

NHSBT Technology Strategy 2022

Technology enabling a world
where every patient receives
the donation they need

This Technology Strategy will enable the delivery of the wider NHSBT Strategy

As we look to the future, our ambition is to save and improve *even more lives*

To deliver this we will:



Grow and diversify our donor base



Modernise our operations



Drive innovation



Collaborate with partners



Invest in people and culture



Our vision: A world where every patient receives the donation they need

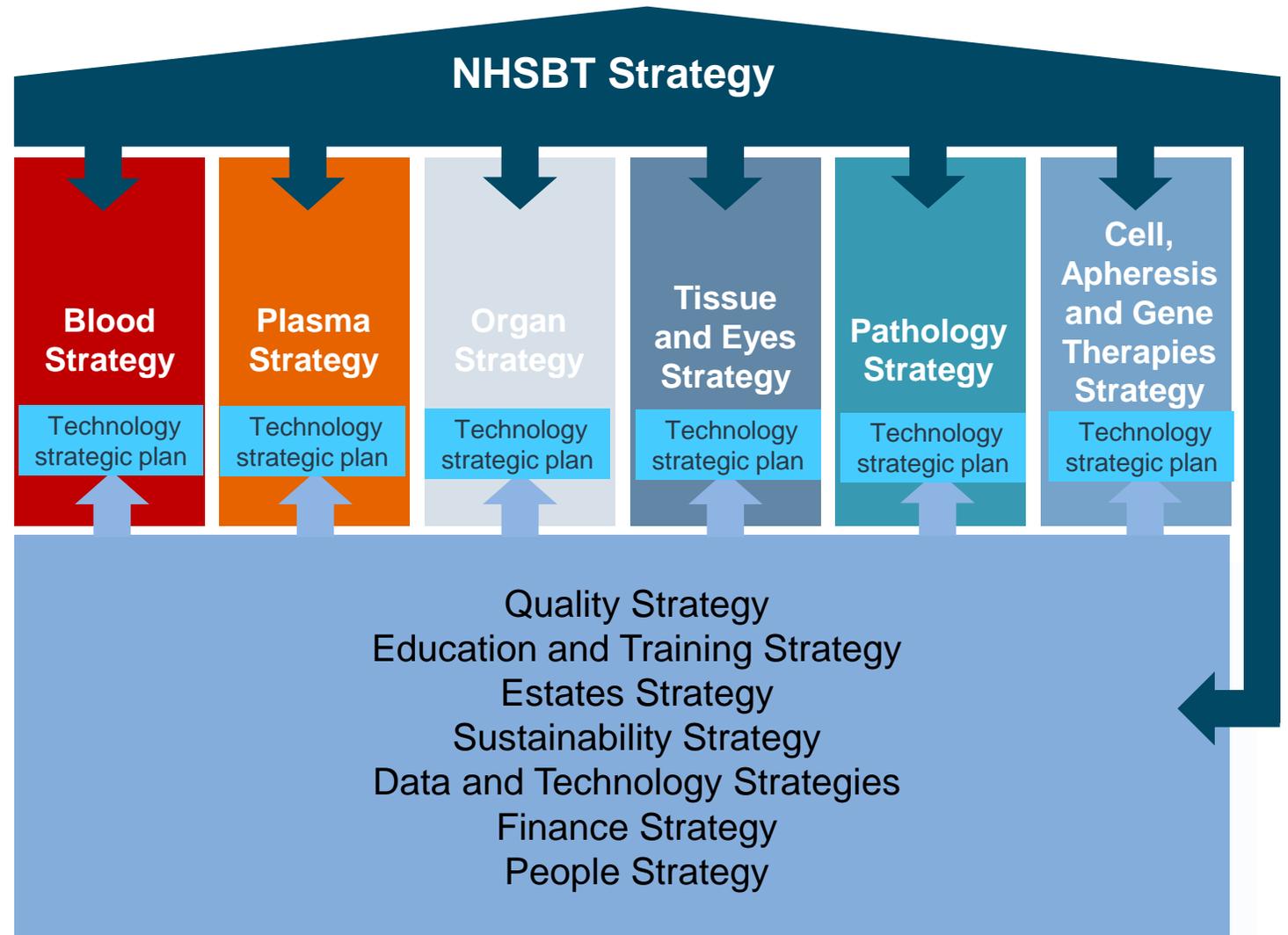
The Technology Strategy sets future technology direction, detailed plans will provide more detail for each service

