North West Ambulance Service NHS Trust

Digital Strategy Overview

2019-2024

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1. Foreword

In less than two decades the world we live in has changed beyond recognition. The birth of the internet paired with mobile computing has changed everything. If we look around now in any cafe, airport, sporting event or social occasion, the world is connected by cameras, social media platforms, applications and pocket sized devices. They sit by our sides in a way that seems completely normal. We tap them onto scanners to board planes and pay for coffee. We treat them as key assets and feel bereft if they are taken from us. Phones are mini computers, smart devices, with more capability than anyone could have dreamed. Even more exciting is the ability we now have to manage our lives through these devices. If we want to protect our children, secure our homes, set our heating, all of this is now possible. This next generation 'internet of things' is a burgeoning area of digital growth. Our NWAS digital strategy provides the foundations for us to operate in this context. Being the first ambulance service to become fully digitally enabled is our ambition. This is a bold statement given our current positioning and we know that. So, why do we think this is necessary and how will this be possible?

In simple terms the rationale for our ambition is that we have promised our patients that we will deliver the right care at the right time in the right place every time and without a progressive digital infrastructure this is simply not possible in today's world. Our patients expect that when we interact with them that they can do this through whatever device or platform is most convenient for them be that email, phone web or application. They expect that we will know all about them because we have access to the best location software, health record and past interactions with us. They expect our clinicians to have the latest knowledge at their fingertips and to use this to advise and direct them to the choices available to them. They expect us to be able to provide immediate access to the right healthcare professional either in person or via video and they do not want to wait for treatment if it's possible to start that immediately in a safe way. Partnering in care in this way is not a luxury, it is the only way. This is what we heard when we conducted the focus groups to develop this strategy and it was a message that we cannot ignore.

Our ambition is also fuelled by our commitment to our staff. To be the best ambulance service in the UK we have a responsibility to ensure that our staff are happy and equipped to deliver services in the most effective and efficient way. Over the past ten years or so Ambulance Trusts led the way on developing their control room technology with virtual Command and Control and call answering, however despite this technology has moved on and historically, NWAS, like most NHS organisations, has continued to operate in a world of pen and paper in many other areas. Whether that is signing into the many books that exist at the entry to our buildings, requesting supplies, completing training, requesting leave, claiming expenses, recording patient information, completing audit or collating evidence of our personal development. These paper systems are slowly being replaced by digital solutions. This strategy makes a commitment to our staff to pursue these improvements at pace. To do this we are partnering with academic institutions, NHS England, NHS Improvement, NHS digital and importantly with the new NHS identity programme which will support our ambition to simplify the logging in and identity issues which hamper our access and put time delays into the process. We will channel our resources towards these solutions to support this vision.

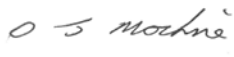
Most of the technology and applications we need already exist. Our job through the strategy is threefold: to build a stable and resilient platform which has the maintenance required to keep our digital information safe; to connect with WiFi seamlessly and to ensure that our data sharing agreements permit secure, seamless interoperability. Our ability to be able to connect to one another within NWAS, for example through a single telephone or computer system, is key. If we have this we can help one another succeed, breaking down some of the inevitable historical barriers between service lines and departments, sharing expertise and supporting demand. Our ability to be

able to connect to other health partners and to patients directly is central to our ambition to lead urgent as well as emergency care. Our strategy addresses this directly.

It is well recognised that the adoption of digital solutions varies significantly from one person to the next, one team to the next and one organisation to the next. This variation exists within NWAS. We already have innovators using mobile computing to access patient records on scene, tap into knowledge repositories such as JRCalc and access Manchester Triage via the GeTac devices. We also have those who will need help with this change, waiting for proof that this will help them deliver better care. This strategy recognises both these polar views and sets out an ambition in the first instance to simply 'get the basics right' after all, if we can't even issue phones and computers on time how can we be trusted to do the rest? To deliver this ambition our IT, informatics, Information governance and clinical records team have come together under a single leadership. A newly appointed team, headed up by a Chief of Digital and Innovation will steer the strategy forward, working with us to build our confidence in these changes and our skills in using the equipment we have. This won't happen overnight for everyone but for some it will be long overdue. We recognise that our workforce will have different needs and have different capabilities and we are absolutely committed to leaving no one behind.

Digital is the opportunity to make NWAS an even greater place to work than it is today. Our people make our organisation outstanding. The systems they work in don't always marry up. Frustrations build and time is wasted trying to access buildings and cupboards with a plethora of keys and codes. For those of you who are bothered by this, help us build a safe single swipe solution for all buildings, cupboards and locked areas which also helps us log into our devices and applications. Help us install number plate recognition into access barriers and garages. Help us continually monitor tyre pressures and vehicle safety, removing the need for manual checks. Let's use our cameras as scanners to barcode our PIN numbers, stock levels, training records and timesheets. Let's upload rather than transport, let's Skype rather than ride. Let's connect and learn. Let's re- define what it means to be a modern and progressive ambulance service.

We hope you enjoy reading this strategy but we hope even more that you enjoy being part of our progressive and exciting digital future.



Daren Mochrie QAM
Chief Executive

Maxine Power, Executive Director of Quality, Innovation & Improvement

2. About this Strategy

This strategy will guide the delivery of our digital ambition for the next five years. It is core to the delivery of reliable services 'every time' and is in service of the organisations overall commitment to deliver the right care, at the right time, in the right place, every time. Our Digital strategy will sit alongside other core enabling strategies such as the Workforce, Fleet & Estates and Communications strategies to support the delivery of our overarching Trust ambition; to become the best Ambulance Service in the UK (see Appendix A).

The strategy will be dynamic and will evolve as we mature our systems, partnerships and capability. This strategy describes our commitment to developing our services with digital solutions, a digitally enabled workforce, secure joined up IT platforms, smarter decisions through improved insight and innovation throughout all of North West Ambulance Service.

Technology is increasingly important for safe, effective and efficient service provision from the frontline to the board. It is central to delivery of key performance standards and enhancing patient experience. Likewise the opportunities afforded by connected business intelligence systems and the insight they provide can reduce variation in management systems and deliver back office efficiencies. Our digital strategy is also critical to connecting with other health providers in the North West and with the strategic transformation partnerships regionally. Digital enables us to connect with other ambulance Trusts to provide a more effective response to national resilience, activity increases and mutually beneficial support arrangements.

The Digital Strategy within NWAS will be developed in three stages: initially, this overview document will describe our intended direction of travel; this will be followed with a detailed implementation plan as an integral part of our integrated business plan (IBP). Finally, each programme of work will be described in detail in a series of papers presented as annual business plans. They will identify key work streams to be delivered in each financial year with quarterly updates provided via the Digital Oversight Forum (DOF) to the Chair of the Finance and Investment Committee (FIPC), who will highlight key risks and mitigations to Board.

3. Board Commitment

The Trust Board are committed to ensuring that the programme of work required to develop our digital ambitions is at the forefront of our integrated business planning. Resources will be required to support the renewal of critical systems and ensure IT systems are securely maintained and that staff are cyber aware. Similarly, investment decisions are required to balance improvements to the internal operating platform with our patient facing IT systems.

