[Speech: My vision for a more tech-driven NHS](#)

All around us, a new generation of technology is changing all of our lives. From the mundane but useful, like the ubiquity of satnavs that stop family arguments and warn us of traffic jams, to the profound and extraordinary, like the ability of genomics to design drugs for each individual.

I started my working life in a tech business. My first job was solving the Millennium Bug in a start-up that takes postcodes and turns them into addresses – you may have used it to speed up your online shopping.

And I've spent most of my Ministerial career driving the proper use of digital technology. From transformation of parts of government technology, to promoting the use of technology across the economy, to legislating to protect us from the new risks it brings, to child safety and privacy.

Now I intend to bring that knowledge and experience, and frankly my unsurpassable enthusiasm for tech to Britain's health and social care system.

It's great to be in the company of so many here who feel the same. So much amazing innovation.

And boy do we need it.

I love the NHS. It's been there for me – as it's been there for us all – at some of the most difficult moments in my life. The NHS has saved the lives of my close family, and has cared for family and friends in their hour of need. I want the best for the NHS, and will do all I can to make that happen. We are increasing the NHS budget by £20 billion by 2023 to 2024, to guarantee the NHS for the long term. But money alone is not enough. We need to make the most of that money.

And the NHS is at the same moment the world's biggest opportunity for saving lives through modern technology, and the world's most frustrating place to work for its IT. The power of genomics plus AI to use the NHS's data to save lives is literally greater than anywhere else on the planet. Yet our hospitals operate dozens of systems each, that don't talk to each other. GPs, social care, pharmacies and community care are on different systems.

Systems crashing is a regular occurrence. In cyber security there have been improvements since WannaCry but this still needs work and board-level attention. The social care system is not at all integrated, when its integration is vital. The NHS is one of the biggest buyers of fax machines on the planet. And it's clunky, clunky, clunky. In many parts of many NHS trusts, workstations have two screens not because they are as cutting edge as a City trading desk but because they have two separate computer systems running side by side. Staff waste hours logging on, transcribing vital clinical data by hand or over the phone, the systems are slow, fail to

communicate with each other, fail to reconcile accounts and identities and rely on expensive, out-of-date badly managed contracts with low-grade suppliers that don't understand the core business they're intending to support.

I could go on.

And the net result is not just scarce resources wasted but countless hours of clinical staff spent trying to work broken systems, patients being given sub-optimal care because the systems didn't communicate, and ultimately lives lost.

But bad thought this picture is, it's even worse than this. Much worse. Because the standard against which we should measure the NHS's tech is not just the current systems working better, but the best that technology could offer the NHS. And against this standard we are falling even further behind — the gap between where we could be and where we are is wide and getting wider. Our doctors, nurses, GPs, pharmacists, our patients, should all have easy access to the best tools that technology can give them.

Only then will we know that we are making the most of our wonderful NHS staff, and offering the very best care of the nation.

So it is an immediate priority of mine to sort out the technology of the NHS and social care systems. I really care about this. And today I want to take a moment to set out how we're going to do it.

First, it's worth looking at the history, because there's a reason we're in this mess.

Like many federated ecosystems, digital technology in the NHS built up in a piecemeal fashion. People started using it to replace existing systems to make their lives easier.

Then as the technology matured, in the early 2000s the senior management decided to try to upgrade NHS IT, and bring it together. This was in vogue and had been done across many organisations. But almost no organisation — bar China's People's Liberation army and Walmart — is as big as the NHS. So despite best efforts, the top-down attempt to impose a new system — and procure a new system — for the whole NHS failed. It failed pretty catastrophically, and millions of pounds were wasted.

The consequence of the failure of the National Programme for IT was for the NHS, its leadership and delivery partners to learn many correct lessons, but also some wrong lessons.

Correct lesson: don't try to build national databases with all the data in one place.

Wrong lesson: don't set national rules to allow databases to talk to each other.

Correct lesson: don't try to procure a new national IT system centrally.

Wrong lesson: let every organisation procure whatever they like locally without any rules on how they are structured.

