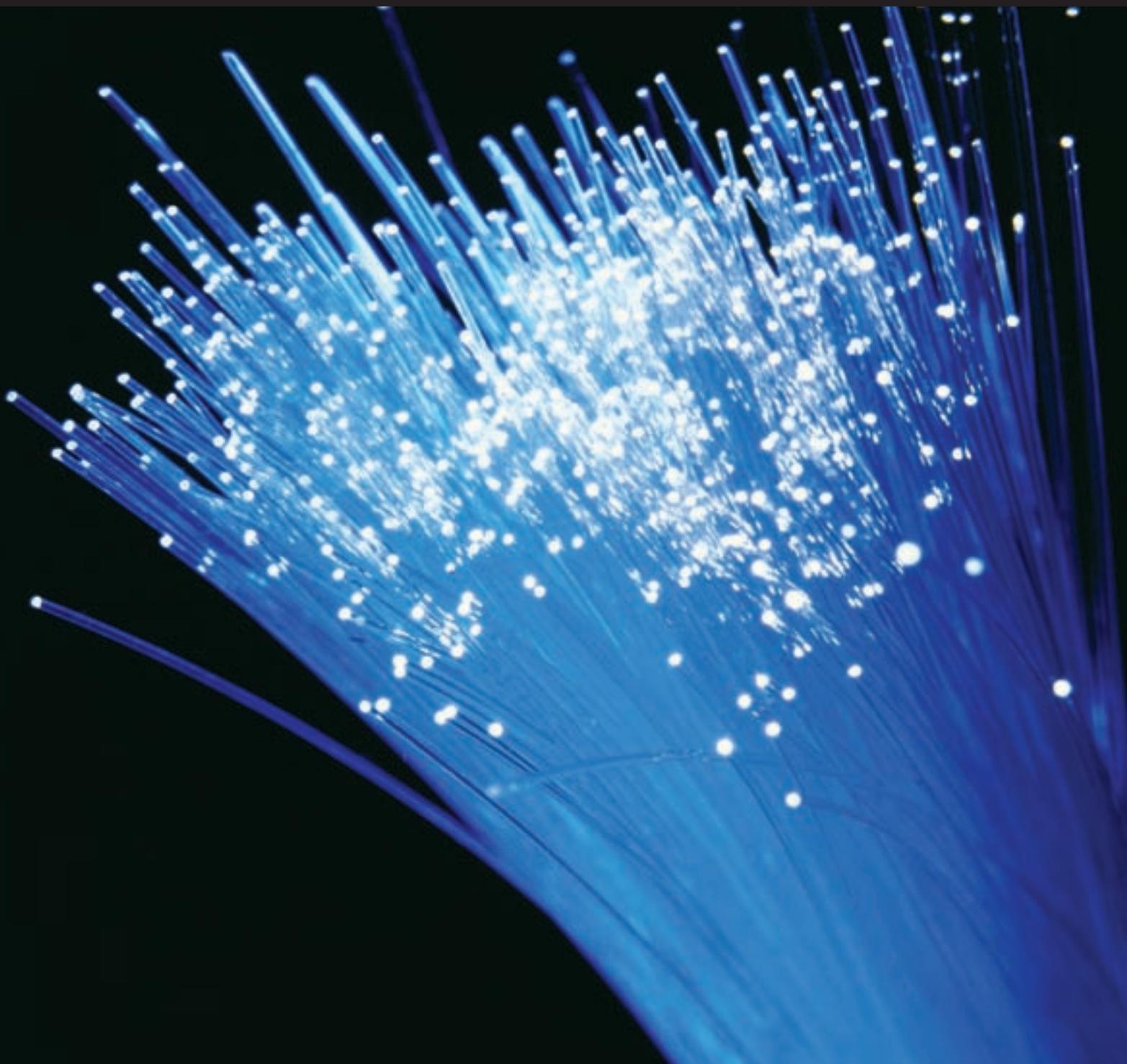


# Scotland's Digital Future - Infrastructure Action Plan



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# 1 Ministerial foreword



This action plan outlines our commitment to a world-class, future proofed infrastructure that will deliver digital connectivity across the whole of Scotland by 2020. The purpose of this plan is to deliver a step change in people's ability to access the internet, enabling people to connect from their homes, businesses and while on the move. A world-class digital infrastructure for Scotland must deliver in terms of speed and ease of access, geographical coverage, and price and choice of provision for consumers. We recognise it is particularly critical for rural and remote communities to be digitally connected in terms of economic viability and growth.

This commitment will make a major contribution to the Government's purpose of making Scotland a more successful country, with opportunities for all to flourish, through increasing sustainable economic growth.

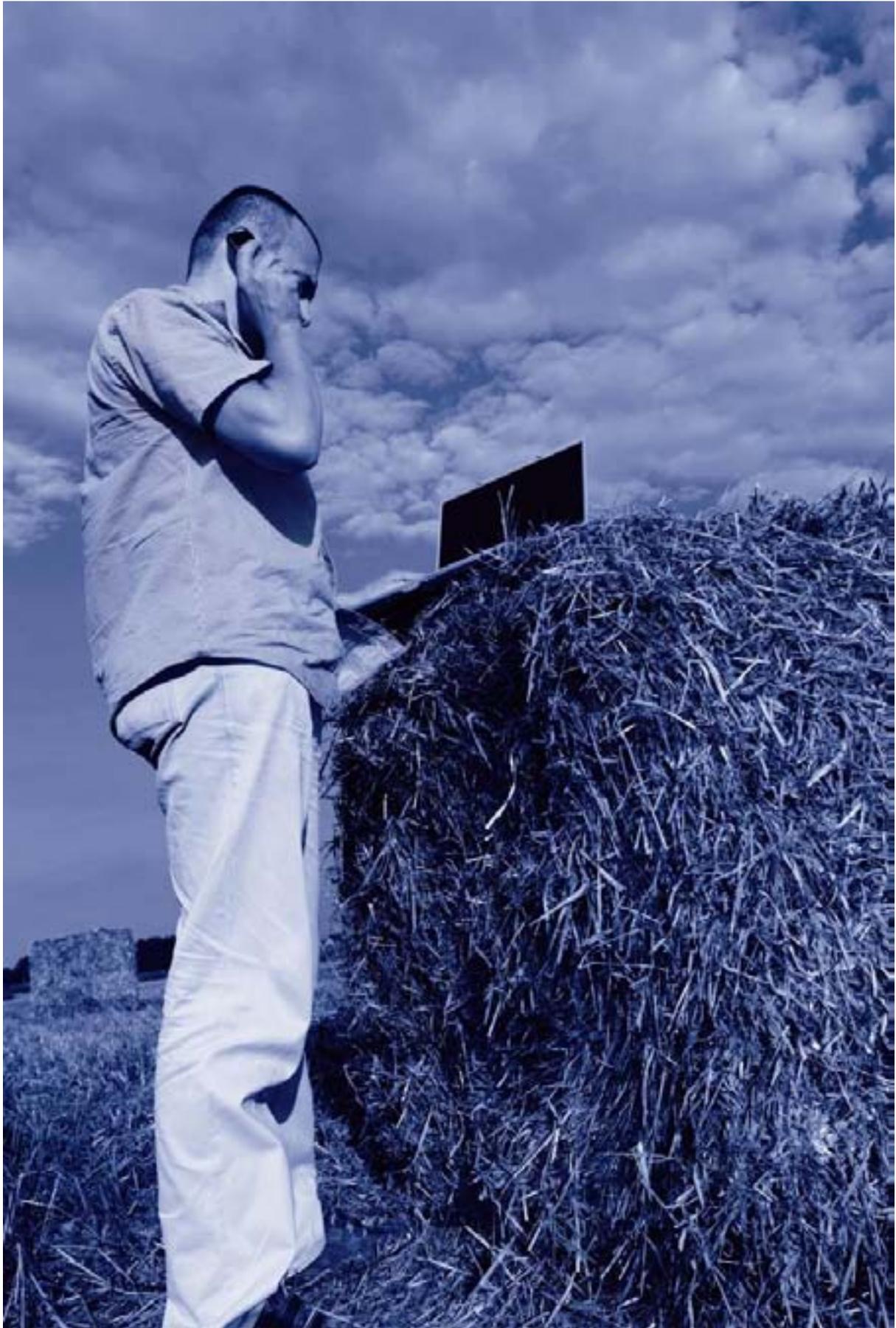
Improvements to our digital infrastructure are essential if we are to maintain and improve the ability of our businesses to compete in a global market place; be successful in attracting inward investment; transform the delivery of public services; respond to the challenges of a low carbon economy and have vibrant, strong and connected communities in our cities, towns and rural areas.

