integrated capability they will be rolled out to all areas of the Trust at pace. This will leave one obvious outstanding component – Theatres. A full Business Case will be presented during 2014 that will recommend an approach to give the Trust an integrated Theatres capability. See section 13.2

Theme 3: the need for Business Intelligence information that describes the operations of the Trust, compares us with our peer group and provides trending capabilities to assist with predictive modelling of future service configurations and patient flow; provides a high-level dashboard type view of Trust performance against a set of locally defined initiatives. This theme introduces the concept of a **Single Source of the Truth** information model that is underpinned by clear **Provenance of Prime Data.** See section 13.3

Theme 4: put in place a new I^3 Governance structure designed to provide visibility and accountability for the whole spectrum of the I^3 agenda. See section 13.4

Theme 5: eHospitals or Paper-lite Hospitals This could be seen as the holy grail of the digital electronic Patient Record agenda, paperless is probably impractical within the life of this strategy (6 years) as external NHS organisations to UHMB will still be using paper as routine currency and without significant effort to scan everything at every entry point to the Trust we will have to be able to accommodate some paper within our processes and systems. However we have much more control over how we conduct and manage our internal business, the Trust has declared it intends to be paper-lite as a priority as soon as possible. The first objective of the paper-lite agenda is to take the outpatient departments paper-lite by June 2014, this will be followed by the Emergency Department and finally the Inpatient areas of the organisation. See section 13.5

Theme 6: Develop and maintain a project portfolio the analysis within this strategy demonstrates that a much more business grounded management of the I^3 agenda. This will be achieved by publishing a full project portfolio of work, the portfolio will show how each project aligns to its business drivers, the expected benefits and its current stage of delivery. Alongside the portfolio will be an I^3 blueprint showing the current landscape of systems and capabilities configuration at the commencement of this strategy lifecycle and also where we expect to be at the end (2019). See section 13.6

Theme 7: Interoperability with other health community patient record systems. To promote and deliver the care our patients expect and deserve we must be able to view aspects of patient records held in other organisations. These organisations will be a mixture of Primary, Secondary (inc Mental Health) and Community providers, these organisation, quite rightly, own and maintain their own patient record systems. However at key points of a patient's pathway

clinicians will require a view of these separate records to inform decisions supporting the next steps of the patient pathway. This strategy describes how the appropriate level of data exchange and viewing will be developed to support the most effective delivery of care no matter where the patient is treated in any of these organisations. See section 13.7

Theme 8: Infrastructure. Our Technology Infrastructure is one of the most precious things we have; it is well designed and robust. This area of strategy ensures the correct priority is given to supporting our infrastructure both on a day to day level and also to ensure the Trust has the appropriate technical tools available to deliver the best care for our patients. See section 13.8

3 Progress since last release

The last Informatics Strategy was published in 2008 and was reviewed annually; the strategy itself was an ambitious document that laid out a structured progression from a series of dis-jointed information systems to a coherent set of business focused integrated systems. The 2008 strategy identified mainly National programme systems to achieve this, through the deployment of an electronic Patient Record (ePR) Lorenzo and the electronic Staff Record (ESR), whilst maintaining the already attained high standard of financial system support through Oracle Financials. There was also a real recognition of the need for a formal service delivery function that could operate across a 24/7 profile. The Strategy also had a strong theme of whole health community development and proposed initiatives to support this.

Today UHMBs Information System support infrastructure is much improved, with significant development opportunity that did not exist in 2008. The electronic Staff Record is deployed and bedded in, the progression to a full electronic Patient Record system is well underway with the foundation platform established and core capabilities either in use and being expanded or in the process of being developed or deployed, all of which has been achieved within the existing staff envelope. There has been no expansion to the Service Delivery function, despite the massive increase in users of the electronic Patient Record and the shift towards a clinical user base. The Informatics Service Desk is Connecting for Health (CfH) accredited, one of the first in the country, this accreditation is reviewed every 3 years. Whilst integrated Information System support does not yet exist across the health community significant steps have been made with an emerging integration layer being developed and firm strategies for adoption coming from organisations both North and South of the Trust.

The electronic Staff Record is now providing opportunities to link management functions to the staff record allowing the Trust to operate more effectively; such as the linking of starters and leavers to the Trusts network access directory (Microsoft's Active Directory). This improves security and also has facilitated the development of a range of other HR related support applications, such as the Training Management System; on-call rota management; overtime recording etc. These developments provide both a user friendly method of tracking and recording both personal progress and also giving aggregated management information.

The electronic Patient Record is now established within the Trust. The platform layer, Lorenzo Care Management, went live June 2010, with the introduction of this capability across the Trust. There are now in excess of 4000 trained users of this single system, both clinicians and admin staff. The clinical content team are now working with clinicians to design forms and documents that will both replace paper records and also at the same time improve the clinical process and visibility of crucial patient information. Lorenzo now robustly stores all; referral letters from GPs; formal typed outpatient clinic and inpatient discharge letters; Radiology reports; Pathology results; Endoscopy reports; an increasing number of immediate discharge summaries; key patient specific structured information such as alerts, allergies and problems (symptoms or diagnosis) and a range of specialised noting type documentation such operation notes, infection control notes etc. Full requesting (Radiology and Pathology) will be available summer 2013. The system also supports other key functions with deployments of Emergency Care which is

fully live and To Take Out (TTO) ePrescribing which has been live across medical wards at Lancaster since October 2011. Project work has also commenced to deliver Advanced Bed Management and full Inpatient Prescribing and Medication Administration. This full capability gives UHMB one of the most comprehensive and sophisticated electronic Patient Record systems deployed anywhere across the NHS.

4 Principles

A clear distinction has been made between Policy and Strategy:

Policy: The principles upon which any measures or course of action are based.

Strategy: A method, plan or stratagem to achieve some goal.

There follows the principles used to underpin this Strategy, developing the vision and informing the service delivery methods.

- Information will be patient based;
- Systems must be integrated wherever possible;
- Information about health of individuals, populations, and about disease prevention, is necessary;
- Information will be derived from operational systems;
- Information will be secure and confidential;
- Information must be focused on health;
- Strategic Management of the introduction of Information System enablers is essential;
- Information systems should support change and deliver tangible benefits and must be accompanied by appropriate staff development and training;
- Proactive management of the pace of introduction of both change and new Information System capability, recognising the constraints and opportunities that exist in UHMB healthcare system is required;
- Information systems should support defined health care objectives, and positive steps should be taken to identify and achieve benefits;
- Effective Communications are key;
- Information systems should support the processes of providing high quality, cost effective health services;
- Management information should be produced, wherever possible, as a by-product of operational systems;
- A single Patient Record (sPR) for each member of the population is the gold standard;
- Each item of information should have a defined person responsible for ensuring that it is up to date, accurate and within the bounds of confidentiality for others to use;
- Standards need to be implemented that enable the exchange of information between NHS information systems and with related systems in the local community;
- Appropriate Informatics staffing levels should be provided to support the implementation and subsequent use of systems;

5 Strategic Analysis

Background

This Strategy builds on the published University Hospitals of Morecambe Bay NHS Foundation Trust Informatics Strategy of 2008, the initial strategy described what the Trust had to do to move towards a fully functioning electronic Patient Record capability and how it would deploy the individual components. This document should be read in conjunction with the 2008 version. The Trust now has a very robust informatics foundation, in terms of network; people; structures; capabilities and information systems. The next six years are about building on this foundation to deliver improved patient experience and better, more effective healthcare delivery.

Local

Much progress has been made over the last 5 years; a new Wide Area Network interconnecting the main Hospital sites, operating at a speed of 1 Giga bit per second. Means complex information, such Picture Archiving and Communications System (PACS) files (Radiology images) can be moved around the Trust very quickly, the new network has also improved the overall resilience of the Trusts connections to the rest of the NHS; the data centres that house the Trusts core computing resources have been improved and added to; the RLI now has a brand new purpose built data centre. This new facility improves resilience within the RLI site and also improves storage and disaster recovery options across all sites; much flexibility has been introduced at the server layer of the Trusts infrastructure by adding a 'virtual server' option. This capability has significantly reduced the operating costs of a typical data centre and also improved overall service response times; the new Pathology System has bedded in; GP electronic requesting for both Pathology and Radiology is fully rolled out; the core elements of a fully functioning electronic Patient Record System are all in place, from the access layer including a robust and effective security model through comprehensive operational capability available anywhere within the Trust, to a complete data warehouse designed to provide operational information as required.
The above summarises both the progress made over the last 3 years, which gives the technical context for some of the next steps described in this Strategy and also provides the infrastructure platform to allow the Trust to confidently build mission critical capabilities needed support its core healthcare objectives.

National - NHS Information Strategy 2012

The strategy's main ambitions

To realise the enormous potential benefits of information to improve our care and our health outcomes, this strategy sets the following ambitions:

- Information used to drive integrated care across the entire health and social care sector, both within and between organisations;
- Information regarded as a health and care service in its own right for us all – with appropriate support in using information available for those who need it, so that information benefits everyone and helps reduce inequalities;
- A change in culture and mind-set, in which our health and care professionals, organisations and systems recognise that information in our own care records is fundamentally about us – so that it becomes normal for us to access our own records easily;

- Information recorded once, at our first contact with professional staff, and shared securely between those providing our care – supported by consistent use of information standards that enable data to flow (interoperability) between systems whilst keeping our confidential information safe and secure;
- Our electronic care records progressively become the source for core information used to improve our care, improve services and to inform research, etc. – reducing bureaucratic data collections and enabling us to measure quality;
- A culture of transparency, where access to high-quality, evidence-based information about services and the quality of care held by Government and health and care services is openly and easily available to us all;
- An information-led culture where all health and care professionals – and local bodies whose policies influence our health, such as local councils – take responsibility for recording, sharing and using information to improve our care.
- The widespread use of modern technology to make health and care services more convenient, accessible and efficient;
- An information system built on innovative and integrated solutions and local decision-making, within a framework of national standards that ensure information can move freely, safely, and securely around the system.

Everyone Counts – NHS Commissioning Board

Empowered local clinicians delivering better outcomes; increased information for patients to make choices; and greater accountability to the communities the NHS serves.
These are the principles behind the new approach to planning clinical led-commissioning from April 2013.
The new NHS Commissioning Board is the body charged with overseeing and supporting this new system; it exists to enable excellence in healthcare. The NHS Outcomes Framework and NHS Constitution set out the goals and responsibilities – but the approaches for delivery will vary and local commissioners will have freedom to develop those that work in their community. Healthcare success in the future will be judged on the quality of outcomes.

Offer 1: NHS services, seven days a week
The NHS will move towards routine services being available seven days a week. This is essential to offer a much more patient-focused service and also offers the opportunity to improve clinical outcomes and reduce costs.
As a first stage, work across the community will focus on improving diagnostics and urgent and emergency care. It will include the consequences of the non-availability of clinical services across the seven day week and provide proposals for improvements to any shortcomings. Emergency care should not be used when patients would benefit from care in other settings.

Offer 2: More transparency, more choice
In conjunction with NHS Choices, publish activity, clinical quality measures and survival rates from national clinical audits for every consultant practising in the following specialties:

- adult cardiac surgery;
- interventional cardiology;
- vascular surgery;
- upper gastro-intestinal surgery;
- colorectal surgery;
- orthopaedic surgery;
- bariatric surgery;
- urological surgery;
- head and neck surgery; and
- thyroid and endocrine surgery.

These data will be published by summer 2013.

Offer 3: Listening to patients and increasing their participation
We need to know more about what our patients think of the services we commission and act on that information in designing and delivering services. We recognise a particular responsibility to ensure that the voice and views of currently disadvantaged groups are sought out and listened to.
The aim is to ensure that all NHS funded patients will have the opportunity to leave feedback in real time on any service by 2015. This will start with a Friends and Family Test which will be introduced for all acute hospital inpatients and Accident and Emergency patients from April 2013 and for women who have used maternity services from October 2013.

Offer 4: Better data, informed commissioning, driving improved outcomes
Ensure information systems are improved and integrated where necessary. Build a modern data service, *care.data*, in health and social care. This will provide timely, accurate data derived from information collected as part of the care process and linked along care pathways. This will require universal adoption of the NHS number as the primary identifier by all providers in 2013/14
Secondary care providers will be expected to be able to account for the outcomes of all patients they treat and to adopt modern, safe standards of electronic record keeping by 2014/15.

Offer 5: Higher standards, safer care
Compassion in Practice sets out a new approach to improving our culture of compassionate care and in particular the actions necessary to maximise the role and expertise of nurses, midwives and care staff to deliver improved patient outcomes. It sets out the necessary values: care, compassion, competence, communication, courage and commitment – the 6Cs. As well as nurses, midwives and care staff, we expect all staff, including doctors, managers and support staff to embrace these values. We all want to see the highest standards of care, from childbirth where women should have choice and personalised care through children's services and adulthood to the end of people's lives.

These 5 core offers are recognised and will be enabled by this strategy

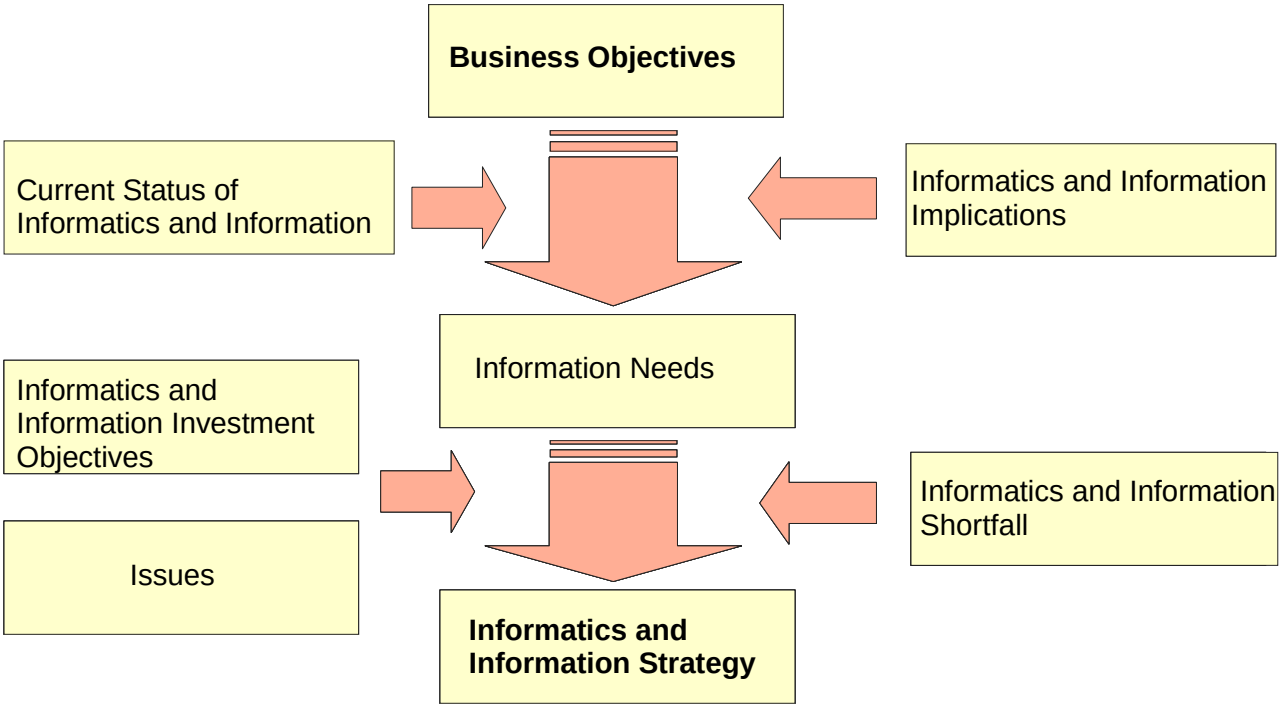
Connecting for Health National contract negotiations

As this local Strategy is being written the new National contract for Lorenzo between CSC/CfH is being finalised; once published UHMB will be able to better plan for the medium term future with certainty. However we do know that one of two contract models will be applied to UHMB. Model one would be an 'as is' interpretation of the guidance issued last year, which stated that the National contract ends for all current users at June 2016, however new users will have a confirmed 5 years' worth of system use from the date of their go live (this is to ensure business cases have enough time to demonstrate a clear benefit), this 5 year timeframe will apply to the UHMB ePrescribing and Maternity projects. Therefore we have asked CfH to consider an alternative model of considering synchronising the start time of a 5 year contract horizon for all existing user sites to either 2016 or to the first go-live of the fast follower Trust (which is likely to be Dec 2013) giving a new contract end date of either 2021 or Dec 2018. This request has been made in good faith trying to balance the benefits available to all Lorenzo Trusts equally. CfH are considering the 3 early adopter Trusts benefits period starting later than fast follower Trusts due to their role in the issue resolution process and also due to the phasing of the capability deployment which was staged through no fault of any of the individual Trusts.

This contract end date is important as it drives the market testing exercise the Trust needs to undertake to ensure any future costs associated to a new locally negotiated contact offers value for money. Worst case scenario with a contract end of 2016 will require a business case this calendar year to support a thorough market testing exercise during 2014/15 and to allow for a subsequent deployment of the chosen solution 2015/16, as required.

The Approach

The stages of the analysis from which this I^3 Strategy was produced are shown in the figure below:



The strategy has been based on many discussions, focus groups and workshops identifying business issues, information needs and priorities. The areas of staff targeted for this process have been:

Executive Directors; Consultants; Senior Nurses; Divisional Managers; Midwives; Emergency Care team; Human Resources; Patient Administration staff; Diagnostic Departments; GPs; Commissioners.

The approach shown above results in a Strategy that is fundamentally developed to deliver the Trusts Business objectives, however it is refined and targeted to fill any shortfall in the current service model, address any known issues and deliver the Trusts Information needs.

6 Business objectives

The Trusts Mission statement is:
We will be the best – giving excellent compassionate care to the people of Morecambe Bay

This whole refreshed I^3 Strategy is underpinned by UHMBs Corporate values and objectives, at the highest level these are published as:

The Trust's five strategic objectives:

Strategic Objectives

1	Continuously improve the patient experience – becoming the provider of choice for excellence with safe and effective patient care.
2	Support and develop all staff to take responsibility for what they do and help them do their best – getting staff truly engaged in how the Trust works.
3	Encourage staff to be innovative when delivering and planning high quality and sustainable services – achieving long term financial sustainability.
4	Work with our partners to provide an integrated health service that meets the needs of the local population – providing local access, including to specialist services wherever that is feasible.
5	Positively contribute to the well-being of the local community.

In addition to these high level strategic objectives the recent Price Waterhouse Cooper (PWC) assessment identified the following Business Capability requirements:

No.	*Capability group*	*Description*
A	Effective Contract Delivery	Ability to know in advance when the Trust is close to meeting its contractual obligations and open discussions with the commissioner about plan for the rest of the year
B	Evidence Based Decision Making	Ability to develop forward looking models and use predictive analytics for capacity and demand planning
C	Vertical Integration and Interoperability	Ability to exchange information with other key constituents in the health care community such as GPs, CCG's and other Trusts
D	Anytime Anywhere Access to Information	Have a single source of truth for key information such as hospital infrastructure capacity and patient data. Be able to access this information easily whenever required
E	Integrated Information Delivery	Ability to prepare and deliver performance reports in an accurate and timely manner
F	Staff Productivity Improvement	Ability to effectively use technology to

No.	Capability group	Description
		reduce unnecessary expenditure. Effectively monitor and manage staff time and productivity
G	High Quality Data Capture	Ability to accurately record information about patient conditions and treatment. Effectively use clinical coding systems to accurately record treatments delivered.
H	Staff Performance Management	Ability to have a transparent view of job contracts and manage staff performance against these contracts
I	Training and Development	Ability to train and develop staff in various topics such as effective use of information systems and improving patient care and interactions
J	Clear Patient Care Pathways	Ability to plan patient care, communicate the plan to the patient and meet patient expectations

In addition a series of operational requirements/issues were identified via a series of one to one and group workshop sessions with various managers and staff teams:

Systems need to be faster
Lorenzo user interface needs improving
Service Desk calls take too long to be answered
Senior staff want to be able to work on mobile devices such as smartphones and tablets
Senior staff want to use their personal mobile devices at work
Senior staff need to see dashboards to overview performance
Clinical Coding need encoder software to assist and prompt coders and doctors in complete recording
Senior staff want access to information analysis expertise

Some of these headings have fed into the I^3 shortfall section below

The above has been used to inform this Strategy and the associated Project Portfolio that will be created to deliver it.

7 The Current Status of Informatics and Information

An independent assessment of the Trusts current capabilities in these areas was carried out by the PWC team, the full assessment report is attached as Appendix A. The assessment can be summarised as follows:

Current State Assessment
Key Opportunities for improving Informatics & Information Usage at UHMB

Summary

Key to addressing these issues is the development of a joint Information and Informatics strategy which provides traceability between Information and Informatics projects and UHMB's strategic objectives.