Much has moved on since the National Programme was canned in 2010. The NHS infrastructure is stronger and moving in the right direction. Local pockets of brilliance shine out. The generic technology itself has moved on a million miles. And we have learned a huge amount about how to deliver cutting-edge tech in very complicated settings with big legacy systems.

I can understand why leadership would shy away from grappling with technology given the history, but we must get back to driving this transformation. We must drive this agenda and you need to know that I've got your back. The biggest risk is not driving digital transformation. The biggest risk is not doing digital transformation. So please hear this one message very clearly — I am not looking for people to blame; I am looking for people to lead. We will together drive this chance. We will make mistakes, and mis-steps. We will learn the right lessons from them and move one. Most importantly, we will move forward with confidence, creativity and determination.

Now is the moment to put the failures of the past behind us, and set our sights on the NHS being the most cutting-edge system in the world for the use of technology to improve our health, make our lives easier, and make money go further, harnessing the amazing explosion of innovation that the connection of billions of minds through digital technology has brought to this world.

There is good work to build on in individual trusts, in Local Health and Care Records, and in the growing HealthTech ecosystem.

We must harness the power of peoples' innovation — in a full spectrum from the most mundane to the most exciting. From basic IT to advanced AI.

And here's how we're going to do it, in six parts.

First: Talk to each other

We know from painful experience that putting data into one big database is bad practice. But likewise, having thousands of databases that don't talk to each other costs lives too.

A world in which we ask an ill patient many times over for their name and address is a problem. A world in which a hospital can't pull up a patient's GP record is downright dangerous.

So our systems need to be able to talk to each other.

We are not going to achieve this by trying to buy one big system for everyone.

But it can be done.

Where it's been successful elsewhere, the centre has imposed strict, mandated, open standards for interoperability of systems. In English: only systems that talk to each other can be used. So this is what we're going to

do in the NHS.

And it's already started with the Local Health and Care Record Exemplars which are based on locally-led delivery, joining up data from health and social care, gaining and maintaining trust by bringing along the public and care professionals with attention paid to privacy from the start.

And because it's embedded as part of service transformation and implemented through transformed care pathways, this will ensure that it's useful, usable and used.

We will publish robust standards in the coming weeks that IT systems must meet if they're going to be bought by anyone in the NHS. No system will be allowed to be bought that does not meet these standards. Existing systems will have to be upgraded to meet them. The standards will be simple, setting out the APIs that allow for the right people to interrogate other systems for data. They'll set out the standards of permissions required, and the privacy and cyber security requirements. The standards will be open, so that anyone can see them, and anyone writing code for use in the NHS knows what the standards are before they start.

Standards of interoperability, privacy and security complement each other. It is my profound belief based on half a lifetime's experience that good-quality data management will both improve privacy and security, as well as improve innovation and user experience. Health data is often deeply private, and its privacy and cyber security must be protected. But we don't do that by preventing its use – we do it with clear rules about its use based on consent and strong architecture. The new Data Protection Act, implementing the gold-standard GDPR into our laws provides the right legal basis for privacy and must be respected in letter and spirit across health and social care.

At the core of interoperability in the health and care system is the patient record. And by an electronic patient record I don't mean an application or a particular company's software. I mean the record – the data.

It's worth stressing this point with an anecdote. Last year my sister suffered a severe head injury. Her life was saved by the ICU at Southmead hospital in Bristol. She spent days in a coma, and over the weeks and months that followed gradually recovered. When she went to her GP, who is a brilliant GP, six months later, to apply to get her driving license back, the GP asked: "But why was it suspended?". Her GP had no information at all about her near-fatal accident or any of the treatment she had received. I wish this was an isolated case. But I've seen in so many other cases just how bad the systems are at talking to each other.

We need to move to a world in which a citizen's patient record can be securely accessed by themselves and staff according to clinical need. There is fantastic work going on. This morning I was at the outstanding Salford Royal where the principles are already in action and the advances are amazing. In my own local West Suffolk I've seen the improvements gather pace. I want to see this and other good practice expanded and accelerated.

And I want to see this acceleration based on broad principles of patients' consent; of strong identity security; of canonical sources to remove duplication; of interoperability not one big database. And perhaps above all, on the principle that it is each one of us as a citizen who ultimately own the data.