This plan is about the whole of Scotland both in terms of geography and people, and it is clear that all of Scottish society will benefit from world-class digital access. The plan is also, therefore, about partnership and creating a shared vision of a connected Scotland which the Scottish Government, local government and the wider public and private sector can unite behind and collaborate to deliver. Together we should seek to achieve our goals as a nation while ensuring that everyone receives a fair and equitable return on their investment and that local circumstances can be taken into account.

We have listened to those in industry who want Government to lead the way in setting out a clear long term framework for Scotland within which they can confidently invest. We are determined that the approach we take will deliver the best outcomes for Scotland in the most cost effective manner; ensuring that best value is secured from every public pound spent, and learning from the experience of others to ensure that we do this right. Our partnership approach will be based on these principles.

To date, we have gathered a lot of evidence, carried out extensive consultation with industry, taken advice from well respected experts in the field and learned from international best practice. We will continue to do this as it is critical that the detail of our plan remains dynamic and continues to evolve to keep pace with developments, and be adaptable to changing demand.

**Alex Neil MSP** - Cabinet Secretary for Infrastructure and Capital Investment



## 2 Executive summary

**Scotland's Digital Future: Infrastructure Action Plan sets out the Scottish Government's commitment and the steps we will take to deliver world-class, future proofed digital infrastructure across all of Scotland by 2020, with an interim milestone of delivering a step change by 2015.**

The purpose of the plan is to deliver a step change in people's ability to access the internet, enabling people to connect from their homes, businesses and while on the move. These improvements to our digital infrastructure are essential if we are to maintain and improve the ability of our businesses to compete in a global market place; be successful in attracting inward investment; transform the delivery of public services; respond to the challenges of a low carbon economy and have vibrant, strong and connected communities in our cities, towns and rural areas. This will make a major contribution to the Government's purpose of making Scotland a more successful country, with opportunities for all to flourish, through increasing sustainable economic growth for all of Scotland.

Modern digital connectivity is one of the essential components of creating a successful country. For businesses and social enterprises, it enhances productivity and drives innovation. In rural communities and fragile areas, it has the potential to boost economic development, retain young people and attract new residents. Connectivity, both fixed and mobile, is central to the successful development of emerging sectors such as renewables, digital healthcare and cloud computing, but also to more traditional sectors, such as tourism or business services, which are increasingly using digital technologies.

The Infrastructure Action Plan sets out four critical programmes, that combined, will ensure that we meet our ambition and deliver a world-class digital infrastructure for Scotland.

**Programme 1: Achieving a step change by 2015** will address the current digital divide and put in place infrastructure in those areas that the market will currently not go, to ensure a step change in speeds by 2015. The outcome we are seeking is a significant uplift in speeds for everyone by 2015, with speeds of 40 – 80Mbps for between 85% to 90% of premises. Our procurement strategy will seek to extend the reach further and deliver the best possible speeds for those where delivery of 40 - 80Mbps is not possible at this stage.

**Programme 2: Achieving world-class by 2020** will deliver a longer term plan, developed in parallel, to ensure we have the right mechanisms, partnerships and commercial models in place to deliver world-class infrastructure in a sustainable way and in partnership with industry.

Underpinning these core infrastructure programmes are two additional programmes:

**Programme 3: Demonstrating and delivering innovative and local solutions** will be targeted at promoting locally based projects and programmes and also trialling new technologies.

**Programme 4: Increasing take-up and stimulating demand** will be targeted at raising digital participation rates (for businesses and individuals) and raising demand for services – helping to improve the commercial case for investment and delivering better outcomes for Scotland.

Improving mobile coverage across Scotland is also an important element of the plan to ensure people have good access, wherever they are, to telephone and data services from hand held platforms such as mobile and smart phones, and tablets.

Aligned to these programmes, we will continue to work with the UK Government and Ofcom to promote an appropriate and adaptable regulatory environment that is an enabler to achieving our ambitions. We will also ensure that our approach to delivery of digital infrastructure is strongly aligned with our Public Sector ICT strategy for Scotland.

The Scottish Government is committed to sourcing and securing the right level of funding to deliver the plan. We expect the industry to work in partnership with us to deliver the plan and we will put in place mechanisms to secure greater investment from the private sector. Our funding strategy to deliver the step change for the 2015 programme will come from a mix of sources. This includes £68.8m from BDUK and £79.5m from the Scottish Budget, including up to £25.5m of EU funds. In addition as much as £40m has already been earmarked by local authorities for this purpose. We will also seek to secure additional EU funding through future programmes.

Within the Scottish Government, we are establishing a Digital Programme Office to deliver these key programmes. A single Programme Board will oversee the delivery of the entire action plan. An external stakeholder group will provide advice, insight and a challenge function.

Critical to our approach will be a strong working partnership across the public and private sectors to deliver on a shared ambition for all of Scotland. We are committed to building a strong partnership with COSLA and individual local authorities to deliver at pace, while taking account of local circumstances and expertise. Our relationship with the private sector will also be based on a fair and equitable partnership, ensuring everyone gets a fair return on their investment and ensuring we get value for every pound of public money invested.

## Summary of the key actions we will take:

### Programme 1 – Achieving step change by 2015

- produce a procurement strategy by March 2012.
- commence procurement by September 2012.
- award contract in the first half of 2013.
- work with Highlands and Islands Enterprise to support their project, contributing effectively and economically to the national strategy.
- establish a coherent overall approach for public sector investment in infrastructure and demand for services that ensures overall value for money.

### Programme 2 – Achieving world class by 2020

- develop a full plan outlining the options for delivering our world-class ambition by December 2012.
- build a strong relationship with COSLA and individual local authorities when formulating the plan, and also engage with wider partners, such as enterprise agencies.

### Programme 3 – Demonstrating and delivering innovative local solutions

- establish a seed fund by April 2012.
- engage with industry, communities and academia on promoting innovative technology options.
- support Scottish bids to UK Government's Urban Broadband Fund

### Programme 4 – Increasing take up rates

- work with the signatories of the Digital Participation Charter on projects to increase take up rates over the lifetime of the Parliament. Key areas for early priority action reflecting demographic, geographic and customer need and change of technologies for digital access, will be selected during spring 2012.
- in partnership with Highlands and Islands Enterprise and Business Gateway, launch a business support project, targeted at upskilling small and medium-sized enterprises in the Highlands and Islands in February 2012.
- in partnership with Scottish Enterprise and Business Gateway, launch a business support project targeted at upskilling small and medium-sized enterprises across the rest of Scotland in April 2012.
- publish a plan for digital public services in spring 2012 and ensure that public sector ICT can enable the delivery of the plan efficiently and effectively.

