

## Our Vision

The future of the NHS and social care depends on getting technology right. The only way the NHS can stay true to its founding principles in a world of rising demand, rising costs and expectations is to use digital technology to transform itself. If we can get this right, there is huge potential to improve outcomes, the experience of patients, people in care, and staff, and productivity. The opportunities to improve health and care are almost endless.

The NHS could become a truly data-driven system, in which everyone is treated as an individual, given the tools to stay healthy and drive their own care when they need it; every clinician is able to operate at the top of their licence, with the time they need to care for patients and people; and the system can constantly optimise the care it gives through data, analytics and research. In social care, better use of technology and data has the potential to support people to live in their own homes for longer, enabling providers to deliver better, smarter care, and local authorities to plan and commission services more efficiently.

For too many of our staff and our citizens, this vision feels impossibly distant. Fulfilling its promise will be a long and involved task. Driving us there, in both health and social care, is why NHSX was set up. This is the first element of an NHS Tech Plan, setting out how we intend to do so and it sets out the other elements of the plan that we will publish over the coming months. This is intended as a draft for discussion across the NHS and care, rather than as an edict from on high.

## Supporting the NHS Long Term Plan

The NHS Long Term Plan will drive the entire system in the coming years. It sets out a vision of a health and care service designed around the individual, enabled by the right technology. The plan sets out an approach to care that is more personalised, supported by both digital and physical services that have been integrated to provide a seamless service.

The essential precondition for success of the [NHS Long Term Plan](#) is that the tech agenda must be integrated into the whole, supporting everything that the NHS wants to achieve, not stuck in its own silo. Every element of the NHS agenda will have tech incorporated - from the People Plan to the Outpatients Strategy.

Our Tech Plan will set out how tech will help fulfil this ambition, consistent with the principles for tech that the Secretary of State set out in the [Future of Healthcare](#). It will set out how we will achieve this - making sure we have all the essential building blocks in place, a clear division of labour, and a plan.

In 2019, the NHS Long Term Plan envisioned a system that was:

1. **More joined up and coordinated**, breaking down traditional organisational silos so that each part of the system treats the whole person, instead of a series of unconnected diagnoses.
2. **More proactive in the services it provides**, using prediction and prevention so we keep more people well instead of just treating them when they're sick. Technology gives us the ability to provide services which are proactive, personalised and can be joined together.
3. **More differentiated in the support it offers**, ensuring that care is targeted at those who need it most and are likely to see the greatest benefit, helping more people take control of their own care, enabling them to receive care at a time and place of their choosing.

## Where we are now

Although there has been significant progress in some parts of the health and care system, for too many there is a gap between the promise of technology and its lived reality.

More and more of the frontline is digitised and an increasing proportion of the country are supported by locally shared health and care records. The Global Digital Exemplar programme has established a set of digitally mature trusts that prove what can be done. There is a huge amount of research and innovation happening right across the system.

However, visionary talk about AI and data will sound hollow to nurses who have to wait fifteen minutes to log on to their computers; in hospitals where patient data is stored in paper files at the end of the patients' beds, where doctors cannot access GP records or test results without phone calls and faxes, and where the social care workforce have to rely on inconsistent paper records or faxed information when a patient is discharged into their care.

The baseline for this Tech Plan is:

- Variable levels of **digitisation**. A small number of providers have reached high levels of digital maturity. A quarter still have no electronic patient record. In social care a third of organisations are still largely paper-based. Some parts of the system ensure that their hardware and networks are up to date and functioning; others wait for the centre to pay for this for them. Most are somewhere between the two.
- Variable levels of tech **confidence** and expertise across the frontline. Some CEOs and many clinicians are already using digital technology to great effect. Many are not and have not been given the training or tools to do so with confidence. For too many staff the tech they are using has not been designed with the user in mind, and is neither intuitive nor easy to use.
- **Data** is not flowing safely across the system in a way that would allow for patient care to be optimised, with hundreds of systems not yet able to talk to

each other and with inconsistent approaches and over-complex guidance on Information Governance inhibiting legitimate sharing, including for research.

- There is plenty of **research and innovation** happening, but scaling is too difficult. There is a huge number of exciting and increasingly proven digital products being developed, inside the NHS, outside, and in the social care system. The barriers to adoption at scale are too high.
- **Citizens** are getting more tools to allow them to drive their own care, and more access to their own data. More people are using the NHS App, other patient-facing apps are being used by more and more citizens; a growing ecosystem is springing up around them. In large parts of the system patients struggle to see their own records. And we have some way to go to ensure that digital technology is reducing health inequalities rather than exacerbating them. As we digitise services and provide new ways of delivering services we must continue to be transparent with citizens about the information that is held about them and how it is used

## Where we want to get to

We will know we have succeeded when:

**Clinicians** find technology makes their working lives much easier. Adding to clinical records, and looking things up from the whole of a patient's record become straightforward and intuitive. Digital technology is built into every clinical pathway, invisibly coordinating care and minimising wasted time or unnecessary interventions. Clinicians feel confident operating at the top of their license, and able to give their patients the care they need, supported by excellent clinical decision support. AI automates a broad range of tasks reducing the pressure on clinicians and giving them time to care for their patients.

