NORTHERN IRELAND CIVIL SERVICE

ICT Strategy
2017-2021

Delivering better
Public Services
through Technology

Department of
Finance
An Roinn
Airgeadais
www.finance-ni.gov.uk

Contents

1 Introduction

This is a hugely important strategy. There are many opportunities to be had through its successful delivery and it is important that we grasp them. Stronger collaboration between government and citizen, the wider public sector, business and the ICT industry, and solid development of Digital Shared Services to deliver future digital solutions will provide the necessary first steps in that journey.

Further development of the Cloud, working mobility and an increasing demand for internal and external social networking are particularly significant areas for future change. Embracing the release of Open Data while balancing the needs of privacy is also increasingly important.

Exciting as these new developments are, it would be unwise not to build upon what the Northern Ireland Civil Service has already worked hard to put in place. With a successful and proven Shared Services infrastructure, a confident and professional workforce, and a highly secure, resilient and scalable network infrastructure, we have both the capability and capacity to optimise what we have already created.

There will, of course, be challenges. Our political, economic, technical and environmental landscapes are constantly changing. We can expect these to provide unknown obstacles. But we now have a four year strategy in place which will go some considerable way to enabling us to achieve our aim of radically improving service delivery.

This Strategy will oversee the fundamental change in our approach to governance and investing in technology. Driving greater insights to organisational performance through deployment of data analytics, harnessing game-changing, leading edge blockchain technology, and exploiting Internet of Things opportunities will bring radical change to our workplace and help optimise operations. We will embrace the Cloud for management of our infrastructure - freeing up more resources and establishing more flexible, scalable and accessible ICT environments. And we will create many more new citizen services supported by further investment in modern technology, which in turn will provide easier and improved gateways for the public and businesses to interact with government.

I welcome this Strategy as a positive and proactive driver for Northern Ireland's ICT plans for the period to 2021 and beyond. I am confident that it will put in place the necessary markers to help us all achieve our aim to radically improve service delivery to citizens and businesses through better use of efficient, effective and fit-for-purpose technology.

Hugh Widdis, Department of Finance Permanent Secretary

2 Executive Summary

The Northern Ireland Civil Service ICT Strategy 2017-2021 has been developed to help deliver more modernised services to the public and businesses through the better use of technology, work processes and investment in people.

This radical Strategy sets a number of principles which include making best use of economies of scale and Shared Services; value for money procurement and flexible contract options; innovative training to lower identified staff skills gaps and the inclusion of security and assurance as part of ICT solutions.

Owned by the Information Governance and Innovation Board (IGIB), the Strategy will be managed and driven by a new Strategic Design Authority (SDA) through a detailed Delivery Plan (to be published separately) which will be reviewed and updated annually.

Whilst the Strategy will continue to build upon the work of earlier plans - with a particular emphasis on reducing business costs, improving overall effectiveness, and enhancing the quality and accessibility of services Government provides to the public and business - this Strategy establishes nine important drivers which have been identified as essential to deliver the required change going forward towards 2021.

These are:

- Investing in infrastructure and Shared Services to achieve VFM;

- Changing Data and Privacy compliance requirements

- The Digital Transformation Agenda

- Changing Business Needs

- Legacy infrastructure

- Cyber Security

- Collaborative working

- Working within budgetary constraints; and

- PfG Priorities

The drivers reinforce a range of key themes such as Digital Transformation; Leadership and People; Information; Technology; and Investment - all of which have been highlighted as indispensable if improved service delivery is to be successful.

The Strategy clearly sets the anticipated outcomes which, by 2021, will see a number of fundamental changes to Government's approach to ICT. This includes a move towards 'cloud first' to improve our infrastructure and develop more flexible and scalable ICT environments; improvements to our digital platforms to enable the public and business to obtain better access to government services; and enhanced security of our systems, which will increase the value of our service provision and further reinforce the level of public trust in what we do.

Ultimately, however, it will be the proven ease of use, reliability, quality of content and greater value for money of a fit-for-purpose service provision which will underscore the true level of this Strategy's eventual success.

3 Vision, Purpose, Principles and Scope

VISION:

The key aim of this ambitious ICT Strategy is to enable the Northern Ireland Civil Service[1] to radically improve service delivery to the citizen and businesses through better use of efficient, effective and fit-for-purpose Technology, processes and investment in people.

PURPOSE:

This Northern Ireland Civil Service ICT Strategy 2017 - 2021 aims to deliver better, high quality public services through the use of modern information technology.   Its primary focus is on modernising the 'internal' public sector - however it will also have a direct and positive effect upon the citizen and businesses as the customer and public sector as a provider of the service.

The purpose of the Strategy is to enable the investment in technology, process change and people to provide high quality, easy-to use and efficient services for the citizen and business, which are focused upon the priorities, outcomes and indicators identified by the NI Executive through Programme for Government (PfG). The economy of scale which this Strategy can help deliver will further provide added value for money for us all.

The Strategy covers the period 2017-2021 and will provide direction for ICT investments across Government and possibly the wider NI public service.

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1   In this context the definition of Northern Ireland Public Service is not restricted to the nine Northern Ireland Departments, their Agencies or Arms Length Bodies. Other public sector organisations are encouraged to optimise use of the Strategy to deliver technology solutions for their benefit.

Principles:

This IT Strategy recognises the need to apply a number of base principles to the work going forward. These principles are outlined as follows:

1. ICT investments shall aim to:

    (a) deliver improved services for staff and service users - maximising use of Shared Services and public access portals;

    (b) take advantage of economies of scale and favour solutions that reduce overall cost to the public sector; and

    (c) look to take advantage of SME and local market delivery in development of Shared Services delivery.

2. Information assurance and security will be integral to the lifecycle of ICT solutions, defined at first stage, embracing the concept of secure by design and reviewed throughout. This will enable a balanced risk and benefit approach.

3. Benchmarking and proving value for money will form part of the procurement lifecycle and also for all aspects of change control.

4. Identifying and addressing possible skills gaps whilst ensuring that training and development for established staff will be innovative and use the most appropriate channels and technologies.

5. ICT contracts shall be flexible to meet future public sector needs by delivering solutions that plan for continuous improvement, adaptability and agility.

6. The technology roadmap will be reviewed in line with public sector benefits and innovative approaches.

Scope:

Being aligned with Programme for Government priorities, the Strategy has been endorsed by the Information Governance and Innovation Board (IGIB) and adopted by the Northern Ireland Civil Service Departments. Agencies and Arms-Length bodies are also encouraged to use the objectives set out in this Strategy to help them deliver technology solutions appropriate to their needs. A Strategic Design Authority (SDA) will be established to manage all aspects of the Delivery Plan going forward. In parallel with year one of this Strategy, the re-focus of ICT HR across the Northern Ireland Civil Service will enable us to action many aspects of the Strategy[2].

The strategy has also been designed to allow other public sector organisations the opportunity to capitalise on the services and good practice which will be delivered with the drivers, themes and outcomes being designed to be relevant across the wider public sector in Northern Ireland. Those organisations and bodies are encouraged to optimise use of this Strategy to help deliver improved technology solutions and benefit from potential cost savings.

We will also make the most of the many opportunities which NI Public Sector organisations have already created - an adaptable, skilled and steady workforce well able for change; the unique impact and largely differing nature from the other areas of the UK of local politics upon the public sector - both at central and local authority level; the compact geographic size of NI and, perhaps most significantly, a successful and proven Shared Service history which is considered more progressive of similar offerings currently available in Whitehall and other international jurisdictions.

