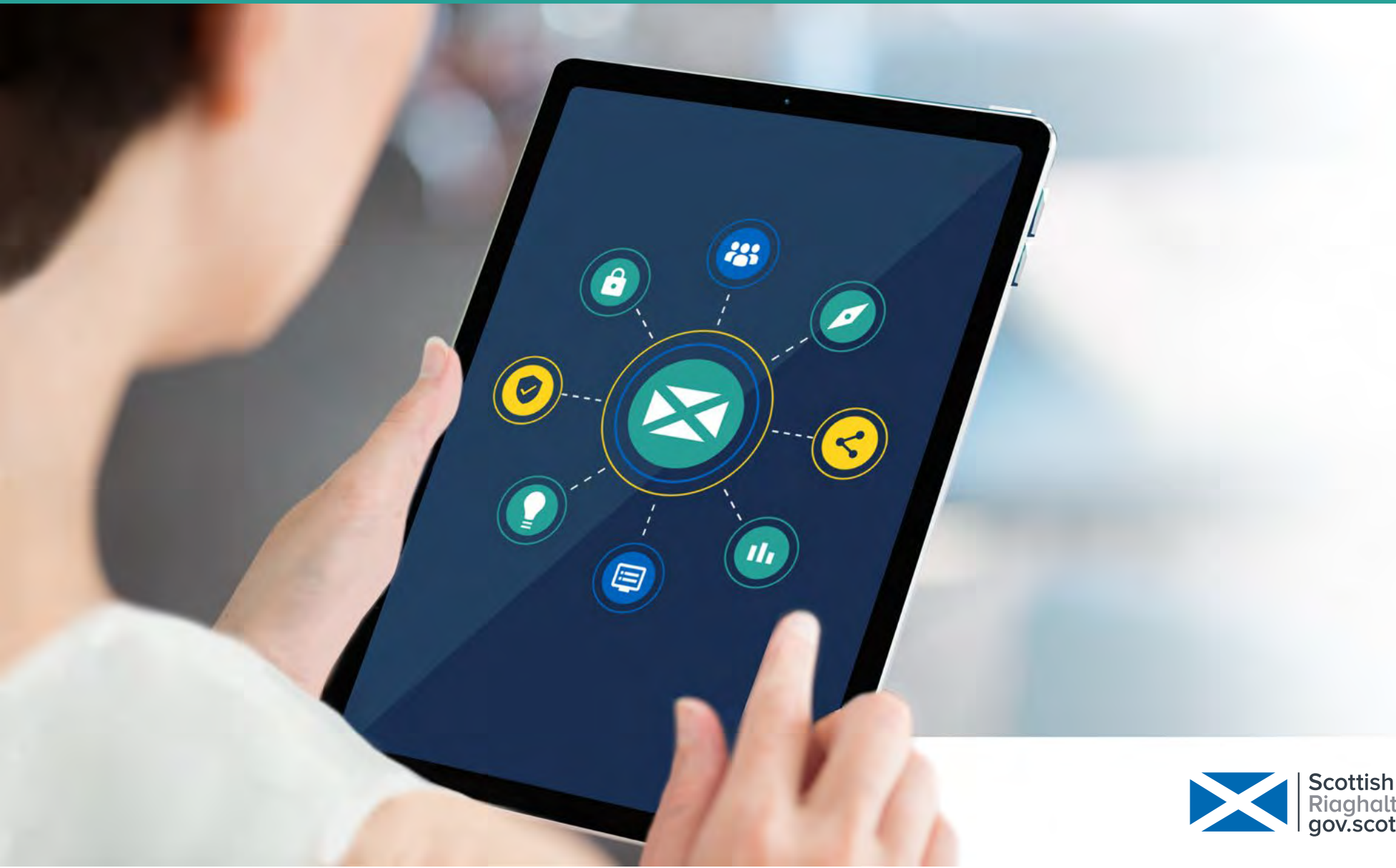


# A Changing Nation:

## How Scotland will Thrive in a Digital World



# Contents

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Part Two: A Strong Digital Economy

Part One: People and Place

Part Three: Government and Services

# Foreword



*Our commitment to work together remains as strong as ever as we work to put this strategy into practice.*



# Foreword

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**Scotland's future will be forged in a digital world. It's a world in which data and digital technologies are transforming every element of our nation and our lives – people, place, economy and government.**

In the past year, the coronavirus crisis has changed our way of life fundamentally. Many of us have worked successfully from home. We've come to rely on home shopping, online education and new and creative ways of using digital technology to keep in touch with family and friends.

But it has also demonstrated the problems that come from digital exclusion. It has reminded us all that whilst technology can transform lives for the better, its essential that we ensure that no one is left behind.

For those of us in Government, be that national or local, the crisis has highlighted both the importance of collaboration and the role that data and digital technology can play in enabling this to happen. We have seen just how much can be achieved by working together, as individuals and organisations across traditional boundaries.

Last year, the Scottish Government and COSLA made a commitment to work together to deliver this refreshed Digital Strategy for Scotland, a shared vision of a modern, digital and collaborative government, designed around people.

This document is a result of that joint working, but its publication is only the beginning. Our commitment to work together remains as strong as ever as we work to put this strategy into practice – a commitment to change the way we work to ensure services are designed to meet the needs of the user, to deliver economic recovery, to meet climate change targets and to ensure that everyone in Scotland has the skills, connectivity and devices required to fully participate in our digital nation.

The speed of digital transformation around the world will only increase. But we are confident that the measures set out in the document will allow Scotland to more than keep pace with change, facing the challenges and opportunities it brings. We believe this strategy sets out a path for us to work together to ensure Scotland fulfils its full potential in this digital world.



*We believe this strategy sets out a path for us to work together to ensure Scotland fulfils its full potential in this digital world.*



**Ivan McKee MSP,**

Minister for Trade Innovation and Public Finance



Scottish Government  
Riaghaltas na h-Alba  
gov.scot

**Councillor Gail MacGregor,**

COSLA Resources Spokesperson



COSLA

# Introduction

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*The way in which we respond to the impact of technology is one of the greatest public policy challenges of our age.*

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# Introduction

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We live in a digital world. It's changing the way we work, do business, entertain, shop and keep in touch with our family and friends. It's transforming our expectations of public services and requires Government to change the way it works to meet these expectations.

Digital technology is already a source of incredible opportunity – to open new markets, work in new ways, personalise services, innovate and scale rapidly, tackle climate change and make links across the globe. It shapes the way in which we meet national priorities such as economic recovery, climate change, decarbonisation, wellbeing and social renewal. It can provide global opportunities for Scottish businesses and talent to build on their technological expertise. It also brings huge new challenges - around privacy, regulation, competition, media fragmentation, security, rights and social inclusion. The way in which we respond to the impact of technology is one of the greatest public policy challenges of our age.

The digital agenda goes beyond the adoption of the latest digital technology. It's about the

adoption of digital thinking, the way we lead organisations and how we embrace the culture and processes of the digital age. An approach to doing business which is user centred and process (rather than silo) focussed. A way of working which maximises the value of networks. A recognition that the pace of change is accelerating and action to equip all of us to embrace this change and take advantage of the opportunities it presents.

For Scotland to thrive in this digital world, our response must embrace three key opportunities: designing and implementing technology in a secure, efficient and user centred way, realising the potential of data to improve services, increase efficiency and deliver better outcomes, and transforming our culture and the way we work through digital thinking, with its emphasis on openness, networking and agility.

Back in 2017, we set out a vision to ensure that Scotland is recognised throughout the world as a vibrant, inclusive, greener, open and outward-looking digital nation.<sup>1</sup> This vision is now even more compelling. However,



# Introduction

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the context in which it will be delivered has changed dramatically.

The pandemic, and our response to it, has shown that the public sector needs to be able to act at speed to deliver new services and bring data together to innovate, provide insight and enable effective decision making.

It has shown us the importance of working as part of an ecosystem of organisations and individual talent in every sector of the economy, to get the right support, to the right people, in the right ways.

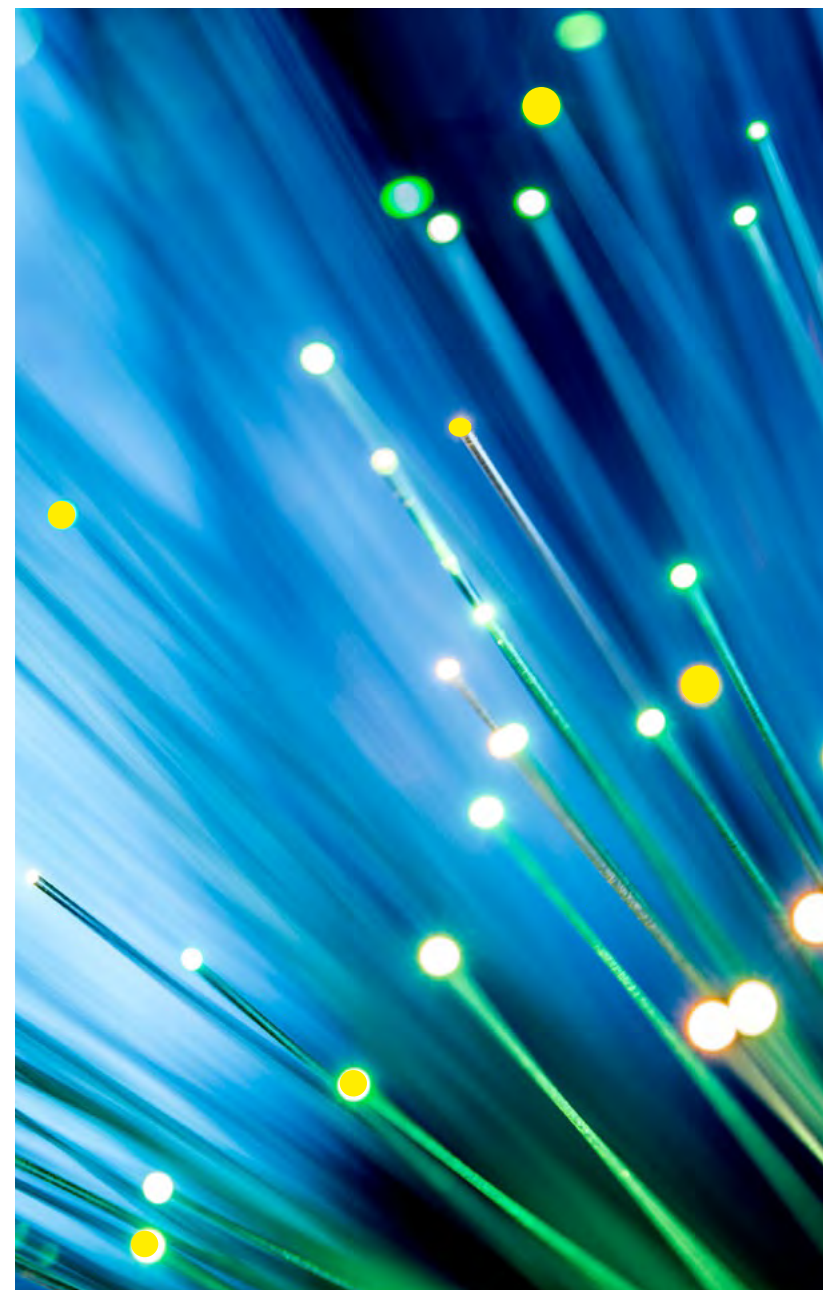
It's focussed attention on the importance of wellbeing, given more of us the confidence to use and benefit from digital technology, and made it more obvious that exclusion from the digital world can increase our sense of isolation and limit our life chances.

It has also highlighted the security challenges as more organisations and people work, learn and communicate online. Cyber resilience is key to operational resilience and business continuity, as well as our capacity to grow and flourish as we adapt to the demands of

operating online. Looking forward, we must embed cyber resilience into the design of Scotland's future digital services, as we ensure that the digital services we build for the future are trustworthy and resilient.

EU-Exit has, of course, compounded the challenges we face. Scotland has enjoyed many benefits of EU membership. Close collaboration with our EU partners and access to the digital single market promoted innovation, growth and the exchange of ideas across borders. We now need to find new ways of ensuring that Scotland remains an attractive destination for talent and investment, and enabling both our digital technologies sector and wider economy to succeed in an increasingly interdependent world.

We held a consultation on an earlier draft of this document between September and December 2020, receiving more than 200 responses from every sector of society. We were hugely encouraged by the support we received, with almost every response endorsing the vision and agreeing on the need for collaboration and innovation to deliver it.



# Introduction

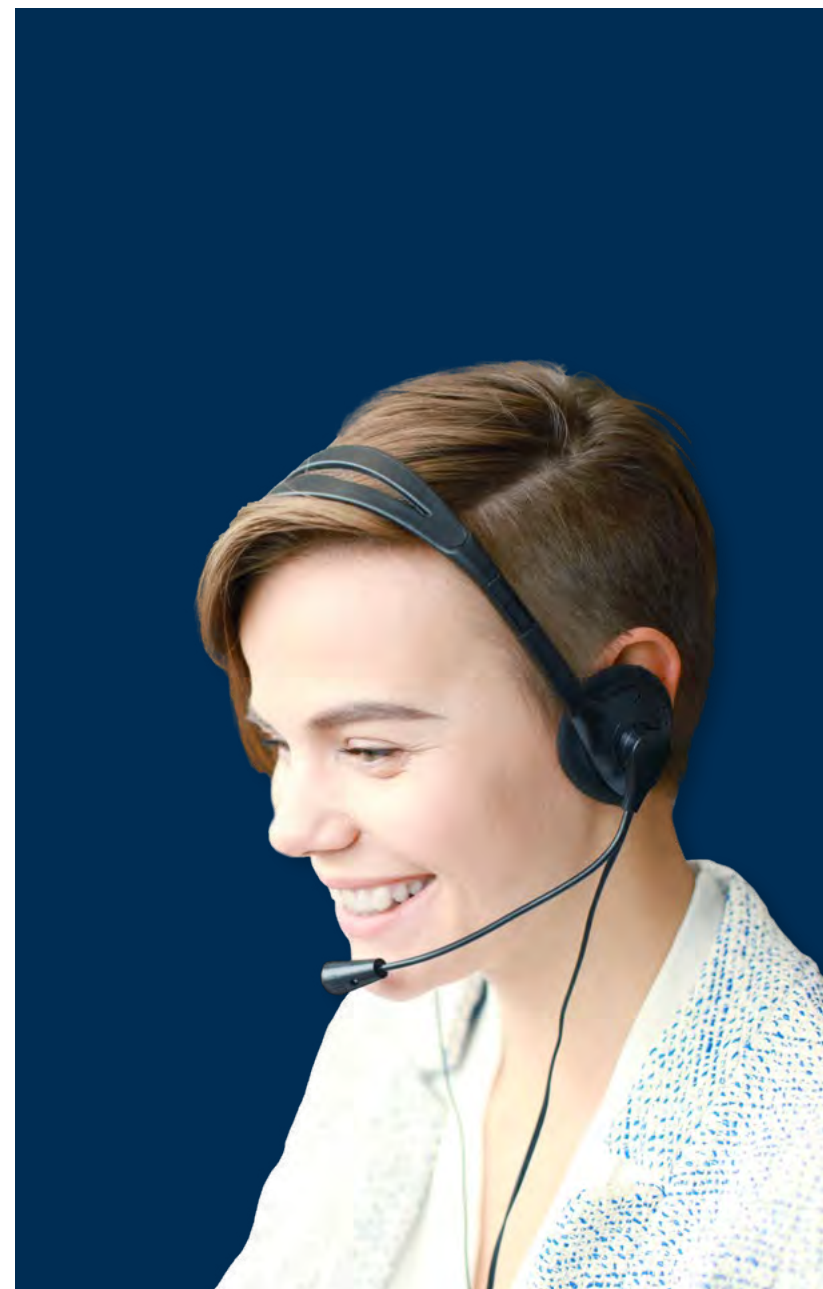
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This document is intended to set out the overarching digital vision; but separate strategies and/or action plans may be required in specific policy areas. Digital strategy updates which take account of the radically changed environment are underway or have taken place across government, including in health and social care and in planning. These will align to and describe further sector-specific actions to deliver our vision.

The consultation has shown that while it may be too early to understand the full extent of the economic and social shock of the pandemic, it has redefined our perceptions of “normal”. Scottish Government and Scottish Local Government therefore cannot, and will not, seek to simply return to previous notions of ‘business as usual’. Together, we will rethink the way we work and support a country that balances and sustains economic, social and environmental wellbeing in a secure and resilient way. We will build a country that has a distinct vision of its place in the digital world and embraces the potential of data and digital technology to deliver the outcomes of the [National Performance Framework](#).

We can and must build a digital Scotland in which:

- we are open, ethical and working with others to meet new moral, environmental, regulatory and security concerns;
- green thinking is incorporated into all our digital solutions, so we can contribute to meet our statutory commitments to be a net zero society by 2045;
- geography, background or ability is not a barrier to getting online and benefiting from digital technology, and we capitalise on the potential of digital technology to sustain and invigorate rural and island communities;
- wellbeing is both safeguarded and enhanced through the greater use of digital technology;
- security and resilience are at the core of all our digital developments;
- our children are prepared for the workplace of the future, and training and skills development are available for the existing workforce;
- our businesses embrace the economic opportunities of data, technology, digital marketing and new ways of working;





# Introduction

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- our digital technologies sector is an innovative one, successful internationally and involving enthusiastic partners in a network of digital and data talent;
- we reinvent our public services to make them more personal, accountable, adaptable, efficient, secure, sustainable and worthy of public trust;
- our government, NHS, and Councils are transformed into true digital organisations with digital skills, cultures and operating models; and
- our third sector partners are supported to develop their digital capabilities and introduce new digital business models.

Our people, places, economy and planet require it.



*When we talk about Digital it is important to recognise that this includes not just the adoption of digital technology but also the adoption of digital thinking.*



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<sup>1</sup>[Realising Scotland's Potential in a Digital World – A Digital Strategy for Scotland.](#)

# Principles of a Digital Nation

Audit Scotland reviewed digital progress in Scottish Government and Local Government in 2019 and 2020 respectively. Collectively, the two reports (“[Enabling Digital Government](#)” and “[Digital Progress](#)

[in Local Government](#)”) identified a number of factors and characteristics necessary for true Digital Government. As this strategy is jointly owned by local and national government, we have taken these and

adapted them to form principles for a digital nation – applicable to Government, but also to People and Place, and the Economy. These principles form the backbone of this strategy.



# Principles of a Digital Nation

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## Inclusive, Ethical and User Focussed

We strive to understand the needs of people and our communities and involve them in the design of products and services. We focus on the outcomes we want to achieve and design services from a user's perspective rather than from our organisational perspective. We value and strive to design and deliver products and services that are inclusive and ethical and resilient, and uphold people's digital rights.



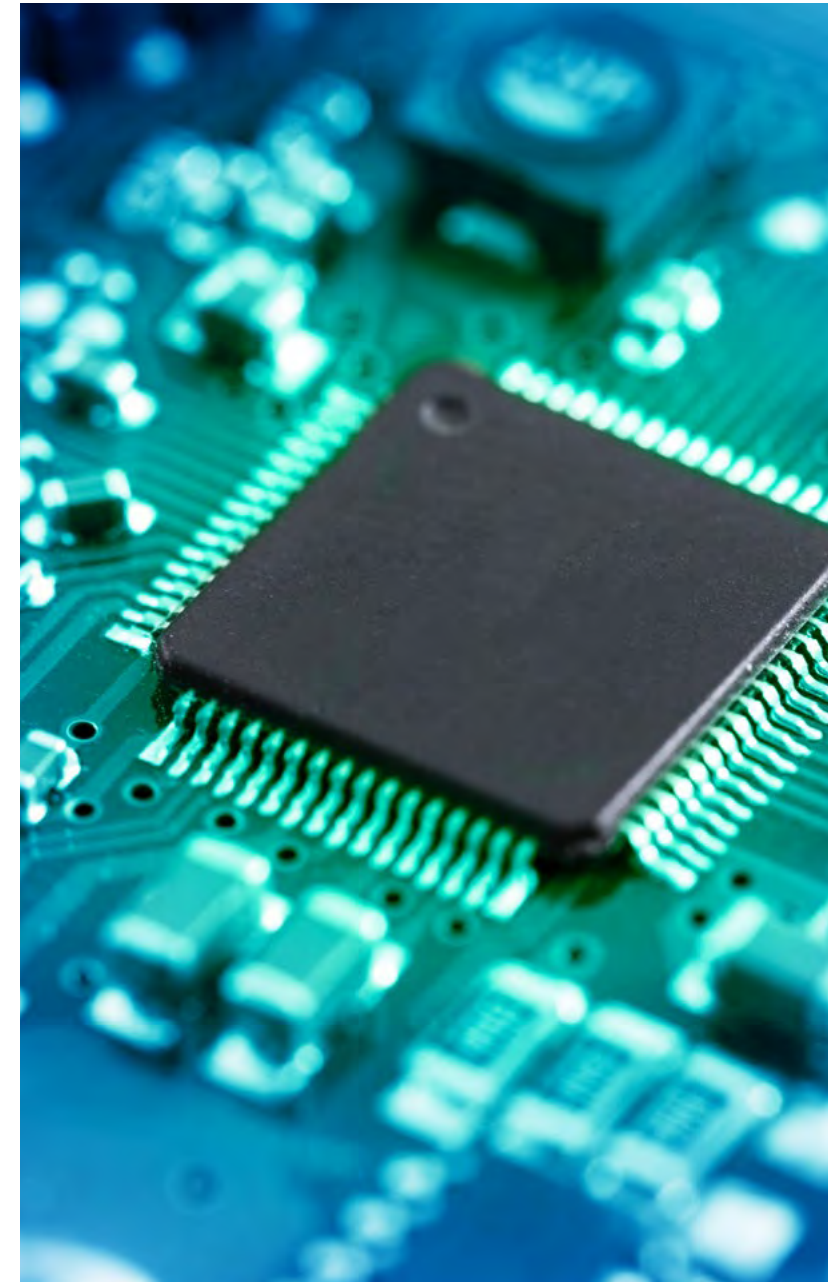
## A Skilled Digital Workforce

To develop and sustain a digital future for Scotland, and to ensure no one is left behind, we need to ensure that our young people are equipped with the skills to thrive in the digital world, and ensure that our organisations are planning for the digital roles that they will need in the near and longer term.



