



North West
Ambulance Service
NHS Trust



DIGITAL STRATEGY

UPDATE REPORT

2019/20 & 2020/21

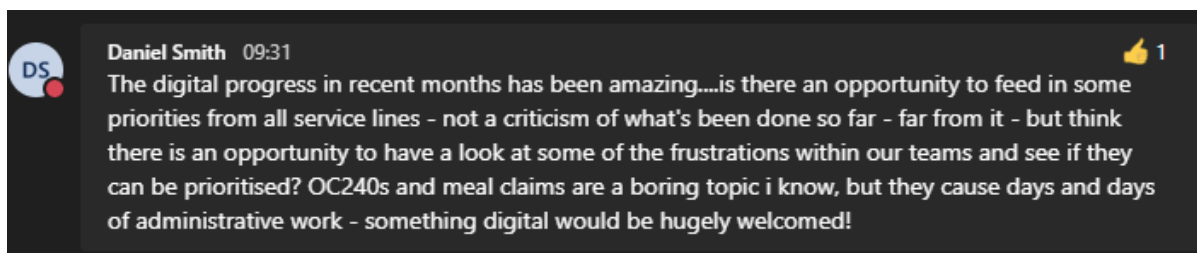


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WHAT ARE WE TRYING TO ACCOMPLISH?

North West Ambulance Service (NWS) published its first digital strategy on 29 May 2019. This report provides a summary of the achievements we have made in FY 19-20 AND FY 20-21, as well as detailing our key next steps. We will continue to provide an update on our progress every two years.

Our ambitious aim is to use digital solutions to radically improve how we meet the needs of patients and staff every time. This is something we have been focussing on relentlessly. When we started the journey towards digital excellence, our staff were frustrated with the pace of change and with every day IT challenges. Whilst this has not gone away completely, the frustration with digital is passing, senior managers are recognising progress being made and are confident to ask for more.



Excerpt from the Operation Outstanding meeting chat from one of our Heads of Service, 9 April 2021.

We also knew that the experience of staff was mirrored by patients and that their interface with our digital systems was not always optimal. Despite the pressures we have endured during the pandemic we have continued to prioritise listening to our patient and public panel. We have revised our strategy based on our learning and their suggestions, putting an increased emphasis on digital inclusion and equality of access. Our revised digital strategy was approved by the Board of Directors in March 2021.

Much of what we set out to achieve required careful planning and significant investment. The first two years of our strategy has really focussed on securing our digital infrastructure and bringing it in line with the expected standards. We have also needed to make capacity to respond to the demands placed on the NHS by COVID, not least of which is the establishment of a digital system in 111 (111 first), rapid deployment of NHS 365 and exponential growth in home working. At the same time we have developed approaches to enable digital innovation and collaboration with staff to solve problems and implement new ideas.

Interestingly, our original strategy intention has served us well and remains largely unchanged. The report provides comprehensive updates on each of the key drivers for change summarised in the driver diagram (figure1):

- Solving everyday problems
- Our digital journey
- Secure and joined up systems
- Smarter decisions; and
- Digital pioneers

We have set out a detailed roadmap, set of objectives (appendix 1 and 2) and measures (section 3) for our aim and each of our primary drivers.

At the time our digital strategy was launched we had already commenced a number of large scale digital programmes, including the Unified Communications Programme and our Electronic Patient Record. We now have a reframed set of high-level objectives and a separate objective for critical system transformation to cover the large-scale digital transformation programmes. This can be seen in the objectives and roadmap in the appendix.

We have worked hard to enable better communications around our work which can sometimes be difficult to translate in non-technical terms. In order to celebrate what we have achieved so far and make all staff aware of our next steps, we have produced a high-level communication summarising achievements which can be seen in appendix 3 and will be published as a companion to this report.

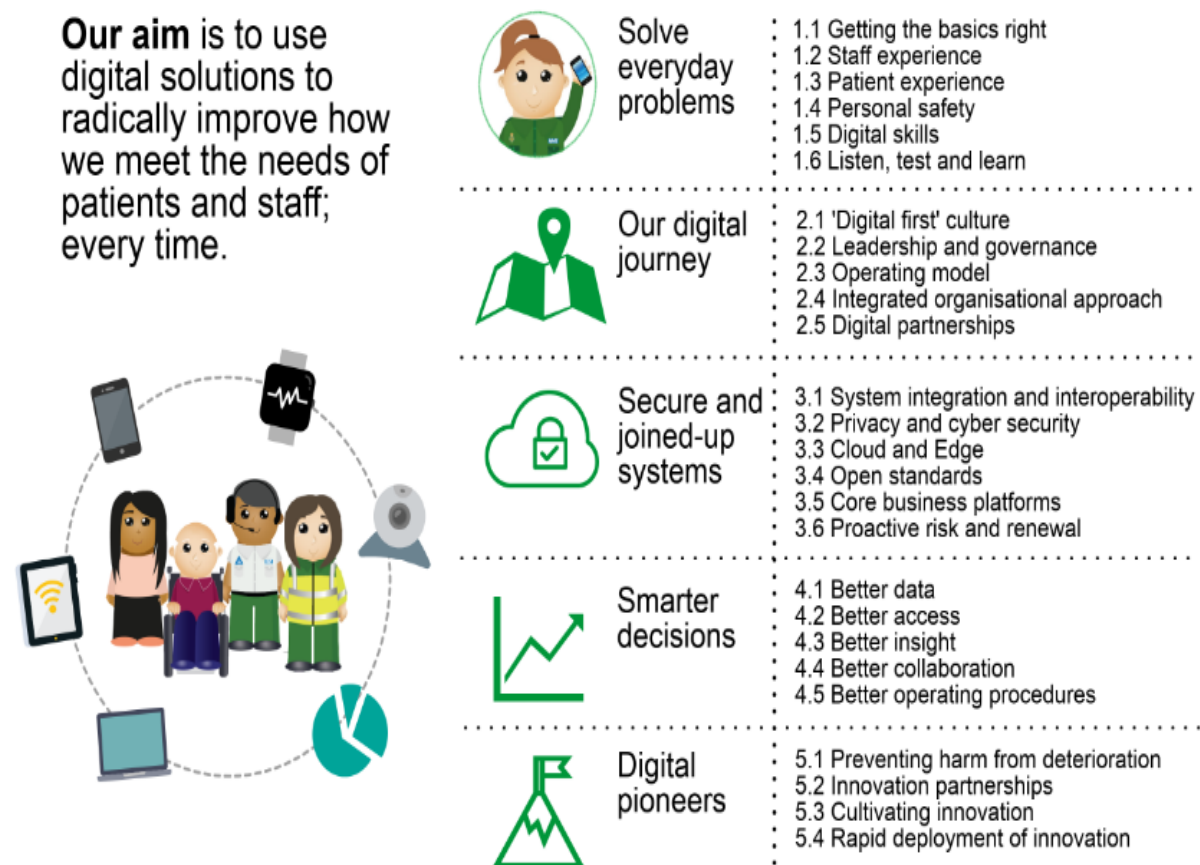


Figure 1: Digital Strategy Driver Diagram

WHAT CHANGES HAVE WE MADE?

Solving everyday problems

What we said we would do:

When speaking with our staff and volunteers it was clear that one of their biggest challenges was that they didn't always have the right digital equipment or skills, at the right time, or in the right place to support them to do their jobs effectively. As much as we could focus on large scale digital transformation and innovation, it is the simpler things that often make a big difference to staff. We also recognised that technology is changing public expectations for more immediate, joined-up and comprehensive care which can be accessed through the use of digital channels.

One of the fundamental aims of the strategy therefore was to improve digital services and technological solutions so that they meet the needs of our staff and patients; every time. **We wanted to provide the right technology and support for staff so that they in turn could provide the best possible service, making NWS a great place to work and more accessible for patients.**

What we did - Getting the basics right:

- **Emails and document sharing:** we have implemented the latest technology for emails and Microsoft products through Office 365. This was a significant undertaking involving the migration of over 7,000 mailboxes. The move has made individuals and NWS more secure and has significantly increased email storage for individuals. It has also provided platforms that enable us to collaborate whether working on documents at the same time or through video calls on teams.
- **Paper free solutions:** we have developed digital solutions to replace paper based information collection, including the Electronic Patient Record which is in early roll out, and SafeCheck which has replaced vehicle and medicine paper checks. We are now working to use SafeCheck to centralise all quality audits with access from personal issue devices to reduce administrative time copying audits from paper to computers.
- **Wi-Fi:** we have secured funding to do a major infrastructure upgrade including a circuit upgrade taking us from 2MG to 50MG together with implementation of a new Wi-Fi solution at 104 stations.
- **Co design to solve problems:** we have created a Digital Design Forum where we work together with staff and the digital teams to focus on solving problems by prototyping and testing digital solutions together. The forum is held every week and any staff member can come along with any problem or idea, big or small.
- **Mobile data:** we secured a contract variation with Virgin Media to better control our mobile data costs and implemented a platform which enables us to

track mobile data usage. This continues to be a challenge and in the coming year we will be putting further controls in place.

Staff experience:

- **Access to information and key systems:** we have provided access to key information for staff including performance data on trust mobile phones. We have also enabled remote access to some of our critical systems including our Computer Aided Dispatch (CAD) in our 999 service and single patient management system Cleric in our 111 service.
- **Reducing administration time and streamlining systems:** we have secured funding and begun an upgrade to our rostering system (GRS) to enable increased functionality including management of timesheets and return to work.
- **The right devices:** in the last two years we have configured and rolled out our vehicle based tough book devices (GETACs). These have been successfully used to access paramedic professional guidelines (JRCALC), the Directory of Services (DOS), SafeCheck and the Electronic Patient Record (EPR). We have also tested a range of devices (phones, laptops and tablets) to understand the best fit for our staff and recently secured a significant amount of funding for personal issues devices.
- **Focus on Equality and Digital Inclusion:** we have completed Equality Impact Assessments as part of all major digital changes / new systems. Digital inclusion for staff and patients has now been highlighted further in the strategy refresh and will form a core part of our work in partnership with the Disability Forum.
- **Remote working:** we have enabled remote working for staff including corporate and frontline roles, for example, the clinical hub and 111 clinical call takers. In the last 18 months there has been a significant change in the way we work and we have monitored system resilience measures, increased capacity in our DMZ (the DMZ supports us to expose the external internet safely) and firewalls, and increased our virtual desktop infrastructure (VDI) to ensure we can safely work offsite.
- **Smart sites, smart staff, smart vehicles:** we have begun testing technology to improve staff wellbeing, to keep staff safe, improve productivity and empower staff with the information that they need to deliver the best possible care. Technologies include smart lighting, voice automation, automated stock management, digital drug cabinets, digital sign in and interactive information boards.

Patient experience:

- **Video triage:** we have established video triage in the clinical hub and 111. We initially tested this during the early stage of the COVID 19 pandemic and have since secured funding and scaled up, with further bids going forward to scale up further in the coming year. Feedback from patients and staff has been positive.
- **Accessing information:** we embedded a process for subject access requests enabling timely responses to any requests from patients or those representing them for information about our interactions with them.
- **Right care, right place, right time:** we have improved access for staff to the Directory of Services providing greater options for onward referrals. We have implemented NHS 111 First which enables us for the first time to be able to book patients in to an emergency department from 111.
- **Patient and public engagement and co design:** we have established a sub group of the Patient and Public Panel to work with us on delivery of the digital strategy. Their feedback was incorporated in to the strategy refresh. In our early meetings we have identified two clear areas: 1, requirement for us to be more explicit about digital inclusion and ensure this is a core design principle of all of our work and 2, to include the patient panel as co designers in the access to clinical records work, enabling us to understand what information patients expect us to know about them before we see them. We have agreed on a focus area for our first co designed sprint to improve our patient communication tools.
- **Information governance:** we have focused on ensuring we meet all information governance standards (General Data Protection Regulations) so that our patient and staff information is safe and meets all regulatory requirements including GDPR. Information governance support is now included at the beginning of any change work we do to ensure it is part of the design of our programmes, and enables the best possible level of compliance and safety.
- **Population health management:** we have been part of a regional effort to share patient data to better understand and respond to the pandemic as part of the Combined Intelligence for Population Health Action (CIPHA) programme.
- **Accessing clinical records and data sharing:** we have improved our access to patient records so that we can provide the best possible care. We also share our own information with other parts of the health service to support onward care. Where our EPR has been rolled out, hospitals and local GPs are able to view our EPR records before the patient arrives with them.

Personal safety:

- **SafeCheck:** our SafeCheck system enables the real time management of vehicles and medicines. Staff are now able to flag to managers where there are vehicle faults or where vehicles have equipment or medicines missing, enabling a quicker response. During the pandemic we have been able to use SafeCheck to look for, and rectify quickly, any faults related to ventilation and heating.
- **Test, Track and Trace:** we used the SafeCheck system to rapidly develop a system for staff to register COVID 19 test results (lateral flow and LAMP testing). We developed a digital tracing module in Safe Check which has been used for training sessions to ensure rapid tracing of staff when required.
- **Clinically safe systems:** we have implemented the NHS Digital clinical risk management standard (DCB160) which NHS organisations need to comply with when they implement health IT systems. The standard is governed by NHS Digital and is mandatory under the Health and Social care Act 2012. We complete a formal risk assessment on any new systems or changes to systems and have a trained Clinical Safety Risk officer (CCIO). This ensures that staff can trust their systems to support them in clinical decision making and supporting care to protect our patients. Any risks are understood and mitigated.
- **Sharing patient flags:** we have recently begun a rapid digital sprint to enable a single patient index and sharing of patient flags across the service. This highlights to our crews where they may be at risk of experiencing violence and aggression when attending an incident. Our next steps will be to work more closely with other blue lights services.
- **Body worn cameras:** we have begun the pre-work for a pilot of body worn cameras to test whether they help to reduce violence and aggression. This includes a full review of the broadband and data storage requirement.

