North East and North Cumbria Integrated Care System

Digital Strategy - Implementing the Care of the Future

2019 - 2024
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### Change Record

<table>
<thead>
<tr>
<th>Date</th>
<th>Author</th>
<th>Version</th>
<th>Summary of Changes</th>
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<tr>
<td>14/06/2019</td>
<td></td>
<td>V0.13</td>
<td>Final Draft Approved by Health Strategy Group (HSG)</td>
</tr>
<tr>
<td>20/06/2019</td>
<td></td>
<td>V1.0</td>
<td>Published version</td>
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Foreword

Digital technology has changed our lives almost beyond recognition in the last twenty years, yet, whilst we frequently manage our financial affairs, retail, leisure time and even our relationships online, we have yet to fully reap the benefits digital technology can bring to the health and social care system. Digital technology has the potential to not only address many of the issues in the health and care system for the North East and North Cumbria, it can also be used to help prevent ill health in the first place and potentially help to identify at risk people/patients, before they become ill.

We recognise the tremendous benefits digital technology can bring – when implemented well. Often the barriers to good implementation are around processes which don’t work for the people involved. We must balance processes, people and the technology for the best possible outcomes for the people of our region. We will develop digital enabled heath and care services around the needs of our patients, the public as well as the health and care practitioners delivering the services. This approach will enable seamless interactions with the health and care system in the North East and North Cumbria.

Over recent years we have been laying down the solid foundations on which to build these digital services – to help us meet both the technical challenge of linking complex systems together, putting in the right infrastructure and standards. One of the greatest challenges to digital transformation is facilitating the right culture for information sharing and new digital services to thrive. By working collaboratively across the region, we can make far greater gains than working alone within our own organisations. Particularly with digital – by working together we can better meet the needs of the population we serve.

We have a significant number of Global Digital Exemplars (GDEs), and Fast Follower organisations who are at the forefront of digitising secondary healthcare. This work is helping to elevate the digital maturity of our organisations – and to share lessons with others to bring them along in the journey to digital maturity. We are moving from a state of isolated organisations, creating their own data silo’s and processes towards a truly integrated care system. Where information from multiple sources, is digitally available at the point of care.

Initiatives such as the Great North Care Record and Health Call are providing the digital solutions to many of the inefficiencies and challenges we face. They are transforming how care can be delivered. We also realise that digital services are not accessible to all, but if we can provide them for those who can and want to use them, this can free up resources for those who can’t or don’t use digital technology. Our region is working collaboratively – to deliver seamless and cost-effective care to achieve the best health outcomes for the 3.6million people of the North East and North Cumbria.

Alan Foster MBE - ICS Lead Executive Officer

Dr Mark Dornan - SRO Digital Care Programme

Dr Graham Evans - Chief Digital Officer for the ICS
1. Strategic rationale

This section sets out:

- The national context for this (including the NHS Long Term Plan)
- The regional work to develop the North East and North Cumbria Integrated Care System Digital Care Programmes
- Specific challenges facing the local system

1.1 National context

In January 2019 NHS England published the NHS Long Term Plan\(^1\) that set out how the NHS should look to invest the five year budget settlement to deliver the best results for patients and taxpayers. The NHS in England has been asked to:

- Develop a new service model for the 21st Century that boosts 'out-of-hospital' care, and finally dissolve the historic divide between primary care and community health and care services. It will provide a new health and care offer of urgent community response and recovery support whilst establishing primary care networks of local GP practices, social care provision and community teams. It will guarantee support to people living in care homes and also support people to age well.
- Reduce pressure on emergency hospital services by improving pre-hospital urgent care, reforming hospital emergency care and cutting delays in patients being able to go home.
- Enable people to have more control over their own health and more personalised care when they need it.
- Develop digitally-enabled primary and outpatient care, which will become mainstream across the NHS.
- Ensure that NHS organisations will increasingly focus on population health – moving to Integrated Care Systems everywhere.

As part of the NHS Long Term Plan we are going to be using new technologies and treatments to improve patient care and save more lives. We are seeing an Artificial Intelligence (AI) revolution that will be a big part of our future over the next five years, with technologies that can cut the time patients wait for scan results and ease the burden on hard working staff.

From April 2020 there are proposals to change the way care is funded, so that, NHS organisations who invest in this world-leading technology will be properly rewarded for doing so. As a result, there has been a global 'call for evidence' for NHS staff and technology innovators to come forward with their best ideas for how we should adjust our financial frameworks to best incentivise the use of safe and evidence-based AI and machine learning technologies across the NHS.

The NHS is carrying out more diagnostic tests than ever before as part of efforts to tackle the major killers, testing of AI and machine learning technology has already demonstrated its potential to ease the burden on staff and free them up for other work. As set out in the Long Term Plan, the NHS is aiming to become the first national health system in the world to digitise its outpatients system through the use of video and online consultations and make use of AI and machine learning technologies to help clinicians interpret scans part of the NHS routine.

\(^1\) [https://www.longtermplan.nhs.uk/publication/nhs-long-term-plan/](https://www.longtermplan.nhs.uk/publication/nhs-long-term-plan/)
A newly established organisation NHSX will help shape the strategic thinking related to digital systems and services, aiming to create the most advanced health and care service in the world to diagnose diseases earlier, free up staff time and empower patients to take greater control of their own healthcare. Currently, much NHS technology relies on systems designed for a pre-internet age. Patients are not getting the care they need because their data does not follow them round the system.

Change has been slow because responsibility for digital, data and tech has been split across multiple agencies, teams and organisations. NHSX will change this by bringing together all the levers of policy, implementation and change for the first time. NHSX will work with the NHS and the wider digital economy to build world-class digital services.

These will improve care for patients and enable medical research. The organisation will use experts in technology, digital, data and cyber security to deliver on the Health Secretary’s tech vision and the Long Term Plan for the NHS.

NHSX’s responsibilities will include:

- setting national policy and developing best practice for NHS technology, digital and data - including data-sharing and transparency.
- setting standards – developing, agreeing and mandating clear standards for the use of technology in the NHS.
- ensuring that NHS systems can talk to each other across the health and care system.
- helping to improve clinical care by delivering agile, user-focused projects.
- supporting the use of new technologies by the NHS, both by working with industry and via its own prototyping and development capability.
- ensuring that common technologies and services, including the NHS App, are designed so that trusts and surgeries don’t have to reinvent the wheel each time.
- making sure that all source code is open by default so that anyone who wants to write code for the NHS can see what we need.
- reforming procurement – helping the NHS buy the right technology through the application of technology standards, streamlined spend controls and new procurement frameworks that support our standards.
- setting national strategy and mandating cyber security standards, so that NHS and social care systems have security designed in from the start.
- championing and developing digital training, skills and culture so our staff are digital-ready.
- delivering an efficient process for technology spend, domain name management and website security.
1.2 Regional context

One of the central ambitions of the NHS Long Term Plan is to introduce “a pragmatic and practical way of delivering the ‘triple integration’ of primary and specialist care, physical and mental health services, and health with social care” through the establishment of Integrated Care Systems (ICS). The aim of an ICS is to bring together local organisations to redesign care and improve population health, creating shared leadership and action. The stated goal is that they will cover the whole country by April 2021.

Based on the initial Sustainability and Transformation Partnerships (STP) footprints that were identified as part of the implementation plan for the NHS Five Year Forward View\(^2\), NHS organisations (in discussions with their partners) across the North East and North Cumbria are now part of the developing ICS Programme. The ICS for the North East and North Cumbria is based on the common challenges in ill health, health inequalities and competition for scarce resources (both financial and skilled workforce) and is working towards being a formally recognised ICS in 2019/20.

In order to ensure that service challenges are addressed at the right level and with the right partners, the North East and North Cumbria ICS is underpinned by four Integrated Care Partnerships (ICPs) which represent natural patient and financial flows and clinical working arrangements. Whilst the ICS and ICP’s are not formal organisations as such, they are about us enabling a culture where local organisations collaborate to solve common issues. By pooling resources and working towards a shared vision, we can improve outcomes and increase wellbeing of our local populations.

Our ambition is to become the best in England and Europe for health and care outcomes, we will achieve this by improving healthy life expectancy where NENC is consistently below the national average. A programme of engagement with our system leaders and frontline staff has helped us to better understand our strategic challenges and opportunities, which in turn has shaped our strategic priorities. Each of the following priorities now has dedicated CEO-level leadership and jointly resourced delivery infrastructure to drive change at system level:

To support our ambitions we will capitalise on the strengths within NENC for the benefit of the wider ICS. These include the place-based plans and governance arrangements in each of our localities, and the growing momentum to develop a streamlined model of commissioning and provision; strong ICS-wide clinical networks and a world-class provider of specialised services across our ICS and beyond in Newcastle Hospitals; and strong innovation capability embodied in our Academic Health Science Network and the National Institute for Health Research (NIHR) Applied Research Collaboration.

Working together with our partners we have developed a shared vision for health and care services across NENC:

- to work with our communities and partners to tackle health inequalities and fundamentally shift health outcomes for the people of the North East and North Cumbria; and

- to ensure the sustainability, quality and effectiveness of our services by working together as an integrated system with mutual accountability for our shared challenges.

- to deliver this vision our system already has strong system leadership and governance at three levels of scale:

- for neighbourhood and place-based activity, we will continue to work through our Local Authority chaired Health and Wellbeing Boards, CCGs and Foundation Trusts, as well as our emerging Primary Care Networks. A number of the place-based systems have

emerging integrated arrangements ensuring a single coherent message from Place to ICS.