2 It is anticipated that the Review of ICT HR Services, presently underway, will complement the overall objectives of this Strategy,

Foundations:

The foundations of this Strategy will also continue to build upon the over-riding business principles which were pre-eminent in its predecessor paper, namely:

Reduce business costs
Helping the business to reduce cost through the use of IT

Leverage investment in Shared Services
Generating efficiencies through the use of shared services and centralised contracts

Improving operational effectiveness
Using IT to help drive duplication and inefficiency out of the business

Improving quality and accessibility of services to citizens
Ensuring resource is focused on front line services

Embedding information assurance
Ensuring information assurance is built into all systems and services and that staff are fully aware of their legal responsibilities in relation to the handling and security of data

Sustainability
Help to reduce cost and waste while supporting sustainable approaches in all aspects of our work

Take advantage of new developments
Exploiting the best of UK (and indeed other International) developments and good practice that can be applied to a Northern Ireland context.

4 Nine Drivers for Change

On the basis of recognised opportunities and innovative technologies, this strategy has identified nine key drivers for change as follows:

1) Investment in existing infrastructure and Shared Services to achieve VFM and maintain affordability;

2) Changing Data including Open Data and Privacy Compliance landscapes;

3) Enable Digital Transformation Agenda and Strategy;

4) Changing Business Needs;

5) Legacy infrastructure;

6) Cyber Security;

7) Collaborative working to meet changing needs and expectations;

8) Working within budgetary constraints; and

9) Aligning with agreed PfG priorities.

5 NICS ICT Strategy Overview

The following diagram provides a one page-view overview of the Northern Ireland Civil Service ICT Strategy 2017-2021. It highlights the main drivers, provides a useful focus on the key themes and the expected outcomes associated with the Strategy paper.

ICT STRATEGY 2017 Delivering Better Public Services through Technology

DRIVERS
- Investment in existing infrastructure and Shared Services to achieve VFM and maintain affordability
- Changing Data and Privacy Compliance Landscapes
- Digital Transformation Agenda
- Changing Business Needs
- Legacy Infrastructure
- Cyber Security
- Collaboratively meeting changing needs and expectations
- Working within budgetary constraints
- Aligning with PfG

KEY THEMES

DIGITAL TRANSFORMATION

| Support Digital Transformation	Re-useable Technology	Promote online services	Data	Smarter Working

LEADERSHIP AND PEOPLE

Senior Managers advocate support for common IT and adopt a common agenda	Foster culture of innovation and shared approaches	Ensure strategic alignment	Develop digital, data and technology skills

INFORMATION

Drive information skills improvement	Promote Secure Data Sharing	Data Analytics supporting evidence-based decisions	Develop public trust in services	Enabling data sharing

TECHNOLOGY

Optimise use of Shared Services	Improve systems integration and inter-operability	Be open to new and emerging technology	Cyber Security	Mandate open standards and policies	Reduce burden of legacy systems	Records Management	Learning from digital exemplars	Technology Stack

INVESTMENT

Centralise Departmental ICT budgets and align to Strategy	Collaborative procurement for IT investment	Prove VFM for all IT investments	Invest to save	Economy of scale	Funding

OUTCOMES
- Excellent trusted and valued ICT services and data
- Improved evidence-based decision making to deliver better public services
- Optimise use of Shared Services and common technologies
- VFM is achieved and proven
- Foster and encourage culture of innovation across public sector
- Skilled, professional and balanced workforce
- Scalable infrastructure and better component re-use

ICT DELIVERY PLAN 2017-2021

PfG Priorities

Focused and Strengthened Governance

BETTER PUBLIC SERVICES

6 Strategic Context - Programme for Government (PfG)

ICT plays an essential role in the delivery of our public services. The challenge we face over the coming years is to improve the way we work and deliver further benefits to the public through new innovations and exploiting our ICT investments further.

The changing demands of the public and our stakeholders place a greater emphasis on our ability to deliver services in unique ways and at a consistently high quality. This is fully reflected in the (draft) 2016-2021 Programme for Government (PfG)[3] which sets out an overarching strategy and business direction for future, high quality, Public Services.

From an ICT perspective the PfG focus is firmly on driving culture and behaviour; providing better citizen services and leveraging greater use of Shared Services - topics which are fully reflected in the contents of this Strategy.

DRAFT PROGRAMME FOR GOVERNMENT FRAMEWORK
2016 – 21

Northern Ireland Executive
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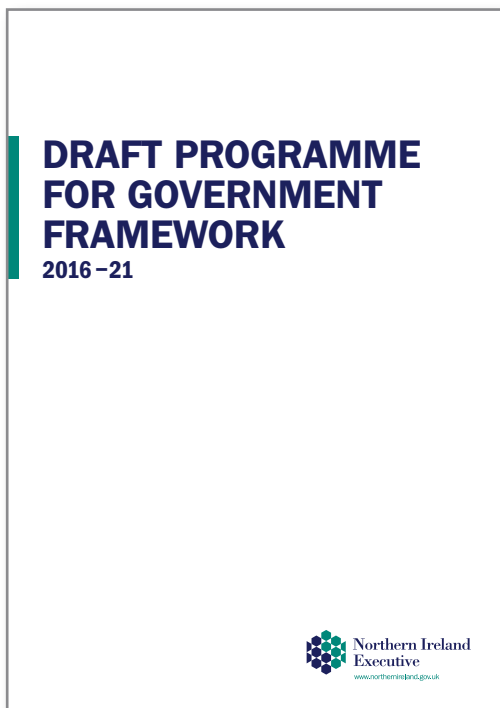
3   The Programme for Government is currently awaiting Executive ratification at time of writing (May 2017).

7 The 9 Strategy Drivers

This Strategy sets a shared vision in support of high quality public services for digital services, systems development and supporting ICT infrastructure. Digital Shared Services have already proven to deliver significant financial and functional benefits to the NICS and associated bodies. The Strategy will enable the public sector to:

a. Improve connectivity and business solutions delivered through common ICT systems

b. Build upon the existing backbone of NICS wide area network infrastructure and strengthen its security and performance. A replacement programme for Network NI will see the deployment of high speed future proofed connectivity which all of the NI Public Sector will be able access and use.

Nine key drivers and associated benefits have been identified that together will be central to the success of the Strategy. These, alongside their associated actions and benefits are:

Driver 1	Exploit investment in existing infrastructure and Shared Services to achieve VFM and maintain affordability
Actions/ Benefits	(1) Promoting and extending shared services across the Northern Ireland Civil Service and potentially to other key areas of the wider Public Sector will result in: (i) identifiable cost savings for the tax payer; (ii) better, more consistent and easier-to-use public services; and (iii) improved resilience. (2) Making best use of a common public sector data centre which is secure, future proofed and meets stringent security standards. (3) Be able to do 'more with less' through optimising investments in technology and systems development. (4) Prioritise ICT initiatives which deliver most efficiencies in the delivery of public services. (5) Enabling improved interaction between and across organisations both internally and externally to the public sector.

Driver 2	Changing Data and Privacy Compliance Landscapes

Actions/Benefits

(1) Introduction of agreed common Open Standards for data use across the public service.

(2) Encourage information sharing and pro-active publication of public sector data as open data where possible to improve economic development and government interaction with the public.

(3) Maintaining integrity and security of all personal data whilst further encouraging secure data sharing where appropriate.

(4) GDPR - be prepared for all future GDPR changes and ensure ICT and business leaders are aware of the extent of the changes and appropriate governance models are in place.