## Digital Leadership and Culture

We recognise that digitisation can deliver better outcomes for Scotland and adapt our leadership style to champion change, and engage and empower our staff to innovate.



# Principles of a Digital Nation

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## Collaborative

We recognise that digitisation delivers better benefits when we collaborate. This means collaborating at a community, local, regional and national level, and collaborating across the public, private, voluntary, and academic sectors.



## Data-Driven

We value the transformational role that data can play in increasing transparency, empowering communities, transforming products and services, fuelling innovation, and improving outcomes.



## Technology-Enabled

We recognise that digitisation is underpinned by technology that is evolving at an exponential rate of change and actively seek opportunities to explore how new and emergent technologies can improve outcomes for Scotland.



*We understand that digitisation now provides unprecedented opportunities to deliver better outcomes in Scotland.*



# Principles of a Digital Nation

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## Innovative and Sustainable

We understand that digitisation now provides unprecedented opportunities to deliver better outcomes in Scotland and create an environment that allows organisations to openly share challenges and ideas and to co-develop and co-produce innovative solutions to old problems.



## Secure By Design

We recognise that there are many threats to the privacy, integrity and availability of digital products and services and build security into digital services by design.



# Principles of a Digital Nation

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*Digital technologies are transforming the way in which people live their lives across Scotland.*

”



# National Performance Framework Alignment

Scotland's National Performance Framework (NPF) describes our ambitions, providing a vision for national wellbeing across a range of economic, social and environmental factors. It sets out the strategic outcomes which collectively describe the kind of Scotland in which people would like to live and guides the decisions and actions of national and local government.

These shared national outcomes are as compelling as ever, but the world in which we will achieve them is vastly different from that of the analogue era. It's a world of speed, responsiveness and interconnections, where consumers are empowered and where new technology companies have transformed the economic order.

This strategy defines how Scotland will succeed in this new world. It sets actions that will help us to deliver the ambitions and outcomes of the National Performance Framework and in doing so provides a mechanism for assessing our progress and success.



# National Performance Framework Alignment

## Priority Themes: People and Place

### Actions

#### No One Left Behind

We will:

1. deliver broadband coverage for all;
2. improve 4G mobile coverage;
3. ensure all newly publicly-funded infrastructure is future-proofed for data requirements;
4. provide equipment and digital skills training to those in need;
5. ensure everyone can access services.

### NPF Outcomes



**Education** - We are well-educated, skilled and able to contribute to society.



**Poverty** - We tackle poverty by sharing opportunities, wealth and power more equally.



**Communities** - We live in communities that are inclusive, empowered, resilient and safe.



**Environment** - We value, enjoy, protect and enhance our environment.



# National Performance Framework Alignment

## Priority Themes: People and Place

### Actions

#### An Ethical Digital Nation

We will:

1. set out a vision of an ethical digital nation;
2. build public trust in data;
3. open up access to data;
4. use digital technology to increase community engagement and participation;
5. ensure that Scotland engages with confidence on the international stage;
6. balance digital rights with the responsibility to be accountable for our actions;
7. use our data capability to address climate change targets.

### NPF Outcomes



**Human Rights** - We respect, protect and fulfil human rights and live free from discrimination.



**Children & Young People** - We grow up loved, safe and respected so that we realise our full potential.



**International** - We are open, connected and make a positive contribution internationally.



**Communities** - We live in communities that are inclusive, empowered, resilient and safe.

# National Performance Framework Alignment

## Priority Themes: People and Place

### Actions

#### Digital Education and Skills

We will:

1. ensure digital knowledge and skills has a place in education;
2. build a skilled digital workforce;
3. support upskilling and reskilling opportunities;
4. increase diversity in the digital skills pool;
5. establish the Scottish Digital Academy as the skills provider of choice;
6. establish a resource of digital and data experts that the public sector can call upon;
7. create a Data Science Competency Centre.

### NPF Outcomes



**Fair Work & Business** - We have thriving and innovative businesses, with quality jobs and fair work for everyone.



**Education** - We are well-educated, skilled and able to contribute to society.



**Economy** - We have a globally competitive, entrepreneurial, inclusive and sustainable economy.



**Poverty** - We tackle poverty by sharing opportunities, wealth and power more equally.

# National Performance Framework Alignment

## Priority Themes: A Strong Digital Economy

### Actions

#### Helping All Businesses to Become Digital Businesses

We will:

1. enable SMEs to adopt and optimise new and resilient digital technologies;
2. expand expert support for SMEs;
3. publish the Digital Economy Business Survey;
4. increase diversity and work with industry to tackle digital skills shortages;
5. improve international data connections for Scotland;
6. collaborate with the tech industry to demonstrate and deliver the benefits of home working;
7. make more of our data available openly;
8. make public sector data easy to find.

### NPF Outcomes



**Fair Work & Business** - We have thriving and innovative businesses, with quality jobs and fair work for everyone.



**Education** - We are well-educated, skilled and able to contribute to society.



**Economy** - We have a globally competitive, entrepreneurial, inclusive and sustainable economy.



**International** - We are open, connected and make a positive contribution internationally.

# National Performance Framework Alignment

## Priority Themes: A Strong Digital Economy

### Actions

#### Supporting our Digital Technology Sector

We will:

1. back and progress the Logan Review's recommendations;
2. attract national and international investment in our tech sector;
3. create a programme of data-driven innovation;
4. establish Scotland as an attractive location for green data centres;
5. capitalise on Scotland's competitive advantage in the growing international market for GovTech;
6. increase diversity in the digital workforce;
7. launch Scotland's AI strategy;
8. implement the Strategic Framework for a Cyber Resilient Scotland.

### NPF Outcomes



**Environment** - We value, enjoy, protect and enhance our environment.



**Fair Work & Business** - We have thriving and innovative businesses, with quality jobs and fair work for everyone.



**Economy** - We have a globally competitive, entrepreneurial, inclusive and sustainable economy.



**International** - We are open, connected and make a positive contribution internationally.

# National Performance Framework Alignment

## Priority Themes: Digital Government and Services

### Actions

#### Public Services Working For Us All

We will:

1. set out ambitious reform programmes for government;
2. embed the Scottish Approach to Service Design across the public sector;
3. ensure that all public services are designed through the lens of inclusion;
4. develop the CivTech operation as the centre of public service innovation of national and local government;
5. ensure that public services are secure and resilient;
6. introduce a digital identity service for users.

### NPF Outcomes



**Health** - We are healthy and active.



**Communities** - We live in communities that are inclusive, empowered, resilient and safe.



**Poverty** - We tackle poverty by sharing opportunities, wealth and power more equally.



**Children & Young People** - We grow up loved, safe and respected so that we realise our full potential.

# National Performance Framework Alignment

## Priority Themes: Digital Government and Services

### Actions

#### Transforming Government

We will:

1. develop cultures and working practices required to be successful in the digital age;
2. build a suite of common platforms to be adopted across the public sector;
3. adopt common digital and data standards;
4. establish a new public sector centre of excellence for process automation;
5. create a digital service hub;
6. adopt an open, inclusive approach to procurement;
7. work with third partners to support a digital third sector;
8. explore the potential for technology to better enable parliamentarians and elected council members to engage with constituents remotely;
9. develop and implement a Data Transformation Framework;
10. invest in analytical platforms.

### NPF Outcomes



**Poverty** - We tackle poverty by sharing opportunities, wealth and power more equally.



**Economy** - We have a globally competitive, entrepreneurial, inclusive and sustainable economy.



**Communities** - We live in communities that are inclusive, empowered, resilient and safe.



**Culture** - We are creative and our vibrant and diverse cultures are expressed and enjoyed widely.

# People and Place



*We will ensure that everyone has the skills they need to thrive in this new digital world, at every stage of life.*



# People and Place

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Geography, background or ability should not be barriers to getting online and benefiting from digital technology.

An ethical digital Scotland will be inclusive, fair and transparent. People must be able to access technology, understand its benefits and limitations, develop the skills they need to be safe and creative online and control how their personal information is used.

We will:

- bring the most vulnerable with us, and make sure that they have the skills, secure connectivity and devices required to fully participate in our digital nation, ensuring no one is left behind by the changes taking place.
- recognise that digital and data infrastructure is critical national infrastructure and that this includes far more than physical connections.
- ensure that every part of Scotland and every community within it can have access to good quality connectivity now and in the future.

- enhance the democratic process so our communities are empowered to have their say about the services that matter to them.
- ensure that everyone has the skills they need to thrive in this new digital world, at every stage of life.
- embed digital learning in every part of our education and training system.
- keep Scotland at the cutting edge of skills development in new digital technologies and rapidly increase the number of digitally skilled individuals graduating from our universities and colleges each year.
- agree on an ethical framework, to define the sort of nation we wish to become.

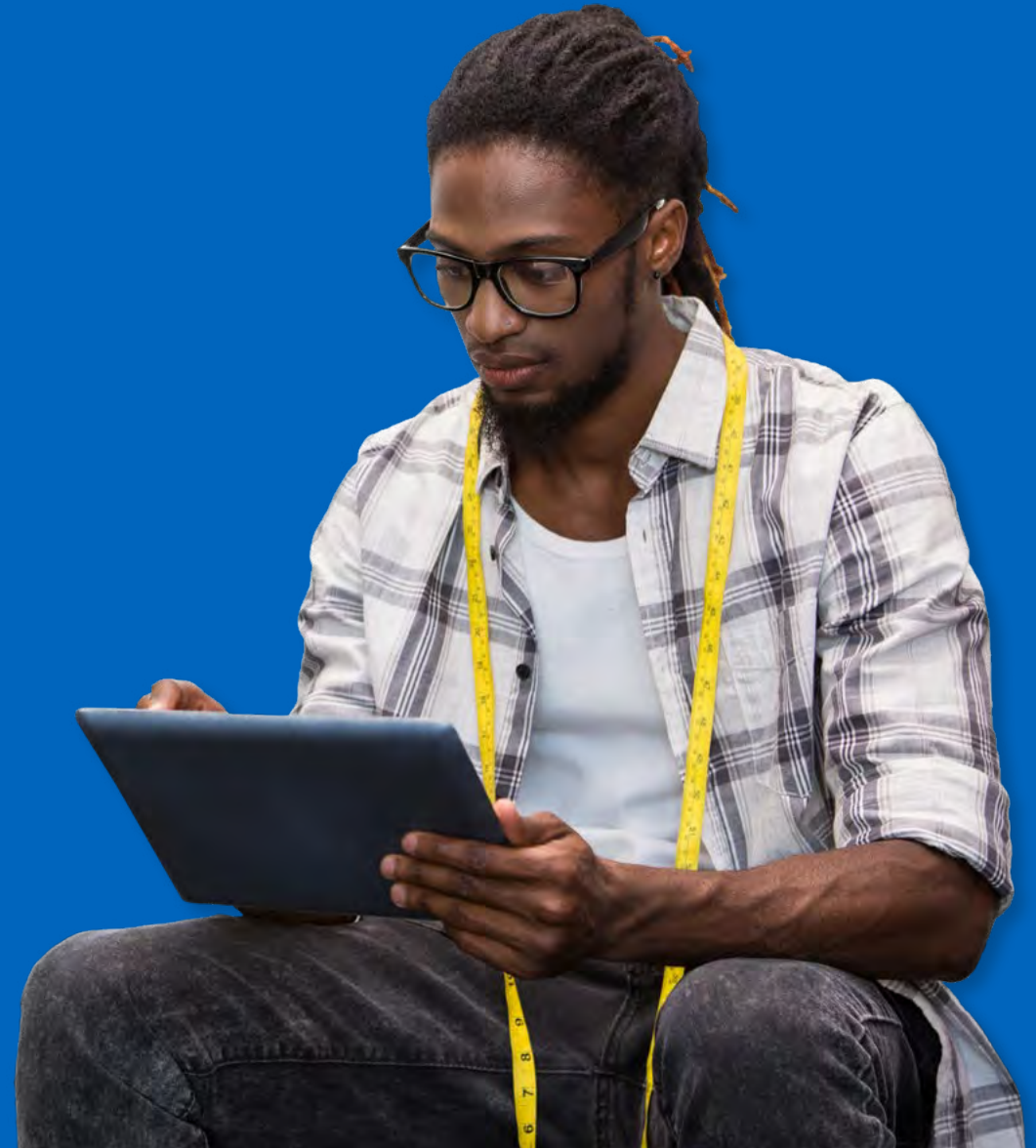




# No One Left Behind



*Scotland has an impressive record of partnership working to tackle digital exclusion.*



# No One Left Behind

Barack Obama observed that “the internet is not a luxury, it is a necessity.”<sup>2</sup> As we have responded as a nation to the pandemic, this has become more apparent than ever. The internet has provided access to essential services and up-to-date and accurate information, and helped us to maintain the social contacts that are so important to our wellbeing. In doing so however, it has also exacerbated the isolation of those who do not enjoy access to technology and focussed attention on the risk that, unless we tackle digital exclusion, we could increase, rather than reduce, inequalities in our society.

## Where we are now

The £463m invested in the Digital Scotland Superfast Broadband programme has extended fibre broadband access to more than 950,000 homes and businesses across Scotland. Over 95% of premises in Scotland can now benefit from faster speeds. The programme has transformed access to broadband in rural areas, with 65% of premises in Orkney, 75% in Shetland and 79% in the Western Isles now able to access superfast broadband – areas where there had been no commercial plans for this kind of

infrastructure. Without this targeted public investment, the economic and social impact of the pandemic would have been even more acute.

The £25m Scottish 4G infill programme is addressing mobile ‘notspots’ (areas where no mobile coverage is available) in remote communities across Scotland, from the Scottish Borders to Shetland and Orkney. However, there is progress still to be made, with the 2019 Ofcom ‘Connected Nations’ report pointing out that approximately 20% of Scotland – mostly in rural areas – does not have 4G coverage from any mobile company.<sup>3</sup>

Scotland has a higher proportion of properties with gigabit capable broadband – 42% compared to 27% in the UK as a whole,<sup>4</sup> – but lags slightly behind when we compare residential premises with access to superfast broadband – 94% at September 2020, compared to 96% for the rest of the UK. However, with access to full fibre broadband at 17%, Scotland is still somewhere behind the best in the world, with Ofcom’s International Broadband Scorecard for 2020 (reflecting data to the end of 2019) showing that 100% of households in Singapore and South Korea and 77% of



*The £463m invested in the Digital Scotland Superfast Broadband programme has extended fibre broadband access to more than 950,000 homes and businesses across Scotland.*



# No One Left Behind

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households in Sweden, compared to 45% in Scotland enjoy such access.<sup>5</sup>

The 2019 Scottish Household Survey suggests that home internet access has increased steadily and is now at an all-time high. However, access to getting online in the most deprived areas is lower (82%) than in the most affluent areas (96%). Other studies also suggest that the digital divide exists across generations. While the number of adults in Scotland over 60 using the internet has increased significantly since 2017, it is lower than the total number of all adults in Scotland (66% for adults over 60; 88% for adults of all ages).<sup>6</sup>

Scotland has an impressive record of partnership working to tackle digital exclusion.

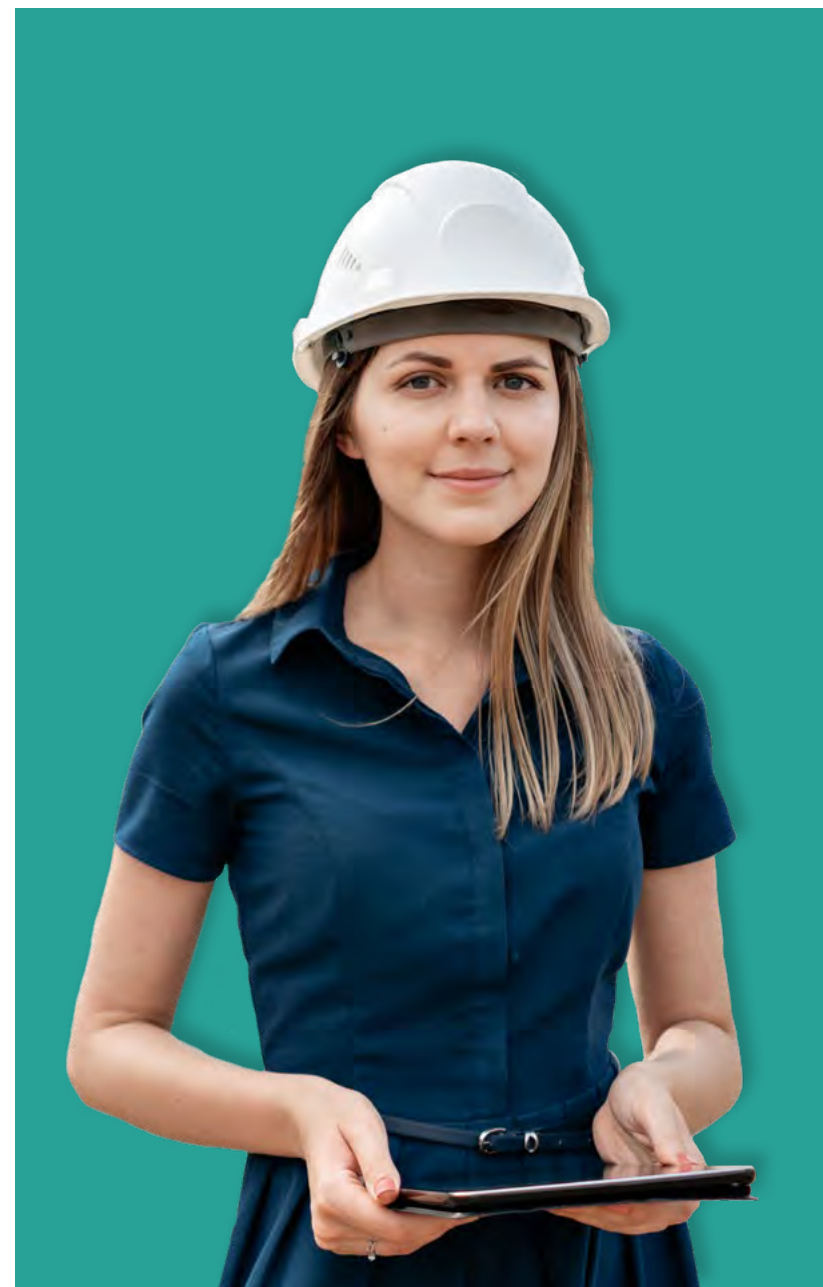
The Digital Participation Charter has been signed by 673 organisations, each of which has committed to supporting their employees and people across Scotland to develop the essential digital skills they need to do their jobs, live their lives, and use different digital services with confidence. The associated Charter Fund, administered by the Scottish Council for Voluntary Organisations

(SCVO), has provided grants (typically up to £10,000) to over 188 organisations to tackle poverty, social isolation and other forms of inequality in society through embedding essential digital skills development work in day-to-day activity with their service users.<sup>7</sup>

[‘Connecting Scotland’](#) a collaboration between Scottish Government, Local Government and the Third Sector, developed in response to the pandemic, provides an internet connection (20 gigabytes a month), training and support, and a laptop or tablet, so that the most vulnerable and digitally excluded people in Scotland can access services and support and connect with friends and family. It will bring 55,000 people online by the end of 2021 and truly encapsulates what can be achieved when organisations, from all sectors of the economy, work together with a common purpose.

## **Where we want to be**

We want Scotland to be a fully digitally inclusive nation in which our digital and data infrastructure is recognised as critical national infrastructure and the benefits of



# No One Left Behind

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technology are available to everyone.

Scotland's Infrastructure Investment Plan adopts a wide, encompassing definition of infrastructure. It extends beyond the fibre, masts and small cells needed to meet our connectivity needs, to encompass digital platforms, online public services and data architecture. Future capital investment decisions will be driven by this understanding of the role that data and digital play in ensuring the economic and societal resilience of all our communities and our ability to trade with the world. They will also support our transition to a net zero society by enabling us to replace unnecessary journeys and make more efficient, environmentally friendly use of the more traditional infrastructure of transport and buildings.

Despite telecoms being reserved to the UK Parliament, our £600 million investment through the Reaching 100% (R100) programme will continue to deliver future-proofed and resilient broadband infrastructure in some of the most rural areas of Scotland. These networks will be transformational – in the short term, enabling faster broadband speeds and

the growth of 4G and 5G; while, over time, underpinning the growth of data-driven, connectivity-enabled technologies across Scotland. We recognise, however, that demand for connectivity continues to increase exponentially and we want to ensure that Scotland leverages commercial partnerships and its research capabilities to anticipate future trends and attract international innovation and investment.

Our investment in digital infrastructure will ensure that our rural and island communities share fully in the future economic, social and environmental wellbeing of Scotland. It can help to address population decline by making living and working in a rural setting a more attractive option, and put small rural businesses on a level playing field with their competitors by providing ready access to international markets. It can also help to diversify our rural economies by capitalising on the unique richness of Scotland's renewable energy sources to attract investment in high quality jobs. As working from home becomes a new normal for many, there will be new opportunities for people to live and work in every part of Scotland and we want to



# No One Left Behind

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work with remote and rural communities to ensure that they benefit from this trend.