- to drive the clinical and care networking between neighbouring Trusts and local authorities that will secure service sustainability, and as a basis for closer joint working between CCGs, we have developed four ‘Integrated Care Partnerships’ (ICPs) as the key delivery vehicles for our ICS ambitions. Already these are developing their own strong identities building on clinical networks and management relationships that have developed over years.

- at the strategic ICS-level we have six collectively agreed workstreams and the decision-making structures to execute them, with oversight from our ICS Management Group and Health Strategy Group, and statutory decision-making via governing bodies and boards (including our Joint CCG Committee).

A programme of engagement with our system leaders, partners and frontline staff has helped us to better understand our strategic challenges and opportunities, which in turn has shaped our strategic priorities. Each of the following now has dedicated CEO-level leadership and jointly resourced delivery infrastructure:


2. Optimising Health Services – setting clinical standards, maintaining oversight on quality and coordinating initiatives across the ICS to find sustainability solutions for our health services under the greatest pressure.

3. Digital Care – improving how we use Information & Technology Services to meet the needs of care providers, patients and the public, helping care professionals to share information and our patients to manage their health and care.

4. Workforce Transformation – building a future workforce by getting supply and education right, becoming a great place to work and then valuing and supporting leadership at all levels.

5. Mental Health - improving outcomes for people who experience poor mental health and breaking down barriers between physical and mental health services.

6. Learning Disabilities – transforming care for people with learning disabilities and autism so that more people can live closer to home, or in the community, with the right support.

Whilst this digital strategy and associated roadmap outlines our broad direction of travel and key priorities, we need to acknowledge that the health and care landscape is continually changing, and as such, we will need to reflect and iterate the strategy and associated delivery plans as time progresses.

More information relating to the NENC ICS vision, priorities and programmes can be found on the NENC Website by following link: www.nhsjoinourjourney.org.uk
Although digitally enabled transformation will cross-cut all ICS priorities, the overarching deliverables through the implementation of the digital strategy are to:

- Establish a region-wide assessment and baseline of organisational digital maturity, using an internationally recognised standard (i.e. HIMSS/EMRAM) by 03/2020.

- Continually raise the level of organisational digital maturity to achieve the NHS (and DHSC) ambition of digital services by 2024;

- This will also include the inclusion of appropriate data and Cyber security controls and regionally coordinated response processes, supported by independent assessment and formal accreditation for all NENC organisations.

- Agree a convergence and standardisation approach to both clinical and line of business systems across the ICS that will facilitate greater staff mobility and flexibility (i.e. Clinician Passport) by 12/2019.

- Delivery of a fully interoperable health and care record (GNCR) across the ICS by 03/2020.

- Enable citizen and patient access to their health and care information via an engagement platform and link to the NHS App by 04/2021.

- Deliver citizen/patient self-service and self-management capabilities through technology enabled health and care services (i.e. Health Call and Local authority assistive technologies) by 09/2019

- The implementation of digital tools and supporting digital infrastructure to enable the delivery of a Population Health Management Strategy and system across the region by 12/2019.

- Create a digitally enabled health and care system, with digitally capable staff, suitably supported through development and learning programmes, in order to enable and embrace new ways of working by 03/2021.

The NENC ICS Digital Roadmap

The above “NENC ICS Digital Roadmap” illustration can be seen in greater detail in subsequent sections of this document. The roadmap provides a high-level overview of key ‘digital deliverables’ over the life-span of this strategic journey.
Figure 1: The footprints for the four ICPs within the North East and North Cumbria ICS.

Neither the ICS nor ICPs are statutory bodies, however, the collaborative working arrangements across the common ‘footprint’ brings together local health and care leaders to support the development and delivery of improved health and care for the population. They do not replace existing statutory organisations and their associated accountabilities. Fundamental to this ambition will be the principal of “prioritisation of need”, where we need to always think;

1. Patient (Citizen)
2. System
3. Organisation

The challenges facing our health and care system include:

- Improving population health and well-being, particularly around some of our challenges with post-industrial illnesses and long-term conditions.
- Ageing population.
- Changing patterns of need in terms of people living longer, but with co-morbidities which may be more challenging to manage.
- Managing the workforce and addressing resourcing issues.
- Delivering financial and clinical sustainability within available resources.
1.3 Governance

Where it makes sense, we work either at a regional ICS level, or more locally as an ICP. For instance, the Great North Care Record and the frailty pathway programmes, are being coordinated at an ICS level, both programmes cut across the whole region and we need to take a broad view of how to manage and implement them as the solution needs to fit the whole region.

Other initiatives, such as making improvements to out of hours or GP services, or integrating with care providers (i.e. care homes) are much better managed at a local ICP, Place or Primary Care Network level, where the locality needs may differ slightly.

Our governance structure (see fig 2) supports this way of working and means that transformation is managed regionally or more locally, but that these areas work closely together. Much of the work of the digital care programme is spread across these layers of scale and governance. We have a regional GP Informatics group who oversee primary care maturity and patient online access, it is appropriate that this group of experts manages this.

![Figure 2: North East and North Cumbria Digital Care Programme alignment to the ICS governance framework](image)

It is anticipated that “ICP level” digital strategies will be developed and implemented in order to enable the delivery of locality/place level priorities. The ICP level digital strategies will both reflect and acknowledge the ICS level strategic objectives and thereby be fully aligned with the overarching ICS digital strategy.

The fundamental principles being, as a system, we should work as one (at ICS level) where it is appropriate to do so, and work at ICP level only where it is necessary and unavoidable, a key theme of ICP level delivery will be based on system convergence and standardisation where possible.
1.4 **Finance**

There are several funding streams which have enabled much of the work programmes highlighted in the digital roadmap to be mobilised. New models of care need to be provided within an agreed financial envelope, at a cost that is sustainable for the health economy. It is possible for us to reduce costs, whilst also improving models of care that are based on patient pathways using the ‘right person, right skills right time right place’ principles, working across traditional organisational boundaries.

Where it makes sense, we can and should aim to converge systems, services and resources for both clinical and line of business (administrative) functions, where appropriate, shared back-office services and use a ‘do once and share’ approach, should be our aim, in order to operate efficiently and effectively.

In general, our respective organisations are all trying to do the same things, perhaps in slightly different ways, but by working and collaborating, we can aim reduce our collective costs and make our services more efficient and effective at the same time. We need to make sure financial investments can be made in the best interests of the broader system, at both ICS and ICP levels.

The digital care programme, will be overseen by the Digital Strategy Group (DSG) and delivered via the Digital Delivery Group (DDG), will develop an investment pipeline based on the regional health and care service priorities identified, this approach will include top-down and bottom up considerations. The pipeline and associated processes will enable us to quickly respond to funding opportunities as they arise. The following diagram illustrates how this process will be aligned to the digital care programme and implemented.

![Figure 3: Digital Care Programme Investment pipeline approach](image)
Specific work programmes will be developed and implemented, following appropriate funding acquisition, due diligence and formal business case approval processes. In many cases it is expected that organisations may need to lead programmes of work on behalf of the “system” and therefore host funds and resources as a result. It is imperative that as an integrated care system, we establish formal and robust processes to ensure organisations are not disadvantaged or placed at risk as a result.

From a Capital Investment perspective, the ICS Strategic Capital Working Group (SCWG) will act as a “system conscience” to ensure capital funding is considered holistically and not in isolation within the delivery and enabling workstreams. The SCWG will develop a set of guiding principles that will be adopted by the digital care programme and implemented within its associated governance systems and governance structures.

1.4.1 Health System-led Investment
The Health System-led Investment (HSLI) funding has enabled a number of regional projects to get off the ground. We have taken a regional – or ICP-level view of what’s best for the people in our region, and where sharing infrastructure or digital tools across the region makes more sense, we are doing that. So with the regional approach to implementing new radiology systems that allow practitioners from different parts of the region to access the same medical images, without needing to be housed in the same trust – means that we can effectively flex our workforce.

HSLI funding has enabled us to channel investment at some areas where we can support mobile working, so clinicians can work smarter. Digital services can allow us to re-design services so they can better fit the needs of our population. We can hand digital tools to those who want to manage their own conditions, and then better service those who can’t or don’t have access to digital technology to interact with the service in the way they want.

A key activity of the Digital Care Programme is to manage these funds on behalf of the region, and ensure the right decisions are made to benefit people of the North East and North Cumbria.

1.4.2 Estates and Technology Transformation Fund (ETTF)
The overall purpose of the Estates and Technology Transformation Programme is to help primary care/practices establish infrastructure which enables extra capacity for appointments in hours and at evenings and weekends to meet locally determined demand. Specifically for technology the fund will support schemes that cover;

- Implementation of IT systems which support the development of primary care at scale and integrated working practices; for example to support integrated care models and record sharing.

- Technology systems which enable the delivery of a service which is paper free at the point of care; for example, through the use of integrated digital care records.

- Technology which enables the public to have better access to services; for example to enable electronic prescribing, new forms of clinical consultations, via email, webcam, telephone or clinical decision support.
In the North East and North Cumbria, the fund has been used to support additional physical infrastructure for example to enable remote working in general practice; information assets for example supporting developments by Clinical Digital Resource Collaborative (CDRC); and interoperability developments.

As and when new funding streams become available for investment in digital technology, through our established Digital governance arrangements, we will ensure the region works together to effectively prioritise those programmes of work which will bring about the most benefit.