Driver 3	Enable Digital Transformation Agenda and strategy

Actions/Benefits

(1) Develop technical infrastructure to support the new Digital Transformation Strategy in pursuit of the future digital agenda.

(2) Make it easier to access government services for NI public and business.

(3) Develop business systems and service development through IT systems.

(4) Develop systems with business outcome focus

Driver 4	Changing Business Needs

Actions/Benefits

(1) We will work with the business on identifying changing needs to replace, upgrade or decommission technology which is no longer supportable or has become obsolete.

Driver 5	Legacy Infrastructure

Actions/Benefits

(1) Provide secure environment for users of legacy systems and a platform to enable transition to new technology infrastructure.

Driver 6	Cyber Security Issues

Actions/Benefits

(1) Develop and maintain robust cyber network with NCSC and the other devolved administrations.

(2) Ensure Northern Ireland remains focused on and at the forefront of Cyber Security advances.

(3) Provide a high level of security and confidence for users of public sector ICT systems.

Driver 7	Collaborative working to meet changing needs and expectations
Actions/ Benefits	(1) Work collaboratively with and across the public and private sectors on all aspects of digital and IT delivery to drive best value. (2) Develop and implement innovative and workable procurement procedures to speed up procurement activity and deliver new services more quickly. (3) Monitor and manage public expectation and their changing needs in respect of access to and use of government services. (4) Adapt quickly to evolving public preferences through agile working and enhanced use of NI Direct Service.

Driver 8	Budgetary Constraints
Actions/ Benefits	(1) Acknowledge, adapt and work within, the budgetary regime applicable during the lifespan of the Strategy. (2) Seek ways to continue to improve service delivery (3) Seek ways in which to meet internal and public expectation

Driver 9	Aligning with PfG priorities
Actions/ Benefits	(1) Work with local government, the private sector and the voluntary and community sectors (2) Applying appropriate measures to let us know if we are on track (3) Placing a focus on outcomes

In addition, the Strategy will also inevitability be impacted by other, as yet unknown, drivers at some point during its anticipated lifespan. These may include but will not necessarily be limited to:

(a) the outcomes from future EU Exit developments;

(b) planning for possible future financial and staffing resource challenges; and

(c) issues such as identity validation and alternative language content.

It is expected that the proposed reviews of this Strategy will further identify and address these and other issues as they arise.

8 Key Themes and High Priority Areas

The scope and extent of the Strategy is highly ambitious but very necessary in the current economic climate if we are to achieve the vision of *radically improving service delivery to the citizen and business in NI through better use of efficient, effective and fit-for-purpose technology, processes and investment in people*.

The Strategy has identified five defining themes, associated sub-themes and outline goals which are centred on the areas of:

1   Digital Transformation;

2. Leadership & People;

3. Information;

4. Technology; and

5. Investment.
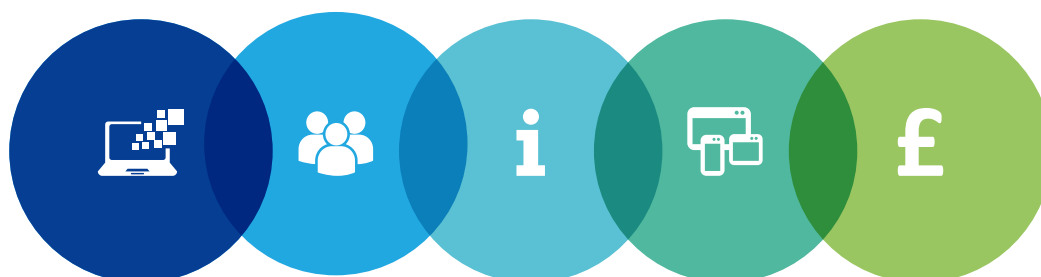
8.1 Theme 1: Digital Transformation

We will aim to promote more on-line services, focused on better outcomes for the public to more easily access trusted government services through agile development methodologies. By doing so, we will transform public facing, internal and back-office government services to the point that we ourselves operate as a digital government.

(a) Support Digital Transformation

The public rightly expect the same online experience from public service that they receive from many private sector organisations.

- We will deliver improved outcomes for public through easy to use, faster, responsive and high quality self service channels and enhancing the online experience whilst driving enhanced online behaviour.

- We will continue to challenge how our services are delivered by the public sector; and

- Our focus will be to enable new online services by transforming the manual processes and digitising current processes.

GOALS

We will develop online government service provision through better use of emerging technologies to make it easier for the public and business to transact more with government.

We will ensure services are as simple as possible and easy-to-use, providing a direct benefit to the public.

We will continue to connect more government services with the public and business year on year.

(b) Re-useable technology

- We will fully exploit the opportunities and cost savings which re-useable technology will bring to public sector ICT;

- We will encourage the use of Open Standards to deliver re-usability and ensure new investments in NICS Enterprise software will support Open Standards;

- Software development tools will support Open Standards including Java, .NET, and XQuery and central libraries of common components will be established and accessible to all parts of the public sector; and

- Use the best of standard pre-built products or system components.

Use of such standards will ensure intellectual property lies within the NICS to use generically across government and supports Programme for Government's theme to make it easy for companies to do well in Northern Ireland and other countries.

GOALS

On-line access to government services will be consistent across all departments.

High quality, operational infrastructure services and technology will be developed which can be deployed within the government technical infrastructure.

Open standards will be mandatory for all new digital development to allow for greater re-use of software developments whilst avoiding proprietary lock-in.

(c) Data

- We will ensure that personal and sensitive data is managed and processed confidentially and in line with data protection law.

- We need to develop improved, secure means of sharing data appropriately across Government Departments in a way which avoids the traditional duplication which has commonly been seen in the past.

- The NICS Information Management Council (IMC) will seek to ensure data is best managed across government and will oversee a number of initiatives to best manage data corporately and seek common solutions across government organisations. Their annual work plan will be published across Government Departments.

- We will encourage the release and re-use of open data within all digital transformation projects to stimulate innovation.

GOALS

We will aim to re-use technology and strive towards providing a consistent service for the NI public across all areas.

We will encourage improved data sharing across all of the Northern Ireland public sector to provide a joined-up service.

We will continue to promote the further use of online services to make NI Direct the obvious 'first port of call' for the public.

We will build assurance and trust from the public in managing their data.

We will review and inform policies relating to data sharing.

(d) Smarter Working

- There will be a strong focus on working 'smarter' by promoting flexible working solutions to empower a mobile workforce. More than half of internet traffic is now initiated through mobile devices via mobile staff, public access, smart buildings and cities.

- We will further pursue wider use of 'fluid' methods of working for the design and delivery of future services - most especially to design and deliver new digital solutions.

- We will proactively promote smarter working through providing the capability for deployment of unified data communications in all NICS accommodation where it is practically possible which will see much improved capability in communications, in order to maximize business processes. This will see increased use of instant messaging, IP telephony and video conferencing capability and improve communications and means of working for multi-location teams and business areas.

GOALS

We will develop end to end mobile working solutions that allow freedom to our workforce in accessing key business systems and information securely.

We will develop a culture of agility and mobility by design in the development of public sector systems and services.

We will be innovative in our approach to leveraging closed services and publicly available services in public sector service delivery.

We will be innovative in the management and protection of sensitive data whilst mobile.

8.2   Theme 2: Leadership and People

Internal capability and capacity will be developed further to ensure future investment plans are all strategically aligned to outcomes of this Strategy. The portfolio of leadership skills will be strengthened to include a wider deployment of agile working knowledge and professionalisation of information assurance, information management and project management.