**Social care workers** are able to access the information they need safely whenever and wherever they need it. People move seamlessly between health and care settings because they and their appropriate care professionals will be able to see their records (or relevant sections) to improve the safety, and personalisation, of their care. The social care workforce at all levels are proficient in using digital tools that improve care quality and system efficiency, with leaders and managers having the confidence to drive digitisation across the social care sector.

**Citizens** have the digital tools they need to drive their own care. They can easily access advice, book appointments, communicate with a healthcare professional, receive a referral, order a prescription, access and contribute to their record and choose who they share it with. They understand how their information is used, are confident in its uses and understand how to exercise their information rights. They can use digital tools to ensure they see the right clinician or carer when they need to, and can be monitored and receive care remotely where appropriate. Population data allows them to be treated as individuals, and they are given personalised information, advice and support to keep themselves healthy. Digital services are

easy to use, inclusive, and non-digital alternatives are available for those that need them.

**Leaders and managers** across the system are able to use data and innovation to keep improving outcomes and the experience of both staff and patients. They lead a data-driven health and care system where real-time information about the millions of decisions made each day is used to continually refine and improve the service.

**Tech professionals** feel valued and respected as a core part of an integrated team providing an ever-improving service for patients, ensuring clinicians have the tools they need, both hardware and software, with connectivity so good nobody notices it. They know care is kept safe from cyber attacks so citizens trust the NHS with their data. CCIOs and CIOs are part of the top team of every provider, and belong to professions that give them the training, status, accreditation and professional development they need. They share best practice, and learn from each others' successes and failures.

**Analysts** are a valued part of the NHS, essential to its data-driven and constantly learning approach. Analysts too are part of a profession that gives them the support and training they need to be maximally effective and properly valued. They work in the open, sharing data and code where it does not compromise patient confidentiality.

**Healthtech innovators** see the NHS and other care settings as a great place for innovation, with clear, open and proportionate standards, platforms on which their innovation can flourish, and tariffs that reward innovation that makes things better. We will remove the painful barriers to scaling, so that the benefits of proven technology can be enjoyed across the system.

**Researchers** have safe, secure, appropriate and streamlined access to high quality, curated and linked health datasets to support cutting-edge research and clinical trials to transform health outcomes and services. Research is viewed as an integral part of the modern and digitised NHS, which aims to continuously learn, improve and adapt. The NHS is recognised globally as a valued and equitable partner in research.

## The Missions

NHSX has set out five missions that it wants to drive its work, and ensure that it remains focussed on real world outcomes in the health and care system rather than process or technology. We are recruiting small teams to lead work on each mission, and will ask each of them to build the one year and five year plan for their mission. We have an idea of what they should be achieving first:

**Mission 1:** Reducing the burden on our workforce, so they can focus on delivering care.

Outdated and inefficient technology results in large amounts of wasted time for health and care staff. We know that slow login times are one of the biggest

technology frustrations for NHS staff, reducing their efficiency and taking their time away from direct patient care. Pager use is also still the norm despite more efficient and user-friendly communication technology being available. There is an opportunity to improve the burden on our staff by introducing the right solutions in the right ways.

One year activities:

- Improving login - evaluate the factors affecting login processes and develop targeted interventions to improve staff experience. This will include supporting the introduction of Single Sign On systems where they will make the most difference.
- Enhancing clinical communication - work with early exemplars to replace pagers with integrated communication and workflow management software to improve efficiency and patient safety

Longer term activities:

- Digital staff identity - lead work to establish and implement requirements for consistent digital staff identity and passporting
- Support innovation - identify and support successful innovative technology in health and social care to release staff time to spend with patients, and speed up its adoption by services

**Mission 2:** Give people the tools to access information and services directly, so they can participate in their own health and care

We will empower citizens to participate in their health and care by ensuring there are digital tools and services available for them to access information and services directly. We will enable the health and care system to personalise people's experience to meet their needs, improve health outcomes through timely interventions, and by enabling more effective interactions across care settings.

Technology will take primary care into the 21<sup>st</sup> century, with easy online booking, tech-enhanced triage and video consultations. We should also explore how tech-enhanced triage can help bridge the gap between primary care secondary care, and, where appropriate, allow for direct bookings of secondary care appointments.