1.4.3 Local Health and Care Record

NHS England has awarded the Great North Care Record funds to mobilise the project as part of Wave 2 of the Local Health and Care Record Exemplar (LHCRE) programme – subject to final business case approval.

It is likely that some of this funding will be invested to improve our population health management offering, the intention being to consider new tools and analytics techniques including the use of big data, artificial intelligence, machine learning and predictive analytics. This will not only improve our ability to mobilise our regional resources, but also treat our population better, and intervene earlier to improve outcomes.

The Great North Care Record is exploring further income streams to secure its long-term future and reduce the reliance on capital funding. The programme is looking to develop a subscription model over the next 18 months.

As the NENC ICS matures and the associated digital services progress, detailed financial investment plans will be developed and published as an integral part of the emerging system governance.

2 Building on our success

This section sets out some of success stories over the last few years which, in many cases have been the building blocks needed to take us to the next stage of our digital journey.

We have a fantastic track record in the North East and North Cumbria for digital innovation in health and social care. We are used to working collaboratively and we have already delivered a great many examples of digital solutions.

However, as we innovate and implement new digital systems and services, we need to ensure we provide the appropriate essential and necessary infrastructure or foundations on which to build our digital ambitions, therefore “Getting the basics right” is a must do, not an option.

Our direction of travel is to converge digital services, exploiting common and where appropriate existing systems and assets if possible, cognisant of the potential risks relating to having “all of our proverbial eggs in one basket” and any national directions including procurement rule compliance.
2.1 Cyber and data security

Once the realms of Science Fiction, data security and Cybercrime is now an everyday reality, whether we are describing data breaches, ransomware, industrial espionage, operational sabotage or purposeful reputation damage. As far back as 2016, over 80 percent of data breaches were financially motivated, fast forward to 2019 and it is evident that all business sector and markets are not safe from Cybercrime and targeted attacks.

These threats apply equally to both our domestic and working lives. On-live transactions, such as banking, shopping, social media, and our rising “digital dependency” all increase the threat potential.

As an integrated health and care system, we can consider our interconnected and interoperable services to be akin to a “supply chain”, and as such, our points of connection i.e. the inputs and outputs between points of care, create potential vulnerabilities and opportunities for both data breach and cyber threats.

Across the NENC ICS, we will expect all stakeholder organisations to take all necessary steps and precautions to protect not only their own organisational data assets and infrastructure, but also the broader “system-wide” data assets and infrastructure. This will be undertaken by following and implementing relevant national guidance and policy, participating in the NHSD CareCERT programme, ensuring we meet the demands of the Data Security and Protection Toolkit, and obtaining necessary independent accreditation such as ISO27001 and or Cyber Essentials Plus (CE+).

Since the WannaCry cyber-attack in May 2017 – there have been several NHS initiatives which have all increased our ability to withstand future attacks with the deployment of new security arrangements across the whole estate. Investing in the security of our systems is paramount so that people in our region trust that their health and care data is safe. Cyber-attacks are here to stay, “It won’t be a case of IF it happens, but WHEN it happens…”, therefore as an ICS we need to be ready.

Through the oversight of the NENC Chief Information Officer (CIO) network and the Digital Strategy Group (DSG), we will implement an appropriate regional Cyber response approach that will ensure all organisations follow an appropriate methodology that focusses equally upon People, Process and Technology.

2.2 Global Digital Exemplars

We have a significant number of Global Digital Exemplars (GDEs) and Fast Followers as part of the Provider Digitisation Programme within our region. These organisations are at the forefront of delivering world-class digital solutions, by Transforming NHS services and making them fit for the 21st century.

However, world class digital practices only work effectively for the people of our region, when all neighbouring and supporting organisations follow the same example by adopting and adapting proven “blueprinted” models rather than continually reinventing the wheel.

When our regional heath and care organisations are working together and sharing best practice, we can aim to avoid waste, maximise knowledge and resource sharing and bring all regional stakeholders along on the digital journey together, for the benefits of our patients, populations and organisations.
At the time of writing this strategic document there are strong indications that there will be a further phase of the GDE programme, however, this needs to be confirmed. If so, this will create an opportunity for expansion and broader adoption within and across the NENC ICS region, therefore we need to be primed and ready to respond to this opportunity. Summary information is available at the following;

https://www.england.nhs.uk/digitaltechnology/connecteddigitalsystems/exemplars/

GDE Foundational Infrastructure

“... the simple truth that if we don’t make it compelling for clinicians to use IT systems for their day to day work and enable them to capture accurate, timely clinical information within those systems, then most of the other opportunities within the IT strategy will be unfulfilled.”

2.3 Great North Care Record

We have implemented information sharing at scale and pace across the region with the first iteration of the Great North Care Record using the Medical Interoperability Gateway (MIG), all GPs are sharing data with out of hours, accident and emergency, mental health and ambulance services across the region. A key enabler of this, was wide-spread adoption of the Information Sharing Gateway (ISG) which was developed in Cumbria. For the first time, this meant that organisations could manage their data sharing agreements in one place and allow us to share GP records at scale and pace across the region.

This has set the social and cultural foundations required for sharing health and care data. By working through the information governance, legal and ethical issues around safe data sharing, we have laid the foundation for accessing these care records over 120,000 times every month. Saving clinician and practitioner’s time and making care safer and more efficient.

The population and professional engagement as part of the Great North Care Record programme over the last few years has installed the building blocks needed to move to the next phase of the programme. Creating Communities of Practice, networks and the teams of teams – all vital so that the right people can be brought together to move the vision of the programme to a reality.

As part of the Connected Health Cities (CHC) programme, a number of care pathway projects were funded which explored the development of a data analytics platform. For instance Durham University led a project using this platform which has been used to develop predictive analytics, based on existing sets of data already collected within the NHS and other organisations. These have helped predict demand on urgent and emergency services. They also explored the legal, ethical and social aspects of data sharing for direct care and secondary uses of data.

The feedback from our population is that most would be comfortable with sharing of their information for healthcare purposes, and that they would welcome the opportunity to define and manage their own preferences for making their data available for medical research.
In collaboration with Health Call, this has included engaging the public in designing and testing of easy ways for them to express and update their preferences for how their care data can be used to improve services and research programmes. Most significantly what has changed in recent years is the culture. We have an open and collaborative culture – where organisations are working together to share financial risks and resources to develop the digital tools required to make the system fit for the future.

An animated overview of the GNCR, has been uploaded on the NENC ICS Website: https://nhsjoinourjourney.org.uk/what-we-are-doing/priorities/digital-care/

Furthermore, it is worth noting that the CHC programme and Academic Health Science Network (AHSN) have been working closely with Local Authorities (LA’s) to develop template benefits plans for LA’s, demonstrating the strong and growing links between health and care within the ICS.

Going forward, the GNCR programme and potentially all other digital enabling transformation programmes for the NENC ICS region, may need to become focussed on agile and rapid “system delivery” and therefore may benefit by being organisation agnostic.

Ideas are currently being considered to create an independent “digital delivery” model or vehicle such as a community interest company, cooperative or extension to existing regional capabilities.

2.4 Online GP consultations

Online GP consultations are available across the region for around 600k patients. This was another example, of how working together to procure digital tools together, the system reduces its costs and has a shared base of digital solutions. The joint procurement of CCGs avoided a £12,000 procurement service change and the associated costs savings (per head of population) totalling £400,000 in year one, increasing to over £1 million in year two.

2.5 Clinical Digital Resource Collaborative (CDRC)

The CDRC provides general practices with free digital resources that work with both EMIS and TPP SystmOne. These resources are quality assured, offering for instance, data entry templates with appropriate coding. Codes are updated into SnoMed CT by the central team – no need for practices to create their own new templates. This ensures same code for same reality across the region.

The CDRC uses regional experts in their field to support, develop and maintain digital resources that practices can use free of charge. By using standardised codes across the region without restricting the clinical freedom of practitioners the CDRC’s work prevents the duplication of effort by individual organisations to achieve the same goal. Previously nearly every CCG had their own templates. Now there is one distribution system across the region and templates need only to be written once.

Our leading clinicians are well aware, that for historical reasons the data quality and labelling of data items as important, major, minor conditions etc. is not equally good across the whole system. They are urging to get this improved before such data is shared widely across the region with other organisations, like hospitals or researchers. This can be done in parallel to developing the GNCR.
2.6 Digitally enabled diagnostics

We are working on transformational projects to improve diagnostic services. For example, within pathology services, the ability for a clinician to be able to access, analyse and diagnose a pathology slide digitally from anywhere will transform the speed of delivery as well as the quality of care provided. This ambition is now becoming a reality for the region and a major part of our Digital Imaging for Pathology programme.

In addition, radiology services will soon benefit from advances in region-wide system interoperability, allowing organisational Picture Archiving and Communications Systems (PACS) and their associated Radiology Reporting Systems (RIS) to be digitally connected, thereby providing a platform and capability for securely sharing diagnostic images, reports and workflows between points of care.

This will not only improve patient services, but will also enable clinicians to work seamlessly, collaboratively and efficiently.

2.7 Health Call

By working together with the Health Call programme, regional trusts are developing innovative digital solutions to help specific pathways of care, particularly where there is a largely transactional services and the need for secure data can flow between a patient and clinicians.

The Atrial Fibrillation technology allows patients to submit readings and for them to interact with healthcare professionals, without having to go in and out of community services, this allows the patient and clinicians to be in touch easily if their condition deteriorates.