Our people remain essential to the successful delivery of this strategy and it is important that we invest in modern technology and digital services to provide the best environment in which to work as well as access to the necessary systems required to do the job efficiently. Public sector staff will be provided with opportunities to develop new digital skills. Continuous improvement in our digital systems will make them easier to operate, search and complete transactions.

Senior ICT professionals across NICS will act as the strategic advisors and decision makers to drive ICT enabled change. They will work collectively through the governance of the Strategic Design Authority to address local constraints and focus on implementation of the Strategy. They will ensure that investments are aligned fully to the Strategic aims and outcomes of the Strategy. They will help promote ICT enabled change to support business improvements and act as champions for the implementation of the ICT Strategy.

(a) Senior Managers advocate support for common IT solutions and common agenda

Senior Managers will be expected to fully support and progress all (SDA/IGIB) endorsed common IT solutions. Their digital leadership role will provide a driving force for ensuring the strategy is followed and investment in ICT is strategic.

GOALS

Senior NICS ICT professionals will act as strategic advisors and decision makers to drive ICT enabled change.

Senior NICS professionals will ensure investments are fully aligned to the aims and objectives of this strategy.

Senior managers will act as advocates and champion the implementation of this strategy.

We will work towards achieving closer collaboration between public and private sectors to leverage best innovation opportunities.

(b) Foster culture of innovation and shared approaches

Agree and implement a shared approach to ICT enabled services across NICS Departments and, where feasible, other public sector bodies. We shall also foster a greater innovative culture from the top and across all business areas with our digital leaders learning from other innovative digital economies like Estonia and taking views from a wide range of stakeholders.

GOALS

We will have an effective, workable governance regime in place through the establishment of a Strategic Design Authority (SDA) and re-engagement of IGIB (or similar) as the NICS Delivery Board;

We will look at improving the appetite for innovation practices.

We will continue to work with stakeholders to ensure technological solutions exist to facilitate the introduction of an HR policy on flexible/mobile working practice.

We will develop training and professionalisation opportunities for staff and encourage and promote innovative working practices.

We will invest in continuous innovation and will establish a central innovation fund which business areas can utilise to drive new initiatives.

(c) Ensure strategic alignment

Those responsible for the delivery of public services will be expected to operate in a joined-up, responsive and flexible way and to collaborate with others as necessary.

GOALS

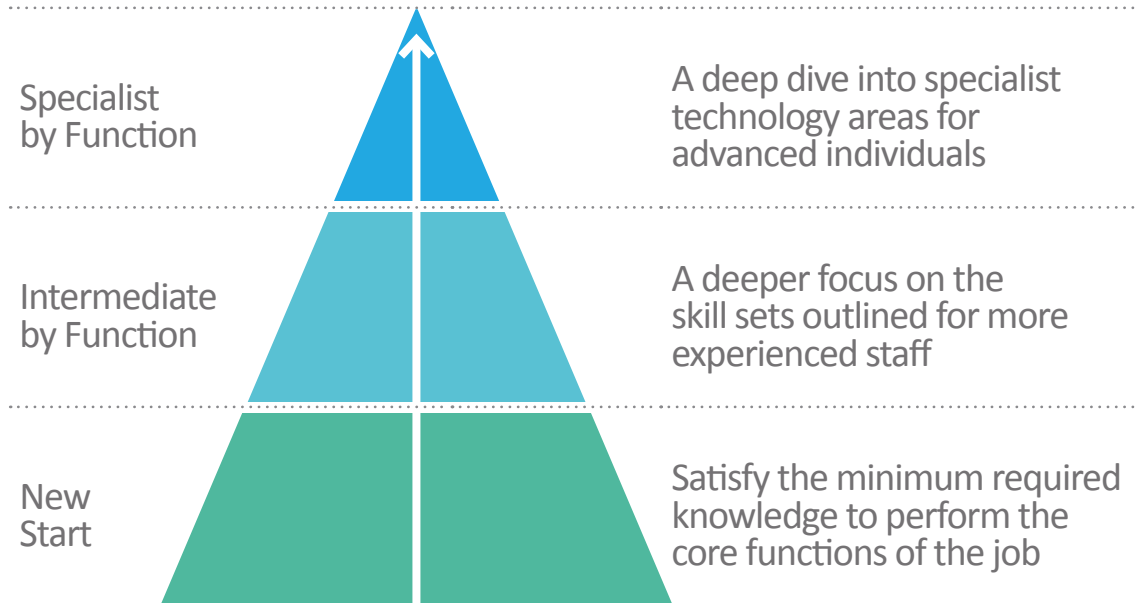We will enable technological solutions to develop collaborative working practices amongst the public sector.

We will establish strong, workable governance measures to include appropriate advisory and support channels.

(d) Develop digital, data and technology skills

The way in which public policy in Northern Ireland (NI) is developed and executed has been modernised and has resulted in the Executive embracing an "outcomes based" accountability approach for the current Draft Programme for Government framework.

ICT staff will play a pivotal role in delivering digital services that are cost effective, faster, more accessible and more secure, whether they are for the people of Northern Ireland or for use by the employees of Public Sectors organisations. Technical skills alone will not be sufficient for success in the delivery of digital services and as a result ICT Professionals must acquire and maintain a broad set of skills beyond traditional technical skills. The Cloud, mobility and the increasing demand for internal and external social networking, Cyber Security, Open Data and Data Analytics are important growth areas. The need to proactively develop new skills and knowledge in the areas listed above, whilst also improving leadership skills will be pivotal for the successful delivery of digital services.

Training Paths:

Level	Description
Specialist by Function	A deep dive into specialist technology areas for advanced individuals
Intermediate by Function	A deeper focus on the skill sets outlined for more experienced staff
New Start	Satisfy the minimum required knowledge to perform the core functions of the job

GOALS

We will increase capability of leaders across the ICT profession through the continued development of appropriate training interventions

We will develop training pathways for each of the technical areas listed above using the model below

We will invest in the core competencies to continuously improve the skills of our NICS technical staff to deliver further innovative services to support the business.

8.3   Theme 3: Information

We will promote and develop improved information skills across the public sector and deploy tools which will prove how the public sector deliver intelligent business through evidence based decision making and analytical tools to better manage our work. Gaining better informed insights to our information and transactions will lead to better informed policy making across government.

(a) Drive information skills improvement

We will persist with investing in ICT staff to continuously up skill so they can prepare for the demands in delivering modern public services.

GOALS

We will source appropriate training opportunities for IT staff to deliver efficient and effective services.

We will encourage staff to seek and obtain relevant professional qualifications

We will encourage greater use of multimedia across NICS to provide advice, routine help and promote self service.

(b) Promote secure data sharing

Data forms the sound foundation of all NICS departments and similar to the way many commercial organisations have radically changed the way they deliver services - the disruption to government services is already underway and this is already evidenced by the 16 by 16 Transactional Services delivered to the public through the NI Direct Portal.

This Strategy supports the development and deployment of new tools to manage data for secure internal processing but also to publish externally.

We will hold and share personal data securely and in accordance with the appropriate legislation in place at the time, most especially in a way consistent with GDPR requirements, and supported by NICS policies.

GOALS

Departments will publish open data by default and adhere to the Open Data principles.

Suppliers will follow guidance issued by procurement which specifies that all new systems and services must have the same capacity to publish open data.

EU General Data Protection Regulation (GDPR) will be applied by May 2018.

All new ICT procurements must adhere to good practice as defined by the General Data Protection Regulation and ensure compliance with the latest data protection legislation.