Progress has been made to tackle digital exclusion in Scotland, but we want to go further and achieve world-leading levels of digital inclusion. This depends, not only on the quality of Scotland's digital infrastructure, but on the ability of people to be able to afford data allowances and devices, and to acquire the skills and confidence to take advantage of the benefits and opportunities of being digitally connected. Through the Connecting Scotland programme and targeted initiatives, we will therefore continue to bring people online throughout Scotland. This, in turn, will provide the foundation of a country that enjoys the benefits of universal digital citizenship where individuals and communities have the skills, information literacy, support and the data required to participate, as full partners, in the design of public services, and through active engagement in national and local democracy to hold us to account for the way in which these are provided.

At the same time, we must recognise that there are some people who cannot or do not want to use technology to access

services. We remain committed to offering alternative options and using digital technology behind the scenes to improve the quality of the user experience.



*We remain committed to offering alternative options and using digital technology behind the scenes to improve the quality of the user experience.*



*Progress has been made to tackle digital exclusion in Scotland, but we want to go further and achieve world-leading levels of digital inclusion.*



# No One Left Behind

## How we are going to get there

- **Deliver broadband coverage for all and maximise gigabit investment in Scotland.** R100 will deliver new subsea connections and bring resilient, future-proofed connectivity to many of our island communities, providing speeds equitable to those experienced in our cities. The vast majority of the R100 contract build will be full fibre connections, capable of download speeds of up to 1 gigabit (1,000 Mbps) – more than 30 times greater than the initial superfast commitment. Commercial delivery of full fibre and gigabit capable networks will also continue at pace in urban and semi-urban areas – incentivised by 100% non-domestic rates relief on new fibre.<sup>8</sup> We will work with commercial providers to stimulate further investment in full fibre, and will work with the UK Government to secure a fair share of the £5bn that has been committed to extend next generation gigabit-capable broadband across all of the UK.



Technology Enabled



# No One Left Behind

- **Improve rural 4G mobile coverage and set the right conditions to encourage investment:** We will continue to invest in future-proofed infrastructure through the Scottish 4G infill programme and work collaboratively with the UK Government to ensure maximum impact from the up to £1bn Shared Rural Network (SRN) investment in Scotland – the UK government has said this scheme will provide 91% geographic coverage by at least one mobile network operator.<sup>9</sup> We will simplify the planning process to make it easier for telecoms operators to deploy infrastructure that meets community needs, and through Scotland 5G centre's Infralink project offer support and guidance to improve rental access to publicly owned assets and ensure that the siting and design of masts helps to protect the natural environment.

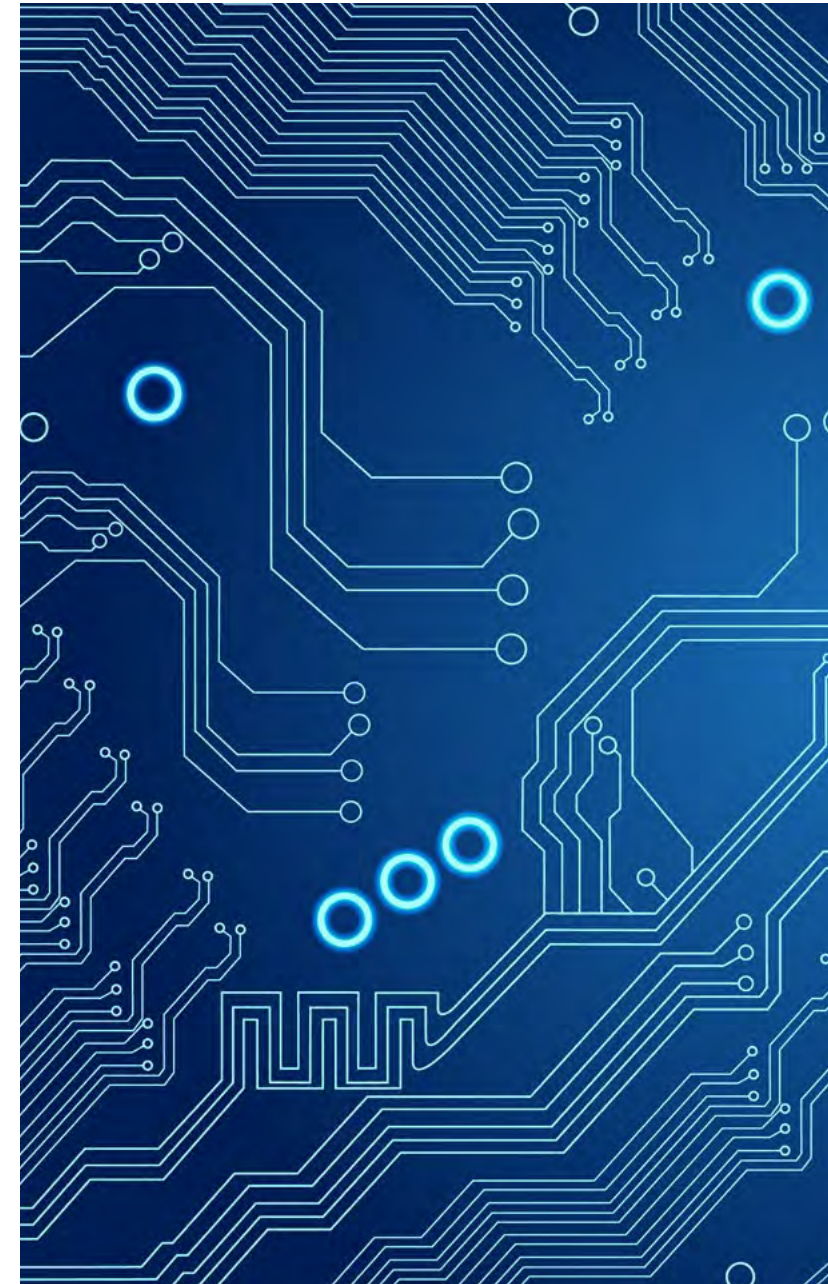


Technology Enabled

- **Ensure that all newly publicly-funded infrastructure is future-proofed for data requirements,** and all our communities – including our rural and islands communities – are resilient and sustainable so they have a strong economic future and can transition to a net zero society. Making robust, high quality data open and available to our communities will enable smarter investment, allow better use of assets and innovation in our public services and economy.



Data-Driven



# No One Left Behind

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- **Build upon our Connecting Scotland programme** to go beyond the 55,000 people we will support with equipment and data packages by the end of 2021 and work collaboratively with all sectors of our economy to achieve world leading levels of digital inclusion. Together, we will provide training opportunities, support and materials to ensure that people have the skills, confidence and information literacy required to make the most of being online.



Inclusive, Ethical and User Focussed



Collaborative

- **Ensure everyone can access services.** We will work to ensure that moving government and other services online reduces inequalities and does not exclude the least advantaged in society from the services they may need the most.



Inclusive, Ethical and User Focussed



*Together, we will provide training opportunities, support and materials to ensure that people have the skills, confidence and information literacy required to make the most of being online.*





# No One Left Behind

## Actions

### No One Left Behind

We will:

1. deliver broadband coverage for all;
2. improve 4G mobile coverage;
3. ensure all newly publicly-funded infrastructure is future-proofed for data requirements;
4. provide equipment and digital skills training to those in need;
5. ensure everyone can access services.

## NPF Outcomes



**Education** - We are well-educated, skilled and able to contribute to society.



**Poverty** - We tackle poverty by sharing opportunities, wealth and power more equally.



**Communities** - We live in communities that are inclusive, empowered, resilient and safe.



**Environment** - We value, enjoy, protect and enhance our environment.

<sup>2</sup> [https://www.youtube.com/watch?v=WyXyn01244U&feature=emb\\_logo](https://www.youtube.com/watch?v=WyXyn01244U&feature=emb_logo)

<sup>3</sup> [https://www.ofcom.org.uk/\\_data/assets/pdf\\_file/0023/186413/Connected-Nations-2019-UK-final.pdf](https://www.ofcom.org.uk/_data/assets/pdf_file/0023/186413/Connected-Nations-2019-UK-final.pdf)

<sup>4</sup> OfCom connected Nations report 2020 <https://www.ofcom.org.uk/research-and-data/multi-sector-research/infrastructure-research/connected-nations-2020>

<sup>5</sup> <https://www.ofcom.org.uk/research-and-data/telecoms-research/broadband-research/eu-bbroadand-scorecard>

<sup>6</sup> Ipsos MORI Basic Digital Skills UK Report, 2015

<sup>7</sup> <https://scvo.scot/funding/digital-participation-charter-fund>

<sup>8</sup> The Scottish Government have removed non-domestic rates on all newly laid and 'lit' infrastructure for 10 years, from 1 April 2019, allowing reinvestment into further fibre build. This is twice as long as UK Government who made a similar commitment for 5 years.

<sup>9</sup> [www.srn.org.uk](http://www.srn.org.uk)

# An Ethical Digital Nation

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*Growing as an ethical digital nation and developing trust in the way we use data and apply digital technology is a collective responsibility.*

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# An Ethical Digital Nation

Growing as an ethical digital nation and developing trust in the way we use data and apply digital technology is a collective responsibility. A recent report by the OECD observed that “Trust is the foundation upon which the legitimacy of public institutions is built and is crucial for maintaining social cohesion... public trust leads to greater compliance with regulations... trust is necessary to increase the confidence of investors and consumers.”<sup>10</sup> Although the social and economic benefits of this approach are clear, but we must always be aware that it takes a long time to build trust, but a much shorter time to lose it.

Evidence suggests that to be confident, digital technology users need to trust that their rights and privacy are protected, that the technology is reliable and secure, and, critically, that service and product providers are truthful, transparent and can be trusted. An ethical digital nation must go beyond the protection of individual data and privacies which are existing legal rights, and engage fully with all sectors and the general public to understand their concerns and the trade - offs and choices they are prepared to make.

While the use of technology and of data can be hugely transformational, it raises important and new questions about the kind of society we want to be. It generates concerns about personal privacy and digital security; about the ways facts can become distorted through social media; and about the way governments work with, and regulate, the global digital technologies industry.

There is a need for clear statements on fairness, freedom of choice and transparency that balance the needs of the individual, society and the market taking account of rights and responsibilities, all aspects of inclusion and environmental impact. We must design and deliver products and services that use data and digital technologies in transparent, honest and inclusive ways and build trust by ensuring that we protect personal privacy and empower people to be informed users and to control their personal information.

## Where we are now

An expert group has been commissioned to gather evidence to develop recommendations and a framework of digital ethics for Scotland. Public



# An Ethical Digital Nation

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engagement has been placed at the centre of this work, with a number of public sessions held to inform and direct findings. Recommendations from the expert group are due in 2021 and will form the basis of our future approach. Already, we have begun providing a means for privacy and ethics issues to be discussed candidly, transparently and in open and mutually respectful environments.

We have also had success in demonstrating the ethical use of data. The Data for Children Collaborative seeks to improve the wellbeing of children locally, nationally and globally, by using data and data science techniques to solve societal problems.

Projects include the development of an Artificial Intelligence (AI) chatbot to rebut rumours, myths and misinformation about the coronavirus pandemic, to allow children to develop their understanding of the dangers posed by coronavirus;<sup>11</sup> and work to understand how isolation, school closure and exam cancellation caused by the pandemic affects the mental health of the of young people in Scotland.<sup>12</sup>

Digital platforms open up the potential for

government to consult more widely, share more openly and to involve people across Scotland to boost individual and collective wellbeing, both at a national level, and with respect to decisions made locally. However, the 2019 Scottish Household survey showed that just 18% of adults agreed that they can influence decisions affecting their local area, while 30% said they would like to be more involved in decisions affecting their local area. We have seen significant developments in response to the pandemic from local authorities, the third sector and other organisations to engage communities through digital means, which will provide a platform from which to build moving forward.

To encourage openness and engagement, Scotland is a member of the Open Government Partnership: an international collaboration of 90 governments committed to openness, transparency and citizen participation. As part of Scotland's Open Government Action Plan 2018-2020, the Scottish Government has set a number of commitments, which have been set in association with Open Government civil society representatives.<sup>13</sup> The Scottish Government has committed to improving



*To encourage openness and engagement, Scotland is a member of the Open Government Partnership: an international collaboration of 90 governments committed to openness, transparency and citizen participation.*



# An Ethical Digital Nation

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the way in which data is used and shared. We have participated in the delivering the activities within the data commitment for the Scotland's Open Government Action Plan 2018-2020. We are in the initial stages of scoping out the activities for any data commitment within the next Open Government Action Plan.

## Where we want to be

Our vision is for a society where people can trust public services and businesses to respect privacy and be open and honest in the way data is being used. But this is about more than the use of data. It is about trust, fair and rewarding work, democratic, social and cultural inclusion, climate change, the circular economy and making sure that the raw materials used in production are ethically sourced.

A place where children and vulnerable people are protected from harm. Where digital technologies adopt the principles of privacy, resilience and harm reduction by design and are inclusive, fair and useful. This is not simple, nor quick work – but it is what we must work towards.

An ethical digital nation will allow people to enjoy their rights and freedoms by

accessing information and education, communicating with their families and staying safe and secure online with confidence in the systems, products and services they choose to use. It will allow businesses to flourish in an environment where there is a skilled workforce with ethical codes that consider the needs of society, the customer and the environment as well as the company. It will also enable the public sector to provide tailored services where the individual is in control of how their information is shared and that add value to the lives of everyone in Scotland.

This reaches far beyond Scotland's borders, or even the powers that we have in national and local government. The way we respond to these, and to other emerging issues, is critical to the kind of country and society we aspire to be. The ability to influence decisions made in international arenas requires us to be recognised internationally as an ethical and secure digital nation, and to have the confidence to engage with citizen groups, communities, regulators, businesses, companies, academics and other governments on a global level. It will also help to attract digital and data



# An Ethical Digital Nation

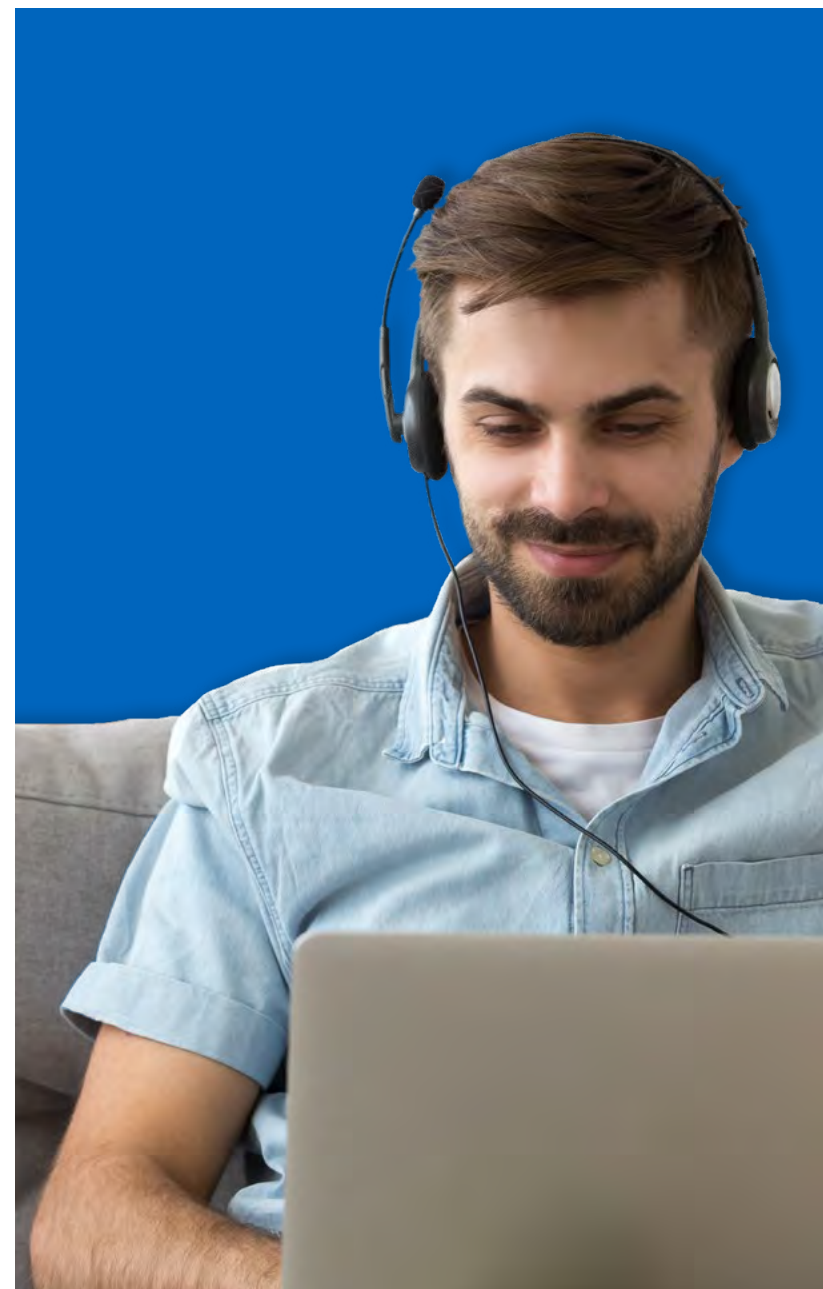
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talent and provide a platform on which to implement the principles set out in our Vision for Trade<sup>14</sup> - inclusive growth, wellbeing, sustainability, net zero and good governance – as we seek new markets, and work to manage and mitigate the considerable risks arising from EU-Exit.

As we face up to these challenges, the need for increased community engagement and involvement in decision-making will be more vital than ever before. Digital platforms open up the potential for government to consult more widely, share openly and involve people across Scotland in shaping how we grow and thrive in a digital world. Consistent with open government principles, we will engage openly with people on issues such as privacy, ethics, and inclusion. We will listen to their voice and views, acting transparently to explain how we take decisions and being accountable for our performance.

At the same time, we need to maintain Scotland's reputation as an ethical place to do business in line with our recently published Vision for Trade<sup>15</sup>. We will place ethical considerations at the heart of all we do, and ensure that a digital Scotland

is recognised as a country whose products and services can be trusted at home and overseas. We believe that Scotland's values-led approach to investment as outlined in Scotland's Inward Investment Plan: Shaping Scotland's Economy<sup>16</sup> underlines our commitment to processes that ensure foreign investment into Scotland is assessed in a transparent way to ensure Scottish interests are protected and potential investors reassured. We also welcome proposals by the United Kingdom Government for a National Security and Investment Bill to strengthen current legislation to bring us in-line with other countries and provide clarity to potential investors.



# An Ethical Digital Nation

## How we are going to get there

- **Set out a vision of an ethical digital nation:** based upon the recommendations of our Expert Group and subsequent discussions with the public, stakeholders and civic society on its implication and the guidance this requires. We will embed the ethical framework and principles that are agreed into the way we design and build digital public services and conduct digital trade. In doing this, we aim to build trust that the technologies we use are designed with integrity, public benefit, are transparent and use a human rights based approach. We will do this through open dialogue with the public, as well as with experts and the wider digital sector.



Digital Leadership and Culture

- **Build public trust in the use of data:** We will provide service users with even greater assurance that we are using their data effectively for public benefit, efficiently and securely to deliver high quality public services. This will include further enhancement of our Information Governance practices, ensuring that cyber resilience and cyber security principles are built into all aspects of data solutions and mitigating the risk of data manipulation by malicious actors. We will also continue to inform individuals of ways keep their own information safe, including through our Digital Identity Programme.



Inclusive, Ethical and User Focussed



# An Ethical Digital Nation

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- **Make more of our data available openly:** We will renew our focus, building on the principles set out in Scotland's open data strategy,<sup>17,18</sup> to open up access to data, which will improve transparency and accountability, digital inclusion, open government and create economic opportunity. We will also ensure that digital technology improves access to data about local needs and assets to allow people to make informed decisions in their communities.



Data-Driven

- **Increase community engagement and participation:** We will use digital technology to facilitate better community engagement and participation, further developing approaches such as online consultation and participatory budgeting. This will ensure that people can play an increased role in decision making in the issues that matter to them, wherever they live in Scotland.



Inclusive, Ethical and User Focussed



*We will use digital technology to facilitate better community engagement and participation.*





# An Ethical Digital Nation

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- **Engage with confidence on the international stage:** We believe that as an outward looking, ethical digital nation we can make a significant contribution to the international debate around cyber security and cyber resilience, privacy, digital rights, artificial intelligence and the regulation of technology and the organisations that have come to dominate world markets. We will build alliances of like-minded governments and engage with NGOs that are leading these debates. We will also build on the foundations established by Scotland's membership of the Wellbeing Economy Government (WEGo) group to play our part in international action to promote digital trade, tackle the climate emergency and create smart economies based on the humane use of technology.



Collaborative

- **Digital Rights:** We will make sure that all of our approaches to establishing an ethical digital nation balance digital rights with the responsibility at both an individual and government level to be accountable for our actions through independent scrutiny. This will ensure public benefit, rather than commercial value, is our driving force and that actions taken are transparent and outcomes are clearly established.