NHSBT strategy outlines our ambition and strategic priorities

Service and functional strategies will set out further detail

The Technology Strategy is a functional strategy that sets our direction of travel, and is informed by the NHSBT strategy, analysis of our current technology, and new emerging technology opportunities

Technology strategic plans for each Service strategy and group functions will define detailed roadmaps and funded workplans



Technology at NHSBT: who we are and what we do

Our People



267 staff in the digital, data and technology function with an engagement score of **7.9** out of 10

A small but growing number of **Digital Leaders** across NHSBT

>90 Data scientists, analysts and managers across NHSBT

15 strategic technology supplier partners

Award winning staff with accolades in Cyber, IG and CIO functions



Our Technology

Systems that are used by **6,400** staff across **90** locations and by **260** hospitals

>6,500 mobile devices supported

Systems that enable **>30m** donors to register as donors

Leaders in **accessibility** of donor facing technology

App and portal that support around **2.5m** donor appointment bookings each year

Systems that support a supply-chain of **>1.8m units** of red cells, plasma and platelets each year

Systems and **complex algorithms** supporting **4,000** transplants per year

Provision of support to the **international community for rare donors**

3.5bn cyber events monitored, analysed and addressed in a 90-day period

National platforms such as Notify and NHS App and NHS Spine

Highly regulated safety critical technology, 5 systems defined as **Critical National Infrastructure**

Multi- cloud environment, 1 on prem datacentre and 2 co-located datacentres hosting **>500 Terabytes** of data

Our vision is to deliver technology that enables a world where every patient receives the donation they need

Our Strategic Goals

Simplify the life of our people > reduce frustration

Systems that make it easy for everyone to do their jobs wherever they are located, working collaboratively with colleagues and automating and simplifying tasks to free up valuable time.

Improve the donor experience > increase satisfaction

Digital services for all our donors that are beautifully designed, inclusive to all and take full advantage of NHS and Government shared platforms.

Simply the life of our customers > reduce barriers

Services that make it easy to collaborate and digitally exchange data and information with us from across the NHS, automating and simplifying tasks to free up valuable time.

Improve patient outcomes > right product

Digital, data and technology that enables the right products to get to the right people on time, provides the data required to understand the impact of our products and services and drive future innovation..

Increase capacity and capability > reduce bottlenecks

Work collaboratively with Services to extend planning horizon so that we can build teams with the right skills, capabilities and capacity to deliver against strategic plans.

Our Guiding Principles*

1 Make things accessible and inclusive Ensure our technology caters for different user needs and meets accessibility guidelines and standards

2 Make things safe Ensure our technology is safe by taking a risk based approach to validation

3 Be open and use open source Use and create open-source technology where possible to enable re-use, easier and more cost-effective upgrade roadmaps

4 Make use of open standards Use open standards for hardware and software which enables standardised upgrade paths and avoids vendor lock in

5 Use cloud first Consider cloud technology first, which will reduce our costs, lower our environmental footprint, and speed up delivery of digital solutions

6 Make things secure Keep systems and data safe by applying the right levels of security and managing risk to reduce the impact of security threats

7 Make privacy integral Ensure users rights are protected by integrating privacy as an essential part of our systems and data flows

8 Share, reuse and collaborate Leverage existing pools of knowledge, know-how, technical resources, including data, APIs and services to expedite, simplify and de-risk

9 Integrate and adapt technology Design solutions that enable seamless interoperability within NHSBT and the wider network