Systems functionality needs to comply with all aspects of the new regulations.

(c) Data Analytics supporting evidence-based decision-making

We will publish many more datasets to drive greater openness and transparency, provide greater access to view performance and strategic plans and enable data analytics to facilitate evidence based decision making.

The deployment of common tools and maximising 'Reporting as a Service' (RaaS) will further empower staff to make better informed decisions and allow service levels to be reviewed much more readily.

GOALS

We will deploy the right data visualisation tools as a cornerstone to producing effective management information and dashboards which can give deeper insights to organisational activity and performance.

We will build upon the recent Open Data NI successes by establishing a stronger data infrastructure which promotes easier means to publishing government held data.

We will develop a wider capability in Data Analytics and drive towards a single Shared Service

(e) Develop public trust in services

Trusted public services will be at the heart of providing robust services and the security of ICT systems and their data will be paramount. Information assurance and good information management must be ingrained in the design, development and implementation of all new services.

GOALS

We will continue to maintain appropriate, fit-for-purpose security measures for all of our ICT systems and data.

We will require Information Assurance and Information Management measures to be adopted as key drivers in all future design, development and implementation of services.

We will become a trusted partner for the retention of information and appropriate access to it.

(f) Enable Data Sharing

By building re-useable components which the NICS and the wider public sector can easily deploy will enable savings on duplicate development and will avoid unnecessary costs.

GOALS

We will establish a repository of systems and catalogues of NICS APIs which can be re-used.

We will develop a common API strategy for the development, deployment and sharing of all APIs.

8.4   Theme 4: Technology

The use of shared services will be optimised with further investment in and exploitation of new technology applied where possible to deliver better public services. New services will be based on common technologies across the public sector which are based on open standards and secure by default, making interoperable government services much more achievable.

Additionally, we will continue to capitalise on the investment NICS have made in its already highly secure, resilient and scalable network infrastructure and will achieve significant cost savings and rationalisation of the NICS network and local area network by channelling more digitised premises management controls across the existing NICS network. This is likely to include a common approach to connected buildings for CCTV, door access and other environmental building controls which have traditionally been analogue.

There will be an on-going and visible approach to investment in innovation and on-boarding of new ICT technologies across NICS. Senior managers will encourage their teams to develop new skills. We will invest in the core competencies to continuously improve the skills of our NICS technical staff to deliver further innovative services to support the business.

With such dependency on technology to deliver modern public services we will continue to invest in cyber security and defending our infrastructure from rising external risks.

(a) Optimise use of Shared Services

We will adopt a Cloud First approach to hosting public sector systems but we will maintain a watching brief on other technology developments and affordability of cloud solutions. The NI Public Sector Data Centres will see all participants benefit from reduced energy costs and property rental charges.

The NICS Private Cloud has already removed several hundred file servers from needing to be supported, licensed, and maintained, while providing a platform that is fully resilient, secure and high performing. **The underlying infrastructure and its availability are therefore business critical**.

More services will be hosted on the Private Cloud infrastructure. There will be a minority of instances where 'on premise' ICT services are inevitable. In other cases, Public Cloud solutions are permissible but only where the security requirements are met, for example when secure encrypted links are established and maintained. In such cases security of the data is paramount and in accordance with current legislative requirements data must only be hosted in the UK.

The role of ICT in support of public sector business is central to the service we provide to customers. The underlying infrastructure and its availability are therefore business critical.

GOALS

We will ensure access to business critical infrastructure and aim to achieve 99.9% of service availability.

Open and promote access to Shared Services to wider NI public sector where beneficial.

We will continue to develop additional digital channels - seeking to make more use of the on-line NI Direct portal but also exploiting further use of "chat" technology which will connect the public with the public sector business more efficiently.

(b) Improve systems integration and interoperability

Connecting major public sector administrative systems in a way it has not done previously will be a priority area for technology enabled change. This will serve to improve internal working and case management, automating common internal transactions which simplify administrative processes, for example single sign-on and single "sign-off". Immediate benefits will be improved audit trails and enhanced security.

GOALS

We will redesign the way we share information internally by investing in technology (Service Bus architecture) which will assist in developing more joined up services which make internal public sector working more efficient but also to help streamline public service delivery.

We will mandate the use of open standards in the development and implementation of new services to achieve interoperability.

(c) Be open to new and emerging technology

Digital transformation affords an opportunity to re-think how our services might be delivered better in future and the further development and implementation of newer technologies such as Blockchain and Internet of Things (IoT) can be expected to have a potentially huge impact upon our work over the period of the Strategy and beyond.

GOALS

We will rethink and adapt our approach to emerging and new technology in order to better help in the delivery of our services.

(d) Cyber security

Cyber security will be strengthened, as threats to ICT services increase and further protection of public Sector ICT assets become vital to service delivery.

With Cyber crime rising steadily year on year as the volume and sophistication of attacks continues to rise, the NICS will be required to invest in skills and in support of public sector security needs with

a focus on new education and awareness, training and tools. Risks will be proactively managed and through management of third party suppliers to react rapidly to any identified issues in order to ensure continuity of service and security of systems and data.

New data analytics tools and advanced authentication will target and reduce cyber threats and assess potential threats. Working closely with our network providers we will invest in tools and technologies to monitor closely inbound activity.

We will develop further our internal cyber capability and establish critical working relationships with the National Cyber Security Centre and others to share knowledge and information about cyber intelligence and potential threats.

Independent health check programmes will be mandated with proportionate penetration testing of systems and contingency testing carried out for all systems on an annual basis. This will help to inform and maintain business continuity plans at the same frequency.

We will proactively maintain a balance between accessibility and security through mitigating controls including awareness, training, and deployment of technical controls across our systems.

GOALS

All new ICT procurements must be designed in line with the principles of the UK Cyber Security Strategy. Most especially, new services must have security built-in as a design mechanism with regular security upgrading being mandated as part of this Strategy.

We will use data analytics and advanced authentication to target and reduce cyber threats and to assess potential threats. Working closely with our network providers we will invest in tools and technologies to monitor inbound activity.

We will develop further our internal cyber capability and establish critical working relationships with the National Cyber Security Centre to share knowledge and information about cyber intelligence and potential threats.

Our focus will be on taking preventative measures to protect against cyber threats and investing in our infrastructure.

Cyber security will only be really achieved from promoting greater awareness and ensuring good practice is persistent throughout the culture of the public sector - from Board level to all aspects of operation.

(e) Mandate open standards and policies

We will be at the forefront of promoting open and accessible data through the development, promotion and use of common, open standards such as Java, .NET, and XQuery and central libraries of common components will be established and accessible to all parts of the public sector. We will use international ISO standards where applicable.

GOALS

We will mandate that all Departments must follow the appropriate advice and guidance pertaining to the relevant standard and policy.

We will ensure that all NI Government Departments will be apprised of the current standard(s) applicable.

We will monitor the application of standards.

(f) Reduce burden of legacy software

We will prioritise the move away from using out-of-date or redundant software and further reduce dependency upon aging legacy systems. This will ensure compliance with good practice in the area of information assurance.

GOALS

We will establish the extent of legacy software, record the data on Departmental Information Asset Registers and monitor the position during the course of this Strategy.

We will work with Departments to reduce the use of legacy or obsolete software.

We will aim to remove all aging legacy and obselete software.

(g) Records Management

Technology in the workplace must meet the needs of a digitally aware workforce, be compliant to current legislation and support a range of work styles.