Execution of this strategy should be based on a joint Information and Informatics operating model, which systematically manages projects and ensures ongoing alignment with UHMB's strategic objectives.

Strategy and Business Alignment

- Informatics and Information do not have a joint strategy for delivering to the business. The current informatics strategy was created in 2008/09. While components of this strategy are still relevant, Informatics and Information need a combined strategy to deliver synergy.
- Informatics related investment discussions in the past (2008) have been strategic. However, as of today, project investment decisions are more tactical in nature.
- Project portfolio management exists within Informatics and is led by Informatics, this needs to be more business led.

Management and Governance

- Lack of strategic drivers has resulted in ad-hoc solutions implementation e.g Qlikview.
- Many small project requests are made to informatics for delivery, without a clear view of business priority, purpose and link to broader Trust level objectives.
- Main technology platform supplier is contracted by DoH, Not UHMB. Current negotiating power is a result of smart manoeuvring and not systematic.

Organisation and Skills

- Two distinct organisations namely Informatics and Information provide partially overlapping services to end users.
- Lack of clarity of services offered by Informatics and Information, as far as end users are concerned.
- Informatics have creatively provided very good systems, but the business user adoption needs improvement (e.g. DQDB, Training Systems, Tele-Conferencing)

Technology and Architecture

- Existing functionality within core systems is not being used to the fullest (e.g. Casenotes tracking, diagnostic requests)

- Considerable amount of in-house development exists, and while this provides much needed agility, it might lead to maintenance issues going forward

- Duplicate and redundant data warehouse exists.

Clinical 5

The Informatics Planning 2009-10 document that was issued in November 2008 to support the annual Operating Framework, instructed local health communities to plan to deliver the Clinical 5, using strategic National Programme solutions where available and appropriate. Its emphasis was on making progress as soon as possible. The Clinical 5 offers a good benchmarking framework to measure the Trust against, progress is documented below:

1. a Patient Administration System (PAS) with integration with other systems and sophisticated reporting;

   The traditional PAS capability is now delivered from a fully integrated ePR module termed as Care Management, this module shares the same database as the rest of the ePR. The whole ePR is interfaced at appropriate levels to the following key systems: Radiology; Pathology; Theatres; Maternity. The ePR, including Care Management, also feeds a full data warehouse every 24 hours, this data warehouse supports all UHMB's operational and managerial reporting requirements. **This item is fully met**. However UHMB have plans to deploy the ePR Maternity and Theatre modules to further integrate its clinical and administrative capabilities.

2. Order Communications and Diagnostics Reporting (including all Pathology and Radiology tests and tests ordered in primary care);

   Order Communications or Requesting and Resulting capability is fully provided by the current version of Lorenzo within UHMB and through Indigo 4 TQuest within Primary Care. Lorenzo currently receives all Radiology, Pathology and Endoscopy results (Lorenzo has at least a 3 year history) and has a live Radiology requesting capability (not fully rolled out); Pathology requesting deployment will commence mid-2013. Indigo 4 TQuest is fully deployed across the whole of North Lancashire and South Cumbria GPs (including fringe GPs such as High Bentham and Garstang).

   In addition Lorenzo supports 'other' results such as Dexa reports and Clinical Investigation reports this capability will also be deployed during 2013 giving a much more complete diagnostic view from the patient record. **This item is partially met with full compliance planed for Q3 2013/14**

3. Discharge letters with coding (discharge summaries, clinic and Accident and Emergency letters);

   Lorenzo supported by UHMB developed software provides the capability to produce, store, and code the full range of documentation supporting any handover point between Primary and secondary care. These documents are available for Primary Care electronically within 24hrs following authorisation. **This item is fully met**

4. Scheduling (for beds, tests, theatres and so on);

   Lorenzo supports scheduling of outpatient appointments and the booking of beds from both Emergency Care and Access plans, Theatres will be included when the Lorenzo Theatre module is deployed 2014/15 (subject to business case approval). In addition a more sophisticated multi resource scheduler will be available at a yet to be agreed date and will include the scheduling of a whole patient pathway including outpatient; diagnostic; Inpatient and theatre events, currently there is no planned date for this capability, a full business case will be developed for this capability. **This item is partially met.**

5. e-Prescribing (including 'To Take Out' medicines);

   Lorenzo supports the To Take Out (TTO) Prescribing capability which is integrated into UHMBs electronic discharge process that culminates with the production of an immediate discharge summary (IDS) available in Primary Care within 24hrs. Full Inpatient Prescribing and Medication Administration will commence deployment early 2013. **The TTO Prescribing element is fully met with Full Prescribing delivered in 2013.**

Benchmarking

The last time the service was formally benchmarked was 2008/09 via the CIPFA VFM Club the report is attached at App B. This report shows the UHMB service as performing adequately, however it also shows that the service is one of the poorest funded, UHMB HI compares at a cost of 1.4% of income with the Average at 2.7% and Median at 1.9%, see indicator ITP1. Industry evidence demonstrates for a modern developing business the Informatics equivalent spend would be in the region of 4.5% of income or higher.
In addition UHMB Informatics service is a member of the HiBC National Benchmarking Club. The analysis in 2010 (the only year available) ranked us 18th out of 38 responding organisations (organisation 364). Detail can also be found at App C.

The service is regularly audited, below is a list with the associated assurance levels for Audits conducted over the last 3 years:

Year	***Audit***	***Outcome***	***Review Status***
2009/2010	CIACC**: IT Disaster Recovery & Business Continuity	Overall report outcome	Significant
	NWIA: Service Desk	Overall report outcome	Significant
2010/2011	NWIA*: Disaster Recovery and Business Continuity	Opinion on the Control Design	Significant
		Opinion on the Operation of the Controls	Significant
		Overall Assurance Opinion	Significant
	NWIA*: PC Control and Maintenance	Opinion on the Control Design	Significant
		Opinion on the Operation of the Controls	Significant
		Overall Assurance Opinion	Significant
	NWIA*: IM&T Project Management	Opinion on the Control Design	Significant
		Opinion on the Operation of the Controls	Full
		Overall Assurance Opinion	Significant
2011/2012	NWIA*: Active Directory	Opinion on the Control Design	Significant
		Opinion on the Operation of the Controls	Significant

Year	*Audit*	*Outcome*	*Review Status*
		Overall Assurance Opinion	Significant
	NWIA*: IT Application Security - Lorenzo System	Opinion on the Control Design	Significant
		Opinion on the Operation of the Controls	Significant
		Overall Assurance Opinion	Significant
	NWIA*: Mobile Computing	Opinion on the Control Design	Significant
		Opinion on the Operation of the Controls	Significant
		Overall Assurance Opinion	Significant
	NWIA*: National Care Record Service - Registration Authority	Opinion on the Control Design	Significant
		Opinion on the Operation of the Controls	Significant
		Overall Assurance Opinion	Significant

**NWIA – North West Internal Audit*
*** CIACC - Cumbria Internal Audit and Counter Fraud Consortium*

8 I^3 Implications

For the purposes of this document the I^3 implications have been limited to the 5 Strategic requirements listed above and an implication assessment of the recent NHS Commissioning Boards – Everyone Counts plan, further detail of the implications of the PWC business requirements can be found in the complete PWC assessment at Appendix A.

Strategic Requirement	Informatics/Information Implication
Continuously improve the patient experience – becoming the provider of choice for excellence with safe and effective patient care.	I^3 will need maximum access to clinical experts in the Morecambe Bay area in order to assist with the reduction of costs, which will allow investment in new clinical services and to ensure that existing services are supported in the most cost effective manner I^3 must deliver the same single Patient Record wherever the patient presents. It also must allow requisite dialogue to support clinical decisions. I^3 must support efficiency improvements at a patient level at the same time improve information required to facilitate that provision of care. I^3 must promote and integrate telemedicine capability as part of the regular functionality of our core Information system environment.
Support and develop all staff to take responsibility for what they do and help them do their best – getting staff truly engaged in how the Trust works.	A significant investment required to facilitate staff education thereby improving the way individual staff members and teams work. Equipping our staff with modern Information tools giving them confidence in their work place and to promote a getting it right first time culture Ensure staff are aware of the potential of the Lorenzo Patient Record and the patient safety and improved patient experience opportunities modern single Patient Record systems bring. Also promote an improved level of confidence through knowing UHMB are leading the way within the NHS on this agenda.
Encourage staff to be innovative when delivering and planning high quality and sustainable services – achieving long term financial sustainability.	Training programmes and interfaces needed to give staff the skills to access this opportunity.

Strategic Requirement	Informatics/Information Implication
	Clinical knowledge bases must be researched and embedded in the sPR system to be easily available in the context of the care being given, Integrated Care Pathways (ICPs) are an ideal vehicle for this. Strengthen relationships with educational establishments leading to improved R & D therefore enhancing local services, develop relationships via the Academic Health and Science Network (AHSN) Promote the ground breaking development work being undertaken within UHMB, offer secondment opportunities for small numbers of individuals each year to develop their own ideas and contribute to the development of a modern Information Systems environment that is transferrable across the NHS
Work with our partners to provide an integrated health service that meets the needs of the local population – providing local access, including to specialist services wherever that is feasible.	Integrated information will be required at a patient level. Requires integrated collaborative approach to I^3 development coupled with the development of shared Integrated Care pathways embedded into Information systems available anywhere in the Morecambe Bay area. This type of information will need to be available consistently throughout the whole healthcare community. Morecambe Bay is moving towards these types of systems by the development of the Lorenzo system and also by the development of the Interoperability layer between partner healthcare providers. Providing the Information tools needed to design and develop the most appropriate Patient services without technological or Information constraints Develop a single data warehouse of health community information to better inform detail patient pathway management; the commissioning process; local public health planning and true end to end business intelligence across the whole patient experience.
Positively contribute to the well-being of the local community.	Must be able to share same patient record, contribute to that record and discuss on line diagnosis etc..

Strategic Requirement	Informatics/Information Implication
	I^3 must facilitate sharing of information with GPs and their Information Systems, building the core of a whole health community record. Requires Internal & External requesting and results reporting as part of the single patient record that can be added to and shared by all Healthcare professionals leading to full order entry communication, using the Lorenzo Patient Record, which also requires the ability to produce the whole range of clinical documentation required by all external and internal healthcare partners as an implicit process of the building the Patient Record. This in turn must be communicated to all recipients.

Everyone Counts Analysis

The Everyone Counts Commissioning Board Strategy published 2013 sets out a clear set of aspirations, these are embodied in 5 Offers, whilst this strategy is designed to implicitly deliver against each offer this section endeavours to explicitly identify specific areas of work or identify I^3 implications that need to be managed.

Everyone Counts Offer description	I^3 Implication
Offer 1: NHS services, seven days a week 	Increased support required across the whole I^3 service offering. Formal support coverage needs to extend across a 24/7 365 day service.
Offer 2: More transparency, more choice 	Support the publishing of activity, clinical quality measures and survival rates from national clinical audits for the identified specialties Work with CCGs to provide comprehensive whole patient pathways views on time synchronised information sets

Everyone Counts Offer description	I^3 Implication
Offer 3: Listening to patients and increasing their participation 	The aim is to ensure that all NHS funded patients will have the opportunity to leave feedback in real time on any service by 2015. Whilst this is not an explicit I^3 type deliverable, it will probably have a reliance on technology to be delivered
Friends and Family Test which will be introduced for all acute hospital inpatients and Accident and Emergency patients from April 2013 and for women who have used maternity services from October 2013	As above this is not an explicit I^3 type deliverable however it will probably have a reliance on technology to be delivered.
Every patient will have the opportunity of online access to their own primary care medical record by the spring of 2015 and we will consult, by June 2013, on plans for provision of patient access to interoperable records across the pathway of care	This aspect will require very close working with CCGs and Primary Care, a significant contribution to the Primary Care electronic record is either messaged directly or scanned in via paper correspondence from Secondary care following a Hospital event.
Emphasis on much more rapid take up of telehealth and telecare in line with patient need.	I^3 need to work with CCGs and other agencies, such as the Academic, Health and Science Network to develop appropriate tele-services
Move to paperless referrals in the NHS by March 2015 so that patients and carers can easily book appointments in primary and secondary care	This will include a re-launch of the Choose and Book service, the national contract is currently out to procurement, any change or modification to this service must include a much more robust interface at the referral letter level
Offer 4: Better data, informed commissioning, driving improved outcomes 	This offer translates to – promoting a modern information culture where sharing is the norm. It identifies a range of fundamental principles that are required to facilitate safe, secure and effective information use
	As a Trust we already use the NHS number

Everyone Counts Offer description	I^3 Implication
Universal adoption of the NHS number as the primary identifier by all providers in 2013/14	as our primary Patient identifier, we do still also use the Case note number to track and trace the Patient paper record as required, as the Trust moves to a paperless environment the need for the case note number will disappear. However improved use of the NHS number needs to be achieved, this will be done through education and use of the soon to be released compliance framework.
Throughout 2013/14 commissioners must use sanctions within the NHS Standard Contract if they are not satisfied over the completeness and quality of a provider's data on the Secondary Uses Service (SUS).	We must continually improve our accuracy, data quality and timeliness of data collection, this is an organisational issue and needs to be performance managed
We will expect secondary care providers to be able to account for the outcomes of all patients they treat and to adopt modern, safe standards of electronic record keeping by 2014/15	To achieve this aspect we need a comprehensive data warehouse and an effective reporting tool (business intelligence), the second aspect to this is related to secondary care having modern safe ePR systems capability
In 2013/14 we will expect secondary care providers to comply with data collections that have been approved by the Information Standards Board, including the Systemic Anti-Cancer Therapy dataset and Cancer Outcomes	Work is underway to deliver against these specifics.

Everyone Counts Offer description	I^3 Implication
Offer 5: Higher standards, safer care  	
The Francis report provides stark reminders of the consequences for patients if their needs are not central to everything we do. All NHS commissioners must work together with their providers to ensure the recommendations in this report are being addressed	I^3 implications To develop accurate, relevant and useful information which assist patient centred healthcare leadership and support the Duty of Candour. To ensure that performance and outcomes are available to all staff, patients , public and regulators
Core values of: care, compassion, competence, communication, courage and commitment – the 6Cs. As well as nurses, midwives and care staff, we expect all staff, including doctors, managers and support staff to embrace these values.	I^3 Service will evaluate how it can adopt these values as part of their daily routines
Medical revalidation is designed to improve the quality and safety of care for patients	Evidence of practice must be available easily to support our clinicians through this process.

All of the above identified actions/implications are embodied by the strategic themes identified later in this strategy, either explicitly or implicitly.

9 Analysis of Information Needs

Introduction

This section describes the information required to support operational and management personnel across the Trust and the requirements of external organisations for information. The information requirements are either not met or only partially met at present. These requirements have been identified following: a series of workshops with Divisions; discussions with members of the Trust Board; a review of the existing Informatics Strategy; Divisional business plans and open workshop sessions.

A summary of the Information needs categorised under operational, management, clinical and external requirements is set out below.

There are Information weaknesses across the Trust. The weaknesses include:

- lack of consistent, shared management information;
- poor recording of formal diagnosis and procedure information within the patients record
- poor access to bed management data;
- general lack of clinical information in a form supporting evidence based protocols or decision support;
- lack of informative business intelligence type tools
- poor ability to perform medical and clinical audit without specialist data capture;
- difficult access to administrative policies, procedures, etc;
- poor methods of collating information for external communications, particularly discharge summaries and outpatient clinic letters.

Support for the Operational Management of Services

Operational Information Requirements

BUSINESS NEED/INFORMATION REQUIREMENT	REQUIRED BY	BENEFITS	[1]CROSS REFERENCE
More complete recording of demographic details and changes ie tracing patients in real time.	Out patients staff, admissions staff, Pharmacy staff, Radiology staff, Theatre staff, nursing staff.	Better identification of patients Reduce duplication of inputting - time saving Reduce errors due to duplicate case notes. Better and more accurate communications with appropriate referring or usual GP Better support for Payment by Results Promotes a more accurate and safe patient record	A, B, C, D, E, G, J

BUSINESS NEED/INFORMATION REQUIREMENT	REQUIRED BY	BENEFITS	[1]CROSS REFERENCE
Better quality referral information from GPs received electronically, in the short term 100% scanning of all referral letters, Med to long term using the Medical Interoperability Gateway (MIG) to pass in real time the GP referral information as a dataset which will include patient Problem	Out patients staff, medical staff nursing staff	Better prioritisation of requests, access to history Time saving, speed up referral process Legible information for emergency admissions	A, B, C, D, E, F, G, J
Ability to request further details from GP electronically, expansion of the MIG summary view	All Outpatient services	Complete history available, speeding up processing of patients visit	A, B, C, D, E, F, G, I, J
Access to multi-resource scheduling system supporting management of whole patient pathways	Out patients staff, A&E staff, secretaries, ward staff	Improve service to patients, reduce DNA's Time saving	A, B, C, D, E, F, G, I, J
All correspondence to be available in Lorenzo	Secretaries, Consultants, GPs	Time saving, Audit, quick access no need for case note.	A, C, D, E, F, J
Letters to GPs to be sent electronically	A&E staff, ward staff, Pharmacy staff, Secretaries, GPs	Time saving, cash releasing Legible discharge letters available quickly	A, C, D, E, F, J
GPs to be able to view waiting list information	GPs, contracting staff	Time saving, better referral decisions	A, B, C, D, E, F, J
Need to improve bed management information	Service Managers, clinicians, ward staff	Time saving, more efficient use of beds	A, B, C, F, G, J
Streamline admissions procedure for emergencies	Clinicians, ward staff	Improved quality of care.	A, C, E, J
Better day case processes, use Kiosks for patient self-arrival and discharge	Nursing staff	Better quality, better prescribing accurate ADT position	A, C, D, E, J

[1]Cross Reference – linking the Information need to the Business requirement categories

Support for Managing the Business

Management Information Requirements

BUSINESS NEED/INFORMATION REQUIREMENT	REQUIRED BY	BENEFITS	[1]CROSS REFERENCE
Easier access to information	Service Managers, Information Dept,	Time saving, better quality information Easier to achieve standards and highlight deficiencies.	A, B, D, F
Need information to support locality commissioning	Contracts staff, Information staff	Exchange of information with HAs and GPs	A, B, C, D, E, J

BUSINESS NEED/INFORMATION REQUIREMENT	REQUIRED BY	BENEFITS	[1]CROSS REFERENCE
Better management information supporting the running of the Trust – need for a business Intelligence type information environment able to give accurate trends and predictions	Divisional Manager, Clinical Directors and Trust Board.	Better monitoring of standards Better comparisons Informed change Quicker decision making	A, B, C, D, E, F, G, H, I, J

[1]Cross Reference – linking the Information need to the Business requirement categories

Requirements of External Organisations

External Information Requirements

BUSINESS NEED/INFORMATION REQUIREMENT	REQUIRED BY	BENEFITS	[1]CROSS REFERENCE
Maintain quality and completeness of CDS flows	NHS Executive	Timely, accurate information for National Statistics	A, G, J
Access to Secondary care views on key information at structured point of a patients pathway ie serious diagnosis given; patient admitted (under the care of, EDD, discharge plan)	GPs	Time saving Better referral decisions Keep patient better informed Supporting better discharge planning and Primary Care hand over	A, B, C, E, F
Negative Electronic results reporting for Pathology/ Radiology	GPs, Patients	Quicker access to results Able to inform patient of outcome Follow up OP appointment avoidance	C, E, F, I, J
Access to individual detail patient record via a secure portal	Patients	Gives confidence	A, C, D, E, F, G, I, J
Single view on a data warehouse that spans the whole patient journey	All	Supports whole patient journey modelling Contributes to BI enabling reduction in acute admissions; shorter LoS; reduction in ED attendances	A, B, C, D, E, F, I, J

[1]Cross Reference – linking the Information need to the Business requirement categories