10 Make better use of data One version of the truth, with data leveraged as a highly valued organisational asset

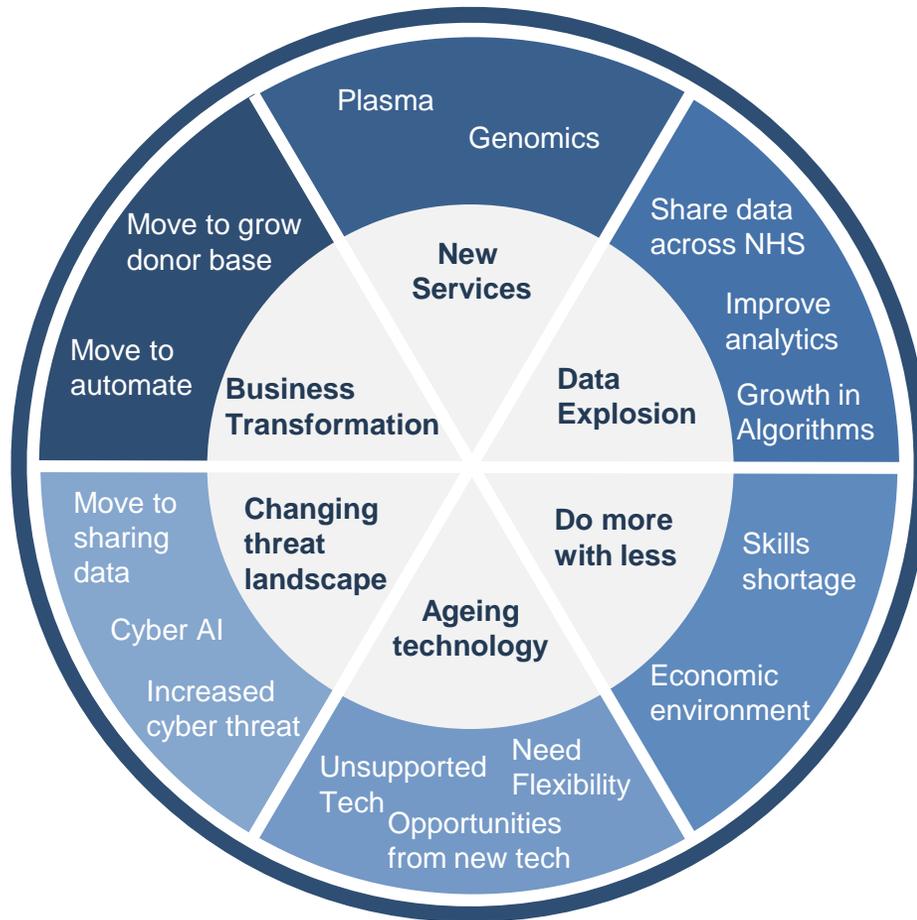
11 Make technology sustainable Improve the management of our technology resources through re-use, reduced waste, and procurement of sustainable technology and digital services

*Principles align with Government DDAT Functional Standard 005 and NHS Vision for DDAT



We've identified **six technology priorities** that respond to key internal and external business drivers

Why these six technology priorities?



1 Business Transformation drives True Digital Transformation

Transforming the way we work is at the heart of NHSBT's strategy and much of that transformation will have to be underpinned by working differently. Digital transformation has already delivered significant benefits by digitising organ transplantation pathways, donor experience and blood collection sessions. But, the work is not complete and many areas are still operating off paper processes.

2 New services drive Technology for New Business

New products and services such as Plasma and Genomics will require the right digital and technology infrastructure. To deliver benefit at the pace required we must deliver new technology with a start-up mindset, capitalising on the opportunity to leap-frog existing systems and build the technology of our future.

3 Data explosion drives Data Sharing Made Easy

The explosion of data and increased digitisation of systems creates opportunities to improve patient outcomes, increase productivity and improve operations. Data needs to be in the hands of people who need it when they need it and not locked away in systems, spreadsheets and proprietary databases.

4 Do more with less drives Democratisation of IT

A challenging economic environment and growing worldwide technology skills shortage, coupled with the emergence of new 'low code' technologies make the democratisation of IT an attractive and necessary option. This creates a digital workforce of business technologists equipped with powerful tools and supported by adequate guard rails, so that we can drive greater productivity.

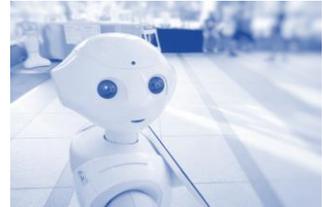
5 Ageing technology drives Modernise Core Technology

In common with many other organisations legacy systems create security risks and stop us innovating at pace. Building unique technology only used by NHSBT is expensive and slows us down. Modernising core technology and moving to shared platforms to free our data and enable agility is essential. We still have a lot of heavy lifting to do to modernise Critical National Infrastructure.