Through Health Call, and primary care services in Durham and Darlington, a digital care home support process has been set up that links care homes directly to primary and community services to dramatically improve training and hospital admissions.

By working together and sharing the investment, the establishment of a common platform allows us to develop new digital tools to support patients living with other conditions.
2.8 Use of assistive technology as part of falls management in Care Homes

Hartlepool and Stockton Clinical Commissioning Group (CCG) working with LA colleagues implemented new sensor technology to warn care staff when patients might be at risk of falling. The project has been implemented across 85 per cent of care homes for older people in Stockton and has been running alongside a focused falls education programme delivered by the Falls Service.

While recognised that the project is one of the contributing factors to the data, it can be suggested that sensors has played a part in reducing falls-related A&E attendance from care homes. Data from NECS suggested that in Q2 2018/19, there have been 272 emergency admissions from Stockton care homes, which is a 16% reduction at the same position on 2017/18.

Injury, poisoning and certain other consequences of external causes has reported a 39% reduction in Q2 2018/19 with 31 admissions, compared to the same period in 2017/18. This grouping includes injuries relating to Fractures, which is the most common diagnosis in this area, which can likely be attributable to falls or mobility issues.

2.9 National Early Warning Scores

Hartlepool and Stockton CCG along with LA colleagues are using the National Early Warning Scores (NEWS) to effectively triage care home residents and to quickly spot signs of deterioration. The NEWS readings are remotely uploaded through a secure internet-based system where they can be accessed by approved staff such as the nurses, community matrons, rapid response and Hospital@Home staff. This then facilitates more appropriate patient triaging.

Feedback from care home staff repeatedly states they feel more confident when referring to other services as they have more information to give the clinicians and this is evidenced through the NEWS readings. Community clinicians find this helpful as it helps them triage the calls more effectively. There are examples of residents that have stayed in care home rather than taken to hospital as they can be monitored closer in the home. NEAS staff are also starting to routinely request NEWS scores when they arrive at the home to see residents who are referred to them.

2.10 National programmes

We implement national programmes and initiatives and as a region, we continue to score well around roll out of national targets such as direct booking, electronic referrals and 111-services. We score well with the roll out of the Electronic Prescription Service, Summary Care Record and GP2GP. We implement national programmes and initiatives and as a region, we continue to score well around roll out of national targets such as direct booking, electronic referrals and 111-services. These are monitored by the regions GP IT groups.

We have established governance which has been able to adapt to the ICS way of working. This is now separated into two parts – a Digital Strategy Group which reports to the ICS board, and a Digital Delivery Group which oversees the day to day operation of regional digital programmes. All of this places us in a strong position, to develop and improve our digital offering for patients and staff in our region. We have built firm foundations onto which we can improve and iterate digital technology to meet the requirements of the people we serve.
3 Vision, aims, objectives and operating principles

This section sets out:
- Our long-term vision, aims and objectives for the Digital Care Programme
- Our principles
- How we plan to manage the inherent complexity in the health and care system

3.1 Vision

Leaders and professionals from around the region have collaborated to describe the shared vision for the Digital Care Programme to create a connected health and social care system.

To enable the delivery of high quality, easily accessible and efficient health and care services, to people of the North East and North Cumbria through digital solutions.

This strategy for digital care sits within the wider developing ambition of the North East and North Cumbria ICS, and its vision, aims, objectives and operating principles.

Our digital strategy is fundamentally about delivery and transformation, and as such, this requires all parts of our health and care system to be fully aligned and in agreement. In order to make this happen, it will require senior leadership from all parts of the health and care system to support the vision, aims and objectives, and make the vision a reality.

*Vision without action is merely a dream. Action without vision just passes the time.*

*Vision with action can change the world.*

- Joel Barker

3.2 Programme objectives

The Digital Care Programme is currently made up of over 20 individual programmes/projects of work, these are each structured, managed and in some instances funded differently.

There are a number of nationally mandated programmes together with others have been identified and developed regionally and locally.

Some programmes are managed by different governance groups such as the North East GP Informatics Group who oversee the digital primary care elements of the programme, whilst this landscape is complex over the different programmes and organisations involved, they are all working towards a shared goal and vision to improve care for people living in our region.
Figure 4 illustrates the plethora of digital initiatives across the North East and North Cumbria. Converting these digital initiatives into a driver diagram or logic model aids in the theming and prioritising of the programmes and projects. The NENC ICS Digital priorities logic model in Figure 5 (and appendix 1), illustrates the vision for the programme, its overall objectives, outcomes/benefits, outputs and impacts.

The majority of the current programmes are factored into this model/diagram, however it is acknowledged that these will both interchange and adapt over the course of this strategy implementation.

![Digital Integrated Care Diagram](image)

**Figure 4 – Digital Care Programmes**

**Figure 5: Digital priorities for the North East and North Cumbria**
3.3 GP Informatics

As an integral part of the NENC regional direction, the North East GP Informatics Group are developing an aligned digital vision and strategy to support their specific needs and requirements.

This approach is wholly consistent with the overarching NENC digital strategy.

The key strategic themes currently include:

- **Optimising Resources;**
  - Utilising systems & processes to support practices to deliver high quality care efficiently.

- **Collaboration and Integrated Working;**
  - Enriching the patient experience through digitally enabled partnerships.

- **Information Sharing;**
  - Supporting practices to feel safe in making the right decisions on data sharing.

- **Digital First Primary Care;**
  - Enabling patients to have additional digital access routes to primary care services.

- **Supporting Infrastructure;**
  - Reliable, Robust and Performance Services underpinning Ongoing Innovation

- **Population Health Management;**
  - Improve population health through data driven planning & proactive care delivery.

Each strategic theme will include a series of deliverables that demonstrate benefits to the patients and citizens, as well as the service providers (i.e. GP practice and stakeholders).

It is expected that the GP Informatics strategy will be published and socialised for reference.
3.4 Operating principles


- Put people at the heart of everything you do
- Design for the outcome
- Be inclusive
- Design for context
- Design for trust
- Test your assumptions
- Make, learn, iterate
- Do the hard work to make it simple
- Make things open. It makes things better

In addition these are the local principles we will adhere to:

- The needs of our people will have priority over organisational interests with place-based care having primacy.
- NHS and local authority commissioners and providers will work collaboratively with the public, on system reform and transformation – particularly as we introduce more self-care technology.
- Waste will be reduced, duplication and reinvention will be avoided and activities stopped which have limited value (measured over an agreed time period) or where the overall benefit is disproportionately low to the cost.
- Learn from best practice, convergence and alignment of existing and proven assets should be considered as a default approach when and wherever possible and practical.

We will test and evaluate new ideas quickly, with fully supported pathfinder innovation management processes, and where it makes sense, up-scale quickly across the region.

3.5 Digital Operating principals

From a digital services perspective we will define and develop a set of architectural principles for the region, we will follow and implement government best practice and guidance, again where possible and practical, in summary these will include;

1. Put our tools in modern browsers.
2. Internet first.
3. Public cloud first.
4. Build a data layer with registers and APIs.
5. Adopt the best cyber security standards.
6. Separate the layers of our patient record stack: hosting, data and digital services.

Further detail can be found via the following link:


Clearly there may be valid reasons why the above digital operating principals may not be appropriate or adopted, such as; affordability and/or compatibility, however appropriate consideration must be taken.
3.6 Managing complexity

We are commissioning and operating many distinct, but often linked digital programmes, driven by differences in organisational priorities and timelines. Our strategy is to help reduce this complexity by facilitating the convergence of the goals and delivery programmes. The complexity in the system is what makes it so challenging and if we acknowledge, work with and manage this complexity it provides the greatest opportunity for successful transformation.

The following are examples of how we will do this, by:

- Developing and delivering effective clinical and system leadership.
- Provide focused resources, infrastructure, architecture, strategy and effective fast track implementation processes.
- Align our work to ICS clinical and back office improvement workstreams.
- Explore infrastructure rationalisation opportunities and collective purchasing.
- Being person/patient-centric, not limited by short term planning, commissioning approaches and traditional care settings and organisational boundaries.
- Integrating our plans that are developed collaboratively, agreed regionally, aligned and resourced.
- Technical design authority assures development and alignment.
- Collaborating on cyber security.
- Supporting the development of a digital culture.

4 Digital transformation at scale – our regional priorities

This section sets out the building blocks we have put in place and some of the initiatives we are implementing to achieve our vision. It’s about much more than technology. It’s about getting the right people and processes aligned so we can reach our goal.

Significant service changes must be underpinned by a set of corresponding changes to people, process and technology. This section describes the approach to the technology development within the region.

Figure 7 – People Process and Technology
The NHS Long Term Plan recognises the need for the NHS and social care to harness the information revolution to meet the fundamental challenges facing us - the health and wellbeing gap, the care and quality gap, and the funding and efficiency gap. The long-term strategy is to create an integrated health and care economy across the North East and North Cumbria ICS footprint. Fundamentally the aim will be to securely, seamlessly and legitimately share information and records across the health and care economy, with appropriate governance and risk assessment.

To build a transformational and sustainable digitally enabled service, there is a need to lay cultural and digital foundations on which to collectively build a patient-centred high quality service.

4.1 Digital maturity

*Mature Digital Providers and associated services*

There are several digital maturity models available and in use, the Digital Maturity Assessment (DMA) measures the extent to which healthcare services in England are supported by the effective use of digital technology.