Inclusive, Ethical and User Focused



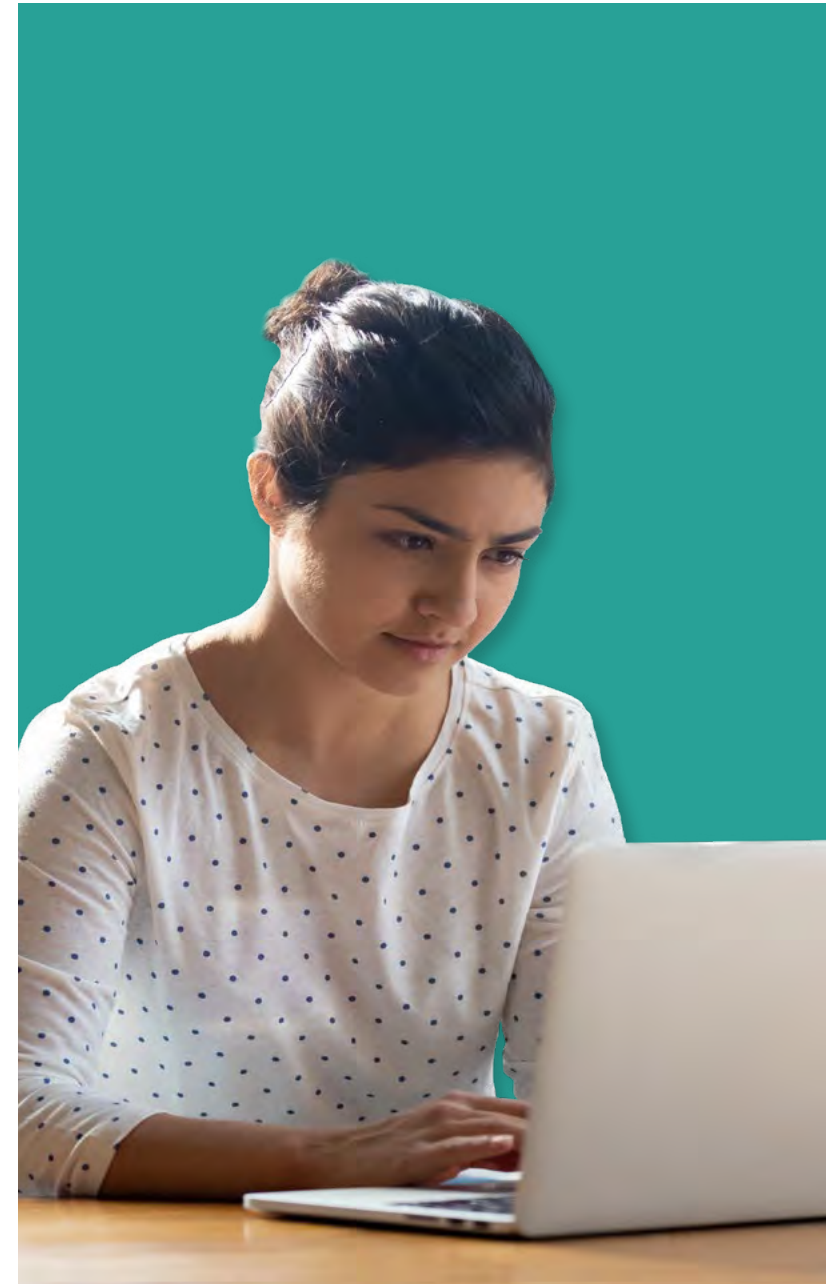
# An Ethical Digital Nation

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- **Use Scotland's data capabilities to address climate change targets:** For example, by extending our Earth Observation programme to monitor peatland restoration and waste monitoring, and building on the work of our AI for Good Climate Change programme.



Collaborative



# An Ethical Digital Nation

## Actions

### An Ethical Digital Nation

We will:

1. set out a vision of an ethical digital nation;
2. build public trust in data;
3. open up access to data;
4. use digital technology to increase community engagement and participation;
5. ensure that Scotland engages with confidence on the international stage;
6. balance digital rights with the responsibility to be accountable for our actions;
7. use our data capability to address climate change targets.

## NPF Outcomes



**Human Rights** - We respect, protect and fulfil human rights and live free from discrimination.



**Children & Young People** - We grow up loved, safe and respected so that we realise our full potential.



**International** - We are open, connected and make a positive contribution internationally.



**Communities** - We live in communities that are inclusive, empowered, resilient and safe.

<sup>10</sup> <http://www.oecd.org/gov/trust-in-government.htm>

<sup>11</sup> <https://www.dataforchildrencollaborative.com/news-from-the-unicef-data-for-children-collaborative/covid-19-the-infodemic-and-fake-news?rq=chatbot>

<sup>12</sup> <https://www.dataforchildrencollaborative.com/news-from-the-unicef-data-for-children-collaborative/world-mental-health-day>

<sup>13</sup> <https://www.gov.scot/publications/scotlands-open-government-action-plan-2018-20-detailed-commitments/>

<sup>14</sup> <https://www.gov.scot/publications/scottish-government-vision-trade/>

<sup>15</sup> <https://www.gov.scot/publications/scottish-government-vision-trade/>

<sup>16</sup> <https://www.gov.scot/publications/shaping-scotlands-economy-scotlands-inward-investment-plan/>

<sup>17</sup> <https://www.gov.scot/publications/open-data-strategy/>

<sup>18</sup> <https://www.gov.scot/publications/open-data-resource-pack-9781786524034/>

# Digital Education and Skills

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*Ensuring we have a strong, digitally skilled workforce will be a key driver to inclusive economic growth.*

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# Digital Education and Skills

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Research shows that basic digital skills are needed for almost every job, from farming (using software to maintain livestock records) through to car mechanics (using applications to diagnose vehicle defects).<sup>19</sup> However, the level of skills and understanding required is increasing fast. As the Logan Review says, “many sectors of our traditional economy, such as Law and Financial Services, are increasingly being disrupted by Internet Economy business models and techniques. It would be wise to equip our future professionals with a basic grounding in the discipline”.<sup>20</sup> Digital skills are needed at every level of an organisation – and it is vital leaders show both digital thinking and digital leadership for organisations to thrive in a digital world.

Ensuring we have a strong, digitally skilled workforce will be a key driver to inclusive economic growth, and it will support the digital technologies sector – a high-growth sector that is key to economic recovery. A recent CBI Scotland study indicates that the adoption of new technologies – and the skills to use them – could add £25 billion to the Scottish economy over the next decade,<sup>21</sup> but this

will only be realised if we raise the digital competency of everyone in Scotland.

## Where we are now

Before the pandemic, the shortage of skills required to meet the demand for digital roles was restricting growth both within the digital sector and across the wider economy. Research indicates that in Scotland 75% of all advertisements for jobs classified as ‘low-skilled’ now require baseline digital skills such as the ability to use spreadsheets and word processing applications.<sup>22</sup> But only 77% of people in Scotland aged over fifteen can complete all seven tech skills considered to be “foundation” level, compared to the UK average of 84%.

Only when people have achieved proficiency in all seven foundation levels can they begin to develop skills considered to be essential for employment, and just 39% of the Scottish workforce is able to complete the essential employment skills.<sup>23, 24</sup> A different study suggests that by comparison, in the Netherlands, 83% of the population has above basic levels of communication skills, and 81% has



# Digital Education and Skills

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above basic problem-solving skills broadly comparable to these essential skills.<sup>25</sup>

We established the Advisory Group on Economic Recovery (AGER) in April 2020, with the remit of providing expert advice on Scotland's economic recovery once the immediate emergency, created by the pandemic, has subsided. Its report<sup>26</sup> highlighted that whilst Scotland has a highly qualified labour force, the nature of the Scottish labour market (insecure work, underemployment, in-work poverty etc.) raised concerns about whether these skills were being fully utilised. It also identified sectoral skills gaps relating to digital technology as being most prevalent in agriculture, hospitality and retail.

We have had success in addressing the future skills pipeline, with increases in young people studying computing science at Level 7, and at university, as well as in the number of modern apprenticeships.<sup>27,28</sup> We have also made interventions at the advanced digital skills level and supported people to upskill and reskill into digital roles, including targeting those furthest away from the job market. For example, the launch of the Digital Start

Fund in 2019 – aimed at those on low or no incomes and who have not recently benefited from further or higher education – gives the opportunity to develop new digital skills and targets the skills gap in the digital technologies sector. Another example of progress is the development of a robust cyber security skills pipeline, embedding cyber security learning and skills development opportunities across our education and lifelong learning system.

However, we need to do much more. In Scotland between 2016 and 2018 there was a 15% decrease in young people studying computing science at Levels 3-5 (National).<sup>29</sup> The 2018 PISA report showed that Scottish performance in science was similar to the OECD average, and was higher than countries including Iceland and Italy, but was lower than England, the UK as a whole, and countries including Finland, Estonia, Germany and the United States.<sup>30</sup> Just 20% of our school pupils studying computing science Level 5 (National) are girls, and only 16% of students pursuing computing degrees at university are women.<sup>31</sup> Current female participation in the tech sector sits at 23%. Research that suggests firms



# Digital Education and Skills

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with higher levels of gender diversity are 15% more likely to outperform rivals.<sup>32</sup> In order to tackle gender bias and improve gendered participation in school subject choice, Education Scotland has in place a dedicated team of education professionals who are delivering the Improving Gender Balance in Education programme. The aim is to help change perceptions about STEM and challenge assumptions made about who does what job.

## Where we want to be

Our [STEM Strategy](#) highlights the importance of providing opportunities for young people to develop their digital skills. It is our ambition that we routinely teach digital skills at the earliest possible stage of the curriculum. We must also widen the definition of digital literacy to include a focus on both cognitive and technical skills, so our people are able to use technology collaboratively to find and evaluate information and to communicate ideas creatively.

The Logan Review identifies Education and Talent as being one of three fundamental supporting areas upon which the performance of Scotland's

tech ecosystem depends. Interventions are proposed across the education system and we are working closely with educators, industry, academia, and skills providers to implement its education and skills related recommendations.

We will do more to help our children and young people to raise awareness of digital technologies and realise the value of digital skills. This includes engaging with those who influence career decisions and equipping our teachers with a formal background in computing science, or a related discipline, so teaching is delivered with a balance of knowledge and enthusiasm that happens when a subject is taught by a subject matter specialist. We want to do this both by supporting the professional development and enthusiasm and confidence of those teachers who cover computing and providing opportunities to update and up-skill those who are already specialists. Industry partnerships can assist on both counts.

We also want to build upon the already excellent reputation of our universities and their success producing spin-off and



# Digital Education and Skills

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spin-out tech companies.<sup>33</sup> In doing this we can ensure that our tech graduates leave with an entrepreneurial mind-set, and can compete with graduates from the likes of Stanford University that have made Silicon Valley such a success.

Digital skills development is critical across all sectors of the economy. We want to encourage people in work – in the private, public and voluntary sectors – to update their skills as new technology changes the way we work. In doing this we can help them to take full advantage of the possibilities arising from automation, rather than fearing it, and ensure that they experience greater job satisfaction. Digital skills will be at the heart of our business support programmes and within the public sector, we will deliver a central, coordinated, cost-effective and coherent programme of learning and coaching through the Scottish Digital Academy.

We want to strengthen our approach to learning by working with a wider range of organisations to develop and deliver digital skills training for people who do not respond to traditional educational backgrounds and settings. We are

also highlighting the attractiveness of Scotland as a place to live and work internationally, and throughout the UK, through, for example, the “Moving to Scotland” campaign.<sup>34</sup> The Logan Review also places a key focus on attracting international tech talent to Scotland as a means of widening the talent funnel of the Scottish tech ecosystem, and as part of implementation we are considering optimal ways of both attracting and retaining tech talent in Scotland.



*We will do more to help our children and young people to raise awareness of digital technologies and realise the value of digital skills.*





# Digital Education and Skills

## How we are going to get there

- **An education system that builds digital skills:** We will work to implement the Logan Review's education related recommendations focussed on improvements to teaching and learning in Computing Science and related disciplines throughout our education system.



Digital Leadership and Culture

- **Increase the digital skills talent pool:** We need to ensure we have a skilled workforce available to meet the needs of a growing digital economy. In line with our aims in the Inward Investment plan, we aim to increase the number of people trained in Scotland in advanced digital skills to 10,000 every year. We will continue to work closely with the Digital Technologies Skills Group, Scotland's technology and public sector partnership, to encourage more people to take advantage of the digital skills training opportunities that we have in Scotland. We will continue to support entry into digital roles through initiatives such as the Digital Start Fund offering digital training to those who are unemployed or on a low income. We are also supporting business to upskill, working with the Data Lab to plan a series of training courses in data literacy for workers in a variety of professions.



A Skilled Digital Workforce



*We need to ensure we have a skilled workforce available to meet the needs of a growing digital economy.*



# Digital Education and Skills

- **Support upskilling and reskilling:** We will look to further support, signpost and increase upskilling and reskilling opportunities for people whose employment was impacted by coronavirus and other changes in the job market and need support to transition to new careers in our high growth digital tech sector, including leveraging the National Transition Training Fund wherever possible. We will also work with the Scottish Tech Army, to explore the potential for volunteering to provide a route back into high quality digital jobs.

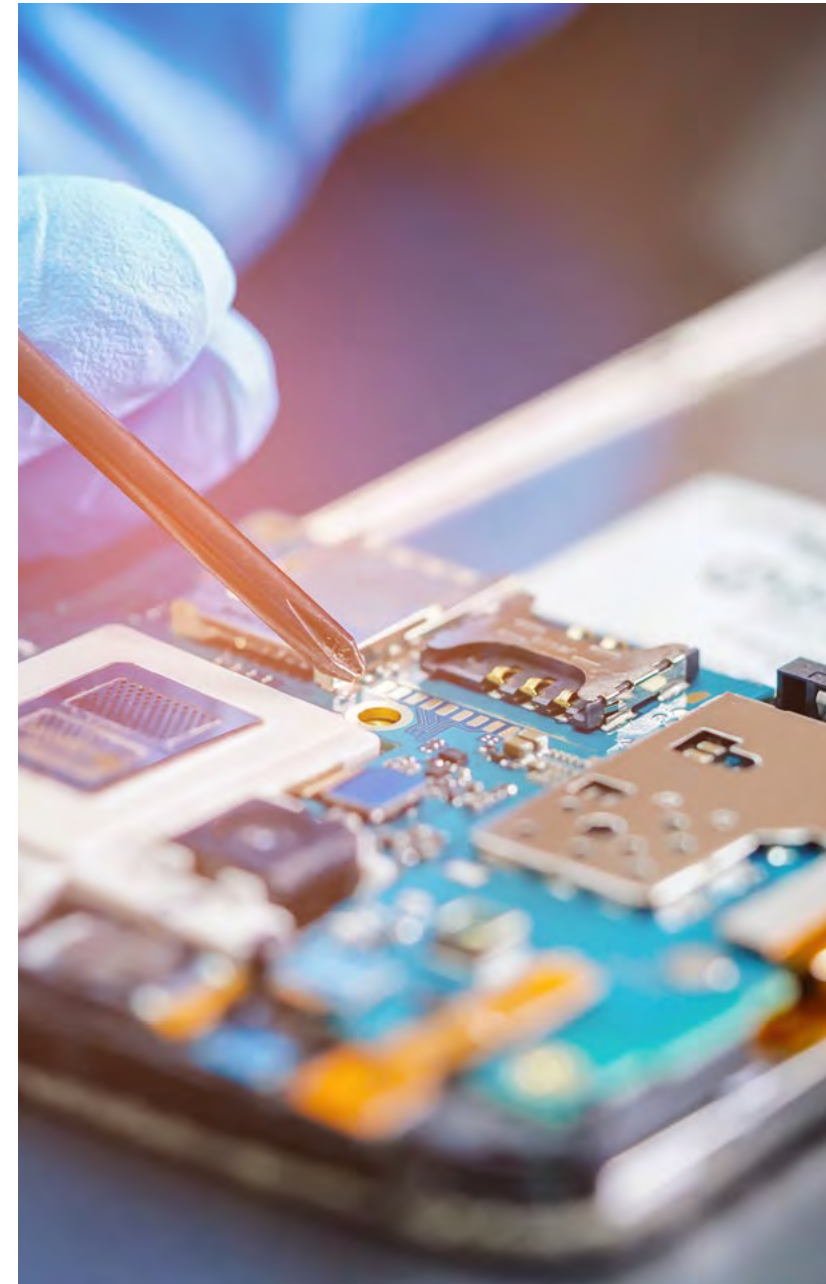


A Skilled Digital Workforce

- **Increase diversity in the digital skills pool:** We will work to improve the gender balance and diversity in digital tech subjects at school, further and higher education, and in apprenticeships. We will continue to work with industry to increase the diversity of our digitally skilled workforce, including women, disabled people, those from minority ethnic backgrounds, and neurodivergent people, to tackle the barriers that are in place and increase the pathways that exist into the workplace.



Inclusive, Ethical and User Focussed



# Digital Education and Skills

- **A single, shared digital academy:** We will build upon the work of the Scottish Digital Academy to establish it as the skills provider of choice for the Scottish public sector. It will offer new programmes in areas such as cyber security, cloud computing and service design, supported by innovative online learning capabilities. This will accelerate the delivery of digital skills that we need both now and in the future; build stronger professional communities to share best practice; and develop leadership capabilities.



A Skilled Digital Workforce

- **Pool digital and data expertise:** High quality digital and data skills have been in short supply in the public sector for some time. Alongside our plans to expand our training capability, we will therefore establish a new, pooled resource of digital and data experts that public sector organisations can call upon to help them transform the way they work. We will also work with partners across the public sector to explore how we can radically overhaul our approach to digital talent recruitment in the Scottish Government and the wider public sector in Scotland. We will work with the [Civil Service Commission](#) and other key bodies to challenge thinking in recognition that the current recruitment process is based on siloed ways of working, historical organisational arrangements, and outdated attraction and selection methods.



Collaborative



*We will build upon the work of the Scottish Digital Academy to establish it as the skills provider of choice for the Scottish public sector.*



# Digital Education and Skills

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- **Creating a Data Science Competency Centre** to accelerate the adoption of new tools and practices across government and the public sector, leveraging our investments in analytical platforms. The competency centre will carry out demonstrator projects, assist in the adoption of new technologies and support analysts in the adoption of automation to unleash the talent in our digital, data and analytical professions.



A Skilled Digital Workforce



# Digital Education and Skills

## Actions

### Digital Education and Skills

We will:

1. ensure digital knowledge and skills has a place in education;
2. build a skilled digital workforce;
3. support upskilling and reskilling opportunities;
4. increase diversity in the digital skills pool;
5. establish the Scottish Digital Academy as the skills provider of choice;
6. establish a resource of digital and data experts that the public sector can call upon;
7. create a Data Science Competency Centre.

## NPF Outcomes



**Fair Work & Business** - We have thriving and innovative businesses, with quality jobs and fair work for everyone.



**Education** - We are well-educated, skilled and able to contribute to society.



**Economy** - We have a globally competitive, entrepreneurial, inclusive and sustainable economy.



**Poverty** - We tackle poverty by sharing opportunities, wealth and power more equally.

<sup>19</sup> <https://ec.europa.eu/digital-single-market/en/news/ict-work-digital-skills-workplace>

<sup>20</sup> <https://www.gov.scot/publications/scottish-technology-ecosystem-review/>

<sup>21</sup> <https://www.cbi.org.uk/our-campaigns/boost-scottish-productivity/>

<sup>22</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/807830/No\\_Longer\\_Optional\\_Employer\\_Demand\\_for\\_Digital\\_Skills.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/807830/No_Longer_Optional_Employer_Demand_for_Digital_Skills.pdf)

<sup>23</sup> <https://www.lloydsbank.com/banking-with-us/whats-happening/consumer-digital-index.html>

<sup>24</sup> [https://www.lloydsbank.com/assets/media/pdfs/banking\\_with\\_us/whats-happening/lb-consumer-digital-index-2020-report.pdf](https://www.lloydsbank.com/assets/media/pdfs/banking_with_us/whats-happening/lb-consumer-digital-index-2020-report.pdf)

<sup>25</sup> <https://www.cbs.nl/en-gb/news/2020/07/the-netherlands-ranks-among-the-eu-top-in-digital-skills>

<sup>26</sup> <https://www.gov.scot/publications/towards-robust-resilient-wellbeing-economy-scotland-report-advisory-group-economic-recovery/>

<sup>27</sup> [https://www.skillsdevelopmentscotland.co.uk/media/46258/scotlands-digital-](https://www.skillsdevelopmentscotland.co.uk/media/46258/scotlands-digital-technologies-summary-report.pdf)

[technologies-summary-report.pdf](https://www.skillsdevelopmentscotland.co.uk/media/46258/scotlands-digital-technologies-summary-report.pdf)

<sup>28</sup> <https://www.skillsdevelopmentscotland.co.uk/media/46258/scotlands-digital-technologies-summary-report.pdf>

<sup>29</sup> <https://www.skillsdevelopmentscotland.co.uk/media/46258/scotlands-digital-technologies-summary-report.pdf>

<sup>30</sup> <https://www.gov.scot/publications/programme-international-student-assessment-pisa-2018-highlights-scotlands-results/>

<sup>31</sup> <https://www.gov.scot/publications/programme-international-student-assessment-pisa-2018-highlights-scotlands-results/>

<sup>32</sup> Pursuing productivity, why regional productivity growth matters for Scotland's future, June 2017: <https://www.cbi.org.uk/media/1357/pursuing-prosperity-2017.pdf>

<sup>33</sup> <https://www.scotsman.com/business/scotland-gets-top-marks-producing-university-spin-outs-3107212>

<sup>34</sup> <https://www.scotland.org/live-in-scotland/moving-to-scotland>

# A Strong Digital Economy

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*Scotland's economy must adapt and seize opportunities to innovate.*

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# A Strong Digital Economy

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Scotland's economy must adapt and seize opportunities to innovate ethically in an interconnected world where digital technology continues to disrupt markets, and revolutionise industries.

- explore opportunities for Scotland as a whole, and our rural and island communities to benefit from changes in the world of work that have been accelerated by the pandemic.

We will:

- make it possible for all businesses to be secure digital businesses, supporting them to adapt and be successful in the digital economy;
- create the conditions for technology businesses to grow, thrive, create jobs and attract investment;
- build digital skills in the workforce to enable these businesses to recruit and thrive;
- utilise the potential of national and local government within Scotland's digital ecosystem to stimulate and scale innovation in ways that meet public service and environmental challenges at home and abroad;

“

*We will create the conditions for technology businesses to grow.*

”



“

*Businesses have been adopting new digital technologies at unprecedented pace, transforming in a matter of weeks and months when it would previously have taken years.*

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# Helping All Businesses to Become Digital Businesses

All businesses operate in the digital economy and all businesses have to be aware of the opportunities and threats that this represents. However, there are differences between businesses which are still reaching digital maturity, and those which are already operating almost entirely in the digital space. This chapter concentrates on helping businesses to reach digital maturity, and the next at how we will grow our tech businesses.