6 Changing threat landscape drives Zero Trust Security

New 'work from anywhere' habits, the increased cyber threat to healthcare and ageing technology create a perfect storm that put zero trust security firmly into our top 6 priorities. With over 5 trillion cyber events in 2021 and 3 person million shortage in the global workforce, we must make the short form manual to scaled AI analytics.

Our **six technology priorities** are aligned with key outcomes in the NHSBT strategy



True Digital Transformation

to grow our donor base, empower our people and automate everything we can

- Processes are digitised and automated, no more paper
- Ethically apply algorithms, machine learning and AI to solve key problems
- All donors access NHSBT from a single front end



Technology for New Businesses

with a start-up mindset to deliver outcomes at pace

- Plasma unshackled by using new technology where possible
- The value of new technology can be quickly assessed by the innovation hub



Data Sharing Made Easy

to improve patient outcomes, decision making and operational management

- Data skills and technology are improving decision making and driving insights
- We can support genomics data platform
- We have NHS wide data sets, without compromising privacy.



Democratise Technology

to empower people to quickly build their own technology

- Our people can automate their own processes and manual tasks without DDTS
- People can safely use their own devices
- Self service infrastructure



Modernise Core Technology

to improve safety, resilience and agility

- All IT platforms are stable and secure
- Shift from bespoke to standard platforms
- Our technology is in the cloud, increasing flexibility & capacity
- All our people can access digital services wherever they are



Zero Trust Security

to protect NHSBTs systems and data

- Industrialise our use of cyber AI
- All regulatory security needs met
- Everything secure by design
- Enabling people to work securely wherever they are

Not all priorities are new but they will all be delivered using **new approaches**



...and they enable the delivery of five priorities in the NHSBT strategy



To enable delivery of the “**Grow and diversify our donor base**” NHSBT priority we will...

	<p>Digital Transformation</p>	<ul style="list-style-type: none"> ▶ Deliver a marketing platform with all required data feeds ▶ Deliver behavioural insight technologies with rich data sets ▶ Create a single NHSBT front end for all our donors ▶ Integrate NHS channels for donor registration - NHS Login & App ▶ Enable transformation of donor experience inc. consent, blood typing at home, share back donors data
	<p>Data sharing made easy</p>	<ul style="list-style-type: none"> ▶ Use our new data platform to provided rich internal and external data sets to drive marketing and improve donor insights



To enable delivery of the “**Modernise our operations**” NHSBT priority we will...

	<p>Modernise Core Technology</p>	<ul style="list-style-type: none"> ▶ Complete modernisation of blood technology and core platforms ▶ Move to cloud to increase flexibility, and reduce costs and carbon
	<p>Digital Transformation</p>	<ul style="list-style-type: none"> ▶ Build a digital transformation capability to automate everything we can (human centred design) ▶ Explore the value of automation technology such as RFID, robotics, AI, monitoring and digital twins
	<p>Data sharing made easy</p>	<ul style="list-style-type: none"> ▶ Implement a data platform with the tools to enable performance monitoring and analysis ▶ Empower users to build their own dashboards and analytics
	<p>Zero Trust Security</p>	<ul style="list-style-type: none"> ▶ Secure our systems and data though cyber IT

...and they enable the delivery of five priorities in the NHSBT strategy



To enable delivery of the **Drive innovation** NHSBT priority we will...



Data sharing made easy

- ▶ Use cloud technology to manage very large genomic data sets
- ▶ Use our new data platform to provide access to an integrated NHS wide dataset.
- ▶ Adopt data standards to support sharing & joining up of data



Digital Transformation

- ▶ Digitise OTDT donation pathways
- ▶ Establish innovation framework and hub



Democratise Technology

- ▶ Establish innovation framework and hub
- ▶ Deliver democratised IT services to empower our people to build their own solutions – do more with less



To enable delivery of the **Collaborate with partners** NHSBT priority we will...



Technology for New Businesses

- ▶ Unshackle Plasma & Tissues by using new technology, not legacy
- ▶ Define approach to delivering education and training to partners



To enable delivery of the **Invest in people and culture** NHSBT priority we will...