Support for Clinicians in the Provision of Health Care

Clinical Information Requirements

BUSINESS NEED/INFORMATION REQUIREMENT	REQUIRED BY	BENEFITS	[1]CROSS REFERENCE
Easier access to diagnostic results with results retained indefinitely, this is to include all Clinical investigation department results and reports, also includes device integration	Out patients staff, ward staff, clinicians, A&E staff, Pathology staff	Results retained indefinitely, Lorenzo Results available quickly, better quality To include formal acknowledgement policies Ability to check if report has been read Contributes to paperless agenda Can be cited into documentation Contributes to safe decision making	A, B, C, D, E, F, G, I, J
Pathology/Radiology requesting	Pathology staff, Radiology staff, Clinicians, Ward staff	Use electronic order sets/protocols Reduce inappropriate tests - cost saving Reduce duplicate test requests Provides an end to end closed loop service Reduce data input at receipt process within Pathology and Radiology - pass through numbering Removes illegible requests cutting down on phone queries	A, B, D, E, F, G, I, J
Need for a clinical reporting tool to support ad-hoc access to clinical data such as what procedures have I done this month	Surgery, clinicians	Drives better input of structured data Improves data quality through self-policing of input	A, B, D, E, F, G, I, J
Need information to support revalidation	clinicians	Drives better input of structured data Improves data quality through self-policing of input	A, F, G, H, I
Access to clinical decision support software and integrated Pathways.	A&E staff, Clinicians, Ward staff	Improved patient care	A, B, C, E, F, G, I, J
Access to electronic prescribing, electronic formulary	A&E staff, ward staff, Pharmacy staff	Legible prescriptions Reduce use of non-formulary drugs/reduce costs Improve patient safety Improve IDS and other core documentation Speed up discharge process Access to warning and contraindications	A, B, D, E, F, G, I, J
Better output from clinical information system	Clinical Audit staff, clinicians	More comprehensive audit	B, D, E, G, I

BUSINESS NEED/INFORMATION REQUIREMENT	REQUIRED BY	BENEFITS	[1]CROSS REFERENCE
Integration of cancer dataset into Lorenzo	Clinical Audit staff, Information staff	Shared demographic details Reduce inputting Promotes single Patient Record	A, B, C, D, E, F, G, I, J
Computerisation of ward based care plan	Ward staff	Reduction in paperwork, time saving Support evidence based medicine Gives ward managers visibility of current status of care provided by patient	A, B, D, E, F, I, J
Introduction of Ward eWhiteboards	Ward Staff	Easily transfer patients Visible patient tracking screen	A, B, D, E, F, I, J
Ward staff to record data electronically as work being done	Ward staff	Time saving Real-time data input supporting requesting and prescribing	A, B, D, E, F, G, H, I, J
Better links between admission process and theatre usage	Ward staff, theatre staff	Better utilisation of theatre time, staff planning Reduce cancelled operations Better management of emergencies	A, D, E, F, H, I, J
Better recording of activity in theatre	Theatre staff	Improved information for audit	A, D, E, F, G, H, I, J
A better integrated Theatre system with Lorenzo	Surgery, Theatre Staff	Better collection of Op note and procedures undertaken	C, D, E, F, G, I, J
Single electronic patient record with data input by all	All hospital staff	Immediate access to history Easy access to care plans Better management of care programme approach	A, B, C, D, E, F, G, H, I, J
Improved clinical audit information	Clinical Audit staff	Higher quality audit Information for service planning	B, F, H, I
Electronic access to policies, protocols, etc	Clinicians, A&E staff, nursing staff	Reduce paperwork, time saving Better quality patient care	B, D, F, I
Move to Integrated Care Pathways	Nursing staff, Clinicians, PAMs	One record only, better communication Reduced data entry	B, D, E, F, G, J
Operational systems for Gynaecology, Maternity, Urodynamics, Colposcopy	Women's /Children Directorate	Improved operational management Access to audit data	A, B, D, F, I

[1]Cross Reference – linking the Information need to the Business requirement categories

Other Information Requirements

Other Requirements

BUSINESS NEED/INFORMATION REQUIREMENT	REQUIRED BY	BENEFITS	[1]CROSS REFERENCE
To be able to monitor use of bank nurses, skill mix etc	Ward staff, nurse managers	Improve manpower planning Better use of resources	A, D, F, H, I
To be able to monitor use of training	Ward staff, nurse managers, Estates, nursing staff	Easier access to information Better analysis of data Staff satisfaction	A, B, E, F, H, I
Easy access to policies, procedures, circulars, budget statements, etc	Ward staff, Estates, Finance, nursing staff	Time saving, easier access ?Cost saving	B, D, F, H, I
Maintenance requests to be made electronically	Estates	Better use of resources Reduce duplication	D, E, F
Increase direct attendance recording	HR	Better quality information	D, E, F, H
Better reporting system for eSR (Staff Record)	HR	Time saving, reduce rekeying of data	D, E, F, H
Recruitment package	HR	Improved operational procedures	D, E, F, H
Electronic stock control	Ward staff	Time saving Maintain optimum stock levels	D, E, F, G
Able to print off patient information when required.	Clinicians, ward staff	Improved quality, time saving Access to ethnic languages.	I

[1]Cross Reference – linking the Information need to the Business requirement categories

Internal Pressures

A Trust-wide analysis has indicated that this strategy will need to address the following:

- In Informatics terms this strategy is clear, however to deploy and make best use of the modern capabilities described here the Trust must at best embrace the opportunity presented at worst simply use it as instructed. Over recent years it has proved difficult to introduce modern Information Technology enabled capabilities across our whole user base, some individuals still see this agenda as optional, the Immediate Discharge Summary capability is a prime example with 80% of the target user base adopting the system however 20% not using it at all;
- at a basic level, the provision of much more timely, accurate and relevant patient administrative and clinically relevant information to clinicians, secretaries, clerks and clinical support staff when and where they need it is difficult. This largely translates into a need for the more rapid transfer of patient administration and clinical information within the hospital and between primary and secondary care (for example, via order requesting and results reporting) so that information is

'there when it is needed by clinicians and others'. Increasingly we need medical devices to feed directly into the Lorenzo system, whilst the technology can support this type of interoperability we need a formal medical devices strategy that is aligned to this I^3 Strategy covering procurement, strategic supplier alignment; configuration, deployment and subsequent use. In addition and at the most fundamental level our users need to put information into our systems in real-time and not via a proxy ie getting or expecting someone else to do it – patient record keeping is at the heart of everyone's job description

- the development of more patient focused, 'managed and systematic care' through the implementation of multi-disciplinary integrated care pathways;
- increasing emphasis on the cost effectiveness of treatments;
- The need to reduce our length of stay, and number of beds. Fundamentally this means we need to see less people in the hospital for shorter durations, implicitly this means that our information systems can only help and support this agenda if they have access to information form before the patients admission and subsequent to their discharge to allow modelling and trending of whole patient pathways;
- a shortage of I^3 staff and skills to cope with the current scope of commitment.

At the heart of these requirements is the **need for the delivery of integrated information, collected as a by-product of the patient care process rather as an end in its own right.**

10 Issues

During the production of this strategy, a number of issues have been raised, many of which require action or decision at a senior level. These are summarised under a number of headings:

Information Quality

The purpose of I^3 is to provide our various users with the many types of information that they require. Consequently for the I^3 services to be of benefit to the users, the information they receive must be the right information.

Obtaining the right information is a function of three essentially separate factors:

- Entry of correct data;
- Appropriate combination/manipulation of data;
- Appropriate extraction and presentation facility.

Entry of Correct Basic Data

Entry of the correct base data is associated with the overall level of awareness, commitment and training that users have of the Information Systems and their use. A user will sometimes be a producer of information and at other times be a consumer. He/she must appreciate that other people consume the information that he/she has entered, and that therefore care must be taken in its entry, both from the point of view of accuracy and of completeness. A corollary to this is that if information is not being used, it is probably not necessary to enter it. Therefore, it is important to determine precisely what information is required and to remove the task of having to enter that which is not.

The precision of entries is important. Both the person who enters the information and the person who extracts it in some form or other, must have the same understanding about the meaning of the information. If they do not, the consumer of the information may do the "wrong" thing. Consequently the training and awareness must cover not only technical aspects of how to use a system, the procedural aspects of when to use a system, but must also cover the meaning of the information and to some extent cover why the information is required. This helps the provider of the information to appreciate what the information means, what the distinction between similar but different values is and consequently to enter the information correctly.

Encoder software would enable clinicians and clinical coders to improve the completeness of clinical coding by providing a single point of reference for coding resources, fast and efficient coding and notation and easy access look up tools.

The solution to this rests with the combination of strategy, which defines the information requirements and how to fulfil them, and an effective training need assessment and training delivery and consider procedures written by the business managers describing how they need their businesses to operate, helping individual departments maintain their quality of input.

Combining, Manipulating and Extracting Information

The combination and manipulation of data that takes place within an application is part of the functionality of the application. In some cases the combination and manipulation involves the automatic transfer of data between systems. To do this the data is extracted from one

application and inserted into another, this in turn requires a common understanding between the systems of factors such as data semantics, format, location and lifetime.

The final extraction of information for presentation to the user is an area that is being standardised. There are a variety of products that provide a user with the ability to query the information in flexible ways. This whole area will be addressed by the Business Intelligence Unit as part of Theme 3

Appropriate Extraction and Presentation Facility

Information is changing constantly within our operational systems, in-line with the patient care process. The operational systems prime task is to assist in the patient care management process, not to be used as an information management tool. The configuration of the systems must demonstrate not only an operational split but also a physical split between management reporting information and operational information.

Information Ownership

Our future Hospital information environment will be made up of a small number of different modules of software. The management of the specific data held in each of these modules is the responsibility of the department that manages the service being delivered, however, data common to all departments is the responsibility of the organisation as a whole. There is still a culture of ' it's not my problem' when it comes to data quality. This is being addressed in to 2 ways: firstly via education at every user training session and also via detailed information governance training and awareness across the Information Asset Owners (IAO) layer; secondly a compliance framework is to be introduced during 2013 which will inform the individual of mistakes or data inconsistencies they have introduced, the compliance framework will track each anomaly to resolution, however if a resolution is not successfully completed the user will be targeted for training and their line manager will be informed of the transgression for follow up action. Similarly if the manager does not follow up the issue to provide the individual user with what is required to allow them to undertake their basic duties then their manager with be similarly notified, and so on.

People Issues

Despite the best efforts of those involved in the range of current Informatics and Information projects, many staff in the Trust tend to remain unaware of the full meaning and implications of the potential changes taking place. This requires that a marketing campaign be mounted by all those involved and that every effort and opportunity is used to communicate the message to staff. In particular steps need to be taken to determine:

- how to move the Trust forward evenly;
- how to motivate and reassure those with keyboard fears; and
- how to communicate the importance of the changes to everyone, especially those who are notoriously hard to contact, such as night & weekend staff.

One of the most effective ways to communicate the opportunities afforded by the increased use of modern Information Systems technologies and to generate ownership of the implemented systems, is to set up an Informatics or Lorenzo User Group. This User Group will be launched in 2013.

Research

Research is essential to develop the evidence base for the successful promotion and protection of health and well-being and to modern and effective healthcare and social service provision. In this sense, research affects us all and has led to the development of many of our current technologies and therapies. Good solid data is essential to support and underpin research initiatives and this current strategy will support the collection of robust and detailed, clinically rich data, that could be aligned to research projects, providing the correct governance has been put in place.

It is only by continuing to invest in our research that we can generate the sound evidence and exciting innovations upon which improvements to healthcare are based. The NHS has supported and conducted research throughout its existence, which is central to achieving these objectives.

Searching for and applying innovative approaches to delivering healthcare must be an integral part of the way the NHS does business. Doing this consistently and comprehensively will dramatically improve quality of care and services for patients

Transparency of data and information enables our staff to know about the organisation's performance in adopting innovation and enables patients and the public to exercise choice about their health provider and demand better services.

This Strategy embraces research as an implicit opportunity by providing an increasingly comprehensive structured electronic patient record. All data can be made available via the Trust's local data warehouse, providing the correct governance framework is present.

This agenda is specifically linked to Themes 2 – complete the ePR platform; 3 – formal Business Intelligence; 4 – Governance and 5 – eHospital

A Trust contributes to developing new knowledge and setting new standards in clinical care through it's involvement in Research and Development, but there is also evidence of a more general positive influence on healthcare within research active organisations. Patient outcomes improve, even for department who themselves might not be research active.

The new I3 department aims to support the R and D agenda within the Trust, as indeed should all Divisions, Departments and Specialties and it is important to capture this intention within this strategy paper. The I3 Department will support R and D in **four** ways:

Firstly; through the increased use of EPR's and increased use of clinical structured terms (symptoms, diagnoses, operations), clinicians will be enabled to undertake comprehensive data searches for cohorts of patients for R and D purposes.

Secondly; patient's who are involved in clinical trials can be flagged via their EPR's with a research alert, so that cohorts of patients can be easily searched. Furthermore, clinicians involved in current of future clinical care will be able to easily identify those patients involved in research trials. This has particular potential relevance to those involved in taking medication for new indications or those taking novel compounds.

Thirdly, the I3 department has a track record for developing and refining new software and systems capability and for facilitating change in clinical and business processes. The capability and experience of capturing the benefits and then documenting and publishing these has been very limited to date. The new I3 Department wishes to improve it's capability at anticipating and capturing clinical and business benefits for new capability and processes through new software capability and innovative developments and subsequently publishing this information into the literature, to better benefit the NHS and other healthcare systems.

Finally in the future, projects involving significant new developments will be assessed for R and D and publication potential.

11 Investment Objectives

The Trust's Business Objectives are set out in detail in section 6 of this document.

The Trust seeks to achieve these objectives by achieving excellence in each of its core hospital functions and activities. These core activities are:

- diagnosing and admitting patients;
- treating and caring for patients;
- planning and managing healthcare provision; and
- learning from patient treatment and care.

The Trust requires that all of its investment projects contribute to promoting excellence and value for money in one or more of these areas. Individual or multiples of these headings are supported by the 8 Themes developed further in the Strategy section below.

12 Analysis

By prioritising the Business capability requirements and confirming the Strategic Objectives the following themes develop throughout the analysis, these are reinforced by the cross referencing of the Information needs to the capabilities identified in the PWC assessment. A further aspect is addressed by ensuring any identified issue or service shortfall is catered for. The overriding conclusion of this strategic analysis is **better information leads to better decisions which lead to better outcomes**.

A clear strategic implication emerged following the assessment of the Trusts Strategic objectives (section 8), this strategy concludes that the current master patient record – the paper case note - can no longer support the Trusts day to day health care delivery and is not a fit for purpose medium to support future healthcare developments. The capability introduced via our previous 2008 strategy is recognised as being a credible digital patient record that is able to deliver the aims of the I^3 strategy and therefore it has been adopted at its core and is further developed, specifically in themes 2, 5 and 7. The strategy does not predict the point that the paper record becomes redundant or subservient to the digital record, however at some point in the life of this strategy the digital record will be formally promoted to be the Trusts master patient record, with all that entails.

The themes are shown below:

Theme 1: the need to reorganise the way we manage our Informatics and Information resources to eradicate the confusion that exists of who does what and where the organisation commissions Informatics or Information work from. In essence this theme describes the need for a single function tasked with this whole agenda, giving the Trust a single point of contact for anything and everything to do with this complex agenda.

Consistently reported as a perceived weakness with the current organisational arrangements however the output of the two current separate departments was not identified as lacking. This gives the Trust the opportunity to reinforce its Informatics and Information service by amalgamating the existing structures to improve on a function that is already performing well.

Theme 2: Complete the Lorenzo Patient Record development and rollout, the Trust over the last 4 years has deployed a significant Patient Record platform. However 3 key components are still to be put in place, during 2013 full ePrescribing; Maternity and electronic requesting of diagnostic capabilities will be introduced. Once these are in place and fully operational as an integrated capability they will be rolled out to all areas of the Trust at pace. This will leave one obvious outstanding component of Theatres, a full Business Case will be presented during 2014 that will recommend an approach to give the Trust an integrated Theatres capability.

The staff interviewed consistently identified the Lorenzo system as essential for the Trust to modernise, however there were regular criticisms of the systems performance and user interface. For the Trust to further its modernisation programme that underpins many of its cost improvement and patient care improvement agendas it must complete the deployment and roll out of this crucial capability. Virtually all the business capability requirements identified are dependent on some aspect of the Lorenzo system; this strategy has the completion of this programme of work as one of its central pillars.

Theme 3: the need for Business Intelligence information that describes the operations of the Trust; compares us with our peer group and provides trending capabilities to assist with predictive modelling of future service configurations and patient flow.

All staff interviewed identified the ability to easily get credible information out of its information systems as a weakness within the Trust. Most staff identified the need to have an improved toolset to better understand this information and to be able to model it looking into the future as a real requirement just to do their jobs. Therefore a key deliverable of this strategy is the introduction of a formal Business Intelligence (BI) unit into the Trust. The BI unit will be responsible for the production of an Information environment that promotes predictive models of the rich data sources the Trust now has as a result of its significant investment in the ePR programme. However two guiding principles emerged: firstly all reporting needs to originate from the same dataset, **the single source of the truth** and second that the users of the BI capability must be confident in the **provenance of the prime data** that underpins what they are looking at. The Strategy also identifies the need to support the Divisions specifically with a dedicated Information Analyst to work closely with the Divisional management teams to guide these operational teams to target the most effective models of operation based on Health service norms and peer group analysis.

Theme 4: put in place a new I^3 governance structure designed to provide visibility and accountability for the whole spectrum of the I^3 agenda.

As a consequence of the themes identified in this strategy this analysis shows a weakness in the current governance arrangements overseeing this important agenda. Therefore a refreshed governance layer will be established within the Trust and will be chaired by the new Chief Clinical Information Officer.

Theme 5: eHospitals or Paper-lite Hospitals this could be seen as the holy grail of the digital electronic patient record agenda. Paperless is probably impractical within the life of this strategy (6 years) as external NHS organisations to UHMB will still be using paper as routine currency. Without significant effort to scan everything at every entry point to the Trust we will have to be able to accommodate some paper within our processes and systems. However we have much more control over how we conduct and manage our internal business, the Trust has declared it intends to be paper-lite as a priority as soon as possible; this strategy has at its core a whole **eHospitals** ambition. The first stage of this agenda is to take the outpatient departments paper-lite by June 2014, this will be followed by the Emergency Department and finally the Inpatient areas of the organisation.

The analysis work looking at: the whole capability requirement; Strategic objectives; the most recent Information Strategy and the new 'Everyone Counts' commissioning guidelines document it is clear there is not only an expectation that the NHS modernises its paper Patient Records environment there is a mandate from the Department of Health to go paperless by 2018. This strategy recognises the benefits of this type of development and the analysis confirms the Trust is not only well placed to deliver a paperless hospital by 2018 it is better placed than all of its near secondary care neighbours.

Theme 6: Develop and maintain a project portfolio the analysis within this strategy demonstrates that a much more business grounded management of the I^3 agenda. This will be achieved by publishing a full project portfolio of work, the portfolio will show how each project aligns to its business drivers, the expected benefits and its current stage of delivery. Alongside the portfolio will be an

Information systems **blueprint** showing the current landscape of systems and capabilities configuration at the commencement of this strategy lifecycle and also where we expect to be at the end (2019).

This strategy is complex in nature and needs very clear governance and reporting mechanisms to support it if it is to succeed, therefore the analysis has concluded that a new all-encompassing project portfolio should be created to cover all existing 'in flight' projects and newly commissioned projects. The portfolio approach will ensure that each project has a clear mandate underpinned by a cross section of Trust objectives and capability requirements, it will identify its reporting requirements, its resource envelop and its cost. The project portfolio will be the single 'document' to track I^3 work at its governance board.

Similarly, the reports developed by Business Intelligence will be described and published via a **reports portfolio**. This will ensure that reports are developed in response to clear requirements and built to give the required coverage for the Trust in a way which is transparent, appropriately prioritised and accords with the Business need.

Theme 7: Interoperability with other health community patient record systems. To promote and deliver the care our patients expect and deserve we must be able to view aspects of patient records held in other organisations. These organisations will be a mixture of Primary, Secondary (inc Mental Health) and Community providers, these organisation, quite rightly, own and maintain their own patient record systems. However at key points of a patient's pathway clinicians will require a view of these separate records to inform decisions supporting the next steps of the patient pathway. This strategy describes how the appropriate level of data exchange and viewing will be developed to support the most effective delivery of care no matter where the patient is treated in any of these organisations.

The analysis and prioritisation of the capability requirements concluded with a clear need to work closer with all healthcare providers along our patients' pathways. In some areas we will have the opportunity to vertically integrate our service delivery, as and when this happens our information systems must support our clinicians and patients. Where we cannot integrate the service delivery we must integrate the different systems used by each care provider organisation.

Theme 8: Infrastructure. Our Technology Infrastructure is one of the most precious things we have, it is well designed and robust. This area of strategy ensures the correct priority is given to supporting our infrastructure both on a day to day level and also to ensure the Trust has the appropriate technical tools available to deliver the best care for our patients.

13 The Strategy

Theme 1 - An Integrated Innovation, Informatics & Information service

Introduction

University Hospitals of Morecambe Bay NHS Foundation Trust currently has separate Health Informatics and Information departments, which operate autonomously in separate corporate departments and with separate Executive Director Leads. There is however, a significant overlap of agendas and expertise, with these two separate departments, which leads to inefficient working and confusion for the customers of collective service.