A common Records Management system which is accessible through desktop or mobile devices and allows easier collaboration will be core to greater productivity and faster decision making.

Digital case management will allow the NI public sector to transform the way it works and shares information securely and ultimately help improve and develop its use of Electronic Records Management within appropriate legislative and security requirements.

GOALS

We will provide a consistent records management service applicable across NI Government in place by December 2018.

We will optimise and utilise the potential of any records management system employed.

We will provide a current, fit-for-purpose and supportable records manager product.

(h) Learn from others - Exemplars

We will be open to take on board the valuable experiences of others and apply them in a Northern Ireland context where appropriate.

One of these exemplars will be the Estonian 'X-Road' system which offers a secure Internet-based data exchange between information systems. It employs a versatile security solution: authentication, multilevel authorisation, a high-level log processing system, encrypted and time-stamped data traffic.

Public and private sector enterprises and institutions can connect their information system with X-Road - in effect, it enables institutions to save resources and become more efficient in data exchange. Indirectly, X-Road also enables citizens and officials to operate via different portals and applications (document management systems, institutional information systems) in a much more efficient and flexible manner, for example, it helps checking for relevant information in national databases or securely exchange documents with institutions.

Our plan for introducing the Service Bus architecture within NICS will effectively establish our own 'X-Road' and provide the foundation to allow many future data exchanges and interoperable services to be built. To assist this approach we will benchmark our achievements in comparison to Estonia and other key exemplar digital economies.

GOALS

We will study other digital economies experiences and apply any lessons learned into a Northern Ireland context.

We will benchmark our achievements against other key exemplar digital economies and report findings annually.

We will develop stronger working links with our colleagues in Estonia and other digital economies and seek to exploit common technology opportunities.

(i) Technology Stack

The purpose of the Technology Stack is to define how we will meet the strategic direction and operational requirements defined in our ICT Strategy. This will be achieved by synthesising the following inputs:

- existing technologies (such as our Data Centres, Infrastructure, Network and Applications);

- new technologies (such as Community Cloud, Containerisation and Infrastructure Hyper Convergence); and

- best practices in relation to achieving 'Digital Transformation', 'Digital First' and cost savings / efficiency gains (such as Remote Working, Shared Services, Wireless and Tablets).

From these inputs we can determine how best to meet both customer expectations, in a way that is cost effective, scalable, future proof and in line with best practice as well as establishing what assets in ICT we can refresh, renovate or repurpose and identifying what we must renew, replace or remove.

GOALS

We will maintain and innovate our Technology Stack in line with business needs.

We will publish a roadmap for our existing technologies.

We will actively support research into new technologies.

The Digital Transformation Service (DTS) has been working alongside NI Departments to implement a digital first policy for government services. Previously Departments have procured individual bespoke solutions for common services whereby each individual project required separate development and hosting infrastructure resulting in significant expenditure.

The development of the Digital Transaction Toolkit by DTS is an example of a solution addressing a common set of business problems that can be easily reused by departments, quickly, securely and with minimal cost.   It has acted as a catalyst for digital transformation right across the public sector in Northern Ireland with its ability to bring to life core citizen services through a cost effective model and has enabled the delivery of services that may not been implemented, due to lack of funding or internal capability.

The toolkit has been designed and built with the wider Public Sector in mind, it has been designed to be scalable, and have the ability to deliver a range of services to multiple service owners with no limits to the number of citizens that can avail of the services that it delivers. It realises an ambition to create a platform for Government for the NICS and potentially others for the same cost as a single line of business application. Significantly, as the toolkit continues to deliver ever more new digital services, then greater cost benefits can be realised and the platform itself is enhanced with more reusable components.

8.5   Theme 5: Investment

The Public Sector needs to radically change its means of procuring ICT services by driving a collaborative approach to procurement which will achieve significant efficiencies. We will encourage new approaches to managing service delivery, for example through shared risk/reward schemes with competent ICT providers to continuously seek to prove value for money in all aspects of ICT investment.

Revised governance arrangements will be critical to delivery of the Strategy. Establishment of a network of senior public sector ICT staff who set standards, manage priorities and drive the Strategy will be critical to its success.

(a) Centralise Departmental IT Budgets to maximise value of investment

The introduction of a centralised IT budget within each Department will maximise and secure future investment, help further strengthen strategic alignment of ICT Services, improve overall systems integration and interoperability and all the while ensuring best value for money.

GOALS

IGIB will own this strategy and seek evidence from all departments that they are complying with this policy.

Departments will demonstrate to IGIB/NICS Delivery Board how they invest in future digital initiatives which meet the outcomes and key themes of this Strategy. Accountability will remain with departments.

(b) Collaborative procurement for IT investments

Procurement priority will be given to those new digital service requirements which are capable of being delivered through collaborative procurements or through the use of existing or future Framework Arrangements.

Significant cost savings are achievable by shared planning and aggregating common needs. The scarce NICS procurement skills and resources need to be best used to reduce duplicate effort on the part of Government Departments and the supplier community alike.

Framework Arrangements can establish longer term working arrangements between NICS Government Departments and suppliers which offer much better value for money and allow for the reuse of ICT assets across Government Departments.

(c) Prove Value for money for all ICT investments

GOALS

We will measure the value of ICT investments and additionally seek evidence from ICT providers that they provide value for money services which are proven and benchmarked.

We will seek to increase transparency and accountability for all ICT investment and expenditure.

(d) Investing to Save

GOALS

We will ensure efficiencies delivered through ICT initiatives will also allow investment in further ICT developments.

We will continue to make appropriate short term investments in technology on the basis that longer-term identifiable savings returns or service improvements will be fully realised and reported.

(e) Economy of scale

Common IT Shared Services are now available to the wider public service with the benefits of achieving significant savings through economy of scale, especially through the use of established Shared Services.

GOALS

We will improve the use of NICS network to maximise service offering and providing added value for money.

When new contracts are awarded by NICS they will be designed in a way which all parts of the NICS can make use of but also, where appropriate, wider public sector organisations can also exploit.

(f) Funding

We will explore the most appropriate funding models for the provision of IT services within and external to the NI public sector. This could include options such as notional charging, hard charging or adopting the principle of 'pay for what you use'.

GOALS

We will develop and introduce the most efficient funding models to enable best value for the NICS.

9 Governance to support implementation

Delivery of ICT services within budget and through using resources optimally are fundamental to successfully achieving the aims and objectives of this ICT Strategy.

This will require exceptional governance and clear focus on managing and delivering our services. The effective management of NICS and wider public sector ICT resources is vital to delivering and supporting the business. This ICT Strategy centres on making best use of ICT resources, both internal and external, and ensuring that all ICT initiatives meet strategic needs and outcomes.

- Focused and strengthened governance will be a key theme of the new approach to delivering ICT services; and

- PfG priorities will determine the common thrust and biggest priority areas most especially when considering resourcing.

Refocus of IGIB and establishment of a Strategic Design Authority (SDA)

NICS will establish a network of senior ICT professionals to form a Strategic Design Authority (SDA) to drive a common approach to the introduction of new technology to support the current and future NICS business needs and drive further business and technical integration. It will:

• effect a step change through ICT and business transformation and will oversee the implementation of standardised technology and processes as well as decommissioning current legacy systems.

• comprise Digital Leaders, with specific participation and advice from Enterprise Shared Services and independent external industry leaders to inform future technical direction.

• ensure compliance with technical direction and standards across existing ICT enabled initiatives and future procurement activities.

• govern and advise on all procurement activity for major ICT digital services.

• be the NICS single authoritative link for all technical design and interfacing matters with NI Direct.

