Informatics Strategy 2017 - 2021
Digitally Enabling Clinicians, Digitally Equipping the Trust

Digitally Empowering Patients

Final Draft for Board Discussion

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1. Introduction

The NHS is striving to improve the quality of current services and to live up to the high expectations of patients and the public at a time of unprecedented austerity and adjusting to an era of much tighter public finances. In addition, financially challenged local authorities have reduced their spend on social care impacting on the demand for health services, including the Trust's services.

To meet these challenges, health and social care services must change fundamentally. This means everyone working differently and smarter. It means altering or completely reshaping services giving people better quality and experience for less money. It means reinvesting any money saved in more and better services and so extending access to care.

The NHS 5 Year Forward View (2014) recognises that innovation and research is the key to driving change-now and in the future and as such we are committed to playing a leading role in this, to the benefit of everyone. Technology has a pivotal role to play in this.

This Strategy sets out an ambitious plan for the Trust to exploit, new and emerging technologies and apply these to our field of healthcare.

Digital services will not wholly replace traditional ways of working but provide a real choice to those who prefer to use technology.

The approach outlined in this Strategy will:

Digitally Empower Patients-enabling patients who prefer to use technology to view their records, amend their personal data, complete assessments, access online information, support/therapy and provide feedback on the services they receive.

Digitally Enable Clinicians- enabling them to do their jobs in more flexible and innovative ways, and giving them more time to spend with patients;

Digitally Equip Services – increased use of technology will enable the Trust to operate more flexibly and efficiently.

In short this Strategy aims to Digitally Empower Patients by Digitally Enabling Clinicians and Digitally Equipping the organisation.

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2. Cultural Change

This is an ambitious Strategy. There are many technical challenges to deliver, which are described below, but these are the easiest ones to overcome. It is the cultural change that will prove the greatest challenge. There are three key stakeholder groups that will be impacted and we need a distinct approach to engagement for each group to successfully implement this strategy:

2.1   Patients

Though many of our patients already embrace technology in other parts of their life but using technology for healthcare will be a worrying and potentially stressful thought for many. For some patients, technology will not be for them and we need to reassure them that traditional services will still support them.

Through the development of communication and engagement plans underpinning the delivery of this Strategy, consideration will be given to how best to involve our patients in the design, delivery and evaluation of these new digital services. We need to ensure that patients are confident that systems are secure, and that these developments meet their requirements.

2.2   Clinical Staff

Though there have been great advances and innovations in recent times, fundamentally, how we deliver health care has changed little over the years. Healthcare is about to go through the paradigm shift and disruption that other industries have experienced. Think how the banking industry has moved on-line, booking travel has changed and the music and movie industries disrupted (anyone remember blockbusters video?) forever in a relatively short time. Our staff have already demonstrated their adaptiveness and ability to embrace technology, NTW was one of the first Trusts in England to implement a full Electronic Patient Record changing how our staff work forever.   We now need to prepare our staff for the next wave of innovation and support them to work with new models of care with advanced technologies to improve our services for the benefit of our patients.

2.3   Informatics and other support Staff

Paradoxically, the staff who will deliver this technical change stand to be most threatened by the new technologies they are deploying. Whilst revolutionising how we deliver services, we will use the cloud and other technical advances which potential threaten established IT roles and responsibilities and empower end users to be able to do more for themselves. We need to work with staff so they understand this change secures, rather than threatens, their roles.

In parallel to delivering this Strategy we need to consider the organisational change and development requirements to support patients and staff through the transformation of health care.

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2.4   Partnership and Innovation

It is not just the internal culture we need to change and influence; this strategy will fundamentally change how we work with partners, both clinical service providers and traditional suppliers.

NTW has been selected by NHS England as a Mental Health Global Digital Exemplar (GDE). Global Digital Exemplars will be an internationally recognised NHS care provider delivering exceptional care, efficiently, through the world-class use of digital technology and information flows, both within and beyond their organisation boundary. They will also be a reference site to other care providers.

GDE status reflects the position that NTW, as an innovative organisation with high quality services, is extremely well positioned to work at a national, regional and international level to share and learn across wider health economies.

To support the GDE programme this Strategy will explore options to establish links with innovative partners and establish a Digital Innovation Centre.

To support the evaluation of the benefits of its GDE programme, the informatics will seek academic partners to support the formal evaluation of the key initiatives of the programme. The aim is to develop a strong benefits case to support the principle of developing blueprints to accelerate adoption by other organisations.   We will also increase the number of academic publications to provide a wide and robust evidence base both nationally and internationally.

The plan to support the cultural change, partnership and innovation is shown in Figure 1 below.

Figure 1: Plan to Support the Cultural Change, Partnership and Innovation

Planned Actions	17/18	18/19	19/20	20/21
Establish a group of Clinicians/End Users to oversee improvement in Rio and explore other options (Clinical Innovation Group)		→		→
Seek partners for Innovation and develop a Digital Innovation Centre perhaps in partnership with the University/AHSN/NHS Digital		→	→	
Establish patient communication and engagement groups to shape new digital services.		→		→
Seek an academic partner to support benefits, evaluation and academic publication.		→		→

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3. The world around us

3.1   The information revolution
There have been three major economic transitions in human history-the agricultural revolution, the industrial revolution and now the information revolution. Whilst daily on line and technology interactions with organisations we all deal with is increasingly common place ie on line shopping, banking, email, twitter, texts etc most countries healthcare systems have been slow to recognise and harness the opportunities presented. For example, in Britain 86% of adults use the internet but only 2% report using it to contact their GP.

While the NHS is a world-leader in primary care computing and some aspects of our national health infrastructure (such as NHS Choices which gets 40 million visits a month, and the NHS Spine which handles 200 million interactions a month), progress on hospital systems has been slow following the failures of the previous 'Connecting For Health' initiative. More generally, the NHS is not yet exploiting its comparative advantage as a people-focused national service, despite the fact that NHS spending on health-related IT has grown rapidly over the past decade or so and is now broadly at the levels that might be expected looking at comparable industries and countries.