Digital skills:

- **Digital capability survey:** we recognised in our digital strategy that our people and processes are vital to achieving digital maturity. In order to achieve our goals, we have set out to understand and improve the digital capabilities of our staff. We have developed a bespoke Digital Capability, Confidence and Satisfaction survey using the Health Education England framework for digital capabilities. We will be using it to track improvement over time, and where necessary provide more bespoke training aligning to staff's level of digital capability.
- **Training for new systems:** we have undertaken significant training programmes for new systems including our new Single Patient Management system and our Electronic Patient Record. For EPR we have begun building a digital training package to support learning.

- **Digital training approaches:** we have developed our training offer to utilise technology to improve staff experience and accessibility. iPads are used with our internal apprentices to facilitate digital learning and we have also implemented an electronic portfolio system. A range of supporting content is also now being delivered through immersive video, e-books, gamification techniques and e-learning which is now accessible through My ESR.
- **Digital partnerships:** we are building our digital partnerships to enable us to improve our digital skills in the digital teams and for all staff. Key partnerships we are looking to take advantage of include, Trustmarque, Microsoft and Apple.

Listen, test and learn:

- **Measuring satisfaction:** we are measuring staff experience of the ICT service desk, and using the feedback to improve our services. For example, we have learned that staff sometimes find it difficult to raise incidents. We are now working to simplify access to raising ICT incidents using teams.
- **Using improvement methodology:** our Digital Design Forum, innovation cycles and sprints all use evidence based improvement methods to prototype and test solutions. For example, SafeCheck was developed with the operational team at Millom Station who worked with the digital development team to modify the system on a daily basis, based on their learning from testing the system. The changes they suggested were directly incorporated into the system as it developed.
- **Evaluation:** we have invested in evaluation expertise within the digital team. The Evaluation manager will develop an evaluation framework to support us to embed evaluation and learning through any change programmes, helping us to get better at achieving our goals and understanding the impact of the changes we make.

Our digital journey

What we said we would do:

The 'our digital journey' objective focused our strategy on driving improvement in our digital maturity; through changes in our culture, our leadership and governance, the way we work, the way we bring digital tools/products together and the way we build partnerships. It sets out how we would position people at the centre of our digital journey and outlines the requirement to build a digital first culture from 'board to floor'.

What we did – digital first culture:

- **Changing the way we work:** our entire digital programme is geared towards this goal. However, our digital skills survey includes specific questions around improvement capability and we are working closely with the improvement team to wrap improvement support and capability building alongside the digital changes we make.
- **Investing in digital:** we have made significant progress as an organisation in recognising the need to invest in digital, and the strategy has been consistently positioned as a key enabler to us achieving our wider goals as an organisation. The level of visibility of the digital strategy and associated risks at board level linked to our Board Assurance Framework Risk is a key signal of our digital maturity.
- **Think digital:** we have tested and established our forums for engaging with staff and will be moving to further promote these through a Digital Design Forum virtual 'roadshow'. This will ensure everyone knows that the support and expertise they need is readily available to help them to always 'think digital' when they're thinking about how to improve their work.
- **EPR:** we have developed, tested and implemented an Electronic Patient Record which not only replaces our paper forms with a digital solution but is integrated with our CAD. This means that patient information is auto populated and integrated with our defibrillators. It also enables receiving locations to view the patient record before we arrive. The EPR pilot started 2/11/2020 with roll out in Lancashire and Cumbria completed by the end of March 2021.

Leadership and Governance

- **Board leadership:** the board are wholly committed to the delivery of the digital strategy and have undertaken training in Cyber Security and GDPR. They have recently approved a revision to the Digital strategy and receive updates at each board meeting via the Chair of Resources Committee and Non- Executive Director lead for Digital. The Chief Executive meets with the Director of Quality Innovation and Improvement (board lead for digital) and Chief of Digital and Innovation (Chief Information Officer) each month. There have been a number of board development sessions on digital and we were

recently featured on the NHS Providers Digital Boards programme as a digital strategy exemplar.

- **Leadership team:** we now have our digital leadership team in place including our Chief of Digital and Innovation and CIO, Chief Technical Officer (CTO), Chief Clinical Information Officer (CCIO) and Head of Digital Intelligence and Analytics and Deputy CIO. Key Leadership team (including Clinical & Governance) roles are now in post.
- **Clinical leadership:** beyond our CCIO, we have also invested in clinical innovation role and are starting to build a network of clinical leaders who are engaged in our digital work. Going forward we want to formalise this engagement through a clinical digital network and provide opportunities for operational and clinical leaders to move in to a rolling digital innovation secondment. We have also set up a steering group for the Business Intelligence (BI) roadmap which will include clinical and operational leadership and will be running engagement sessions as we design new BI products.
- **Reporting:** we now have a well-established Digital Oversight Forum that reports to the Resources Committee for assurance and the Corporate Programme Board on the management of projects. The Governance structure can be viewed in the digital strategy refresh.
- **Risk management:** we have strong risk identification and management processes in place with good oversight of these risks through the Resources Committee, and at Board level via the Board Assurance Framework.

Operating model

- **Digital team structures:** we have assessed our digital structures and invested in key gaps including resources to support projects, clinical roles and roles to support interoperability and in house development.
- **Joint delivery with PMO, Transformation and Improvement:** we have developed and matured working relationships between the digital, Programme Management Office, Transformation and Improvement teams ensuring streamlined programme / project delivery using all of our strengths together. Our next steps are to focus together on evaluation, learning and evidencing the impact of our work on our joint goals.
- **Asset management:** we have made significant strides in positioning our service leaders as asset owners of the information and systems their services use. We have identified who are asset owners and administrators are, and critical system asset owners have been trained. We have developed a digital asset register which brings together all key information on our information and system assets including assurance around information security and renewal / support requirements for systems and supporting infrastructure and licensing. We have tested asset owner engagement sessions using a recognised risk review process.

- **Communications and engagement:** we are working together with the communications team, PMO and transformation and now publish a joint communication on change programmes. We recently published a summary of our achievements (appendix 4) where we worked hard to simplify the technical language so all staff could engage with it. We have communications team representation on key projects and meetings including the Digital Design Forum.
- **Funding:** in 2020/21 we have secured over six and a half million pounds in external capital funding support digital programmes. This is a significant achievement but does bring revenue costs.

Integrated organisational approach

- **One integrated service:** one of the primary drivers of our work has been enabling the organisation's integrated Urgent and Emergency Care Strategy. Our large scale digital changes have included implementing a single telephony platform across the trust, implementing a single patient management system, cleric and now we are beginning to support the Single Primary Triage programme.
- **Single patient management system:** we worked with operational colleagues and the transformation team to implement in unprecedented times a new Single Patient Management System for 111 and the clinical hub. This was a complex piece of work involving hundreds of external system with whom we interact.
- **Unified communications programme:** in January we replaced the telephony in 111. Our telephones are the primary contact point for patients and so any changes we make are high risk.
- **Integration and interoperability:** as outlined in the next section on secure and joined up systems we have a priority focus on achieving system integration and interoperability.

Digital partnerships

- **Integrated Care Systems (ICS):** we have matured our relationships with our ICS digital leads and positioned ourselves as systems leaders. We are the only provider to join a North West wide digital sub cell with ICS colleagues where we seek to share learning and work together. This will support us going forward as we work on new funding arrangements.
- **NHS England / Improvement:** we have built strong relationships with the NHS E/I North digital leads whom recently received funding to deliver on some of the ambitions we have positioned as priorities. This includes a single Urgent and Emergency care referrals platform, connecting all shared care records/LHCREs in the North West together and EPR integration with emergency departments. We also successfully worked together to deliver NHS 111 First at an unprecedented pace.

- **NHSX:** we have started to build relationships within NHSX with a particular focus on our use of improvement methods to enable digital change. We have committed to work together to share our learning from this with others.
- **Northern Ambulance Alliance (NAA):** we have built strong working relationships with the NAA and have a network of digital leaders across the group whom we can call on in times of need or for learning. Together we have begun to deliver on significant large scale programmes including the Unified Telephony Programme. Our next step is to continue with our CAD procurement programme and to progress digital innovations including robotics.
- **AACE:** We are part of the AACE national ambulance digital directors group
- **Industry:** We have started to build meaningful partnerships with our industry partners which support us in achieving our digital ambitions and enabling digital innovation.

Secure and joined up systems

What we said we would do:

The objective of the strategy recognised that our technological systems must be secure, resilient and effective to maintain business continuity and high quality patient care. It set out how we would prioritise essential system maintenance and improvement to maintain business continuity, developing best-in-class privacy and cyber security standards, providing the trust with the right level of resilience, security and protection, throughout all of our digital platforms. At the same time this objectives set out our ambition to systematically increase system interoperability enabling sharing of information and seamless working across NWS services and systems and externally across the North West and beyond. This is positioned as key to enabling ongoing innovation. Interoperability is a key driver of the national ambulance digital strategy and is expected to be a core characteristic of our digital ecosystem.

What we did – system integration and interoperability:

- **Call passing:** we are already leaders in using the Interoperability Toolkit (ITK) which enables messaging between organisations. On the 24th December 2020 we used the ITK to pass calls to the Northern Ireland Ambulance Service for the first time. With this in place we are now able to pass calls between all ambulance services in the UK. We are the first ambulance provider in the UK to achieve this functionality. This has been important for system resilience during the COVID 19 pandemic as it had enabled us to take calls for other ambulance services under pressure.
- **Mission interop:** interoperability is the term used to describe the exchange, interpretation and storage of data. It allows us to remove complex and manual steps; saving time, resources and reducing human error. Historically we have found internal and external interoperability to enable sharing and viewing of patient information across multiple different systems a significant challenge. This is complex for any healthcare provider but the task is amplified for us by the scale of our partnerships. For the last 18 months we have taken our time to understand the technical requirements to undertake this work and built the strategic partnerships to support us as external interoperability cannot be achieved on our own. Our system interoperability work stream continues to mature and is split in to 3 distinct work streams as outlined below including progress:
 - **Internal integration:** a series of sprints to enable sharing of data and joint working internally.
 - **Architecture:** the architectural design and build to enable safe access to internal and external systems (including N3) from any device.
 - **Northwest wide solutions:** a single point of entry to all North West shared care records and regional Trust Integration Engines (which enable the passing of information) integration to enable the EPR to be integrated with emergency departments.

- **Interoperability sprints:** two of the products we have implemented support passing call information from 111 and 999 to PTS. For example if our 999 service has taken a patient into hospital, but they have a planned PTS journey booked, the system will flag that this patient is not at the address and allow us to pre-emptively cancel the PTS vehicle. This kind of interoperability allows for a more informed and streamlined patient journey and adds value to the PTS service line, notifying them of potential changes to booked journeys with the aim of reducing aborted vehicles. 999 to PTS interaction was completed in seven weeks and the 111 to PTS notification is close to completion after five weeks. We have also delivered an interoperability sprint that enabled a shared clinical queue between the clinical hub and 111. Allowing us to allocate clinicians to calls irrespective of their originating source. We are continually exploring small and achievable pieces of interoperability and have a number of products lined up for the months ahead.
- **North West wide solutions and architecture:** we have made significant progress in positioning our requirements for a single point of entry to shared care records and there is now a working group chaired by NHS E/I North working towards this goal.
- **Open standards:** wherever we have enabled interoperability we have used open standards including the ITK for call passing and during the implementation of the digital infrastructure for NHS 111 First. We have put ourselves forward to test new standards for interoperability with NHS X and are working with our providers and partners to use new FHIR standards for the next stages of our interoperability work.

Privacy and cyber security

- **Cyber security improvement plan:** we have a single cyber security improvement plan which brings together learning from the number of reviews and audits of our digital and cyber maturity and incorporates requirements of the data security and protection toolkit required by NHSD and our regulators.
- **System oversight and visibility:** we have implemented the IT Health Dashboard which gives us increased visibility of our estate and any vulnerabilities within it. It allows us to measure the effectiveness of the patching and technical risk across the estate. We have also implemented Pervade (Security Incident and Event Management System).
- **End of life hardware / supported systems:** our primary cyber risk at the outset of the strategy was unsupported and end of life hardware. We have been systematically addressing this. We have significantly reduced Windows 2008 servers with a small number remaining where plans are in place to replace largely linked to the Unified Communications Programme. We have no windows 7 desktops remaining.