• Work as the key link towards meeting business targets and drivers.

Terms of Reference are included at Appendix A.

In addition, SDA will review the responsibilities and make-up of other associated bodies such as DHOTS and SSPOC as well as investigating the development of possible future roles such as OCIO or OCTO.

IGIB will continue to act as the de facto NICS IT Delivery Board.

IT related decisions to be ratified/endorsed at this level with PSG in role of arbiter if required. The Board will:

- Comprise representation from each NICS Department plus Digital Shared Services (and HR and others as required) with core understanding of IA/IM/Cyber issues.

- Allocate individual responsibility for reporting upon specific areas of delivery at each Board meeting (to be agreed by Board) to individual Board members.

- Comprise membership at minimum Grade 5 level with authority to act on behalf of relevant Department. Deputisation is to be discouraged.

- Own and drive the ICT Strategy on behalf of all NICS Departments.

- Consider and set NI Government IT business targets and drivers and work alongside SDA to implement them. IGIB will endorse and/or challenge all SDA recommendations as necessary.

- Ensure alignment with PfG, NICS Board and other priorities and challenges as may arise.

Proposed SDA Governance structure

The diagram below outlines the position of the proposed SDA and its association with other ICT governance structures currently operational within the NICS. This graphic will be further developed once SDA has been established and the future governance arrangements confirmed.
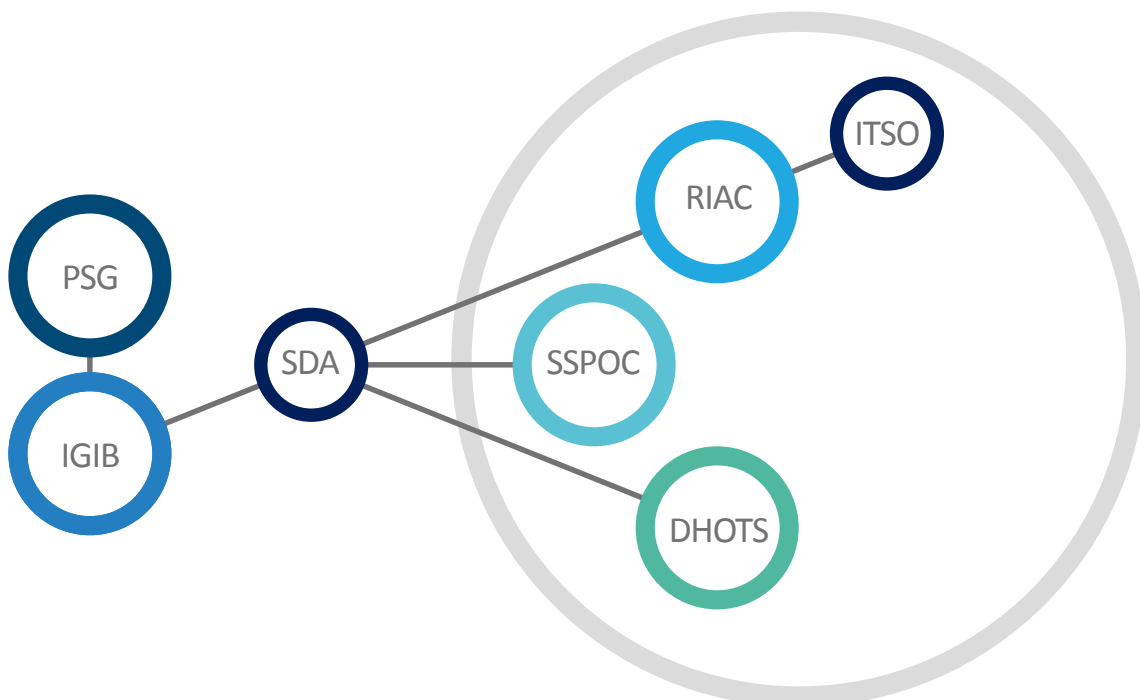
10 Outcomes and Success

This strategy will seek to monitor and reflect upon recent and future changes as well as measuring goals and achievements against set target aspirations.

Delivery of this Strategy will help Government in Northern Ireland put in place more modernised, efficient services for the benefit of the public and business.

What will success look like?

- Year-on-year growth in public access of government services online

- Improved ease of use for both user and provider.

- Improved online service(s) content provision for public (and business)

- Improved reliability and consistency for all users

- Easier development, procurement and implementation of government services

- Proven reduced cost of government-provided services during lifespan of strategy

- Further uptake of Shared Services by external public sector organisations

How will success be measured?

Both IGIB and SDA will seek to measure how well we are doing against the established goals and delivery plan. This will be done through:

- The use of focus groups to provide metrics and public suggestions for ongoing change and/or improvement.

- Identifying and reporting on reduction in costs and improved VFM across the board including in the provision of service.

- Recording significantly increased public uptake and usage of digital services and the associated improvements in overall online user experience.

- Benchmark and survey with service user groups against good practice.

Outcomes

The Strategy will, by 2021, have overseen fundamental changes in our approach to governance, investing in technology and in our people and creating many more new citizen services.

The adoption of a 'cloud first' approach will greatly improve management of our infrastructure, freeing up more resources and establishing more flexible, scalable and accessible ICT environments. Digital platforms will also have been prioritised and we will have in place easier and improved gateways for the public and businesses to interact with government. Enhancing the security of our systems, coupled with proper use, accessibility and storage of data, will not only increase the value of our service provision but will, importantly, also help develop and reinforce trust from the public and business in what we do and how we do it.

The success of the strategy will be benchmarked against visible improvements such as continuous year-on-year growth in public access to government online services; better online content provision and improved ease-of-use; better reliability and consistency for all users; legal compliance and a proven reduction in the cost of providing our services.

By 2021, implementation of the Strategy will have achieved:

excellent trusted and valued ICT services and data

delivery of better public services through improved evidence-based decision making

a skilled professional and balanced **WORKFORCE**

infrastructure scalability and better re-use of components

a culture of innovation across the public sector

maximised use of Shared Services and common technologies

PROVEN
Value for Money

efficient, legal data handling

trusted, valued data exploitation

A APPENDIX A:
Strategic Design Authority - Draft Terms of Reference

Terms of Reference

1. NICS will establish a Strategic Design Authority to set standards, technical direction and approve the technical design of new ICT digital services.

2. The Strategic Design Authority will be a network of senior NICS ICT professionals with additional specific input where required.

3. The main functions of the Strategic Design Authority will be to ensure the integrity of the NICS ICT architecture, ensuring that investments in new or upgraded ICT digital services comply with:

   (i) Programme for Government

   (ii) The Northern Ireland Civil Service ICT Strategy 2017-2021

   (iii) The technical direction and standards necessary to maintain a robust, secure, consistent and integrated ICT technical infrastructure.

Objective

4. The Strategic Design Authority will be responsible for:

   • developing, promoting and control of standards for ICT digital services;

   • quality assurance of ICT requirements to ensure that investments in ICT are designed around common standards;

   • approval of designs and setting standards;

   • control high-level design concepts and focus on meeting the needs of NICS business areas;

   • defining and communication of a standard design process to ensure data sharing, integration and interoperability, quality control, and integration of NICS systems and services;

   • assuring the technical aspects of delivery;

   • identifying common baseline services for all staff; and

   • identifying new potential solutions for possible live service.

Role

5. The Strategic Design Authority role will be to:

    (i)   develop, maintain and communicate technical standards which support ICT investment;

    (ii)   participate in business area project planning and design activities to help ensure compliance with standards; and

    (iii)   verify compliance with Northern Ireland Civil Service ICT Strategy 2017-2021, ICT technical standards and ITIL good practice.