Health informatics (also called Health Information Systems, health care informatics, healthcare informatics, medical informatics, nursing informatics, clinical informatics, or biomedical informatics) is a discipline at the intersection of information science, computer science, and health care. It deals with the resources, devices, and methods required to optimise the acquisition, storage, retrieval, and use of information in health and biomedicine. Health informatics tools include not only computers but also clinical guidelines, formal medical terminologies, and information and communication systems. It is applied to the areas of nursing, clinical care, dentistry, pharmacy, public health, occupational therapy, and (bio)medical research.

The Trust is going through a transformation process, moving towards a clinically-led organisation. A credible and systematic I^3 strategy (this document) is critical to the success of this change process. The Trust needs to work collaboratively with CCG commissioners to deliver a challenging agenda of reconfiguring clinical services, which are high quality and safe, give patients a good experience and are financially viable for the future. At the centre of this Strategy are the people tasked with its delivery, starting with the obvious Informatics and Information teams and other aligned resources throughout the Trust, the first stage of the actual strategy delivery is the formation of a single core function to gain an "intellectual" economy of scale under one structure with formal Clinical and Managerial Leadership. The single structure will provide better clarity and better definition of services, to better meet the current and future needs of the Trust, clinicians and patients. However as this agenda matures, a move to embrace a wide cross section of patient care delivery staff directly in the delivery of this Strategy is recommended, the Trust will consider a rolling secondment process of engaging a broad cross section of staff groups in the day to day service improvement and modernisations that are achievable from this new digital opportunity.

I^3 Philosophy

To improve the patients' care experience, improve clinical practice and improve health in the local health community we have to:

- get the information to where the patient and clinician are and improve the information that is available to patients
- get the knowledge and guidance to where the clinician is
- develop standards against which to measure care against and capture the care delivery data to do it

- provide communications infrastructure to enable patient care information to flow between all agencies involved
- provide universally robust and secure infrastructure – enabling clinicians to access and input data from wherever they are – based on who they are;

And then…

- make significant changes to investment in Informatics training for clinicians, managers, I^3 staff and other users
- Establish the role of Chief Clinical Information Officer formally in each contributing organisation

Which will…

- reduce patient and staff time wasted on the retrieval and re-collating of patient care records
- improve the information available to patients and the public about their care and the services provided
- allow monitoring of local and national targets and other NHS requirements
- develop a local health service that is responsive to our patient's needs.
- achieve all the above within an acceptable resource envelope

This vision recognises that I^3 underpins all our organisations' clinical and business objectives and therefore any information systems investment must demonstrate quantifiable improvements in patient care and resource utilisation.

The central core ethos of this new I^3 service is an understanding that **better information will result in better clinical decisions which in turn will deliver better patient outcomes.**

Proposed Service Definition
A unified service is required, led collectively by the new roles of CCIO and CIO. The new service reflects the synergies between the current Information and Informatics services through a unified structure which brings together similar functional areas using a common approach and toolset. Functions to be examined as a part of the unification process are:

Patient Information Quality and Data Quality – there is limited resource in both departments attempting to deliver very similar agendas

Information Governance and Information Security – there is an opportunity to combine the CCIO function with the Caldicott function, leaving the SIRO function with an Executive Director with both being supported by the new integrated team.

Data Warehouse Administration – there is the potential to bring together several expert areas, such as CDS management, patient activity information, aggregated views, presentation and operational management tools using common data sources and tools to promote the 'Single Source of the Truth'

Innovation Service definition

This service stream is a development of the ePR Service that currently concentrates on ePR development and deployment, the next 6 years brings a new shape to this complex agenda and therefore has been refreshed with the following service definitions:

- ePR Optimisation, this service will ensure we are getting the best form our ePR investment, it will deliver staff education, development and training and promote a continual improvement programme across all aspects of the ePR agenda.
- ePR Development, this service will lead all ePR developments for the Trust, its primary focus will be the eHospitals or paperless agenda
- Software Development, this strategy recognises that we will never have a one size fits all system, therefore this service will continue to develop local capability to fill the gaps that our core systems do not deliver against and also pursue the interoperability agenda.

Information Service definition

- Business intelligence & reporting services to support, Clinical Divisions ,Statutory requirements, Commissioning requirements, Finance, Performance, Integrated Performance Reports – to provide both internal and external views from the 'single source of the truth' -This links with Strategic Objectives 1, 3 & 5
- The merging of the services is expected to release more time for analysis and increasing the time spent on interpretation of standards and data requirements for the Trust. Investigation of reasons behind issues/poor performance and working with clinical staff to change processes to improve. This links with all the Strategic Objectives
- Corporate business reporting – Monitor KPI's, Freedom of Information responses etc -This links with Strategic Objectives 1 & 3
- Assurance checking of data quality to support key Commissioning datasets and other data before submission to National data centres, e.g. NHS Information Centre, Secondary Uses Service, Cancer Intelligence Service, Cancer Registry, Clinical Commissioning Groups, etc -This links with Strategic Objectives 1 & 2
- Managing the Information Schedule requirements - This links with Strategic Objective 3
- Clinical Coding services, with closer links to clinicians - -This links with Strategic Objectives 2
- Support for the Trust Contract negotiations and monitoring - -This links with Strategic Objectives 3
- Capacity & Demand forecasting and activity Planning – advice , guidance and support - This links with Strategic Objective 3
- Modelling information to – predict performance, flag up early warning of potential issues. - This links with Strategic Objectives 3, 4 & 5
- Data Protection advice - acting as Trust Data Controller, Information Governance management and standards evidence collation

Information Systems service definition

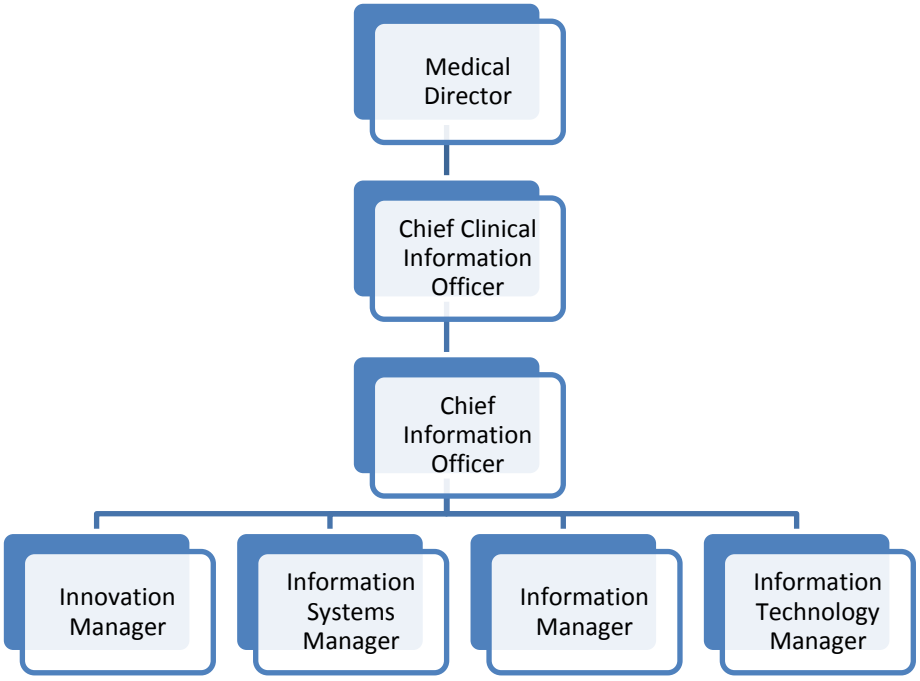
The Information Systems service manage professional services required to deliver a coherent set of systems that deliver this strategy and assurance that they are fit for purpose.

- Quality and Compliance covers the formal discipline to manage: Quality (incl Benchmarking, Operational performance, Operational effectiveness); Risk Management; Incident Response Capability; Project Portfolio assurance; Change Management and transition; Configuration (at a system and services level).
- Security of information and prevention of data loss, privacy and confidentiality are major underpinning principles of this strategy, however they need to work for the patient and clinician, therefore this is seen as a significant area of work. Business Continuity planning will become an increasingly important aspect of system implementation as the potential impact of outages of business critical systems increases.

Information Technology Service Definition

The Information Technology service deliver the engine room of this strategy, they also maintain it on behalf of our users. The service definition described here follows best practice guidelines as documented in the Information Technology Information Library (ITIL).

- First line support or Service Management, this service provide the service desk function which fundamentally has to grow both in terms of importance to the Trust but crucially in size if we are to be able to support a 24/7 healthcare delivery model. The service also provide the in depth corporate systems configuration and application support skills
- Second line support this service provides the day to day support that keeps all our technology working, they are crucial to the delivery of this strategy and as with the first line service above need to grow to meet the challenges of this strategy
- Third line support , this service provide the deep technology skills required to design and deliver innovative corporate technology, they provide high quality robust technology architectures that are serviceable and future proofed.



Possible Structure
The structure above formally introduces the roles of CCIO and CIO into a combined Informatics and Information structure, as indicated above in the service definition section, the 4 disciplines that make up the new service will be re organised to take advantage of common agendas and also to reengineer a single fit for purpose Informatics delivery service. This structure will give the Trust a 'single point of contact' for any and all of its I^3 needs. The new service must support the divisional structure much better by identifying an individual person/post per division as the link person for all their information and business analysis needs.

Transition
The transition into this structure identified above needs to be carefully managed to ensure staff affected feel valued during and as a result of the change and also to ensure due process is followed, including a full staff consultation phase. If the reorganisation results in a change in role, given the complex nature of this agenda a 3 month hand over period should be built in to follow the re-organisation itself.

Team Building

In the initial phase of building the new function there will be a requirement to build the new team, therefore it is recommended that a modest investment in the new team is made very early in its formation to build robust relationships and understandings. In addition it is recommended that towards the end of this Strategic horizon of 2019 a provision is made to invest in the then management team to develop leadership skills to assist with succession planning.

Potential Scope for phase 2
This paper identifies the obvious synergy of combining the 2 high profile 'Informatics' teams, however there are many other pockets of small, sometimes isolated, resource attempting to deliver the same or an aligned agenda. Examples of such services are: Clinical Audit

department; Service Line Reporting team; Medical Engineering; Library and Knowledge department. These are just four examples of areas where further benefit could be gained by pooling expertise and managing collectively giving a resultant service that delivers more than the sum of its parts. The utility of this would be informed by separate strategic reviews of other functions within the Trusts.

Timescale	Activity
Short Term Yr. 1	Construct organisation structure and present with new Informatics and Information Strategy. Complete staff consultation exercise and introduce new structure, consolidate. Complete team building work
Medium Term Yrs. 2 - 3	Conduct 12 month review and adjust as required. Review phase 2 options
Long Term Yrs. 4 - 6	Conduct 48 month review and adjust as required. Complete leadership development

Financial Summary

	13/14		14/15		15/16		16/17		17/18		18/19		Comments
Staff Costs	w.t.e	£	w.t.e	£	w.t.e	£	w.t.e	£	w.t.e	£	w.t.e	£	
sub-total													
*Non-Staff Costs **	£		£		£		£		£		£		
sub-total													
Grand Total	*0*		*0*		*0*		*0*		*0*		*0*		

Theme 2 - Complete the Lorenzo Patient Record deployment and rollout

Patient Record Development

The Lorenzo programme commenced in 2008 with the introduction of the early releases of limited clinical documentation, requesting and resulting and the ability to record structured patient information into the core ePR. Since then the local deployment programme has not only provided significant lessons for the wider NHS against this extremely complex area of work but also it has given the Trust a significant and sophisticated capability to enable radical process change. Lorenzo as a system is delivering very complex information to a wide variety of clinical and admin staff whilst respecting patient confidentiality, it is therefore inherently a complex system to fully utilise, similar to any integrated ePR platform. However once the fundamentals of the system are understood the overriding benefit for our users is they only have to remember one password and learn one user interface to access any and all patient related information to support all care events.

To complete the scope of the Lorenzo programme as planned the project team will:

- deploy the Inpatient Prescribing and Medication Administration (IPPMA) module, this capability compliments the To Take Out (TTO) prescribing module and gives a complete end to end ePrescribing solution, from patient assessment (clerking in) to discharge, replacing the current drug chart held at the end of the patients bed. The IPPMA module will go live on 14th May 2013 on the first ward (ward 37 RLI). Following consolidation and early life support the capability will be rolled out with electronic diagnostic requesting (see below) and TTO prescribing;
- deploy the Maternity module, work is at a mature stage with a July go-live planned for, this Lorenzo module will replace the current Maternity system (Evolution) and will streamline many system related processes. In addition to the Lorenzo module and to support information being collected within the community setting the project will also deploy digital pen technology which is capable of being interfaced directly with the Lorenzo system.

2013/14 Lorenzo Programme
The list below summarises the portfolio currently being investigated, these developments are available and will be assessed for inclusion in the Patient Record programme for 2013/14:

Care Management Optimisation – working on usability aspects of both the administration and clinical aspects of the 1.9 code base already delivered. Manage the system merging with the global Lorenzo enterprise version.

Content Development – the development of UHMB (and NHS wide) clinical forms and documents, CfH have funded for the last 3 years a specific UHMB content development team, given the immaturity of the Lorenzo software in this area little progress has been made until recently. There is now a very real opportunity to design and deliver a whole range of document templates and clinical assessment forms in a relatively short period of time. However resource investment needs to made in this area to make any real progress. This capability will form the backbone of the Paperlite outpatient project.

TTO Prescribing – This project delivers the foundation of all future prescribing capability, however it does not include a full roll out of TTO. The Roll out of TTO prescribing will be linked to the IPPMA project to introduce a complete ePrescribing capability with one visit to each area. TTO prescribing covers the recording of drugs at admission and drugs

prescribed/dispensed at discharge including a record of any cessations, amendments and additions.

In Patient Prescribing and Medication Administration IPPMA – this capability covers the prescribing and administration of all medication management throughout the patients inpatient stay. It excludes the very complex end of the prescribing spectrum of oncology/chemotherapy. The Project has started and is at PID stage (at writing this strategy Feb 2013) the capability is delivered across 2 phases in 2013/14, Phase one is planned for go-live May 2013 a local incentive funding arrangement with CSC is in the process of being finalised.

Advanced Bed Mgt – allows interactive and real time bed management through modern drag and drop user interface. This capability will be linked to eWhiteboards in each ward area.

Pathology Requesting – this capability is to be delivered in 2 phases resulting first followed by requesting, the resulting component is complete and signed off and requesting will commence roll out end of April 2013

Care Plans – primarily this capability provides a standard model of nursing care plan creation and maintenance. The logical capability this module provides would allow rudimentary tracking and management of packages of care that could be made transparent across our commissioners ie GPs getting a daily tracker of the status against plan of their specific patients. A deployment decision is yet to be taken against this capability.

Theatres – probably 2 years away, however the principle needs to be established and planned for. Any proposal will include a full business case

Maternity – the project to deploy this module is underway and is at PID stage (as at writing this Strategy Feb 1012) the project will use a mix of Digital pen technology to capture information in the community and replace the evolution system to record the birth details. The system is planned to go live Summer 2013.

The above is a significant opportunity for UHMB, however each development will further 'load' the already stretched support infrastructure. We currently do not have a 24/7 operation, we rely on grace and favour of a few expert individuals within the Informatics Service, this needs to be addressed in the early years of this strategy to allow UHMB to understand what it is capable of and how far it can go within its current HI investment.

Timescale	Activity
Short Term Yr. 1	Complete major development phase of ePrescribing and Maternity. Commence the whole ePR platform rollout across all areas
Medium Term Yrs. 2 - 3	Review the staff numbers needed on a 24/7 basis to support a comprehensive ePR. Complete the whole ePR platform rollout across all areas
Long Term Yrs. 4 - 6	Yet to be decided date to commence business case justification for replacement National contract arrangements

Financial Summary

	13/14		14/15		15/16		16/17		17/18		18/19		Comments
Staff Costs	w.t.e	£	w.t.e	£	w.t.e	£	w.t.e	£	w.t.e	£	w.t.e	£	
sub-total													
*Non-Staff Costs **	£		£		£		£		£		£		
sub-total													

Grand Total	*0*	*0*	*0*	*0*	*0*	*0*

Theme 3 - The need for Business Intelligence

Business intelligence (**BI**) is a set of theories, methodologies, processes, architectures, and technologies that transform raw data into meaningful and useful information. BI can handle large amounts of information to help identify and develop new opportunities. Making use of new opportunities and implementing an effective strategy can provide a competitive market advantage and long-term stability

Introduction

The Trust operates in excess of 180 information systems plus contributing to a number of national systems. These systems can be grouped into a variety of broad themes, such as Patient Management, Financial, Staff, Estates etc. The Trust is moving rapidly from a non-IT centric organisation towards a fully IT System dependent organisation. This has driven a significant demand for Information and analytical breakdowns of key performance indicators where information may be held over multiple systems.

In addition, the prominence of CQUIN and QUIPP as tools to evidence compliance with commissioning requirements / National Standards has meant an increase in general reporting requirements with specific data that needs recording.

The Trust is in need of a change of approach as to how it uses information to inform its decision making.

Gartner Inc., an IT research organisation, predicts over a third of companies regularly fail to make insightful decisions because they lack the right information

With the implementation of a Business Intelligence led approach - the Trust can achieve a significant improvement in its decision making by having more information and analysis readily available. This process can be summarised as recognising a need to reduce complexity, improve transparency, and transition from intuition-based to fact-based decision making.

Business intelligence is the key to running a performance-oriented organisation

Business intelligence should help define strategy, drive efficiency, and develop a performance-oriented culture throughout the Trust. It is much more than a reporting tool. Using BI is a way of working. Defining metrics that will measure progress toward specific goals is critical. Once the right metrics have been identified, the Trust should focus on gaining the support of key stakeholders and the cooperation of employees and partners to focus on delivery.

Scope

In principle, every Trust system should be contributing to the Data Warehouse. This will enable cross system analytics and enable the Business Intelligence layer to support the entire Trust. The scope will need to be implemented over time, depending on the Trusts priorities. (See 6 year plan)

Currencies and Definitions

Without common definitions, a BI implementation cannot succeed. Lack of agreement and understanding is a problem the Trust is suffering from. For example, CDS sourced information opposed to direct system information is a typical example. Definitions of Specialty and Treatment Functions level information has been another. The sources need to be clearly identified and what the currency they are operating in. A significant amount of time is spent reconciling one set of information to another when there is no clarity of the report definition.

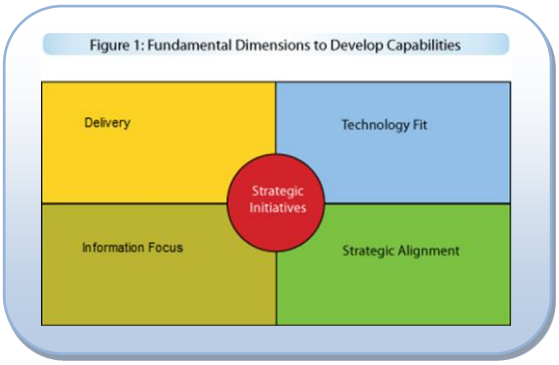
Data, Tools and Integration

The data held in the data warehouse where possible should be a full database copy, or if that's impossible/impractical due to storage or accessibility problems, then as much as possibly should be extracted from the source systems.

The Trust has a significant investment in Microsoft SQL Server in terms of skills and application databases. The existing data warehouse is due for replacement and will be based on Microsoft SQL Server 2012 with additional features to support an IT Centric organisation.

Business Intelligence Environment

Whilst the BI environment will interrogate the Data Warehouse, the aim of the BI service should be to enable every employee to use the system. It is crucial the presentation layer is clear and simple to use.



It is essential to properly identify the core principles to build the Business Intelligence Service around.

A systematic approach requires ways to deliver on business capabilities, the technology and processes that need to be adapted for execution, what is to be delivered and ways to maintain strategic alignment.

Some fundamental dimensions to develop capabilities around are:

- Delivery
- Technology fit
- Information Focus
- Strategic alignment

The Trust needs to put Information at the Heart of the Organisation. By that, the information requirements should be delivered from general usage of IT Systems and not require capture of special data sets. The main delivery vehicle will naturally be Lorenzo and as its deployment scope and breadth increase, so do the opportunities for key analysis and intelligence led decision making.

Where there is a need to collect specific data items, the Trust should look to re-process engineer the whole business area and derive required information from the new business processes. This is not an insignificant task and will require some tactical implementations along the way. Part of the process engineering should involve a Technology alignment or fit. Where possible, existing applications and technology should be utilised or in some cases developed to deliver a seamless BI environment.

Finally, the direction and mandate for the BI service should be alignment of the Trusts Strategic objectives with the capability being delivered. This will ensure a better integrated service and increase the likelihood of the BI service being accepted by the organisation as a fundamental player in the Trusts success.

The Trust will adopt 2 prime technologies as its standard platforms to support the business intelligence service

- Analyzer
- Microsoft Reporting Services

Additional technologies which will be evaluated to determine if they can complement or contribute to the delivery of a BI Service.