- **Patching:** patching is an ongoing priority for the security team who manage high vulnerability threats issued via Carecert. Seventy eight percent of our systems are patched within 90 days which is a significant improvement on our position when we launched our strategy. The security patching level and oversight mechanisms were assessed by MIAA who recommended that we could reduce our cyber risk on the corporate risk register.
- **Penetration testing:** penetration testing was carried out in 2019 and January 2021. The test included all web apps (ERISS, grs, Audio Safe, PTS, Webmail, Has and C3) and a full pen test was carried out on Safe Check. It also included all Servers at Broughton and Estuary Point, a build review, wireless network Testing and firewalls. The majority of high risk areas identified have been actioned.
- **Firewalls:** on the 11 November 2020 we replaced our Firewalls, a vital component of corporate IT security planning, blocking threats to the environment, and protecting sensitive data from breaches, unwanted access, and other intrusion attempts. Firewall migrations are extremely complex and require meticulous planning. The ICT team have a detailed firewall migration plan covering vendor and product selection, current state analysis, pre-configuration planning, transition planning, and decommissioning of the old hardware. There is additional work for the IT team following a firewall migration to resolve any missed firewall rules, policies, and configurations.
- **Migration of service at Elm House:** following the migration of staff from Elm House to Estuary Point there was a significant amount of IT de-commissioning which needed to be completed during the reporting period. The IT and informatics team safely decommissioned over 32 servers at Elm House and 12 switches. This was completed over several months.
- **HSC Circuit Commissioned:** on the 16 June 2020 we commissioned the High Capacity Circuit (HCS) between Broughton and Estuary Point. This provides a second network link providing resilience through automatic fail over between circuits in event of failure.
- **Emails and SQL:** we have implemented a new email solution and have an agreed yearly plan for SQL licensing (essential for the operating system), replacing systems which were unsupported by the vendor and susceptible to cyber-attack.
- **COVID response:** we put a number of measures in place to maintain security during rapid expansion of home working, including implementation of an enhanced network load balancer to support the additional connections from the internet and appropriate security gateway monitoring.
- **CareCERTs:** we continue to reduce the number of outstanding CareCERTs. Weekly CareCERT figures are sent to the Executive Leadership Committee to

ensure there is a sufficient oversight, including progress made and an update on measures.

- **Data Security and Protection Toolkit (DSPT):** the DSPT is an externally assessed set of assertions for which we provide evidence that we are meeting requirements. In 2019 we met 72 out of 110 assertions in the DSPT. In 2020 we met all bar one assertion (mandatory training compliance at 95%). For 2021 we are working with organisational development to increase compliance and hope to achieve 100% of the DSPT assertions.

Cloud and Edge

'The cloud' refers to servers that are accessed over the Internet, and the software and databases that run on those servers. Cloud servers are located in data centres all over the world. By using cloud computing, users and companies don't have to manage physical servers themselves or run software applications on their own machines.

Edge hosting is where data-less application servers are placed at the 'edge' of a secure network, they are accessible from anywhere on the internet, serve authorised users and connect through to data storage that is inside the secure network. This grants universal access whilst maintaining a high degree of data security.

- **Increased cloud based systems:** over the past two years we have reviewed our 'on premises' data centre configuration and started to move services to the cloud as appropriate to align with NHS digital guidance. We now have our email system hosted in the cloud and the new Datix system as examples. Microsoft Teams is a cloud based solution as are many of our new systems including the new Datix.
- **Architecture:** in addition to the above we have started to create the architecture to enable on premise systems to be accessible via the cloud through a new azure edge hosted server which represents the most up to date mechanism for enabling safe access to NHS hosted systems or on premise hosted systems. As we start to enable access via Azzure we will be able to access systems from any device where ever we are even if not connecting in via Nwas directly such as C3 or cleric.

Core business platforms

- **Critical system replacement:** a programme of upgrade and replacement of critical systems to enable our internal integrated services has been in place including telephony and our Single Patient Management System (full update referenced in 'our digital journey' section). In addition we have successfully implemented the upgraded Cleric system for our Patient Transport Service.
- **Business continuity plans:** we have refreshed all business continuity plans and had a recent audit from Mersey Internal Audit Agency, the learning from which we will use to continue to improve.

- **Failover:** the new firewalls give the trust the ability to failover between Broughton and Estuary for both Internet and Health and Social Care Network (HSCN). Going forward we will be in a position to adjust our security levels based on the information from the firewalls. We have been completing quarterly failover for our 999 CAD and now plan to move to more frequent failover, which will further add to our digital resilience. We have used the ACS (Assured Continuity of Service) system on a number of occasions now, which keeps disruption to a minimum.
- **Proactive risk and renewal:** we are working with Asset owners to ensure the life cycle of systems is understood and any required failover, patching and replacement are factored in to business plans.
- **Supporting infrastructure:** we have undertaken a significant ongoing programme of infrastructure upgrade which includes an expansion of our Nutanix servers and virtual desktop capability which enabled increased remote working.

What we said we would do:

Our strategy recognised the unique position NWAS holds in the North West health and care system due to our geographical scale and amount of patient contacts each year; this means we have substantial knowledge and information about our patients, the wider population and the services available to support patient navigation. It set out how we will share our data securely and consume data from across primary, secondary, community and other public health services in a more intelligent way. In particular, this information will help to inform clinical decision making, intelligently manage patient demand and resource allocation, predict and prevent deterioration in patients who are known to us as a service and identify opportunities for innovation to improve service delivery. We set out five key business intelligence principles that we would develop over the life of the strategy:

- **Better data**, ensuring our data management, storage and capabilities are best-in-class
- **Better access**, providing the wider trust with self-service, engaging and intuitive tools
- **Better insight**, leveraging our data and capabilities to accurately support our decision making, our understanding of our business and patients as well as our ability to predict health system outcomes
- **Better collaboration**, truly engaging our organisation with data products, increasing the overall data literacy with all staff and building data partnerships to strengthen our offer
- **Better operating procedures**, having the right support, governance and industry standards in place, to ensure our Business Intelligence offer is safe, secure and resilient

What we did – better data:

- **Safe foundations:** on the 15 June 2020 we completed a significant piece of work to migrate, upgrade and decommission legacy business intelligence reporting tools and server infrastructure hosted in Elm House to a modern data centre hosted in Estuary Point. This meant we had safe foundations from which to implement better technology to support Business Intelligence.
- **Data Warehouse Solution established:** we have progressed at pace to integrate our key systems in to our data warehouse, enabling easier access for reporting. 999 is now within the data warehouse and updated every 15 minutes. We also have key 111 measures and have a data warehouse roadmap agreed.
- **Automation:** we have automated our key reports through SSRS.

Better access:

- **Self service solutions:** we implemented Lightfoot to enable staff in the EOC to analyse variation and track changes over time.
- **Power BI implementation:** we procured and implemented Power BI and have completed our first Power BI dashboards for COVID and 999 live performance. With Office 365 in place Power BI can be accessed by all staff and will be designed to enable easy access to key information.
- **Power BI roadmap:** we now have an agreed roadmap which will continue to automate our reporting solutions, empower the business through engaging and self-serve intelligence tools.

Better insight:

- **COVID-19:** we have rapidly responded to the changing requirements for reporting for the pandemic including meeting regulatory requirements for reporting and developing a Power BI dashboard with key information around COVID including testing.
- **Bespoke analytics:** we have supported the organization to deep dive in to areas of interest particularly where there is unexplained variation.
- **Regional reporting:** we have contributed to a number of regional reports to better measure and improve urgent and emergency care services. We have also supported population health analytics through the CIPHA programme.

Better collaboration:

- **Business Partnering:** we have improved our business partnering, design and development process and have implemented governance to oversee and sign off new dashboards.
- **Shared ownership of BI priorities:** we have now established a BI steering group with representatives from all service lines to oversee the BI work and manage priorities. This significantly improves the visibility and ownership of the BI workload across the trust and ensures we are focussing our efforts on the appropriate priorities.

Better operating procedures:

- **BI development cycle:** we have redesigned the BI development cycle to include enhanced stakeholder engagement points and dashboard design process.
- **Data quality:** we have agreed our plan to improve data quality to include immediate data quality solutions in the underlying infrastructure (a set of procedural rules and processes that will be set at a data-warehouse level), as well as software to monitor, flag and correct data quality issues and a dedicated Data Quality resource.

Digital pioneers

What we said we would do:

Our strategy set out our aim to create a culture of continuous improvement and innovation which would support the delivery of our strategic ambitions outlined within the Right Care and Urgent and Emergency Care strategies. It positioned digital, business intelligence and innovation as wholly interdependent.

We aimed to use improvement methods, embed digital culture and capabilities alongside technical solutions and intelligence to enable us to get the basics right whilst at the same time driving innovation. We recognised that partnership would be key, and set out to build partnerships with NHS, academia and industry that would support our goals to be digital pioneers.

In order to be leaders of digital innovation we said we would:

- Develop in house digital solutions and intellectual property
- Collaborate and build strong digital partnerships, within and external to our industry
- Continue to measure our digital maturity, listen to our people and our patients and most importantly, use this feedback to help shape our digital needs
- Invest in solutions which will drive significant value to the trust, this includes artificial intelligence, machine learning and productivity/efficiency enhancements
- Maintain a transparent and clear innovation pipeline, ensuring the trust is engaged with the digital plan and strategy

What we did – Innovation partnerships:

- **NAA:** we are working with the Northern Ambulance Alliance to understand how we may benefit from Robotic Process Automation / AI and have secured our own Robot with which to test in the next 6 months.
- **ICSs and AHSNs:** we have been building relationships with our partners across the North West to understand how we rapidly evaluate innovations, secure funding for scale up of innovative solutions and explore commercialisation.
- **ICS interoperability:** our work with the ICSs to enable integrated shared care records for the whole North West to which we have been a significant driver, is leading the way nationally in the interoperability space.
- **Industry:** we have started to build relationships with industry partners to support us in expediting digital innovation including Microsoft and Apple and have worked with multiple companies to test new products as part of the smart series.

Cultivating innovation:

- **Digital Design Forum:** the Digital Design Forum provides a space for ideation and the testing of new ideas and innovations. There are multiple different approaches used to test and scale up ideas including small scale PDSA (plan, do study, act) testing, innovation cycles and sprints.
- **Investment in internal development team:** we secured internal investment to test having our own development team in house. In our first year we have been able to develop our own solution SafeCheck, an interactive wallboard solution integrating key information, as well as testing how we use power apps and Sharepoint. Our development lead for interoperability has enabled us to progress our interoperability sprints supporting internal and regional sharing of information.
- **Commercial:** we have been granted a trademark for SafeCheck and have produced a non-disclosure agreement enabling us to discuss with outside parties. We have engaged with a number of different agencies to consider options for commercialisation.

Cultivating innovation:

- **SafeCheck:** SafeCheck was rolled out across PES using PDSA in six months from development and testing to complete roll out. To the end of the annual report period checks were logged through the system. The PTS modules has also been developed.
- **COVID response:** we were able to use the Safe Check platform to rapidly develop our own QR code Test Track and Trace app within a week. The web app enabled staff and visitors to track using their phones as they moved around locations where they are not usually based and was primarily used for training sessions. We were also able to stand up a testing results platform within 24 hours.
- **Hubara:** we have added 4 state of the art interactive wallboards including our own developed interactive display of key information (named Hubara) to stations leading our Smart Sites Stations project – Kendal, Ambleside and Grange Over Sands. We have partnered with Samsung to test their LYNK Cloud product. This allows us to remotely control all displays and TVs across the organisation and remotely push out content e.g. live video messages, bulletins and questionnaires.
- **Smart sites, smart people, smart vehicles:** we are currently testing multiple digital solutions to create the right environment to support our staff, empower them with data and enable them to maximise productivity, delivering a connected, productive, efficient and safe ambulance service through the latest technologies and innovations.
- **SCRUM:** to implement interoperability between our systems we have begun a series of integration 'sprints' adopting an agile approach using the 'SCRUM'

framework to deliver quality products in short timescales at minimal cost. SCRUM is a framework that enables teams and organisations to generate value through adaptive solutions for complex problems.

MEASURES OF SUCCESS

We have spent the first two years of the strategy implementation developing and testing a suite of measures, gathering a baseline and setting our targets. These are now agreed and used to track progress over time.

Category	High Level Measure	Sub-Measures	Dimension(s)	Target
1 Solving Everyday Problems	Service Desk Performance Score (0-3)	% of System up time	Weekly - over time	>99%
		% of responses within SLA	Monthly - over time	>90%
		% of requests re-opened	Monthly - over time	<1%
	User Feedback & compliance Score (0-2)	% Customer Surveys Completed	Monthly - over time	>8%
		Avg Digital Satisfaction recommendation score	Monthly - over time	10
	AVG Helpdesk Customer Feedback Score	Monthly - over time	8 to 10	
2 Our digital journey (0-8)	Partnership Score (0-2)	Engage in projects with external partners	Quarterly - Over Time	>3
		Secure links with Acadamia	Annual	>1
	Interoperability Score (0-1)	Create Interoperability link between systems	Quarterly - Over Time	>1
	Asset Owners (0-3)	% of Asset owners trained	Quarterly - Over Time	95%
		# Asset owner sessions attended	Quarterly - Over Time	3+
		DPIA's from asset Register completed	Quarterly - Over Time	95%
	Critical System Transformation (0-2)	# Critical Systems Replaced	Monthly - over time	
Overall RAG project progress		monthly - over time	Green	
3 Secure & Joined up systems (0-8)	Servers supported Score (0-2)	% of Servers patched from previous month	Monthly - over time	>80%
		% of Critical servers patched	Monthly - over time	>95%
	Security Compliance Score (0-3)	% Change in data breaches reported (from prev month)	Monthly - over time	<15%
		% of DSPT Criteria met	Monthly - over time	100.0%
		% of CARECERT Compliance	Monthly - over time	>95%
	System Reliability Score (0-3)	Number of unplanned downtime for critical systems	Monthly - over time	0
		Perception of reliability of systems	Monthly - over time	8 to 10
	Number of out of hours call-outs	Monthly - over time	<1	
4 Enabling Smarter Decisions (0-6)	BI Service Score (0-3)	Average open helpdesk requests	Monthly - over time	<315
		Average days to close request	Monthly - over time	<20 days
		Data Warehouse ETL Failure Rate	Weekly - over time	<2%
	BI Development Score (0-3)	% Data sources integrated into DWH	Monthly - over time	90%
		Large PowerBI Developments completed	Monthly - over time	90%
		Key stakeholder engagement sessions completed	Monthly - over time	>12
5 Digital Pioneers (0-4)	Evaluation Score (0-1)	# Products Evaluated	Monthly - over time	>3
	Digital Innovation Score (0-3)	% of DDF proposals tested	Monthly - over time	>60%
		# New developments launched	Monthly - over time	>3
	% of Sprints delivered to plan	Monthly - over time	>90%	

INVESTMENT

The digital budget represents circa 4-5% of our overall budget including revenue and capital costs, which are aligned to the national recommendation of spend on digital.