    (iv)   Prioritise initiatives and resources which are managed by the Enterprise IT Management business unit.

Membership

6. Membership will include Digital Leaders who will represent ICT and business understanding from across NICS. There will be specific participation and advice from Enterprise Shared Services and independent external industry leaders to inform future technical direction.

7. The Strategic Design Authority will be chaired by the Digital Shared Services Chief Strategy Officer who will report to the Information Governance and Innovation Board. An annual report on Strategy achievements will be developed by the Strategic Design Authority summarising outcomes, challenges and future direction.

B APPENDIX B:
Reference material

Draft PfG (consultation)
https://www.northernireland.gov.uk/consultations/programme-government-consultation

OpenData NI Strategy
https://www.finance-ni.gov.uk/publications/open-data-strategy-northern-ireland-2015-2018

(2014) NICS IS Strategy
https://www.finance-ni.gov.uk/publications/nics-information-systems-strategy

Government Transformation Strategy (Cabinet Office)
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/590199/Government_Transformation_Strategy.pdf

National Cyber Security Centre (NCSC)
https://www.ncsc.gov.uk/

UK National Cyber Security Strategy
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/567242/national_cyber_security_strategy_2016.pdf

Go On NI campaign
https://www.nidirect.gov.uk/campaigns/go-on-ni

General Data Protection Regulation (GDPR)
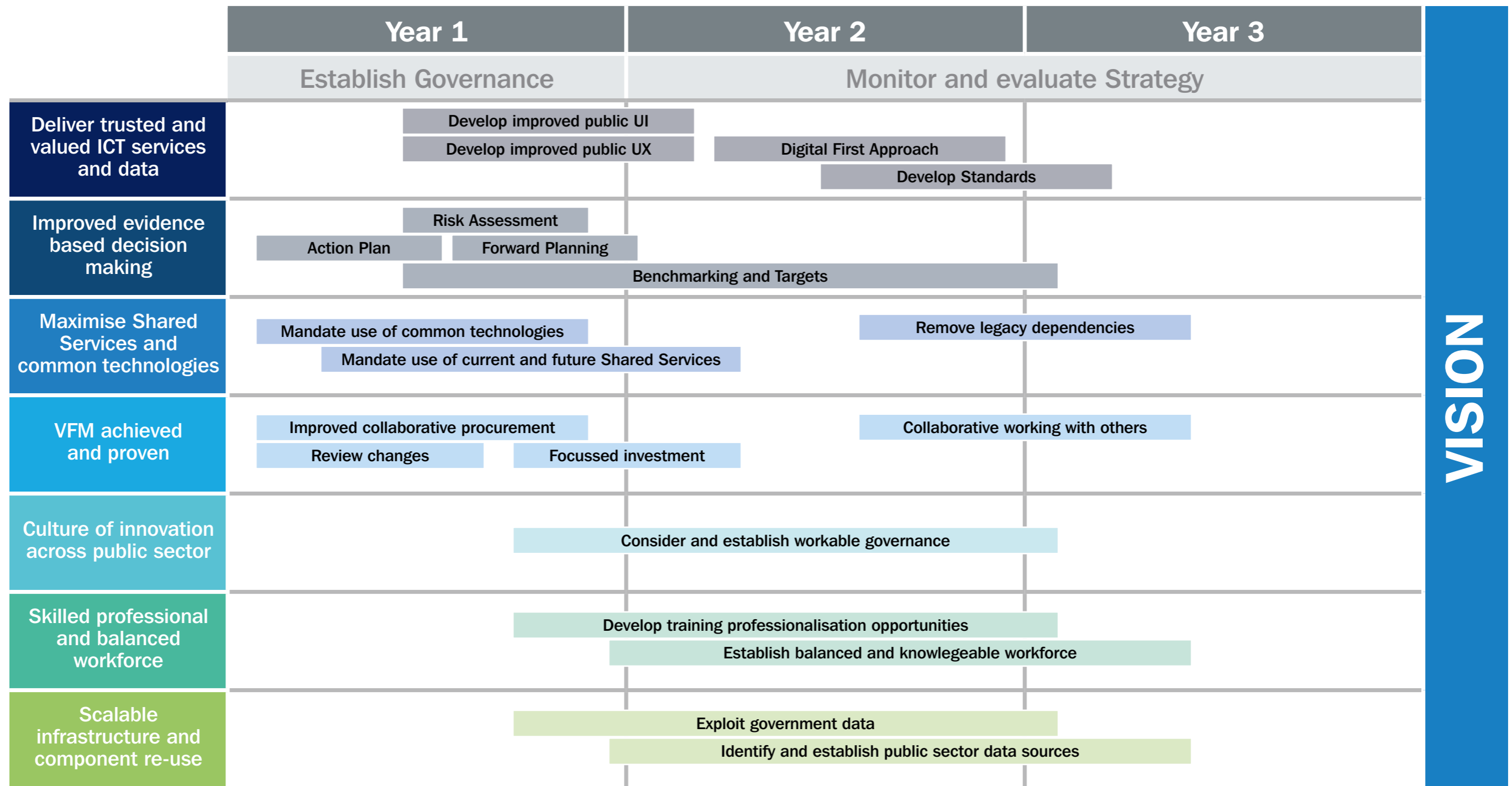https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/567242/national_cyber_security_strategy_2016.pdf

Building the first National Framework of digital data and technology job role
https://www.gov.uk/government/organisations/digital-data-and-technology-professions

2017 NAO report on GDS Digital Transformation in Government
https://www.nao.org.uk/report/digital-transformation-in-government/

C APPENDIX C:
Strategy Implementation Timeline

	Year 1	Year 2	Year 3	
	Establish Governance	Monitor and evaluate Strategy		
Deliver trusted and valued ICT services and data	Develop improved public UI Develop improved public UX	Digital First Approach Develop Standards		
Improved evidence based decision making	Risk Assessment Action Plan Forward Planning Benchmarking and Targets			
Maximise Shared Services and common technologies	Mandate use of common technologies Mandate use of current and future Shared Services	Remove legacy dependencies		
VFM achieved and proven	Improved collaborative procurement Review changes Focussed investment	Collaborative working with others		
Culture of innovation across public sector	Consider and establish workable governance			
Skilled professional and balanced workforce	Develop training professionalisation opportunities Establish balanced and knowlegeable workforce			
Scalable infrastructure and component re-use	Exploit government data Identify and establish public sector data sources			

VISION

D APPENDIX D:
Glossary of Terms

API	Application Programming Interfaces
DoF	Department of Finance
DHOTs	Department Heads of Technology
GDPR	General Data Protection Requirements (GDPR)
GaaS	Government as a Service
GIS	Government Information Systems
IA	Information Assurance
ICO	Information Commissioner's Office
ICT	Information Communications Technology
IGIB	Information Governance and Innovation Board
IM	Information Management
ITIL	Information Technology Infrasturucture Library
IoT	Internet of Things
IS	Information Systems
ITSO	IT Security Officer
NCSC	National Cyber Security Centre
NICS	Northern Ireland Civil Service
OCIO	Office of the Chief Transformation Officer
OCTO	Office of the Chief Technology Officer
PfG	Programme for Government
RaaS	Reporting as a Service
RIAC	Risk and Information Assurance Council (Accreditation)
SDA	Strategic Design Authority
SSPOC	Shared Service Planning and Operations Committee