### In support of these programmes we will also:

- work closely with local government, the enterprise agencies and other partners to ensure there is flexibility within the national approach to meet local requirements and priorities and to deliver local solutions.
- continue to work with industry.
- continue to work with the UK Government and Ofcom to promote an appropriate and adaptable regulatory environment that is an enabler to achieving our ambitions; notably in relation to rural mobile coverage.
- ensure that our approach to delivery of digital infrastructure strongly aligns with Scotland's digital public services plan and our public sector ICT priorities.

## 3 Introduction

In March 2011, the Scottish Government published *Scotland's Digital Future: A Strategy for Scotland*<sup>1</sup>. The strategy set out the following ambition:

→ **that next generation broadband will be available to all by 2020, and that significant progress will be made by 2015.**

*Scotland's Digital Future – Infrastructure Action Plan* details the action required now and in the coming years to deliver world-class digital infrastructure for Scotland, taking forward the targets we set out in 2011 and setting out our intent to move forward at pace and in a way that ensures we are internationally competitive.

This action plan sets out our approach to achieving a core national infrastructure that will support the delivery of the other three strands of *Scotland's Digital Future* – progress towards digital public service delivery, an increase in digital participation and growth in the digital economy.

Scotland already has world-class strengths in many areas relating to digital technology – our digital media industries, our education facilities and our telehealthcare services.

However, the digital infrastructure in place in Scotland today does not deliver for all of Scotland and will not have the capacity everywhere to service future demand. All trends point towards an increase in the coverage and speeds of digital access required as the number of internet enabled devices increases and as technology continues to evolve, such as cloud computing and TV through the internet. To accommodate these trends it is clear that we will need faster, more reliable upload and download speeds and the ability to use multiple devices in our homes, hospitals, further and higher education institutions, workplaces and in our schools.

We are committed to ensuring that we have world class digital infrastructure in place that can meet growing and changing demands for digital services. Given the phenomenal pace of technological change and consumer demands, there is no fixed definition of what world-class access will look like in the future. In today's terms world-class would require speeds of between 100Mbps and 1Gbps. In 2020, it is difficult to predict what world-class speeds will be, however there are technological solutions to infrastructure now, such as fibre, that experts believe can provide the backbone of a future proofed infrastructure capable of accommodating future demand at increasing speeds, for decades to come. We will use the best available expertise to make sure Scotland is best placed.

This is what we need to put in place. This is a major infrastructure programme and this plan sets out the actions we will take to put in place, not only the backbone digital infrastructure that Scotland needs now, but the right infrastructure to ensure that Scotland can remain globally competitive for years to come.

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<sup>1</sup> [www.scotland.gov.uk/Publications/2011/03/04162416/0](http://www.scotland.gov.uk/Publications/2011/03/04162416/0)



**Broadband speeds of 40 Mbps and upwards will make a significant impact on the way people do business:**

**Cloud Computing** allows data and software applications to be hosted remotely in a secure environment. Many cloud based business applications are now available - ranging from office software (email, calendars, word processors and spreadsheets) to more sophisticated business software like customer relationship management systems. Data can be accessed easily from anywhere with an internet connection – at work or at home. It also means that all documents can be retrieved from the cloud if the hard drive becomes corrupted.

It can enhance and encourage greater **collaboration** on projects by sharing ideas and information from different locations in real time through a secure workspace in the cloud.

Next generation broadband can make **remote access to data** much more efficient. This can encourage more flexible working and allow people to work remotely or at home. This can increase productivity, reduce travel, improve work-life balance, reduce environmental impacts and save money.

**Communication** with customers and colleagues can be transformed through widely used video call solutions, like Skype, to high-resolution video conferencing suites. Next generation broadband means that the quality of the video is perfect – with no time delay – and can allow people to join in from various locations across the world. It can also provide the ability to speak to customers face to face no matter where they are in the world, giving a more personal style of relationship. For a rural textile business this could mean showing fabrics and samples of work in progress. It can also vastly reduce travel time and costs on telephone calls.



For a design business that has to send and receive large data files, next generation broadband can significantly improve productivity - very large files, images and video can be sent and downloaded instantaneously.

It also allows businesses to **trade online and expand their customer base and markets**, giving an advantage over slower moving competitors. For a remote bed and breakfast (B&B), it allows the owner to promote the B&B and surrounding area with large high quality images and videos, thus enhancing the experience for customers all over the world. It also allows the B&B owner to use an online booking and secure payment facility.

## 4 What is the plan?

This Infrastructure Action Plan sets out **4 critical programmes** that combined will ensure that we meet our ambition and deliver a world-class digital infrastructure for Scotland.

**The first two of our programmes are focussed on delivering our core, or backbone, national infrastructure in a phased and future proofed way:**

**Programme 1: Achieving a step change by 2015** will address the current digital divide and put in place infrastructure in those areas that the market will currently not go to ensure a step change in speeds by 2015; and

**Programme 2: Achieving World-Class by 2020** will deliver a longer term plan, developed in parallel, to ensure we have the right mechanisms, partnerships and commercial models in place to deliver world-class infrastructure in a sustainable way and in partnership with industry.

**Underpinning these core infrastructure programmes are two additional programmes:**

**Programme 3: Demonstrating and delivering innovative and local solutions** will be targeted at promoting locally based projects and programmes and also trialling new technologies. This will help deliver solutions now for the 10-15% least likely to benefit from the core investment in Programme 1 and ensuring that they are not left behind. It will also seek to accelerate our journey to world class.

**Programme 4: Increasing take-up and usage** will be targeted at raising digital participation rates (for businesses and individuals) and raising demand for services – helping to improve the commercial case for investment and delivering better outcomes for Scotland.

Aligned to these programmes we will continue to work with the UK Government and Ofcom to promote an appropriate and adaptable regulatory environment that is an enabler to achieving our ambitions. We will also ensure that our approach to delivery of digital infrastructure is strongly aligned with our Public Sector ICT strategy for Scotland.

In delivering our four Programmes there are a number of key principles that will frame our approach. Our approach must:

- be based on a **shared vision that supports our overarching purpose of delivering sustainable economic growth**. It is critical that the digital ambition for Scotland is a shared agenda and must be jointly owned and delivered by industry, communities and the public sector.
- deliver a **future proofed** infrastructure that will enable Scotland to **keep pace** with and **surpass** international benchmarks.
- deliver a world-class infrastructure which means delivering in terms of **speed** and ease of access, geographical **coverage**, and **price** and **choice** of provision for consumers.
- ensure **value for money**. Public sector investment and public sector demand for services must ensure that industry investment in Scotland goes beyond current plans to deliver improved speeds to more people more quickly.
- deliver a **return on investment** to the public sector as well as the private sector.
- promote **rural and community benefits**, by supporting local projects and through contractual arrangements including education and improved technology.

We expect the majority of investment across Scotland to be market-led, therefore the focus of our investment will be in those areas where the market will not go, either at all or without some form of public subvention/investment – these are defined by the EU as ‘white’<sup>3</sup> areas. Our analysis suggests that the market will not deliver to around 30% of premises and that semi-urban, rural and remote areas are the most likely to fall into this category.

The remaining areas are where the market may deliver but has not yet made the decision; these are defined as ‘grey’<sup>4</sup> areas. They tend to be in the fringes of cities and semi-urban areas, therefore our plan also includes a programme of underpinning activity to encourage industry to invest, through demand stimulation, market facilitation and working with the recently announced Enterprise Areas<sup>5</sup> and with cities and city regions as they develop their plans for the UK’s Urban Broadband Fund<sup>6</sup>.