Our revenue position for 2020/21 was £284,000 overspent. However this amount was agreed by Board in May 2020 as part of the contract variation with Virgin Media.

There are four key ways in which we aim to invest and deliver our digital strategy.

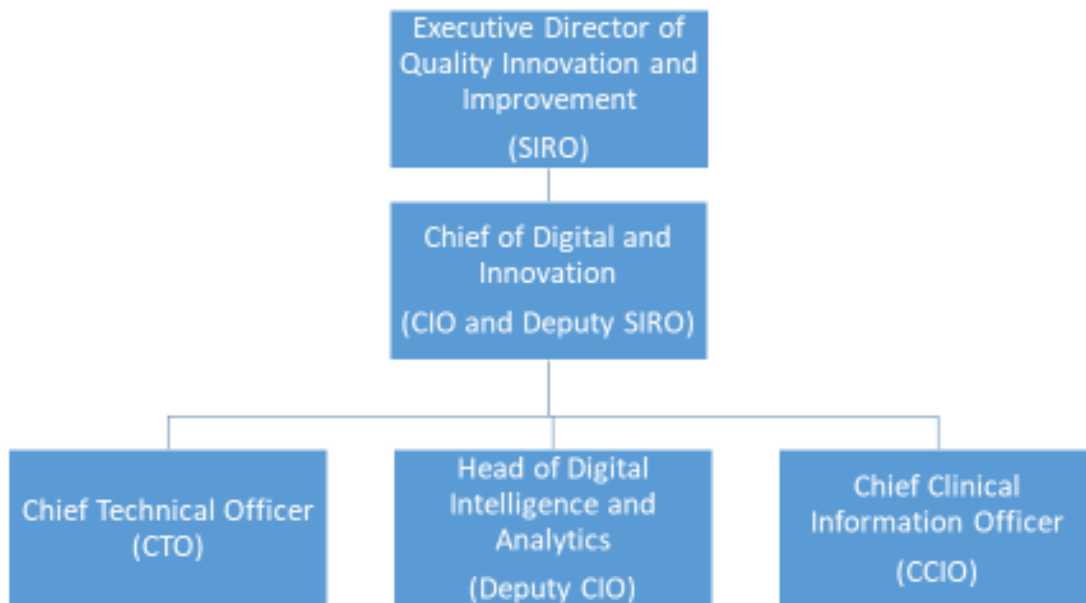
- **Budget management:** find efficiencies in the ICT budget through good contract management and thorough examination and upkeep of the budget. Efficiencies found can then be reinvested in new developments and risk mitigation. This is anticipated to be used in years 1-3 of the strategy only.
- **Productivity and efficiencies:** to better evaluate and understand the productivity and efficiency gains associated with our digital work and prioritise high impact areas and where possible release associated money.
- **External funding:** where possible bring in funding from national and regional funding pots.
- **Investment and commercial:** in time we will look to secure ongoing investment and commercialise products we develop working with our AHSNs.

In 20/21 we kept a close eye on external NHS funding opportunities and were able to secure a total of £7,179,948 in capital funding. This includes:

- **NHX personal issue devices:** the personal issue iPad funding facilitated by NHS X
- **National Urgent and Emergency Care capital funding programme:** this opportunity via NHS E/I was used to update station infrastructure, scale up video triage and implement innovative solutions to support productivity and efficiencies through the SMART series and including workforce solutions
- **NHE/I local cyber:** we secured funding to implement pervade and a backup email solution to improve our resilience against cyber attack
- **NHS E/I Wi-Fi:** we secured funding to put a new Wifi solution in all ambulance stations
- **Body worn cameras:** we secured funding for 926 body worn cameras and associated infrastructure to support them.

THE DIGITAL TEAM

When the strategy was first launched in May 2019 the first priority was to put a leadership team in place. Our Chief of Digital and Innovation started in July 2019, permanent CTO in August 2020 and Head of Digital Intelligence and Analytics in December 2020. The CCIO was in place from May 2020 as a secondment.



In May 2020 we agreed on a number of new roles to be added to the digital team in order to mitigate risks and enable delivery of the strategy. This included a CCIO, clinical digital innovation lead, programme and portfolio managers, security manager, IT technical project roles, an improvement analyst and an evaluation manager. We also secured temporary funding to test in house developments.

REGULATORY COMPLIANCE

Data Security and Protection Toolkit

Across the two periods covered by this report internal audit by MIAA concluded that in 2019/2020 there was substantial assurance that the trust was compliant with the *Data Security and Protection Toolkit (DSPT)* audit they had completed. The March 2021 submission of the DSPT was delayed until June 2021 but a baseline submission has been completed and an MIAA audit to check on preparedness giving assurance that the trust is on track.

SIRO report

A SIRO report has been produced for each year including the numbers of data breaches, Freedom of Information requests and compliance with Information Governance KPIs. The progress against KPIS for 2020 / 21 can be seen below.

KPI	Target	Q1	Q2	Q3	Q4
Freedom of Information requests	To respond to 90% of requests within 20 working days	95%	97%	96%	97%
Subject Access requests	To respond to 85% of requests without undue delay and at the latest, within one month	100%	99%	97%	97%
Data Protection requests	To respond to 85% of requests within 40 working days	100%	100%	100%	100%
Data breaches	To have a 15% reduction in externally reported data breaches and a 15% reduction in reported data breaches	KPI not agreed	KPI not agreed	External 90% reduction Internal 23% reduction	External 100% Reduction Internal 50% reduction

Reporting

The trust continues to maintain and service a current list of submissions including Ambulance Quality Indicators (AQIs), Public Health England and daily commissioner returns.

Incidents and Serious Incidents (STEIS)

In the period covered by this report a total of 3 STEIS were declared and investigated in which IT actions were recorded. All IT actions arising have been completed and learning shared internally and with external partners. In 2019/20 there was a failure of ProQA and ProQA standalone back-up system. Lessons learned surrounded a lack of documentation to support the system and to assist the IT helpdesk and/or on-call staff with the management of PProQA incidents. In 2020/21 the implementation of the national DCR table with no send and pandemic level 1 was introduced. A new pandemic related card (36) was misaligned to the local response model. The error was quickly identified and patients wrongly given a 'no send' were reviewed for potential harm. The review concluded with a 'near miss' outcome as no adverse effect had been found. Lessons learned identified that the speed of implementation had been a causative factor. On 1 October 2020, a fire alarm was activated at Estuary Point NWAS Headquarters in Cheshire and Mersey area at 03:36am. This led to a subsequent evacuation of Estuary Point staff and also loss of CAD functionality across the whole trust. Lessons learned included that a more efficient escalation would probably have resulted in shorter downtime, as a result a series of Business Continuity exercises have been planned and undertaken.

Clinical safety

DCB 0160 is the clinical risk management standard which NHS organisations need to comply with when they implement health IT systems or software which may impact on any aspect of patient care. The standard is governed by NHS Digital (NHSD) and is mandatory under the Health and Social Care Act 2012. To comply with the standard, organisations need to undertake a formal risk assessment on the product or project and produce three documents summarising the outcome. These are presented to NHSD and are assessed against a compliance template. This template is an assurance that the deploying organisation has suitable clinical risk management systems in place to manage design, build, deployment, life and decommissioning of the system or product. It is known as the Clinical Risk Management System (CRMS) and was implemented by the trust in late 2020. Since then six safety cases have been submitted covering the introduction of our Single Patient Management System (Cleric), UCP and EPR. Currently work is ongoing to extend the CRMS to identify and qualify designated clinical safety officers within the service lines to support future digital innovation in patient care.

GOVERNANCE AND RISK

Governance and assurance meetings and processes



Procedures and policies

A total of 131 standard procedures, working documents and policies were reviewed, updated or created during the report period. Two new policies are currently in process aimed at improving the Trust's cyber defence capacity. The Mobile Devices Policy requires that mobile devices and removable media solutions) are approved in advance, ensuring that the trust can be assured that staff are working safely and securely. The purpose of the IT Security Policy is to establish and maintain the security and confidentiality of information stored and transferred electronically, information systems, applications and networks.

External assurance reports

Over the period there have been a number of reports complete by Mersey Internal Audit Agency.

- **ICO report – reasonable assurance:** a data protection audit report by the Information Commissioners Office in 2019 provided the trust with reasonable independent assurance of the extent to which the trust was compliant with data protection legislation. The audit included aspects relating to management structure, policies and procedures, information governance training, rights of access and transfer of records. Since the audit was undertaken a detailed action plan has been delivered to action all recommendations of the audit.
- **MIAA Critical Application Review – moderate assurance:** in early 2019, the Critical Application Review – Patient Transport Service (PTS) concluded that there was moderate assurance that the trust was exercising good

practice in a number of areas including back-up regimes, good practice documentation and user guidance.

- **MIAA Third Party Access - substantial assurance:** the review of Third Party Remote Access and Management in 2019/20 concluded that there was substantial assurance that the Trust was meeting its obligations.
- **MIAA 111 Home Working - substantial assurance:** the review of the 111 Working from Home process was undertaken in early 2020. The risks associated with the 111 homeworking system potentially involved loss and unintentional disclosure of personal identifiable data. The report provided substantial assurance that individual home workers environments are risk assessed, sampled for consistency and security features such as unique login details, Smartcard access and the utilisation of a Virtual Private Network enhance secure connectivity.
- **MIAA Incident Outcomes - substantial assurance:** the MIAA data quality review for 2019/20 was focused on Incident Outcomes (Hear & Treat, See & Treat and See & Convey). As part of the audit process Informatics took MIAA through a sample of 70 incidents to verify outcomes. The main focus of the report was around EOC procedures and monitoring. It was highlighted that incident outcomes were reported to the trust Board monthly through the integrated performance report with AQI reports also shared with NHS E which were consistent with quality assurance checks in place.
- **MIAA data quality - moderate assurance:** the data quality review identified a clear process in place for the submission of data to NHSE and a concise and robust procedure for the production of Ambulance Quality Indicator information. Audit review of the trust risk register identified a risk associated with data quality processes. The report acknowledged that we have recently reported to the Audit Committee on the current gaps in control relating to the data quality processes, recommending that a Data Quality Policy and associated procedures should be implemented to benefit the data quality team. It also acknowledged forthcoming plans to invest in software to assist in mitigating the risk of data quality errors at source.
- **MIAA User Privilege - substantial assurance:** within the infrastructure environment, maintained by IT Services, the trust stores and accesses a variety of critical and sensitive applications and associated data. Therefore, it is essential that we ensure access to this environment is appropriately controlled by robust user management processes to validate and train users, provide authorised access, enable monitoring and logging of activity and handle changes to access including role changers and leavers. Overall we were found to have demonstrated a good control framework in this area including policies and procedures, scheduled checks and good systems in place. However there were areas for improvement including: activating the

user dormancy process, evidencing review of admin accounts and management of expiry passwords.

- **MIAA Review of IT Service Continuity and Resilience – moderate assurance:** the report outlines evidence of good practice, which included: overviews of key system status and issues through alerting from the Nutanix system and use of Solarwinds reporting tools, good segregation of datacentre sites and backup locations, environmental controls and redundancy considerations and regular scheduled checks on the Marvel system. Areas for improvement included: upkeep of documentation, confirmation of service level agreements with third Parties, internal service level agreements with asset owners and increased testing of recovery procedures.

All recommendations from the audits have been delivered or for recent reports are included in action plans.

Risks mitigated

The NWAS Board Assurance Framework held a strategic risk regarding digital infrastructure throughout 2019/20 and 20/21. Work over the last 2 years as a result of having a defined digital strategy has allowed us to significantly reduce the impact and probability of this risk materialising (moving from 20 to 12). Key controls that enabled this (linked to individual risks on the corporate risk register) have included:

- The newly formed leadership team including clinical roles
- The IT health dashboard
- A partnership for expert support from Mersey Internal Audit Agency (MIAA)
- Ensuring a fully supported infrastructure for our CAD
- Significantly improving our infrastructure to ensure systems are supported and limiting risk of cyber attack
- Increasing our capability and capacity to deliver both 'business as usual' and new projects and innovations both within the digital teams and through building strong working relationships and investing in the PMO and transformation teams
- Increasing governance and oversight at the organisation / exec level around project delivery
- Providing new infrastructure and investing in new Business Intelligence technology
- Replacing our telephony for 111
- Ensuring digital requirements are included in all Business Cases

Outstanding risks

There are a number of risks that, although mitigations and plans are in place, remain significant for us and are priority areas for the next year.