Technology for New Businesses

- ▶ Deliver a workforce planning and recruitment platform and data
- ▶ Provide technology to ensure all NHSBT workers are engaged and informed on a level playing field

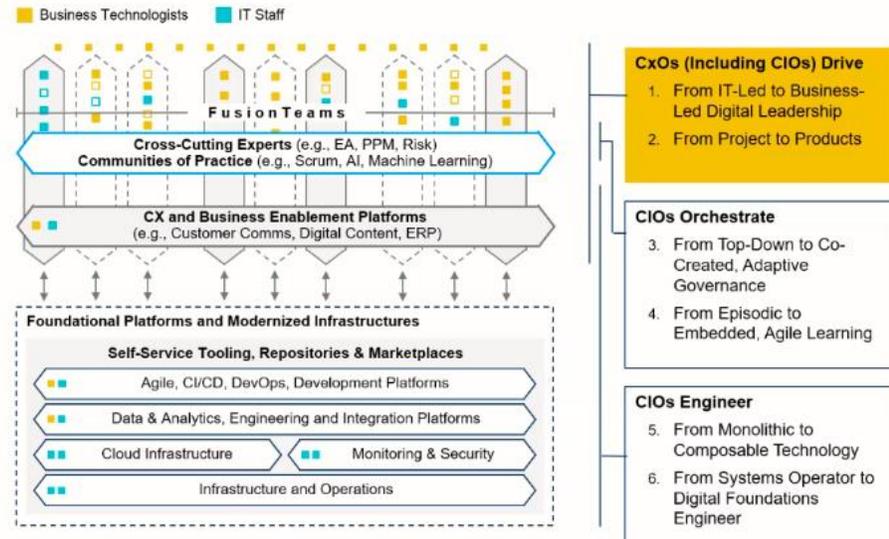
To deliver successfully, we need to **deliver cultural change and strengthen digital skills** across NHSBT

1. Creating a cultural shift

- We need to create a shift towards technology and data transforming ways of working, not just digitise old ways of doing things. This will drive change to jobs and skills across the organisation
- Cross NHSBT Digital Leadership working in equal partnership with DDTS is critical to success.
- We're not trailblazers on this, it's a new and recognised way of working (see Gartner model below)

A New Operating Model for the Digital Enterprise

Critical Changes Pursued by Progressive Enterprises to Democratize Technology Work



Source: Gartner

2. Important principles

1. Continued investment in **professionalisation** of Digital Leaders (including Executive), Business Technologists and DDAT (Digital, Data and Technology) staff is essential.
2. Digital skills become part of our **employee offer**
3. Keeping in step with **DDAT pay and reward** across Government and NHS is a minimum requirement to remain competitive.
4. Strong networks across Government, NHS and private sector required to ensure we can reach the **best talent**.
5. Partnerships with **strategic suppliers** to enhance and extend internal capabilities will become even more important.

3. Essential skills & capabilities



All People

- Essential Digital skills



Business Digital Leaders

- Service design and ownership
- Digital transformation
- Agile and product thinking mind set
- Accredited Senior Responsible Owners



Business Technologists

- Report and analytics - i.e. Power BI and SAS
- App creation – i.e. Power Apps, Monday.com, low code platforms
- Data scientists – algorithm development



DDAT Staff

- Product Management, Agile, Leadership and regulatory
- Cyber security and data privacy
- DevSecOps skills
- Development skills (full stack, React JS...)
- Cloud (Azure, Oracle...)
- Platforms (Marketing, ERP, HR...)
- Data (Data scientist, AI, Power BI...)

Additionally we will explore **accelerating innovation and collaboration** by bringing together problem solvers and technologists from across NHSBT, partners and industry in an innovation hub, taking inspiration from others who have done this really well

Establish an NHSBT wide innovation hub

An innovation hub is made up of a few dedicated people, some tools, processes, collaboration partners and a small budget. Hosting the hub in the Strategy function would ensure that it focusses on the most important problems and opportunities.

Identify problems to solve

The innovation hub is there to support leaders in solving complex or simple cross organisational problems that require multiple disciplines – data, tech, process, people. All problems should have a sponsor.

Bring people together to collaborate

The hub provides the space (virtual or physical) some tools and processes and will help convene people to work together internally and with external partners to solve problems quickly using events like hackathons.