We have seen a number of false starts on the use of patient data in the NHS. There are still many scarred by the care.data debacle. But again, we need to learn the right lesson. The wrong lesson would be to leave patient data alone as too much trouble. The right lesson is that we can get this right if we are up front with patients about what we are doing and why. We know that patients will give their consent if they hear from people they trust about the difference that their data could make.

Get the consent right, get the data architecture right, and we can unlock great improvements in patient care.

Is this enough? No.

It's not sufficient. But it is necessary. It's the platform.

Next: buy the right stuff

Mandated standards are just the start. Too often people with too little technical understanding are buying IT from suppliers who want to capture the buyer so they can't ever go elsewhere. Suppliers' interests are too often not aligned with the NHS's interests, and the contracts badly managed. This supplier capture is common in IT, but it is not inevitable. So we are seriously going to increase the in-house capacity to understand the technology, to procure the right things, to manage them better, to split up big contracts into smaller pieces, to ensure an agile, iterative approach focussed on the question: what is the user need?

This takes a culture change. Out with the big service contracts. In with more agile in-house teams that can be smarter at contracting. I don't want to see any more the automatic knee-jerk response to an IT problem of engaging big consultancies to tell us what the problem is, offer to sell us the solution, and then mark their own homework. Instead we need to build in-house capacity to lead design and delivery, and this will also enable good providers to work more effectively with the NHS, deliver more successfully and operate with less risk.

We've started at the centre, extending the capability of NHS Digital. I know this sort of capacity costs money, so I am today allocating £200 million for the next round of Global Digital Exemplars to help trusts go on this journey.

And I say to suppliers: I've heard some horror stories already. I've been appalled at some of the tales of blockages, especially in providers of systems for primary care. We are going to be extremely robust with any supplier who doesn't live up to the new standards we are mandating. I want all our existing suppliers to come with us on this journey. But if you don't want to come on this journey, you won't be supplying IT to the NHS.

We're going to buy the right stuff.

Third: HealthTech and the cutting edge

Britain has the chance to lead the world on HealthTech. We already have some of the world's best HealthTech companies — Babylon, Touch Surgery, Benevolent AI and hundreds of others are all bringing new innovations to UK patients and further growing the international reputation of our world-leading science and research base. We have exciting research going on across dozens of our universities. And we have the world's biggest health institution. I want to use all of this to build an ecosystem of the best HealthTech in the world.

Moorfield's Eye Hospital has published the results of their work with Deepmind — using AI they are now able to identify over 50 eye diseases with 94% accuracy. It's a step towards revolutionising the way professionals carry out eye tests. In Cambridge, Addenbrooke's have used Microsoft's InnerEye system automatically to mark up scans to assist radiology treatment for prostate cancer patients. These collaborations between the NHS and industry exhibit how the most innovative parts of the health service can work with advanced technology companies to deliver better patient outcomes.

Just as we have curated a world-class ecosystem to make the UK the world leader in FinTech, so we can do the same in HealthTech too. We need a strong environment for enterprise, where innovation is supported. This doesn't happen on its own. We must put in place a framework that allows innovators and technology companies to thrive — to meet user needs — and most importantly to support the uptake and adoption of the best of those services. We need to work unceasingly to nurture that ecosystem so HealthTech innovators feel supported and can see our commitment to them, and their ground-breaking discoveries.

Building an ecosystem means setting standards, securing access to finance, opening up procurement, deepening the talent pool, and offering the full range of support and collaboration. There's no reason why Britain's HealthTech ecosystem can't be the best in the world, and why the British HealthTech sector cannot contribute massively both to the nation's prosperity and global standing.

Earlier this week Lord O'Shaughnessy launched for consultation our first draft of a Code of Conduct for Data-driven Technologies in Health. We want to work with you and with industry and academia to ensure we are set up to benefit from the extraordinary growth in AI, which has such power to improve care and save lives.

The Code of Conduct is important to ensure that technologies like AI work for us — with ethical standards we are happy with. Across the full spectrum of digital adoption, the open national standards will allow any HealthTech business, small or large, to know what the rules of the road are so their kit can slot straight in.