The Trust Board acknowledge that digital infrastructure should be viewed as a priority to any service redesign and as key enabler to improvement. We will prioritise those programmes that address risks to patient care, outcomes or information security. These commitments will be delivered recognising that our resources are limited and a continuous programme of efficiency improvement will be required. To this end, the board are committed to partnering to access investment opportunities and adopting partnerships which support procurement efficiencies.

4. Our Vision

Our digital vision is to radically improve how we meet the needs of patients, staff and any partners every time they interact with our digital services. These benefits will be measured through a focus on aligning our digital development priorities to the Trust's strategic priorities and creating a 'digital first' culture from the board to the frontline.

Our Strategic Themes and Focus

The next five years is focused on delivery of five strategic themes as outlined below:

Our aim is to use digital solutions to radically improve how we meet the needs of patients and staff; every time.

Solve everyday problems

- 1.1 Getting the basics right
- 1.2 Staff experience
- 1.3 Patient experience
- 1.4 Personal safety
- 1.5 Digital skills
- 1.6 Listen, test and learn

Our digital journey

- 2.1 'Digital first' culture
- 2.2 Leadership and governance
- 2.3 Operating model
- 2.4 Integrated organisational approach
- 2.5 Digital partnerships

Secure and joined-up systems

- 3.1 System integration and interoperability
- 3.2 Privacy and cyber security
- 3.3 Cloud and Edge
- 3.4 Open standards
- 3.5 Core business platforms
- 3.6 Proactive risk and renewal

Smarter decisions

- 4.1 Better data
- 4.2 Better access
- 4.3 Better insight
- 4.4 Better collaboration
- 4.5 Better operating procedures

Digital pioneers

- 5.1 Preventing harm from deterioration
- 5.2 Innovation partnerships
- 5.3 Cultivating innovation
- 5.4 Rapid deployment of innovation

1. Solving Everyday Problems

When speaking with our staff and volunteers it is clear that one of their biggest challenges is not having the right digital equipment or skills, at the right time or in the right place to support them to do their jobs effectively. We also recognise that technology is changing public expectations for more immediate, joined-up and comprehensive care which can be accessed through the use of digital channels. Therefore, one of the fundamental aims of this strategy is to improve digital services and technological solutions so that they meet the needs of our staff and patients; every time. If we can improve the quality and resilience of our digital services, we will in turn make NWAS a more accessible service for our patients and a great place to work for our staff.

1.1 Getting the basics right	✓ Our ambition is that all NWAS staff, whether clinical, corporate or voluntary, will receive the right digital equipment required for their role, from the first day they join the Trust. ✓ We will provide a timely response when staff do encounter technical problems or require further support or training, minimising disruption to roles wherever possible. ✓ We will ensure that our workforce is digitally connected, through digital communication channels, access to emails and reliable Wi-Fi connections.
1.2 Staff experience	✓ We will work closely with teams to develop and implement digital solutions which are focused around the end user and business need. ✓ We will redesign our digital operating model to focus around staff experience which includes a continuous feedback loop between our digital services, and the staff using these on the frontline and in our corporate services. This will ensure we understand the experience of digital system users and work with them to design and implement improvements based on their experience. ✓ Where possible we will use technology to provide equity of access for everyone, removing barriers for staff with disabilities. ✓ We will digitise our workforce using single-sign on and smart unique identifiers to securely access our core business platforms (see section 3.5) as well as staff and patient information.
1.3 Patient experience	✓ Our services will be straightforward to access and use and will help patients and carers navigate their care pathway in a seamless, integrated way. ✓ We will offer patients several points of contact into our service; using digital channels to be a gateway to the wider urgent and emergency care system. ✓ We will develop unified communications platforms which enable the flow of patient information, i.e. if a patient switches from NHS 111 online to calling 111, the information they have provided up to that point will not be lost. ✓ We will offer our patients more opportunities for self-service for example, to book, cancel and update Patient Transport Services (PTS). ✓ We will use digital solutions to minimise unnecessary waits or duplication such as using NHS numbers to reduce the need for patients to repeat personal information to different staff during their care pathway. ✓ We will use digital solutions to offer clinical advice and intervention at the earliest opportunity in the patient's journey and navigate patients through the most appropriate care pathway. ✓ We will protect patient's privacy and adhere to all information governance

	standards. ✓ We will proactively gather feedback from patients through the Patient and Public Panel and use insights from the evaluation of patient and staff feedback to identify opportunities to improve.
1.4 Improving safety	✓ We will test the use of technological equipment and safety devices to continuously improve the personal safety of staff on the frontline. ✓ We will digitise our estate through the adoption of smart access technologies to maintain security for our staff, systems and patients. ✓ We will use routine and automated alerts from systems such as Gazetteer, to inform staff when they are entering a situation with a patient who is known to be challenging or who may threaten their personal safety. ✓ We will develop partnerships with other partners to share information which will improve the safety of our workforce. ✓ We will integrate our systems so that vital information collated in out of hospital settings can be shared to keep staff safe; for example, valuable information collected by PTS crews about patients with challenging or aggressive behaviour can be used by PES to support teams. ✓ We will also use digital solutions to keep our patients safe and reduce the number of serious incidents with technology or ICT identified as a root cause.
1.5 Digital skills	✓ We will enhance the digital skills and capability of every member of staff through robust and innovative approaches to training and support across all NWAS directorates. ✓ All staff will receive an overview of our digital strategy and culture during induction as well as specific training on how to use the equipment and systems required for their role. ✓ We will digitalise our learning and development offer where appropriate, using simulation training, online seminars e-learning, and electronic portfolio development to make training more accessible for staff ✓ We will design new digital solutions to be intuitive and user-friendly and where required training will be put in place to ensure smooth transition into business as usual. ✓ We will establish digital partnerships with other industries to provide expert coaching and an environment within which digital skills can be shared. ✓ We will undertake a full skills profiling exercise to baseline the current levels of digital capability across the organisation and adopt a channel shift approach to upskilling and developing our workforce.
1.6 Listen, test and learn	✓ We will listen to ideas from staff on how we can use digital solutions to solve every day problems and improve working practice (Topol Report, 2019). ✓ We will adopt an agile approach to digital innovation; using improvement cycles to continuously test staff ideas and learn from both success and failure before scaling up across the organisation. ✓ We will develop criteria through which benefits from change ideas can be measured and aligned to Trust goals and prioritise the rollout of those initiatives with demonstrable improvements.

2. Our Digital Journey

Digital is about more than just ICT, it is simply a way of doing things which can deliver benefits to patients, staff and the wider system through the use of technology[1]. Our ability to realise the benefits it brings will be influenced by how we approach and adopt digital solutions across the whole Trust. Our strategy therefore, is as much about people as it is systems and processes and therefore requires a culture change from 'board to floor' that embraces a digital first approach.