- **Unsupported telephony for 999:** we have not been able to close the risk associated with our unsupported telephony platform in 999 due to delays implementing the Unified Communications Platform. This is an incredibly complex and high risk piece of work and delays have been largely due to third party issues, the complexity of delivering across the NAA and the impact of COVID-19. The work is planned for May – August 2021.
- **Oversight of system issues due to the number of high impact digital projects:** in order to deliver on our ambitions as an organisation we are delivering multiple complex critical system and infrastructure changes simultaneously. Alongside this, we have significant ground to make up and have had to manage delays associated with COVID which have pushed projects closer together. We are working to mitigate the impact of this but accept that there is an element of risk in moving as quickly as we are to achieve our goals.
- **Mobile data, connectivity and Wi-Fi:** challenges of mobile data reliability and poor infrastructure at ambulance stations continue to be a significant risk to our digital ambitions. Over the next 18 months we intend to mitigate this with a combination of WIFI and infrastructure upgrades on stations, new devices with roaming sims and the introduction of the Emergency Service Network (ESN).
- **Data quality:** although quality assurance checks are in place we do not have a systematic approach to data quality and have not been able to give full assurance on the accuracy of data. We now have a plan to implement software and new processes overseen by a data quality lead.
- **Clinical records governance:** we have identified the need of centralised governance of clinical records and our registration authority. Although this work happens at a service level, audits have demonstrated weaknesses in governance and we have plans to strengthen our clinical records team and bring the Registration Authority in to the digital team.
- **24/7 resilience and support:** the digital teams work primarily as other corporate functions as a 9-5 Monday to Friday service. We do provide out of hours support for critical or multi user issues but this puts us at significant risk. Some of the gaps include:
 - Capacity of our speciality engineers (for example telephony)
 - Ability to respond to major incidents (such as the fire suppressant / data centre incident)
 - Capacity to respond to multiple critical system issues occurring out of hours

- Ability to support our new EPR

We will be putting forward options to increase out of hours resilience and move to a 24/7 model this year.

- **Funding:** we expect significant challenges in funding much of our digital strategy and have a particular challenge around our revenue budget with many costs which were previously capital changing to revenue license models. We are working to look for alternative funding routes via national opportunities, income generation and partnerships.

Northern Ambulance Alliance (NAA)

The NAA digital team is relatively small, and it therefore relies heavily on the contribution of the participating trusts' key subject matter experts. The NWAS digital team continue to make a vital contribution to the wider alliance digital transformation agenda. NWAS stakeholders are board members of the NAA digitisation Programme Board that oversees all NAA digital work, and members of the Tranman, Common CAD and RPA project boards. User groups and communities of interest supporting these projects continue to benefit from the enthusiastic support of the wider NWAS digital team. This level of mutual support and trust is also reflected in the involvement of NAA staff in a critical friend capacity at the DOF and to NWAS Unified Comms project team. Overall, the digital element of the NAA is starting to make progress and this has been helped significantly by the open and positive relationship enabled by the NWAS team.

Graham Norton
Digital Transformation Lead
Northern Ambulance Alliance



NHSE/I and North West Integrated Care Systems

“Within digital technology, NWAS have been developing their partnership work to work with the four ICS footprints within their geography. The digital transformation roadmap is focussing on interoperability and the sharing of information/intelligence with health and care partners. NWAS is stepping forward as a regional organisation to work with multi-disciplinary teams in connecting digital solutions. This will enhance patient delivery through the sharing of critical urgent and emergency care information with appropriate providers. NWAS is maturing their partnership approach and establishing their team as a regional contributor to the North West objectives.”

- Daniel Hallen, Head of Digital Technology and Digital and Urgent Emergency Care Digital Transformation, NHS England and NHS Improvement (North West)

Patient and Public Panel

“I would like to say a huge thank you for your support with our Patient and Public Panel (PPP) to date - your active involvement with our volunteers has meant we have continued to provide a high level of engagement throughout the pandemic.”

- Jenna Matthews, Patient and Public Panel Facilitator

HSJ shortlist

We were shortlisted for a HSJ award for SafeCheck for the Using Technology to Bring Efficiencies and Productivity Gains category.

DIGITAL STRATEGY UPDATES FOR 2021/22

A review and refresh of the strategy was complete in March 2021. The refresh was overseen by the Digital Oversight Forum including representation from across the organisation and following a number of sessions with the Patient and Public Panel and external partners.

As a result of this consultation we are content that the strategy remains broadly fit for purpose, albeit a number of minor amendments have been made. These include:

- A strengthened focus on digital inclusion which was highlighted in particular through our patient and public panel sessions
- More detail on evaluation with an increased focus on how we understand productivity and efficiencies linked to digital changes
- A re-focus of the objectives around avoidable deterioration in the digital pioneers section to set out how we will work in partnership on wearable tech and focus within NWAS on innovative technologies to support on scene physiological monitoring
- More focus on how we work together with PMO and transformation as a core part of our operating model
- An update of language to reflect the current context for example ICSs instead of STPs
- An update of governance and team structures
- A strengthened focus on how we will implement innovations that enable us to be an efficient and productive organisation including Smart technologies and supporting our green agenda
- A strengthened focus on data quality

KEY DELIVERABLES FOR 2021/22

A comprehensive work plan is in place for 21/22 and the remainder of the strategy as seen in the appendix. Key deliverables include:

Solving everyday problems

- ICT Service Desk upgrade so requests can be sent via Teams
- Improved personal issue devices and phones with the roll out of iPads to frontline road staff, SPTLs, APs, PTS drivers and mobile staff in the EOC, clinical hub and 111.
- The Emergency Services Mobile Communications Programme including replacement / upgrade of vehicle radio and MDTs / sat navs and a new control room solution
- More personal and visible IT support
- Body worn camera pilot
- Upgrades and integration of key systems to reduce admin such as GRS
- Integration of audits
- Station infrastructure and Wi-Fi upgrade

Our digital journey

- Full EPR roll out
- New telephony platform aligned across our services
- Information sharing across service lines
- Improved access to and use of service finder and Directory of Services
- Asset owner engagement sessions
- NAA CAD business case

Secure and joined up systems

- Access to shared care records across the North West so staff can view clinical records easily from whatever system, device or location
- Single source of information on patients through a single patient index which will bring together patient information held on our different systems
- Strong authentication and single sign on

- Improved sharing of information through the regional Trust Integration Engine (TIE) programme and new FHIR standards
- Increased clinical records governance
- Azzure edge data centre

Smarter decisions

- Enhanced engagement with the Business Intelligence team - supporting and consulting on new report developments and analytics
- Access to real time data through Power BI, including what-if modelling
- Progression of the data warehouse roadmap
- Increased bespoke support supporting our key challenges and understanding unwarranted variation
- Better analytics and insight about the care we deliver to inform staff training and development and improve competence and confidence in decision making through EPR data

Digital pioneers

- The Smart Innovation series testing technologies to make your life easier and improve outcomes for patients
- An innovation pipeline and 'Innovation Lab' for all to use
- Commercialisation of products
- Digital champions network
- New partnerships

CASE STUDIES

The SMART Series - SafeCheck

We want to build an outstanding, 'Smart' ambulance service using digital solutions to improve the experiences of our staff and patients. Our Smart ambulance vision incorporates:

- **Smart sites:** our sites will feature the latest technology to improve staff flow and inform staff of the live status of their local healthcare system
- **Smart people:** our staff will be provided with the latest technology, allowing them to connect anywhere and at any time.
- **Smart vehicles:** our vehicles will be fitted with improved connectivity, lighting and devices to enhance patient care.
- **Smart oversight:** our organisation systems will provide assurance around our compliance and insight for areas of improvement, underpinned by reliable data.

This case study will focus on SafeCheck, our digital quality assurance platform for recording vehicle, equipment and medicine checks, which was designed and developed in-house and is now fully rolled out across the organisation.

SafeCheck

The problem:

A number of vehicle, equipment and medicine checks have to be undertaken by ambulance crews before vehicles can be taken out on the road to respond to incidents. Prior to SafeCheck, all of these checks were recorded on paper, within a vehicle check book. Records were difficult to update, it was difficult for managers to monitor, track and respond to faults, and impossible for the organisation to identify trends and areas of non-compliance giving us no assurance (as highlighted by the CQC).

The solution:

A number of different digital solutions were considered, including purchasing an existing system from an external provider at significant costs. During these considerations, the Head of Clinical and Digital Innovation developed a visual prototype and subsequently the decision was made to test and build an in-house solution.

A small team was established to oversee and run a six week testing cycle, using Model for Improvement methodology. The goal was to gather enough data to understand the effectiveness of the SafeCheck application, using Plan Do Study Act (PDSA) cycles to enable rapid scale up of testing and adaptation of the solution. The development team met weekly with users of the prototype system, as well as members of IT, Innovation, Informatics and Information Governance to oversee the testing cycle work. Research tells us that organisational culture and context has a

big role to play in how safety checklists are implemented and embedded¹, so capturing detailed user feedback throughout testing was a key focus for the development.

A set of design principles were developed with associated measures used during PDSAs:

- The system had to be accessible on all trust vehicles including PES, UCS and PTS
- All daily checks should take 5 minutes or less to complete, utilising digital development to continually streamline the process
- The system would be a full digital replacement of the vehicle check book
- The system would have real time audit and reporting functionality
- The system would align to internal and external IG, IT and data security requirements
- The system could be accessed on trust mobile phones and G-TAC devices

The testing was undertaken at Millom Ambulance station, with engagement from the Morecambe Bay sector management team. The team were engaged from the beginning of the process and contributed to a number of changes which were implemented during the cycle using a notice board on site to make a note of changes required and requested so that people on different shifts could all see them.



Abigail Harrison @Abigail_NHS · Oct 20, 2020

What a privilege to visit the great team at Millom station @NWAmbulance to thank them for their crucial role as early testers of #safecheck Also they set a fantastic example of how we work with our communities to provide the best possible care #innovationinaction



Figure 1: Six week SafeCheck development process

¹ Catchpole K, Russ S., The Problem with Checklists, BMJ Qual Saf 2015;24:545–549. doi:10.1136/bmjqs-2015-00443

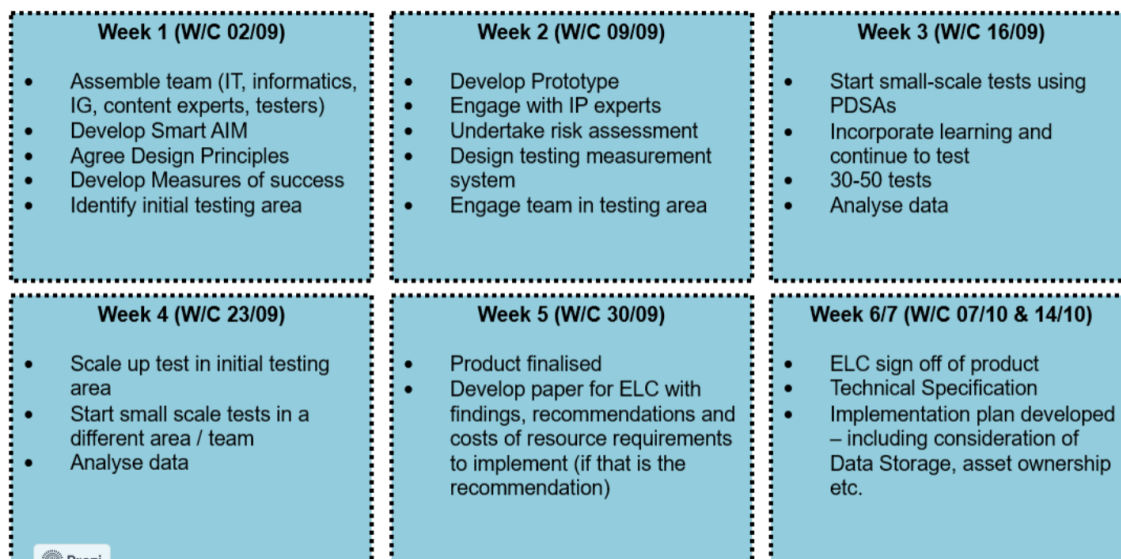
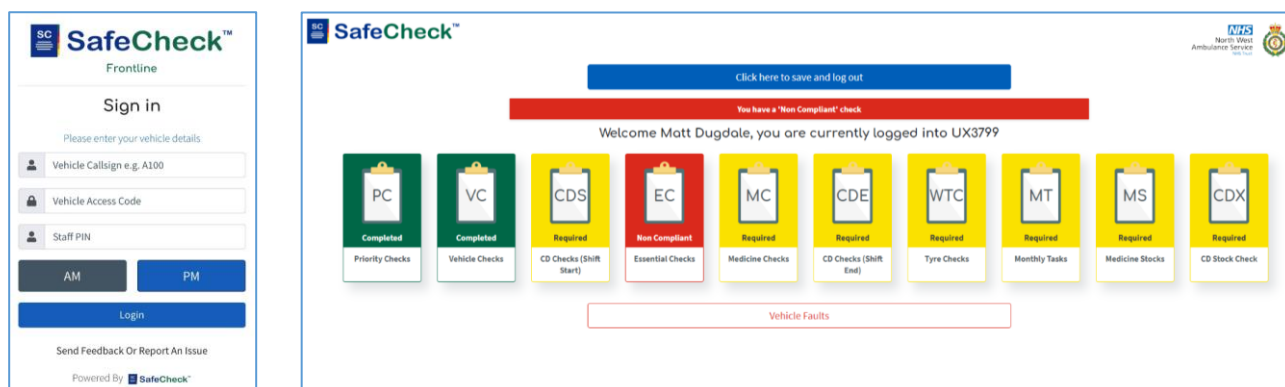