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<sup>3</sup> As defined by EU state aid guidelines; [http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52009XC0930\(02\):EN:NOT](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52009XC0930(02):EN:NOT)

<sup>4</sup> As defined by EU state aid guidelines; [http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52009XC0930\(02\):EN:NOT](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52009XC0930(02):EN:NOT). This information is not available to publish as it relates to commercially sensitive information about industry investment plans.

<sup>5</sup> [www.scotland.gov.uk/News/Releases/2012/01/Employment17012012](http://www.scotland.gov.uk/News/Releases/2012/01/Employment17012012)

<sup>6</sup> [http://www.culture.gov.uk/news/media\\_releases/8730.aspx](http://www.culture.gov.uk/news/media_releases/8730.aspx)

**Broadband speeds of 40 Mbps and upwards will make a significant impact on the way people live:**

- downloading films, music and e-books, uploading videos and photos or enjoying online gaming in an instant.
- on demand: instant access to TV and films wherever and whenever - buffering when watching catch up TV will be a thing of the past.
- connecting face to face with family and friends from across the world through high definition video and webcams.
- online learning becomes much easier, faster and more interactive. Downloading materials and online research is faster and smoother, and video helps to bring everything alive. Live streaming of lectures and online tutorials means that students can access teaching material wherever they are located.
- new 'telehealth' services allow people to access health and social care online and for monitoring medical conditions thereby allowing people to continue to live in their homes and reducing the need for travel by patients and healthcare professionals.

The greatest advantage of next generation broadband is that it will allow all family members to be online at the same time with a consistent and reliable service across multiple devices, including desktop, laptop and tablet PCs, mobile phones, games consoles and internet-enabled televisions. For example, the eldest child who is at studying medicine at University is revising using an online surgery tutorial, the youngest child is playing an online game against competitors in Germany and South Africa, Mum is catching up with her favourite TV programme streamed on to the TV using iPlayer and Dad is speaking to his mum who lives in Australia on a Skype video call from his laptop.



## Programme 1 - Achieving a step change by 2015

As the first immediate step on the journey to world-class, we need to bridge the digital divide and deliver a step change across the whole of Scotland; ensuring that Scotland's core, or backbone, digital infrastructure is fit for purpose and future proofed. This will mean extending and improving the core national network as far and fast as possible, utilising future proofed and sustainable technologies, such as fibre, that will be capable of coping with significant increases in demand for access and speed.

**The outcome we are seeking is a significant uplift in speeds for everyone by 2015, with a target of 40 – 80Mbps for between 85% to 90% of premises. Our procurement strategy will seek to extend the reach further and deliver the best possible speeds for those where delivery of 40 - 80Mbps is not possible.**

Improving mobile coverage across Scotland is also an important element of the plan to ensure people have good access, wherever they are, to telephone and data services from hand held platforms such as mobile and smart phones and tablets. We will continue to engage and seek to influence UK Government, Ofcom and the mobile operators as the plan develops to ensure consistency and alignment of the roll out of mobile and fixed broadband. There are two main areas of focus that could make a significant impact on mobile coverage in Scotland as part of the 2015 programme:

- **Mobile Infrastructure Project<sup>7</sup>** Some parts of Scotland, and parts of the UK, do not yet have effective voice coverage for mobile phones (2G), let alone coverage that provides data services via a mobile internet connection (3G). The UK Government is making £150m available to address 2G 'not spots' across the UK and to take UK coverage up to 99%. As Scotland currently only has 85% coverage, we expect Scotland to derive an appropriately significant share of the benefits from this project. We are working closely with UK Government on the delivery of the project to ensure this happens. The project is expected to go out to procurement by April 2012 with delivery improvements by 2013. It is critical that this extension of 2G coverage also provides a platform for enhanced coverage of 3G and 4G services.
- **4G spectrum auction<sup>8</sup>** The shape of the auction will be critical in determining extent and timing of 4G coverage in remote areas. We have already submitted a substantial business case to Ofcom, including the proposal to increase the coverage obligation on mobile service providers to 98% of the population and for this to apply to 98% of each region within Scotland, not merely a UK average. We will continue to press for this as the auction process continues. We will also press for alignment between the Mobile Infrastructure Project and the roll out of 4G to ensure that coverage for Scotland is maximised. The auction is expected before the end of 2012 with delivery improvements starting in 2013/2014.

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<sup>7</sup> [http://www.culture.gov.uk/what\\_we\\_do/telecommunications\\_and\\_online/8757.aspx](http://www.culture.gov.uk/what_we_do/telecommunications_and_online/8757.aspx)

<sup>8</sup> <http://consumers.ofcom.org.uk/2012/01/proposals-to-extend-4g-mobile-coverage/>

### The 4G spectrum auction

The 4G spectrum auction, which is equivalent to three quarters of the mobile spectrum in use today, is being consulted on by Ofcom until 31 May 2012. Ofcom expect this spectrum auction to be used to deliver the next generation of mobile broadband services, using fourth generation (4G) mobile technologies. They state that:

*These mobile broadband services might have speeds approaching today's fixed broadband services, with coverage significantly better than today's 3G coverage and instead approaching today's 2G (voice) coverage. The award of this spectrum is vital to the UK's economic and social growth. It will enable mobile operators to meet the significant growth in demand for mobile data. This is being fuelled by growth in the take up of smart phones and tablets, offering services such as video streaming, social networking and mobile gaming, as well as applications such as messaging and email.*

*Access of this spectrum is expected to be vital to the future commercial success of existing and prospective new entrant mobile network operators. The proposals set out in this consultation are likely to shape the future competitiveness of the mobile sector for at least the next decade.*

**To achieve our Programme 1 step change, we are in the process of finalising a full procurement strategy that we will produce by the end of March 2012. We intend to commence the procurement process by summer 2012 and award a contract as soon as possible thereafter and no later than the first half of 2013.**

The procurement strategy will:

- specify a technology neutral approach with a mix of solutions that delivers 40 – 80Mbps for between 85% to 90% of premises and the best speeds possible for those where delivery of 40 - 80Mbps is not achievable. We recognise that a wide range of factors affect actual speeds at individual premises, and the 40-80Mbps target is intended to signal the extent of the step change required, rather than being a precise measure.
- deliver open access infrastructure - ensuring interoperability, encouraging competition and delivering value and choice for consumers.
- ensure the right balance between national, regional and local priorities is met, and build on the work being carried out at a local level to understand local requirements and priorities.
- be part of a coherent overall approach to public sector investment in ICT infrastructure and demand for services.
- provide low cost access for the public sector.
- include a mechanism to provide for a return on investment to the public sector as well as the private sector.
- link investment to higher take-up rates to deliver best value for public sector investment.
- seek, where viable, to build on existing and planned infrastructure including public sector infrastructure, electricity, water and transport infrastructure.
- encourage innovation and SME engagement in the delivery of the infrastructure.
- include a mechanism to deliver Community Benefits.
- assess the right route to market and consider whether the Framework currently being developed by BDUK meets the needs of Scotland.

## Delivery approach

Our current intention is to implement this programme through two closely related procurements: the current project in the Highlands and Islands, and a contract for the rest of Scotland.

The current project in the Highlands and Islands is well into the procurement phase, and is a critical part of our overall plan given the specific geographical and technological challenges of delivering next generation broadband in extremely remote and rural areas. We recognise the significant progress they are making and the momentum towards early delivery of improvements across the Highlands and Islands. It will also provide essential learning that we can use for future procurements. We will progress with their current procurement, provided it continues to meet value for money requirements, and in parallel, continue a dialogue on how the future requirements for the region can best be taken forward in a national approach.