3.2   The NHS 5 Year Forward View (2014)
The NHS 5 Year Forward View sets out a vision of a future where there is an increasing emphasis on prevention, empowering patients, engaging communities and the NHS as a social movement. The vision includes improving the information to which people have access-not only clinical advice, but also information about their condition and history. Within 5 years all citizens will be able to access their medical and care records (including in social care contexts) and share them with carers and others if they chose. To support people to manage their own health-staying healthy, making informed choices of treatment, managing conditions there needs to be better access to evidenced based approaches, including self help and therapy which technology could support. New models of care, including integrated care need integrated systems and information. The NHS 5 Year Forward View confirms that exploiting the information revolution is key.

3.3   The NHS 5 Year Forward View for Mental Health (2016)
It is recognised that there is a pivotal role for digital technology in driving major changes to mental health services over the next five years, building on the good examples of its use including the number of apps with a mental health theme. It is recommended that provision must be increased so that:
- People can access services conveniently, have greater choice, and can network with peers to provide mutual support and guidance;
- Providers can deliver a more nuanced service, with contact through digital media backed up by face to face intervention;
- Providers can work securely to share patient data on electronic health records, where appropriate, to benchmark their performance and to test new service models;

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- People who use services, carers and the wider public can hold the system to account by having access to information to scrutinise performance.

3.4   Next Steps on The NHS 5 Year Forward View (2017)
Published in March 2017, the Next Steps on the 5 Year Forward View sets out the NHS' main national service improvement priorities over the next two years.

Northumberland, Tyne and Wear NHS Foundation Trust is named in the document as one of seven Mental Health Global Digital Exemplars.

The document states that GDE organisations are the most advanced IT hospitals in the NHS and have committed to work to become world class exemplars for the rest of the NHS to learn from. Their task is not only to become great, but to work with other trusts to develop a blueprint that can be deployed to other hospitals, reducing the time and cost for further adoption.

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4.   The Trust's 5 Year Strategy 2016-2021

In reviewing our strategy, we have taken into account key themes within national and local strategies that are relevant to the people using our services, carers our staff and our organisation as a whole. We have also had regard to the Strategic Objectives in the Northumberland, Tyne and Wear Sustainability Plan and the feedback from the Care Quality Commission following the comprehensive inspection of our services in 2016.The Trust was rated as "outstanding" and we became one of only two mental health trusts in England to be awarded an overall rating of outstanding.

From the start the Board agreed that we should take a "bottom up" approach to refreshing our strategy and over the last eighteen months we have tried to involve lots of people in lots of different ways including:

- Service Users and Carers
- Our staff
- Our 3 clinical Groups
- The Council of Governors
- The Board

Our Vision-

"To champion the health and wellbeing of the communities and people we serve, providing services that match the best in the world"

Our vision is underpinned by a set of core values which we refreshed during 2013, in consultation with a range of partners, including service users, carers, staff and governors.

Our values ensure that we will strive to provide the best care, delivered by the best people, to achieve the best outcomes. Our concerns are quality and safety and we will ensure that our values are reflected in all we do:

Caring and compassionate	**Respectful**	**Honest and transparent**
Put ourselves in other people's shoes	Value the skill and contribution of others	Have no secrets
Listen and offer hope	Give respect to all people	Be open and truthful
Focus on recovery	Respect and embrace difference	Accept what is wrong and strive to put it right
Be approachable	Encourage innovation and be open to new ideas	Share information
Be sensitive and considerate	Work together and value our partners	Be accountable for our actions
Be helpful		
Go the extra mile		

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We initially identified our Quality Goals in 2009, drawing upon feedback from patients, staff and our partners. Following feedback from those involved in developing the Trust's new 5 Year Strategy we have reviewed and updated our Quality Goals.

Our Quality Goals are based upon the Darzi principles of safety, patient experience and clinical effectiveness.

Quality Goal One **Keeping you safe, avoiding harm**	**Quality Goal Two** **Improving the way we work with you, your carers and your family to support your journey**	**Quality Goal Three** **Ensure the right services are in the right place at the right time to meet all your health and care needs**

These Quality Goals are the three things that will help us achieve our vision, are familiar to our service users, patients, carers, staff and partners and provide the overarching framework for this Strategy.

Our strategic ambitions demonstrate how we plan to achieve the Trust's vision and mission over the next five years.

Our Strategic Ambitions-
Strategic Ambition One:
Working together with service users and carers we will provide excellent care, supporting people on their personal journey to wellbeing.

Strategic Ambition Two:
With people, communities and partners, together we will promote prevention, early intervention and resilience

Strategic Ambition Three:
Working with partners there will be "no health without mental health and disability" and services will be "joined up"

Strategic Ambition Four:
Northumberland Tyne and Wear NHS Foundation Trust's Mental Health and Disability services will be sustainable and deliver real value to the people who use them.

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Strategic Ambition Five:
Northumberland, Tyne and Wear NHS Foundation Trust will be a centre of excellence for mental health and disability.

Strategic Ambition Six:
Northumberland, Tyne and Wear NHS Foundation Trust will be regarded as a "great place to work".

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5. Where are we now

The Trust is one of the most technologically enabled secondary care trusts in the NHS:

5.1 Paperless Trust

RiO, the Trust's Patient Information System, went live in 2002 and the system is now integral to the work of the Trust across all areas of the organisation. During peak times, over 1,500 users connect to RiO each day and the Trust records in excess of 5,000,000 progress notes on RiO every year. Many secondary care trusts are still dependent on paper-based systems.

Electronic records have opened up new possibilities and they can now be accessed securely anywhere from wireless networks across the Trust and connected via 4G and WiFi in the community.

5.2 Anywhere access for Liaison Teams

To provide high quality care, the Trust's Psychiatric Liaison Teams require access to RiO. This poses a challenge as the Teams, by their very nature, work across Acute hospital services and sites. To overcome this the Trust is deploying a new system for remote access based on a Microsoft technology called Direct Access. This allows fast and secure connection to the Trusts network over any internet connection. This solution was first introduced to the new Northumberland Specialist Emergency Care Hospital where our Liaison staff access RiO securely across any part of the hospital by using Northumbria Healthcare's Visitor WiFi service. Following the successful deployment to Liaison, this solution has been rolled out wider and by 2018 we expect all laptop users to be able to connect from anywhere.