2.1 'Digital first' culture	✓ In order to embed a 'digital first' culture we will re-think how and why our organisation does things. ✓ We will utilise digital skills and technologies to unlock the capability of digital transformation across our organisation and help our staff to do their jobs more effectively. ✓ We will continue to work towards a paper-free patient experience by 2024 including commitment to removing all clinical paper records to support clinicians to manage care more effectively, improve ease of data extraction and sharing and minimise waste and duplication within audit processes. ✓ We will continuously strive to improve our systems and processes using digital solutions, rather than simply digitising our current paper processes. ✓ Within the first year of this strategy, we will develop a robust digital culture maturity assessment and establish the baseline from which we will measure improvement periodically. ✓ We will optimise our estates using digital solutions to enable remote and virtual working to reduce unnecessary travel and contribute to a reduction in emissions as part of our environmental targets. ✓ We will also use remote and virtual working to offer more flexibility and opportunity for rotational working between NWAS service lines and with external partners. ✓ We will digitise our fleet to improve vehicle maintenance and resource management as well as explore opportunities to improve connectivity across all geographic locations. For example, we will continue to engage with the Emergency Services Network programme which aims to install dedicated networks within Ambulance vehicles which can be used for critical communications and information sharing.
2.2 Leadership and governance	✓ We will develop clear structures through which our digital portfolio will be designed and implemented, with assurance provided both internally and externally. ✓ Our digital portfolio will be managed by a senior leadership team who represent NWAS' digital strategic priorities as part of the Executive Management Team and oversee prioritisation; delivery assurance and strategic alignment (see section 5). ✓ We will develop a Clinical Design Authority to provide clinical leadership across our digital portfolio and maintain focus on patient experience and outcomes.

[1] National Ambulance Digital Strategy (2018) NHS Digital and NHS England.

2.3 Operating model	✓ We will review our digital operating model to ensure we have sufficient capacity and capability within our digital structures to simultaneously deliver essential ICT systems management and business continuity, whilst releasing capacity for innovation and intelligent data analytics to drive future transformation. ✓ We will provide IT systems and services that will remain "fit for purpose" for a minimum period of five years from the date of implementation, and that can be scaled to suit the needs of the Trust ✓ We will establish clear roles and responsibilities within our ICT and Business Intelligence teams which will include ownership of this strategy and the implementation plan which follows. ✓ We will also clearly articulate within our operating model, the roles of data and asset owners across the organisation and educate these individuals so they fully understand and appreciate their responsibilities.
2.4 Integrated organisational approach	✓ We will adopt digital solutions to meet the aims outlined within the Urgent and Emergency Care strategy to have a single-service approach to delivery. ✓ We will ensure our internal systems are fully integrated to support a shift away from operating as three distinct service lines across 999, 111 and PTS and re-align under a single integrated urgent and emergency care model. ✓ We will review and optimise our core business platforms to ensure they provide our operational and corporate teams with the flexibility and interoperability required to deliver an integrated organisational approach. For example, we will move to a single primary triage system across our 111 and 999 call taking functions to improve integration of our workforce and manage demand more effectively. ✓ We will also ensure integration and interoperability with external partners within an Integrated Urgent Care environment to provide patients with seamless access to and navigation of the wider North West health system. For example, we will continue to work with partners to develop automated processes for referring and booking patients into alternative care pathways from an integrated Clinical Assessment Service (CAS).
2.5 Digital partnerships	✓ We will develop and sustain digital partnerships to ensure strategic alignment at a national and regional level. ✓ We will work closely with the four Strategic Transformation Partnerships across the NWAS region to ensure our plans are aligned with other providers in order to achieve maximum system benefit. ✓ We will also work with colleagues across the ambulance sector i.e. the Northern Ambulance Alliance, to champion the delivery of shared ICT systems and services to support wholescale efficiencies and resilience and learn from others. ✓ We commit to ongoing collaboration with national bodies such as NHS England, NHS Digital and NHS Improvement to ensure continued alignment with national strategic drivers whilst also maximising opportunities for collaboration, learning and innovation at scale with other providers and digital partners. ✓ We will continue to work in partnership with Commissioners to ensure that we can co-design and implement digital transformation with our system and our patients in mind.

3. Secure and Joined-Up Systems

Our technological systems must be secure, resilient and effective to maintain business continuity and high quality patient care; therefore, our priority will always be to provide essential system maintenance and improvement to maintain business continuity. At the same time, we want to create the capacity within our digital structures for ongoing innovation through increased system interoperability and more intelligent data analytics.

3.1 System integration and interoperability	✓ We will ensure that NWAS' systems are integrated and interoperable, both internally and externally, meaning systems can talk to each other. ✓ We will use interoperable systems to ensure that clinicians have access to the information they need to provide the right care, in the right place at the right time. ✓ We will develop interoperable systems to achieve our strategic ambition to act as a gateway to the wider urgent and emergency care system across the North West. For example, without system interoperability, we will be unable to pass information or patient incidents between our service lines (i.e. 111 to 999) or electronically refer a patient out from our Clinical Assessment Service into alternative providers. ✓ We will continue to work collaboratively with STPs to increase interoperability with acute services, primary care, secondary care and social care pathways to improve the seamless coordination of patient care. ✓ We will also improve interoperability between our internal corporate systems to offer a single point of entry to input and collate consistent staff information and facilitate single sign-on functionality to access multiple systems through one device.
3.2 Privacy and cyber security	✓ We will continue to adopt the best cyber security standards and adhere to mandated frameworks around privacy and data sharing in order to maintain public trust in how we store, share and use data. ✓ We will develop and implement a programme of work which aims to continuously improve the levels of protection to cyber threats. ✓ We will ensure our systems and data infrastructure is safe and secure in order to protect our patients, staff, business continuity and resilience. ✓ We will proactively renew and update the software and networks which support our systems to create a secure digital environment.
3.3 'Cloud' and 'Edge' storage	✓ We will explore opportunities for the appropriate use of cloud hosting and data storage. ✓ Where appropriate, we will use cloud services to store data and patient information safely and securely and reduce risk of data accessibility being affected by local hardware failure ✓ We will ensure that when procuring or reviewing our digital services that the benefits of cloud hosting and storage are included within the business case process. ✓ We will adhere to national guidance to ensure any uses of cloud solutions are safe, secure and effectively managed.
3.4 Open standards	✓ We will comply with national open standards for integration and communication to allow our systems to become interoperable and talk to

	other systems. ✓ We will design our systems to enable reliable data sharing across care settings and organisations. ✓ When procuring new systems, or reviewing our current technological infrastructure, we will ensure that we invest in the best value for money technological solutions which comply with open standards and enable us to connect with the wider healthcare system.
3.5 Core business platforms	✓ We will ensure that our core business platforms are secure, resilient and fit for purpose to support our staff to do their jobs effectively. ✓ We will continuously review our core business platforms to identify opportunities for improvement and efficiencies, especially for those systems approaching 'end of life'. ✓ We will replace our current telephony systems with a fully unified communication platform within the life of this strategy. ✓ We will remove all clinical paper records by implementing an electronic patient record which will deliver a paper-free patient experience by 2024. ✓ We will review and optimise our core operational platforms to enable integration and resilience across service lines and with external partners. For example, we will undertake a full review of the current CAD platform used within 999 alongside the patient information platforms used within 111 and PTS and scope a new optimum system configuration to deliver Integrated Urgent and Emergency Care. ✓ We will optimise our core clinical platforms to provide high quality, patient-centred care which is seamlessly joined up internally and externally. For example, we will develop and implement a single electronic secondary triage system within our contact centres and by staff on the road. ✓ We will develop a core patient information platform to provide a single source of patient data to support clinical decision making in our contact centres and on the road whilst also providing spine look-up functionality allowing us to obtain patient NHS numbers at scene. ✓ We will develop a core platform for workforce management which is fully integrated with other corporate systems to enable seamless management of staff through a master staff index.
3.6 Proactive risk and renewal	✓ We will take a proactive approach to internal system management and renewal; working closely with suppliers to clearly outline system requirements and support expectations. ✓ We will maintain robust digital roadmaps to understand when systems are coming towards 'end of life' whereby either software, system or network support will cease and follow the appropriate steps to review associated risks and implement mitigating actions to address these. ✓ We will ensure that financial investment in replacement systems and services is aligned to the wider business objectives of the Trust, and that where appropriate, cost avoidance is realised through investment in alternative technologies. ✓ We will ensure that our operational model supports ongoing system management and proactive risk and renewal to reduce unplanned critical system downtime and support business continuity.