The DMA helps to identify key strengths and gaps in digital services. It builds on existing evidence to help organisations identify the best allocation of investment.

Whilst data is published and readily available that can give relative levels of NHS organisational digital maturity, such as the Clinical Digital Maturity Index (CDMI), we need to also consider how other “system partners” such as primary care, local authority and social care organisations within our system can do the same. Encouragingly, recent coordinated efforts through the Local Government Association (LGA) and within the NENC via the Association of Directors of Adult Social Services (ADASS), a GNCR reference group has been established, resulting in an initial digital system baseline and maturity assessment being undertaken.

As a result, a ‘system level’ digital maturity assessment will be an early priority for the ICS, we will consider an international recognised benchmark for organisations and the systems digital maturity assessment such as the Healthcare Information and Management Systems Society (HIMSS) accreditation standard.

Some of the recent HSLI funding has been allocated to organisations within our region to improve their digital maturity. Going forward, there needs to be a further acknowledgement and recognition of how the system can help and support those organisations that are less digitally mature than others in order to help raise their digital maturity levels as quickly and efficiently as possible.

We will continue to support organisations and channel investment in digital services to those parts of the service that need it the most, that said, all organisations need to take necessary and appropriate responsibility and invest appropriately in digital systems and technology.

The NENC ICS aspiration to be a fully integrated and interoperable health and care system, relies heavily on all organisations raising the digital maturity bar as, in system terms, “we will only be as good as the weakest link”.
4.2 A digitally integrated health and care system

Interoperable and collaborative systems and resources

An integrated health and care system needs digitally mature organisations. We will take the steps required to ensure that all parts of the system reach the required level of maturity so we can create a truly integrated system. Our principle needs to be one of convergence at an ICP level or system level where necessary or appropriate. Examples of this could include regional Laboratory Information management System (LIMS) solutions, Radiology solutions or ICP level Electronic Patient Records (EPRs).

Fundamental to the integration and collaboration agenda is the implementation of a shared care record. The shared care record provides the "glue" that bonds legitimate entities and people together.

All care provider organisations have developed roadmaps describing their individual strategic digital aspirations, many of which require digital technology solutions to facilitate inter- and intra-organisational information sharing.

Primary care is well advanced in the deployment and adoption of digital technologies and electronic health records. Whilst challenges still exist around joining up information access and data sharing across the system, good progress is being made with implementation of the MIG which provided a stepping stone towards the Great North Care Record (GNCR).
The ICS is developing an enabling workforce programme with an ambition for the North East and North Cumbria, to be the best place to work, with a focus on wellbeing and population health, delivered by an adaptable and flexible workforce. The future working model needs to be flexible, agile and future proofed. This ambition is supported by an emergent programme mission of ‘Recruit, Develop, Appreciate, Retain’ and these core areas of work are referenced repeatedly throughout this clinical strategy.

The recently released Topol Review (February 2019), explores the issues of digital technology – which includes the convergence of new technologies and insight such as genomic data, artificial intelligence, electronic patient records, biosensors and smartphone apps. The coming together of these technologies will rapidly change how healthcare is delivered. It will not replace clinicians – but provide them with more data and insights to improve patient outcomes. Some areas of medicine such as digital imaging will change far more than others as these new technologies improve the prevention, diagnosis and treatment of illnesses.

4.2.1 A digitally enabled workforce

The Digital Care Programme will work in collaboration with the emerging ICS to benefit from the regional workforce programme, which is developing priority areas of focus relating to workforce development, talent management and new roles, flexibility of the workforce and system development support. All of these system wide pieces of work will support delivery of the ICS strategy, as will the imminent National Workforce Strategy.

The workforce is a shared resource, delivering across locations and facilities. Considering buildings as facilities to operate from rather than the sole property of individual institutions- this will do away with the notion that consultant medical staff only work in acute hospitals and GPs only work in primary care premises.

By putting in new digital technology such as a ‘Regional Passport’, we can enable clinicians to work across organisational boundaries, consideration will also need to be made to enable LA colleagues to benefit from these capabilities. Staff will be able to access existing systems until such a time that we have system convergence. We will work to improve the systems we have in place to make services more useable, useful and used.

It is not just about introducing new digital tools to do the same things, but to allow us to work in new ways – making the most of the workforce resource we have, we recognise that this is not easy – but that it is more about overcoming cultural barriers, the technical barriers can be more easily solved.

Our workforce design principles centre around:

- Recognising that an emerging part of the workforce will be:
  - Members of the public choosing self-management of their care needs.
  - Care home and third sector staff.
  - First responders such as fire and police and risk assessors in the community

- Designing and delivering models that are not based on organisational boundaries or only around health and care sector digital network infrastructure.

- Building upon the foundations of delivering care closer to home using digital technology and infrastructure to enable a true ‘shift of the point of care delivery’.

- Enhancing the integration of services and delivery of seamless care for people/patients.
• Actively facilitating and promote learning between clinicians and care professionals in the integrated care system – we need to look at who can be taught to deliver episodes of care to patients, and not be restricted by organisation or professional boundaries.

• To recognise and promote learning between back office staff and health and care professionals.

• Enhancing recruitment through the development of innovative working practices, new roles and relationships across primary and secondary care.

• Ensuring that the health resources available are used to maximum effect and efficiency based upon the principle of the shared health pound, rather than for organisational gain or need.

• Recognising that digital health and care services require a significant mind-set change and the right skills to enable health and care professionals to support personalised self-care.

We will work with colleagues from across our region and agencies such as Health Education England to create a workforce that have the skills and confidence to use new technology and to digitally enable patients on supported self-management tools. We will support people (both staff and the public) to increase their digital literacy to effectively use telemedicine, smartphone apps (to monitor health), speech recognition, genomics and predictive analysis to anticipate and prevent ill health. It is vital that staff and patients understand the benefits and use these new technologies so we can get most from them. It is about providing them with the right coaching skills so they can support patients to manage their own conditions.

NHS organisations will need to provide professional development opportunities for their staff to develop and learn how technology such as AI can be brought into their specialities to improve patient care. We will work closely with our academic partners to share specialist staff and skills in the development of predictive modelling or future demand and future workforce requirements, robotics, data science, machine learning and artificial intelligence (AI). Using new digital tools and technologies which will enable our staff to augment ways of working and enable them to have more time to care.

Ensure there is strong leadership and Board level roles to lead the change and empower people to deliver the strategy. Innovate to identify and implement new ways of working. Encouraging positive behaviours and values and reinforce that the patient is at the heart of decision making and care delivery. This decision making will need to be open and transparent and have independent public scrutiny and input.

4.2.2 Great North Care Record

The Great North Care Record makes information more widely available and accessible to support frontline care, individual self-management, planning and research, so that:

• Professionals and carers can have legitimate access to the right information at the point of need, ensuring our population get better, safer care regardless of setting or organisation in which this care is provided.

• Improved access to information, allowing individuals to better understand and manage their own well-being and care.

• Improved data access and analytics, allowing better population health planning based on demand, and enabling the development and deployment of more innovative treatments.
Our regional governance structure provides single leadership towards the aims of our common vision for the Great North Care Record in the North East and North Cumbria. We are developing integrated communities to achieve these aims, working across organisational boundaries and enabling collaborations based on specialism and interest.

We are developing common standards and infrastructure to allow secure access and exchange of information across our region, introducing efficiencies whilst respecting the rights and confidentiality of our population. National programmes such as CareConnect, adoption of Fast Health Interoperability (FHIR) and Open Application Programme Interfaces (API’s) will inform and provide learning. Use of open standards will give us control of data across the region and enable sharing of data with other areas.

The North East and North Cumbria will become the safest place to receive care and do research.

There are three components, or modules to the Great North Care Record – a Health Information Exchange (HIE), a patient portal – or Great North Care Record app and Population Health Management tools including RAIDR (which is already well established across the region) and a Trusted Analytics Platform (TAP).

4.2.3 Health Information Exchange

The HIE is the regional infrastructure needed to connect the region’s IT systems together to support frontline care. This central point means that all health and care providers can publish information or data to the regional platform, which can then be appropriately accessed by health and care professionals. This will enable them to see a holistic picture of a patient’s history. They will be able to see what investigations, results and information is recorded by other care professionals in other organisations.

The HIE will be available in 2019 in the North East and North Cumbria when organisations will start to be connected, as and when they are ready. Initially we will focus on connecting our NHS trusts, primary care and local authorities.

By 2022 we expect these to be connected and sharing information for direct care. We will also engage with other parties including the third sector and independent providers to look at their needs and timescales of joining. We have spent the last few years putting the building blocks in place to support a culture of record sharing in our region. We have gathered research and insight from academics and digital leaders to shape our approach to roll out of the HIE. We have completed extensive research with the public and created a regional network – our dedicated team of professionals who are the people who will make our vision real.

Professor Margunn Aanestad (Oslo University) researched regional and national IT collaborations in her book “Working with the installed base”. Good information sharing projects take a “cultivational approach”, instead of a top-down, build. The complexity of the programme and others similar have succeeded where they are built organically, over time, once organisations are ready to join. Use the existing systems that are in place and build interoperability upon them.
In addition, Aanestad’s research indicates successful integration projects build on the ‘installed base’ – they use what technologies health and care organisations currently have, rather than a top-down, rip out and replace model. Taking this learning forward and applying it to the regional HIE means that we will add organisations and pathways of care to the HIE as and when they are ready and where there is a clear clinical need. This process will be built upon conversations and only those who meet the open standards and technical requirements.