Give people the tools and get out of their way

To run a successful hackathon people need the tools to do the job, once they have them there should be few restrictions as to what they can do in the innovation environment.

Move fast, fail and adapt

Not everything will work, the emphasis should be on failing fast and moving on

Create innovation theatre to encourage participation

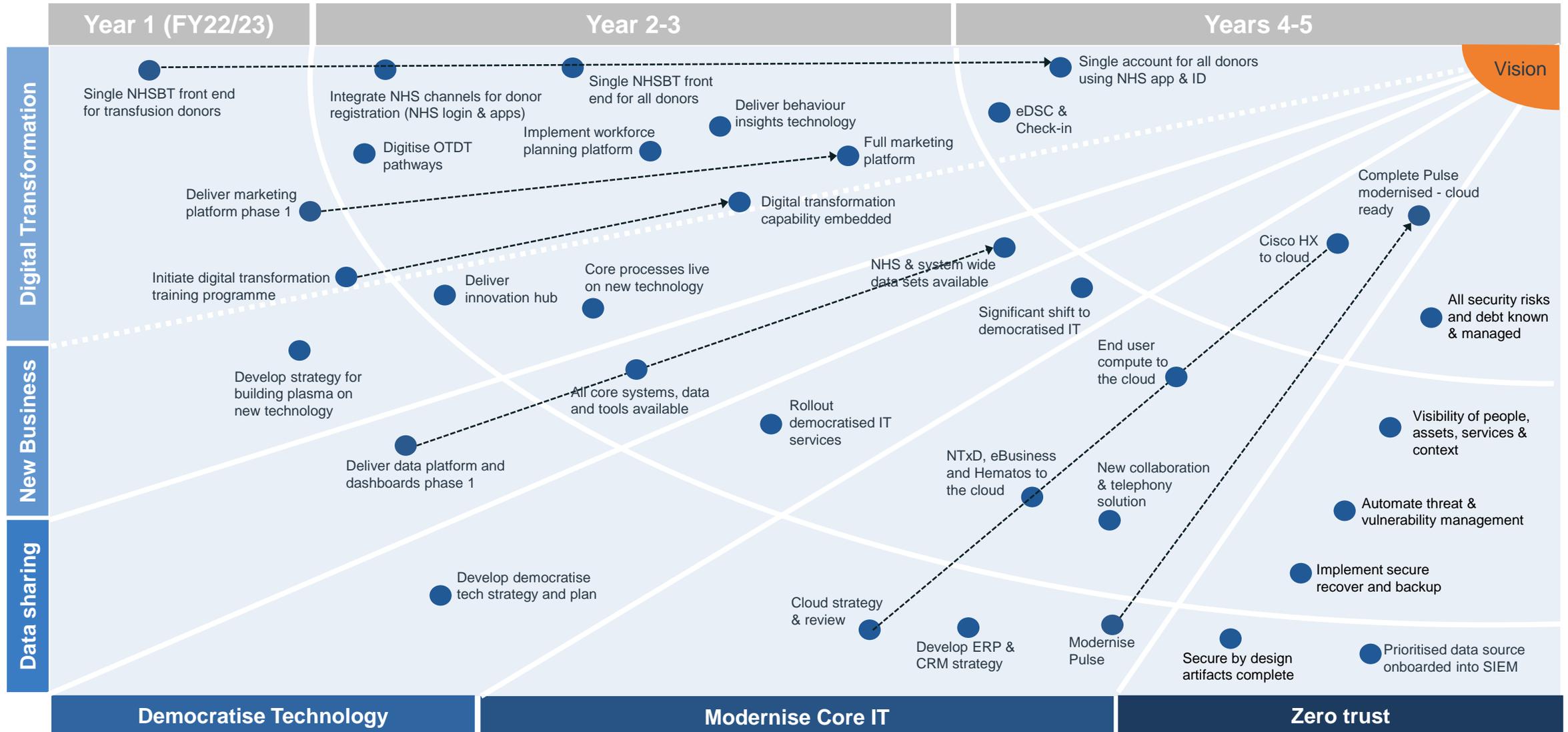
It's important to celebrate both success and failure through telling the stories that create a movement that people want to be part of.