One year activities:

- NHS App - ensuring there is baseline functionality across all GP system suppliers to view records, book appointments and order repeat prescriptions. Increasing functionality to include reminders and push notifications
- NHS website - making it easier for people to find services and self refer on the NHS website and providing open access to content for syndication partners
- NHS login - enabling NHS login for all system suppliers who meet NHS standards
- Child health - rolling out digital personal child health records and ensuring interoperability between these and existing systems and the life long record
- Maternity - rolling out digital maternity records and ensuring interoperability between these and existing systems and the life long record

Longer term activities:

- Enabling proxy and delegated access to digital health and care systems and services
- Enabling people to set contact preferences and ensure that these are used by all health and care organisations and systems
- Integration of digital products with the infrastructure that supports the NHS App

### **Case study: Connected Nottinghamshire**

Connected Nottinghamshire is changing the way people access health and care services by providing digital services that connect them to the information and services they need, when they need them and all in one place. Connected Nottinghamshire uses Patients Know Best (a technology platform that brings together data from health and social care providers and the citizen's own data, into one secure personal health record) as its local personal health record (PHR). It is the first PHR to integrate with the NHS App and the first to integrate with NHS Login's new encrypted single sign-on to enable patients to securely connect NHS login to their PHR data.

Connected Nottinghamshire enables people to drive their own health outcomes by taking steps to manage their health and care, by integrating their own medical devices, taking advantage of social prescribing and sharing their data with family, carers or any health or care professional involved in their care.

**Mission 3:** Ensure information about people's health and care can be safely accessed, wherever it is needed

Information needs to flow seamlessly between digital systems in different NHS and social care organisations so that they can work together to streamline people's care. By digitising health and care as well as joining up patient records, we can avoid delays in diagnosis, prevent tests from being repeated unnecessarily, and speed up the process of starting people on the correct treatment and care that they need.

One year activities:

- Provide national frameworks and standards for sharing data and minimum technical standards that digital services and IT systems in the NHS have to meet.
- Funding for the digitisation of providers will be targeted through a new digital aspirant programme.
- Sharing best practice through Global Digital Exemplar "blueprints"
- Supporting the development of locally-led shared care records and plans across GPs, hospitals, community services and social care settings.

Longer term activities:

- Ensuring that the entire country is covered by Shared Care Records.

- Putting in place core record standards and supporting adoption of interoperability standards in social care systems.
- Personal Health Records (PHRs) held in locally shared health and care records will allow care plans and other information to be exchanged between citizens and the people who provide their care and enable reminders or alerts to be sent.
- Ensuring data can be accessed in an ethical, safe, secure and trusted way for research

**Mission 4:** Aid the improvement of safety across health and care systems

NHSX has a critical part to play in improving the safety of health and care services. We will work closely with the patient safety directorate in NHS England to ensure emerging technology itself is safe and makes care safer; and to use data to prioritise safety improvements in health and care.

One year activities:

- Describe the core standards underpinning digital diagnostics including pathology
- Medicines Standards - Initial standardised dataset on secondary care prescribing and medicines administration
- Antimicrobial analytics: data set developed and available to support national reporting and research

Longer term activities:

- Delivering solutions based on HSIB recommendations around communication of results to patients and registries of implantable devices
- Next generation Electronic Prescription Service to cover all care settings and medicines types
- Develop a process to recognise and act on digital issues reported from the Patient Safety Incident Management System

**Mission 5:** Improve health and care productivity with digital technology

Other sectors have demonstrated significant productivity gains through technology by automating tasks previously requiring human intervention and through better business intelligence to understand and share more efficient processes.

One year activities:

- Supporting a range of digital tools and services to help transform the outpatient journey reducing the need for face to face appointments
- We will establish a new team to scale proven innovations in health and social care with evidence of productivity gains, particularly for staff time.
  - Including tools that support better triage and management of patients, more efficient bed, ward and theatre use, and rota capacity and improved communications between pathways and providers.

- For adult social care, this will include scaling technologies that support provider efficiency, improve care outcomes, and that enable individuals to live as independently as possible.
- Improve bookings, referrals and advice management; allowing any part of the service to refer, appropriately, to any other, and to help advice and guidance become the safe, speedy default option where clinically indicated.

Longer term activities:

- Corporate Services efficiencies - we will identify productivity improvements to frontline corporate services functions, including Finance, HR, Legal, Payroll, IM&T, Procurement, Governance & Risk.
- Community providers - we will bring in interoperable digital solutions to ensure all health and care staff in the community (including pharmacists, optometrists, dentists, ambulance, mental health and the social care workforce).

### **Case Study: Robotic Process Automation at East Suffolk and North Essex NHS Foundation Trust**

East Suffolk and North Essex NHS Foundation Trust (ESNEFT) have been pioneering the use of Intelligent Automation to release over 5,500 hours a month of staff time. Extracting referrals in real-time from the NHS e-Referral System into the Trust's Electronic Patient Record has removed the need to print paper forms and reduced the time to process referrals from 20 to 6 minutes. The automatic cancellation of patient appointments via text message is on track to reduce 13,000 wasted outpatient appointments in the first year and save £2.1m.

In the near future, advanced automation tools will see the real-time translation of patient letters into 60 languages, automated registration and appointment booking for maternity self-referrals via a patient portal and the processing of clinical outputs from Multi-Disciplinary Team meetings.

## **Social care**

The Care sector is made up of over 18,500 diverse organisations, employing 1.5m people. The remit of NHSX emphatically includes the digital transformation of social care as well as health, and there are important differences between the sectors.