A local panel of practitioners from health and social care will provide us with expert clinical and practitioners guidance to recommend the most impactful pathways of care to add to the HIE. We will support the region to assess its digital maturity. We have organisations who are ready and able to connect today. Others will need to make changes, or be supported to digitise records so they can join the HIE.

### 4.2.4 Patient Engagement Platform

We will digitally empower individuals to help manage their own care using the Great North Care Record (GNCR) app. This will allow them to contribute and manage their own health conditions. Working closely with the self-management tools created by Health Call – patients with certain healthcare conditions will be able to input their own readings and information is hosted in one place – making it easier for the person/patient, and those supporting and treating them.

The GNCR app will allow patients and people living in our region to have a single point of access for their appointment, test results and correspondence. It will allow them to set their communication preferences. This will not only reduce the cost of postage to organisations, but will also improve efficiency as notifications and amendments can be made via the app. It will bring together information from multiple sources, such as enabling patients to see key information to help them find their way to, make and change appointments.

In the future the GNCR app will integrate with the national NHS App – providing a single point of access for patients to access health and social care services.

Members of the public will be able to use the GNCR to set their data sharing preferences. They will be able to share their data for secondary uses such as service evaluation and planning, and for researchers to analyse patterns in their data. In addition, they will be able to register to be contacted to participate in clinical research.

The GNCR app will start development in spring 2019 with first deployments later that year. In 2019 we will also produce a roadmap of how it will be deployed across the region. The high level design for the development of the functionality includes:

![Figure 10 – Patient Engagement Platform.](image)
4.2.5 Population Health Management

NHS England have defined Population Health Management (PHM) as:

"Population Health Management improves population health by data driven planning and delivery of care to achieve maximum impact. It includes segmentation, stratification and impactability modelling to identify local ‘at risk’ cohorts - and, in turn, designing and targeting interventions to prevent ill-health and to improve care and support for people with ongoing health conditions and reducing unwarranted variations in outcomes".

A representation of the concept of Population Health Management (PHM) can be seen in figure 11. The complexity of care pyramid shows that the majority of the population are healthy and resilient. A substantial part of PHM is focused on prevention and on health promotion, helping people to lead a healthy life in order to keep the majority of the population in this layer of the pyramid.

Effective analytics ensures we can identify individuals or cohorts of people at each layer of the pyramid, as well as segments within each layer. Analytics also provides insight on the level of risk of moving up the layers of the pyramid, either from the risk of developing health conditions or having an exacerbation of a health condition.

This effective analytics informs the wider management of individuals and cohorts of people leading to the design and delivery of associated interventions. The design of such interventions will be informed by current knowledge and insights into what constitutes good practice and which interventions can make a positive difference to outcomes, as well as reduce the levels of risk for an individual or cohort.

**Figure 11 – Complexity of Care**

PHM activities to date have focused around use of limited datasets and have been undertaken by analytics teams across multiple organisations in the region, often not in a joined-up manner and only covering selected localities and/or communities of interest. We will build on the existing data sources and PHM tools, and will maximise the benefits of our collective analytics resource across the region by implementing a ‘Single Version of the Truth’ (SVOT) data warehouse, which will include data from health and care organisations across the ICS as well as publicly available data.

This SVOT will be enriched by near real-time data from the Great North Care Record and will be compatible with the national data architecture. There are information governance challenges to work through, but the SVOT will be made available not only to analysts across the constituent organisations of the ICS, but also to academia to support research, figure 12 illustrates the conceptual Population Health Analysis Platform.
This SVOT will be enriched by near real-time data from the Great North Care Record and will be compatible with the national data architecture. Analysts can subsequently generate consistent insight across the ICS by accessing a single population health analytics tool (i.e. RAIDR) or can utilise their own local tools.

Using existing data and analysing it in new ways means that we will be able to take more preventative interventions, as highlighted in the NHS Long Term Plan, to better manage the resources we have and the health of the population. It is important to note that PHM will include commonly used health and care data sets as well as the use of wider data sets which collectively give a richer picture on the health of the population, for example housing, climate, pollution, tele health and tele care. Self-management data will become a significant input in the future.

4.2.6 Infrastructure

**Robust, Secure and appropriate infrastructure**

By getting the basics right, using shared approaches to our infrastructure, developing systems that can talk to one another enables us to move forward on our digital journey. It is about us not only putting in the right digital services for professionals working across the system, but also giving the public access to digital tools to enable them to manage their own healthcare.

Internal system convergence will be enabled through the development, adoption and implementation of platforms such as Electronic Patient Record (EPR) systems within provider organisations. Then, by adopting a similar philosophy within a system, implement a collaboration convergence approach across suitable organisations. This will improve both patient pathway management as well as practitioner access and utilisation.

Furthermore, this approach will support back-office consolidation and potentially improve organisation security and technical standards adoption.
4.2.7 Infrastructure, Networks and Data links

The NHS N3 network is being decommissioned by BT in August 2020. It is therefore incumbent on all organisations to have appropriate Health and Social Care Network (HSCN) network connectivity, either in collaboration with partner organisations or as part of their own digital strategy.

The North East Commissioning Support (NECS) unit is developing a programme of work to replace the existing connectivity across the North East, with a single managed Community of Interest Network (CoIN) in primary care, which will have connectivity to the HSCN.

HSCN replaces N3 and is a new data network, which will offer the underpinning provisions to assist in the facilitation of integration and transformation across health and social care settings; through enabling organisations to access and share information more effectively and efficiently.

The implementation of new HSCN network connections, with typically higher bandwidth, will present a multitude of benefits and enhanced capabilities, including:

- Support of the government agenda for increased interoperability across all public sector organisations, through the use of a more standard common infrastructure.
- Facilitation and provision of innovative digital systems, benefiting both the public and clinical staff.
- Significantly enhanced control over the entire ICT estate, enabling timely responses to security threats and issues.

As part of their own digital roadmaps, all trusts, GP practices and local authorities are either already part of, or are taking steps to connect to the HSCN.

4.2.8 Internet First

In line with the government strategic direction, NHS Digital implemented an Internet First policy in March 2018. It sets the principle that all new externally accessible digital services provided by NHS Digital should be internet facing by default and for existing digital services to remediate at the earliest opportunity. The Secretary of State vision is for everyone to have access to digital health and social care services.

To achieve this, the Internet First policy has been extended to become the Internet First policy and guidance.

The NENC digital care programme will ensure appropriate alignment with Internet First policy and guidance, more information can be found at: https://digital.nhs.uk/services/internet-first/policy-and-guidance#top

4.2.9 Wi-Fi and 5G connectivity opportunities

It is recognised that whilst the above infrastructure is necessary it is only a partial strategy, and it is not sufficient to prepare for the future. The emergence of 5G networks provides significant opportunities to create more connected communities, using a range of internet-enabled digital tools such as remote air pollution monitors to warn patients with breathing difficulties about local air quality.

The Healthy New Town programme in Darlington is exploring how more highly connected communities can benefit from 5G connectivity, or better Wi-Fi provision for all residents, not just those who can afford it.
We will monitor the ongoing development of 5G connectivity – working with partners such as Health Call, we can develop new tools to remotely monitor and improve outcomes for patients with specific conditions. We can create new devices and technology which will enable them to better manage their conditions and reducing the impact on acute services.

Reliable and secure Wi-Fi access across all parts of the NENC health and care spectrum will be a critical enabler for agile working and collaborative care provision, as a region there has been a great deal of success here, but there will be more to do.

Initiatives and opportunities such as “Govroam”, which stands for 'government roaming', is a RADIUS-based infrastructure for public services and governmental administrations. Being part of Govroam allows users visiting another institution connected to Govroam to log on to the Wi-Fi of the organization using the same credentials (username and password) they use at their home institution, further work will be necessary to explore the benefits of initiatives such as this in support of our emerging mobility agenda.

4.3 Data quality is paramount

*Dynamic system planning and delivery through the use of robust data, effective analytical services underpinned by evidence and research.*

As we start sharing existing information more widely across organisations, it will be necessary to implement a system to:

- Report and correct poor or inconsistent data
- Improve data quality pro-actively and re-actively
- Review and agree individual and organisational responsibilities to ensure correct and reliable data is maintained.

High-quality data becomes vital to decision-making on individual, population health level, service improvement, commissioning and research.

Telehealth is now providing improved access to clinical skills that are otherwise limited by geographical dislocation and paucity of resources. Telehealth also provides patients and service users the option to make lifestyle choices about when, where and how they link to clinical support services, and how they send their personal data.

This will reduce the number of appointments needed and allow those with long term conditions to have less disruption to their working and family lives. It will also enable healthcare professionals to remotely monitor data on certain aspects of a patient’s health and anticipate their needs before they become critical and need acute care.

Health Call are developing secure, data quality checking approaches in telehealth and telecare applications to:

- provide the digital linkages to clinical and care services using NHS number data tags
- give the choice to patients on how they want to ‘Cross the digital bridge’, by developing app, landline phone, text, Internet, personal device access points
- ensure interoperability from telehealth / telecare driven data feeds to existing clinical record systems; reducing the complexity / inefficiencies of clinicians having to log into multiple systems to access and record data collected by the patient.