Our procurement for the 2015 programme will seek to put in place a single contract for the rest of Scotland. We recognise that some areas have more advanced local plans than others, such as South of Scotland and Aberdeen City and Shire. It is clear that our ambitions for Scotland's Digital Future are shared with our local government partners. We will work closely with COSLA and individual local authorities to ensure there is flexibility within the national approach to meet local requirements and priorities and to deliver local solutions. We are putting those engagement arrangements in place now and this will also include key partners, such as our enterprise agencies. We recognise the need to establish Scotland's priorities while at the same time allowing partners to identify the priority actions within their own areas and ensuring there is no delay in progress. We will work with partners during the development of the procurement strategy to agree priority areas which will focus on:

- white areas<sup>9</sup>.
- readiness of a particular area or project.
- economic and social benefits.
- areas where current obtainable speeds are below our target.

Both the Highlands and Islands and the rest of Scotland will form part of the development of an overall approach, covering both infrastructure and services referred to later in this plan.

There are already a number of regional broadband projects at an advanced stage across Scotland. All of these projects form an essential part of our national plan. These projects have been developed by regional partnerships as they recognise that modern digital connectivity is one of the essential components of creating successful regions. For businesses and social enterprises it enhances productivity and drives innovation. In communities and fragile areas it has the potential to boost economic development, retain young people and attract new residents. Connectivity, both fixed and mobile, is central to the successful development of emerging sectors such as

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<sup>9</sup> As defined by EU state aid guidelines; [http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52009XC0930\(02\):EN:NOT](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52009XC0930(02):EN:NOT)

renewables, digital healthcare and cloud computing but also to more traditional sectors such as tourism or business services which are increasingly using digital technologies.

The **Highlands and Islands (H&I) Broadband Project** covers the entire Highlands and Islands region and is being led and managed by Highlands and Islands Enterprise (HIE). The project will be delivered in phases – the first phase aims to deliver next generation broadband to around 50 towns and communities geographically spread across the H&I region by 2015. Also by 2015 the project aims to provide everyone in the region with at least 2Mbps. The overall ambition of the project is for 100% coverage of next generation broadband by 2020. On 8 June 2011, the project entered its procurement phase which is expected to last 12 months. Delivery of connectivity improvements to the H&I region is expected to begin January 2013 onwards. HIE has so far secured an initial £20m to deliver the project through BDUK, HIE and EU funding.

The **South of Scotland Alliance (SoSA)**<sup>10</sup> has developed a regional broadband plan to provide next generation broadband to 100% of the south of Scotland population by 2020, with an interim target of 90% availability by the end of 2015 and a minimum connection of 2Mbps to the remaining 10%. The Project also aims to increase take up levels of broadband services across the region. Borders and Dumfries and Galloway Councils have committed up to £21 million as a contribution towards delivery of the plan.

The project aims to future proof the south of Scotland infrastructure and it proposes that this will be achieved through the improvement of local access infrastructure, backhaul infrastructure and Points of Presence to improve the affordability and availability of next generation broadband. Open access to allow competitive service development is a key objective. To help improve the business model and to meet the public sector requirements in this area, the Council's public sector network (PSN) requirements will be offered as anchor tenants.

**Aberdeen City and Shire Economic Future (ACSEF)**<sup>11</sup>, a partnership of public and private sector representatives from the North East of Scotland, has developed a Regional Broadband Plan to deliver a world-class infrastructure for the North East of Scotland. ACSEF has secured £20m funding from Aberdeen City and Shire Councils as a contribution towards delivery of the plan. The plan proposes three principal initiatives:

- **Build an open access fibre network** running around the western periphery of the city to enhance coverage of major residential and industrial developments at Westhill, Kingswells, Dyce and Bridge of Don and help enable world-class broadband in the Energetica strategic development corridor.
- **Develop and implement a rural access strategy** to ensure 100% availability of broadband services and access speeds in the rural areas are significantly increased. This will be achieved through a mix of technologies and the utilisation of the Aberdeenshire Council network currently serving Aberdeenshire sites and schools.
- **Deploy a next generation wireless network in Aberdeen City** utilising its existing property portfolio as an incentive for wireless operators to deploy base stations across the City.

<sup>10</sup> SoSA is a strategic partnership of Scottish Enterprise, Scottish Borders and Dumfries and Galloway Councils. NHS Borders and NHS Dumfries & Galloway are also partners in the project.

<sup>11</sup> ACSEF brings together Aberdeen City and Aberdeenshire Councils, Scottish Enterprise, Aberdeen & Grampian Chamber of Commerce, Skills Development Scotland and VisitScotland with representatives from business and academia to ensure a collaborative approach to growing the economy and enhancing quality of life.

## Programme 1 – Key next steps

We will:

- produce a procurement strategy by March 2012.
- commence procurement by September 2012.
- award contract in the first half of 2013.
- work with HIE to support their project, contributing effectively and economically to the national strategy.
- establish a coherent overall approach for public sector investment in infrastructure and demand for services that ensures overall value for money.

## Programme 2 – Achieving world-class by 2020

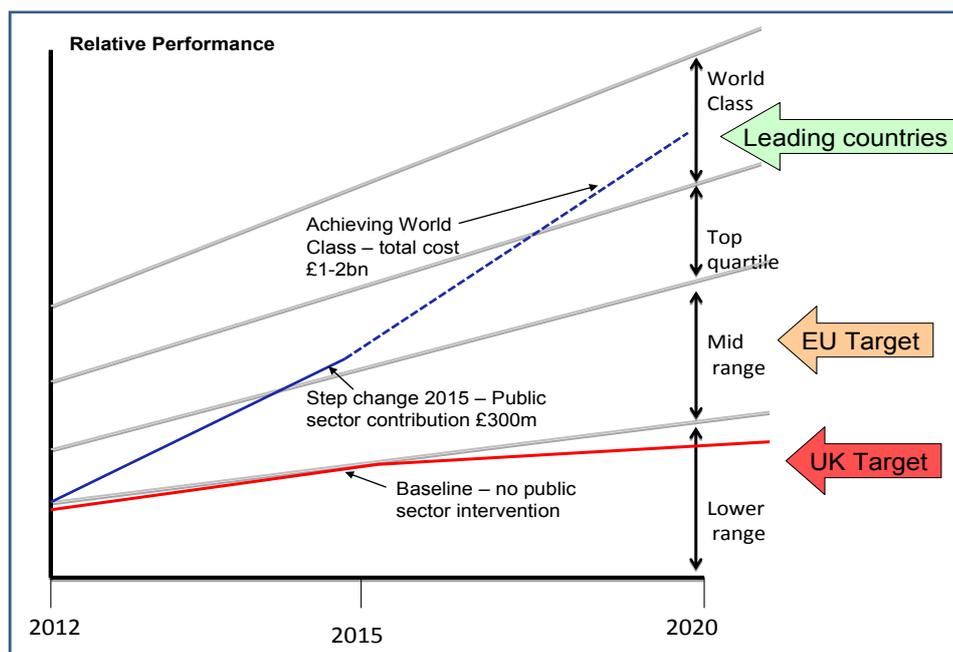
In parallel with and building on the outcomes of the 2015 programme, a comprehensive plan will be developed to deliver a world-class infrastructure for Scotland that delivers in terms of speed and ease of access, geographical coverage and price and choice of provision for consumers.

However, the definition of what will be world-class in the future will evolve and change. Our ambition is therefore to keep at pace and ensure the infrastructure that we invest in now and in the future is future-proof and considered world-class both now and in the future.