The adoption of digital business models has accelerated dramatically during the pandemic. The Fraser of Allander Institute and Addleshaw Goddard<sup>35</sup> found that overall 73% of businesses found that the pandemic has encouraged them to adopt new technology to provide their goods and services. Businesses have been adopting new digital technologies at unprecedented pace, transforming in a matter of weeks and months when it would previously have taken years. These figures match those of research by the OECD (February 2021) who found that global business surveys are indicating up to 70% of SMEs worldwide have intensified their use of digital technologies as a result of the pandemic.

## Where we are now

Small to Medium Enterprises (SMEs) are vital to Scotland's business base accounting for roughly 41% of turnover and employing 55% of Scottish private sector employees – so interventions specifically supporting SMEs are crucial. This is why we are investing an additional £21.8 million to support business invest in digital and data technologies. This included £20m in the DigitalBoost Development Grant, £1 million with The Data Lab and £800k in Highlands and Islands Enterprise's Digital Enablement Grant.

However, a report by the Federation of Small Businesses in June 2020<sup>36</sup> reported that just a fifth of SMEs in Scotland had adopted new digital technologies during the pandemic. This contrasts with research from Addleshaw Goddard and Fraser of Allander Institute<sup>37</sup> who claim 81% of larger businesses have accelerated their digital plans as a result of the pandemic. This suggests a continuing 'digital divide' between large and small firms.

The businesses that have responded best to the challenges of the pandemic are those who have been able to innovate:



*The businesses that have coped best are those who have been able to innovate.*



# Helping All Businesses to Become Digital Businesses

pivoting quickly to homeworking, adopting cloud computing for speed and collaborative working, using new and secure digital platforms to access customers and to repurpose or diversify products and services and there is a growing body of evidence to suggest that this way of working is here to stay. With global online retail sales reaching \$4.9 trillion in 2020 and growth in the area expected to continue, it is clear that E-commerce will be critical to Scotland's ability to deliver the ambitious target set in A Trading Nation, Scotland's export growth plan, of growing exports to 25% of GDP by 2029.<sup>38</sup>

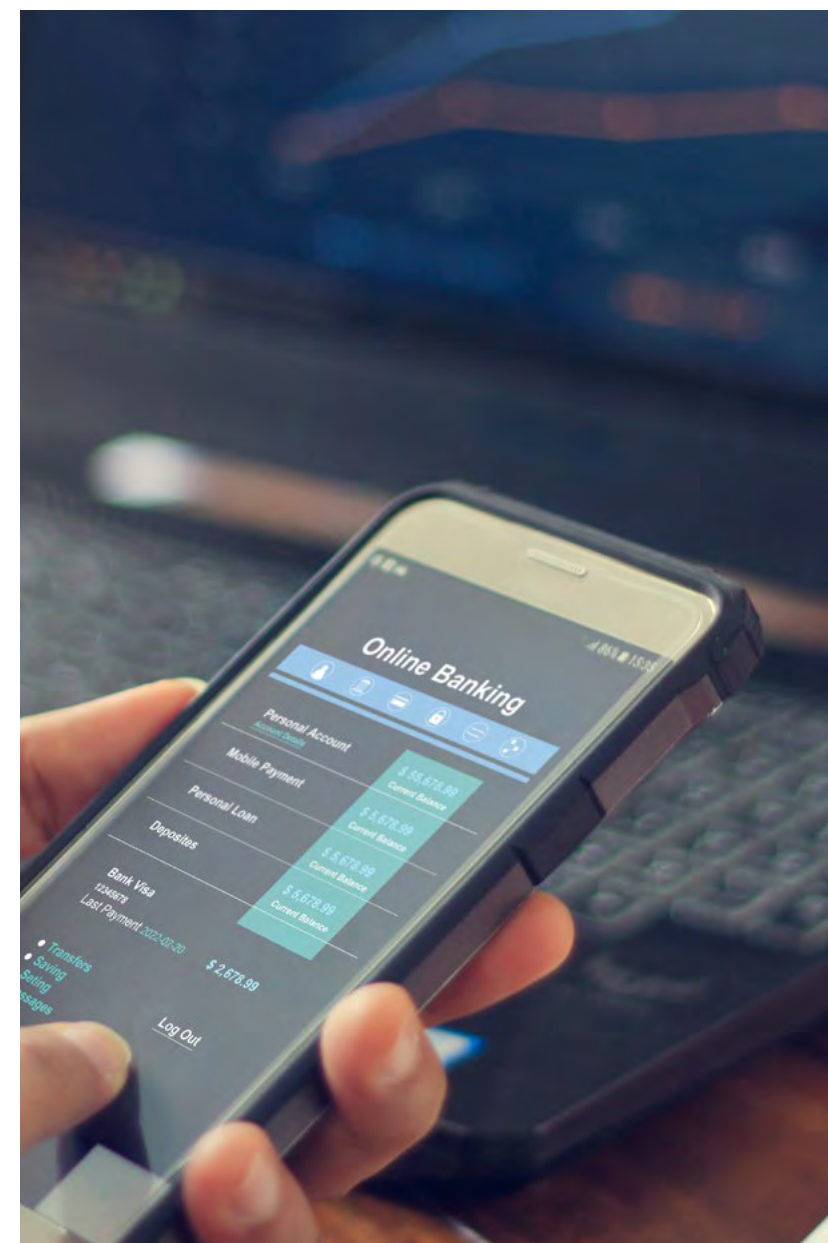
Scotland has some of the best data in the world, and our methods of managing, storing, accessing and controlling that data are also amongst the best in the world. A median estimate from a number of studies by the European Data Portal have shown the current open data market share in 2019 is 1.19% of the GDP of EU countries.<sup>39</sup> The UK-wide Geospatial Commission (GC) was established in 2017 to improve the quality of key, publicly held data and make it easier to access and use. By doing so, it is estimated the commission will unlock up to £11 billion

of extra value for the UK economy each year.<sup>40</sup>

The effective use of non-personal data is crucial to ensure a thriving economy, with a recent report estimating that the value of open data to the EU27+ countries is currently worth €184 billion and forecast to reach between €199.51 and €334.21 billion in 2025; with the biggest potential benefits in sectors such as science, finance, agriculture and transport.<sup>41</sup>

Scotland, like other countries, has had to respond rapidly to these difficult and unexpected circumstances and the need to be digitally secure has been a critical component to the coronavirus response. Cyber resilience has been a key underpinning factor to ensure Scotland is able to develop secure smart digital solutions to meet the needs of the situation in the immediate and longer-terms.

The coronavirus pandemic is not the only crisis that we are currently facing. As Scotland prepares to host the UN Climate Change Conference COP26, we are acutely aware of the growing demand from Scottish businesses to develop or adopt



# Helping All Businesses to Become Digital Businesses

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climate technology for economic and environmental purposes.

In March 2020 the European Commission published its SME strategy for a digital and sustainable Europe with plans to launch a green tech investment initiative designed to increase finance for SMEs and start-ups developing and adopting green tech solutions.<sup>42</sup>

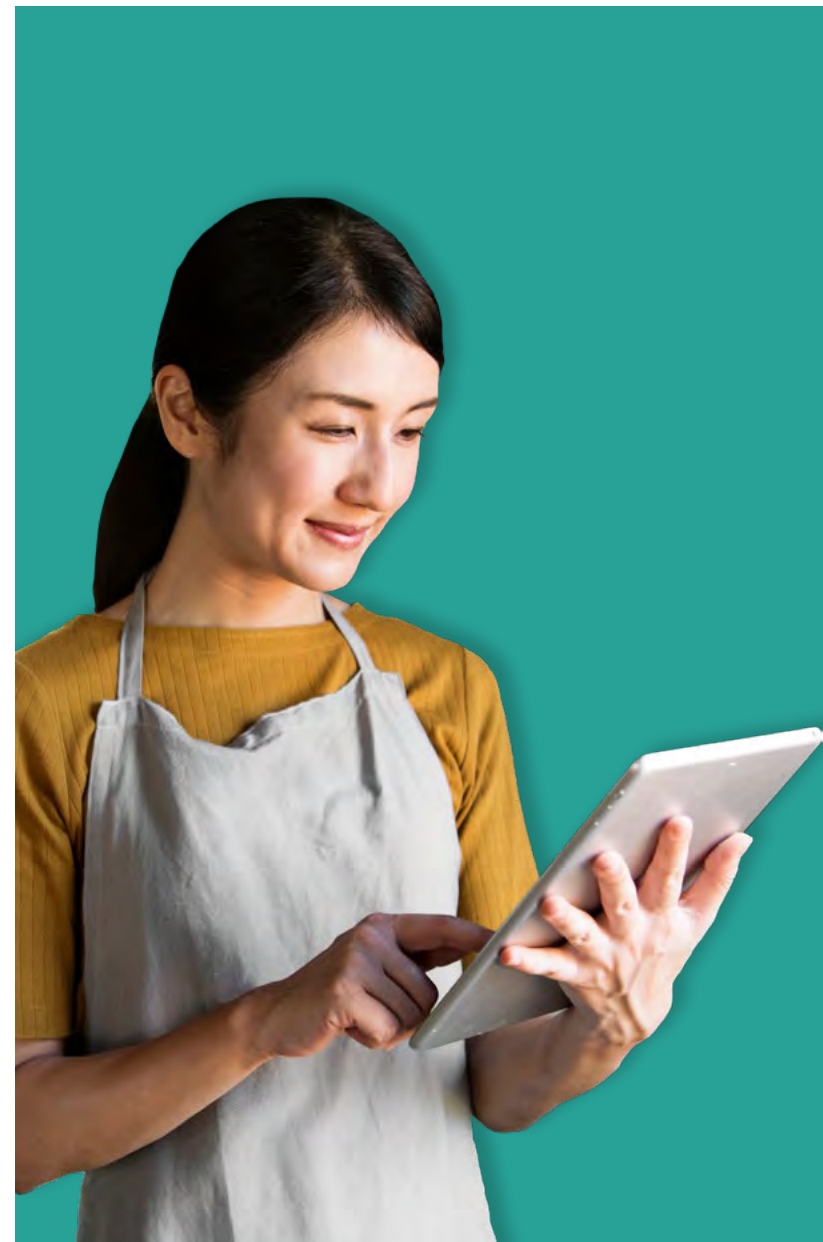
## Where we want to be

Whilst the adoption of digital technology has been a feature of the country's response to the pandemic, there is still much work to do to ensure that every business understands what support is available to realise the benefits of digital technologies, and does so securely from the very start. The more we can realise the digital ambitions of our businesses, the greater the return on our increased investment in digital infrastructure. This sentiment formed a key part of the 2020 Advisory Group on Economic Recovery report and underpins the actions we are taking currently to develop business information and support through [mygov.scot](https://mygov.scot) and [findbusinesssupport.gov.scot](https://findbusinesssupport.gov.scot). We will continue working to help Scottish

businesses find the right information, advice and support at the right time to meet their needs.

Our determination to ensure that 'no one is left behind' is as much an economic as it is a social commitment. The economic cost of inaction in adopting digital technologies is significant with an ever-increasing productivity divide between 'frontier' firms who adopt and benefit from digital technologies and those who are not benefiting from technological advances and experience sluggish productivity. The Organisation for Economic Co-operation and Development (OECD) estimate that more than half of this divide is explained by the contrasting capacity of businesses to integrate digital technologies.

Research by the OECD suggests that offering the choice of – but not mandating – homeworking has the potential, in the longer run, to improve economic and social wellbeing, for example by contributing to improved work life balance and improving job opportunities in rural areas.<sup>43</sup> We want to explore this potential with employers of all sizes, working closely with local communities in order to ensure that they benefit from this opportunity.



# Helping All Businesses to Become Digital Businesses

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We will continue to invest in developing our high-quality data as critical national assets and making more of this available to create social and economic value. Publishing public sector open data enables efficiency gains and cost savings, as people, businesses and developers can consume open data to create products that can be used to for decision making at a variety of levels. The new Geospatial Network Integrator should enable this, by bringing together disparate public, academic and private sector organisations to deliver a more cohesive, collaborative and organised sector that is actively engaging with the key customers and developing new business, delivering economic growth.

Cyber risk needs to be seen as a business risk for any organisation. We live in a rapidly evolving, hyper-connected, digitalised society that presents us with opportunities to flourish. However, the constantly evolving digital landscape in which our organisations and businesses find themselves in also presents new opportunities for criminal exploitation. A cyber resilient business is a competitively strong and trusted business.

As we set out in our recent trade vision,<sup>44</sup> trade is being transformed by advances in automation and the digital economy. We must ensure that digital technologies support the vision for Scotland to be a successful trading nation, so that our businesses are fully aware of the benefits of trading electronically, and the investments they need to make to be truly digitally. This is particularly pertinent to SMEs who account for a small proportion of exports relative to their share of overall activity and employment,<sup>45</sup> so we must do more to support our SMEs, where the appetite exists, to trade internationally.



*We must ensure that digital technologies support the vision for Scotland to be a successful trading nation.*



# Helping All Businesses to Become Digital Businesses

## How we are going to get there

- **Technology loans:** Through an extension of the [Digital Development Loan](#), we will enable SMEs in all sectors to adopt and optimise new digital technologies, improve their productivity, increase their reliance and grow their business. The scheme provides interest-free loans, between £5k and £100k for businesses to improve their digital capabilities.

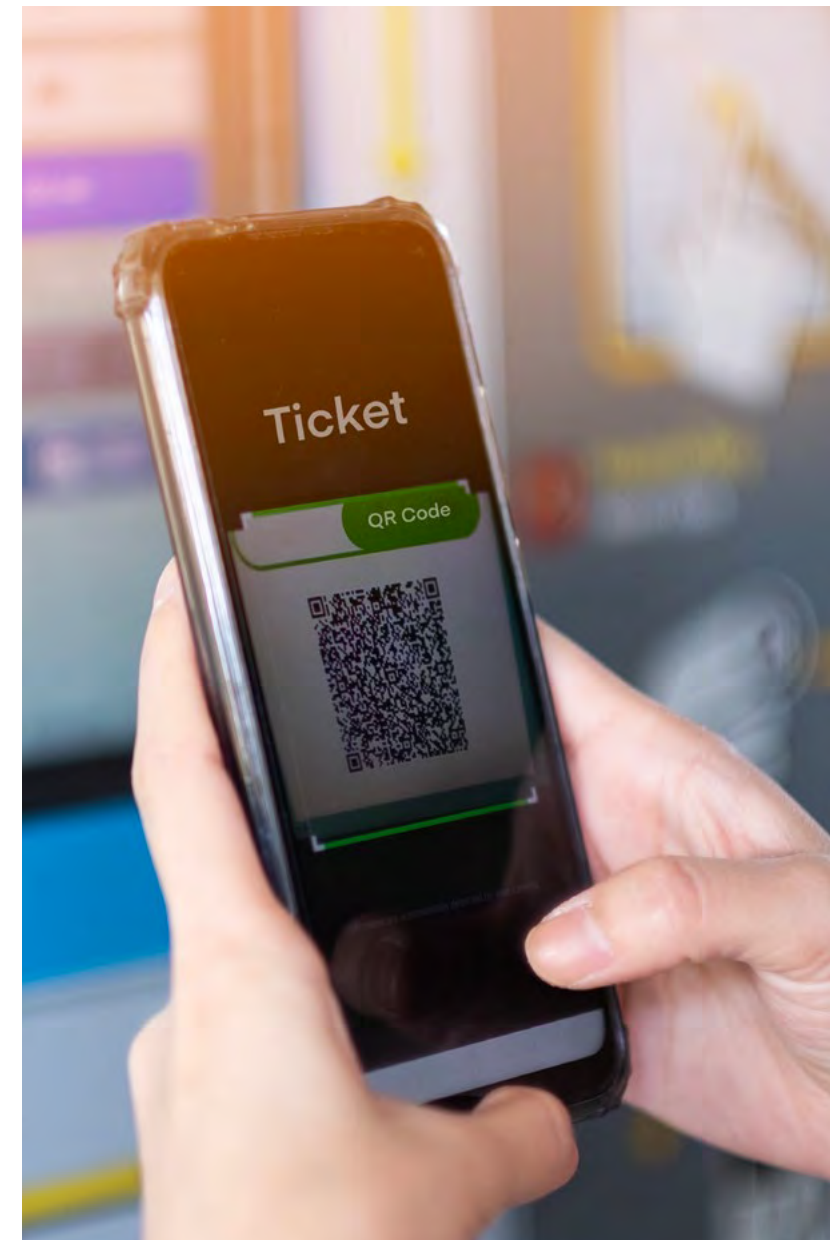


Digital Leadership and Culture

- **Expand support for SMEs:** We will continue to develop and expand [DigitalBoost](#) as our primary support programme for SMEs. We are currently reviewing the impact of our recent, additional investment of £21.8m in enabling businesses to invest in secure digital technologies and digital skills and will use the learning from that exercise to shape and strengthen our future programmes.



Digital Leadership and Culture



# Helping All Businesses to Become Digital Businesses

- **Publish the Digital Economy Business Survey (DEBS) in Spring 2021.** First produced in 2014 and then in 2017, DEBS is a longitudinal survey of the digital maturity of Scotland's businesses and provides policy makers with a wide range of information to help inform policy design to support Scotland's ambition to be a leading digital economy.



Data-Driven

- **Increase diversity in digital roles:** We will work with industry to tackle both short and long term skills shortages across the sector; to increase the number of and diversity of suitable candidates, for example, women and those from minority ethnic backgrounds; and to expand the number of pathways into the workplace. We must account for the implications of the pandemic for the skills and learning system, labour market and youth transitions.



Inclusive, Ethical and User Focussed



# Helping All Businesses to Become Digital Businesses

- **Scotland as a centre for home working:** We will engage with communities in remote and rural areas to find ways in which Scotland can capitalise on changes in the world of work and position itself as a leading centre for home and remote working. To be successful, this approach must enjoy the support of local communities. We will include businesses, economic development agencies, Scottish Futures Trust and innovation centres such as CENSIS and CivTech in these discussions. As part of this effort, we will provide opportunities for entrepreneurs to develop and refine the new generation of collaborative digital tools we require to improve productivity and maintain social capital given the potential reduction of shared physical workspaces.



Innovative and Sustainable

- **Make more of our data available openly, renewing our focus on data which will improve transparency, open government and create economic opportunity.** This will include working to open up more local government and other public sector data, through collaborations with organisations such as Scottish Cities Alliance and the Improvement Service; extending our LIDAR and Earth Observation (EO) programme; and integrating publishing of open data into our support for the transformation of analytical processes.



Data-Driven



*We will work with the private sector to improve international data connections for Scotland.*



# Helping All Businesses to Become Digital Businesses

- **Ensure businesses are digitally secure and resilient.** Increase businesses' understanding of cyber risks and how to manage a cyber incident. The implementation of the Private Sector Action Plan as part of the Strategic Framework for a Cyber Resilient Scotland will support this.<sup>46</sup>



Secure By Design

- **Make public sector data easy to find:** In line with the principles of the open data strategy, it is vital that public sector data are discoverable to make this information easier to find, understand and reuse. We are working with Optimat, in conjunction with the Scottish Cities Alliance to understand more about what type of public sector data that businesses and organisations would benefit from access to if it were made available, and what existing data could be improved upon.



Data-Driven





# Helping All Businesses to Become Digital Businesses

## Actions

### Helping All Businesses to Become Digital Businesses

We will:

1. enable SMEs to adopt and optimise new and resilient digital technologies;
2. expand expert support for SMEs;
3. publish the Digital Economy Business Survey;
4. increase diversity and work with industry to tackle digital skills shortages;
5. collaborate with the tech industry to demonstrate and deliver the benefits of home working;
6. make more of our data available openly;
7. make public sector data easy to find.

## NPF Outcomes



**Fair Work & Business** - We have thriving and innovative businesses, with quality jobs and fair work for everyone.



**Education** - We are well-educated, skilled and able to contribute to society.



**Economy** - We have a globally competitive, entrepreneurial, inclusive and sustainable economy.



**International** - We are open, connected and make a positive contribution internationally.

<sup>35</sup> <https://www.addleshawgoddard.com/en/insights/insights-briefings/2020/general/has-technology-outpaced-business-ag-tech-report-2020/>

<sup>36</sup> <https://www.fsb.org.uk/resource-report/finding-our-feet.html>

<sup>37</sup> <https://www.addleshawgoddard.com/en/insights/insights-briefings/2020/general/has-technology-outpaced-business-ag-tech-report-2020/>

<sup>38</sup> <https://www.gov.scot/publications/scotland-a-trading-nation/>

<sup>39</sup> <https://www.europeandataportal.eu/sites/default/files/the-economic-impact-of-open-data.pdf>

<sup>40</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/733864/Initial\\_Analysis\\_of\\_the\\_Potential\\_Geospatial\\_Economic\\_Opportunity.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/733864/Initial_Analysis_of_the_Potential_Geospatial_Economic_Opportunity.pdf)

<sup>41</sup> <https://www.europeandataportal.eu/en/highlights/the-economic-impact-of-open-data>

<sup>42</sup> <https://ec.europa.eu/digital-single-market/en/news/sme-strategy-launched-european-commission>

<sup>43</sup> <http://www.oecd.org/coronavirus/policy-responses/productivity-gains-from-teleworking-in-the-post-covid-19-era-a5d52e99/>

<sup>44</sup> <https://www.gov.scot/publications/scottish-government-vision-trade/>

<sup>45</sup> <https://www.gov.scot/publications/scottish-government-vision-trade/>

<sup>46</sup> [Cyber Resilient Scotland: strategic framework - gov.scot \(www.gov.scot\)](https://www.gov.scot/publications/cyber-resilient-scotland-strategic-framework-gov.scot/)

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Scotland is home to a thriving tech ecosystem with over 1,500 companies.