5.3 One click view of GP record

As the use of electronic records increases across the wider health economy, the Trust is leading the way on electronic sharing of information in the region. Using the Medical Interoperability Gateway (MIG) the Trust's clinicians can now access securely and quickly from anywhere a real time view of the patients GP record, via a one click link in RiO without needing to access a separate system.

5.4 At a Glance Boards

The "At a Glance Boards" are an electronic inpatient "whiteboard pilot which provides quick at a glance access to key inpatient information to improve patient care. The electronic boards use information already collected on RiO, reducing duplication for staff. As RiO is updated ,the boards reflect the current information for each patient. The boards also introduce interactive elements to support the Multi Disciplinary Teams and visiting professionals.

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5.5   Partner and Public WiFi

Building on the Keep in Touch initiative, the Trust is deploying Trust wide Wi-Fi access across all sites to enhance partnership working and provide public access. The service is now live for Trust smartphone and tablet devices enabling them to connect to the internet to reduce cost, and improve access in buildings where mobile coverage is poor. WiFi is being extended to support GovWiFi, a pan-government WiFi roaming solution making it easier for our staff to access secure guest WiFi on partner sites, without the need to login into the service.

5.6   Digital Dictation

To reduce the time taken to record patient documentation and improve mobile working, the Trust has developed a digital dictation service for clinicians. The system rolled out to over 400 clinicians in South Tyneside and Sunderland areas over the last few years and is now rolling out Trust wide, currently available to around 1,000 staff. The development continues with the use of more advanced speech recognition and support for mobile devices.

5.7   Mobilising the Workforce

The Trust has deployed over 2,000 secure 3g/4g mobile lap tops to clinical staff over the last few years. These laptops provide access to the Trust network, so that clinical staff can stay connected when working on different sites, patients homes and on- call at home. The laptops connect seamlessly, and work the same from the user perspective regardless of the connection type (Trust network or 3G/4G).This makes access to the patient record secure, quick and easy for staff from any location. The Trust is working on the next phase of its mobile strategy, and further enhancing the remote access solution to work over any Wi-Fi connection and not just 3G/4G, improving coverage.

5.8   Self Help app

The Trust has been publishing award winning self-help leaflets for a number of years. The Informatics Department has produced a web site holding electronic versions of these leaflets, and allow for patient feedback on the material. A self help app for Android and Apple devices has also been developed to again improve access to the material.

5.9   Expertise

In Darren McKenna, Joe McDonald and Jonathan Richardson NTW has three of NHS IT leading figures, consequently the Trust is uniquely placed to lead the development of informatics and associated technology to support innovative and high quality person centred mental health and disability.

We aim to develop the next generation of NHS digital leaders from within our existing services to increase capacity and ensure a continued legacy of innovation.

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6.   Where we want to be and how we will get there

Though ambitious, this Strategy will be built on the solid foundation of informatics delivery to date. Future innovations will largely be built on existing platforms and services to reduce cost and speed up delivery. Our vision as to where we want to be by 2021 is described below.

6.1   The Digital Patient

The Digital Patient will be empowered with an online relationship with the organisation and their clinical team.

Upon referral to NTW, a patient will be contacted and offered the option of an on-line experience. **Traditional ways of communicating will remain for those who do not to use electronic systems,** but if a patient would prefer using electronic systems, their electronic contact details will be verified. An "Easyjet" style on-line check-in will be provided allowing a patient to complete their own basic demographic details saving time and repetition in the future. The patient will also be able to consider and control how their information will be used and shared through an on-line consent and privacy model. Also, any initial assessment information required from the patient could be provided by the patient from the comfort of their home, rather than being put under pressure to recount personal information at an assessment clinic.   This also has an efficiency benefit for the Trust, as through this process, the patient will have entered much of the initial information required for demographics and initial assessment, and as the patient has provided this directly, data accuracy should be high. This should reduce the administrative burden at initial assessments and give clinicians more clinical time with the patient.

Where appropriate, patients will be offered on-line consultations with clinical staff. Patients or Trust staff often travel significant distances, particularly in more rural areas of the Trust. Public transport in some areas of Northumberland, Tyne and Wear can be limited. Relatives and carers may also live in various parts of the area, or even the country, and where they accompany patients this can add to journeys. An on-line consultation is a convenient means to maintain contact between patients and clinicians. Ideally, this will be a video and audio link so that non-verbal communication is not lost during the consultation. Advanced conferencing facilities will be used so that audio can be carried over the telephone network so that audio quality can be maintained where internet connections may be slower.

An on-line consultation will not be appropriate for every patient or every visit, but could be a significant enhancement to the Trust's current service provision. To reduce the duplication of effort for clinical staff, any online appointments will be booked as a normal appointment in the Trust's clinical information system and from this an automated invitation will be sent to the patient along with automated reminders. An entry containing the online consultation link will also be placed into the clinician's diary automatically so it is conveniently at hand for that day's appointments.

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The Trust is committed to Department of Health guidance about copying letters to patients and it is policy that patients have the option of receiving copies of letters about their care. However, there is no option to receive these in an electronic format. To ensure confidentiality is maintained, patients will be offered the option of receiving a notification via email/SMS with a link to sign into a secure area to read the content of any letters. Though not as convenient as receiving letter directly via email, this would ensure that a patient's privacy is protected where they may use a shared machine or an email service that routinely scans emails for advertising or security purposes. These messages will be automatically generated.

As our patients move along assessment and treatment pathway, there will be the opportunity to provide self help and support material electronically. In addition, an aspiration will be to develop on-line, moderated groups where patients can interact with others.

A significant advantage of delivering an electronic pathway is an opportunity to automate the collection of feedback and outcome reporting measures. Like Amazon and Trip Advisor, patients could be offered the opportunity to rate their experience at regular intervals along a pathway. Care will need to be taken to prevent "survey fatigue" from over use of these tools, but the collection of real-time experience ratings will provide the Trust with a valuable stream of information regarding its services and could be used to quickly highlight and deal with areas where experience is not meeting expectations. Similarly, using routine outcome measures, and perhaps other health related devices (eg. Activity monitors) real time information could be collected about a patient's general wellbeing and the effectiveness of pathways.