- QlikView
- Powerview

Figure 2 represents that rather than looking to transpose a BI service on the organisational structure, if BI is looked at from a service-oriented perspective, four key areas emerge that serve the business needs of the organisation.

- Ad hoc service: Supporting the day-to-day information needs of the business, whether they're operational or strategic in nature.
- Standard report service: Producing, maintaining and enhancing canned reports for management and various functions within the Trust. This includes deploying standard reports as well as continuously validating information produced and supporting queries from business users.
- BI infrastructure development : Developing an enterprise data warehouse, operational data stores, and application data marts. This team would be driven by business requirements but would continuously focus on developing the right architectures.
- Decision support services or advanced analytics services: More advanced analyses that require piecing together information from multiple reports, or those analyses that do not lend themselves well to the traditional BI slice and dice but are more algorithmic in nature

Staffing and Skill Set

An experienced Business Intelligence lead is required to take this agenda and implement in the Trust. The post needs to be senior and the skills required will be challenging.

The cornerstone of the BI implementation will be a strong data foundation, including data models (logical/physical), an enterprise data warehouse, metadata management and business requirements management.

Core skills to employ / develop / retain are architecture, data modelling, BI requirements management and data warehousing project management.

The implementation requires certain key additional skill sets like extract, transform and load development and reports development. Once the high level and detailed architectures are

developed, this area can be handed down to Data Warehouse / Business Intelligence programmers who can execute.
Nevertheless, most organisations employ or procure talent in this second tier, which is often easier to find because it is more toolset-based. That said, the competition for these posts is not limited to the NHS and there is a vibrant contracting market for people with these skills. It is in the contracting arena that the Trust will have the most success.

Development Plan

A fundamental question needs to be addressed, which is does the Trust purchase an off the shelf platform or develop its existing capability. The answer is some of both. Initially recruitment of a lead for the BI service is required. This post should be a senior recruitment who can lead the implementation, ideally utilising experience gained to create a short, medium and long term development plan that satisfies the Trust's needs.

The Trust will then commission development works, some in-house and some from external agencies to deliver the plan under the control of the BI Lead. The key principles will be to get to an assured baseline, followed by the systematic building of views of the baseline data. Along with detailed description of what the information is, its source so there is no doubt as to what is being shown.

The end point of the Business Intelligence service will be to deliver "ward to board" reporting, based on exactly the same data but providing different views, with different levels of detail. From Dashboards and Scorecards to summary lists for action. Powered by the single version of the Truth, there will be no confused messages around what the state of play is for given performance indicators.

Clinical Information Network

The concept of linking patients to electronic Integrated Care Pathways (eICP) spanning the whole continuum of care, mapped onto fully functional multi resource scheduling capability is massively powerful. The basis for whole patient journey management, workflow and analysis is a clinical information network.
The principle is that you can only work with information that:

- can be collected in one location (maybe a virtual location);
- conforms to a single schema;
- has the same currency value;
- is managed by a robust security model and
- has been through some sort of quality assurance that gives the user confidence it is fit for purpose.

If the above criteria can't be met then organisations will not easily be able to meet their information requirement.
Informatics services need to be constructed to manage/develop services across the shared health network space which will facilitate initial bringing together of basic patient data, an understanding of the resource constraints and clinical expert knowledge into one data warehouse. The presence of this populated data warehouse will, in turn, support effective, real-time patient episodic management by building against the stored data models (defined by eICPs with embedded workflow) reporting that will report/alert health care professionals to exceptions or support outcome analysis.
These complex health management models cannot be delivered using paper based systems or even interfaced sets of organisational systems, they require a super set of information available in one database which can be interrogated from a uniform set of tools that have an understood currency across all users of the information. The outputs from such an

environment can support many purposes, from health care planning to day to day (minute by minute) health care delivery management.
The following needs to be in place before this type of tool is achievable:

- A Health Informatics Service able to develop and deliver the capability and mandated to deliver the data set; this is Informatics operating at a data level not an information analysis level;
- A technical architecture able to support this type of mission critical service;
- An acceptance by the health network that an BI Unit will be in existence;
- Organisational deployment plans that include the delivery of this aspect of service;
- Development of a set of corporate strategic systems that are in place for the long term to support each contributing services day to day business.
- Where ever possible an economy of scale approach should be promoted to prevent re-inventing the wheel and introducing Chinese whispers within this vision.

Timescale	Activity
Short Term Yr. 1	Employ Senior Post to Lead the BI Service Develop Enterprise Level Data Warehouse Alignment with Strategic Requirements Publish Performance Dashboard Development of BI Capability
Medium Term Yrs. 2 - 3	Development of BI Capability Alignment Checks Review Permanent Staffing Profile
Long Term Yrs. 4 - 6	Development of BI Capability

Financial Summary

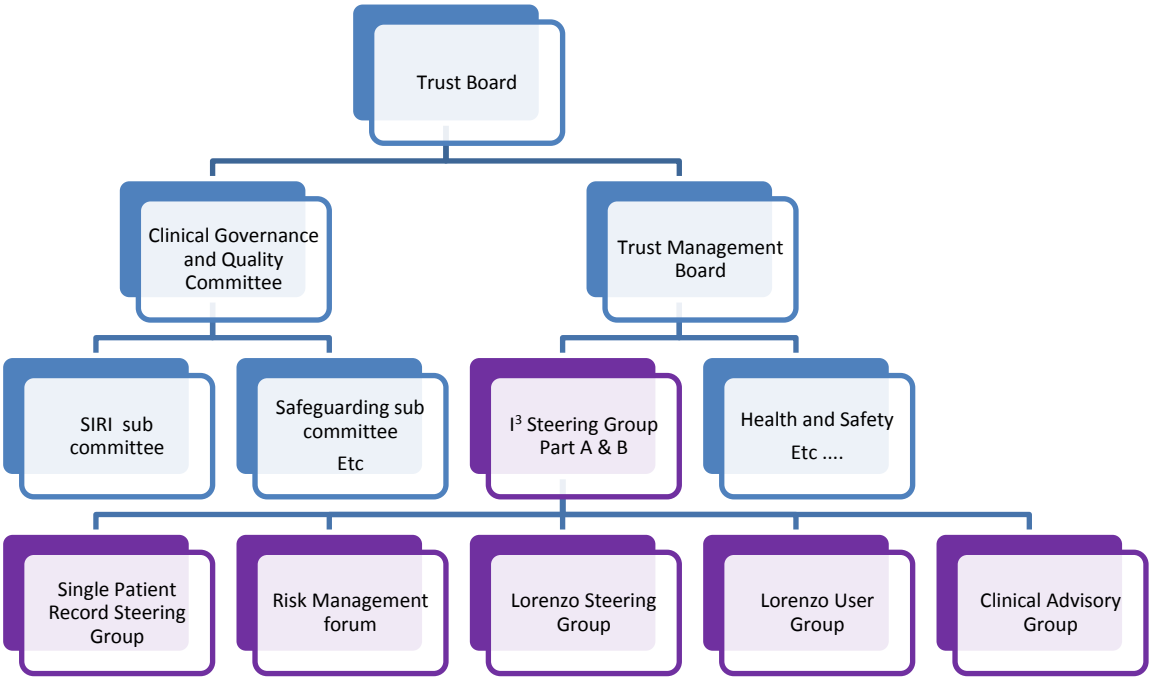
	13/14		14/15		15/16		16/17		17/18		18/19		Comments
Staff Costs	w.t.e	£	w.t.e	£	w.t.e	£	w.t.e	£	w.t.e	£	w.t.e	£	
sub-total													
*Non-Staff Costs **	£		£		£		£		£		£		
sub-total													

Grand Total	*0*	*0*	*0*	*0*	*0*	*0*

Theme 4 - Governance

I^3 Steering Group

This strategy identifies a significant agenda that is crucial to the day to day delivery of healthcare services and also to the modernisation aspirations of the Trust, therefore it must have robust governance, accountability and visibility at all levels of the Trust and local Health Community. The exiting health community wide Informatics and Information Steering Group is well attended and works well for all organisations, therefore a specific part A to this meeting will be added that will oversee the UHMB agenda exclusively. It is proposed that the new Chief Clinical Information Officer chairs the total meeting (part A & B) with Executive and appropriate Senior Management attendance from UHMB at Part A. The meeting will be supported by a series of project and programme highlight reports; outputs from other I^3 governance groups, such as Risk, Quality etc; blueprint review and Project Portfolio review. The new I^3 Steering Group will relate to the UHMB Governance structure as follows: The group structure below positions the I^3 Steering group reporting to the Trust Management Board (purple boxes show this strategy's influence), for clarity an indication of other governance groups are shown to allow alignment of the importance of this agenda, however most other groups have been omitted.



User group / Clinical Advisory Group

The overall aim as part of the strategy is to build strong, supportive relationships with all users of our key corporate systems in all aspects of informatics in healthcare, in so doing, improving services for patients, carers and families. Clinical engagement forms a strategic part of service development and improvement, using health informatics to support decisions and processes to deliver care.

Clinical engagement will continue to be built through the Clinical Advisory Group – which consists of professionals from medicine, nursing and allied health professionals whose role is to advise on any clinical aspects of the implementation of new information system

capability or an expansion of existing capability. The aim of this group is to ensure that technology enabling projects are aligning to and support the clinical strategy.
Clinical staff are represented on governance groups and improvement groups associated with improving patient access, flow and treatment pathways. However to support the existing Clinical Advisory group this strategy identifies the need for a 'systems' user group.

The new user group is required to give our users an important voice in how we deliver, maintain and expand the key information systems at the heart of this strategy. The user group will have different focus areas for different staff groups and will accommodate forward thinking, incident or problem tracking as well as education and communication. The User Group will be a whole day event supported by key Informatics and Information Staff and will have a structured rolling agenda, it will meet once a month rotating across all three hospital sites. The Chairman role will be a user representative, and even though our local agenda may be wider than our electronic Patient Record footprint, it is proposed that this person also sits on the National Lorenzo User Group.

National Lorenzo User Group
The new National Lorenzo User Group (LUG) was formally launched November 2012, this group brings together all current Lorenzo user organisations and organisations that have made a formal commitment to a deployment. The group's membership is comprised of 2 representatives from each organisation that are senior enough to carry a decision at their organisation. Connecting for Health are present however they only have an advisory role, Computer Science Corporation (CSC) as the system supplier host the event and provide administration support. The primary aim of the LUG is to ensure the product future roadmap delivers what the NHS requires; it also has a responsibility to ensure day to day issues that have exhausted formal escalation processes are resolved. The user group crucially also has the ability to request changes to the product. The first Chairman was elected at the group's second meeting with UHMBs Dr Colin Brown taking the role.

Reinforcing the right Information Governance (IG) culture
Information governance is an accountability framework to encourage desirable behaviour in the way information, chiefly our records, are used. It includes the processes, roles, standards and metrics that ensure the effective and efficient use of information in enabling UHMB to deliver its services in a lawful and efficient manner.

Realising the benefits of I^3 innovation in the delivery of care within UHMB will involve the successful alignment of people, process and technology. Of these, 'people' is overwhelmingly the least predictable and most challenging dimension to align, particularly against a backdrop of profound organisational change. Information Governance drives the cultural shift by taking a systematic approach to the development of its people to ensure that UHMB protects privacy and has high data quality. It lies at the heart of the 'do it once, do it right' agenda.

Lorenzo has a range of IG control features that are not found in any other NHS systems as it was specifically commissioned to support the secure sharing of detailed care records between different NHS organisations. It is the only system that has been designed from scratch with this goal in mind. The range of IG and security features is able to support interoperable access to records held in other systems equally as well as it supports secure access to UHMB records within native Lorenzo.

Informatics is currently piloting a Compliance System which has been developed to monitor and improve user interaction with Lorenzo (although the system is not Lorenzo specific and could be used with any system). The pilot has focussed on key transactions that, if

incorrectly done, have a high impact or risk associated. The aim of the system is twofold – firstly, to ensure that mistakes are corrected in a timely way and secondly, to drive improvements in user compliance with the agreed processes in order to improve data quality. As the I^3 service takes off, this system will move to mainstream use and drive data quality improvement in a targeted, risk aware manner.

In 2013/14, Privacy algorithms will be added to the Compliance System to highlight user activities that may be suspect, for instance, unusual patterns of access to records, or snooping on family, neighbour and colleague records. As successive algorithms are applied, there will be an associated education project within UHMB to communicate acceptable standards of IG practice, highlight any poor practice, and where necessary deal with individuals who are falling short of expected standards. Successive cycles of the Privacy project will be tracked via an IG maturity model which is currently in development.
The approach outlined above is precisely the same approach that is used by the 'Fair Warning' system that has been deployed by, for instance, NHS Scotland. In the case of the UHMB Privacy Compliance System, there is an additional, significant advantage that the system has an integral, automated escalation system through line managers to associate director level.

This system, when used in combination with other existing privacy controls in Lorenzo (Registration Authority controls, granular audit logs, Legitimate Relationship controls and locally commissioned audit measures) gives UHMB a capability for assuring privacy which is world class. It will require dedicated resource in the form of a Privacy Officer (plus some business intelligence input) to monitor this rich seam of data, follow up aberrant behaviour and hone educational interventions to drive the cultural shift at a pace. These elements together will put UHMB at huge advantage in delivering vertical integration as we will have an unrivalled, enterprise class privacy assurance framework.

Quality management

The new I^3 service described in this strategy is designed to

- be a high quality sustainable service
- be innovative in support of Trust business needs
- have a flexible, professional and dedicated workforce
- have enterprise class infrastructure and systems

We are building on the solid foundations of existing services, however being systematic in our approach to quality at the outset allow us to build capability through keeping I^3 performance high, even and focussed to support continuous service improvement, service optimisation and responsiveness.

We will develop a Quality Policy to define our commitment to quality, clarify intentions and objectives and serve as a framework for action. This will be based on the ISO 9000 Quality Management Principles which already underpin our existing approaches in Security, Project and Risk management.

We will develop a dashboard of KPIs to sit at the heart of the framework provide a cohesive and summarised view of the service's performance. The key areas will be:

Operational Performance
We already monitor performance against a range of KPIs, and have a solid base of indicators but need to expand the range and coverage. There are two particular

areas for development - Capacity management is key to meeting the expectations of our customers, which goes hand in hand with understanding customer satisfaction. As the NHS introduces the Friends and Family Test to drive continuous improvement, I^3 will adopt the Net Promoter Score (NPS) to provide a clear measure of performance through the eyes of our customer base by asking the question 'How likely is it that you would recommend I3 to a colleague?'

Operational Effectiveness
MBHI are longstanding members of the National Informatics Benchmarking Club and have recently subscribed to the level 3 service. Building on this, we will develop a quality framework to provide assurance to customers and stakeholders that the I^3 service provides value for money. We will know that we conform to SLAs; the dialogue and engagement with our customers and stakeholders will increase our sustainability.

Change Programmes
This is underpins the work set out in Theme 6 of this strategy: performance measures to provide assurance that programmes are being driven forward and that plans, resources, risks and issues are managed effectively.

Continuous Service Improvement for the whole team
Our staff will present the "face" of the I^3 service. We must foster a positive employee attitude to work, and encourage all I^3 staff to take pride in their work. We already make good use of the development opportunities afforded by our membership of the Informatics Staff Development project, but a systematic approach will be necessary for reshaped I^3 service to quickly create an internal culture and environment which promotes the development of our staff to deliver excellent services. We must lead this through having clear expectations of how all staff should behave and perform, and aligning training & development with customer satisfaction. We should also drive forward the 'professional' development of the I^3 service and ensure that staff are engaged in appropriate continuing professional development.

Change Management

UHMB will rely increasingly upon Information systems, business systems and the IT Infrastructure in order to deliver patient care. The interdependencies of these systems are complex, and the results of changes made to one system may have serious consequences for the others.

The uncontrolled implementation of changes to the Health Information 'production environment' presents a significant risk to operational services i.e. those information systems and the IT infrastructure which support core business functions. Changing system requirements, resolution of known issues, implementation of new services and routine maintenance all require appropriate change management.

Change management ensures the stability of systems by the identification and mitigation of associated implementation risks, and so minimises disruption to operations caused by system outages, and consequently protects and improves upon the services and service levels provided to the organisation.

Morecambe Bay Health Informatics service has adopted a policy of Change Management following the industry best-practice standards of ITIL – the IT Infrastructure Library. This policy outlines the Change Management process, including its roles and accountabilities.

No production environment changes are allowed for services delivered by Morecambe Bay Informatics Service without authorisation. I^3 will continue the operation of the current management arrangements. Minor (low and medium impact) technical changes will be authorised via the Technical Change Authorisation Board (TCAB). The Change Advisory Board, which includes the whole Senior Management Team, will continue to ensure that significant changes are not made to the production environment without them having been fully understood, risk assessed and authorised at the highest level.

Benefits Management

Benefits management provides the necessary link between the improved capability described in this strategy and the achievement of the business transformation. It provides the formal discipline to identify, describe, plan, measure and deliver the quantifiable benefits that this strategy promises. To deliver this will require a Benefits Manager to analyse, track and manage the benefits and evidence the return on investment in terms of quality of care, patient safety, operational efficiency, improved income and cost savings.

Project Assurance

Morecambe Bay Informatics service has implemented a large number of projects to implement new information systems of varying complexity and has a demanding programme of work around building capability within the local healthcare community. When introducing new systems, the project management requirement is to bring in the project 'on time, on spec and on budget'. To this end, the service has adopted the industry standard project management methodology PRINCE2 and has a dozen qualified PRINCE2 practitioners. In 2010 the Morecambe Bay Project Management Handbook underwent an overhaul and was developed to strengthen project controls covering the transition period of bringing a system live and dovetail with ITIL, the service management methodology that underpins the delivery of the service to users, and also to incorporate key elements of change management during that critical period. In 2011, this area was audited by Audit North West (ANW) and received significant assurance.

The processes are scalable and are used proportionately to the size of the project being managed. Hence large projects are directed by a dedicated Steering Group and small projects are overseen by the Health Informatics Risk Management Forum.

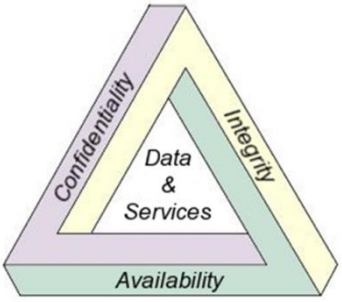
In 2011, further work was done to develop risk based project approaches to Information Security to provide robust assessments of system risk at project transition (go-live) and thereby assure the fitness of the system for deployment from an Information Security perspective. This dovetails with the change management processes also intrinsic in the project management approaches.

Information Security

Healthcare cannot function without accurate, accessible information. But information, if not securely managed, becomes a liability with attendant clinical risks to patient and the outcomes of their care. An effective Information Security Management System is essential to:

- Ensure business continuity
- Safeguard the interests and privacy of patients, staff and stakeholders and retain their trust
- Comply with the law and defend ourselves against legal action
- Protect from the reputational damage that may flow from poorly managed information

Protection of information is assured by maintaining:



- Confidentiality: protecting information from unauthorised access and disclosure, essential to compliance with the Data Protection Act
- Integrity: safeguarding the accuracy and completeness of information and preventing its unauthorised amendment or deletion
- Availability: information is available when needed, free of disruption

The existing Informatics Service has two members of staff qualified to advanced level in Information Security management and the service has been standardised on ISO/IEC 27001 as the basis for the security management approach since 2009. The standard specifies the implementation of an information security management system (ISMS) which requires systematic risk assessment and risk treatment via security controls. There is an annual workplan with associated risk register measuring compliance with the associated Code of Practice ISO/IEC 27002 which is also mapped to the IGT standards. The UHMB Information Security Policy (ISP), authored within the Informatics Service, sets out a framework of governance and accountability for information security management across the Trust and forms the basis of the UHMB Information Security Management System (ISMS).

The ISMS provides a holistic framework for the application of information security controls which are designed to fit the organisation's business needs and risk appetite. The monthly Risk Management Forum provides the check point for operational level security decisions with Health Informatics Steering Group overseeing progress towards ISO 27001 compliance.

Importantly, the Information Risk Management System in place also encompasses **accountability** through the designation of information asset owners within the service. This ensures that ensuring that Informatics information assets are protected by a risk management structure in which key individuals are clearly accountable for maintaining the information security triad.

Data Loss Prevention

The loss of personal data of 25 million Child Benefit claimants by HMRC in 2008 led to a profound shift in the risk appetite for data loss in the public sector. The Information Commissioner regularly imposes fines of >£100,000 on NHS organisations, with the

Extracts from The Engagement Analysis of the NHS Next Stage Review. This review sought views from both within the NHS and from patients.

Creating Confidence:

A Patient's perspective

"When you are young, it's embarrassing that everyone like the receptionist knows everything – the receptionist could be your friend's Mum."