4. Smarter Decisions

NWAS holds a unique position 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.

We must 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.

4.1 Better data	✓ We will ensure that the data we capture, share and consume is high-quality, validated and stored within a central warehouse to provide a single source of truth. ✓ We will gather high quality data from a range of internal and external systems to inform real-time decision making and retrospective analysis. ✓ We will adhere to robust information governance standards as a means of providing assurance that all information, particularly person-identifiable information, is managed securely and appropriately in accordance with relevant legislation.
4.2 Better access	✓ We will ensure that our staff, and where appropriate our patients and partners, will be able to appropriately access and gain insight from the data we hold. ✓ We will continue to develop and implement a Patient Information Portal which will allow clinicians, in control functions and on the frontline, to access relevant patient information to support decision making and patient journey management. ✓ We will introduce an Electronic Patient Record that will provide NHS Spine look-up functionality which will increase utilisation of NHS numbers. ✓ We will also develop our self-service functionality to enable staff to generate automated reports and dashboards within a self-service portal. ✓ We will present data through clear, visual outputs which are user-friendly and offer opportunities for intelligent interactivity and drill-down functionality. ✓ We will increase the automation of data extraction to release capacity within our Business Intelligence function for more advanced analytics to inform service delivery and digital innovation across the organisation. ✓ We will ensure that all workforce information will be accessible through a single staff index enabling opportunities to use data to support workforce management, including HR, training and staff rostering.
4.3 Better insight	✓ We will develop an intelligent learning system within NWAS which proactively sources data and translates this into information which can

	be used to inform decision making and innovation. ✓ We will enhance our use of advanced analytics to gather insight from high quality data to support integrated urgent and emergency care, including better prevention and management 'before the call'. ✓ Demand management: we will analyse data captured from our interactions with our patients to gain insight into demand patterns and enable proactive resource management. ✓ Performance management: we will use data to measure performance against statutory measures (i.e. ARP) as well as the quality of care we provide. ✓ Patient communication: we will use historic data and digital communication channels to target public health communication to promote preventative self-care for example we will work closely with the Patient and Public Panel to drive intelligence-based improvements. ✓ Clinical decision-making: we will improve use of patient outcome data to inform staff training and development and improve competence and confidence in decision making. ✓ Master navigation: We will use data to strengthen our position as the master navigator of urgent and emergency care in the North West in order to effectively signpost and refer patients to the most appropriate care pathways for their needs. ✓ System-wide improvement: we will use data to continuously improve the safety and effectiveness of our delivery models.
4.4 Better collaboration	✓ We will bring together multi-disciplinary partners to contextualise data and identify opportunities for improvement. ✓ We will use data to proactively test hypotheses to drive insight, solve problems and implement changes in working practice. ✓ We will foster collaboration between our Business Intelligence teams and staff across the organisation to drive innovation using data to develop insight, test hypotheses and implement change. ✓ We will work in collaboration with partners to share and consume data from integrated sources to co-create and transform service delivery across the system. ✓ We will use data to inform opportunities for research and development in partnership with digital and innovation partners.
4.5 Better Operating Procedures	✓ We will improve our operating procedures to encode findings from data analytics in practice. ✓ We will establish data owners who will be responsible for using data to inform decision making and to take improvement action. ✓ We will also work with data owners to establish guidelines and responsibilities for the management of data quality. ✓ We will ensure that the results and intelligence gained from data analytics is used to improve clinical and corporate practice which in turn, will improve patient care and operational performance.

5. Digital Pioneers

Our ultimate aim is to create a culture of continuous improvement and innovation which supports the delivery of our strategic ambitions outlined within the Right Care and UEC strategies. We therefore see digital, business intelligence and innovation as wholly interdependent. Embedding digital capabilities and culture alongside robust technological solutions and intelligent data analysis should enable us to prioritise vital work on 'getting the basics right' whilst at the same time, continuing to move in pursuit of partnership working to drive innovation and digital transformation.

We aim to become leading pioneers across the Ambulance sector at preventing harm from avoidable deterioration and will develop, test and implement digital solutions which will help us to achieve this ambition. We will also develop innovation partnerships with academic and commercial organisations to drive innovation at pace and scale across the North West whilst also exploring opportunities for funding, resource and learning. Our approach to innovation at NWAS will be agile and fast-paced, putting the needs of our staff and patients first and using their ideas to identify opportunities to challenge the status quo, and adopt digital solutions to radically improve outcomes and experience.

5.1 Preventing harm from deterioration	✓ We will work closely with partners across integrated urgent and emergency care settings to target admission avoidance and support safe care closer to home. ✓ We will use ongoing research and development to test the use of digital solutions to provide enhanced physiological monitoring to detect deterioration in known patients, taking action to intervene at the earliest opportunity. ✓ We will also utilise unified communication channels within our contact centres to analyse data from wearable technology and proactively contact patients for preventative care. For example, we will explore utilisation of text messaging functionality and tele-health appointments. ✓ We will use intelligence to make accurate predictions around health prevalence using demographic analysis to identify areas of health deprivation to identify at-risk patients or population groups before they reach crisis point and proactively manage their care. ✓ We will also drive innovation across our Patient Transport Services by testing sensor technology assessments and monitoring for the frail and elderly to identify at-risk patients before they require an emergency response.
5.2 Innovation partnerships	✓ We will continue to work collaboratively with Ambulance Trusts across the North West to develop innovative cross-organisational initiatives which will improve quality, performance and resilience. ✓ We will develop a more proactive approach to collaborative working with other regional and national partners to maximise opportunities for system-wide innovation and change and access to resource, funding and support. ✓ We will establish innovation partnerships with academia to harness the knowledge required to drive innovation whilst also seeking opportunities to collaborate and learn from organisations that have previously piloted or implemented digital solutions to complex

	problems. ✓ We will utilise the knowledge and experience of commercial organisations that have developed digital solutions and identify opportunities for external funding and investment to support innovation. ✓ We will work closely with STP partners and other providers to identify innovation opportunities which will have system-wide impact.
5.3 Cultivating innovation	✓ We will harness innovation by developing the people, processes and digital infrastructure required to surface and share ideas for innovation in a structured way. ✓ We will harvest bottom up idea generation using an agile approach to test ideas at pace (see section 1.6). ✓ We will create an innovation pipeline where ideas can be prioritised and incorporated into innovation cycles. ✓ We will establish clear structures for ongoing horizon scanning and to identify opportunities for business or commercial development. ✓ We will explore further opportunities to join national pilots or partner with organisations such as Global Digital Exemplars to become early adopters. For example, within the first year of this pilot we will join the NHS Identity pilot to develop a national approach to two-factor authentication and replace the need for Smartcards.
5.4 Rapid deployment of innovation	✓ We will ensure our innovation roadmap is aligned with strategic ambitions to improve patient care and deliver a more integrated approach to urgent and emergency care. ✓ We will review our digital operational model to include innovation architecture which supports continuous rapid identification and prioritisation of opportunities, swift delivery of solutions and measurement of organisational impact. ✓ We will develop an innovation pipeline which provides a transparent process for prioritising and piloting innovative ideas and rolling out successful innovations into business as usual. ✓ We will also develop a blueprint through which we can share innovation and learning both internally across service delivery functions, and externally with digital partners to improve care across the system.