A longer term aspiration will be to develop a comprehensive portal where a patient can fully interact with clinicians and view and annotate their record. This concept will be explored further with patients and the potential to utilise existing GP system portals and NHS Digital offerings will also be explored, which would have the benefit of providing a more comprehensive view of the patient's record. These portals will be able to gather information from patients whether entered directly, collected via fitness and wellbeing apps or wearables.

The issuing of prescriptions electronically is also a longer term aspiration, linking in with the existing NHS electronic prescription programme.

As NTW moves patient interactions online, careful consideration will be given to providing appropriate technical support for patients so that patients are confident in its use, that support issues do not fall to clinical staff to resolve and thereby ensuring the technology is an enabler rather than a barrier to providing care.

To realise the vision relating to the Digital Patient described several work streams will be progressed over 2016-2021:

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Figure 2: Plan to Support the Digital Patient

Planned Actions	17/18	18/19	19/20	20/21
On-line check-in.	→—————	—————	→	
Develop a consent model app to be integrated with our EPR		→—————	→	
On-line consultations		→—————	—————	→
Electronic letters		→—————	→	
Feedback and Outcome collection		→—————	→	
Self help and support			→—————	→
Patient Portal		→—————	—————	→
ePrescriptions			→—————	→

6.2 Enhancing the current Electronic Patient Record (EPR)

The Trust uses RiO as its Electronic Record Solution and this has been in place for over 7 years and is well embedded in clinical practice. To further develop clinical functionality, there are additional services that will be evaluated and deployed to benefit clinical staff.

Electronic Prescribing and Medication Administration (ePMA)
Pilot areas in in-patients, community and substance misuse are due to go-live during 2017, and there will be evaluated with rollout to further areas, ePMA has the potential to significantly increase safety and support clinical staff in the prescribing and administration of medication. ePMA will also result in recording structured medication information on RiO which will improve the quality of clinical communication containing medication information, such as GP Handover documents.

eObservation
The recording of observations carried out on inpatient wards are still paper based. The Trust will move towards the electronic recording of Observations including more traditional clinical observations including vital signs, but will also develop solutions to electronically record therapeutic observations. Electronic recording will allow observations information to be held as part of the clinical record to support decision making and it will also support compliance with recording and alert staff where observations are overdue. The use of wearable technology to enhance observations will also be explored starting with inpatient settings, and extending to the community.

Seclusion recording
The recording of seclusion events is still a paper based process. An electronic process will be developed to improve the recording and communication of seclusion events and the allow reporting both at a patient and an aggregated level.

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Results Requesting and Reporting
Staff have access to Pathology results via a standalone solution and this will be deployed via the core EPR. This has the advantage of supporting results requesting and embedding results in the EPR to support decision making. This is particularly valuable to support ePrescribing.

We will also work with secondary care providers to develop access to requesting and results report for other diagnostic tests including Radiology.

ePathways
ePathways will support clinicians to develop and measure the effectiveness of best practice evidenced based pathways of care. The functionality will be visual and use information recorded on the Trust's EPR to measure adherence to clinically agreed pathways and measure variance. Where possible pathway progress will be derived automatically from the clinical record to reduce data entry.   When combined with outcome measurement, ePathways will allow clinicians to personalise, assess and refine treatment packages and measure the effectiveness of different pathways for individual patients. ePathways will not constrain clinical choice or remove clinical decision making and will support clinicians to deliver the most effective treatments to benefit patients
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At a Glance Boards
To support clinicians on busy wards and teams, digital "at a glance" boards which have been piloted in various locations will be deployed across the organisation. These digital boards replace the traditional white boards which typically provide a real-time view of key patient information and support continuity and delivery of care. The digital boards save staff time by providing an up-to-date view of the ward or team directly from the EPR, and reflect the real-time status of any due or completed interventions, improving safety. Staff use the "at a glance" board in multi-display team meetings and actively during daily working to improve the flow of patients and co-ordination of treatment.

Figure 3: Enhancing the current Electronic Patient Record

Planned Actions	17/18	18/19	19/20	20/21
Pilot ePrescribing and Medicines Adminstration (ePMA)	→			
Evaluate and rollout ePMA		→		→
eObservations		→		
Seclusion recording		→		
Results Requesting and Reporting		→		
ePathways		→		
At a glance board rollout	→			

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6.3   State of the Art Core Systems

To underpin the vision of digitally empowering patients, the Trust will need a flexible and open Electronic Patient Record system. NTW is already an advanced user of its Electronic Patient Record (RiO) and has a well embedded system in use which support clinical services. However, we need to examine the current functionality and future roadmap against our digital ambitions to understand whether the product (RiO) will develop to meet future requirements.

Our vision going forward is to secure a system which meets the following requirements:

- A clinically intuitive system with high usability ratings
- Task based mobile working
- Flexible to changing requirements whilst maintaining usability
- Support for ePathways and outcomes
- Extensive and fully open interfaces to ensure it is highly interoperable
- Flexible security model
- Ability to support multiple methods of patient access

An early action will therefore will be a high-level review of the clinical systems marketplace with the aim of identifying our approach to delivering improved an clinical system by 2021.

Whilst improved clinical systems which meet our needs is key to our vision, many of the Trust's existing internal corporate systems are difficult to navigate and create inefficiency in terms of corporate processes and also wasted staff time rekeying information or navigating manual processes.

Our vision going forward is to use Customer Relationship Management (CRM) systems to streamline our corporate processes and systems. Customer Relationship Management (CRM) is now used ubiquitously across commercial organisations and increasingly across the public sector to provide self-service offerings, standardised workflows and integration across legacy systems.