Stakeholder comments

"Staff need to know they are accountable for the information they record and realise the implications of that"

concomitant reputational damage proving equally if not more costly. UHMB has addressed significant areas of the DLP agenda already but others remain.

Faxes
Faxing sticks out as a major uncontrolled risk in data transfers, and regularly features in incident reports, yet it continues to be heavily used despite the NHS having invested in secure alternatives. Urgent referrals both into and onward from UHMB are routinely supported by faxed information. There are practical and cultural objections to applying fax (safe haven) policies and replacing faxing with more secure means. The Information Commissioner's Office (ICO) is intolerant of data loss if it finds "reasonable steps" have not been taken to address risk associated with faxing. Eliminating the use of fax machines therefore presents big challenges and requires detailed and cooperative work with partners to change workflows, but it is an area that we must address.

The safest way to transmit data is system to system with a secure transfer platform linking the two. The MIG is easily the best strategic solution available across the community and already is the subject of an important and ambitious programme of work to share records in support of vertical integration. I3 will, in its early days, map reduction in faxing enabled by the MIG against a timeline to understand how quickly fax risk can be dealt with. This will support decisions, taken with partners, on whether tactical solutions have a place in the work to provide alternative means for data transfer.

Secure Email
There is a mandatory NHS requirement that all transfers of sensitive and confidential information held in electronic format must be encrypted, however the greatest risk with email is that information will inadvertently be sent to an incorrect recipient, often with a similar name. A secure solution therefore needs to be both encrypted and allow the sender to 'revoke' or cancel information sent by email in order to maintain full control.

The vast majority of UHMB email traffic is internal and all email transfers within UHMB are encrypted and can be recalled. Both NHS mail and UHMB email are secure within their own environments and both have secure, encrypted links to other email environments, but selection of the correct email system for secure delivery is confusing as it is dependent on what data is being communicated and to whom. For this reason, UHMB procured a cloud-based Switch secure email solution in 2012/13. Switch 'packages' the message securely and gives the sender full control. A Switch email gateway solution is also in place in the CaNL domain to auto-encrypt email by policy as it leaves UHMB, providing further assurance. The Switch roll out will continue out aligned with the CaNL migration project in 13/14 with a move to permanent licensing for key / clinical email users in 14/15.

Network Security: the move away from a 'trusted' network

Community of Interest Network Security: There are many benefits for cross organisational boundary working that flow from the Community of Interest Network (COIN) and from connecting NHS COINs in Lancashire and Cumbria. The downside is that the UHMB network is exposed to risk from other COIN connected organisations, specifically from malware such as worms. We have already experienced a 'zero-day' attack as the result of a worm introduced from another COIN-connected organisation; fortunately this was limited in its impact due to the UHMB 'Defence in Depth' security strategy. Going forwards, our network will be business critical to the delivery of care and we must not tolerate a risk of our systems being downed by disruption caused by this real threat when it is essentially

preventable. Measures are required to protect UHMB from the spread of disruption arising within UHMB, or from 'trusted' organisations on our own and linked COINs.

- move from a traditional model of 'trusted network' to a model where are data centres and end user devices (PCs, laptops and mobile media) are protected by design through use of encryption through Virtual Private Network (VPN) as standard for those areas not using Virtual desktop (VDI)

Consumerism and BYOD: Consumerism is the relatively new trend of users driving the adoption and use of mobile devices within a corporate environment. Until early 2012, advice from Informatics Security had been to resist the introduction of smartphones and tablets for corporate use on the dual grounds of an ill-defined business need and the difficulty of managing information security across a mixed device platform. Although this approach follows sound security principles, the position became increasingly untenable and we now have an increasing number of corporate tablet (iPad) users.

There is also increasing demand from users to use personal mobile devices for work purposes (Bring Your Own Device or BYOD) and UHMB is setting up a salary sacrifice scheme for iPads and similar devices.

Mobile devices are typically on 3 month cycles of development as functionality evolves much faster than for PCs. User demands and business requirements will most likely change as fast as the market. As we adopt more device types we also increase the cost and complexity of managing and supporting them. UHMB data will be exposed to new risks almost daily as security vulnerabilities arise which will require new controls and ways of working.

To enable this trend in as secure a way as possible we need to:

- explore moving from a traditional model of 'trusted network' to a model of distrust in order to create a manageable security and technology landscape agnostic of user device. This is in effect a benefit of the VPN work outlined in the paragraph above

In addition to the network model changes, we will:

- Publish both consumerist and BYOD supporting policy, procedures and end user agreements
- develop policies and practices to support our users to become 'savvy' and avoid making mistakes which could lead to UHMB or themselves being compromised. We may need to review employee contracts to work with 'blended devices' versus the traditional work-only platform.

Incident and Disaster Management, Disaster Recovery

It has become clear that although the latest evolutions of systems in use in our health community offer previously unattainable levels of resilience and redundancy via modern data centre architecture, there will always be periods of system unavailability which need to be managed. Events such as Data centres being unavailable and other environmental events such as the Bunsfield refinery explosion demonstrate that events will interrupt continuity of supply.

It is imperative that we all plan for events that could interrupt our operations for an extended period. Disaster recovery (DR) focuses on recovering the information systems and

associated data that support critical clinical and business functions after a period of interruption; business continuity (BC) involves planning to keep all critical areas functioning in the midst of disruptive events.

Health Informatics maintains a Disaster Recovery Plan, which is subject to annual review and is fed from the results of planned disaster recovery tests, an annual table top DR exercise and outputs from the monthly Health Informatics Risk Management Forum on incident lessons learned or root cause analysis reports. This area of work was subject to an audit by Audit North West in 2011 with an outcome of significant assurance.

Recent approaches have focussed on the management of High Severity Incidents with the intention of disaster avoidance through optimising an effective and co-ordinated Informatics response to untoward events. The rationale is that through effective management of early events, progression to a disaster can be prevented. A 'High Severity Incident Toolkit' has been developed and is referenced in the Disaster Recovery Plan. The DR toolset now encompasses disaster avoidance and recovery strategies that are scaleable and pragmatic.

As interoperable systems are developed that include increasing amounts of clinical information, the criticality of the systems also increase. Health Informatics focus on understanding the changing risk profile and controlling those risks, and iterative planning of DR work to provide fully resilient incident management.

Business Continuity Planning

I^3 will be responsible for business continuity planning within our service and will continue to lead and lend expertise to support business continuity planning for systems, principally at times of system change through project and change management processes. Review of internal business continuity plans will be continued on an annual basis as a part of the structured risk assessment programme. The Informatics service played a lead role in the UHMB Business Continuity Standard BS25999 compliance project, which provides a basis for understanding, developing and implementing business continuity within an organisation.

No network or system can guarantee 100% uptime. As eHospital delivers paper-lite running in both clinical and corporate areas of business, business continuity plans and systems will need to develop a matching sophistication and robustness to avoid putting our business at risk. I^3 will continue to engage with Information Asset Owners in understanding and addressing the business continuity risks and finding workable solutions to mitigate those risks.

The scale of Business Continuity planning and testing necessary to support the paper-lite eHospital agenda will require a dedicated Business Continuity Officer, plus development work to establish systems and reports to provide key information to clinicians and maintain operations in the event of outage.

Timescale	Activity
Short Term Yr. 1	Establish I^3 Steering Group; develop IG organisational maturity model and establish baseline; deploy first Privacy algorithm in the Compliance system; develop Quality dashboard in line with new I^3 Quality Policy;

Timescale	Activity
	publish Data Loss Prevention plan covering key threats; step up Business Continuity planning activity to protect new Lorenzo capability and eHospital
Medium Term Yrs. 2 - 3	Deploy further Compliance System Privacy algorithms and monitor against organisational IG maturity model; continue to deliver DLP improvement; publish I^3 staff development plan against improvement measures in Quality dashboard, continued BC planning.
Long Term Yrs. 4 - 6	Continue to develop and monitor IG maturity though Compliance system and education programmes; continue to deliver plans for DLP and BC

Financial Summary

	13/14		14/15		15/16		16/17		17/18		18/19		Comments
Staff Costs	w.t.e	£	w.t.e	£	w.t.e	£	w.t.e	£	w.t.e	£	w.t.e	£	
sub-total													
*Non-Staff Costs **	£		£		£		£		£		£		
sub-total													
Grand Total		*0*		*0*		*0*		*0*		*0*		*0*	

Theme 5 – eHospital

Creating electronic records and/or removing paper, desirable as these may be, are not the prime objective. The objective is to use technology to support and coordinate the processes of care so that the patient sees an integrated service that delivers greater convenience and quality

This section of the strategy in informatics terms represents the Trusts central ambition for the next 6 years. The eHospitals strategy converts the technology investment the Trust has made over recent years into real capability that will revolutionise the way we operate and manage our Hospital, resulting in a direct improvement in patient care. The eHospital journey starts with a pragmatic project based introduction of a paper-lite capability across our outpatient services, however the proposed pace of change is sensitive to where the Trust is against its cultural acceptance of technology within clinical settings and the availability of scarce expert resources able to manage both the people and the technology as the new way of working is introduced. Once the paper-lite outpatient project concludes the pace will pick up with businesses cases for similar projects supporting Emergency Care and Inpatients. At the same time much more of the administrative overheads will be seen to be more streamlined with the introduction of eFunctions such as: Return to work interview support; Sickness Absence Recording; Annual Leave Request. All accessible via an eHospitals portal available to all staff. The eHospitals agenda is not just bound by patient care it covers how we conduct our routine business as a busy hospital, however the direct result of this aim will be a noticeable improvement in patient outcomes.

This agenda presents a significant opportunity to review and reengineer, if appropriate, clinical and business processes. This initiative will be a missed opportunity if we just represent the current paperwork in a digital form, we could end up with the most expensive electronic typewriter ever made.

Need for a Medical Devices Strategy

In parallel to the initiatives usually associated with this type of agenda is a real need for rigorous management and planning of the Trusts Medical Devices, this strategy will commission a full Medical devices strategy in its own right. The Medical Devices Strategy will ensure: we have effective procurement, ensuring we procure standards based equipment that are compatible with existing device platforms; we only procure devices that will connect and communicate across our existing network; only devices that can communicate via the NHS published standards framework will be procured. Once we have procured the correct equipment the Strategy will document the framework environment to ensure the deployment of each piece of equipment includes a full end to end capability resulting in information being passed to and is presentable in the appropriate eHospitals environment – in short let the equipment do the work for us wherever possible.

Jeremy Hunt:

We expect the need for informatics in the service to grow dramatically over the next three years. The combination of large volumes of standardised data and intelligent analysis and presentation can yield significant quality improvements for patients.

The need for change management

Reaping the benefits of change enabled by technology advancement will require major and wholesale changes in practice right across the Trust. Systems, responsibilities, processes, roles, personal development objectives, policies and procedures all need to change. This degree of change presents the potential for significant risk to the Trust business. There will be resistance to change; reliance on paper based systems, cultural preferences amongst some clinicians to rely on administrative

staff to perform 'PC-based activities' and operating differences both within and across the services. All of these obstacles will need to be overcome to maximise the realisation of business benefits to the Trust. It is crucial to the success of this strategy that it is both Clinically and Executively led, ensuring the right emphasis is adopted to bring the desired benefit, these leaders will be the Medical Director and the Chief Executive supported by 2 new posts of Chief Clinical Information Officer (CCIO) and Chief Information Officer (CIO).

Paper lite Outpatients

This project will deliver a digital capability able to replace the requirement for the paper case note in the outpatient setting. It is expected that by June 2014 the Trust will be operating 80% of all outpatient activity without the need for the case note to be present in the outpatient clinic environment. The 80% initial coverage will increase as more history is added to the digital record. The project will undertake a rolling programme of work, each seven weeks it will start a cycle of: communications; nomination of clinician lead; information gathering; analysis; form design; testing; formal release; training and support. This scope of activity will address the change requirement of 6 treatment functions each cycle and will work with the clinician lead to design an acceptable digital capability to deliver the required minimum information set to replace the need for the current paper case note. The initiative will present and support the agreed capability, however the project will rely on existing management structures to ensure it gets used. Compliance and Privacy indicators will be provided as part of the project.

Digital Case note

As the outpatient project above draws to a close a formal business case will be submitted describing the next steps to complete the paperless clinical agenda and maintain momentum of the outpatient project. This business case will propose taking the Emergency Department and the Inpatient areas of the hospital paper-lite in the same fashion as outpatients. At some point of this phase of work the tipping point of digital verses paper record will be reached with the Trust formally declaring its master patient record as digital. This new digital world has the real potential to save significant costs by allowing us to work differently without the constraint of paper, for example IF we collect structured data to describe the care we give our patients as the patient traverses their individual care pathway, we can then use this structured data to communicate with other legitimate interested parties (GPs etc) as a by-product of the process, therefore negating the need for summary 'hand over' documents – let the system do the work.

Language or clinical terminology

Clinical Coding is singularly the most important function that affects the overall accuracy of our clinical and business information bases. It directly affects our ability to contract and therefore affects our potential cash flow or indeed total income. It also directly affects our ability to assess our clinical effectiveness and therefore patient care may suffer.

The clinical language used within our systems has to be at a standard level to ensure all users of the patient record have the same understanding of the presented information, the language also needs to be understood by other systems if we are to interoperate effectively (see Theme 7 – Interoperability). Our systems do not necessarily need to all use the same language at all levels within the system, however when presenting key structured data and when interoperating they must, an example of an everyday example of such a system is the global air traffic control systems – the language of the skies is English all air traffic control is conducted in English by all nations however the language of the cockpit can be different and still be effective.

The common language of NHS systems is Snomed: SNOMED CT (Systematized Nomenclature Of Medicine Clinical Terms), is a systematically organised computer processable collection of medical terms providing codes, terms, synonyms and definitions covering diseases, findings, procedures, microorganisms, substances, etc. It allows a consistent way to index, store, retrieve, and aggregate clinical data across specialties and sites of care. It also helps in organising the content of medical records, reducing the variability in the way data is captured, encoded and used for clinical care of patients and research. The primary purpose of SNOMED CT is to support the effective clinical recording of data with the aim of improving patient care. It is a structured collection of medical terms that are used internationally for recording clinical information and are coded in order to be computer processable. It covers areas such as diseases, symptoms, operations, treatments, devices and drugs. Its purpose is to consistently index, store, retrieve, and aggregate clinical data across specialties and sites of care. It helps organising the content of electronic health records systems, reducing the variability in the way data is captured, encoded and used for clinical care of patients and research. It can be used to record the clinical details of individuals in electronic patient records and support application functionality such as informed decision making, linkage to clinical care pathways and knowledge resources, shared care plans and as such support long term patient care.

There are well over 300 000 Snomed concepts or clinical ideas.

The development of an effective patient record and our ability to operate an effective business relies heavily on the accuracy of our coded records, therefore this strategy will promote accurate coding of every patient by the most appropriate member of staff, this will invariably be a clinician. The expected direct recording may be simply the confirmation of a previous suspected diagnosis, user and speciality 'hotlists' of preferred or common terms/codes will be provided by our systems.

Electronic Document Management System

At the completion of the paper-lite initiative described above it is anticipated that some clinicians will require a small percentage of paper records in support of complex treatment plans and chronic disease management, as stated above this requirement will diminish over time. In addition the Trust will still be doing routine business with other NHS organisations that will still be reliant on paper. Outside the patient record requirement there is a general need to be able to store significant volumes of information to support other administration functions such as Finance, HR etc. Therefore within the planning horizon of this strategy a formal electronic document management system (EDMS) capability is proposed. The Trust single Patient Record capability is designed to create, manage and present structured digital information and whilst it has the capability to receive and store scanned paper this is not its area of excellence. The proposed EDMS capability is a purpose designed system to manage the display of paper that has been scanned into the digital world, the EDMS solution will be delivered as a sub-system of the single Patient Record and will benefit from the sPRs security and patient context controls. This development is anticipated to be much smaller than previous EDMS investigation scope and will only cover the residual paper records needed for the management of complex patients and the paperwork coming into the organisation, making it much cheaper and easier to deploy.

Re-expression of Patient Record support

Currently many disparate staff across all patient service functions spend time supporting the maintenance and management of the paper patient record – the case note. As the Trust moves into the digital world much of this ad-hoc maintenance will no longer be needed and will be seen in the organisation as a saving, however the digital record will require supporting in a different way requiring a different skill set. The Trust will require Patient Record support staff who can answer the 'how do I' or 'where is the' type question, they will need to know

how to manage lost or forgotten smart cards whilst maintaining the security of the system. These support staff need to be available 24/7 365. However as the digital record is never lost, always available, structured and presented in a consistent fashion there is much less of a support overhead compared with the paper world. For example if the introduction of digital records saves each nurse 90 minutes per week by not having to find missing or misplaced case notes, or checking up on Pathology results (requests) then the Trust saves the equivalent of £2M pa. In reality this time saving will be put back into direct patient care, however this example demonstrates the savings potential. The potential dis-benefit to this reduction in supporting the deficiencies of the paper record is if a Nurse then has to wait 10 minutes to access the service desk by telephone to get some much needed help and then that help is at the end of an on-call arrangement that takes 45 minutes to get into work to effect the required support, the saving is lost.

Timescale	Activity
Short Term Yr 1	Paper lite Outpatients near completion, medical devices strategy published. Lorenzo capability extended to cover medical device integration and the charting of observations and physiology
Medium Term Yrs 2 - 3	Progress with paper-less healthcare agenda by generating a business case to seek support for continuing beyond Outpatients and move into Emergency Care and Inpatients. This will require an extension to secondments or a new project initiated. eHospitals agenda progressed with …… Commence work on formal Patients portal. Introduce a new encoding capability integrated with Lorenzo.
Long Term Yrs 4 - 6	Generation of Business Case to examine the affordability and suitability of a formal electronic document management system (EDMS) to manage the legacy paper record.

Financial Summary

	13/14		14/15		15/16		16/17		17/18		18/19		Comments
Staff Costs	w.t.e	£	w.t.e	£	w.t.e	£	w.t.e	£	w.t.e	£	w.t.e	£	
sub-total													
*Non-Staff Costs **	£		£		£		£		£		£		
sub-total													

Grand Total	*0*	*0*	*0*	*0*	*0*	*0*

Theme 6 - Develop and maintain a Project Portfolio

The analysis within this strategy demonstrates that a much more business grounded management of the I^3 agenda is required. This will be achieved via a restructure of the overall function (Theme 1 section 13.1); improved governance and much tighter control of the agenda (Theme 4, section 13.4) and by publishing a full project portfolio of work, the portfolio will show how each project aligns to its business drivers, the expected benefits and its current stage of delivery. Alongside the portfolio will be an Informatics blueprint showing the current landscape of systems and capabilities configuration at the commencement of this strategy lifecycle and also where we expect to be at the end (2019).

A blueprint is a technical design plan; when applied to systems at organisational level, a blueprint describes those systems that make up the organisational architecture. Blueprints typically are based on data flows between systems and therefore describe their capabilities, interdependencies and complexity. They enable an understanding of how systems are planned to develop over time in order to deliver capability. The blueprint works with strategic configuration management, which is used to maintain an understanding of the status of complex assets to ensure that services are not disrupted due to the asset (or parts of the asset) overrunning limits of planned lifespan or below quality levels. Configuration management allows the maintenance of the highest level of serviceability for the lowest cost and ensures that UHMB system architecture is dependable and robust as it becomes increasingly mission critical.

In a complex organisation which is subject to rapid change there will always be a requirement for rapid development of organisational information systems to support those changes. Inevitably, the enterprise level information systems will not meet the whole organisational need without being 'topped up' with other best of class or bespoke tactical systems, or software, deployed 'on demand'. This describes the relationship between Lorenzo and the local Lorenzo Extensions which have enabled UHMB to be responsive in capturing information to support for instance, CQUIN targets. ORMIS, Evolution and many other systems have also been deployed tactically to give a capability for a limited time until that is delivered elsewhere - in this case, in Lorenzo. Whilst these systems are vital, they also add risk and complexity to the local architecture and the demands of configuration management dictate that they are only in place for the minimum time necessary.

Maintenance of the blueprint therefore becomes an increasingly important discipline that supports the planning to optimise configuration and deliver capability; it will drive a significant number of I^3 projects.

The Project Portfolio will cover all in flight projects and newly commissioned projects across the whole I^3 agenda. Every Project will be cross referenced with the Organisational Objectives and Business Capabilities documented in this strategy at section 6.