Figure 2: SafeCheck welcome screens



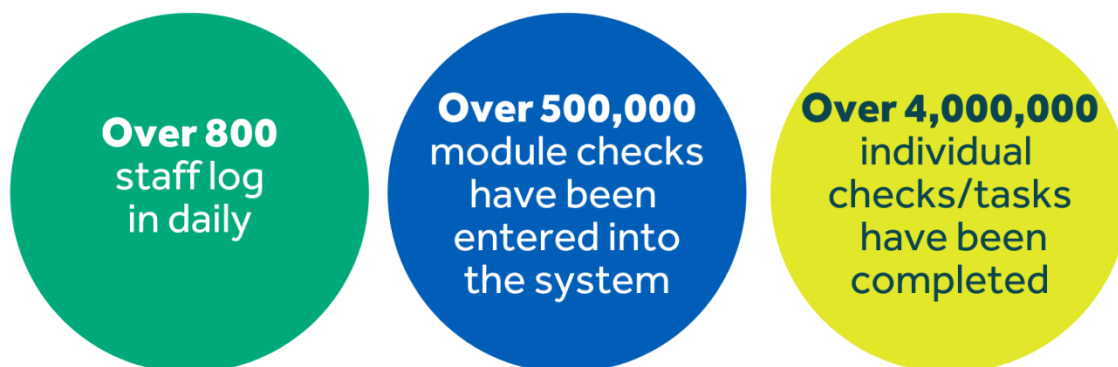
Benefits

SafeCheck already delivers a number of benefits to the organisation:

- **Data quality:** the system allows clinicians to quickly and accurately enter their vehicle, equipment and medicine checks onto a secure, electronic platform
- **Real time auditing and compliance:** the management console provides data in real time, notifying managers of anything that requires immediate action. It is also easier for managers to identify where there may be recurrent safety issues or concerns. Vehicles can also be marked as being off the road which avoids these being flagged as non-compliant
- **Productivity and efficiency:** RAG rating in the management console highlights where checks are overdue or there are safety concerns, reducing the requirement for managers to make follow up telephone calls.

- **Covid 19:** SafeCheck was developed to fulfil a number of additional tasks during Covid-19, including recording lateral flow, PCR and Lamp test results as well as vaccination registrations
- **Device tracking:** The system provides visibility on device usage, allowing us to view GTAC locations and log-ins. SafeCheck will help us to monitor usage of the new iPads when they are rolled out to frontline staff

Since the launch of SafeCheck:



Learning:

Collaboration: a small project team oversaw the design and development of SafeCheck but the importance of engaging with all stakeholders was vital to getting the product scaled up and rolled out across the organisation.

Methodology: using the Model for Improvement and PDSA cycles to structure the development allowed the project team to make small iterative changes to ensure the needs of all users were met.

Next steps:

- A central steering group will be established to agree future developments and use of the application
- Work will begin on ensuring interoperability of SafeCheck with other systems across NWAS
- Reporting functionality will be increased through the development of a Power BI dashboard, allowing more intelligent, trend reporting
- Work has begun on integrating other checks into the application, including Infection Prevention Control (IPC) and clinical safety audits checks
- A full evaluation of SafeCheck will be undertaken to understand where any productivity and efficiency gains have been realised, and to capture learning from the project which may inform the development of other digital solutions

Interoperability

One of the main challenges faced by patients and staff is the disjointed nature of systems, different information held in different places and not shared across the system. System interoperability will help to drive organisation wide efficiencies and ensure that we can provide the right care, in the right place at the right time. Interoperability is the term used to describe the exchange, interpretation and storage of data. It allows us to remove complex and manual steps; saving time, resources and reducing human error. Our system interoperability work includes:

- **Internal Interoperability:** a series of sprints to enable sharing of data and joint working internally across our 999,111 and PTS service lines
- **Shared Care Records:** a single point of entry to all North West shared care records and regional Trust Integration Engines (which enable the passing of information) to enable the EPR to be integrated with emergency departments and the sharing of referrals
- **Architecture:** the architectural design and build to enable safe access to internal and external systems (including N3) from any device anywhere.

This case study will focus on the internal interoperability work we have undertaken over the past twelve months and the learning we have from this so far from one specific example.

Internal system interoperability – the problem:

The Patient Transport Service fulfils a vital role in the movement of patients with non-urgent needs. PTS journeys may involve taking patients to routine clinics or planned admissions, supporting older adults with rehabilitation or other needs, or taking patients home following discharge.

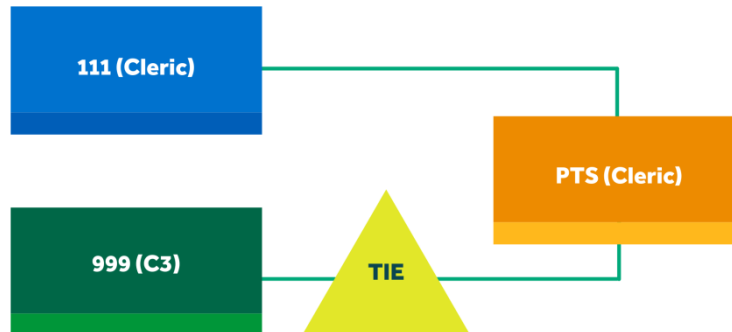
However, often the vehicle will arrive to collect a patient and find they have been admitted to hospital. These admissions usually occur following contact with 999 or 111 due to urgent or emergency changes in health needs at short notice. This results in a large number of abandoned Journeys, 14,000 in 18 months.

The solution:

A scrum team was established to build system interoperability between 999 CAD System, 111 Clinical management system and PTS resource management system that traditionally operated in silo to each other. The aim was to create an automated digital 'warning' for PTS planners, flagging where a known patient could have been admitted in the preceding 48 hours via contact with the 999 or 111. Initially operating at a pilot level within the Cumbria and Lancashire area, a lookup on the patient NHS number from PTS journey planner has enabled the PTS team to identify potential

non-required booked journeys via the development of the 'Recent Contact Assessment' module.

Figure 1 demonstrates how the data feeds are linked together to enable interoperability between the three service lines. The Trust Integration Engine (TIE) has been used to link together the 999 C3 and PTS cleric systems.

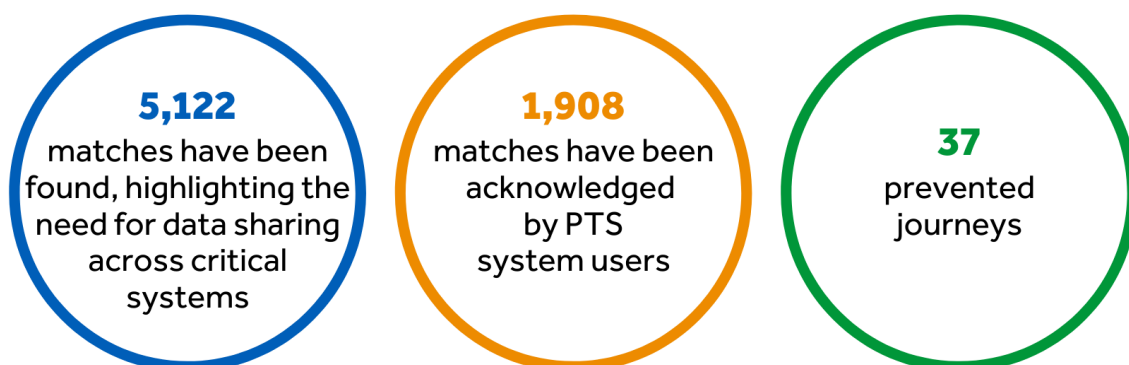


The pilot has been developed using Agile methodology and a Scrum framework, which was applied to divide the project up into different phases, using short cycles or 'sprints' to allow for rapid production and revision. Daily Scrum meetings took place where the project team shared progress and updates.

The overall challenge posed by multiple systems is large in scale and would be difficult to solve in one effort - using digital sprints in this way allowed us to break the task down and create connections one by one between systems to allow for secure interoperability and sharing of data across multiple systems.

The benefits:

During the first three months of the pilot, (March - May 2021):



Future Projection² – Full NWAS Footprint with additional resources over 6 months:



- **Operational efficiencies:** current figures show that on average, 1-2 unrequired journeys are being saved per week across the pilot. These saved journeys allow PTS resources to be diverted to other areas, for example assisting in patient discharges from hospitals. This creates additional capacity internally and could help to improve patient flow in hospitals.
- **Patient experience:** patients would naturally expect NWAS to have knowledge of their patient journey and sharing information between critical systems means that a better standard of care and patient experience is being delivered.
- **Data quality improvements:** personal contact details from the patient to the 111 / 999 service lines are often more up to date than the details stored in the PTS database, and this improved interoperability can now be shared across all systems.

Learning:

- **Agile methodology:** has helped to build and maintain momentum across the project. Under the direction of the team lead, a certified 'Scrum Master', the team used the methodology to break the project up into short cycles, reviewing progress at key points. This method provides us with the tools to break down complex problems into small and manageable steps. We are now using this methodology across other digital projects within NWAS.
- **Effective collaboration:** across service lines was an essential component for successful delivery of the pilot. Daily 'scrum' meetings helped to foster collaboration by ensuring regular communication across all of the stakeholders.

² Future projections are calculated based on figures from the three month pilot together with the scope to widen the product out to Greater Manchester and Mersey locality. They are also based on increasing staffing to work on acknowledging matches and making contact with service users and external care services, for example hospitals.

- **Asset owners and funding:** maintaining engagement with asset owners is key and work was done to improve this throughout the project. Much of this work requires small sums of money for development from external providers and it is important to identify at the beginning who is expected to make this investment.

Next steps:

- Full roll out across the North West region will take place throughout August and September 2021.
- A key next phase for the project will involve PTS planners contacting hospitals directly to query patient admissions where a recent contact with 999 or 111 has been flagged. Longer term, access to the shared care records (example, via Graphnet) will enable staff to access admission and discharge notes uploaded by the hospitals.
- A full evaluation of the interoperability work will be undertaken to understand where any productivity and efficiency gains have been made and what learning from the project can be applied elsewhere.

Digital innovation

The problem:

We know that technology and digital innovation can help us to deliver a sustainable service as well as the best possible outcomes and experience for our patients and staff. However, many of the innovations and technologies that we know could make a difference often struggle to be developed and spread within the NHS. At NWS, we want to make it as simple as possible to innovate and implement digital solutions.

This case study will describe the implementation of the Digital Design Forum, a weekly forum designed to provide a safe space in which to collaborate on and test digital solutions. The case study will also provide an overview of some of the problems and new ideas which have been taken through the forum to date.

Digital Design Forum



Digital design forum – the problem:

Our organisations are often designed with structures and governance that are rightly focussed on keeping patients and staff safe, but not necessarily in a way that enables us to test, to fail, to innovate and to disrupt standard processes and procedures. Our digital strategy sets out our ambition to use digital solutions to radically improve how we meet the needs of patients and staff, and we have skilled digital teams to support this work. However, often the mechanisms, methods or capacity are lacking to enable us to respond to new ideas that sit outside of our standard processes for fixing technical issues through the service desk or implementing large scale changes through project governance and change controls.

The solution:

The digital design forum was fully established in September 2020, with the aim of enabling rapid implementation of digital solutions across the organisation. The focus of the forum is linked to two parts of our digital strategy: 'Solving Every Day Problems' for our staff and positioning ourselves as 'Digital Pioneers'.

The forum meets weekly with representation from IT (including our CTO, cyber security lead, development and interoperability specialists), Information Governance, Business Intelligence, Operations, HR, communications, PMO and Clinical and Digital Innovation. The forum provides a clear channel for staff across the organisation to share and contribute information and ideas. By facilitating collaboration across relevant departments and individuals, it supports staff to safely test solutions to intractable problems or to test new ideas. Our goal is to use improvement methods to find a way to test on a small scale even the most complex of ideas or digital solutions. With any problem or idea we always start by exploring whether our current systems could provide a solution, then whether solutions already

exist beyond NWS and finally we explore whether it is something we could develop in house.

Figure 1: The digital design forum process

The process



1: Discuss and submit your idea



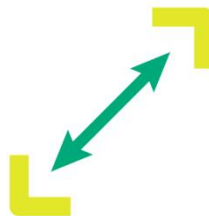
2: Present your idea to the forum



3: Implement small scale testing



4: Evaluate learning



5: Agree scale up plan

Benefits:

A total of 50 ideas and solutions have been shared through the forum to date, 20 of which have been supported to testing and seven which have been implemented at a regional or trust level. Around 15 ideas were aligned to initiatives already underway

The tables below detail some examples of the projects taken through the forum to date. These are grouped into those solving everyday problems and those supporting our journey to become digital pioneers.