To realise the vision relating to State of the Art Core Systems described a number of workstreams will be progressed over 2016-2021:

Figure 3: Plan to support State of the Art Core Systems

Planned Actions	17/18	18/19	19/20	20/21
Core Clinical Systems Review	⟶			
Plan to improve Core Clinical Systems		⟶		⟶
Explore Customer Relationship Management (CRM) Solutions	⟶			
Extend CRM approach		⟶		⟶

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6.4 The "work from anywhere" Trust

NTW has already made significant investment in mobile working and enabled community staff to work remotely using 3G/4G. Whilst this solution is intuitive to use it only works over mobile networks and therefore will not work where coverage is limited and at times when bandwidth is limited.

Our vision is to enable staff to "work from anywhere" and we will utilise the next generation of remote access which retains the high level of usability and security whilst allowing devices to securely connect via any public WiFi. This would provide a high quality and reliable connection from virtually anywhere. This innovative technology would support partnership working and "joined up care" as staff will be able to access NTW systems and resources over partner networks where they provide Internet access. It would also reduces mobile working costs as Internet access becomes more widely available for no cost. Laptops would still be equipped with 4G connectivity for times when WiFi is not available, providing maximum possible coverage for staff.

To harness the power of tablet devices, and as part of the Core Systems Review, "apps" would also be deployed to staff to assist with remote working. These apps would not simply replicate the PC based systems and will need to be "task" focused so that they only present the information that is relevant to the context in which it is being used, and prompt for the collection of appropriate data at that point in time. For example, a patient visit app could present a summary of recent contact for that patient so that the staff member is briefed of the latest situation before seeing the patient. The app would collect information relating to the contact including any required clinical and performance information, and could collect other information to feed other systems, eg. Travel expenses payments.

The use of cloud based systems and Office 365 will enable staff to access information from any device, not just laptops. Advanced mobile collaboration tools would also be delivered to staff in the form of Presence, Instant Messaging, audio and video calling and desk to desk conferencing that will allow screen sharing.

Presence allows staff to view the real-time availability of colleagues. Presence is automatically updated based on calendar appointments, but could also be linked to business systems, for example, the Trust's electronic record system to show a "busy" status when a clinician is with a patient. In addition to working at a personal level, presence can be used to show the availability of resource groups such as an on-call rota or single point of access. Presence enhances mobile working as it makes staff working away from the office feel more connected to colleagues and saves time ringing around to speak to colleagues to answer queries.

Instant messaging (IM) would provide a convenient way for staff to contact others without having to send emails. IM is helpful to answer quick queries and is less intrusive than phone calls when something has greater immediacy than email.

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Audio and video calling is also possible with modern collaboration tools. This could either be on a one to one basis, or to a group. Desktop sharing between colleagues is a key feature for remote collaboration, and allows one member of staff to securely share their screen or any application with others on the call. This is a powerful tool when working collaboratively on a document, or for example, if two clinicians were discussing a patient and wanted to jointly review and update their records. The technology can also be delivered as "room based" solutions, with large integrative screens allowing screen sharing and collaboration between groups in a physical meeting and others joining remotely. This type of solution for example would enable expertise to be brought quickly and efficiently into a meeting, supporting the Trust's scaffolding model.

On-line collaboration would also be a powerful tool for the delivery of training, allowing a live trainer to deliver training to remote rooms and individuals. This would deliver the efficiencies associated with on-line training but deliver higher quality training and the opportunity for two-way interaction.

Whilst initial solutions would be focused on internal use, potentially this technology could be used across organisational boundaries to enhance collaboration across the wider health community and "joined up services", or the remote delivery of expertise and service provision.

To realise the vision relating to the "work from anywhere" Trust described a number of workstreams will be progressed over 2016-2021:

Figure 4: Plan to support the "work from anywhere" Trust

Planned Actions	17/18	18/19	19/20	20/21
Core Clinical Task Based Apps		→		
Rollout next generation remote access	→			
Rollout Skype for Business collaboration tools				→

6.5 Open Standards and Systems and Clinical Standards

The NHS is changing rapidly, and organisations are increasingly needing to collaborate to ensure the patient is at the centre of services. This collaboration is extending beyond traditional healthcare boundaries and increasingly involving non-NHS organisations.

The use of electronic clinical recording systems is also increasing across partner organisations and whilst this can present information sharing challenges, it also offers great opportunities in terms of being able to securely "join up" patients records to improve the quality and efficiency of care.

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Open systems and standards is a term used to describe a number of different approaches and technologies that allow sharing of information between systems, and allow systems to be more open so that other suppliers can develop and enhance functionality for example, through the development of mobile apps.

Standards are important at a technical level as they ensure the security and integrity of electronic communication. Standards are also key at a clinical level to ensure the content of messaging is clinically safe as it passes between systems. Clinical standards and coding can also reduce clinical workload by reducing the need to re-key information between systems.

Primary Care have one of the most advanced areas of electronic records, and this provides a natural starting point for sharing records.

As a part of our vision of Shared Systems and "Joined Up Systems" the Trust will deploy a two-way view which will allow clinicians using RiO to view key parts of the GP record, with appropriate safeguards around consent and security. A reciprocal view will be developed to enable GPs to view key parts of their patient's RiO records.

It is imperative as we develop shared records, that these are secure but also very accessible to clinicians from within their current clinical information systems. Evidence from other parts of the country show that "one-click" access greatly enhances the frequency of usage.

Social Care will be another key area of focus for the sharing information. NTW already has "one-click" reciprocal views of data with Northumberland and Newcastle social care teams and is working to achieve the same with Gateshead. Further work will be undertaken with other Social Care organisations within the NTW footprint.

A requirement of the Local Digital Roadmaps (LDR) is to access information from the Child Protection Information Sharing Project (CP-IS). NTW will implement access to the CP-IS indicator from within RiO in a similar manner to the implementation of the MIG.

This level of point-to-point information sharing whilst effective, is not scalable to include all organisations involved in the care of a patient. Regionally, the development of a more scalable and collaborative solution to information sharing is being developed through the regional information sharing project known as "The Great North Care Record". NTW has been a catalyst in the development of the initial information sharing solutions in the region using the MIG and due to the large geographical footprint of NTW and close working relationships with other providers, the Trust is well placed to influence this development, and aims to be the first secondary care organisation using the system.