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# Supporting Our Digital Technology Sector

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A vibrant tech sector is critical to our recovery. Growing this sector gives us an opportunity to create new jobs in industries with long term growth potential and a positive impact on climate change. It also helps us to further promote our ambitions for a wellbeing economy to balance the demands to sustain the economy, while safeguarding social and environmental wellbeing. This approach allows us to work collaboratively with new and emerging businesses. The success of Fintech Scotland shows the impact possible from vibrant communities of likeminded businesses, and we want to extend this approach even further still.

## Where we are now

Scotland is home to a thriving tech ecosystem with over 1,500 companies that contributed £4.9bn Gross Value Added (GVA) to Scotland's economy in 2019, accounting for 3.5% of total GVA. GVA per head for the tech sector is 40% higher than for the economy as a whole, making it a considerable contributor to Scotland's economy. This success has elevated Edinburgh to the most active tech community outside London, closely followed by Glasgow in 4th place.

The Scottish Government is working with industry and academia to produce a Scottish Geospatial Roadmap, this will define the vision and future direction for Scotland's geospatial information (location data). The direction will reflect the current strategic priorities but also address how we review these priorities going forward, enabling the Roadmap to become an agile document aligned to Scotland's Digital Strategy and National Outcomes such as Programme for Government.

Scotland has directly supported over 180 companies whose products and services deliver value from data, either on a business-to-business basis, or directly to customers. These companies have a combined annual turnover from their data activities in Scotland of £600m, which is projected to double within the next 3 years.

There is significant investment in infrastructure to support data driven innovation (DDI) and a high level of ambition – to establish Edinburgh as the Data Capital of Europe and to benefit the wider Scottish economy. Sectors such as Energy, Tourism, FinTech, Health and Care and the Public Sector are already moving to embrace wider adoption of DDI.



# Supporting Our Digital Technology Sector

## Where we want to be

Scottish Government commissioned Mark Logan to undertake an independent review focussed on how our tech ecosystem can be improved to give Scotland the best possible chance of generating a stronger pipeline of successful, scalable businesses. Mr Logan's conclusions were published in 2020, outlining an ambitious strategy covering Education and Talent, Infrastructure and Funding, to establish Scotland as a leading start-up nation. It has been widely endorsed by key figures across business, technology and academia as potentially transformational. He identified, and we agree, the need for action. The review included the following:

- Develop a national network of Tech Scalers: We will work to extend significantly the purpose and capability of traditional incubation programmes, combining usual networking and meet-up benefits with formal, world class start-up education tailored to sectors and stages of growth. Access to all services will be provided both physically and in a fully virtualised form, enabling country-wide participation in Scotland's high-technology economy.
- Proposals for improvements to teaching and learning in Computing Science and related disciplines, including making learning more engaging e.g. by focusing more on creative projects, and significant expansion of extra-curricular activity, especially those focused on tackling gender bias.
- At university level, investment in increasing the number of computing science graduates, the incorporation of entrepreneurship into the computing science syllabus, cross-fertilisation of business and computing students, and development of infrastructure to support student start-ups and provide small seed investments.
- Supporting 'social infrastructure' or a 'market square' e.g. festivals, conferences, meet-ups and demos. It is argued that the world's best technology ecosystems depend on their social infrastructure to facilitate start-up education, propagation of best-practice, networking, peer-support and hiring.
- Working with the investment community to solve funding pressures around early investment and the much larger sums needed as businesses scale and grow.



*We will work to extend significantly the purpose and capability of traditional incubation programmes.*



# Supporting Our Digital Technology Sector

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The Internet of Things (IoT) is set to transform every sector of our economy, from manufacturing to agriculture, by providing reliable data about the world around us. Our investment in IoT Scotland aims to provide SMEs, third sector organisations and researchers with a secure and accessible IoT service to explore sensor and imaging applications, to pilot their ideas and then launch proven, sustainable products and services into the global market. Alongside creating underlying network capability, we're working closely with a range of partners to create compelling use cases to inspire, educate and enthuse the public sector, businesses and members of the public about sensor technologies. By doing so we aim to drive uptake and demand for services and devices, spurring commercial investment and innovation.

We have invested in projects to investigate use of IoT in rural locations and have encouraged IoT innovation through a CivTech challenge around infection control in care homes, sponsoring Eildon Housing. We are also supporting the provision of cutting-edge sensor technologies for the public sector through the SWAN

programme, enabling access to IoT as a managed service.

In 2019 we launched Scotland's 5G Strategy and established the Scotland 5G Centre to facilitate investment in, and deployment of, 5G in Scotland. The Scotland 5G Centre offers a central support and development function, to help ensure that 5G activities across the public sector, academia, and industry are targeted at delivering the right outcomes in the right sectors at the right time to rapidly advance Scotland's connectivity in line with national priorities.

The Programme for Government 2020/2021 announced the launch of a national network of Innovation Hubs through the new S5GConnect Programme, supported by £4 million of Scottish Government funding. The first of these Hubs will be located in the Forth Valley and more will be announced throughout 2021. The Innovation Hubs will work with SMEs to embrace 5G, develop use cases on a private 5G testbed network, and provide the skills to use 5G technology as a business enabler. Collectively, our aim is for the network of Hubs, whilst operating in alignment with the new national network



# Supporting Our Digital Technology Sector

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of Tech Scalars – to act as a catalyst to place Scotland at the forefront of next generation wireless communications services.

Scotland's commitment to enabling access to superfast broadband for all, closing gaps in mobile provision and supporting the networks that underpin the IoT provide the foundations supporting a green economic recovery. However, we can do more to ensure the quality and resilience of the networks on which businesses rely. We can encourage further investment in international connectivity to reduce our dependence on the London-Amsterdam corridor, ensure resilience throughout our networks and develop our renewable-energy powered datacentre capacity in ways that create economic opportunities, enhance performance and minimise the environmental impact of the power consumption they require through, for example, reusing waste heat.



*Scotland's commitment to enabling access to superfast broadband for all, closing gaps in mobile provision and supporting the networks that underpin the IoT provide the foundations supporting a green economic recovery.*



# Supporting Our Digital Technology Sector

## How we are going to get there

- **Support an Innovation Ecosystem:** we back the Logan Review's recommendations and are providing £7 million funding in the first year to drive implementation. We will work with public and private sector partners to progress its key recommendations around education, entrepreneurship and investment. This includes the introduction of a national network of Tech Scalars and the creation of an Ecosystem Fund that will make strategic investments in the organisations and activities that support our start-ups to succeed. Examples include investing in key tech conferences, the creation of new start-ups and extracurricular support to develop the next generation of tech talent.



Collaborative

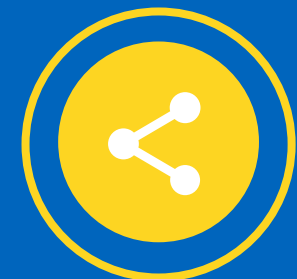
- **Attract national and international investment in testing,** developing and commercialising new products, processes and services based on the potential offered by 5G and the Internet of Things. We will deliver this in partnership with [CENSIS](#), Scotland's Innovation Centre for Internet of Things technologies; the [Scotland 5G Centre](#), Scotland's national hub for accelerating the deployment and adoption of 5G; [CivTech@](#), our public sector technology incubator; and [Scottish Enterprise](#), the body responsible for economic development, enterprise, and investment in business.



Digital Leadership and Culture



We back the Logan Review's recommendations and are providing £7 million funding in the first year to drive implementation.



# Supporting Our Digital Technology Sector

- **Create a programme of data-driven innovation:** We will work with The Data Lab, our universities and the digital technologies industry to maximise the economic and environmental opportunities presented by the high-quality data sources available in Scotland.



Data-Driven

- **Establish Scotland as an attractive location for green data centres.** This requires us to work closely with and stimulate the datacentre market, capitalise on Scotland's abundant natural resources in renewable energy, and attract investment in both international and terrestrial fibre connectivity. We will deliver this in partnership with the [Scottish Futures Trust](#), Scotland's centre of infrastructure expertise; [Scottish Development International](#), the international arm of the Scottish Government, Scotland's enterprise agencies and wide range of other public and private sector partners.



Technology Enabled





# Supporting Our Digital Technology Sector

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- **Develop the GovTech sector:** We will capitalise on Scotland's competitive advantage in the growing international market for GovTech. We will work in partnership with ScotlandIS, with the newly formed CivTech Alliance and others to support and develop and promote this sector across the world.



Innovative and Sustainable

- **Ensure equality of opportunity for all:** We will work to increase diversity at all levels of the workforce in the digital technologies sector, and in so doing, ensure that the sector harnesses talents from across Scotland.



Inclusive, Ethical and User Focussed



# Supporting Our Digital Technology Sector

- **Launch Scotland's AI Strategy in March 2021** to ensure that Scotland maximises the potential economic and social benefits of AI. The strategy will build on the foundations created by our data infrastructure and give benefit to people in Scotland as its core guiding principle and be informed by open and meaningful dialogue with the public and all stakeholders. We aspire to set the global standard for responsible ethical and trusted development and application of AI, and ensure the benefits and productivity gains from AI are felt across the whole of Scotland.



Digital Leadership and Culture

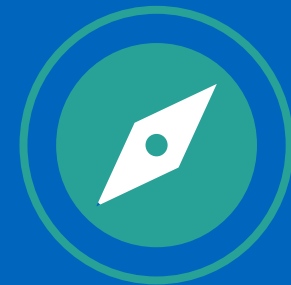
- **Implement the Strategic Framework for a Cyber Resilient Scotland**, to ensure our digital ambitions are secure and resilient from the outset.



Secure By Design



*We aspire to set the global standard for responsible ethical and trusted development and application of AI.*



# Supporting Our Digital Technology Sector

- **Enabling Infrastructure:** We will work with the private sector to improve international data connections for Scotland and stimulate investment in strong connections between cities to support the growth of a green and resilient digital economy.



Technology Enabled



# Supporting Our Digital Technology Sector

## Actions

### Supporting Our Digital Technology Sector

We will:

1. back and progress the Logan Review's recommendations;
2. attract national and international investment in our tech sector;
3. create a programme of data-driven innovation;
4. establish Scotland as an attractive location for green data centres;
5. capitalise on Scotland's competitive advantage in the growing international market for GovTech;
6. increase diversity in the digital workforce;
7. launch Scotland's AI strategy;
8. implement the Strategic Framework for a Cyber Resilient Scotland;
9. improve international data connections for Scotland.

## NPF Outcomes



**Environment** - We value, enjoy, protect and enhance our environment.



**Fair Work & Business** - We have thriving and innovative businesses, with quality jobs and fair work for everyone.



**Economy** - We have a globally competitive, entrepreneurial, inclusive and sustainable economy.



**International** - We are open, connected and make a positive contribution internationally.

# Digital Government and Services



*The people we serve expect services that are responsive and tailored to their needs.*



# Digital Government and Services

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As we become a truly digital nation, the nature of government, at a national and local level, will change. The people we serve expect services that are responsive and tailored to their needs and they expect to hold us to account for the quality and efficiency of these services. This requires us to both re-think how we design and deliver services and change the operating model of the organisations that provide them.

We will:

- Design services around the needs of our users and enable users to play a full and active part in the design process.
- Design digital public services with security built in from the outset.
- Adopt a common approach to online identity where personal data is controlled by the individual.
- Place national and local government at the heart of an ecosystem of organisations, across the public, private and third sector, working together in new and different ways to meet public needs.

- Commit to using common digital and data standards that enable us to work across boundaries and deliver personalised and preventive services.
- Use common operating platforms for the processes that are common across Government and enable our resources to be focussed on front line service delivery.
- Be data driven, using data systematically to improve decision making, saving time, money and lives.
- Stimulate innovation through innovative procurement and the availability of non-personalised research data.



*We will design services around the needs of our users and enable users to play a full and active part in the design process.*



# Public Services Working For Us All



*People and businesses expect services that are accessible and simple to use.*



# Public Services Working For Us All

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People and businesses expect services that are accessible and simple to use. They want them to be inclusive and designed around their needs, rather than the organisational structures or traditions of the organisations that provide them. The maturity of digital technologies such as the web, cloud computing, data analytics, artificial intelligence and the internet of things (IoT) now also provide unprecedented opportunities to reimagine how public services are delivered.

They can:

- provide the right communication medium for the right type of support needed, without the need to be tied to a physical location or specific hours of support;
- allow us to simplify transactions improving the user experience;
- allow us to simplify and automate the processes that underpin services to improve responsiveness and reduce the opportunity for things to go wrong;
- provide users with a clearer understanding on the progress of their request;

- help us to understand and anticipate the needs of people and businesses;
- allow us to tailor and target services towards those who need support the most;
- help us to deliver services that are more proactive and preventative;
- allow us to make the connections between unrelated services used in communities so responses are seamless and comprehensive.

## Where we are now

In 2020 the Scottish Government commissioned consulting firm Capgemini Invent to produce the report as part of work to deliver a refreshed digital strategy for Scotland. Capgemini produces annual “Digital Maturity” reports for the EU, and assessed Scotland using the same methodology. The research shows that Scotland’s digital public services outperform both the EU27+ average, and also those of the United Kingdom Government (Table 1).<sup>47</sup> Our score for on-line security for example (use of https for secure connections between websites





# Public Services Working For Us All

and users etc.) is 20% higher than the EU 27+ average. But we lag behind the best performing countries.

## Overall average score of the eGovernment Benchmark Assessment

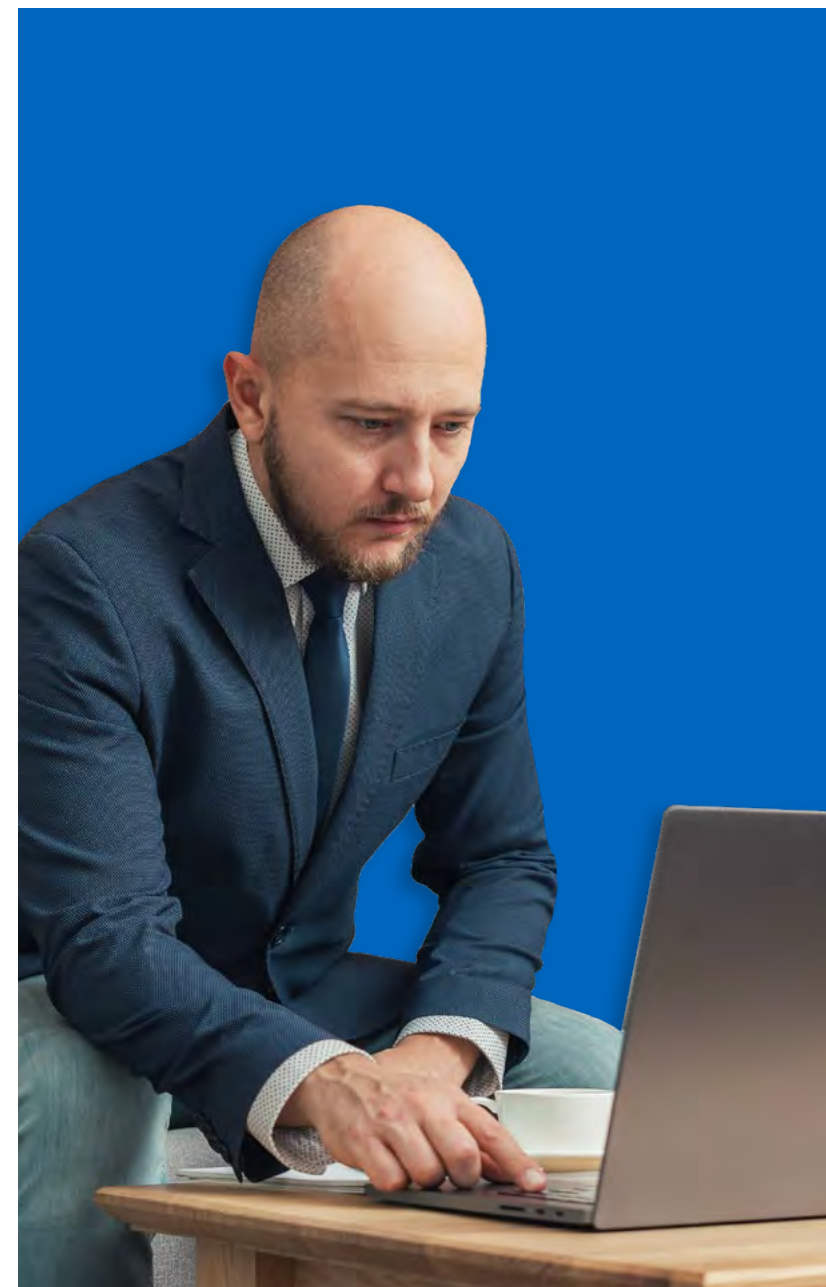
Denmark	77%
Finland	75%
Norway	75%
Sweden	73%
Scotland	67%
UK	54%
EU27+	59%

These results reflect significant progress over the past few years. Councils across Scotland are increasingly moving services online to deliver a more responsive customer experience that offers self-service, provides up to date information and can be accessed on a 24-hour basis.

The coronavirus crisis has shone an intense spotlight on the importance

of public services which are not only secure and resilient, but which are able to work across organisational boundaries, adapt and scale in response to changing demands. We were able to accelerate roll-out of the 'NHS Near me' video consultation platform from 300 consultations a week in March 2020 to 17,000 a week in July 2020 allowing patients and service users to attend appointments remotely. This has had a transformative impact on wellbeing with patients and carers able to strike a balance between managing complex health care requirements to attend appointments alongside work and family life.<sup>48</sup> Protect Scotland, a free, mobile phone app designed to help us protect each other and reduce the spread of coronavirus has been downloaded over 1.8 million times and represents a central element of Scotland's response to the pandemic.

Check In Scotland was developed at pace to collect the contact details of people who visit hospitality businesses, such as pubs, bars, restaurants and cafes in a safe and secure way, supporting contact tracing across Scotland. This service, which is a joint venture between Scottish Government, Public Health Scotland (PHS)



# Public Services Working For Us All

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and NHS National Services Scotland (NSS), has provided benefits on the speed, quality, accuracy and consistency of data being retrieved in the event of venue registers being required by local health boards.

In July 2020, and in response to coronavirus where Council offices were closed or operating to restricted opening hours, the Improvement Service successfully launched [getyournec.scot](https://getyournec.scot) as a new online channel for National Entitlement Card applications. Initially launched for over 60s to apply for concessionary bus travel, it was quickly followed by a new digital application process for Disabled Concessionary Travel and Young Scot applicants. By providing a contactless channel in a lockdown environment, it allows those eligible to apply online from the comfort of their own home and by offering a better end-user experience for those comfortable using technology. In less than six months of the site's launch, half (17) of Scotland's Councils have adopted the service, with more set to follow. The service is proving popular with the public; in some Councils, up to 65% of cards being issued are as a result of an application having been made online through the site.

Through the Scottish Cities Alliance millions of pounds are also being invested to make Scotland's cities smarter, using new technologies to accelerate and transform the delivery of city services. For example, Councils such as Glasgow City Council have introduced a network of intelligent street lighting as part of ongoing initiatives to improve digital infrastructure in our cities.

## Where we want to be

We want to join the front rank of European countries in terms of the quality, availability and security of our digital public services. We need to transform the way government operates to align processes centred on the user experience and implement 'digital thinking' as well as digital technology across the public sector. We need to learn from those countries with the most advance standards. This won't be easy, but we believe it is possible if we collaborate across the public sector, work as part of an ecosystem of talent across the economy, champion the re-design of services from the perspective of the user and earn the trust of the people we serve.

Scotland will put people at the heart of



*The coronavirus crisis has shone an intense spotlight on the importance of public services which are not only secure and resilient, but which are able to work across organisational boundaries, adapt and scale in response to changing demands.*



# Public Services Working For Us All

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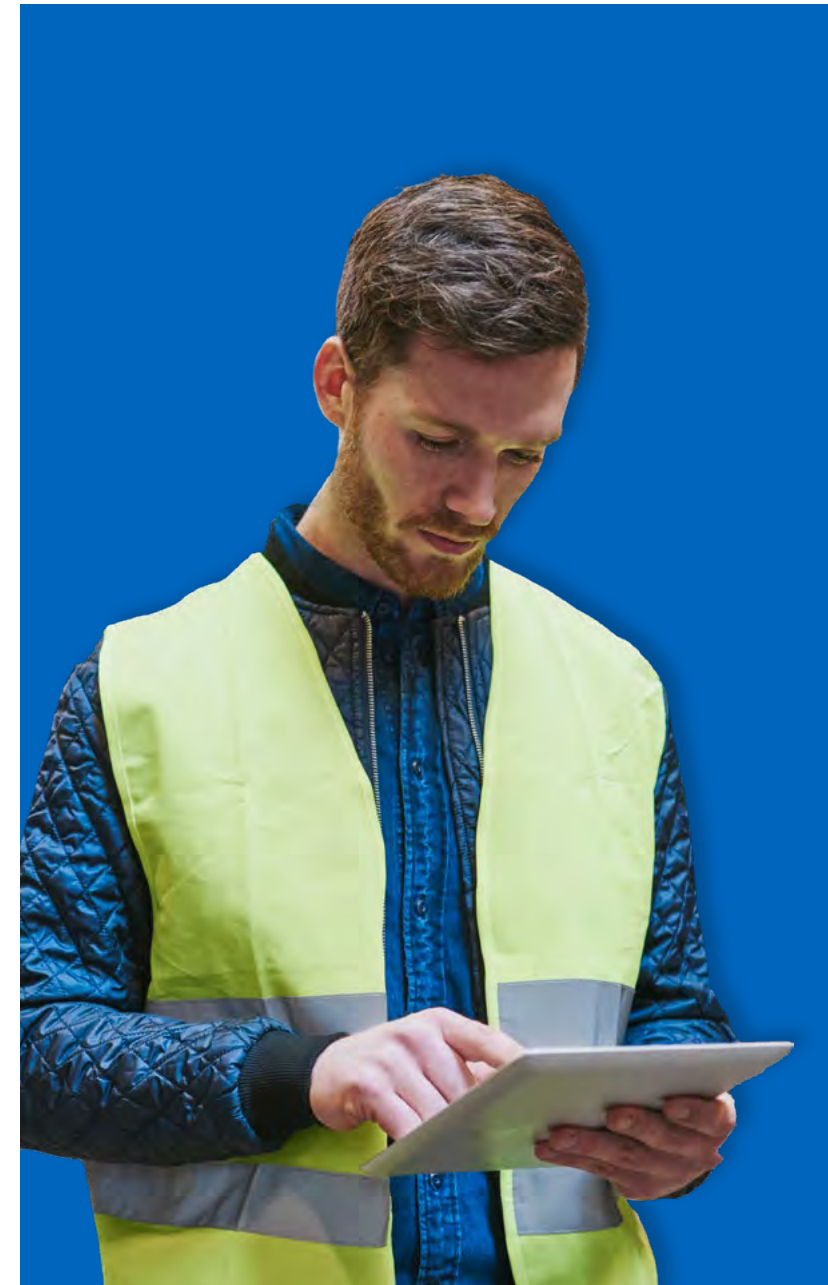
its approach and create and sustain an environment in which people are engaged and empowered to participate in designing the services they need and in holding service providers to account for their performance.