5. Strategy Implementation

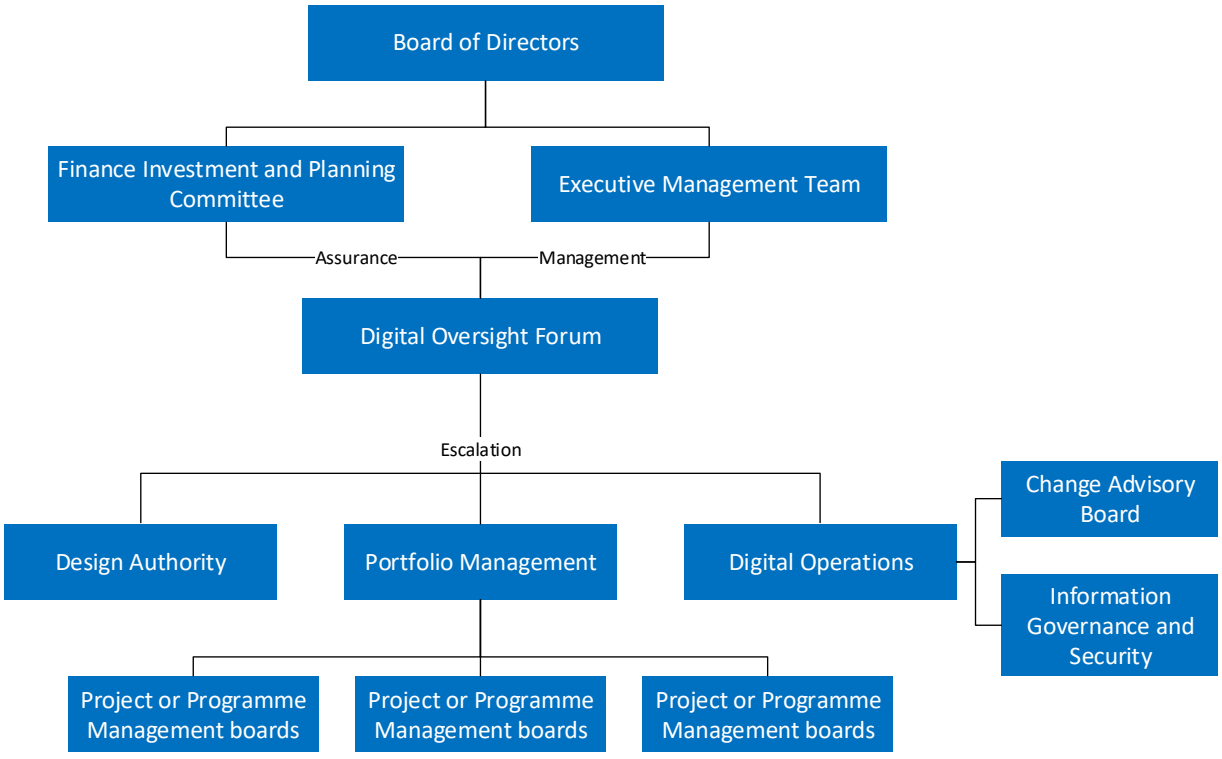
How will we approach delivery?

We recognise that the digital vision we have outlined in this strategy is ambitious and achievement of our goals over the next five years we will depend upon significant investment into getting the basics right, whilst prioritising future initiatives to drive digital transformation at pace and scale. The commitments outlined under each of our strategic intentions are subject to appropriate finance and resource. It is essential that as we move forward in pursuit of our strategic ambitions, we also remain focussed on the stabilisation and improvement of our existing technological foundations. These foundational systems will provide the infrastructure upon which future transformation can be developed whilst also maintaining resilience and business continuity.

Therefore, following approval of this strategy, a detailed implementation plan will be developed to outline how our digital portfolio will be co-ordinated and delivered to ensure we can effectively balance the Trust's portfolio of activity and prioritise future projects. This implementation plan will be informed by NWAS' integrated business plan (IBP) to ensure the appropriate balance of resource, capacity, finances and capability to deliver a coherent portfolio of work across the organisation which aligns to the delivery of our overarching strategic aims. We will also develop a robust communication and engagement plan which will ensure our objectives and progress are shared across the organisation and with partners.

How will we oversee delivery?

The governance structure below provides a proposal for how the implementation of our strategic intentions will be delivered; Appendix B provides details on the proposed function and outputs of each group.



This governance structure aims to create a system with delegated oversight and ownership over our strategic aims and implementation plan. It is essential that we create a structure which enables engagement and involvement across all operational and corporate service lines as well as a process for the flow of information and assurance, including escalation of risks.

Within the first year of this strategy, we will further develop and implement our governance structure, taking a lean approach when developing terms of reference, accountable owners, deliverables and metrics so as not to add un-necessary layers of governance to decision making which may delay progress.

What is our roadmap for implementation?

Our roadmap for implementation is phased based on short, medium and long-term deliverables as outlined below and includes those projects which have been committed to within the first year of this strategy, as well as work streams which require further scoping.

Short term
Projects committed or commenced
(0-1 Years)

Solving everyday problems
- Getac device deployment

Our Digital Journey
- Electronic patient record
- Electronic secondary triage (e-TS)
- Trust internet/intranet enhancement
- Adastra Phase 2/APAS automation

Secure and joined up systems
- PTS and 999 CAD server replacement
- Patient Information Portal/ CQUIN
- Unified Communications programme
- Risk and renewal roadmap
- Estuary point migration

Smarter decisions
- Data warehouse project
- Lightfoot

Digital Pioneers
- Developing digital partnerships

Medium Term
Projects scoped in the Integrated Business Plan
(0-3 Years)

Solving everyday problems
- Customer experience
- ESMCP Mobile Data Solution

Our Digital Journey
- EPR rollout
- e-TS rollout
- Master Staff Index
- LHCREs

Secure and joined up systems
- Single primary triage
- Aligned platforms/CAD
- System resilience and business continuity
- Patient Information Portal rollout

Smarter decisions
- Medicine Management
- Power BI
- Demographic analysis

Digital Pioneers
- Physiological monitoring

Long Term
Horizon Scanning
(0-5 Years)

We will continue to review our digital road map and our risk and renewal roadmap to look for opportunities to innovate and provide new digital solutions.

This roadmap is intended to provide the basis for a more detailed implementation plan which will be developed following a process of collaborative prioritisation to ensure alignment with NWAS' strategic ambitions and operational planning.