Leading countries like Sweden are currently considered as world-class as they have set ambitious targets, put in place robust strategies and funding mechanisms to take them there. Sweden has the following ambition:

- 90% of homes and business to have access to minimum of 100Mbps by 2020;
- With 40% access to 100Mbps by 2015.

**Graph 1** shows Scotland's comparative performance.



The red line on the graph shows where Scotland would be if the Scottish Government did nothing. However, the actions outlined in this plan will place Scotland on the trajectory to world-class as shown by the blue line.

Activity carried out in Programmes 2 and 3 will take parts of Scotland to world-class but we want to see delivery of world-class digital infrastructure across all of Scotland by 2020. We have carried out an initial review of the options available to us and it is

clear that in order to build on the 2015 programme and deliver world-class, we need to approach the market with an entirely different proposition.

This requires a longer-term approach and will need to consider:

- innovative delivery and commercial models such as joint venture arrangements that utilise an integrated mobile and fixed infrastructure e.g. Institutional Public Private Partnership.
- innovative ways of funding and financing the delivery of infrastructure including opportunities for investment from International players not currently active in the UK.
- existing and planned infrastructure including public sector infrastructure, electricity, water and transport infrastructure.
- potential regulatory and legislative levers.
- mass market demand stimulation, including a continued drive to deliver public services online.
- public sector utilisation and purchasing power.

**Over the course of the year, we will engage with the range of stakeholders that will play a key role in the world-class plan, including industry, UK Government, Ofcom, local government, enterprise agencies, utilities companies and Transport Scotland. We will develop a full plan by the end of the year outlining the options for delivering our world-class ambition.**

## **Programme 2 – Key next steps**

We will:

- develop a full plan outlining the options for delivering our world-class ambition by December 2012;
- build a strong relationship with COSLA and individual local authorities when formulating the plan, and also engage with wider partners, such as enterprise agencies.

## Programme 3 - Demonstrating and delivering innovative and local solutions

Programme 3 will encourage and support the development of local projects and partnerships that provide solutions for those communities where the market won't go or that seek to accelerate the pace to our 2020 vision by trialling innovative approaches.

Initiatives under this programme will seek to demonstrate viable next generation solutions with the potential for large scale roll out both in the short and medium term. They will provide the opportunity for local solutions to be developed to meet local needs. Examples may include a community-based approach to provide access for remote communities, building out from the national infrastructure backbone, delivered as part of the 2015 ambition or super wireless connected cities, leading the way towards our 2020 world class ambition.

**We believe the industry is enthusiastic to demonstrate the capability of alternative technologies, and is sufficiently motivated to support, and potentially invest in, these sorts of initiatives. We also know that empowering communities to develop tailored solutions to meet their local requirements can deliver significant benefits.**

Alongside this, the Scottish Government will initially invest £5 million (£1m in 2012-13; £2m in 2013-14 and £2m in 2014-15) in a seed fund where public sector funding is necessary to kick start these projects. However, there is an expectation that these projects will largely be industry and community-led with the majority or all of the funding coming from a mix of sources including industry, communities (e.g. through revenues generated from community renewable energy projects), local businesses (e.g. through Business Improvement Districts and Enterprise Areas), third sector and local government. The UK Government's Urban Broadband Fund and Mobile Infrastructure Project will also play a key role in facilitating the delivery of innovative solutions if the funding is targeted in the right way.

### Programme 3 – Key next steps

We will:

- establish a seed fund by April 2012.
- engage with industry, communities and academia on promoting innovative technology options.
- support Scottish bids to UK Government's Urban Broadband Fund.

## Programme 4 – Increasing take-up and usage

Ensuring that we have world class digital infrastructure in place for 2020 is not an end in itself. For Scotland to reap the benefits of a digital age and for all our citizens to benefit we must ensure that our businesses, our public services, and our citizens are aware of, and are capable of capitalising on the benefits. Increasing take-up rates can deliver multiple social, environmental and economic benefits. For business and the public sector it can lead to productivity gains through more efficient and lower cost provision of services, for individuals it can deliver household savings, increase learning opportunities and enhanced entertainment experiences.

Increasing demand also increases competition amongst providers, delivering greater choice and a better price for the consumer. Some areas are closer to meeting the demand thresholds to stimulate market investment in infrastructure than others and an approach that increases take-up rates in these areas will be essential. We will ensure that take-up clauses are a key part of any contract and if take-up increases beyond industry forecasts, we will expect industry to adjust their investment plans accordingly.

**Our ambition is that the rate of broadband take-up by people in Scotland should be at or above the UK average by 2013, and should be highest among the UK nations by 2015.**

Delivering an increase in take up requires a coordinated approach across the public, private, academic and third sectors. This will continue to be a focus of digital participation improvement. One important area of development was that in November 2011 Scottish Ministers signed Scotland's Digital Participation Charter<sup>12</sup>, marking the start of a new national alliance with signatories from across the private, public and third sectors to raise digital participation levels and to deliver economic, social and environmental benefits for Scotland as whole. The Scottish Government is committed to working in partnership with this new alliance to bring together committed and dedicated people and organisations from across all sectors to make a real difference in this area.

Momentum is building, with over 30 signatories signed up to the Charter since November, including Microsoft, BT, HP, Cisco, JP Morgan, Experian, Consumer Focus Scotland, the Scottish Government, public and third sector bodies and the University of Edinburgh.

**The developing alliance behind the Charter is committed to working together to align their skills, resources and expertise to optimise investments already being made and to develop new projects that will deliver our common goal of increasing the take-up rate in Scotland over the lifetime of this Parliament. Key areas for early action are being developed now with a view to selecting initial priority programmes in the spring.**

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<sup>12</sup> <http://www.govcampscotland.com/charter>

Targeted measures will be the most effective in stimulating uptake and increasing usage of digital services. An understanding of the issues that affect take-up levels is also critical to design the appropriate responses. It is clear that our approaches need to be designed around the needs of individuals whether at home, at work, in education or in accessing public services.

## Individuals

Early research into the barriers to take up has been published<sup>13</sup>. It highlights the different demographic factors that influence take up and concludes that non-use is not related to availability of infrastructure but is overcoming the first barrier of recognising the benefits and need for the internet.



It will be critical to overcome these barriers if we are to achieve the outcomes we want for Scotland, with all citizens benefiting from the digital age. It is also important in order to deliver the increase in take-up required to stimulate additional market investment and actions such as targeted awareness raising campaigns and community based initiatives will form part of the national programme.

## Business

Improving business skills and use of the internet will create additional demand from businesses. Our enterprise agencies, local government and the third sector already deliver a range of business support programmes to accelerate the adoption of ICT within high growth businesses to increase productivity through more intelligent use of social media and digital marketing. We are also working with Scottish Enterprise (SE), HIE and Business Gateway (BG) to develop a programme aimed at upskilling those businesses, particularly small and medium sized enterprises (SMEs), who are currently not using the internet or are using it for basic applications. This will help them to better understand how they can take advantage of next generation broadband to grow their business. Two business support projects are being developed, one covers the Highlands and Islands and is being led by HIE. This project is due to launch in February 2012.

Discussions with Business Gateway to deliver a programme to cover the rest of Scotland are ongoing and it is anticipated that a programme will be launched in April 2012. We currently have funding of up to £1m available each year over the spending review period to support our work in relation to the digital economy.

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<sup>13</sup> <http://www.scotland.gov.uk/Publications/2011/12/28095429/0>

## Education

Scotland has a strong history of using technology imaginatively in schools. We had early strategies to get computers into the classroom; we had some of the first online communities in the world for school leaders; we've invested in Continuing Professional Development (CPD) online; we've developed an international reputation for Games Based Learning, and we have Glow – the world's first national education intranet.