This theme will also encompass the publication of an electronic report portfolio that will contain a full description of each formal output that is embraced by the scope of this strategy, each entry will have reference to the report status, its format, purpose and execution instructions. This approach will reduce requests for ad-hoc report output and allow refinement of existing reporting developments

Timescale	Activity
Short Term Yr 1	Publish Project Portfolio and supporting documentation, agree presentation format to support I^3 portfolio. Publish draft blueprint, publish report portfolio.
Medium Term Yrs 2 - 3	Monitor portfolio and refine governance process. Publish 3 phase blueprint (Short, Medium and Long term) taking the Trust up to 2019
Long Term Yrs 4 - 6	Maintain Blueprint, Project and Report Portfolios

Financial Summary

	13/14		14/15		15/16		16/17		17/18		18/19		Comments
Staff Costs	w.t.e	£	w.t.e	£	w.t.e	£	w.t.e	£	w.t.e	£	w.t.e	£	
sub-total													
*Non-Staff Costs **	£		£		£		£		£		£		
sub-total													

Grand Total	*0*	*0*	*0*	*0*	*0*	*0*

Theme 7 - Interoperability

Interoperability is a cornerstone of integrated care record services. However, components can interoperate only if they are designed to fit with each other. An effective architecture for healthcare interoperability is required, underpinned by a common language therefore common understanding of what is being shared. Interoperability falls into two classes— functional and semantic.

Functional interoperability is the ability of components to exchange data, without necessarily understanding what is being exchanged. The (Universal Serial Bus) USB specification for attaching peripheral components (modem, printer, etc) to computers is an example. Most of the e-Government Interoperability Framework falls into this category.

Semantic interoperability describes the ability to share data between applications. This depends on both the sender and receiver understanding a common language, in much the same way that English is used as a common language for air traffic control. This does not mean that all systems need to use this language internally, only that it is used for interoperability. The lack of such a language has been an impediment to progress for many years, although special purpose standards have enabled electronic data interchange for a limited range of tasks such as reporting clinical test results. HL7 version 3 (Health Level 7) is intended to fill this gap, in combination with SNOMED Clinical Terms.

System Interoperability within the NHS
For many years the notion of system interoperability within the NHS has been a difficult target to hit. A number of groups have tried to address the problem over years with varying levels of success. In certain domains, there is a good level of similarity in business process, data requirements and technical alignment. In other areas there are competing and, in some cases, incompatible solutions. The Interoperability Tool Kit (ITK) is an attempt to try and fill the vacuum by providing a number of specifications and technologies which are consistent and applicable across a wide range of domains and localities.

What is ITK?
The Interoperability Toolkit (ITK) is a set of national standards, frameworks and implementation guides to support interoperability within local organisations and across local health communities. The ITK is not a piece of software; it is not a product which is downloadable from this website. Over the years, the NHS has experienced a market where individual application vendors have developed bespoke interfaces or variations of standard interfaces. The NHS is faced with a situation where attempting to integrate applications is overly complex and increasingly expensive. The ITK is targeted at reducing this complexity and therefore expenditure by introducing a unified specification for system interoperability within the English NHS. By publishing a series of common specifications and then by policing the deployment of those specifications through the ITK accreditation scheme, the ITK is bringing a level of standardisation to the market.

Reduced clinical risk
Poor quality of information can result in failures of patient care. ITK enforces compliance when connecting systems for message content standards, ensuring data is always represented in the context in which the originator intended.

Improved communications
The reform of the NHS, with its focus on accountability, will require care settings such as acute hospitals to become more responsive to the information needs of other organisations. This will be needed for working with CCG's, community care and social services etc. The ITK greatly simplifies communication and interoperability with systems outside the traditional boundaries - using Web standards-based protocols and processes. Also important is a flexible security layer that permits interactions with external agencies, even patients, without compromising information governance policies.

single Patient Record (sPR) Development and Shared Community Responsibilities

The Patient Record capability across Morecambe Bay will be broadly delivered from existing systems. There will be opportunities to extend these systems by introducing additional shared information. The existing data warehouse would naturally extend to cover this footprint and provide both a reporting capability, analytics and allow the ability to follow the patients pathways across organisations.

This large data warehouse will enable detailed patient record sharing across all participating organisations. At the application layer (user interface) there will be the opportunity to share real-time information with other organisations.

The advantages to these organisations within a "sharing group"

- Information sharing at a patient record level
- Planned progression to an agreed mutually beneficial plan
- Economy of scale management (if the Instance is managed by a single entity through a shared service)
- Opportunity to build professional resource pools to support deployments/upgrades in a sequential fashion, supported by an agreed plan
- Sharing of experiences both at a technical and business change level
- Contributors could commission a single data warehouse to serve all organisations data needs (not replacing Information teams).

At the centre of this vision is the stability of using (when appropriate) current established systems and developing an interoperability layer to present views of patient data to clinicians as required. However a realistic assessment of the appropriateness of the established system needs to be undertaken when viewing the whole patient pathway requirements; i.e. the best approach to business or clinical interoperability is to pragmatically use the same system.

To practically achieve this each healthcare sector must own the vision and work towards it with every Informatics investment and development; ideally this area should be managed and maintained by a single Informatics function with active CCIO support from each organisation.

What could it look like?

For the first time, the organisations within Morecambe Bay and have a stable set of deployable system that can be used by all health sectors of healthcare delivery. As these systems mature, they will unlock capability to radically change the relationships and boundaries of traditional healthcare delivery. For example, primary care will be able to use their system of choice and it will communicate with secondary care, raising opportunities to improve the handover process points or even eradicate them. When GP's are using Integrated Care Pathways (ICPs) across the health community (based on a Map of Medicine type approach), then the referral decision is supported by a rigorous research and knowledge base (these can be cross referenced at any point in the patient's journey in context with that particular individual).

This referral decision is a structured next step in the patients individualised care package (each care package will be built to support national initiatives and provide the best possible outcome). The GP will be prompted/supported to pass the patient to the appropriate clinician within secondary care; the system will support choice and subsequent appointment booking. There will be no need for a supporting referral letter as the ICP contains all the information the receiving clinicians requires to support the ongoing care package, both clinicians are supported by the information within the patient record such as alerts/allergies/chronic conditions/family history etc (which are synchronised) via structure summary views in context with each decision. The secondary care clinician will be alerted to the addition of the patient on his/her work list by a message in their clinical inbox, this message will link directly to the ICP.

The Multi resource scheduler within the system will have supported the GP to ensure the correct sequencing of events have been made resulting in the most efficient use of time and resource. If, for any reason, the patient's pathway is compromised in a way that would adversely affect the outcome either clinically or administratively, then the system will escalate this issue as defined in the workflow underpinning the ICP

For the first time the health community will have a seamless information service. As the Patient progresses through the pathway all appropriate clinicians responsible for the patients care in some way, but not directly involved in the current stage, will be updated on progress via the rules built into the ICP. This will eradicate the need for both outpatient clinic letters and inpatient discharge letters, as each care professional will be prompted via the clinical inbox to review an appropriate aspect of the care package within the bounds of the ICP.

The vision described above starts to be delivered in our existing set of deployed Electronic Patient Records Systems; Lorenzo at UHMB, EMISweb within Primary Care and Alert at BVH. However we are lagging behind these systems development timescale (by 2 ⅓ years) i.e. the system can do a lot more than we ask them to. Much work has to be accomplished before we can take advantage of the above. For instance, GPs need to be supported through the adoption of EMISweb as a single capability and then supported to ensure the collective EMIS estate is managed as an entity, in terms of upgrade management, Business as Usual (BAU) support, Interoperability support via the Medical Interoperability Gateway (MIG) and data warehousing. Secondary Care need to consolidate on corporate Patient Administration capability that can scale to the agenda described above and can interoperate with modern interoperability gateways such as the MIG, secondary care also need to sweat their Integration engine assets much more and promote information exchange as routine not special.

Therefore to take early advantage of this type of patient record capability the health community must plan for whole coverage and begin formal business change work to develop future state models (FSM) describing how the health community wants the local NHS services to work. These FSMs can be fed into the whole systems development and release cycle to influence the staging of capability whilst also supporting local priorities and change initiatives.

Interoperable Systems & IG

Changes in commissioning have driven a requirement to match patients to the most appropriate and cost-effective treatments, which may be provided in a range of healthcare settings by different providers using different information systems. The risk to the continuity of patient care is at its greatest where patients move from one provider to another, hence the demand for cross-organisational access to patient information through interoperable systems.

The Morecambe Bay Health Informatics service have developed the capability to view elements of GP and community records within the Lorenzo system and have also completed a technical Proof of Concept of data transfer between EMIS and Lorenzo using the Medical Interoperability Gateway (MIG). To satisfy the IG aspects of the development project, Morecambe Bay Informatics also developed a risk-based framework of project controls specifically for interoperable systems and has secured agreement across local healthcare organisations to standardise on this approach.

Information Governance lies at the heart of the delivery of this interoperable information sharing agenda. All stakeholders need confidence in each other's IG practices to share patient information safely within interoperable systems and this is a key barrier to the growth of these systems. All partners must develop safe systems that satisfy legislative requirements to maintain the integrity and availability of information and deal with patient concerns about the confidentiality of their data. Currently this landscape is uneven and the means to sign up to interoperable sharing of data is often heavily bureaucratic and time consuming. All stakeholders must be involved in the risk decision, as the risk profile differs across the different organisations and stakeholder bodies.

Going forward, there is a further need for leadership in developing trust between information sharing partners based on openness and transparency about IG practices and agreed commitments and programmes of work to improve IG performance within partner organisations. The Caldicott 2 Report, to be published in mid April 2013, is expected to impose a 'Duty to Share' on organisations. As Informatics have become technical leaders in the development of interoperable systems and IG controls, I^3 will demonstrate leadership in developing new, fit for purpose systems to obtain and underpin sharing agreements and develop tools and programmes of work with partner organisations to improve collective IG maturity levels. In UHMB, we will require an Information Sharing system to track and support the rapid growth of information sharing in a way which is lawful and compliant with regulation. Maintaining a strong presence on bodies such as the Cumbria & Lancashire IG Group, which covers all public sector organisations and providers on this footprint, will be a key enabler.

Summary

Implementing an interoperable set of systems and devices by definition entwines systems together. Over time as the EPR becomes further embedded in the organisation, it will have

more clinical information available. This will be fed from other systems or available by pulling information from other systems. For our interoperability with Primary and Community Care, the MIG will provide the vehicle for this. In years 1 and 2, the Trust will be delivering documents to Primary Care electronically as well as being able to access information direct from the GP systems. This will save huge amounts of time and increase productivity as staff will have information to hand. Further developments will lead to datasets supporting Palliative Care in years 1 and 2.
Interoperability with our secondary care partners is less clear in the short and medium term. There is a development of the MDES solution which has been successfully installed in Texas which at a technology layer links whole hosts of systems and looks promising for our Lancashire neighbours. There will need to be some tactical implementations between organisations, particularly with Blackpool where there are clear patient pathways and shared care. The first example of this will be enabling access to Blackpool's Pathology & Radiology results via Lorenzo.

Timescale	Activity
Short Term Yr 1	Consolidate the Medical Interoperability Gateway (MIG) capability across the whole UHMB footprint, bringing all Primary Care to the same use level. Publish new approaches and tools to enable information sharing through interoperable systems, including a joint information sharing database with electronic authorisation
Medium Term Yrs 2 - 3	Extend the MIG use by adding appropriate clinician views both in and out of Primary Care. Develop a framework to facilitate Patient Record sharing between Secondary care organisations (Hospital to Hospital)
Long Term Yrs 4 - 6	Develop a Patient portal to provide patients with an easy to use view of the information we hold for them and also who has looked at it.

Financial Summary

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sub-total													
*Non-Staff Costs **	£		£		£		£		£		£		
sub-total													

Grand Total	*0*	*0*	*0*	*0*	*0*	*0*

Theme 8 – Infrastructure

Throughout this document it is evident that a single requirement underpins each of the preceding seven themes. The requirement to provide an infrastructure that is highly resilient, appropriate in design to the specific needs of the user and importantly an infrastructure and supporting processes that are 'safe and credible' to provide clinical and business users alike with the confidence to adapt and reconstruct their processes and depend upon the technology that is the bedrock of this strategy.

The technology infrastructure which has been implemented and developed to date is indeed a precious asset, which can support the themes presented in this document but can also be exploited by managers and leaders across the Trust in their quest for continual service improvement, to re-engineer their departments and take advantage of modern, flexible and cost effective methods of working.

A Network for Voice, Video and Data

The Trust network has been designed to the industry standard Architecture for Voice Video and Integrated Data (AVVID), which means that the same nine thousand wired and wireless network points that provide network connectivity from every admin office, every clinical area and every consulting room can be used for voice, video and data applications. An AVVID compliant network has inbuilt resilience, with every item of network electronics on a protected power supply and connected via two separate routes to the rest of the network. The Trust has full AVVID compliance in key areas. With a continuous infrastructure refresh programme and investments targeted at non-compliant areas the whole of the Trust network will be AVVID compliant within five years. Utilising this robust platform the new I^3 service will assist senior managers and clinicians to take maximum advantage from existing technologies; web(telephone) conferencing; IP Telephony; Vocera 'hands free' mobile communications; remote and mobile working.

9000 network points capable of delivering voice, video and data.

A network built to internationally accepted gold standards.

Anytime, anywhere access to information.

A Web Conference can be cheaper and more effective than a traditional face to face meeting.

In addition the new I^3 service will develop a business case to replace legacy PBX telephony infrastructure with IP Telephony, providing access to all staff to the benefits of digital technology. In anticipation of an increase in demand for non-deskbound services the trust internet facing connection, which supports home working and remote access, will be upgraded from 10mbps to 100Mbps. Connections to the national telephone network will be improved through the introduction of BT Hosted Voice. Introducing dynamic routing of incoming and outgoing calls and removing the current site based single points of failure. Voice services will be integrated in to the desktop, linking in telephony to the user 'presence' which will over the next five years become an increasingly important feature. Integrated voice with the desktop will improve efficiency and fit well with the introduction of software based telephones as an alternative to a physical handset. In addition to software telephones, as IP Telephony is deployed, Informatics will work with managers and clinicians on the most appropriate telephone handset exploring mobile IP Telephony and utilising the desk based IP phone to display corporate notifications and messages targeted at specific groups. Voice mail and email will converge in to a single unified messaging system. Such integrations will improve productivity with more targeted and successful communications. It will also further enhance the experience of remote working, with the ultimate goal of an

identical technical experience for remote and office workers. Using the IEEE 802.1x standard physical access to the network will be restricted to users and devices that are members of the trust's single active directory.

In five years, the trust network will be fully AVVID compliant. Providing the necessary resilience and security required to support a workforce accessing voice, video and data services from the office, from remote locations and with the patient. With the deployment of Vocera handsets and tight integration between voice services and the computer desktop, more targeted communications will introduce new efficiencies across the workforce. Greater use of the trust telephone/web conference facilities will have reduced travel, saving cost and giving back to the organisation thousands of wasted hours every month.

Timescale	Activity
Short Term Yr 1	Resilient incoming/outgoing calls through BT Hosted Voice. Smartphone and tablet devices an alternative to the Blackberry. Extended Vocera pilots. Every senior manager and clinician offered a private and secure web conference facility
Medium Term Yrs 2 - 3	Secure Network Access Control. Telephony integrated with the PC Desktop. Single entry point for new email and voice messages. Every senior manager and clinician regularly using a private and secure web conference facility
Long Term Yrs 4 - 6	100% AVVID compliant network. Full deployment of IP Telephony. Remote and office technical experiences identical

The UHMB User Experience

The Trust has 2900 PC's and 400 laptops, all of which run a standard set of software to create a consistent desktop and user experience. Every user has a User folder to store documents and a Group folder to share documents with specific co-workers. The Trust intranet recently moved to Microsoft SharePoint 2010, all users have access to the intranet. Every user is listed in the trust active directory and many users keep their contact details in the directory up to date. Every user has a password, which they must change on a regular basis. The majority of users also have a smartcard to gain access to national applications, such as Lorenzo or the Electronic Staff Record system. The majority of PC's are located on desks and a small number of PC's have been deployed on special carts using the trust wireless network to provide some limited mobility in clinical environments.

The standard user desktop will be upgraded to Windows 7 and the advanced power management features of Windows 7 deployed immediately to minimise PC energy consumption. User email will be upgraded to use a Windows Exchange 2010 email service, which when integrated with Office 2010 significantly improves the user experience. Microsoft SharePoint will be extended to all users, replacing the current network drives with a structured content management alternative, improving version control, giving better access control and a more efficient use of storage space. An Instant Messenger tool will be

deployed to all regular users, to provide instant messaging and small scale application sharing as an alternative to travel. User 'presence' will be intensively promoted to the same group of users. Web conference facilities will be provided to staff who regularly travel for meetings, which when combined with telephone conferencing will significantly save cost and return to the organisation thousands of wasted hours every month. Voice will be integrated in to the desktop, with telephone contact immediately available through the user 'presence'.
The 'virtual desktop' pilot in the RLI ED will be extended to the FGH ED and a business case will be developed to extend the 'virtual desktop' project piloted successfully in Emergency Care, to other relevant clinical areas to give **instant** and uninterrupted access to a user's desktop and applications from **any** PC. Cheaper more energy efficient alternatives to PC's will be incorporated in the 'virtual desktop' trials, included devices that are powered from the network not from a traditional power socket, with a view to reducing the trust carbon footprint and more flexible device deployments.
Smartcards will be provided to all users in place of the password authentication required for logon. Smartcard PIN unlocking facilities will be provided across the trust to allow delegated individuals to perform basic smartcard functions in the place of work.

As applications develop, tablet devices and smartphones will be deployed as alternatives to PC's for those users who require access to information away from the desk.

Timescale	Activity
Short Term Yr 1	Informatics pilot with content management. Promote user management of active directory information. VDI pilot completed in Emergency Care. Migration to Exchange 2010 completed**.** Windows 7 becomes the standard operating system
Medium Term Yrs 2 - 3	Instant Messaging and 'Presence' deployed to all 'regular' users. Subject to business case approval Virtual Desktops deployed according to need. Introduction of tablets and smartphones in line with system functionality. Single sign-on. Majority of users utilising SharePoint for the management of personal and group documentation.
Long Term Yrs 4 - 6	Deskbound PC no longer the default device. Devices deployed according to user requirement. Multiple devices used by one user to access the same uninterrupted desktop. User 'presence', Instant Messaging, Web Conferencing, SharePoint and Office integrations providing true collaboration. Remote and office user experiences identical.

Working with our Partner Organisations

The Active Directory of Trust users which underpins all document sharing, much system security and the new 'collaborative' technologies which enhance inter-personal communications and are describe elsewhere in this strategy are in the process of being migrated in to a wider collection of active directories, a 'Forest' across Cumbria and

Lancashire. This will extend the reach of those benefits across the whole of that geography for organisations that participate, which with the exception of LTH includes all Trusts in Lancashire and the new North Lancashire Clinical Commissioning group. NHS Cumbria was advised in a strategy commissioned from the Strategic Health Authority to do the same, however for the immediate future Cumbria Clinical Commissioning Group and Cumbria Partnership Foundation Trust will remain in their own Active Directory separate to UHMB and the other organisations listed above. I^3 will continue to work closely with both organisations and highlight relevant constraints and risks through the governance structures of each organisation.

Membership of the Cumbria and Lancashire active directory as a common platform provides opportunities for sharing technology developments and support processes with other member organisations. A shared wireless network has been deployed between the Trust and Blackpool, Fylde and Wyre NHS Foundation Trust and working groups are in place with the same Trust to develop common processes around the desktop software, service desk, and security of non-windows devices and the delivery of 'push' email.

Active Directory membership drives system security. A Cumbria and Lancashire collection of directories allows a common security strategy, with simple to manage processes for granting access to Cumbria and Lancashire NHS staff to the UHMB wired and wireless network and Trust Information Systems. With common strategies enhancing the experience of cross-organisation working and reducing unnecessary duplication of IT infrastructures and support processes. The alternative is a return to practices common ten years ago when collaborative technologies did not exist, when primary care and the Trust ran separate networks in to the same buildings. With the expansion of technologies since then, poor collaboration will result in duplication on a grander scale with cross-organisation workers sharing offices served by two networks, two telephone systems and PC's neither can share.

Many of the Lancashire Trusts implemented a shared Community of Interest Network through Virgin Media, similar to the arrangement in place between UHMB and the organisations across Cumbria provided by the N3 Service Provider (BT). To manage the Virgin Media network and contract the organisations involved co-fund the NHS North West Shared Infrastructure Service, a small autonomous group of staff, who also hold the contract with BDS Solutions for configuration management of the shared active directory. I^3 will actively participate with this group to explore and discuss technology collaborations across Cumbria and Lancashire.

Timescale	Activity
Short Term Yr 1	UHMB migrated in to the Cumbria and Lancashire Forest of Active Directories
Medium Term Yrs 2 - 3	Full participation in the strategic direction of the Cumbria and Lancashire Forest. User experience of UHMB user and Cumbria Lancashire Forest user identical regardless of location.
Long Term Yrs 4 – 6	User 'presence', Instant Messaging, Web Conferencing, SharePoint and Office integrations providing true collaboration across Cumbria and Lancashire

In Service Delivery We Must Trust

Service Delivery and the outward face of I^3, the Service Desk, are pivotal to the success of this strategy. It is imperative that the service is of a 'gold' standard that staff and partners can depend upon, to provide them with the confidence to re-engineer their processes to take full advantage of the themes in this strategy.