The starting point will be to ensure that our design methods are accessible and inclusive. We will therefore embed service users throughout the design process, not just as consultees, but as full and active participants in making sense of the challenges we face and making decisions on prototype services and models. We will bring those with lived experience into multi-disciplinary teams, including those with an understanding of what is possible from current and future digital technologies and operating practices to re-think, rather than just digitise services. We will provide the collaborative leadership required to challenge and work across organisational boundaries where these are not adding value to the people and businesses that use our services. This will be underpinned by a digital service culture and a commitment to common standards that promote interoperability.

Implementing a fundamental re-design of public services will require a data-driven approach to better understand needs and inform service design. This will ensure that relevant data is available at the right time within the underlying processes, and to monitor impact of these new services. Using data to understand trends can also enable services to become more targeted, proactive and preventative. Service design activities will therefore need to be resourced with appropriate skills and capability, and underpinned by technology that enables data to be shared, presented, analysed as appropriate.

As more public services go online, users need to be able to trust service providers with their data and interactions. This is especially the case for people who are reluctant to move to digital versions of familiar services. Strong security needs to be built into digital public services by design.

Building trust will be a vital component of the design process, and their participation will validate that our use of data can be trusted and regarded as ethical. Building



# Public Services Working For Us All

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such trust will be important:

- for people to understand how their information is used and managed by the public sector, and (where appropriate) to have greater control for how it is used;
- to process personal data in line with data protection principles;
- to use a consistent ethical framework that can guide our use of data within the delivery of public services.

“

*As more public services go online, users need to be able to trust service providers with their data and interactions.*

”



# Public Services Working For Us All

## How we are going to get there:

- **Transform key public services:** We will set out new and ambitious reform programmes for key areas of government, including health and social care, learning, justice, planning, schools and agriculture and the rural economy. Recognising that delivery processes, and the user experience, often cross traditional departmental boundaries much of this work will require the breaking down of those traditional barriers. These services and transformations in each priority area, a partnership of Scottish Government, Local Authorities, and other key stakeholders will work together to set out new, greener ways of working to help deliver a net zero society, that are centred around the people who use our services to improve their wellbeing, and ensure it is easier to deal online with all levels of government.



Digital Leadership and Culture

- **Ensure public services are secure and resilient:** We will improve the security capabilities and resilience of digital public services by protecting the digital systems that support Scotland's infrastructure and essential services and ensuring a secure-by-design approach is adopted across the supply chain.



Secure By Design



We will set out new and ambitious reform programmes for key areas of government.



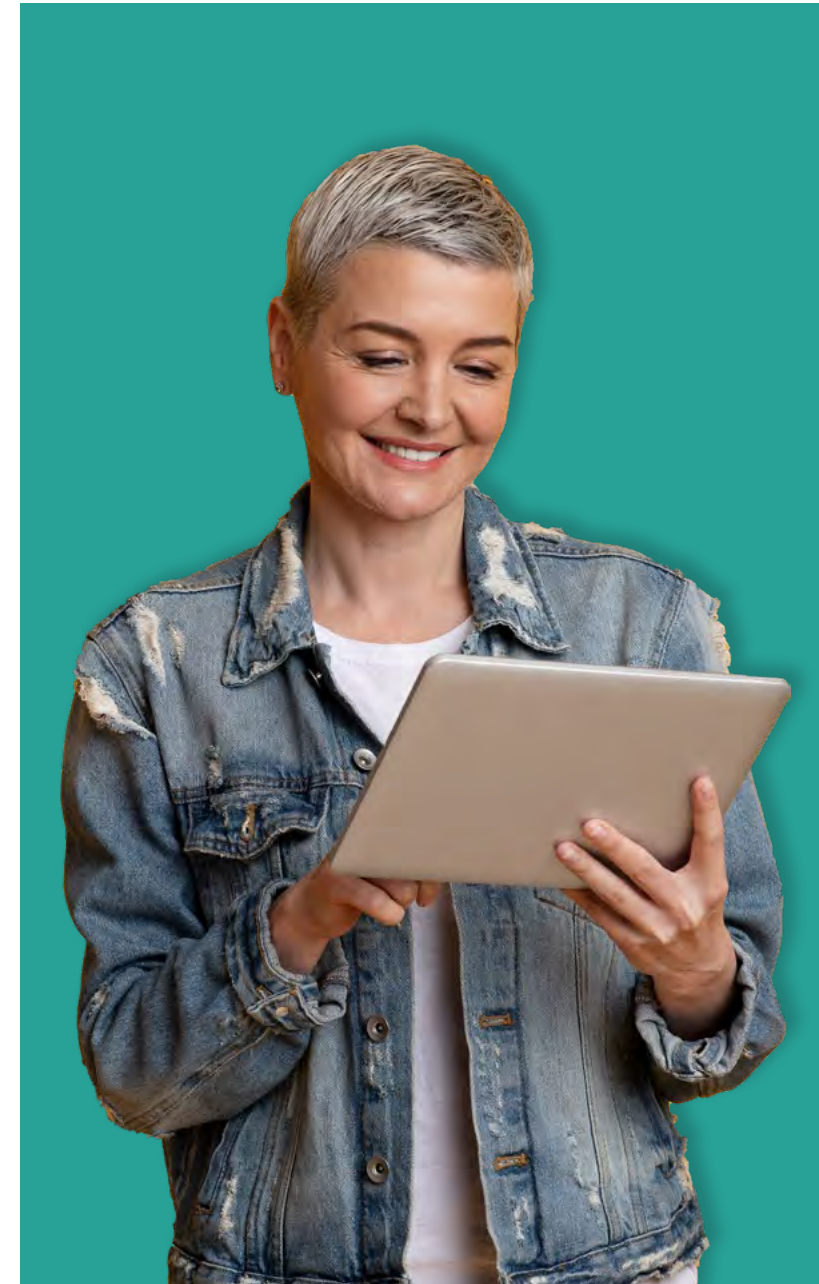
# Public Services Working For Us All

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- **Embed the Scottish Approach to Service Design:** Local Government and Scottish Government will build upon its growing service design community to increase adoption of the Scottish Approach to Service Design across the public sector. This means that we will define the problem before we design the solution, we design service journeys around people not our organisational structures, we seek citizen participation, use inclusive and accessible research, use a common set of core tools and methods and share and reuse our research. It will be underpinned by:
  - promoting and implementing the method within individual organisation;
  - capacity and skills in place to implement the approach across the public sector;
  - communities of practice in place to encourage collaboration;
  - periodically undertaking a service design maturity self-assessment and peer review;
  - a library of design standards and patterns that can be re-used and adopted across the public sector.



Inclusive, Ethical and User Focussed



# Public Services Working For Us All

- **Improve accessibility:** We will make design decisions through the lenses of inclusion and offer clearly signposted alternative ways of accessing services for those who cannot, or do not want to, use digital routes. This will include the development of tools, processes and approaches that will allow identity to be established in a secure and sympathetic way for the digitally excluded. We will ensure that face-to-face services continue to be provided when they are necessary and enhanced, where possible, by technologies that support staff with local decision making and service delivery.



Inclusive, Ethical and User Focussed

- **Establish a joint Service Innovation Centre:** We will develop the highly successful [CivTech](#) operation as the centre of public service innovation for national and local government. It will take public service problems and challenges and support entrepreneurs and small businesses to create, launch and implement digital solutions. The backing of the Scottish public sector as a whole will further strengthen Scotland's reputation for innovation and our competitive position in the international GovTech market.



Innovative and Sustainable



# Public Services Working For Us All

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- **Introduce a digital identity service for users:** We will develop and establish a trusted and secure service for users to prove who they are, and that they are eligible for a service. Users will be able to store their information and choose to share it when applying to public services. This will improve a user's access to services by providing a safe and secure way to prove their identity, while reducing time and cost for the public sector. Additionally, we will develop an inclusive approach for all users to ensure that offline services are available for those who are unable to use a digital service.



Inclusive, Ethical and User Focussed



*Additionally, we will develop an inclusive approach for all users to ensure that offline services are available for those who are unable to use a digital service.*





# Public Services Working For Us All

## Actions

### Public Services Working For Us All

We will:

1. set out ambitious reform programmes for government;
2. embed the Scottish Approach to Service Design across the public sector;
3. ensure that all public services are designed through the lens of inclusion;
4. develop the CivTech operation as the centre of public service innovation of national and local government;
5. ensure that public services are secure and resilient;
6. introduce a digital identity service for users.

## NPF Outcomes



**Health** - We are healthy and active.



**Communities** - We live in communities that are inclusive, empowered, resilient and safe.



**Poverty** - We tackle poverty by sharing opportunities, wealth and power more equally.



**Children & Young People** - We grow up loved, safe and respected so that we realise our full potential.

<sup>47</sup> [https://www.capgemini.com/gb-en/wp-content/uploads/sites/3/2020/12/344112020\\_eGovernment-Benchmark-Scotland-2020.pdf](https://www.capgemini.com/gb-en/wp-content/uploads/sites/3/2020/12/344112020_eGovernment-Benchmark-Scotland-2020.pdf)

<sup>48</sup> <https://www.gov.scot/publications/evaluation-attend-anywhere-near-video-consulting-service-scotland-2019-20-main-report/>

# Transforming Government



*Transforming Services requires us to transform the organisations that deliver them.*



# Transforming Government

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Recent work around The Promise and the Adult Review of Health and Social Care has reinforced the message that transforming services requires us to transform the organisations that deliver them. This is not simply a question of adopting new or better technology. It requires a fundamental shift in culture, skills, leadership, service design, process engineering, the use of data, collaboration, and investment planning. It requires leaders with the confidence to move away from the approaches, systems and ways of working that have been successful in the past. In short, it requires the transformation of Government and the adoption of new digital business models based on greater accountability, networking, agility and a relentless focus on improving the customer experience.

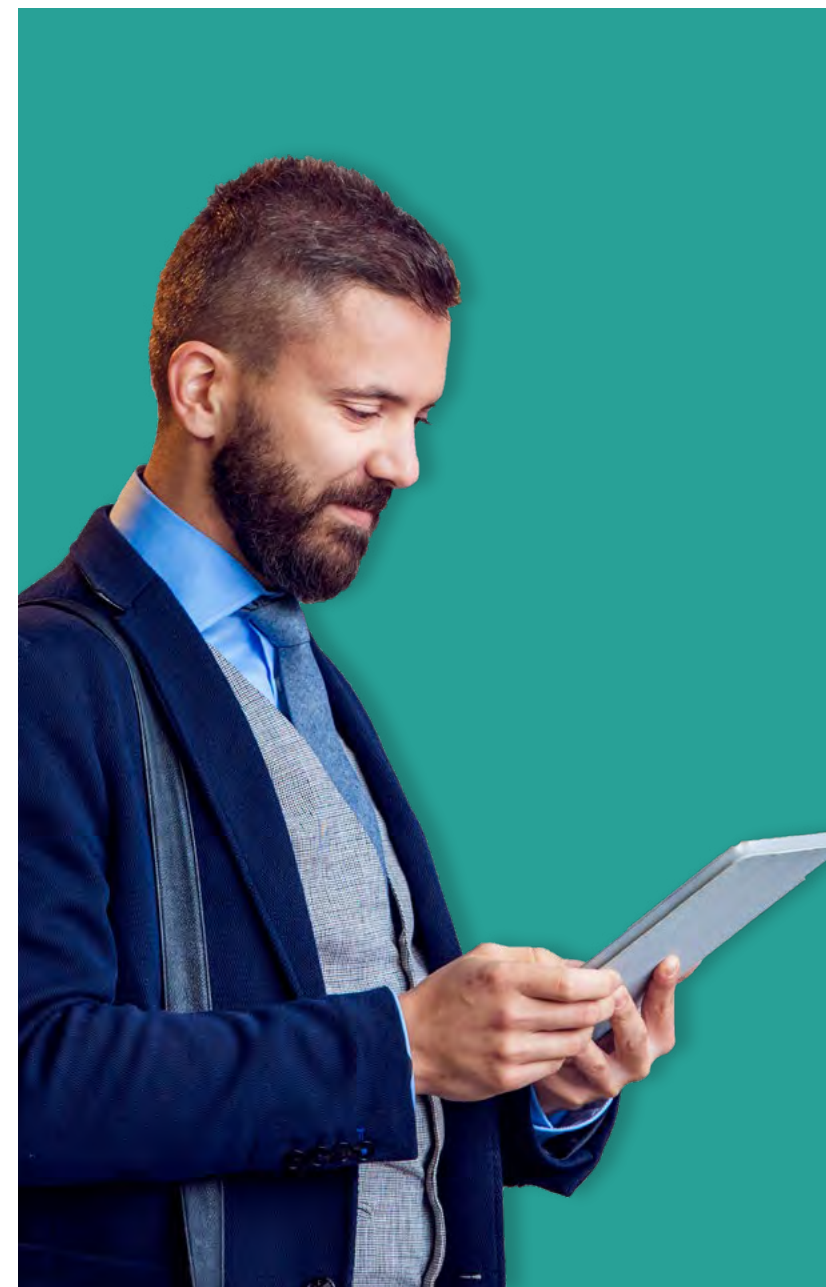
Although it can be relatively quick to establish a new digital business, transforming existing organisations to become digital organisations can take time. Public bodies across Scotland are at different stages of their journey, with varying levels of digital and data maturity.

However, and particularly at a time when resources are tight, the prize is a great one.

## **Where we are now**

The national response to the pandemic has shown that we can spin up new services and scale old ones at incredible speed. It reinforced the importance of collaboration across the public sector and the benefits that can be achieved by working in creative partnerships with businesses and the third sector.

The pandemic demonstrated that good data is essential, and fostered a greater understanding of the value of high-quality data and data analytics. The crisis precipitated data innovation at scale to provide information, products and services to support both government and the people of Scotland at pace, and led to the establishment of a COVID-19 Data and Intelligence Network that provided the public sector with real-time intelligence to make rapid decisions. However, it has also demonstrated once again that not all organisations have the data maturity to optimise their services and that drivers



# Transforming Government

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are needed to move organisations through data transformation just as is being done with digital transformation.

Progress in this direction has been made through an acceleration of Research Data Scotland (RDS)<sup>49</sup> and the launch of the [COVID-19 data research service](#) in May 2020. This initiative has brought together and re-purposed existing data infrastructure, capabilities, skills and resources so that researchers are able to carry out collaborative research and analysis that provides evidence for important decisions on the lifting of social restrictions and recovery from the pandemic. This service together with the new and emerging RDS will provide a catalyst for change so that Scotland's data can be organised, collated and curated more systematically and more done can be done up stream to enhance the added value that data can bring to a number of applications. RDS will achieve this whilst maintaining public confidence in the appropriate use of data, whilst ensuring access to data is quicker and clearer for those who want to access it, also through the digitisation of aspects of

the data access service.

At the same time, the way in which we responded to the crisis has had some profound effects on the way that national and local government work. It has shown that we no longer need to rely solely on central office locations, but can make greater use of home and remote working and make the most of its potential in delivering personalised services, operating efficiently, reducing carbon footprint, promoting inclusivity and wellbeing and reinvigorating local communities. It has also demonstrated the benefits of collaboration tools and video-conferencing for both engaging with members of the public, increasing the resilience of democratic processes, and for improving collaboration across public bodies

The governance mechanisms required to transform the way in which government works are already in place. The Local Government Digital Partnership is a partnership of all 32 local authorities in Scotland that was established in 2016 to advance digital transformation in local government. Supported by the Digital



*The governance mechanisms required to transform the way in which government works are already in place.*



# Transforming Government

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Office for Scottish Local Government and range of national partners such as COSLA, Scottish Government, Improvement Service, Scotland Excel and SEEMiS, the partnership provides leadership for digital transformation at a sector level, fosters collaboration across Councils, and promotes joined up approaches and digital programmes across the sector. It oversees the design and delivery of collaborative programmes around digital service transformation, digital leadership and the “digital foundations” of technology enablement, data-driven approaches, and cyber security.

The digitisation of Scottish Government is overseen by the independently chaired Central Government Digital Transformation Board and led by a Digital Directorate which delivers national connectivity, transformation and innovation programmes including R100 and a series of common operating platforms. It also provides shared digital services, such as remote access, networking and security services, to 16,500 staff across 48 separate organisations in the Scottish public sector. The two governance

structures work together at both a strategic and programme level.

The Scottish Wide Area Network (SWAN) provides 94 organisations including all NHS boards and an estimated 300,000 public sector staff, with the connectivity to access digital services and work collaboratively. We are starting to see common services and platforms at work, with work underway at various stages of development on publishing platforms, payments, and Digital Identity.

## **Where we want to be**

We want to build national and local government on digital business models. This means that we need to make progress across each of the factors described by Audit Scotland in their reports (“[Enabling Digital Government](#)” and “[Digital Progress in Local Government](#)”).

The starting point is to ensure that public sector leaders understand and act upon the opportunities and risks of the digital age. We want to provide them with access to very best thinking



# Transforming Government

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around digital information, promote peer to peer networks to share learning and encourage collaboration and change the way we evaluate success to reinforce the expectation that all organisations will adopt common standards, processes, technologies. We want them to be supported in this by a highly skilled and empowered workforce, who understand the benefits of these ways of working and have the capacity, capability and skills to operate successfully in a digital organisation. The shared single Digital Academy for the Public Sector will have a key part to play in this.

Our vision is one in which national and local government play a full and active part in a network of organisations from all sectors of the Scottish economy, each of which focusses on what they do best in order to meet the expectations of our service users. This means finding new ways of tapping into the innovation that flows from universities and entrepreneurial businesses and the trust that people place in third sector organisations to deliver services and enhance our local communities. It means that the



*Our vision is one in which national and local government play a full and active part in a network of organisations from all sectors of the Scottish economy.*



*Our vision is one in which national and local government play a full and active part in a network of organisations from all sectors of the Scottish economy*



# Transforming Government

public sector will not seek to reinvent commodity technologies but instead focus on accessing them in the most efficient way through common platforms capable of achieving economies of scale and enabling us to focus our efforts and resources on meeting the needs of local people, businesses and communities by improving the quality of services we offer and taking action to prevent issues before they arise.

Once developed, we want Common Platforms (Figure 2) to operate across organisational boundaries and form the basis of an approach to public service reform where individual organisations can focus their staff, resources and innovation on front line service delivery because they don't have to reinvent or operate back office processes that are best delivered in collaboration and through widely available commodity technologies. This will take time, particularly where organisations have a legacy of existing processes and systems, but by working together we can share learning and boost the business case for change.

Figure 2: Priority Common Platforms

	Identity	Confirming personal identity securely, to access public-sector services digitally.
	Payments	A wide range of financial transactions.
	Applications (forms)	Online applications and support forms.
	Publishing	Making information about services and functions accessible online.
	Customer Relationship Management	Storing customer data and interaction information.
	Management Information (Performance)	Data analysis, and publication of performance information.
	Cloud Operations	Supporting public sector to make efficient and secure use of cloud technology.

# Transforming Government

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## How we are going to get there:

- **Work together on a sustained programme of culture change.** We will develop and sustain the cultures and working practices required to be successful in the digital age and enhance wellbeing. This starts with the use of technology to extend and embed the principles of open government by enabling greater accountability and community engagement. In this way we will foster and sustain agile working, greater collaboration and secure data sharing within and across organisations.

