

Empowering a world-leading Digital Scotland

The Microsoft Digital Blueprint

“Think of yourself as on the
threshold of unparalleled success.
A whole, clear, glorious life lies before you.
Achieve! Achieve!”

Andrew Carnegie



The Microsoft Digital Blueprint

Foreword

We at Microsoft are passionate about the role that technology can play in empowering every citizen and every business on the planet to achieve more. We are delighted too that Scotland sees the opportunity to become a truly great Digital Nation.

Microsoft made the UK its first international base just over 30 years ago and we have been investing across the length and breadth of the UK, in businesses and communities, ever since. Our investments in Scotland are many but we are particularly proud of two programmes. The first is our partnership with the Scottish Government and others in creating more than 2,300 IT Modern Apprentices in Scotland that are supporting the growth of the digital economy. The second is our partnership with both Government and Scotland's 32 local authorities to drive adoption of digital technologies in the classroom, benefiting both teachers and learners. Scotland's young people are a vital ingredient for Scotland's future prosperity and we are always alert to opportunities to forge new partnerships that will give young people the skills to prosper in an increasingly digital world.

The Scottish Futures Trust report prepared by Deloitte sets out the rewards for Scotland if it has the ambition to become a truly great Digital Nation. With a growing digital technologies industry, supported by an outstanding computer science and engineering capability in its universities, Microsoft believes that Scotland can earn those rewards.

It is because of Microsoft's reach – globally, across software, devices and cloud services, in computer science research – that we are uniquely placed to help Scotland develop and deliver on its vision. For many "cloud computing" is a term that is not easily defined. In basic terms, cloud computing is the phrase used to describe different scenarios in which computing resource is delivered as a service over a network connection (usually, this is the internet). Cloud computing is therefore a type of computing that relies on sharing a pool of physical and/or virtual resources, rather than deploying local or personal hardware and software. Most of us use "the cloud" to access information on our mobile phones every day, whether we are booking a restaurant or finding an agreed meeting place. However, it is so much more as vast amounts of data can be collected from multiple users. This allows Governments around the world, for example, to more accurately predict future service demands or to personalise services based on previous usage data. We believe that cloud computing is the cornerstone on which a great Digital Nation can be built.

Microsoft will also not be alone in helping Scotland to become a great Digital Nation. We have very many partners in Scotland, within the more than one thousand digital technology companies who share our vision for what technology can achieve.

We are confident that working together we can continue to grow Scotland's digital industries on an increasingly international scale. At the same time, we can help to improve lives in Scotland for every citizen and help businesses grow as Scotland seeks to earn its place at the top table of Digital Nations.

We believe that Scotland can seize the opportunity. Our Blueprint takes a look at some key outcomes that will help Scotland become a world leading Digital Nation:

- ▶ Grow Scotland's Businesses
- ▶ Expand Digital Public Services
- ▶ Develop Digital Skills and Education
- ▶ Grow Digital Health

In this Blueprint, Microsoft makes 16 proposals for 2016, mirroring our earlier promise of 2016 Modern Apprentices by 2016. We kept that promise with our partners. We now need to find partners amongst those who will be elected to the next Scottish Parliament, those who will form the next Scottish Government and those who will serve the people of Scotland in so many ways in coming years. Together we can then accelerate our journey towards building a truly great Digital Nation. We hope our recommendations will stimulate debate amongst our Scottish partners, clients, employees and vendors and many other stakeholders in Scotland's Digital Future.

Our message is that we can achieve more by coming together to develop skills, support growth and empower citizens while transforming public services. We stand ready to support countries such as Scotland who are ambitious and committed to investing in their digital futures.

Scotland employs more than 84,000 people directly in the digital technologies industry with many more citizens, businesses, public and third sector organisations increasingly benefiting from access to such technologies. There is a solid, rapidly growing industry base from which to build.

Scotland has the opportunity to "grasp the thistle" and become a truly great Digital Nation.

Microsoft looks forward to helping realise the ambition.



Michel van der Bel
Managing Director, Microsoft UK



Steven Grier
Country Manager, Scotland

Introduction

In order to compete in an increasingly global economy, Scotland must fulfil a vision that sees technology empowering every individual and every organisation.