Put in place process to scale innovation

Make sure that successful experiments have a route to scaling & industrialisation



A high-level roadmap will support collaborative technology planning with key stakeholders, ensuring the right foundations are delivered in the early years



Delivery of the strategy will be funded through **four main sources**

1. Transformation Fund

The majority of investment will come from Blood & Group, OTDT, Clinical and Capital transformation portfolios (currently ~£35m per annum for tech and non-tech transformation).

Many of the specific capabilities mentioned are already baked into the NHSBT strategy and service strategies that exist. As service plans are fleshed out it will become clearer whether existing transformation funding levels is sufficient.

Provisioning platform capabilities (e.g. data) and moving to cloud based services early will enable much greater agility and accelerate our journey.

Assume: £20 - £25m annual investment in data and technology

2. Annual Budget

Some but not all new capabilities will drive increases to Digital, Data and Technology costs. However, business led Digital Transformation should increase productivity, reduce manual effort and enable cash releasing savings. Additional rigour will be introduced to business cases to draw this out as investment decisions are made.

Some parts of the strategy will require modest amounts of additional central investment in order to deliver them:

- Digital leaders and skills development training
- Establishment of an innovation hub capability
- Areas like automation that could be accelerated if we invested in a central capability

Estimate: £750k - £1m annual increase in BAU budget for the capabilities identified above

3. External Investment

Historically we have committed minimal leadership effort to secure external funding and we've been missing out.

Funding is available from multiple sources if we are well networked and commit to delivering strategic partnerships. For example:

- Use of national platforms and capabilities (NHS App, Login, Notify, Cyber etc)
- Tech partners willing to invest in innovation and new capabilities
- NHSE/I Transformation funding e.g. AI lab
- Government funding e.g. legacy technology

Target: £1m cumulative investment achieved annually

4. Efficiencies

The technology priorities are designed to drive out efficiencies. Primary sources are lower cost, cloud based shared platforms, use of national platforms and capabilities, taking work out of the system through automation and mature demand and contract management capabilities.

Target: 10% recurring savings on 2021/22 baseline over next 5 years

Delivery of the strategy will be tracked through some **key metrics** and progress against delivery plans

Our Strategic Priorities



Digital transformation



Tech for new business



Data made easy



Democratise Tech



Modernise core tech



Zero trust security

Our key metrics

Automation – 50% fewer paper based systems/processes

Digital Workforce - 5% increase in Our Voice engagement, 20 digital transformation leaders (accredited), measure satisfaction with new digital capabilities

Satisfaction – Greater than 4.5 for all on Apple/Google stores.

Data - 100% of core data safely available in the data platform

Democratisation - 100 licenced users

Architecture - 50% increase in 'open' API enabled systems

Cloud - 80% of core systems in the cloud

Security - 100% of core systems in support

Stakeholders consulted in the formulation of the strategy

DX	Blood Supply	Plasma	OTDT	Clinical	Group	Board	Industry
<ul style="list-style-type: none"> ➤ Mark Croucher 	<ul style="list-style-type: none"> ➤ Dean Neill ➤ Kevin Price ➤ Stephen Thomas ➤ Ella Poppitt ➤ Darren Bowen ➤ Debbie Rahman ➤ Aman Dhesi 	<ul style="list-style-type: none"> ➤ Tony Staincliffe ➤ Peter Wright ➤ Jayne Williams ➤ Plasma SMT 	<ul style="list-style-type: none"> ➤ Ben Hume ➤ Ian Taylor ➤ John Richardson ➤ Karen Quinn 	<ul style="list-style-type: none"> ➤ Laura Hontoria Del Hoyo ➤ Mick Burton ➤ Carol Ash ➤ Nicola Warburton ➤ Dan Hollyman ➤ Clinical SMT 	<ul style="list-style-type: none"> ➤ Shane White ➤ Linda Haigh ➤ Mark Whelan ➤ Ian Freestone ➤ NHSBT Strategy Network ➤ NHSBT Strategy Team ➤ DDTS SMT 	<ul style="list-style-type: none"> ➤ Executive Team ➤ Piers White ➤ Jo Lewis 	<ul style="list-style-type: none"> ➤ Gartner ➤ Microsoft ➤ Deloitte ➤ Reply