Whilst real-time information sharing will enhance shared working, the Trust will continue to send electronic communication at set points in a pathway, eg GP handover at

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discharge. Currently the Trust is heavily reliant on paper which is expensive and inefficient.   These paper flows will be moved to secure electronic flows.

The Trust will also assess its options in relation to secure email. Whilst the NHS is developing MESH, a secure system to handle secure structured messaging between clinical systems, it is acknowledged that email is a quick and convenient method for ad-hoc information sharing.   Whilst email will remain, it is being increasingly augmented with modern collaboration services such as instant messaging, team collaboration sites etc. These will also need to be secured and exchange information with partners.

As information sharing between organisations develops and matures over the coming years, focus will shift to the quality and structure of the clinical record. There will be a move towards adopting a common structured coding scheme for electronic clinical records regardless of the system used. NHS England is mandating the use of SNOMED for clinical notation. Whilst this is a significant benefit when sharing information, it poses challenges for mental health and disability providers where narrative text comprises a significant part of the clinical record as this is more difficult and time consuming to code than GP and acute records. To reduce the burden on clinicians, technology should be explored to support clinical recording and decision making. Technologies such as Natural Language Processing which can take narrative free text and structure and order it along with Machine Learning, the process whereby systems can learn to support clinical decision making using large quantities of information and the input of subject experts. This initiative could reduce the time taken by clinicians to record information. These technologies are now being used extensively in many industry sectors, but the cost has been prohibitive to health. The entry cost of these technologies is now falling, and can be accessed on demand via cloud services, making the technologies affordable and accessible by public sector.

As technology develops, the Trust needs to be able to safely open up its core systems and allow clinical staff options around how they interact and update records. For example, via an app, voice recognition, handwriting and in future patients and wearables could all populate a clinical record. This will not be achieved in a reliable manner without open systems.

To realise the vision relating to Open Standards and Systems and Clinical Standards described a number of workstreams will be progressed over 2016-2021:

Figure 5: Plan to support Open Standards and Systems and Clinical Standards

Planned Actions	17/18	18/19	19/20	20/21
Complete RiO Reciprocal View	→→→			
Implement CP-IS indicator viewer	→→→			
Pioneer The Great North Care Record, the integrated digital care record for the region.		→→→→→→→→→→		→
Electronic communication (eg GP handover)	→→→→→→→			

Implement secure email standards	→		
SNOMED coding and clinician support			→
Multiple methods of note entry		→	

6.6 "Cloud First" Approach

Just as technology is changing the way we can deliver patient focused services, technology is changing how we can deliver technology!   Traditionally, new IT developments would need to be specified and then developed usually involving the purchase of expensive hardware and software in large quantities at the beginning of a project to ensure it is scalable beyond initial use. Building and maintaining critical systems at scale is expensive, time consuming and requires high levels of expertise.

We simply cannot afford to deliver the ambitions set out in this strategy using the NHS traditional approaches and the Informatics team who will deliver the technology have already embraced new ways of delivering technology via the Cloud. Cloud technology may seem a technical term, but put simply it is using other people's expertise and expensive infrastructure to provide IT services so that IT becomes a commodity.

As an example, the Trust would never think of building its own power station for a new hospital. The Estates department will ensure there is an adequate electricity cable into the site and manage the distribution of electricity around the site, but the electricity is purchased on-demand from the national grid.   During the day demand increases and the grid can meet these peaks and in the evening demand reduces and so does the supply and cost. Cloud computing is similar, it is bought in as a service, distributed to users and can be scaled up and down as required.

The use of cloud technology is integral to our vision and will allow the Informatics Department to deliver services more quickly without significantly increasing resources. There are other advantages to the Cloud, such as the ability to trial new solutions on a small scale with little initial capital outlay. Where trails are successful the technology can quickly be scaled to a full production system on demand. Similarly, unsuccessful projects can be reengineered or shutdown with little wasted cost.

Cloud services can be securely delivered via standard Internet links, which can be provisioned quickly and more cheaply than traditional NHS network links. The Cloud offers greater end user control and self-service, for example, if a department wishes to create a shared drive and email address, and then add users or remove them later to these resources, this can only currently be done by contacting the service desk and can only be done in working hours. Cloud services therefore provide end users with easy tools to do what was traditionally an IT task.

We will adopt a "Cloud First" approach and before implementing solutions using infrastructure on site, we will assess available cloud options.

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The Trust has a large Microsoft infrastructure on site and a significant user base and cannot afford to replace this overnight. To maintain a legal licensing position and grow services efficiently, we will implement a hybrid solution for core services such as email, document management and collaboration systems.   We will retain on premise technology where this is cost-effective but link it to the Cloud and leverage the scalability and more modern technologies available, effectively achieving the best of both worlds.

Cloud technology may sound all very technical, and it is, but its potential to radically change how we deliver IT services and increase the benefits for our staff and patients is huge. It is one of the pivotal technologies that will underpin this Strategy, and allow NTW to transform the way we work at pace and at an affordable cost.

To realise the vision relating to "Cloud First" Approach a number of workstreams will be progressed over 2016-2021, initial "Cloud First" projects will include:

Office 365/Enterprise mobility security. Through our existing enterprise agreements we will establish a hybrid connection to Office 365 and the ability to deliver core services (email, document storage sharing, Skype for business and mobile security) either via traditional on-site technology or cloud technology so that Groups and services can use the most appropriate and cost effective technology for their needs.

Infrastructure as service. Reduce the reliance on scarce internal technical resources including personnel and server room space. Where possible we will use cloud based services to free up technical staff from routine operation and support work and use their skills and knowledge to improve the use of technology and increase the speed of rolling out new technology.

Analytics Strategy.   The Trust has increasing amounts of data, but the skills and technology to turn this into meaningful data are limited. The cloud is well suited to delivering advanced analytics tools and systems that allow end users to perform powerful data analysis and comparisons without deep technical skills. As we look to refresh and update our dashboard and reporting systems we will develop the use of these new technologies in our Analytics Strategy.

Using cloud technology to deliver advanced analytics tools provides access to modern reporting and analysis facilities on a pay per use basis with no capital outlay, allowing the Trust to deliver benefits from technologies that were previously unaffordable.