Table 1: Digital solutions for everyday problems:

Project	Aim	Solution	Testing	Scalability
1. Real time communication (front line clinicians)	To find a digital solution to communicate in real time with front line clinicians (e.g. to communicate key updates)	Pando mobile and web application	Testing has taken place across Lancashire, successful implementation achieved	Project seeking approval for scalability and external/internal funding
2. Trust wide digital capability	To collect baseline data on digital capability across the organisation	Microsoft Forms , with advice from QI working group for survey design	Testing took place across all EPR training sessions	Survey has gone live across the trust, findings to be shared in an academic publication
3. Test, Track and Trace	To develop a digital solution for recording Test Track and Trace	Incorporate onto SafeCheck	The system was tested and implemented rapidly	Scaled up trust wide
4. Parkway EOC communication	To develop a Sharepoint communication site for Parkway EOC	Correct permissions were granted for the development of the site	Testing was undertaken across GM EOC	Implemented successfully GM wide with potential to scale further. An expert Sharepoint user group has also been created
5. Return to work (RTW) forms	To digitalise return to work forms	Incorporated into a wider piece of work around workforce management (looking at RTW, digital sign on, sickness/absence management, overtime etc)	Testing sprints to begin on a small scale	Potential to spread trust wide
6. NILO / commander documentation	To enable use of digital files and transcription services	Dictation functionality to convert speech to text	Testing has started and is ongoing	Potential to spread trust wide

Table 2: Digital pioneer projects

Project	Aim	Solution	Testing	Scalability
1. Quality Assurance Visits	To digitalise Quality Assurance Visits	To be incorporated into SafeCheck	Testing was undertaken in MS Forms to prove concept	Will be spread trust wide once incorporated onto Safecheck
2. Public health datasets	To link NWAS datasets with public health data (e.g. deprivation, distance to primary care sites, mortality. Morbidity)	Creation of public health dashboards through Power BI	Dashboard design is underway	To be used across the organisation
3. Quality Improvement platform	To develop a virtual interactive platform for the 'Right Care at Home' programme	Future NHS Collaboration Platform	Built and tested by QI with support from the forum.	The platform is now used Trust wide for the project at zero cost to the organisation.
4. NQP preceptorship records	To digitalise and centralise NQP preceptorship records	Power BI app	Testing was undertaken across Cumbria	Has now been implemented trust wide.
5. Equipment/Asset tracking	To enable digital tracking of equipment and assets	Safecheck – all assets to be scanned onto the system weekly on frontline vehicles	Testing undertaken on Safecheck	To be scaled trust wide
6. High Intensity Users and Violence and Agression	To develop a central system for flagging HIU and patients with history of violence or aggression	Both problems were brought separately to the forum but became part of a wider digital solution provided via Cleric	A number of digital sprints have been run and are being tested – training and testing	To be scaled up trust wide and potentially to incorporate safeguarding elements in conjunction with emerald
7. Social prescribing	To develop central referral platform for social prescribing referrals	Cleric to be used as an interim solution, may become part of DoS (query interoperability with external system Elemental)	Testing of Cleric to get underway shortly	To be scaled trust wide

Staff feedback and quotes

“I have taken part in the Digital Design Forum on two occasions regarding two different pieces of work. I was asked to provide a brief presentation and overview of my proposal, and there was a discussion from all those on the Forum about the projects. The process was really helpful in rapidly moving my projects forward, and also providing valuable feedback and things to think about in the future. Having colleagues with so many different areas of expertise ensured we thought about things I hadn't even begun to consider, offering suggestions for how my projects could not only be more efficient but also safer.”

- David Winterbottom, Emergency Medical Dispatcher

“Presenting to the digital design forum was a really great thing to do. We arrived with a problem and an idea of how to fix this. After really helpful, thorough and understandable discussion we fully understood the issues of the solution that we had suggested and came away with a completely different idea which has proved to be even better than the one we originally thought of. I highly recommend it to anyone with a digital/IT problem.”

- Jane Clayton, Quality Improvement Project Manager

“The digital design forum is a really friendly, safe environment to present your idea. Everyone is there to support you to progress your idea and discuss options you may not have considered and can help you link in with similar projects going on elsewhere in the Trust. It is also an opportunity to hear about other projects going on in the trust and to build relationships with colleagues outside of your service line.”

- Ross Luckie, 111 Service Development Manager

Learning:

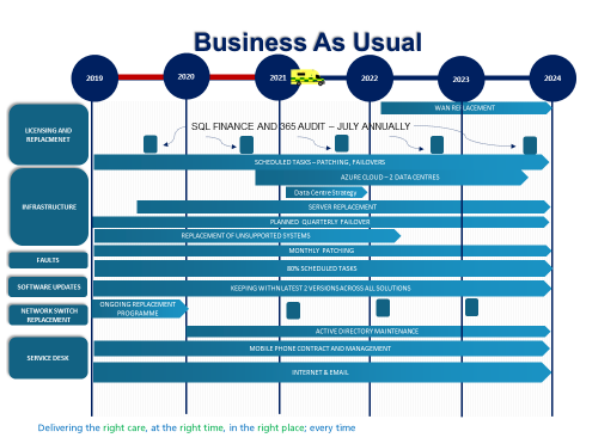
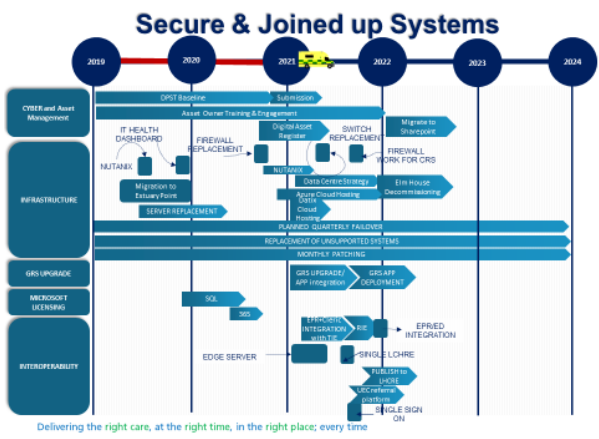
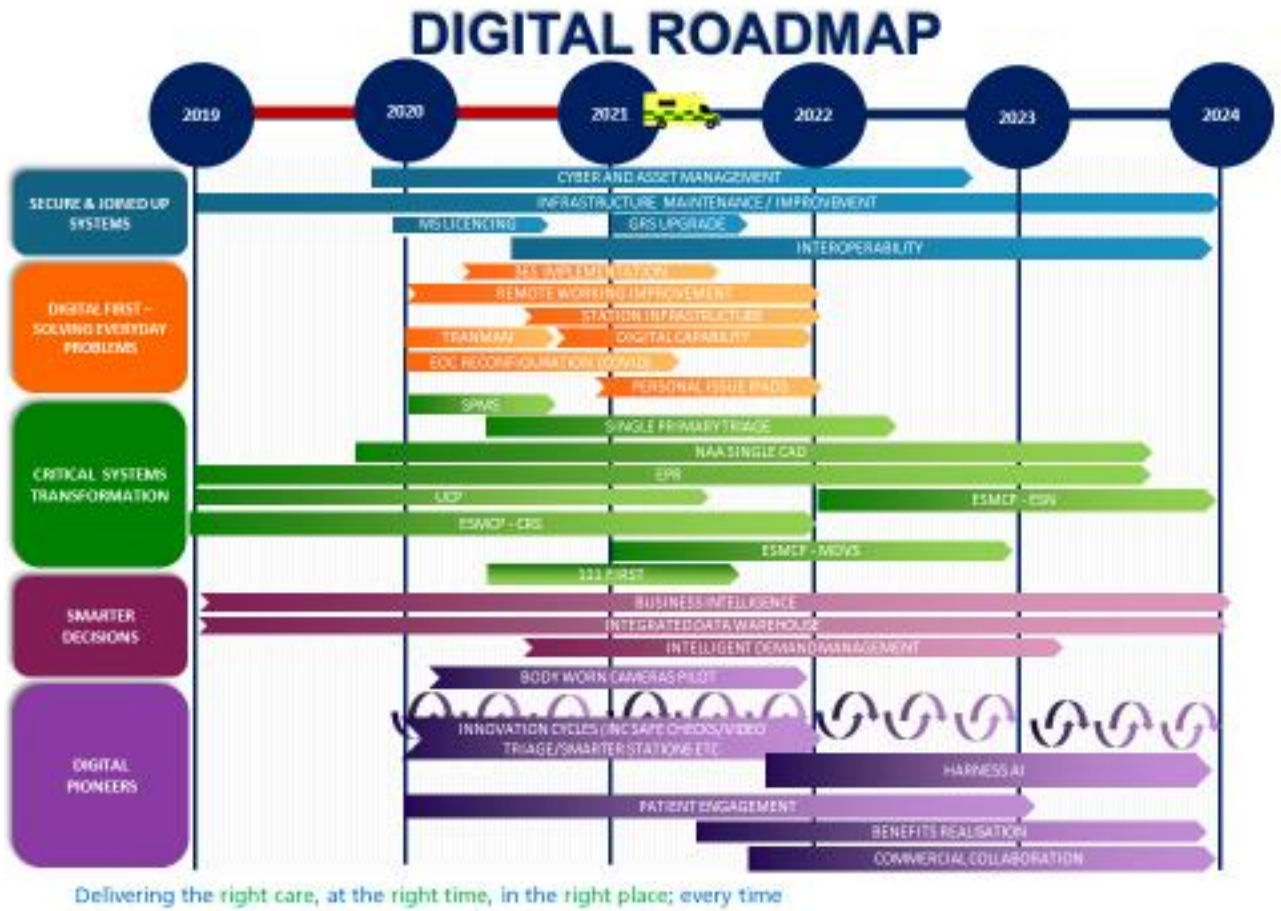
- **Collaboration:** representation from a broad group of teams across NWS has enabled staff to test their ideas safely, legally and effectively, overcoming many perceived and actual barriers to innovation. Members of the forum from HR and our technical cyber and information governance leads have proven key to enable safe testing.
- **Small scale testing:** using improvement methods, we have been able to break down seemingly impossible tasks in to bite size chunks that we can test which is particularly difficult with technical solutions. Beyond the immediate impact, the forum has also shared and spread knowledge of improvement testing methodology, encouraging staff within the technical teams and across the organisation to use small scale testing to build upon initial ideas and solutions.

- **Central oversight:** having a single forum for digital innovation has provided central oversight for digital teams and helped to reduce duplication, for example preventing unnecessary purchasing of digital applications when our current systems can perform that task. It has also improved our ability to respond to staff who were previously using multiple entry points (service desk or emails to individuals) with limited success.
- **Keeping track:** with so much momentum it has been difficult to keep track of ideas and tests. We have started to use Trello to keep track of what we have committed to do with presenters, add in monthly points to pause and look back and improve our knowledge capture around what is coming through the forum.

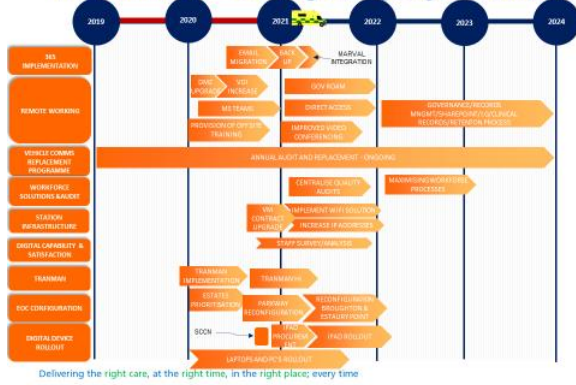
Next steps:

- The forum has developed over time and we now have a defined set of measures to enable us to track success which will be used in 2021/22 and onward including:
 - The number of ideas presented
 - The proportion of ideas presented that are tested
 - The proportion of ideas tested that are implement
 - Satisfaction of those presenting ideas
- We will be using a rapid evaluation model to enable us to better track and learn from the initiatives going through the forum. One meeting every quarter will be used as an opportunity for learning and reflection. How we scale up ideas and understand whether or not they have been sustained will be a key focus for our on-going evaluation.
- We are going to focus on how we communicate across the organisation the ideas and work that is coming through the forum and use our reflection calls and HR lead to support this.
- We are also now planning how we will engage with industry around some of the challenges we are not able to fix internally, for example connectivity, but using the same approach to testing we have develop through the forum.