The Scottish Government's ICT in Education programme will realise 5 objectives: culture change; improve confidence; promote new behaviours; deepen parental engagement; and strengthen the position on hardware and associated infrastructure. Achieving these objectives will be driven by enabling access to online learning opportunities from schools, homes and mobile devices.

## Public Sector

This plan concentrates on infrastructure issues and meeting the needs of individuals, businesses and the public sector. Key issues arise where the public sector both invest in the infrastructure and is a significant source of demand for services. It is therefore essential that we take a coherent overall approach to these two aspects in order to achieve overall value for money in delivering the outcomes we are seeking. At a minimum, we need to ensure that the cost of access for the public sector to the infrastructure is reasonable. Beyond that, there is an argument for utilising public sector demand for services to leverage additional capital investment from the private sector.

A number of strands of work in relation to John McClelland's Review of ICT Infrastructure in the Public Sector in Scotland<sup>14</sup> are focused on the scope both to establish common standards on public sector networks, and to aggregate public sector demand for services. A linked project has been established by the Scottish Government to develop specific options to support this approach.

In order to establish a coherent overall approach, the work on the broadband procurement strategy and this work on aggregation of public sector demand will be brought together. This approach, and any public sector contracts, should meet the following criteria:

- contracting for open access infrastructure,
- utilisation of existing open access infrastructure,
- utilising the digital reach of schools to serve as the digital hub for communities;
- community benefit clauses.

As well as the aggregation of public sector demand, a key issue is the likely future growth in public sector demand, particularly in relation to the development of digital public services. Beyond direct public sector demand, the greater availability of public services online may contribute to higher levels of take-up by service users. So it is important to demonstrate to potential providers that there will be substantial public sector generated demand for digital infrastructure, in a way that allows them to factor

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<sup>14</sup> <http://www.scotland.gov.uk/Publications/2011/06/15104329/0>

this into their take-up forecasts. The Scottish Government is committed to exploring the opportunities digital technology presents to provide services which are faster and more convenient for people to use, while improving the efficiency and effectiveness of Scotland's public services. Increasing use of digital technology – with resulting demands on infrastructure – is a key driver of the reforms and improvements to our public services.

A digital public services plan is being developed and will be published in spring 2012. It will send a clear message on future direction of public service delivery in Scotland, including on future demand from the public sector in Scotland. We will also set out the strategic priorities and actions to ensure that public sector ICT can enable the digital public services plan efficiently and effectively. This national plan will be supported by sectoral plans to ensure sectoral and local requirements can deliver for the citizens of Scotland.

#### **Programme 4 – Key next steps**

We will:

- work with the signatories of the Digital Participation Charter on projects to increase take up rates over the lifetime of the Parliament. Key areas for early priority action reflecting demographic, geographic and customer need and change of technologies for digital access, will be selected during spring 2012.
- in partnership with Highlands and Islands Enterprise and Business Gateway, launch a business support project, targeted at upskilling SMEs in the Highlands and Islands in February 2012.
- in partnership with Scottish Enterprise and Business Gateway, launch a business support project targeted at upskilling SMEs in the rest of Scotland in April 2012.
- publish a digital public services plan in spring 2012 and ensure that public sector ICT can enable the digital public services plan efficiently and effectively.

## 5 How and who is going to deliver it?

### Funding Strategy

Our funding strategy to deliver the step change for the 2015 programme will come from a mix of sources. This includes £68.8m from BDUK and £79.5m from the Scottish Budget, including up to £25.5m of EU funds. We will also seek to secure additional EU funding from the post 2013 programme and through future spending reviews to deliver our full ambition to 2020.

We believe Scotland has a case to make for additional funding from BDUK, given the particular geographic and technical challenges we face and we will be making that case to UK Government. Scotland can also expect funding from the UK Government for 'superfast cities' (£100m Urban Broadband Fund) and for mobile 'not spots' (£150m Mobile Infrastructure Project).

We will work in partnership with local government to identify potential funding opportunities for local solutions to this shared priority. As much as £40m has already been earmarked by four local authorities for this purpose. This will be particularly important where local solutions can deliver local priorities.

The Scottish Government is committed to sourcing and securing the right level of funding to deliver the plan, however, we are determined to achieve value for money for our spending, and to ensure that it does not displace private investment or duplicate previous public or private sector investment. This will be delivered in partnership with the private sector and we will drive them hard to provide their share – by seeking ambitious take-up assumptions in the contracts, and return on investment if revenue significantly exceeds expectations.

### Governance

Within Scottish Government we are establishing a Digital Programme Office to deliver these key programmes. This is made up of officials from across the range of disciplines within Government supplemented with expert procurement, technical and commercial advisors. It will work closely with the Highlands and Islands Enterprise procurement team as well as other broadband project and local government teams to ensure that local, regional and national approaches are aligned. The immediate focus of the office will be to:

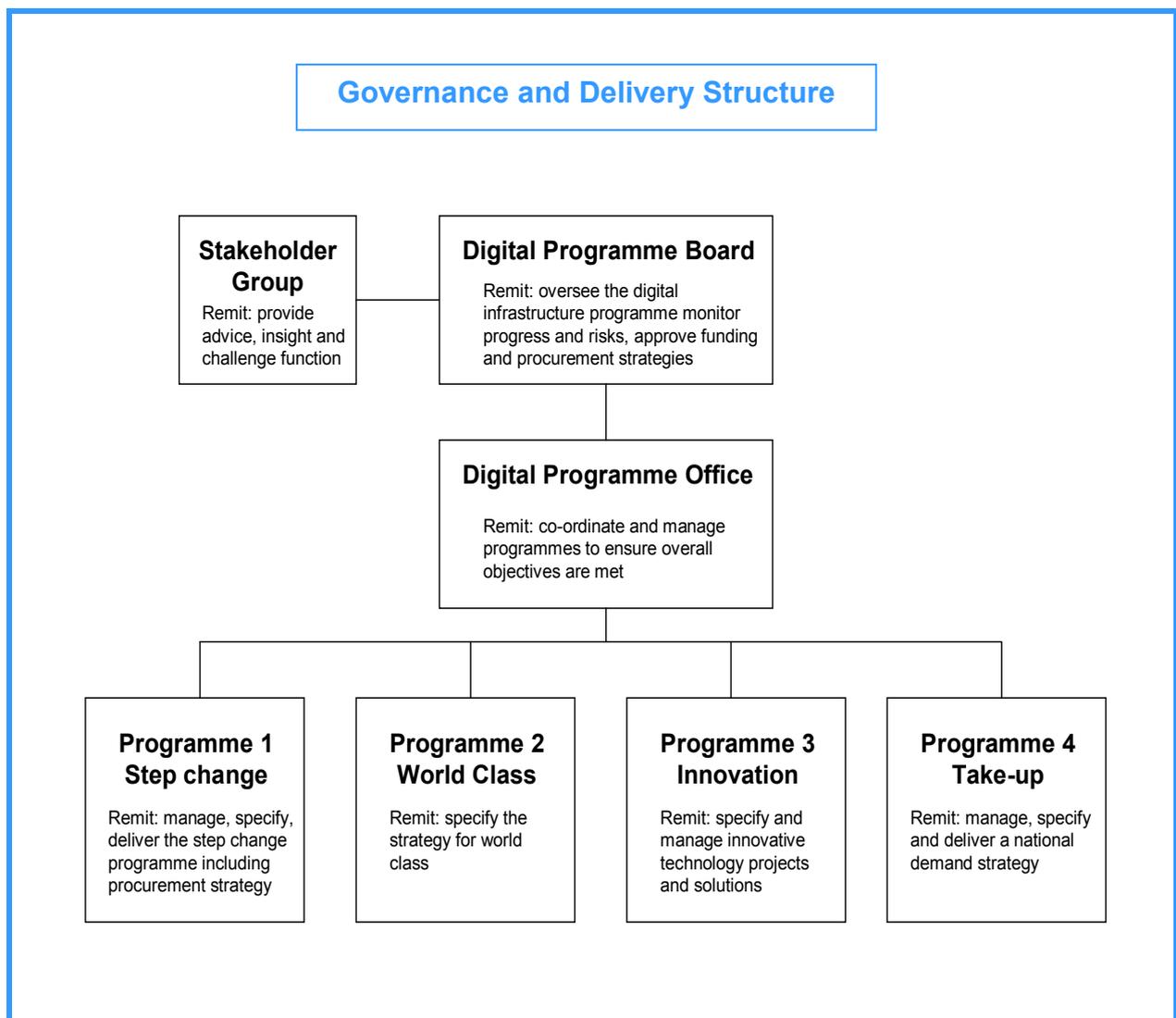
- Finalise the procurement strategy and deliver the contract to achieve step change by 2015;
- Continue the development of a full plan by end 2012 to achieve world-class; and
- Specify, manage and deliver a programme of innovative pilot solutions and demonstration projects.