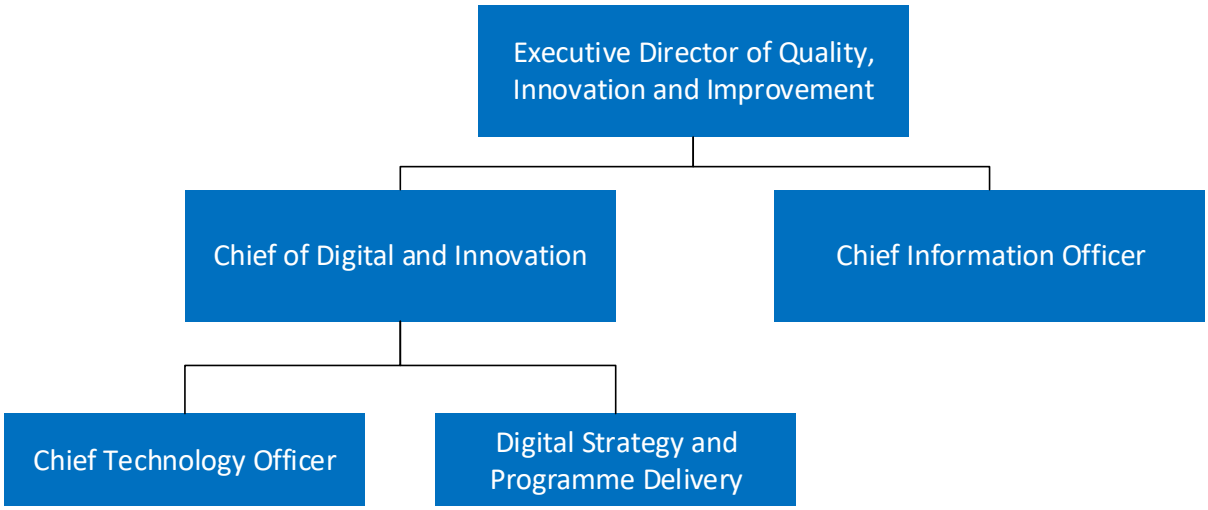
A supporting risk and renewal roadmap will also be developed which will be used to proactively identify systems which are approaching 'end of life' and take appropriate action to review, renew or replace as required.

Within the first year of this strategy (2019/20) we have identified a number of strategic priorities which have been incorporated into the integrated business planning process. Appendix C demonstrates at a high level, the work-streams which will be developed as a priority within year one alongside the programmes of work which have already commenced with further detail provided as part of the implementation plan.

Digital leadership structure

In order to delivery high quality, effective digital services we will review our operating model to ensure we have sufficient capacity, capability and leadership within our digital structures to deliver our strategic ambitions whilst also maintaining essential ICT systems management and business continuity.

We have reviewed the digital leadership requirements within NWAS and have developed the following high-level structure which will be implemented as a priority within the first year of this strategy:



This leadership team will be expected to work collaboratively with digital partners, both internally and externally, to ensure our digital services are fully integrated across all NWAS service lines and with partners across the wider system.

As a further priority within year one, we will undertake a full review of the roles and responsibilities across our ICT and Business Intelligence functions and take appropriate action to ensure all aspects of our strategic implementation plan are adequately resourced and structured.

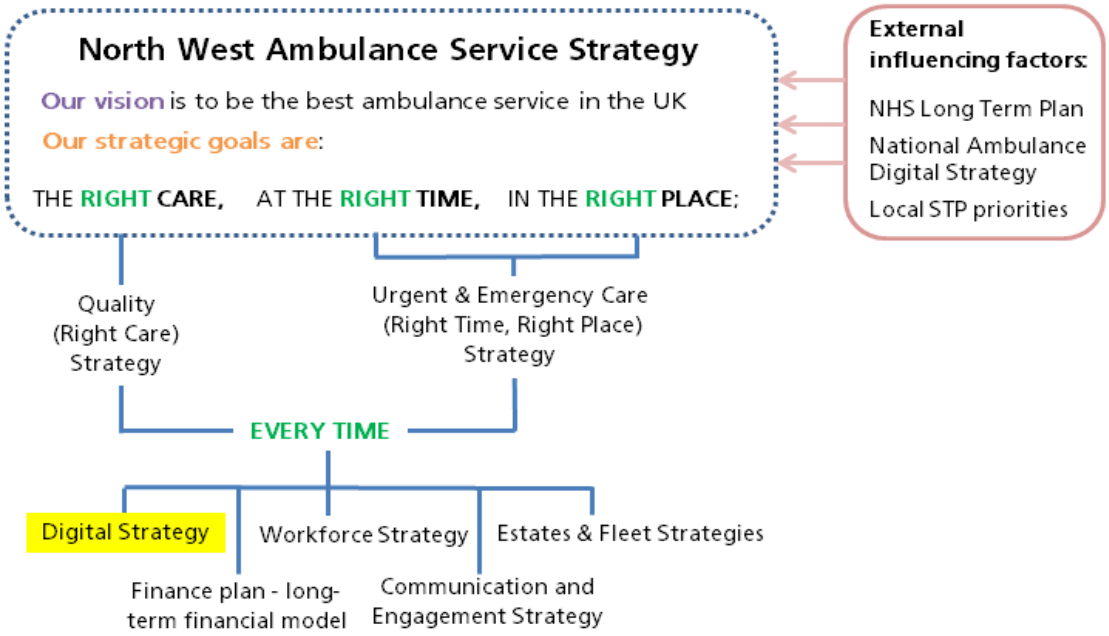
How will we measure improvement?

We have identified a number of core metrics which will be used to measure improvement over the next five years. Further work is required within 2019/20 to collate baseline metrics and plot improvement trajectories over the next five years:

		How much by when?					
	Goal	**Baseline**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**
Solving everyday problems	% of staff satisfied with digital services.	Collate baseline					95%
	% of patients satisfied with digital services.	Collate baseline					95%
Our digital journey	% of staff productively using digital systems.	Collate baseline					
	Number of digital partners established linked to delivering benefits.	Collate baseline					
Secure and joined up systems	Annual cyber security assessment shows no critical threats.						
	Reduction in unplanned down time.	Collate baseline					
	% of clinically relevant patient records accessed by Clinicians at scene and in contact centres.	0%	10%	30%	50%	70%	95%
Smarter decisions	Number of datasets in data warehouse.	20%	30%	45%	60%	75%	95%
	Number of unique logins to data warehouse.	0	100	250	500	800	1000
	10 hypothesis that use data to drive insight and changes ways of working.	0	10	20	30	40	50
Digital Pioneers	Number of patients with remote monitoring.	0					
	£ investment received to deliver innovative solutions	Collate baseline					

(Table currently under development; for completion in Q1 2019/2020)