Improved information, Wi-Fi and digital infrastructure in the community (such as 5G) and digitally enabled technologies within social care will underpin better ‘where’ and ‘how’ care is provided and allow improved information on services and benefits when designing new models of care and approaches to health improvement.
We need to review processes, governance and support to correct any false information and entries in any original system and subsequent systems it has been shared with. Frontline staff need to know how to identify and report “wrong” data entries and how to correct them.

This data quality is also important if we want to conduct (with permission from patients) research using such data. Addressing these issues adequately will require knowledge from clinical practitioners, governance, researchers, informaticians, training and support staff and a collaborative approach to preventing poor quality data and improve data quality.

We will also require the mechanism for patients to report data inaccuracies and make it possible so that changes can be made where appropriate.

4.3.1 Clinical Digital Resource Collaborative (CDRC)

The use by general practice of the data entry templates provided by CDRC will not only lead to improved data quality, but also simplify interoperability of electronic record system searches. It will improve output of business intelligence programmes since we know what codes are likely to be used to reflect circumstances of reality.

Strategically, if we manage to achieve a sufficiently widespread (ideally universal) use of these templates and their SnoMed CT coded successors in primary care, we will have created a valuable basis of coding that could be transferred into use by secondary care organisations in due course. This can ensure use of the same codes across primary and secondary care to reflect the same reality. It does not preclude secondary care clinicians from access to a subset of SnoMed CT codes that are only relevant to their fields of clinical practice.

All templates will be available across the region, with a single governance structure.

4.4 Digital technologies

Digital innovations to deliver self-sufficient care delivered closer to home in neighbourhood and communities

4.4.1 Telehealth, telecare

There are many cases of good practice relating to telehealth and telecare within and across the NENC region predominantly within our regional local authorities, section 2.8 of this document provides such an example. Whilst many of these services perhaps started with basic monitoring and alarm functionality, the adoption of assistive technologies is now in widespread use and growing.

There is a clear and compelling opportunity for greater alignment within health and care with a range of emerging “use cases” that may be supported by commercially available technologies such as; cloud-based intelligent personal assistants, smart home technologies and digital health services, such as the Health Call platform.

4.4.2 Health Call

Health Call is a collaboration of provider trusts across the region. Health Call supports NHS organisations to design, develop and implement digital health services at speed, with their products also being made available to the other organisations in the UK.

Health Call has set up a number of programmes which allow patients to self-test and record their own health readings and allow them to interact digitally with their care team. Health Call
technologies will interoperate with the Great North Care Record, which will allow patients using Health Call tools to interact with and manage their conditions. Health Call is developing a tool which will capture data sharing preferences which will become part of the patient-facing app.

Health Call technologies are built on open platforms and standards which allow them to interoperate with the wider digital eco-system.

Work will continue to identify transactional health and care interactions which could benefit both citizens and patients who want to be able to manage their conditions remotely.

4.4.3 Video consultations

Across the North East and North Cumbria we cover a vast geographic footprint, much of which is rural and remote. Video consultation is a solution that can deliver benefits to citizens, patients and professionals whilst using safe and secure systems.

Remote video (pseudo face to face) consultation is still in an embryonic form and the expectation is that this will become an increasingly mainstream activity (in the same way telephone consultations became accepted as a standard part of day to day operations in general practice). We will identify ways in which remote consultations could deliver the most benefits to our population. How it could improve attendance and make follow-up easier.

It will only be used when and where appropriate, there are transactions between patients and healthcare professionals which lend themselves to this form of communication, furthermore, it is expected that similar use cases will equally apply to our local authorities and their interactions between citizens and staff.

We will explore how we can extend this service in the future including the potential to interoperate with the GNCR platform and/or app. 5G connectivity will support the roll out of video conference technology as it can handle higher amounts of data and higher security standards than current networks.

4.4.4 Working with healthcare apps

There is a great deal of healthcare apps in public use, each serving different purposes. Many of which are approved nationally as part of the NHS app library. The NHS App is also being rolled out across England and will provide a front door to primary care digital services.
There is a great deal of choice out there for the public, many of the apps providing similar or the same services. We will of course be producing a Great North Care Record app for our region which will need to interoperate with the NHS App as this develops.

New digital tools and apps will come to the fore during this strategy period and we will work with developers or existing tools where appropriate.

5 How digital will transform services in our region

As a collaboration of care providers and commissioners in our regional care economy system, we need to work collectively to deliver the highest quality of care and improve outcomes for the patients and population we serve. Transformational improvements in diagnostic services will enable some of this to become a reality.

5.1 Frailty

The NHS Long Term Plan expects local systems to continue to focus on supporting the most frail and vulnerable people who are most risk of becoming ill or falling. While people are now living far longer those extra years of life are not always spent in good health. People living in care homes account for 185,000 emergency hospital admissions in England each year and 30% of people aged 65 and over, and 50% of those aged 80 and over, are likely to fall at least once a year.

Using the Great North Care Record, practitioners will be able to see information recorded about frail patients in different care settings which will allow them to better care for and treat these patients. They will know who else is involved in their care such as social workers. This means that health and care professionals, the patient, their family or carers can access and contribute to their care plan.

All parts of our system are impacted by frail patients. Work has gone on using digital tools such as in care homes to identify patients who are at greater risk of falling. We will continue to explore new ways of interpreting data to identify at-risk individuals, and using monitoring tools to better support them and to help keep them well.

5.2 Maternity

As with frailty, patients receiving maternity care use different services within the system. Information is currently shared in paper format which the patient needs to have with them when receiving care. There are pockets of excellence in the region such as in Gateshead, where patients have the option to use a digital portal so that everyone involved in their care can access and update their record.

The Great North Care Record will allow different parts of the system to add to and review data recorded in different parts of the system. We need to develop the maternity dataset in collaboration with all services so that the information recorded is usable and useful can be viewed and shared electronically, rather than relying on paper records.
5.3 Radiology

As with many areas in digital, each part of the system has the same requirements and challenges. By working together, collaboratively we are aiming to align and connect the regional Picture Archiving and Communications Systems (PACS) and their associated Radiology Information Systems (RIS) across the region, it is anticipated that a shared technology platform will be implemented that provides the capability for securely sharing diagnostic images, reports and workflows between points of care.

This will not only improve patient services, but will also enable clinicians to work seamlessly, collaboratively and efficiently, across different organisations.

Radiologists will be able to work more effectively and we will be able to use the workforce more efficiently, as with many professions, the workforce shortage means we have to work smarter, by providing digital tools which allow them to access patient information from anywhere in the region, safely and securely.

5.4 Pathology

A new system of working for pathology is about to commence, with a move away from the tradition of looking down microscopes, to using new digital technologies to look at pathology tissues on high definition monitors. Digitising the microscope slides will allow far easier regional pathology case collaboration and will create significant benefits for patients and pathology services alike.

A single system has been procured for the region, this will allow the total regional pool of highly skilled pathologists to operate far more flexibly than before. The new platform combined with new ways of working, will substantially reduce the current risks of transporting tissues around the region which causes unnecessary delays for patients requiring regional multi-disciplinary team (MDT) assessments. Clinicians will be able to access, analyse and diagnose a pathology slides digitally from anywhere, as a result, this will transform the speed of delivery as well as the quality of care provided.

6 Creating a Learning Health System

The regional digital vision and strategic plans will be informed by insight. We will learn, develop and iterate as we go. Insight, the ability to see or understanding something clearly, includes experience, ideas and information and is a key element of a Learning Health System (see www.learninghealthcareproject.org). A health and care system that learns is one where ‘best practice’ knowledge is immediately available to support decisions’ (Friedman, 2015) and might relate to direct care, planning, strategy, research or implementation. Understanding the context, problem or challenge faced by service-users and staff will be achieved by:

- Supporting communities of practice to co-create and share insights – it will be easy for people to take part in co-production activities.

- Enabling public and practitioners to articulate and contribute their needs, ideas and innovations – it will be easy for individuals and groups to put forward suggestions and needs.
• Systematically assembling, analysing and collectively interpreting data - it will be easy for decision-makers to access relevant data to iteratively inform design, delivery and review of service improvements.

• Ensuring the learning cycle is completed – it will be easy for public and practitioners to assess and review the impact and benefits of change.

7 Artificial intelligence and machine learning

Emerging technologies and looking at existing data recorded in clinical IT systems will change the face of medicine in the near future.

Patients will be able to record far more data using their own devices which can then input directly into their clinical record. The development of new statistical models based on routinely collected data will allow us to generate new insights and improve treatments.

It will allow us to develop personalised treatments, by linking genomic data and patient outcomes.

By improving the quality of data, by putting it in the right formats and making it useful to researchers. We can begin to unleash the potential of new technologies such as AI and Machine Learning (ML). There are examples around the region already where we are taking data already recorded such as Early Warning Scores.

Hospitals gather huge amounts of this sort of data. By feeding this data into AI technology, we can identify new trends and patterns, not previously seen.

This is the direction technology is going, where computer algorithms can process information from vast amounts of data recorded in electronic health systems in new ways, ways in which humans cannot. Processing vast amounts of data to help us spot things we wouldn’t have seen otherwise.

These tools can support practitioners to make decisions, making them better informed. The value of data is not to be underestimated. We can support the region to become an attractive place to do research into developing AI and ML tools.

We can support the work of our local academic institutions, by putting in the right legal governance, ensuring the public understand how their data is being used and to give them the option to donate their data.

In the next five years, this technology will continue to expand our knowledge, and the best treatments and interventions for disease and illness.
8 Our digital roadmap

The regional digital roadmap will be developed and updated regularly. It provides a snapshot of the key milestones for some of our larger, regional and national programmes going on around the region.