Technology has the potential to deliver significant system-wide benefits for people in care and care professionals and the social care sector is facing its own challenges in reaping the benefits of tech and digitisation. Work by the Local Government Association and Skills for Care shows that there is a lack of integration between the NHS and social care, with under 10% of people and carers able to digitally view and/or update their care records. Only 29% of social care professionals told a recent survey that they have digital access to the information they need from health care



providers, with 52% of social care managers reporting that their staff lack basic online skills and knowledge of assisted living technologies.

While at least 1.7 million people in England are already supported by technology-enabled care such as Telecare and personal alarm systems, there is still a vast amount of untapped potential in the social care sector for to use technology to improve the care it gives.

To ensure the social care system also reaps the benefits of digitisation, our vision is to support:

- People to live independently in their homes or communities for longer, better connected to family and friends
- Providers to deliver more responsive, flexible and efficient care, enabling staff to do the best for people using services
- Local authorities and the NHS to better plan and commission services with the support of data and technology

To achieve this, we are working with to make progress across five pillars that are being developed in discussion with the sector:

- Setting standards and supporting adoption of standards to enable interoperability and integration between health and care;
- Enabling better collection, sharing and use of data across the system;
- Increasing capability and growing a digitally expert workforce;
- Supporting research and innovation, adoption and a vibrant ecosystem for technology in care; and,
- Supporting infrastructure and provider digitisation through measures to improve connectivity in the sector and looking at options to improve access to basic IT.
- Delivering bespoke information and guidance to support the social care sector to prepare for the forthcoming digital migration of telephony, ensuring continuity of service for people reliant on analogue devices for their care.

#### **Case study: South Gloucester - Connecting Care**

Supported by the NHS Digital Pathfinder programme, South Gloucestershire Council has partnered with two other local authorities, the Clinical Commissioning Group and over 50 care homes to provide authorised personnel in care homes with secure access to up-to-date health and social care records.

The partnership will produce a blueprint for care homes to access shared information, and will work in partnership with the Professional Records Standards Body (PRSB) to develop a standard information set that is shared with health and social care providers by care homes about their residents.

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## The Enablers

### Building infrastructure, standards and interoperability

None of this will happen unless we get the entire system up to a minimum level of digital capability. The Long Term Plan commits the NHS to having every provider digitised by 2024. This will mean:

- Decent hardware: much of the frustration currently felt by staff is the result of hopelessly old laptops and clunky hardware
- Adequate networks: an NHS powered by full fibre and 5G
- Integrated systems that allow flexibility in managing clinical and operational workflows and patient data, built in a modular fashion according to open standards, avoiding vendor lock-in

Getting there will need:

- Clarity about who is responsible for paying for what. Providers need to know their obligations, and where they can expect help from the centre. We will set this out as one of the elements of the Tech Plan.
- Sufficient spending on tech. As set out in the NHS Operational and Planning Guidance, NHSX will be engaging with systems and providers to determine if there is a minimum or optimum level of technology revenue spend, linked to the digital maturity standards that are under development.
- Targeted funding from the centre. We recognise that many providers will struggle to generate the scale of funding required to digitise themselves. The digital aspirant programme will be the next chapter in how the centre helps them over this step, building on the Global Digital Exemplar programme that showed what was possible.
- Support from the centre: including in procurement and deployment.

The NHS is too big and unwieldy for unitary tech solutions to be the answer, the social care sector is similarly also too diverse. Equally, letting a thousand flowers bloom has led to the current situation, where literally thousands of different systems cannot speak to each other. (There will be a small number of functions where it will make sense to do things once, rather than have the whole system buy or build their own versions to do the same thing, and when it does we will do so - as we are on the screening programme.)

The only way that tech can work in a system as huge as the NHS (which has a bigger GDP than Hungary) is for the centre to set clear, open standards, and enforce them. Local providers can make their own choices, and as long as what they do and buy is compliant with the standards then everything will slot together and systems will be able to communicate.

NHSX will lead the work to establish these open standards, working closely with NHSD, the wider NHS, the social care sector, and the healthtech community. There

will be an open catalogue of these standards, and sensible processes to ensure they stay up to date. We will soon appoint a Director of Standards and Interoperability. In the meantime, we have been making progress on the core standards:

Area	Overall aim	Where are we now	Next steps
NHS Number	Ubiquitous use of NHS Number as the primary identifier for all patient and social care service user data	Discovery underway for recommendations to improve demographic processes, assessment of social care uptake and replacement of local identifiers	Improvements to national demographic services, access for social care, replacement of local identifiers in systems
Medications	Free movement of medicines data across settings of care, access to medicines data for analysis, common terminology	Interoperable medication standards including dosage information consulted on and in testing, analysis of sources of medications data underway, discovery on future prescribing service underway	Implementation across all care settings of medication standard, access to analytical data from across care settings, new functionality to support prescribing process, expand use of dm+d
Pathology	Access to standardised test results wherever they were undertaken	Draft specification for common catalogue for blood sciences, development of standardised units commenced, draft pathology messaging for consultation	Expansion of catalogue to other pathology disciplines, finalised standard for units, engagement with system suppliers
SNOMED	Use of SNOMED across all health and care settings as the primary terminology	Finalised rollout to general practice, initial engagement with mental health services, testing of national terminology server	Begin rollout across mental health, deployment of national terminology server, engagement with social care
Bookings, appointments and referrals	Use of common booking standards and services across all settings of care	Discovery projects underway for: future service bookings service, data mining and technical integration	Discovery reporting, initiation of alpha projects, development of standards, systems integration, expanded rollout
Observations	Standardised representation of clinical observations available across care settings	Published standards to support NEWS2 related observations, initiated pilot implementation projects, commenced engagement with paediatrics for PEWS	Implementation across pilot sites, integration with ambulance standards, development of additional content
Identity	Single consistent identifier for staff	Enhanced NHS Identity using devices on iOS	NHS Identity for devices on Android plus rollout to wider

	federated across services and linked to a passport of credentials	(complete) and windows (underway), integration with ESR and NHS Mail commenced, initiated pilot for use of digital staff passports	service, development of staff passport standard, beta testing for service, SSO integration
FHIR	Creation of a core set of FHIR resources for use across the UK	Draft content available, engagement across provider and supplier organisations commencing	Finalise first version of a UK FHIR Core and begin use case testing with maternity services, as well as engagement with social care
Core record for social care	Creation of a minimum data set information standard for social care to form a core record for all people who receive care	Engaging with the sector to set the content for the core record, and building use cases to test the record	Planning a targeted alpha to test the core record in practice

We will also need to establish effective ways to enforce these standards. This has proved difficult to do in the past. The centre has, for example, repeatedly mandated the use of the NHS number as the unique identifier of patients, without success. So we will establish a new system of spend controls to ensure that tech is compliant. This will involve a much lower spend threshold for central approval, the deal being that the process will be quicker and smarter than it is at present.

So that information can be shared between social care and health systems we will do two things: set a core record standard for social care so that there is consistent information recorded for all people in social care, and - where possible - set the same open standards in social care as those used in health.

## Sharing data

Nothing will happen if the data cannot flow safely across the health and social care system, in a way that is currently patchy at best. Over time, the standards-based approach described above will make this happen. Getting there will need more active steps, not least because of the stock of non-interoperable systems currently in place.

The LHCR programme has done excellent work in advancing data sharing at the regional level. We will build on the insight this has created as we develop the next steps, which will include the following components:

- **Shared care records** across the whole country: many regions and local systems now have these in place, ensuring that data can flow between primary and secondary care, mental health, community and social care. We need to make sure that these are universal, with the technology underpinned

by good and clear information governance and the local trust and relationships these need to work;

- Work to ensure individual **care pathways** and processes are making use of patient data in the optimal way, drawing on some of the precedents and progress made in individual LHCRs. Shared information will support improved management of patients: Primary care will be able to gain insights into how their decisions impact downstream costs and services. Practices will be able to see how many of their patients are currently in secondary care or social care and the costs of patients on their lists downstream, including their downstream prescription costs.

### **Case study: CogStack and King's College Hospital**

Electronic health record systems are often closed systems using proprietary standards with incomplete and unstructured data making data difficult to pool together. The result is that the wealth of information potentially available within health records is often inaccessible and underused.

CogStack is a platform that pools and indexes all forms of health data as text allowing interaction with the electronic patient record. Researchers at Kings College Hospital used CogStack to cohort patients with atrial fibrillation who had been admitted between January 2011 to October 2017<sup>1</sup>. For 10,030 patients, personalised risk of stroke, risk of harm from treatment (anticoagulation) and general frailty was calculated using an algorithm which analysed the free text of discharge letters. These risk scores inform clinical decision-making for anticoagulation, and could be applied to a wide-variety of clinical scenarios.

- Simple, coherent, unitary guidance on **Information Governance**: at present there are numerous overlapping rules, and guidance coming from many sources, leaving staff paralysed by the fear of getting this wrong. NHSX will lead work with the ICO, National Data Guardian, NHSD to convene the key stakeholders and agree much simpler guidance so that data can be safely shared, where it is appropriate to do so;
- Smart **Data architecture** to ensure that the system hangs together, with all the numerous initiatives and players coherent in a single system. We will move over time from the current messy arrangements to a federated approach, in which data can be easily and safely accessed where it is needed, with clarity on what is canonical, and no need for single national stores holding all the nation's data;

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<sup>1</sup> Bean DM, Teo J, Wu H, Oliveira R, Patel R, Bendayan R, et al. (2019) Semantic computational analysis of anticoagulation use in atrial fibrillation from real world data. PLoS ONE 14(11): e0225625. <https://doi.org/10.1371/journal.pone.0225625>

- The **citizen** in more control, able to access and write to their own data, allowing them to be an equal partner in driving their own care. There are already excellent examples of this across the NHS. We will ensure that it becomes a universal experience.
- Promote **research** and **innovation** by enabling the safe access to health and social care data to develop tech that is tailored to NHS needs, improve diagnosis, develop new treatments and prevent disease.