Using the secure cloud, cutting edge technologies such as Artificial Intelligent, Nature Language Processing and Machine Learning would be available. These technologies bring the potential to revolutionise how we report on our information to better understand the effectiveness and efficiencies of our services to further improve patient care

Cloud Telephony.   Traditional telephony has changed. We can now deploy sophisticated phone systems at a fraction of the cost over standard Internet lines. This improves the efficiency and reliability of our telephone systems and is key to making our services and staff more flexible and mobile.

Internet links. Traditionally the NHS has linked it sites together using slow, special and expensive private network links. In some case, for example between large sites, these are cost effective. However in many areas, particularly in community bases and in rural areas they are not.   The technology exists today to deliver the required services over standard internet links reducing the costs and lead times for new sites. NTW is already advanced in this area and has tested the ability to operate a full clinical community team site using just a standard internet link. We will continue this work and deliver services over standard Internet links where technically possible.

Patient/Public/Partner WiFi. Increasingly Trust staff and visiting staff are requiring access to high quality, secure and reliable Internet access. Also, patients and their relatives whether visiting our community premises, or on inpatient wards require Internet access for communication and social inclusion. Using the existing WiFi infrastructure the Trust has invested in we will use this to securely delivery high quality Internet access tailored to the needs of different groups including staff, partners, patients and the public.   We will also work with national services including GovRoam and GovWiFi to offer reciprocal and seamless WiFi roaming across public sector sites for our staff and visiting staff from partner agencies.

To realise the vision relating to the "Cloud First" Approach described a number of workstreams will be progressed over 2016-2021:

Figure 6: Plan to support "Cloud First" Approach

Planned Actions	17/18	18/19	19/20	20/21
Office 365 hybrid solution deployed	→→			
Office 365 Migration	→→	→→	→	
Develop Infrastructure as a Service		→→	→→	→
Migrate to Cloud Analytics	→→	→→	→	
Deploy Cloud Telephony		→→	→→	
Improve fixed networking/internet links	→→	→→		
Patient/Public/Partner WiFi	→→	→→		

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6.7 Information Governance, Security and Assurance

As we move more services online the Trust needs to ensure that appropriate governance, security and assurance is built into projects as part of the design. We owe a duty of confidentially to our patients and must ensure the solutions we deliver are secure. The Trust has a strong track record of delivering secure services and through this strategy we will strengthen even further our processes and systems to keep pace with the rising risk of cyber security threats and the increasing sophistication of our electronic platforms.

Information Governance and Caldicott
Our process, policies and training for staff are the most important aspects for ensuring as an organisation we take seriously the importance of handling information securely.

This governance and security starts at our board, and two Trust executive directors hold important roles and responsibilities for the protection information. The Executive Director of Commissioning & Quality Assurance is the Trust's Senior Information Risk Office (SIRO) and the Medical Director is the Trust's Caldicott Guardian. These roles ensure we achieve the correct balance between the operational priorities of the organisation and the appropriate privacy and security of information.

The board roles are supported by an experienced team that oversee day to day operations and manage the adherence to policy, management of risks and review of incidents if they occur.

Whilst a formal information governance structure is important, NTW believes that security and privacy is part of everyone's role, and significant effort is made to train and educate all our staff about the importance of protection the information that we hold.

As we move to increase our use of digital services, we need to also strengthen our security systems and further train and educate our staff, and in the future our services users so can have confidence in the information they provide to NTW and that they stay safe on-line.

Enhanced training
We already ensure that our staff undertake Information Governance and Security training annually and we would like to build on and extend this so that it covers new threats and risks that emerge over time with changes in technology.

We will develop new training packages and these will be updated annually. We will identify and tailor training to be more specific and relevant to individual job roles.

Enhanced auditing
We use role based access to limit which staff can access information on our EPR and our systems audit all actual and attempted access to records. The EPR displays the last people to access the record on the case record screen so that this information is

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visible to all staff for information and to act as a deterrent to inappropriate access to records. Audit trails are used extensively when investigating incidents and as they are part of a patient's record can be accessed under the Data Protection Act.

As the use of clinical systems increases and we being to share information through the Great North Care Record, the amount of detail and complexity of these audit trails will increase.

We will develop systems to better manage this audit trail information and process the information more proactively to identify suspicious or potential inappropriate information. We will use new technologies such as Machine Learning for this purpose, this is similar to the technology that has been used by Financial Instructions to proactively identify and stop debit and credit card threats by spotting and alerting staff to suspicious transactions that differ from the norm.

ISO 27001
ISO27001 is the international standard that describes best practice for an information security management system. NTW is committed to achieving ISO27001 for it's internal Information Technology service operations and maintaining the accreditation.

This will provide additional assurance that the Trust's IT services are managed securely as the organisation will be certified compliant by an independent and accredited certification body on successful completion of a formal compliance audit.

The Trust will also fully support and participate in new NHS and government standards for information security including the CareCert and Cyber Essentials programmes.

Modernising the Infrastructure
Providing the latest software for our staff not only ensures that they can stay productive with the latest technology, it is also one of the best defences against threats including viruses and malicious software and also provides more advanced IT management capabilities to help prevent deliberate or accidental data loss.

NTW is rolling our Windows 10, currently the latest desktop operating system available from Microsoft. We have replaced all out of date Windows XP devices and plan to replace remaining Windows 7 devices with Windows 10 during 2018, well before it becomes an unsupported environment.

NTW has started to deploy Office 365 replacing legacy versions of Microsoft Office. This will allow staff to work more flexibly and use corporate and personal devices, whilst maintaining security. It will also provide significant flexibility when working with partners. The rollout of Office 365 will include the use of the Enterprise Management Security product for majority of staff, to manage mobile devices and remote working, provide enhanced security and encryption services and provide facilities to prevent data loss. Full transition to Office 365 is expected to be completed by 2020.