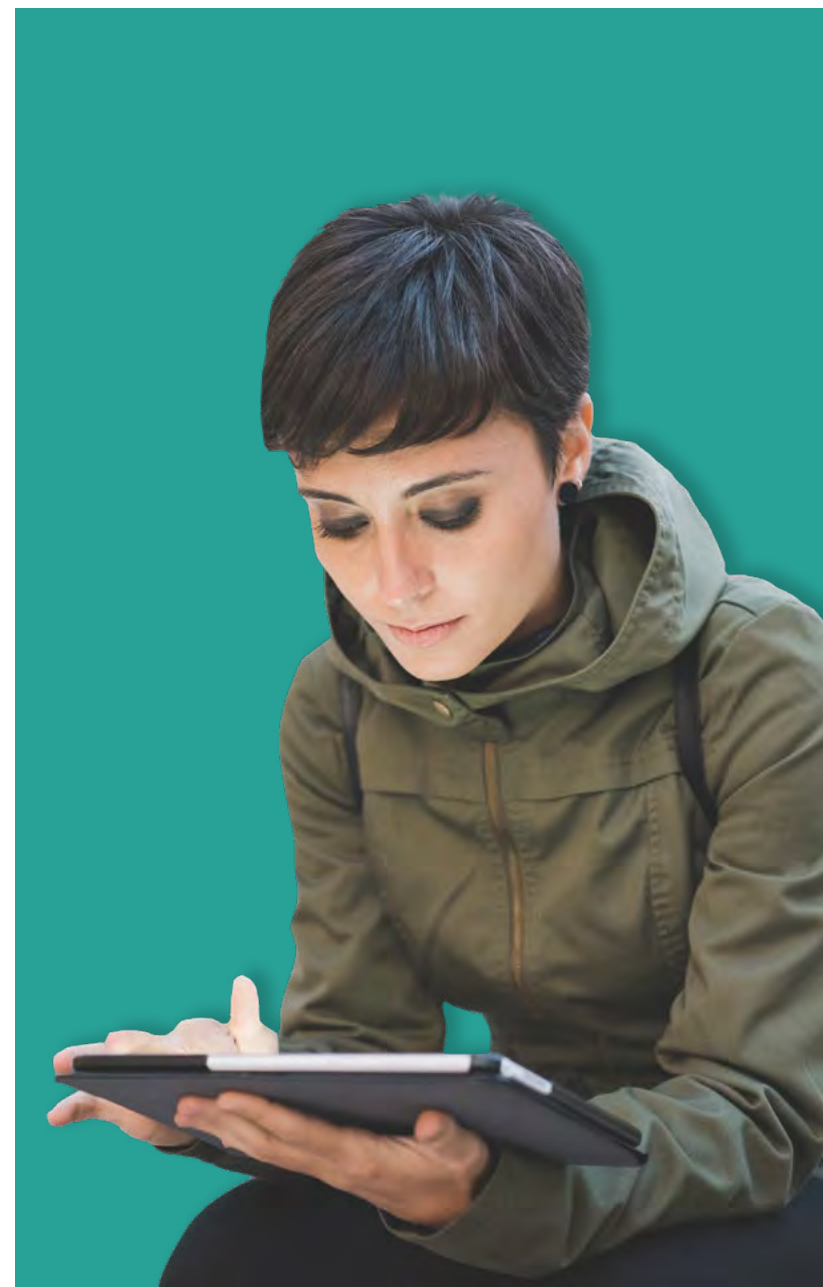


Digital Leadership and Culture

- **Build a suite of common platforms and commit to their rapid adoption across the public sector.** The Infrastructure Investment Programme recognises that digital public services are part of Scotland's critical national infrastructure and identifies a multi-year investment of £110 million to help develop and implement the platforms described in Figure 2. This will be supplemented by investment in transforming priority service areas.



Digital Leadership and Culture





# Transforming Government

- **Adopt common digital and data standards:** We will develop and accelerate the use of common digital and data standards across the public sector. This will make it easier to join up services for the benefit of the people who use them. We will embed the Scottish Approach to Service Design and Digital Scotland Service Standards, and ensure that users are involved in all design decisions, data can be shared where appropriate, teams are resourced and skilled appropriately and that common services and platforms are used as the default. To aid this, a Data Standards community of practice will be formed to develop the ambition, build a roadmap of key steps to be taken and processes to help organisations improve. We will develop a public sector data catalogue, which will make it easier for everyone to see what data is held and to understand how to access it.



Technology Enabled

- **Establish a new public sector centre of excellence for process automation.** In line with the infrastructure investment plans to develop a new, system-wide infrastructure investment assessment and prioritisation framework, we will establish a public sector centre of excellence for digital technology and digital thinking to train staff in these techniques across the public sector. This will commission joint projects and share information about 'what works' to avoid unnecessary and often costly repetition of work.



Collaborative



*We will develop and accelerate the use of common digital and data standards across the public sector.*



# Transforming Government

- **A digital service hub:** We will develop a common catalogue of services and service components that will be used as a default across national and local government, including, for example, a common online recruitment service. This will be based on a common architecture, a joint approach to prioritisation, joint design, joint commissioning/procurement and joint governance, delivering efficiencies and simplifying people's experience of working with and in government. At the heart of this will be a set of common operating platforms as described in Figure 2. We will ensure that all new organisations and services across national and local government are built using these platforms. Existing organisations will aim to move to these platforms as they need to replace legacy systems.

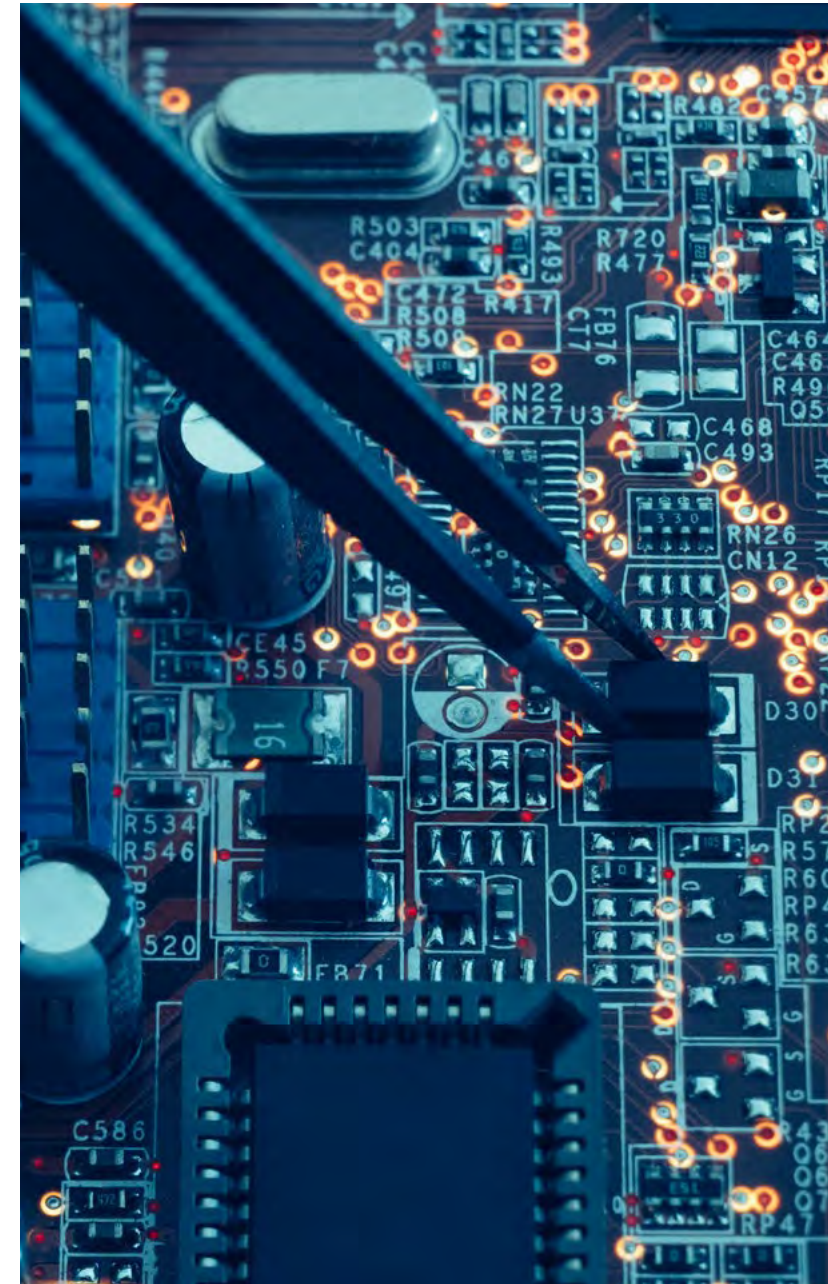


Technology Enabled

- **A new model of commercial engagement :** Led by the Digital Commercial Service the Scottish Government will adopt open inclusive approach to procurement which provides meaningful opportunities for small businesses and start-ups and ensure that the public sector secures best value from its long-term strategic relationships with key suppliers. We see the public sector as an integral part of an ecosystem of talent and innovation and will work to ensure that we access the very best ideas and skills from across our economy in order to support economic growth and transform the quality of the services we offer.



Digital Leadership and Culture



# Transforming Government

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- **Support a Digital Third Sector:** We will work with third sector partners and Digital Participation Charter signatories to enable them to develop their digital capabilities as well as introducing new digital business models. This will promote common standards and secure technologies across the sector and promote interoperability with public sector partners. This will ensure that the third sector remains an innovative partner in the ecosystem that supports people and communities across Scotland.



Collaborative

- **Enhance Digital democracy:** We will explore the potential for digital technology to better enable parliamentarians and elected council members to engage with constituents remotely to enhance the resilience of the democratic process; assist participation in local decision making and community councils; and to engage with overseas governments remotely to improve Scotland's international influence.



Innovative and Sustainable



# Transforming Government

- **Develop and implement a Data Transformation Framework** to encourage both data improvement and the expansion of data reuse across the Scottish Public Sector. Taking an approach that acknowledges the elements necessary for a successful data ecosystem, the Framework will provide clear data maturity pathways to achieving this, using guidance, resources, standards and principles for each stage, enabling organisations to become data driven. At its core it will deliver a shared vision for data maturity, quality and innovation.



Data-Driven

- **Invest in analytical platforms**, to increase efficiency, improve the quality of data we collect, share skills and knowledge and enable greater innovation and collaboration. We will leverage the power of our data through our application platforms and build on the Data & Intelligence Network as a model for collaboration, to create communities of practice, address challenges create a trusted and efficient data ecosystem to enable data to be used to help solve some of our most significant challenges. We will further develop Research Data Scotland service which is currently scoping the requirements for new and additional research data platforms. These will be at the heart of data sharing and data access so that high quality research with high quality data can happen in Scotland.



Data-Driven



*We will leverage the power of our data through our application platforms and build on the Data & Intelligence Network as a model for collaboration.*



# Transforming Government

## Actions

### Transforming Government

We will:

1. develop cultures and working practices required to be successful in the digital age;
2. build a suite of common platforms to be adopted across the public sector;
3. adopt common digital and data standards;
4. establish a new public sector centre of excellence for process automation;
5. create a digital service hub;
6. adopt an open, inclusive approach to procurement;
7. work with third partners to support a digital third sector;
8. explore the potential for technology to better enable parliamentarians and elected council members to engage with constituents remotely;
9. develop and implement a Data Transformation Framework;
10. invest in analytical platforms.

## NPF Outcomes



**Poverty** - We tackle poverty by sharing opportunities, wealth and power more equally.



**Economy** - We have a globally competitive, entrepreneurial, inclusive and sustainable economy.



**Communities** - We live in communities that are inclusive, empowered, resilient and safe.



**Culture** - We are creative and our vibrant and diverse cultures are expressed and enjoyed widely.

<sup>49</sup> <https://www.gov.scot/publications/protecting-scotlands-future-governments-programme-scotland-2019-20/>

# Summary



*The updated strategy sets out the rationale and evidence for key actions that will allow Scotland to fulfil its potential in a digital world.*



# Summary

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The Updated Digital Strategy for Scotland sets out a vision to ensure that Scotland is recognised throughout the world as a truly digital nation.

The coronavirus pandemic undoubtedly presents great global challenges, but also opportunity for change and growth. The pandemic, and our response to it, has reminded us all of the social and economic consequences that can occur as result of being digitally excluded, however it has also highlighted that Scotland has the skills needed to digitise services at a rapid pace.

The updated strategy sets out the rationale and evidence for key actions that will allow Scotland to fulfil its potential in a digital world. The following actions will support and accelerate Scotland's journey towards being an inclusive, ethical and sustainable digital nation.



*The Updated Digital Strategy for Scotland sets out a vision to ensure that Scotland is recognised throughout the world as a truly digital nation.*



*Ensuring Scotland is a fully digitally inclusive nation in which the benefits of technology are available to all.*



# Summary

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## Part 1 - People and Place

### No One Left Behind

Ensuring Scotland is a fully digitally inclusive nation in which the benefits of technology are available to all.

We will:

1. deliver broadband coverage for all and maximise gigabit investment in Scotland through our R100 programme and through collaboration with commercial providers and the UK Government;
2. improve rural 4G mobile coverage and set the right conditions to encourage investment through continued investment in infrastructure and collaborative working with the UK Government;
3. ensure that all newly publicly-funded infrastructure is future-proofed for data requirements and all our communities are resilient and sustainable;
4. build on the Connecting Scotland programme to provide equipment and data packages and digital skills training to those in need;
5. ensure everyone can access services and that moving services online does not exclude the least advantaged in our society.





# Summary

## An Ethical Digital Nation

Creating a society where people can trust public services and businesses to respect privacy and be open and honest in the way data is being used.

We will:

1. set out a vision of an Ethical Digital Nation, building trust that the technologies we use are designed with integrity, transparency and use a human rights based approach;
2. build public trust in the use of data and provide all people with the assurance that we are using their data effectively for public benefit, and efficiently and safely to deliver high quality public services;
3. open up access to data and ensure that digital technology improves access to data on local needs and assets;
4. use digital technology to increase community engagement and participation, ensuring that people have an active role in decision making in Scotland;
5. increase collaboration with other governments and NGOs to ensure that Scotland has an active role on issues relating to digital, such as cyber security and the creation of smart economics;
6. ensure that our approaches to establishing an ethical digital nation balance digital rights with the responsibility to be accountable for our actions;
7. use Scotland's data capabilities to address climate change targets by extending our Earth Observation programme and building on the work of our AI for Good Climate Change programme.



# Summary

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## Digital Education and Skills

Ensuring digital capability plays a key role in education to assist us in establishing a strong, digitally skilled workforce.

We will:

1. work to ensure that digital knowledge and skills plays a key role in education and align with our plans for a new National Digital Learning Strategy;
2. ensure that we have a skilled workforce available to meet the needs of a growing digital economy and continue to support entry into digital roles through initiatives such as the Digital Start Fund;
3. look to further support and increase upskilling and reskilling opportunities for people whose employment was impacted by the coronavirus pandemic;
4. increase diversity in the digital skills pool by working with industry to increase pathways into the digital tech sector;
5. establish the Scottish Digital Academy as the skills provider of choice for the Scottish public sector, accelerating the delivery of digital skills that we need both now and in the future;
6. establish a new, pooled resource of digital and data experts that the public sector can call upon to help them transform digitally;
7. create a Data Science Competencies Centre to accelerate the adoption of new tools and practises across government and the public sector.



*Ensuring digital capability plays a key role in education to assist us in establishing a strong, digitally skilled workforce.*



# Summary

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## Part 2 - A Strong Digital Economy

### Helping all businesses to become digital businesses

Working to ensure that the digital acceleration experienced as a result of the pandemic is sustainable and contributes to increased productivity, improved resilience and economic recovery.

We will:

1. enable SMEs in all sectors to adopt and optimise new digital technologies, improve their productivity, increase their resilience and grow their businesses;
2. expand expert support for SMEs through additional investment and the creation of a capital fund to incentivise and support SMEs to invest in the necessary software, hardware and skills;
3. publish the Digital Economy Business Survey in Spring 2021, helping inform policy design to support Scotland's ambition to be a leading digital economy;
4. work with industry to tackle skills shortages across the sector, increase the number of and diversity of suitable candidates and expand the number of pathways into the workplace;
5. work with bodies in the tech industry to demonstrate and deliver the operational and environmental benefits of safe and secure home-working;
6. make more of our data available openly, improving transparency, open government and creating economic opportunity;
7. make public sector data easy to find, understand and reuse.



*Working to ensure that the digital acceleration experienced as a result of the pandemic is sustainable and contributes to increased productivity, improved resilience and economic recovery.*



# Summary

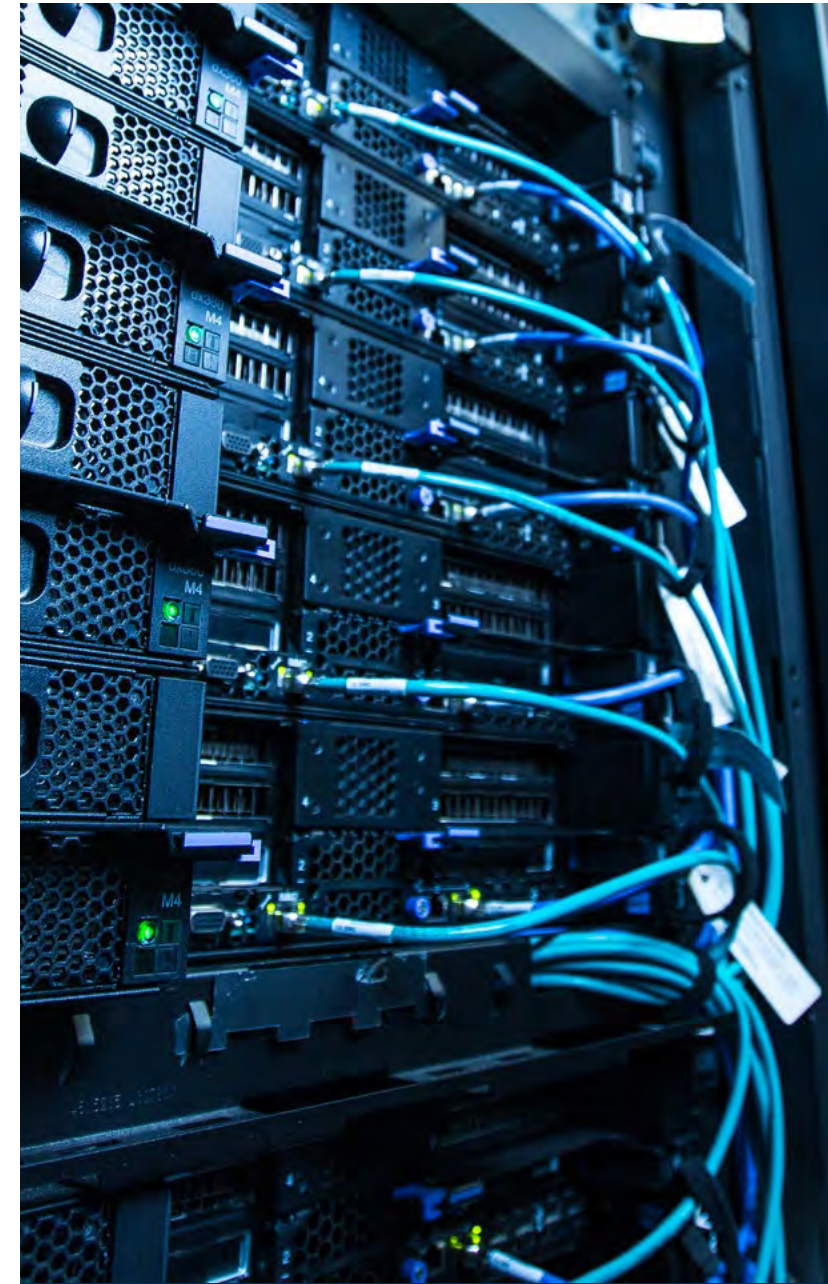
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## Supporting Our Digital Technology Sector

Growing our digital tech sector in order to create new jobs in industries with long term growth potential and a positive impact on climate change.

We will:

1. back the Logan Review's recommendations and work with public and private sector partners to progress its key recommendations around education, entrepreneurship and investment;
2. work with bodies in the tech sector to attract national and international investment in testing, developing and commercialising new products, processes and services;
3. work with the tech sector to create a programme of data-driven innovation;
4. work closely with the datacentre market in order to establish Scotland as an attractive location for green data centres;
5. capitalise on Scotland's competitive advantage in the growing international market for GovTech and promote and develop this sector across the world;
6. ensure equal opportunities for all in the tech sector and work to increase diversity in the workforce; launch Scotland's AI Strategy in March 2021 to ensure that the benefits and productivity gains from AI are felt across the whole of Scotland;
7. implement the Strategic Framework for a Cyber Resilient Scotland;
8. work with the private sector to improve international data connections for Scotland.



# Summary

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## Part 3 - Digital Government and Services

### **Public Services Working For Us All**

Building public services that are accessible to all and simple to use.

We will:

1. set out ambitious reform programmes for key areas of government in order to transform key public services;
2. embed the Scottish Approach to Service Design across the public sector and design services around the needs of the user;
3. ensure that all public services are designed through the lenses of inclusion, offering signposted alternative ways of accessing services for those who cannot or do not want to use digital routes;
4. develop the CivTech operation as the centre of public service innovation of national and local government;
5. introduce a digital identity service for service users, providing a safe and secure way to prove their identity, while reducing time and cost for the public sector.



# Summary

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## Transforming Government

Transforming public services to realise the opportunities of digital ways of working.

We will:

1. develop and sustain the cultures and working practices required to be successful in the digital age and to enhance wellbeing;
2. build a suite of common platforms that will be adopted across the public sector;
3. develop and accelerate the use of a common digital and data standards across the public sector;
4. establish a public sector centre for excellence for digital technology and digital thinking across the public sector;
5. create a digital service hub, developing a common catalogue of services and service components;
6. adopt an open and inclusive approach to procurement which provides meaningful opportunities for small businesses and start-ups, ensuring that the public sector secures the best value from its long-term strategy relationships with key stakeholders;
7. support a Digital Third Sector, enabling third sector partners and Digital Participation Charter signatories to develop their digital capabilities and introduce new business models;
8. explore the potential for digital technology to better enable parliamentarians and elected council members to engage with constituents remotely, assist participation in local decision making and community councils, and engage with overseas governments remotely;
9. develop and implement a Data Transformation Framework to encourage data improvement and the expansion of data reuse across the public sector;
10. invest in analytical platforms, to increase efficiency, improve the quality of data we collect, share skills and knowledge and enable greater innovation and collaboration.



*Transforming public services to realise the opportunities of digital ways of working.*



# About this Resource



## A Changing Nation:

How Scotland will thrive in a Digital World



This resource is also available in HTML format at:

<https://www.gov.scot/publications/a-changing-nation-how-scotland-will-thrive-in-a-digital-world>

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Please contact **design@gov.scot** to make a request for this.