## Building the centre

We need to make sure that the centre is giving the frontline the support and guidance it needs. This will include:

- Establishing a model of **What Good Looks Like**, with clear criteria for different sorts of providers that leaders can use. These criteria will be co-created with colleagues across the NHS as part of the building the Tech Plan, and will feed into the NHS's improvement methodology and CQC inspections.
- As set out above, setting out **who should pay for what**, so that providers are clear about what they need to make provision for, and where they can look to the centre for support. We will be working with finance colleagues across NHSE/I and DHSC to provide as stable and early a view of central funding as possible.
- We need to do a much better job of **sharing best practice**. The GDE Blueprints have been successful, and are well used across the NHS. We will expand their range to include advice for clinicians and leaders as well as technical guidance. And we will set up other mechanisms for identifying who is doing what, and how we can learn from both successes and failures.
- We will establish better ways of providing **support for the frontline**. We should not expect every provider in the NHS to maintain the expertise they need to do major digital transformation in-house. So we need to work out how we can help fill the gaps, and in a way that feels supportive rather than overwhelming or bossy. This will mean aligning the support on the tech and data side with the support coming from other parts of the centre. We will explore different options for doing this in the coming months, as part of the Tech Plan process.
- We will establish a **less onerous way of providing oversight** on centrally-funded programmes. We have started down this route already with the Digital Exemplar funding for 19/20, producing a much shorter form, ten rather than over a hundred conditions, and light-touch quarterly check-ins rather than burdensome monthly reporting. This is on the basis of presumed

competence and good faith. The flipside is that where obligations aren't met, we will not continue to fund.

- Improved **commercial** support: NHSX will set up a small strategic commercial function, to support relationships between providers and tech vendors. It will ensure we are collectively managing our relationships with the key vendors, look at what should be negotiated nationally, and where local negotiations make sense make sure that providers have the information and functionality they need.
- NHSX is establishing a Centre of Expertise to provide particular support and advice to providers that are entering into commercial arrangements around data.

We also know that we need to provide clarity about the separate roles of NHSX and NHSD at the centre. We will set out a more detailed breakdown of roles, but in summary:

- NHSX: The guiding mind on the digital transformation of health and care. Articulates the vision, defines the strategy including market engagement, decides on priorities and associated spending, commissions programs of work from NHS Digital and others to support the NHSE/I agenda and oversees their delivery. Defines system-wide cyber-security strategy. Advises Ministers.
- NHS D: The national digital, data and technology delivery organisation for the Health and Care system. Designs, builds, deploys and operates national digital products and services, commissioned by NHSX (for NHSE/I programs) and various other bodies. Collects and curates system-wide data and provides insights and analytics services. Disseminates open data, controlled data sets and official statistics. Implements system-wide cyber-security strategy.

## Building the platforms

The best thing we can do to promote innovation across the NHS and social care is to provide the platforms on which innovation can flourish.

The approach we have taken on the **NHS App** is an example of how we intend to do this. Rather than build a sovereign NHS App with huge amounts of functionality, we have decided to keep it thin, with functionality that citizens would expect us to provide ourselves (like access to medical records, booking appointments or preferences on contact or organ donation). We are now allowing innovators to use the app as a platform, allowing access (through APIs, with appropriate consents) to data that will allow them to work within the app, giving the user a seamless experience, or to create their own separate apps.

At a national level, there is currently a mix of **booking, referral and appointment management** tools, standards, architecture and functions in place across the NHS

and social care. Some work on point to point solutions; others use standards and API solutions. It has been a long-term vision across the system to have a fully operational 'any to any' booking, referral and appointment management ecosystem for health and social care and citizens, that is efficient, effective and scalable, and driven by user needs. We have established a small team of user researchers, service designers and product delivery experts to scope this out.

NHSX will lead improvements to the IT systems that support the **national screening programmes**, to ensure they are safe, user-friendly and leave nobody behind. The new screening platform will consist of a series of modules - some of which will be re-purposed from existing government and NHS infrastructure, some built in-house, and others bought from the market. Where it makes sense to do so, we will use the same module across multiple screening programmes as well as for new initiatives such as targeted screening and other forms of precision public health.

We want to get more effective and safe digital health technologies into the hands of those who need them the most - be they a junior doctor needing an app to help them manage their training needs or a patient who wants to feel more in control of their cancer care - by providing clear standards and a platform from which products can be hosted and procured.

We are evolving the way these health technologies and innovations are assured, evaluated and procured, removing the bottlenecks centrally in the system and streamlining the different processes. In partnership with the healthtech sector and standards experts, we have drafted a new, more cohesive **Standard for Digital Health Technologies**, allowing innovators and commissioners to identify what standards a product needs to have met to be safely used by the system. Alongside, we are building a platform to support external assessors in their assurance of these technologies (against the new Standard) providing open, robust APIs to support the distribution of these assured products and services. Linked in with procurement frameworks such as the HSSF, this platform will provide providers and commissioners with a single channel to lookup companies and products to view the status of their assessment.