Appendix 1: Digital Roadmap



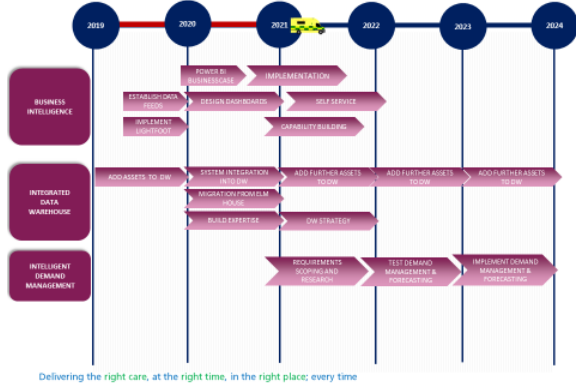
Digital First – Solving Everyday Problems



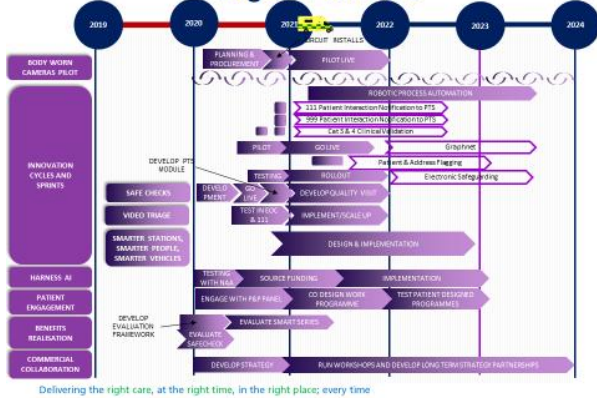
Critical Systems Transformation



Smarter Decisions



Digital Pioneers




Appendix 2: Digital Objectives

Strategic Priority: Digital		ACTUAL		DELIVERABLES	PLANNED DELIVERABLES	PLANNED DELIVERABLES	PLANNED DELIVERABLES	
High level objective	Smart Objective / Deliverable	Year 1 STATUS	Year 1 BRAGG score	Year 2	Year 3	Year 4	Year 5	
Enable a Digital First Culture where everyday problems are solved via technology	Implement an EPR that is fully integrated / interoperable across the North West with a 24/7 support model by November 2022	blue	4	Start phase 1 EPR implementation by October	Implement EPR development roadmap	Work with partners to realise the benefits of data flow on improving outcomes	Work with partners to realise the benefits of data flow on improving outcomes	
		blue	4	Design and test phase 2 EPR – integration	Implement phase 2 EPR and align to NHS 111 First			
		blue	4		Develop EPR for IOS			
		blue	4		Procure personal issue IPads and deliver EPR on			
	Design, test and implement 2X digital solutions to solve everyday problems and tackle priority issues each year	Blue	4	Implement GETAC support model				
				Implement video conferencing facilities and work with communications on a campaign	Reduce travel to meetings by 20%			
				Roll out safecheck system for PES and produce PTS module	Develop quality visit safecheck modules	2x solutions to everyday issues	2x solutions to everyday issues	
				Test Video Triage in EOC and 111 module and ready to go in ESR	Contract in place for CHub/111 evaluation across clinical hub	Extension of contract subject to satisfactory progress	Extension of contract subject to satisfactory progress	
	Enable Patient Engagement in digital workstreams with and co design functioning by March 22			Engage with Patient and Public Panel and identify patient representatives to engage in digital workstreams	roll out automated safeguarding referrals trust wide	Lessons learned and evaluation	Lessons learned and evaluation	
				Identify and connect with digital champions	Co design work programme around improving patient experience via digital solutions	Implement development on call		
digital leadership network by March 23				Develop digital leaders network	Test patient designed programmes	Digital objectives included in job roles with dedicated time		
Deliver Secure and Joined up Systems	Implement critical system transformation: UCP by Dec 20, SPMS by Sep 20, ESMPC, Apr 21	blue	4	Implement UCP	Efficiency gains realised from UCP system implementation			
				Switch replacement programme completed				
				Support primary triage, SPMS and CAD scoping, business cases and planning	Implement primary triage	Implement CAD replacement		
					Implement CRS	CCI Port Replacement		
					Implement MDVS	Prepare for ESN device rollout	Full ESN Delivery Inc voice devices	
					De commission Elm House		Decommission CCI Ports	
	Benefits of viewing and sharing of clinical records via integration with LHCREs realised by March 24	amber	2	Enable connection to forcere and test forcere viewer in EOC	Single viewer for clinical records (including on scene)	Full integration with LHCREs	Benefits realisation	
				Develop plan for integration engine	Internal integration and interoperability	Publish data to LHCREs	Benefits realisation	
	Progress continued improvements to Cyber Security achieving 100% compliance for DSPT and Carecert responses by 2024			99% criteria met for DSPT	99% criteria met for DSPT	100% criteria met for DSPT	100% criteria met for DSPT	
				90% CARECERT compliance	95% CARECERT compliance	98% CARECERT compliance	100% CARECERT compliance	
	Improve asset management delivering 100% on key measures by March 24			Operationalise purveyed software				
				Achieve 90% support systems by March 2021	100% supported systems	100% supported systems	100% supported systems	
				90% systems with renewed DPIA	100% systems with renewed DPIA			
				30% systems with a clinical safety risk assessment	50% systems with a clinical safety risk assessment	70% systems with a clinical safety risk assessment	100% systems with a clinical safety risk assessment	
Implement Office 365 by December 2020			80% asset owners and administrators trained	95% asset owners and administrators trained	100% asset owners and administrators trained	100% asset owners and administrators trained		
	blue	4	Implement technology and migrate	Benefits realisation of teams and other additional functions				
Review wifi and network infrastructure ensuring improved / consistent connectivity			Develop improvement plan for wifi and network infrastructure	Deliver improvement plan for wifi and network infrastructure	Work with external partners to improve connectivity			

	Use data science to implement an intelligent demand management and forecasting service by 2024				Scope requirements for resources and systems to support better demographic analysis that will enable intelligent demand management and forecasting Test intelligent demand management and forecasting	Implement intelligent demand management and forecasting Identify opportunities for AI across the trust	Partner with key AI/ML players, to create an AI/ML strategy and roadmap for the trust		
	Establish a pipeline of analytics activities			ad-hoc analytics processes implemented	Ensure BI analytics is embedded into the Public Health agenda at NWS	Identify and create a roadmap for key analytics activities (including data integration opportunities), including geomapping and health profiling			
	Implement Robotic Process Improvement				Implement RPA on 2 manual processes	Implement an RPA practice team, automating 15 manual processes across the trust	RPA centre of excellence across the trust		
Enable Smarter Decisions	Deliver Automation and self service by September 21	blue	4	Power BI Business case agreed, PID and development roadmap plan	Establish the PowerBI Development roadmap, including delivery of 12 core dashboard products	Automate 90% of all manual reporting	What-if scenario modelling tool to be developed and rolled out to operational teams		
				Data warehouse prepared	Scoping Vincent framework	implement Vincent framework			
				Establish the IG strategic roadmap to underpin all BI activities	Review of internal processes including Processing activities, DPIA templates, IAO training and ROPA	Achieve 95% of all staff annual data security training by March 2022 & Data protection qualification by March 2020	Complete IG benchmark comparisons with other trusts		
		Blue	4	Achieve 90% license users active on lightfoot system	Use lightfoot data to systematically identify and reduce variation	Terminate and decommission Lightfoot system			
				Customer engagement programme with BI Business Partner leads for directorates and scope capability building programme	Establish formal business partner approach and enhanced stakeholder design and engagement sessions	Implement capability building programme – train 150 managers	Establish PowerBI "superusers" across the trust, ensuring enhanced access and functionality is rolled out		
				Complete migration from Elm House					
				Deliver a fully Integrated Data warehouse by 2024	Establish a Data Quality function with automated DQ software integrated within the DWH	Complete well defined data quality policies, which link into all digital and change functions	achieve 99% data accuracy across trust DQ monitoring		
				Continue to integrate systems into the warehouse using "SPRINT" methodology in data warehousing and adoption of standard	50% of NWS data sources to be integrated Data warehouse training and solutioning strategy	100% of NWS data sources to be integrated including associated technical training	3rd party data integration established ensure development contingency can be maintained		
		blue	4						
			Establish a pipeline of analytics activities			ad-hoc analytics processes implemented	Ensure BI analytics is embedded into the Public Health agenda at NWS	Identify and create a roadmap for key analytics activities (including data integration opportunities), including geomapping and health profiling	
			Implement Robotic Process Improvement				Implement RPA on 2 manual processes	Implement an RPA practice team, automating 15 manual processes across the trust	RPA centre of excellence across the trust
			Use data science to implement an intelligent demand management and forecasting service by 2024				Scope requirements for resources and systems to support better demographic analysis that will enable intelligent demand management and forecasting Test intelligent demand management and forecasting	Implement intelligent demand management and forecasting Identify opportunities for AI across the trust	Partner with key AI/ML players, to
Position NWS as Digital Pioneers enabling rapid implementation of digital innovation	Deliver 4 per year digital solutions and income generation to fund innovation by 2024			Produce development framework	Secure long term funding for development team				
				Develop x 2 more in house solutions	Develop x 4 in house solutions				
				Intellectual Property agreement for Safecheck	Generate income from intellectual property	Self funded innovation function			
	Develop Partnership (industry, STPs) to support collaboration			Develop commercial / industry engagement strategy	Run x3 commercial partner workshops per year to invite innovations aligned to our strategy				
				Identify key partners to test in areas aligned to our strategy	Long term strategic partnerships				
	Measure and Improve Digital Maturity achieving HIMs by 2024			Build digital dashboard including bespoke measures of digital capabilities and satisfaction	Develop feedback and actions loop to continuously improve digital culture	Digital capabilities framework			
				Re do digital maturity assessment	HIMs assessment				
				Skills mapping and plan re structure to meet our future digital needs					
	Harness AI and machine learning to support preventative healthcare and improve monitoring by 2024			Scoping of physiological monitoring as opportunity to support preventative population-based	Sources external funding for testing	Implement innovative approaches to monitoring			
				Scope digital medicines programme	Implement digital medicines programme				
	Enable benefits realisation and evaluation by 2023			Develop evaluation function to evaluate impact on productivity and efficiency	Map benefits realisation and evidence re investment				
	Deliver an innovation pipeline to harness and develop staff ideas by 2022			X3 staff ideas at each digital design forum	Funded innovation scheme for staff				
				Scope sharing platform for idea generation					
				Implement innovation pipeline					

Appendix 3: Our Digital Journey Communication



**North West
Ambulance Service**
NHS Trust

Our Digital Journey

Secure and Joined Up Systems

Cyber security: Significant improvements have been made to ensure we are protected from cyber-attacks but we always need your help. Please make sure your IG mandatory training is up to date and visit our new site: greenroom.nwas.nhs.uk/cyber-security

New emails and virtual working: You now have a new email service in Office 365 which may have caused some disruption but brings lots of benefits, such as helping us connect through Microsoft Teams.

Information sharing: We have focused on sharing information internally and externally. We are the only trust in the UK who can pass calls electronically to all other ambulance services. We now have agreement across the North West about how we will access and share patient records.

Supported environment: We have been working hard to ensure that we can provide the most up to date and supported digital infrastructure. There was a lot to do and sometimes this may have caused disruption but this enables us to be strong and stable going forward into the future with more reliable systems.

Our Digital Strategy sets out our ambition to use digital solutions to radically improve how we meet the needs of patients and staff every time.

Here are the highlights of the past 18 months that are already making a difference.

Key things to look out for in 2021

- ICT Service Desk upgrade so requests can be sent via Teams
- New telephony platform aligned across our services
- Full EPR roll out
- New triage platform aligned across our services
- Easy access to clinical records from anywhere!
- Improved personal issue devices and phones
- The new national Control Room Radio solution
- More personal and visible IT support
- Enhanced engagement with the Business Intelligence team - supporting and consulting on new report developments and analytics
- Access to real time data through Power BI, including what-if modelling
- An 'Innovation Lab' for all to use
- Information sharing across service lines
- The Smart Innovation series testing technologies to make your life easier and improve outcomes for patients
- Upgrades and integration of key systems to reduce admin such as GRS
- Body worn camera pilot

Thank you for supporting us on this journey. If you have a problem you can't fix or have a new idea for a digital solution, contact us at the Digital Design Forum
<http://tiny.cc/NWASDDF>

Unified comms programme:

Our new telephony platform went live in NHS 111 in January. PTS, corporate and 999 will follow.

Critical System Transformation

EPR

Following a pilot in the Blackpool / Fylde area we have started the roll out of our Electronic Patient Record.

Video consultations: We have implemented a video consultation solution to support clinical decision making in both NHS 111 and the Clinical HUB.

Cleric in NHS 111: We have implemented Cleric, our new single patient management system in NHS 111 and the Clinical HUB and upgraded to the new Cleric in PTS.

Smarter Decisions

Data warehouse solution: We can securely house data to feed our reporting. This will grow with the integration of more of our internal and new datasets and enhance our future analytics capabilities.

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We have focussed on staff being able to access data when and how they want to see it. We have introduced **Power BI** that allows the migration of all informatics outputs to be best-in-class and on an engaging platform.


Requests for information

One of our first solutions to enable digital innovation - a replacement for paper vehicle and medicine check books. It provides real time management and reporting and has been developed by an in-house team who have been shortlisted for a HSJ Award.

Digital Pioneers

Digital Partnerships: We have delivered Tranman and UCP in partnership with the NAA and worked closely with ICS digital partners.

Safecheck: One of our first solutions to enable digital innovation - a replacement for paper vehicle and medicine check books. It provides real time management and reporting and has been developed by an in-house team who have been shortlisted for a HSJ Award.



Solving everyday problems:

We know it's frustrating when the simple things don't work and we have secured funding to upgrade some of our key infrastructure, including WiFi at stations.

Digital First Culture

Service support: Last year we responded to 44,118 requests / incidents and started to collect feedback from staff to help us improve our service.

Remote working:

We have safely enabled a significant increase in remote working, whether that's in the Clinical HUB, NHS 111, corporate or through hundreds of staff being trained off site - this has helped especially with our COVID response.

Digital confidence and satisfaction:

We have developed a survey to assess the confidence, capability and satisfaction of staff so we can provide better support as we implement new technologies. Take five minutes to complete the survey here: www.surveymonkey.co.uk/r/SurveyDigitalCapability