The standards we set at the centre for privacy, cyber security and data will not only work for us as buyers, but promote innovation by creating clear

rules for innovators. We need to tell suppliers and developers what we need and where they can help us — while leaving them as free as possible to provide cutting-edge solutions that meet our standards. And I want local system leaders to recognise how important these standards are in enabling them to deliver local service transformation. This is a board-level issue to get this right.

We need to create the flexibility for local organisations to buy the tech and commodity services they need that meet those standards. They understand the needs of their users best and we must help them be better, more informed customers. We need them to be free to choose from the broadest possible set of choices to meet the needs of their patients and staff.

And we need to recognise that health isn't always different. We must make use of the best technology available to support some of our most basic needs — and not reinvent the wheel for the NHS. We need to use common services that save money, reduce complexity and enable innovation to build on stable and predictable platforms. We need tech as good as we have at home — and there is no reason not to use some of the same devices and software we all use to manage the rest of our lives.

HealthTech isn't just about selling into the NHS; we need to recognise how much happens before the hospital visit or GP appointment. The app that helps a patient to manage their diabetes, the device that measures and celebrates when you go for a run, the gentle reminder to set sleep patterns — the HealthTech ecosystem can support prevention and help us all manage our health like we do our finances. These digital services might send data into the NHS, but are largely outside of our systems. We need to create the conditions in which they can grow, not only building on our digital economy, but also helping people to prevent the need to see the doctor in the first place.

This ecosystem we will build must reward new approaches and make the rules as clear and simple as possible. We need to make it easy for anyone — software developer in a startup or clinician with a good idea — to see how to get a good idea off the ground, fit within the rules, get into active use, then promulgated across the system.

Fourth: Backing the NHS to succeed

The digital revolution in healthcare cannot rely solely on the innovations of industry. There is a huge role for the NHS to play in developing solutions and co-creating them with industry, recognising the value that trusts bring to the table.

So I'm delighted that the NHS itself is developing cutting-edge innovations.

I can announce that the NHS app will enter private beta this month and be available nationally from the end of the year. I've learnt a lot about app development and can tell you that this one looks really good.

It will be tested across 5 sites, starting in Liverpool and will give patients the ability to book GP appointments, access the NHS 111 service, and

view their GP record – enabling them to interact with the NHS the same way they do their bank.

I like it. But more important than me liking it, the design has been led by user testing and user need. Research published by Roche here at Expo shows just how welcome the NHS app will be. More than half of 16-24 year olds asked, said they would actually prefer to receive GP advice online or via an app than face to face. We must respond to this change in expectations. This is just the beginning of the process. Patients who want to will feel the benefits of being able to access services through their fingertips, rather than needing to pick up the phone or physically walk into a GP surgery. It is a big step in making the NHS resemble the rest of the modern world around us.

I love the fact the NHS is doing this. I want to support anyone in the NHS developing new technology that can improve care.

And I also want to reassure those in the room building their own products that we have no intention or desire to close off the market – in fact we want exactly the opposite. We want to back innovations that can improve our NHS, wherever they can be found.

That brings me to part five: a new skillset

To do all this we need the right skills as well as the right tools. We will work to build technical skills in the whole health and care system to help them manage their tech, meet their user needs, articulate those needs better, guide innovators through the rabbit warren and buy the best tech.

This isn't a blanket or bland call. For most staff the IT they use every day should be easier and meet their user needs, not be an additional burden they need to be extensively trained for.

Like good tech elsewhere, we need technology that makes life easier for hard-working and often over-stretched staff. We need technology that can run basic tasks and processes more efficiently. This will save the NHS money and free up staff time – money and time that can be better used to provide great care.

To those on the front line, frustrated by breathless talk of Artificial Intelligence when all you want is a decent working system: I understand the frustration – and I am determined that we use tech to make things better for you.

In some trusts this is already happening. I've seen how Tyne and Wear NHS Foundation Trust, for example, use technology as simple as Skype to make staff lives easier. Other trusts are using instant messaging services – like the CareFlow Connect App at University Hospitals Bristol, which enables staff to quickly and more accurately share information with each other – using their own mobile devices.