As we begin to build and deploy more technologies that use **AI** through the NHS AI Lab, we want to develop a mechanism that allows these AI products to be safely used in the workflow whilst maintaining the integrity of health and care data. This mechanism will create an environment that supports innovators to safely test their integration into the clinical workflow and IT infrastructures. This will enable faster adoption of AI technologies with a consistent, streamlined approach to integration, whilst allowing multiple products to be used so exploiting the full potential of AI.

**Regulation** will be key for us to make sure that AI technologies are deployable at scale in clinical and non-clinical workflows. Doing AI right means putting a set of rules around it that will make sure it is done safely, in a way that respects patients' privacy and keeps the confidence of citizens and staff. Some of those rules already exist like the Data Protection Act (2018). We will work with regulatory bodies to develop a joined up approach, in which innovators do not have to navigate between lots of different bodies and sets of rules. We will aim to set up a single platform,



bringing all the regulatory strands together to create a single point of contact, advice and engagement for innovators.

Interoperability will be key to this platform approach. The new contract to provide systems for GPs - **GPIT Futures** - has interoperability at its heart, with stringent requirements for primary care system providers to make data and APIs available. We will be watching closely to see how these obligations are met.

## Building the workforce

Veterans of NHS technology know that it is much more about the people than about the technology. With a few exceptions, most of the technology that the NHS needs is not particularly cutting edge. Making best use of it will need a more consistent level of commitment and involvement from leadership across the frontline, and a level of confidence in driving digitally-enabled transformation that is evident now in those places that are already getting this right.

We will expand our commitment to the people elements of technology, focusing on three areas in particular - leaders with the confidence they need, tech professionals properly supported and networked, and clinicians entering the workforce knowing how they can use technology and data to help their patients. All this will be in our Digital Ready Workforce agenda, in which HEE will be playing the key delivery role. The People Plan will set out the agenda in more detail.

We will also build the digital capability of our social care workforce, to ensure staff at all levels have the necessary skills to make the most of digital technology.

## Ensuring everyone can benefit

Not all our citizens can use digital products and services. Structural barriers like connectivity can exclude people such as those living in rural communities (where twelve percent of people struggle to access a decent broadband service). Almost 12m people in the UK lack basic skills or means to access digital services.

We need to make sure that digital transformation of health and care eases rather than exacerbates health inequality. People who live in areas of high deprivation and health inequalities tend to have multiple and complex health and care needs and are also more likely to be digitally excluded. Vulnerable people and excluded communities can benefit the most from the convenience and choice digital health technologies can offer, so we must ensure they have the same opportunity and ability to access these tools and services. In providing this access, we can help save money and reduce the burden on local health and care teams, allowing them to focus on those with greater need.

While technology can extend the reach of health and care services to some groups who have traditionally struggled to access them, other groups might be adversely

impacted. Locally shared health and care records and local systems who are transforming services through population health management approaches offer a unique opportunity to monitor inequalities more comprehensively and design services that meet the needs of those parts of the community that are often left behind.

NHSX is committed to work across the system to ensure that digital inclusion is built in to what we do. To do this we will:

- Ensure that the digital health products and services we commission and deliver nationally are accessible and meet the needs of the most excluded
- Ensure that standards and guidance drive market provision of accessible services by local commissioners
- Use data and research to segment and target those most in need, measure success and improve access to services, embedding digital inclusion into population health management
- Use our partnerships with the third sector and with industry to address the barriers preventing people from using digital tools and services
- Ensure local NHS organisations design digitally inclusive services that meet the needs of their most vulnerable and excluded patients

## Expectations of systems and providers

This will only work if every provider makes digital transformation a foundational part of their plan for the future, and every local system is built at least in part on digital technology.

This does not mean doing the same thing but with computers; it means ensuring that clinical pathways and business processes are reimaged and redrawn, in the light of the potential technology offers to allow us to do things better, more productively, with better outcomes and more personalised treatment.

This will require every **provider** to:

- fully integrate digital transformation into their strategic plans
- be data-driven, with insights from analytics driving continuous clinical and operational improvement as well as informing planning activity
- Ensure that all the systems used are compliant with national standards, including information governance and cyber security
- ensure that the use of tech is clinically-led wherever appropriate
- ensure that their leadership - executive and board - have the confidence to engage with technology
- make the necessary investments in people, and in the hardware, network and systems
- share best practice with the rest of the NHS

On top of these, it will require every **system** to:

- have a plan for system working that makes full use of digital technology
- ensure that patient data can safely flow across the system
- drive decisions on the basis of data and analysis

## Measuring success

We need to find the right metrics so we can tell how we are doing. These need to measure the outcomes we are actually trying to achieve, and be framed in a way that incentivises the right approach and avoids creating perverse incentives. This is an opportunity to engage the whole of the health and care system in a conversation about how we measure success.