Appendix A- NWAS strategy portfolio



Appendix B- Governance Structure

Forum	Purpose
Trust Board	To support and oversee the Digital Strategy implementation plans; providing overarching investment decisions which balance improvements in core business platforms with ongoing innovation.
Finance, Investment and Planning Committee	To take assurance from the Digital Oversight Forum regarding delivery of Digital Strategy implementation plan and take decisions, based on submission of appropriate business cases, around investment in digital programmes. To ensure appropriate management of digital resource including staff, system management and funding. To support partnership opportunities to access investment both internally and externally.
Executive Management Team	To provide senior management support and oversight to the Digital strategy implementation plan; ensuring alignment of strategic intentions with wider operational and corporate priorities. To act as a point of escalation for emerging issues and risks and support mitigation actions.
Digital Oversight Forum	To act with delegated authority to manage the Digital Strategy implementation plan on behalf of Trust Board, FIP and EMT. To oversee the implementation of the digital services required to achieve strategic ambitions. To accept accountability for: 1) Ongoing development and delivery of digital services (including people, systems, training and culture) and drive NWAS' strategic direction and integrated planning from a digital perspective; 2) Digital innovation portfolio and delivery roadmap, acting as point of escalation for any operational or programme risks and issues; 3) Operational delivery of digital services, including system management, risk and renewal and the roadmap for improvement.
Design Authority	To lead on the design of digital and data services including alignment with strategic priorities and technical design of digital solutions. To ensure interoperability and integration between NWAS systems and manage the flow of information and data. To sign off all technical designs and system specifications; ensuring business readiness and strategic fit. To lead on horizon scanning to identify opportunities for business development and innovation.
Portfolio Management	To lead on the delivery of all digital projects and programmes within the implementation plan. To oversee overall planning and investment in digital services and collate and maintain the roadmap for delivery. To provide delegated responsibility for digital projects including resource, delivery timelines, business change, operational impact, risk and mitigations. To report progress of project and programmes to the DOF including project status and exceptions (i.e. deviations from tolerances, risks, quality assurance etc.) To set the standards through which project will be managed (i.e. PMO framework, agile methodologies).
Digital Operations	To lead on operational delivery of digital services across NWAS including; proactive management of risk and renewal roadmap, capacity and planning, digital system capability and functionality, skills development and training, forward planning of work and modelling impact to business continuity, management of security (cyber and information) and information governance, disaster recovery planning and critical systems maintenance.

Appendix C – 2019/2020 plan on a page

Strategy Implementation

Planning and milestones

- **Implementation plan** – We will create a full implementation plan to outline how NWAS intends to deliver the strategy over the next five years. The plan will be completed by the end of Q1/Q2 and will include a schedule for completion of project initiation documents, project plans, risk register, full benefits realisation and milestones as well as meetings and board assurance. We will develop a supporting communication and engagement plan which will ensure our objectives and progress is shared across the organisation and with partners.
- **Road Map –** Alongside this a full roadmap will be completed for 2019/20, clearly outlining all of the programmes of work that have been committed to or are being scoped in 2019/20.
- **Governance structures –** We will develop and implement a robust governance structure to oversee implementation.

Operational model

- **ICT team** – We will undertake a full review of the ICT structure to ensure the team is resourced adequately to "keep the lights on" as well as deliver all of the innovative programmes outlined in the Digital strategy.
- **Business Intelligence (BI) –** We will undertake a full review of the BI team to ensure they have the capacity to deliver the key drivers around smarter decisions.
- **Realign structures to enable innovation –** The development of an innovation framework will mean all functions in the organisation will need to change their working practices. We will need to ensure this is properly considered and resourced to cultivate innovation and also ensure we can rapidly deploy innovative ideas.
- **Patient feedback to deliver change –** We recognise that to provide excellent patient care we need to provide a forum for patients to contribute innovative ideas and a framework for us to action them. We are establishing a Public Patient Panel to allow this process to take place.

Secure and joined-up systems

- **Risk and renewal** – We will develop and continually review a risk and renewal roadmap to clearly identify which systems are coming to end of life. This will mean that all upgrades are completed within the lifecycle of the product/service and ensure we are able to identify opportunities for improvement and efficiency.
- **Cyber security –** We will continue to adopt the most up to date cyber security standards through the scoping and implementation of a cyber security programme. The full programme will be outlined in the implementation plan and will deliver key milestones outlined in the NWAS cyber security maturity assessment.
- **System design –** Within 2019/20 we will review all of our core business platforms and scope out developments that can be undertaken to effectively align our systems in line with the U&EC strategy. We will use system design principles to ensure all systems are fit for purpose and are able to integrate and be interoperable.

Getting the basics right

We will establish a getting the basics right programme that will include the following deliverables:

- **Basic equipment** – ensure all staff have the right equipment and training required for their role from day one in the organisation..
- **Right estate–** ensure that all estates within NWAS have the right equipment and technology.
- **Connectivity –** ensure Wi-Fi connectivity across the whole of the North West where possible.
- **Digitising vehicles –** continue to invest in the digitisation of NWAS vehicles, through the roll out of GeTacs and the scoping of other initiatives.

This programme of works will be fully scoped out within the implementation plan. This will include full benefits realisation, milestones and a roadmap for development.

Programmes of Work

ePR

- **Strategic fit**

The programme will enhance our digital journey by replacing our paper based patient report form with a digital process. ePR will provide Clinicians with a wealth of relevant data and support NWAS commitment to become paperless by 2024. EPR will provide us with high quality data we currently don't have access to.

Our digital journey/Smarter decision → Digital culture; Better data

- **Outline of Programme**

The programme is currently underway and will run throughout 2019/20. The key deliverables from the programme include the development of an electronic patient report form that is interoperable with the NWAS CAD and the NHS spine. The ePR will also be able to send post event messages to the patients GP Key milestones, project plans and governance structures have been developed to ensure the programme is successful.

Unified comms

- **Strategic fit**

The programme will allow us to enhance our telephony by developing a unified communications platform that will be fit for purpose of the lifecycle of this Digital Strategy.

Secure and joined up systems; Core business platforms

- **Outline of Programme**

The programme will run until Q3 2020/21. The key deliverables from the programme include the procurement of a new telephony system, wallboards across all services, introduction of SIP technology and video conference capability. Key milestones project plans and assurance structures have been developed.

Data Consumption

- **Strategic fit**

The programme will increase interoperability with acute services, primary care, secondary care and social care through the sharing of patient record. This information will be viewed through the patient information portal, a secure core business platform to support clinical decision making.

Secure and joined up systems → System integration and interoperability; Core business platforms

- **Outline of Programme**

The programme will run for 2019/20 in line with CQUIN. The key deliverables from the programme include developing a patient information portal that has access to the shared care records in the North West and can be viewed by Clinicians in a face to face environment. Key milestones have been developed.

eTS

- **Strategic fit**

The programme will enhance our digital journey by replacing our paper based triage process with a digital process. eTS will allow direct integration with ePR and support NWAS commitment to become paperless by 2024. ETS will provide us with high quality data we currently don't have access to.

Our digital journey/Smarter decision → Digital culture; Better data

- **Outline of Programme**

The programme will run throughout 2019/20 and is interdependent with ePR. Key milestones have been completed and timescales are being scoped in line with the ePR programme.

Developing innovation framework

In 2019/20 we will commit to developing an innovation framework that will harness innovation by developing the people, processes and digital infrastructure required to surface and share ideas for innovation in a structured way. Through a dedicated team we will scope ideas to develop bottom up idea generation as well as large scale organisational innovation initiatives.

Developing R&D relationships

In January 2019 we commenced a piece of work to establish a research community, working with existing interested parties from Manchester Metropolitan University and Salford University. We will continue to work with them to identify opportunities and scope innovative solutions, whilst also exploring further opportunities with Universities and other leading institutions across the NWAS landscape and beyond.

Appendix D- Financial Implications (Identified to date)

	CAPITAL					REVENUE				
	2019/20 £m	2020/21 £m	2021/22 £m	2022/23 £m	2023/24 £m	2019/20 £M	2020/21 £m	2021/22 £m	2022/23 £m	2023/24 £m
EPR	N	N	N	N	N	1.162	0.403	0.394	0.236	0.236
Unified Communications Programme	3.085	Y (TBC)	N	N	N	0.200	0.200	0.200	0.200	0.200
Data Consumption	Y (TBC)	N	N	N	N	CQUIN	N	N	N	N
Electronic Triage Solution	0.300	Y (TBC)	N	N	N	N	N	N	N	N
Aiwave Replacement (ESMCP)	0.264	N	N	N	N	Y	Y	Y	Y	Y
IMT other Projects	1.977	1.000	1.000	1.000	1.000	Y	Y	Y	Y	Y

Business Cases approved for EPR and Unified Communications Programme, awaiting final agreement of 2019/20 CDEL from NHSI
All investments will require separate business cases for approval

Appendix E- Glossary of Terms

The glossary below should be used to provide definitions of key terms used within this strategy and supporting implementation plan documentation.