The Service Desk will continue to operate as a single point of contact for all incidents and enquiries for all I^3 systems and processes. Demand to the service desk has grown by 40% in the last five years and the trend will continue as the Trust modernises and moves closer to a single electronic patient record. In addition the complexity of support requests has increased and will increase further as technology and information systems are increasingly intertwined with business and clinical practice. The greatest challenge for the Service Desk is adapting to these demands whilst improving access to the service desk and reducing queuing times to match the demands of the increasingly clinical user base.

The new I^3 service will continue the pursuit of ITIL good practice. ITIL – Information Technology Infrastructure Library is an internationally recognised approach for IT Service Management; a framework for identifying, planning delivering and supporting IT Services. ITIL was produced by the Office of Government Commerce, along with the PRINCE project management methodology, and is widely implemented across the NHS. In recognition of outstanding ITIL incident management processes the Service Desk achieved 'accreditation' status from Connecting from Health in 2007. The new I^3 service will replace the current bespoke Service Desk application with a fully ITIL compliant solution and deploy self-service technologies (password requests etc) and web incident logging to reduce the volume of telephone calls made to the Service Desk, reserving that method of contact for only the most urgent requests. The reduced volume of telephone contact with the Service Desk will improve queue times and increase operator time for a higher quality contact. With a fully ITIL compliant service desk the new I^3 service will re-engineer problem, change and release management processes to improve the user experience, information governance and reliability/availability of business critical systems. Specifically, the new I^3 service will extend current change management processes to incorporate a Change Approval Board to oversee changes across the entire I^3 Service Portfolio. The new I^3 service Senior Management on-call rota to be re-constituted for 24x7 service delivery representation in high severity incident and release management processes.

Based on research from the Gartner Group, against current levels of incident logging, the Service Desk should have 12 Service Desk Specialists. The current Service Desk has 7 Service Desk Specialists. This is borne out by the 'Abandonment Rate' Key Performance Indicator used to measure Call Centre access. The %Abandonment Rate indicates the proportion of callers who wait a minimum of 30s and hang up their call before queuing to speak with a Service Desk. In 2010 when the Service Desk was staffed with 16 Service Desk Specialists providing 24 x 7 support to the Lorenzo implementation, the %Abandonment Rate was as low as 3%. The current average %Abandonment Rate is 22%. More than 1 in 5 users calling the Service Desk hang up before speaking to an operator. In March 2013 the total time spent by staff queuing for a Service Desk Specialist was greater than one million seconds – 1,295,620 seconds, which taking a mid-point band 5 for an average caller equates to a total cost of £5,463.00 of staff time waiting to speak to a service desk specialist, which equates to an annual cost of £65k.

The new I^3 service and the Facilities department have agreed in principle to a merge of switchboard and service desk operations, to increase the capacity of both and provide 24 x 7 access to the informatics service. Subject to business case approval the new I^3 service and Facilities will work closely to deliver these improvements and extend the single point of access concept to other Trust departments with similar 'customer facing' operations such as Hotel Services.

The extended 24 x 7 footprint will allow around the clock incident management and facilitate the transfer of back office routine service desk tasks, such as email processing, account creation/removal, SLA management etc away from the busy daylight hours. The merge with the Switchboard will provide a valuable back office out of hour's function which could provide not only those services traditionally linked to the Service Desk, but preparation and validation exercises of the data warehouse structures which will underpin the Business Intelligence unit. In line with Gartner an additional five Service Desk Specialists should be recruited to provide sufficient capacity to

- Answer 99% of calls within 30 seconds
- Process all non-urgent email to the Service Desk within 24 hours

The introduction of a Lorenzo User Group and a Mobile Device User Group will create a two-way exchange of information and ideas, working with staff representatives from across the Trust to improve use of systems, re-engineer existing processes and develop innovations and improvements.

In addition the existing Application Support resource must be increased in recognition of the additional workload created from the implementation of Immediate Discharge Summaries, Clinical Content, ePrescribing, eOutcome and the multitude of Lorenzo Extension applications. As the Lorenzo user base continues to grow and more functionality is deployed then demand on the Application Support team will do so also. Similarly to the IT Engineer team, the user base for Application Support is shifting towards the clinical introducing the challenge of more rapid resolution times and out-of-hours support.

An additional four Senior Application Support Specialists are required to ensure service levels are increased to match the anticipated clinical user requirement and to extend the footprint of Application Support to match the extended hours of the Service Desk and at all three sites. This extended application support resource would also provide extended hours Smartcard Support Services across all three sites.

In addition to the extended Application Support footprint an out-of-hours on-call rota will be created to provide cover for the hours when the service desk is closed.

Timescale	Activity
Short Term Yr 1	Service Desk Incident Management migrated to fully ITIL compliant solution. Facility for users to log calls via the intranet live. Small scale user self-service deployed. Business case for switchboard/service desk. Merge produced. Lorenzo User Group and Mobile Device User Group established.
Medium Term Yrs 2 - 3	ITIL compliant Problem Management, Change Management & Release Management processes. 24 x 7

	Informatics Service Desk**. Change Approval Board. Mature Lorenzo User Group actively engaged with supplier innovation and release management. Seamless integration with daytime and 24x7
Long Term Yrs 4 – 6	Mature 24x7 Trust Service Desk, accessible in fewer than 30 seconds.

Resilient Servers in Resilient Data Centres

The new data centre on the RLI campus provides an opportunity to build on the success of the dual data centre concept at Furness General Hospital. The function of the data centres will be expanded with an extension of the Storage Area Network and Virtual Server infrastructure to create a robust and resilient alternative to the FGH primary data centre for disaster recovery services. With either site capable of delivering the Trust business critical applications.

Over a five year cycle I^3 will continue to work with senior management and clinicians within the Trust to enhance, test and maintain the suitability of disaster recovery procedures for current and future business critical applications. Through such discussions, I3 Architects will, with senior users, document and highlight risk, generating costed solutions and assisting with the production of suitable business cases. The CommVault data archive management system will be expanded to all key information systems to enhance backup and recovery through disk to disk archiving.

Through a combination of the extended Service Desk and the IT Engineers on-call, appropriate proactive procedures will be implemented in line with system monitoring and alerting.

To improve system management, resilience and options for disaster recovery without compromise to system performance a virtual server will be the default resource for new technical solutions. The new I^3 service will work closely with the Facilities department to minimise the Trust carbon footprint and ensure the level of data centre server room air conditioning and fire suppression is appropriate.

Key I3 data centres and wiring closets will be secured with a physical access control system linked to the Trust active directory.

The new I^3 service will decommission the Springville House server room and work with the Trust Estates department to migrate the Medical Unit One sever room to a more appropriate location.

Timescale	Activity
Short Term Yr 1	FGH Virtual Server Blade Infrastructure deployed. Lancaster Springville House server room decommissioned. Data Centre physical access control linked to Trust active directory.
Medium Term Yrs 2 - 3	Trust Storage Area Network and Virtual Server environment expanded to RLI data centre. Active monitoring and proactive alerting in place for all key

	information systems.
Long Term Yrs 4 – 6	Active-Active failover in place between FGH and RLI for all key Information Systems. Disaster recovery testing complete for every UHMB system, Data Centre carbon footprint reduced by 25%.

Standardised Toolkit and Rapid Engineer Response

The I^3 Computer Operations Team comprises of the Computer Operations Manager and 13 IT Engineers, supporting 3400 computers across the Trust and a further 1800 computers across Primary Care. Over the past five years the volume of calls logged to the operations team has grown by 40% and as more clinical systems have been deployed the impact of an IT incident has on average become more urgent reflecting the effect of the incident on the underlying clinical process.

The range of networked devices across UHMB is changing. Technology is constantly evolving and in recent years much of the innovation has been with portable and tablet computers. As the organisation becomes paper-lite and medical devices are integrated in to the electronic patient record similar standards must be developed and applied with rigour.

The Computer Operations team have historically been able to manage with a relatively small team by enforcing strict standards on software applications and a standard range of client devices. It is essential that this ethos is maintained as the range of computers and networked devices expands to reflect changing requirements and emerging technologies.

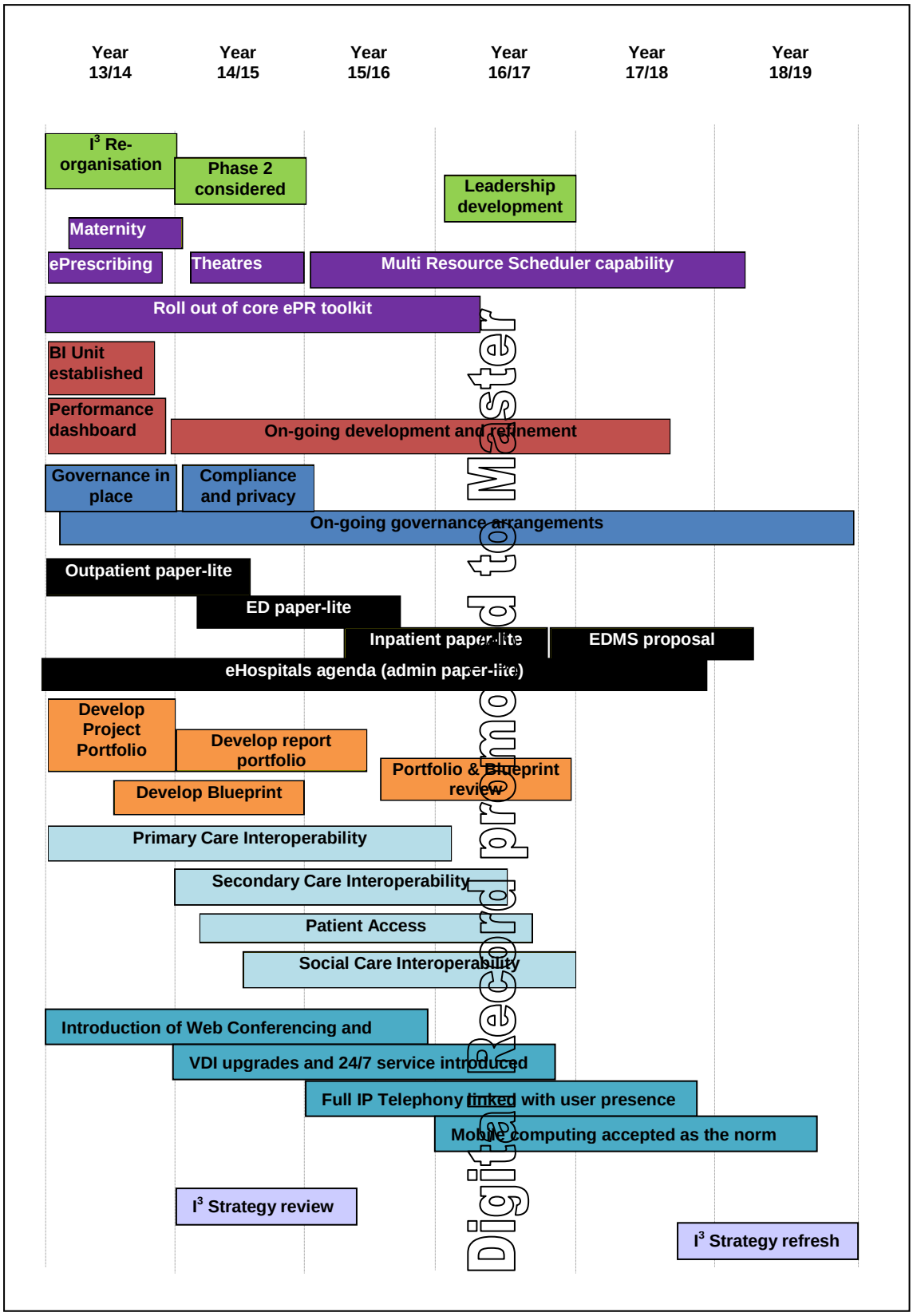
Even with strict standards on software and hardware, investment must be made in the IT Operations function if there is to be sufficient resource available to satisfy the increasing workload and increasingly stringent service levels associated with supporting an active clinical user base. Two more IT Engineers should be recruited immediately, with a further three IT Engineers added to the existing baseline in year 2/3 of this strategy to extend the IT Operational day until 11pm.

The Technology Team will continue to publish and maintain a standard catalogue of end-user devices and software configurations with a guiding principle of as few catalogue items as possible. A single laptop, tablet, PC, self-checkin kiosk, eWhiteboard IP Telephone etc with a common user interface to support the user experience.

Financial Summary

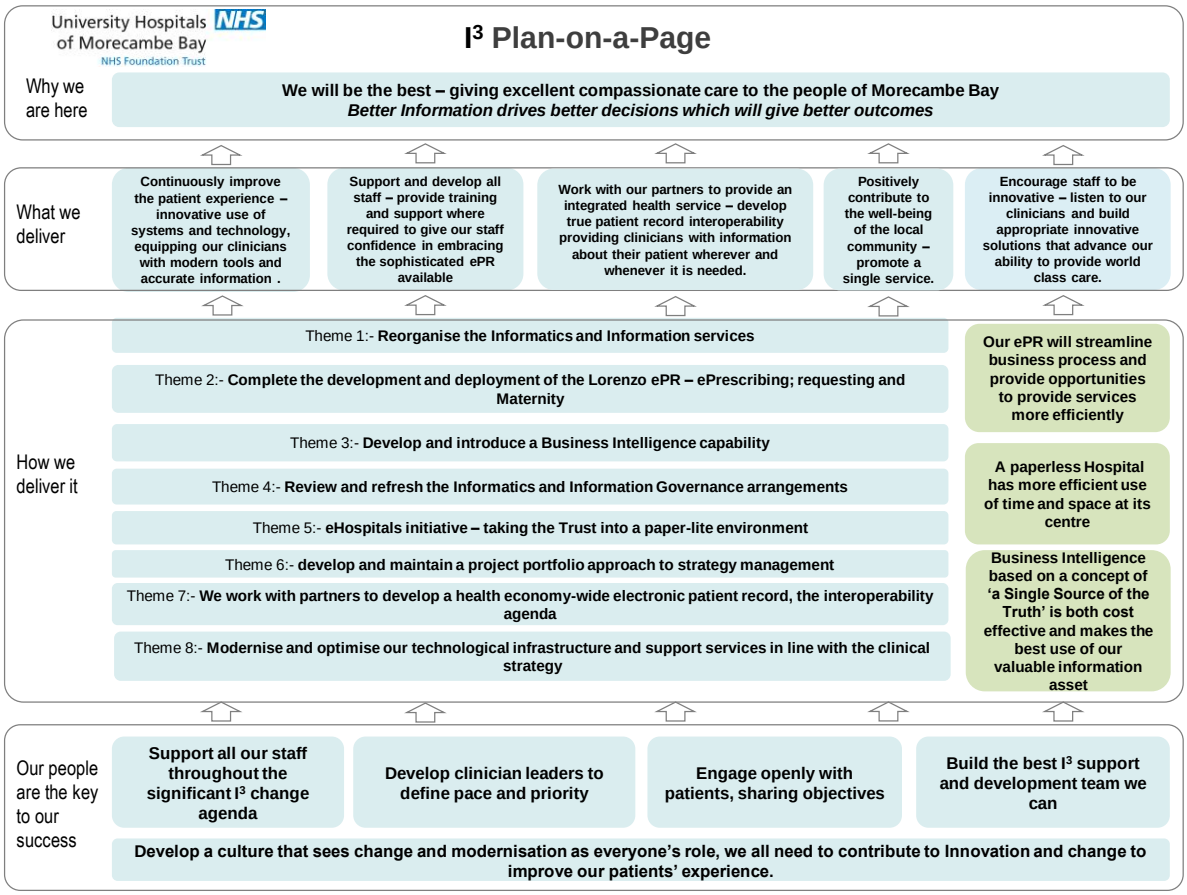
	13/14		14/15		15/16		16/17		17/18		18/19		Comments
Staff Costs	w.t.e	£	w.t.e	£	w.t.e	£	w.t.e	£	w.t.e	£	w.t.e	£	
sub-total				0		0		0		0		0	
*Non-Staff Costs **	£		£		£		£		£		£		
sub-total													
Grand Total	*0*		*0*		*0*		*0*		*0*		*0*		

14 The Summary Plan



University Hospitals of Morecambe Bay NHS Foundation Trust Innovation, Informatics & Information (I^3) Strategy

Click on the image below to see the full size I^3 Plan on a page



15 Financial Summary

Appendix A: Price Waterhouse Coopers (PWC) Information and Informatics Assessment, Full report

To access the full report please click on the image below

Appendix B: CIPFA VFM Club full report

CIPFA_VFM ICT 0809_Final.pdf

Appendix C: HiBC National Benchmarking Club 2010

Also attached the 2010 detail report and the NIMM Self-assessment report

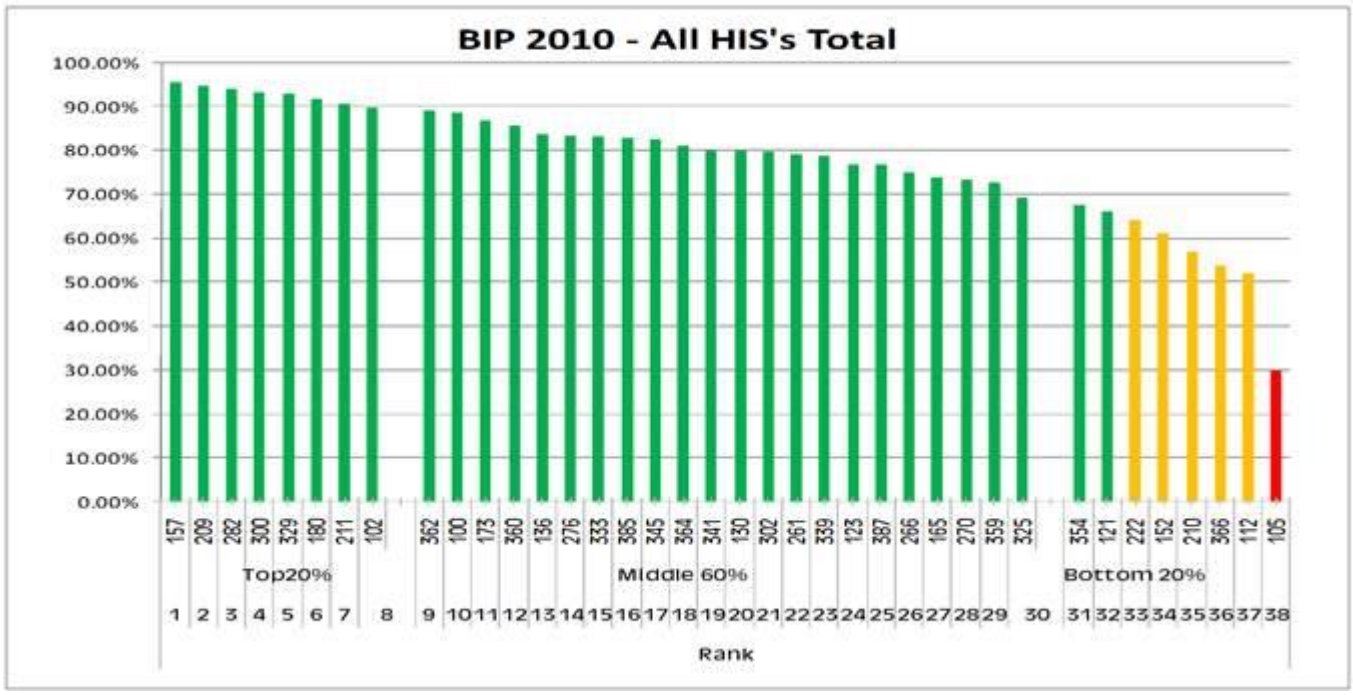
BIP2010_Annual_Analysis.pdf

NIMM - Self-Assessment - 20

Summary results from the National Benchmarking Club

UHMB Informatics service is a member of the HiBC National Benchmarking Club. The analysis in 2010 (the only year available) ranked us 18th out of 38 responding organisations (organisation 364).

The chart below indicates how each HIS scored overall, in relation to other organisations.



Morecambe Bay Health Informatics prioritised 6 of the NHS Infrastructure Maturity Model (NIMM) Foundation Capability Assessments (CAs) to carry out in the period 2010/2011. Selected were the following:

All perspectives achieved level 3 or greater within the CA, with the overall CA score shown below

- Benefits Management 3.2
- Data Security 3.2
- Directory Services 3.2
- Patch Management 3.0
- PC Operating System Standardisation 4.0
- Service Desk 3.6