Programme 4 which aims to increase take-up rates is a critical underpinning element of the action plan and will be progressed in parallel to other programmes of work and

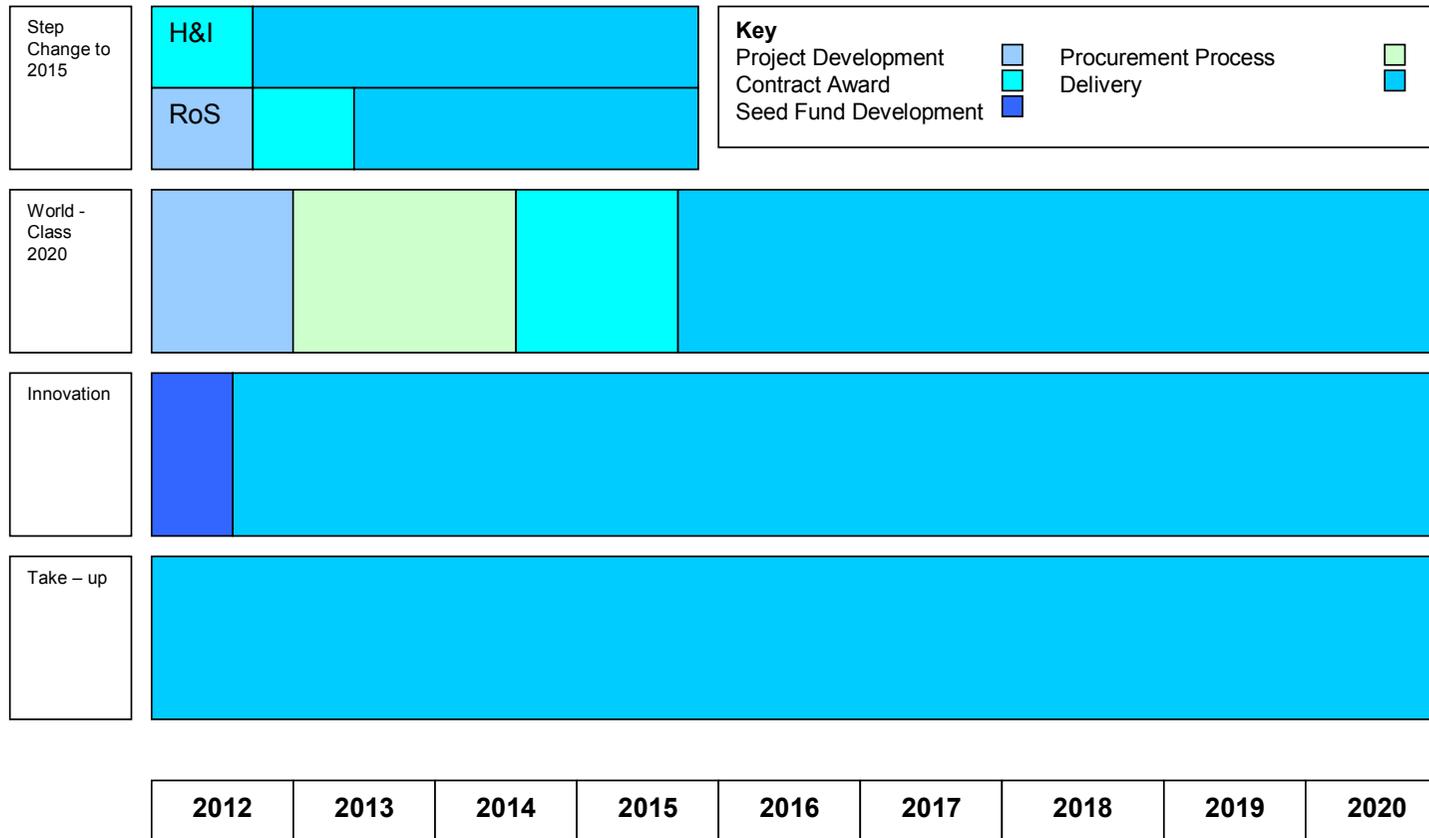
overseen by the Programme Delivery Office. This work will be supported by the signatories of the Digital Participation Charter and the wider public and third sectors.

A single Programme Board will oversee the delivery of the entire action plan and will be made up of key Government and external stakeholders. The Programme Board will ensure alignment to the Public Sector ICT work programme to ensure joined-up decision making. The overall governance for the Digital Strategy and Public Service Reform will reflect this going forward and the structures below may therefore evolve over time. An external stakeholder group made up of experts and innovative thinkers from across the public and private sector will be established to provide advice and a challenge function.

An illustration of the governance and delivery arrangements for the Infrastructure Action Plan is provided below:



**ACTIONS**



H&I – Highlands and Islands; RoS – Rest of Scotland

## 7 Glossary of terms

BDUK	Broadband Delivery UK
2G	The second generation of mobile telephony, capable of delivering voice and slow data services (including SMS text services). Upper range 2G services can provide data rates of up to 236.8 kbps.
3G	The third generation of the mobile telephone network, capable of delivering broadband equivalent speeds to mobile telephones and smartphones, laptops and handheld/tablet computers.
4G	The fourth (and future) generation of the mobile telephone network, currently undergoing trials in the UK. 4G is likely to be capable of speeds of up to 100 megabits per second.
Broadband	High-speed internet connection typically capable of speeds ten times greater than dial-up.
Cloud Computing	Location-independent computing, whereby shared servers provide resources, software, and data to computers and other devices on demand.
COSLA	Convention of Scottish Local Authorities
Gbps	Gigabytes per second
GHz	Giga Hertz
HIE	Highlands and Islands Enterprise
ICT	Information and Communication Technologies
Mbps	Megabits per second
MHz	Mega Hertz
Next generation broadband	High speed broadband which exceeds the capabilities of copper-based (or similar) broadband infrastructure. Speeds will vary dependent on the technology used.
Ofcom	Office of Communications – the UK’s independent telecommunications regulator and competition authority.
RoS	Rest of Scotland
SE	Scottish Enterprise
SME	Small to Medium-sized Enterprise
WiFi	Wireless Fidelity – a technology enabling home computers, smartphones and handheld/tablet computers to access the internet when within range of a wireless network connected to the internet.



**The Scottish  
Government**

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