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Figure 7: Information Governance, Security and Assurance

Planned Actions	17/18	18/19	19/20	20/21
Enhanced IG and Security Training for Staff		→————————————→		
Enhanced use of audit trail data		→————————————→		
Attain and maintain ISO27001		→————————————————————→		
Complete Windows 10 Deployment	→————→			
Complete Office 365 Deployment		→————————————————————→		

6.6. To be a leader in Informatics innovation

In response to the Plan for Growth, HM Treasury (March 2011), the Department of Health published Innovation Health and Wealth: Accelerating Adoption and Diffusion in the NHS – Department of Health (December 2011).This report, highlighted that the NHS is very innovative but poor at adoption and spread. Cross engagement with other sectors such as industry and Universities was proposed to be critical for the co-creation and spread of innovation.

As outlined in Section 5 the Trust is one of the most technologically enabled secondary care trusts in the NHS employing three NHS IT leading figures and demonstrated by the award of Mental Health Global Digital Exemplar (GDE) status. As well as providing funding, GDE provides the Trust an unprecedented opportunity to blueprint its solutions and support other organisations to adopt them at scale and at pace.

One of the Trust's Ambitions (Strategic Ambition Five) is for Northumberland, Tyne and Wear NHS Foundation Trust will be a centre of excellence for mental health and disability.is The Trust is in the process of establishing "Trust Innovation" as a brand for providing external support, advice and consultancy and products to the wider NHS and beyond.

The Trust is leading with its approach to informatics across the mental health and disability sector. A strong and robust technical infrastructure has been established with a range of software tools developed to support and enable clinicians, and, to a lesser extent, users of our services.

The Trust has also established itself as a key partner within the Northumberland Tyne and Wear Sustainability and Transformation Plan footprint, and have led or heavily engaged in much of the work to date on supporting common data and information platforms across organisations and services.

The Trust is therefore uniquely placed to lead the development of informatics and associated technology and support, through the "Trust Innovation" brand the development, adoption and spread of Informatics innovation.

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7. Investment to Support Delivery of this Strategy

The Trust's sound financial performance to date has supported a planned long-term investment in Informatics and the organisation is seeing the benefits of this. Several these informatic innovations were highlighted as outstanding practice in NTW's recent CQC comprehensive inspection. Whilst the vision outlined in this Strategy are ambitious, much of the investment made to date serves as a foundation to enable the work required going forward to realise the vision.

The Trust's Global Digital Exemplar status brings £5m of funding over the next 3 years to support the delivery of this strategy and this will be matched with £5m of Trust funding, providing at least £10m to deliver this strategy.

GDE status will also enable the Trust to develop unique partnerships with commercial, NHS and academic partners with the potential to attract further funding and resource,

This investment will be used to develop new ways of working allowing Groups to reduce operating costs and improve productivity. Take travel as an example. In 2016, Trust staff travelled over 5 million miles in the course of their duties. The use of Skype to hold meetings and deliver online consultations has the potential to reduce travel and accommodation costs, improve productivity and reduce our environmental impact,

We will invest in Customer Relationship Management (CRM) systems have the potential to significantly reduce operational running costs by automating current manual processes and reducing duplication of effort both for our front-line clinical staff and back office services.

Due to the Trust's early adoption of the Cloud, many of the other developments proposed can be delivered with an initial low investment and cost scaling incrementally as use and benefits increase and as revenue is released. This is one of the main advantages of a "Cloud First" approach as it allows the Trust to rapidly deploy and test developments to understand benefits and then scale up to realise these benefits quickly. This reduces the lead times and risks associated with typical Informatics project that typically require a significant investment up-front to build systems and services that can cope with the maximum user base.

Other of the proposals are relatively low investment with potential high return. For example, the MIG viewer that allows Trust staff to view the GP record cost around £20,000 per annum per CCG area, and this cost can be shared with other organisations.

Even where GDE funding is used, some initiatives will require significant investment and Business Cases will be developed and considered via the Trust's decision making processes in the context of Trust's Financial Strategy.

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One of the areas that will need consideration and investment is support, especially for patients. This Strategy will introduce radically different and new ways of working for staff, and new ways to access services for patients. To ensure success, and that the cultural issues as described above are overcome we will need to ensure support for patients and staff is available.

One of the constraining factors will be the capacity of the Informatics Team to deliver the developments outlined in this Strategy. Some of the requirements of the Strategy are so innovative there will be a requirement to develop in-house systems. GDE funding will be used to strategically increase capacity, but careful prioritisation of work will still be required to maintain Strategy delivery.

There is the potential to attract further external funding to support this Strategy. The Government has recognised that better use of technology can improve quality and reduce costs as has been evidenced in many other sectors. With this ambitious and cohesive Strategy coupled with the Trusts track record of delivery and national profile it is well placed to bid for such funds.   Our national reputation and close relationship with the Connected Health Cities project gives us the opportunity to establish a Digital Innovation Centre with sponsorship from major IT companies and National bodies (eg.NHS Digital). The Trust would need to invest in leadership and business planning ability to make the Centre a reality.

The key aim of this strategy is to free the significant cost "locked up" in the organisation in the form of stamps, paper and desks. With improved technology, as other industry sectors have done, it should be possible to release in excess of £1m per annum to fund recurring elements of this Strategy through reducing the Trust's reliance on paper processes and post, and through better use of our estate.

The Trust already has the ability to be the "work from anywhere Trust" and needs to exploit this fully, exploring the potential to free itself from geographic constraints and deliver its services to anywhere in the world by staff who could literally be based anywhere with an Internet connection.

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8. Governance Arrangements

The Resource and Business Assurance Committee (RBAC), a sub Committee of the Trust Board, is responsible for receiving assurance that proper arrangements are in place for the management of the Trust's Informatics, maintenance and development Programme ensuring it supports the Trust's Strategy and Operational Plans, including delivery of improvement and efficiency objectives, and the fulfilment of legal and statutory obligations. RBAC is also responsible for ensuring that there is a clear understanding of current and emerging risks regarding the Trust's Informatics systems and development programme.

RBAC meets quarterly and receives at each meeting a quarterly Highlight Report regarding progress made in respect of the Informatics Programme, including any current and emerging risks.

There will be a Global Digital Exemplar Board established to oversee the delivery of this strategy.