Term	Description
Access	The ability to utilise IT systems or view/edit data on IT systems
Access Control	An ACL is a table that tells a computer operating system which access rights each user has to a particular system object, such as a file directory or individual file. Each object has a security attribute that identifies its access control list.
Auditing	An examination of the management controls within an Information technology (IT) infrastructure. The evaluation of obtained evidence determines if the information systems are safeguarding assets, maintaining data integrity, and operating effectively to achieve the organisation's goals or objectives.
Authentication	The process of identifying an individual, usually based on a username and password. This is defined as single factor authentication. If another factor, such as a token or PIN, is required in addition to the first one this is defined as 2 factor authentication.
Authorisation	The process of granting or denying a user access to network resources once the user has been authenticated through the username and password.
CAD	Computer Aided Dispatch is the system used to dispatch Ambulances.
Cloud	A network of remote servers hosted on the Internet to store, manage, and process data, rather than a local server or a personal computer.
Cloud Security	A broad set of policies, technologies, and controls deployed to protect data, applications, and the associated infrastructure
Consumer	A system which consumes data using existing Open APIs.
Cyber Security	The body of technologies, processes and practices designed to protect networks, computers, programmes and data from attack, damage or unauthorised access.
Database	A structured set of data held in a computer, can be accessible in various ways
DAA	An agreement between two or more entities to allow access to data or information. Details the controls that are to be put in place to protect the data, including how the data will be used, stored, shared and disposed of.
DPA	Data Protection Act. The DPA (1998) is an act of the United Kingdom Parliament that defines the ways in which information about living people may be legally used and handled. The main intent is to protect individuals against misuse or abuse of information about them.
Encryption	The process of converting information or data into a code, especially to prevent unauthorised access.
EPR	An Electronic Patient Record is an electronic record of periodic health care of a single individual, provided mainly by one institution.
eTS	An electronic version of NWAS secondary Triage tool. Designed to provide clinicians with support in their decision making.
Firewall	A network security system that monitors and controls the incoming and outgoing network traffic based on predetermined security rules.
First of Type	The chosen recipient(s) to test the first deployment of the new capabilities.
Gateway	A hardware device that acts as a "gate" between two networks. It may be a router, firewall, server, or other device that enables traffic to flow in and out of the network
HSCI	Health and Social Care Integration. This integrates local health and social care services to improve coordination between local health and social care agencies, leading to improved experiences for people using these services.
Health and Social Care Network (HSCN)	HSCN is a Wide Area IP Network (WAN) connecting many different sites across the NHS within England & Scotland. It also connects to other networks via gateways, notably to the internet via the internet gateway
Identification	A logical entity used to identify a user on a software, system, website or within any generic IT environment. It is used within any IT enabled system to identify and distinguish between the users who access or use it. A user ID may also be termed as username or user identifier

Term	Description
Information Security	A set of strategies for managing the processes, tools and policies necessary to prevent, detect, document and counter threats to digital and non-digital information.
Internet	A network of global exchanges – including private, public, business, academic and government networks – connected by guided, wireless and fibre-optic technologies. The terms Internet and world wide web are often used interchangeably, but they are not exactly the same thing; the Internet refers to the global communication system, including hardware and infrastructure, while the web is one of the services communicated over the Internet.
MIG	The Medical Interoperability Gateway is a supplier lead interoperability solution provided by EMIS + Vision which allows third parties access to GP data.
N3	Now replaced by the Health and Social Care Network (HSCN).
Network	A group of computer systems and other computing hardware devices that are linked together through communication channels to facilitate communication and resource-sharing among a wide range of users.
NRLS	National Record Locator Service is a technical proof of concept acting as a national index to identify available records for patients and locate them across local and national care record solutions (such as SCR).
Open Source	Denotes software for which the original source code is made freely available and may be redistributed and modified.
Password (Protection)	A collection of letters/numbers/characters used in a security process that protects information accessible via computers that needs to be protected from certain users. Password protection allows only those with an authorised password to gain access to certain information.
PII	Personally Identifiable Information. Data that could potentially identify a specific individual. Any information that can be used to distinguish one person from another and can be used for de-anonymizing anonymous data can be considered PII.
Provider	An individual or an organisation that provides health care for a patient. Also a system which provides data by exposing Open APIs.
Proxy server	A server that acts as an intermediary for requests from clients seeking resources from other servers
Remote Access	The ability to access a computer from a remote location. This allows employees to work offsite, such as at home or in another location, while still having access to the office network. Remote access is usually set up using a virtual private network (VPN). Remote Access can also be known as remote login.
Security	The protection of information (digital and hardcopy), assets (physical and intangible) and personnel against internal and external, malicious and accidental threats. This protection includes detection, prevention and response to threats through the use of security policies, procedures, tools and services.
SCR (SCRa)	Summary Care Record. The SCR is intended to support patient care in urgent and emergency care settings. The SCR will store a defined set of key patient data for every patient in England except those who elect not to have one. This data will make a summary record created from information held on GP clinical systems. This summary record helps to ensure a continuity of care across a variety of care settings.
Spine	Spine is a collection of national applications, services and directories which support the health and social care sector in the exchange of information in national and local IT systems. A national, central service that underpins the NHS Care Records Service. It manages the patient's national Summary Care Records. Clinical information is held in the Personal Spine Information Service (PSIS) and demographic information is held in the Personal Demographics Service (PDS). The Spine also supports other systems and services such as the e-Referral Service and the Electronic Prescription Service.
SSO	Single Sign On. An authentication process that allows a user to access multiple applications with one set of login credentials. SSO is a common procedure in organisations, where a client accesses multiple resources connected to a local area network (LAN).
Validated NHS Number	A valid NHS Number is one that has the correct format and passes the number check digit calculation.

Term	Description
Verified NHS number	A verified NHS Number is one where the patient's identity has been cross-checked using demographic details on the Personal Demographics Service (PDS).
Virtual Private Network	A virtualised extension of a private network across a public network, such as the Internet. It enables users to send and receive data across shared or public networks as if their computing devices were directly connected to the private network. Applications running across the VPN may therefore benefit from the functionality, security, and management of the private network. A VPN allows employees to securely access an organisations intranet and other network resources while located outside the office. A VPN may also be used to securely connect geographically separated offices of an organisation, creating one cohesive network.
WAN	A network that exists over a large-scale geographical area. A WAN connects different smaller networks (LANs). This ensures that computers and users in one location can communicate with computers and users in other locations.
Wi-Fi	The standard wireless local area network (WLAN) technology for connecting computers and myriad electronic devices to each other and to the Internet. Wi-Fi is the wireless version of a wired network. Data is passed via radio waves broadcast to/from a Wi-Fi enabled devices that make up the WLAN (router, laptop, desktop, tablet, mobile phone, printer, etc.).
WPA	Wi-Fi Protected Access