There are also many great innovations aimed at improving patient care across settings, like right here in Manchester where the Greater Manchester health and care system is one of our Local Health and Care Record Exemplar

programmes. They will ensure that a patient's data is available when they move between different parts of the health and care system, improving patients' care and reducing the burden on staff

Or the Care Home Bed State Tool developed by NHS England North, which enables staff to locate available beds in nearby care homes instantly – reducing the need for nursing staff to spend all day on the phone ringing round and freeing up beds in acute settings. I've also seen real-time patient tracking devices that use wearable technology to track a patient throughout their stay, making administrative life easier and showing immediately when a bed is empty and needs cleaning following a patient's discharge from hospital.

We need to equip staff all across the NHS with the right skills to constantly innovate and continuously realise the benefits that technology will provide.

And crucially, we need the skills and capability in management and leadership to build this technology. I want every Trust Board and STP leadership team to drive this, and ensure this transformation happens. Driven only by an enthusiastic IT Department reporting to the CFO it will fail. Owned by the whole organisation, the Board, the Chief Executive, and the clinical leadership, and the opportunities to improve our NHS are huge. And you have the support of the National Leadership of the NHS and the Department of Health and Social Care to make it happen.

And as technology develops, and as that breathless talk about AI turns into effective systems and tools, I want our staff to be able to use them with confidence, in the knowledge that they will be able to do their job better as a result, rather than fear them as impenetrable technologies that will put them out of a job altogether.

I want to embed these skills right across the NHS and social care. And I want to hear from you about it too.

And this brings me to my final point: culture change

The truth is, it is not the technology that is holding us back. Just being able to make the best use of technology that has already been invented would transform health and care in this country. In all my experience of digital transformation it's no different. Only 10% of the challenge is the tech. 90% of the challenge is the culture.

To make the changes that are needed we must work together and have a common vision. We need to couple this with an agile culture where we constantly improve systems and champion the innovators.

We, at the centre, must support them by creating the environment where technology can deliver and continue to deliver against ever-changing needs.

We need to stop the narrative that it's too difficult to do it right in health and care.

The culture of adoption has to change too for this digital age. The culture of the NHS is understandably that clinical trials take time so we should

adopt new ideas only once robustly and repeatedly tested. Yet a new generation of technology has arrived that can be rapidly adopted, rapidly assessed, and rapidly iterated. Of course, all this must be based on evidence: something isn't good simply because it's "new". It's good, because it works. But evidence needn't be expensive: we must also use the power of data, and software, to make it easier for innovators to assess the impact of their tools on real-world outcomes, in real-world data. We must ensure that our staff have the skills to assess that evidence, to work proportionately, and decide what level of evidence is required for each procurement choice, each clinical decision. This is how we maintain tempo, and incentivise innovation: by ensuring that evidence is generated swiftly, and used thoughtfully. By adopting new technology that works, while swiftly disinvesting from those tools and processes that fail to show benefit. Adopt. Iterate. Improve.

The culture change we need to see requires strong management and leadership. I'm determined to grow stronger leadership across the NHS. We should train more of our own, yes, and bring in more talent from the outside too who know how to inspire change. And we are starting this at the top. I am creating a HealthTech Advisory Board which I'm delighted will be chaired by Dr Ben Goldacre, reporting directly to me, consisting of tech experts, clinicians and academics, and, as in the case of Ben, people who combine that holy trinity 3 in 1. It will highlight where change needs to happen, where best practice isn't being followed, and be an ideas hub for how we transform the NHS to improve patient outcomes, patient experience, and to make the lives of NHS staff easier.

I know that many of you have been crying out for these changes. I have heard this over and over in the weeks and months since I became Secretary of State for Health and Social Care.

I know there are many brilliant people trying to do the right thing and I will back you. And I say to health and social care leaders: I expect every board in the health and care system, to grapple with this agenda and back the people doing the transformation. I am determined to make this happen — for the sake of the millions of you who work in health and social care. For the 50 million people in this country who rely on you in their hour of need.

To help in our mission to guarantee the NHS for the long term, to make the NHS the best it can be.

So let us work together to put the best technology on the planet to work.