We need to measure progress against core objectives, like the extent to which local organisations and systems are digitised, what we really want to know is the impact that has on the experiences of staff and patients and the outcomes that are achieved - whether health outcomes for individuals and populations or improvements in productivity.

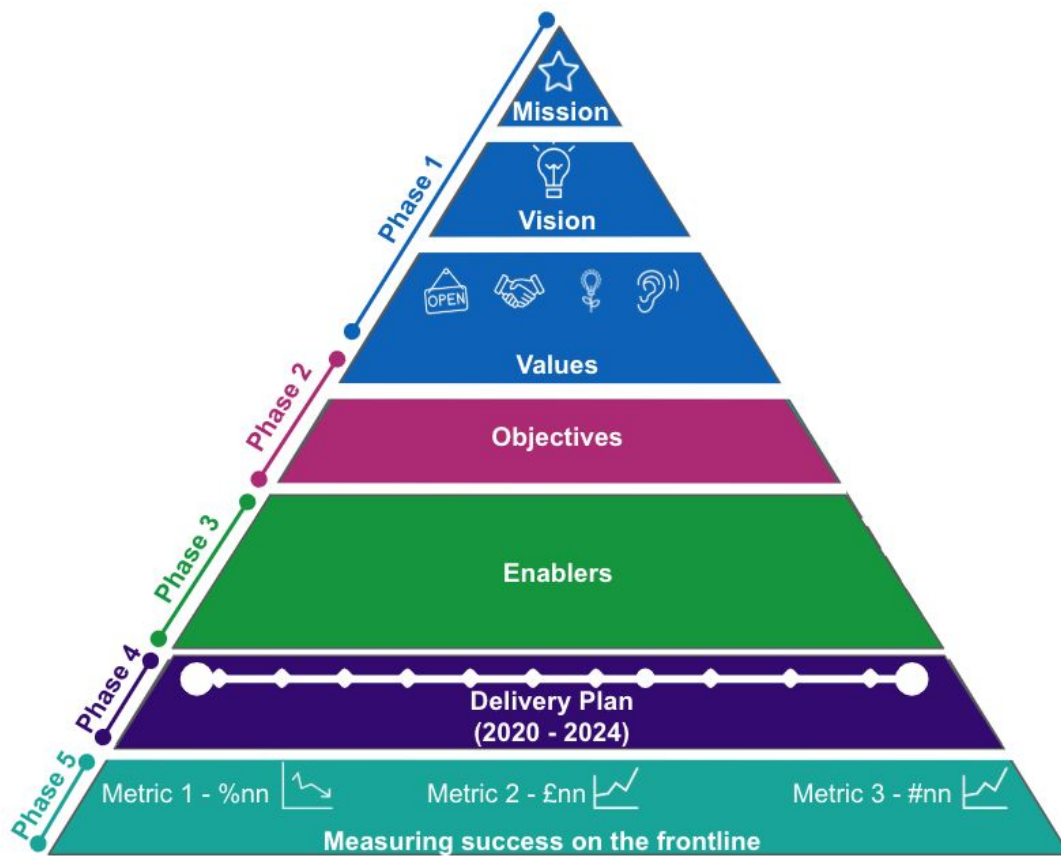
As a key part of this, over the next year we will develop a model for digital maturity that is appropriate for the UK, and measures outcomes rather than technology. This will need to work at the system as well as the commissioner and provider level. We will work closely with colleagues from across the health and care system to build this model. It should help ICSs and providers identify their investment priorities, and provide an effective mechanism for tracking progress over the coming years.

## The tech plan

We have set out 5 phases of consultation that take us from the vision through to our delivery plan and the ways that we will measure success. We'll be developing each section iteratively and make our work the best it can be.

We will actively engage with people across the health and care system, providing the opportunity for patients, health and care professionals and other frontline staff, researchers, managers and boards and other stakeholders to shape our work.

Our phases:



- **Phase 1** - we are publishing this vision, to set out what we want to achieve, and showing how tech will help deliver the NHS Long Term Plan.
- **Phase 2** - will focus on our objectives and missions - we want to check that they still provide a comprehensive framing for what we want to achieve. We will set out what we've done since NHSX was established, what we'll be doing in 2020/2021 and what the 3-5 year view is on each mission so that you and tell us whether we're focusing on the right things.
- **Phase 3** - will be about enablers, that help the health and care system to deliver excellent care enabled by technology. We will work with colleagues across health and care to define what good and outstanding in digital transformation look like for different types of provider as well as for local systems, both now and our best guess for 2024. We will set out who should pay for what. And we will say more about our approach to standards and architecture.
- **Phase 4** - covers our deliverables, up to the end of March 2024. This will cover areas where we might need to develop standards, guidance or policies, areas where we might need to establish funding routes or continue to provide existing ones and - only where it really makes sense - may also include products or services delivered centrally.
- **Phase 5** - will be used to define the ways that we will measure our success, both in making progress against digital maturity across the health and care system and also in measuring the impact it is having for patients and our workforce.