Figure 14 - Digital roadmap
9 What does this strategy deliver for me?

9.1 Patient and citizens
- My experience of the NHS and social care is improved as I don’t have to keep repeating the same information and there are fewer delays to my care
- I feel empowered and involved in my care because I can see more information
- I can book, cancel and manage my GP and hospital appointment online
- I have a choice to book online consultations when I need them
- I can use my own device to manage my care
- I can use assistive technology to manage my care and I can interact with care providers online
- I can manage my own conditions better because I have access to more information
- I can set my communication and data sharing preferences – and easily change these
- I can upload readings from my own devices, or wearables to my medical record

9.2 Frontline health and care professionals
- I can access more information about the people I treat through my own IT system
- I can improve the quality and safety of care as I have access to the full medication history of my patients
- There is less paperwork and no need to double enter data that has already been recorded somewhere else
- I have access to new clinical decision support tools which also message me with alerts, as and when I need them
- I don’t have to repeat tests or interventions because I can see the patient’s previous results
- My patients stay in hospital for fewer days
- I have had the right training to get the most out the digital tools I have available
- I can manage my workload more easily
- I am confident that records are handled in a safe, secure and confidential manner
- Fewer people need to be referred
- I don’t have to spend as much time looking for information about the people I care for
- The reliance on fax communications has drastically reduced

9.3 Data analysts and researchers
- I am able to securely view, analyse and manipulate data which enables me to do my job.
- I can access linked data sets.
- I have opportunities to collaborate with experts from other sectors.
- Public health reporting and monitoring is easier
- I can directly contact people who might be suitable participants to my study.
- I can attract investment into my institution because I can conduct cutting edge research.
- My organisation is seen as a world leader in research.
9.4 Health and care organisations

- Digitally mature
- Reduction in the duplication of work for staff
- Reduction in complaints
- Improved patient experience and outcomes
- Happier, more satisfied staff
- More cost effective and efficient services
- Targeted interventions/care that meets people’s health and care needs

10 Summary

Digital technology has the potential to improve many of the inefficiencies and frustrations that health and care professionals and the public experience when accessing our services.

Our ambitions over the next five years will increase the availability and usability of digital tools and services for our populations, patients/service users and our health and care system staff.

Our health and care organisations will be inter-connected by secure, standards based, interoperable digital systems and services, staff will be able to work in agile flexible ways, by accessing secure, common, standardised and converged digital systems, locally and where necessary remotely.

Patients will be able to access digital systems where appropriate, in order to self-manage their own conditions, being able to input to their medical records and help to reduce the chances of getting ill in the first place.

We will “skill up” our dedicated workforce and provide them with opportunities to use new digital technologies in ways we may not imagined as yet. Staff will not be able just to do the same things better, but ultimately will do better things using digital systems and services.

By converging towards common digital systems implementing agreed standards and delivering improved data quality – we will unleash the potential within our collaborative region and make it one of the best places to receive health and care services internationally. New insights and analytics into medical research will help us intervene and treat people earlier.

By linking data; services and practitioners together in innovative ways, we will transform the North East and North Cumbria Integrated Care System, thereby greatly improving health outcomes and service user experience for the population we serve.
## Appendix 1: Digital Care Programme Logic Model

<table>
<thead>
<tr>
<th>Resources (Inputs)</th>
<th>Programmes/projects (Activities)</th>
<th>Programme Themes</th>
<th>Outcomes/Benefits</th>
<th>Objectives (Impacts)</th>
<th>Vision</th>
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</thead>
<tbody>
<tr>
<td>Policy: NHS 10 year plan</td>
<td>HSCN Implementation - health and local government collaboration</td>
<td>Robust, secure and appropriate Infrastructure</td>
<td>Improved clinical outcomes</td>
<td>Reduction in unnecessary/inappropriate diagnostics</td>
<td>Improved clinical outcomes</td>
</tr>
<tr>
<td>Governance: Digital Strategy Group, Digital Delivery Group, ICP IT/Digital group, GP IT Governance Group, CIO Forum &amp; Technical Design Authority, CCIO Forum</td>
<td>Warranted systems &amp; Cyber Security (Prevention)</td>
<td>Mature Digital Providers and associated services</td>
<td>Improved patient satisfaction and experience</td>
<td>Faster, more efficient treatment</td>
<td>Sustainable efficient health and care services</td>
</tr>
<tr>
<td>Key roles: SRO, CDO, Programme manager, Programme support, CCIO lead</td>
<td>Electronic Patient Records (EPRs)</td>
<td>Interoperable and Collaborative systems and resources</td>
<td>Reduction in avoidable admissions</td>
<td>Reduction in stationary costs</td>
<td>Deliver high quality, health and care services</td>
</tr>
<tr>
<td>Interdependencies: GNCR/UHCR, GDE programmes, HSLI programme, National programmes</td>
<td>CardScan+</td>
<td>Digital innovations to deliver self-sufficient care delivered closer to home in neighbourhoods and communities</td>
<td>Significant reduction in procurement, delivery management and business as usual costs</td>
<td>Improved staff satisfaction (efficient ways of working)</td>
<td>Improve the health and care of the population</td>
</tr>
<tr>
<td>ICS priorities - Optimising Health Services, Prevention &amp; Population Health Management, Workforce Transformation, Mental Health and Learning Disabilities.</td>
<td>Pathology (inc. Haematology): integrated LIMS system/common IT platform and implementation of a new digital imaging solution (PACS)</td>
<td>Digital First Primary Care</td>
<td>Improved staff satisfaction (efficient ways of working)</td>
<td>Reduction in patient risk</td>
<td>Patients empowered to make decisions about their own care</td>
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<tr>
<td>ICP service planning and transformation</td>
<td>GP Connect (National solution for limited record sharing)</td>
<td>Expand Mobile Working</td>
<td>Efficiency savings/time re-invested into patient care</td>
<td>Reduction in staffing costs</td>
<td>Digital innovations to deliver self-sufficient care delivered closer to home in neighbourhoods and communities</td>
</tr>
<tr>
<td>Clinical Networks</td>
<td>Transforming Radiology using appropriate technology</td>
<td>Artificial Intelligence and machine learning</td>
<td>Reduction in repeated process and data collection</td>
<td>To enable the delivery of high quality, easily accessible and efficient health and care services, to the people of the North East and North Cumbria through digital solutions</td>
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### Appendix 2 - Glossary of terms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>AI</td>
<td>Artificial Intelligence</td>
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<td>API</td>
<td>Application Programme Interface</td>
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<td>CCGs</td>
<td>Clinical commissioning groups</td>
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<td>CDMI</td>
<td>Clinical Digital Maturity Index</td>
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<td>CDRC</td>
<td>Clinical Digital Resource Collaborative</td>
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<tr>
<td>CEO</td>
<td>Chief Executive</td>
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<tr>
<td>CIO/CDO</td>
<td>Chief Information Officer/Chief Digital Officer</td>
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<tr>
<td>COIN</td>
<td>Community of interest network</td>
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<tr>
<td>DMA</td>
<td>Digital Maturity Index</td>
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<tr>
<td>DSG</td>
<td>Digital Strategy Group</td>
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<tr>
<td>EPR</td>
<td>Electronic Patient Records</td>
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<tr>
<td>ETTF</td>
<td>Estates and Technology Transformation Fund</td>
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<tr>
<td>FIHR</td>
<td>Fast Health Interoperability</td>
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<tr>
<td>GDE (FF)</td>
<td>Global Digital Exemplar (Fast Follower)</td>
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<td>GNCR</td>
<td>Great North Care Record</td>
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<td>HIE</td>
<td>Health Information Exchange</td>
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<td>HIMSS</td>
<td>Healthcare Information and Management Systems Society</td>
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<tr>
<td>HSCN</td>
<td>Health and Social Care Network</td>
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<td>HSLI</td>
<td>Health System-led Investment</td>
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<td>ICP</td>
<td>Integrated Care Partnership</td>
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<td>ICS</td>
<td>Integrated Care System</td>
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<td>ISG</td>
<td>Information Sharing Gateway</td>
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<td>LHCRE</td>
<td>Local Health and Care Record Exemplar</td>
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<td>LIMS</td>
<td>Laboratory Information Systems</td>
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<td>MDT</td>
<td>Multi-disciplinary team</td>
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<td>ML</td>
<td>Machine learning</td>
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<td>NEAS</td>
<td>North East Ambulance Service NHS Foundation Trust</td>
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<td>NECS</td>
<td>North of England Commissioning Support</td>
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<td>NENC</td>
<td>North East and North Cumbria</td>
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<td>NEWS</td>
<td>National Early Warning Scores</td>
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<tr>
<td>NIHR</td>
<td>National Institute for Health Research</td>
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<tr>
<td>PACS</td>
<td>Picture Archiving and Communications Systems</td>
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<tr>
<td>PHM</td>
<td>Population Health Management</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>RIS</td>
<td>Radiology Information Systems</td>
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<td>SCWG</td>
<td>Strategic Capital Working Group</td>
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<tr>
<td>SRO</td>
<td>Senior Responsible Owner</td>
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<tr>
<td>STP</td>
<td>Sustainability and Transformation Partnership</td>
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<tr>
<td>SVOT</td>
<td>Single version of the truth</td>
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<tr>
<td>TAP</td>
<td>Trusted Analytics Platform</td>
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