There is no doubt that Scotland can be a more prosperous, healthy and connected country with digital technologies supporting economic growth, delivering highly personalised public services and improving the lives of its citizens.

However, to realise this ambition everyone in Scottish government, society and business must sign up to playing their part. More investment will be needed from all sectors and the journey speeded up as we respond rapidly and flexibly to a very competitive digital world.

So what does success look like? A recent predictive study by Deloitte, the global advisory firm, commissioned by the Scottish Futures Trust provides some pointers.

Let us start with some simple but ambitious targets for 2030 which define what a great world leading Digital Nation would look like and show us how it would feel for Scotland’s citizens, businesses and visitors. (see Figure 1).

Hit these targets and Scotland would add a cumulative £100 billion plus to GDP from 2014-2030. In simple terms, this would add £5,000 to the worth of every household in Scotland by 2030. It would mean increased spending power, more jobs being created, a growing economy. If Scotland experiences only an incremental improvement in digitalisation the benefit could fall to £4billion. Much less household wealth, fewer jobs created.

Figure 1 Targets for 2030



The Microsoft Digital Blueprint

What does this mean for the Scottish Citizen?

As Scotland begins to realise these goals, citizens will begin to see dramatic changes not only in the way public services are delivered but in the way they approach their day-to-day lives. Take Glasgow as an example. Glasgow received funding from Innovate UK, from the Technology Strategy Board's Future Cities Demonstrator programme, to develop a state-of-the-art approach to city management.

Glasgow Operations Centre is the beating heart of the city, an integrated traffic and public safety management system, created with the aid of the Innovate UK funding. The new centre brings together public space CCTV, security for the city council's museums and art galleries, traffic management and police intelligence. The facility has the capability to provide a coordinated, real-time, intelligence-led, response to incidents large and small across the city, placing Glasgow at the leading edge of smart city management. Video analytics is a pivotal tool used as an additional intelligence source. This emerging technology provides Operations Centre operators with alerts as situations and events unfold. This has resulted in improved, more informed decision-making, earlier intervention and reaction to events.

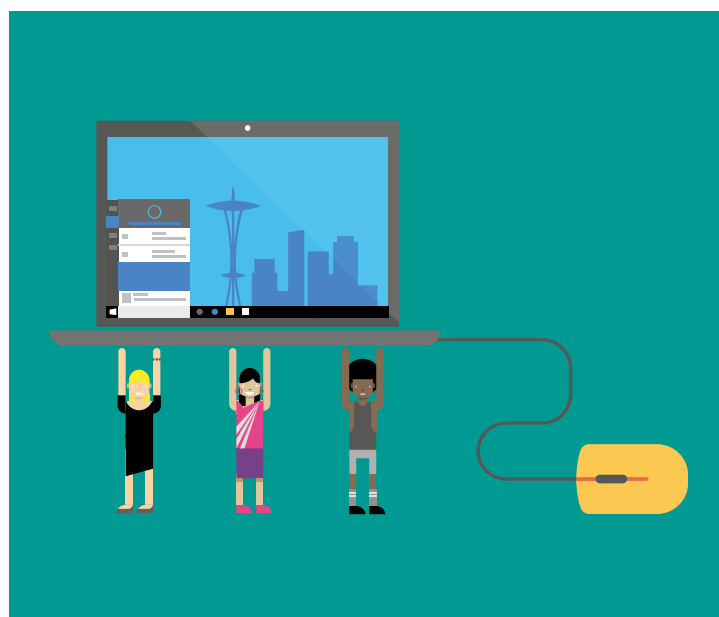
The Centre uses the huge amount of data including the video analytics to ensure a safer and sustainable environment by ensuring that the right resources are in the right place at the right time, benefiting citizens, local businesses and visitors alike. The continuing flow of information then enables the resources to be reallocated as the situation changes. For example on a "Big Match" day, tens of thousands of supporters flow through the major rail and bus stations in the city centre, making their way to one of the main football stadiums, involving the local authority, host football ground, police and other services. Glasgow was proud to host the recent Commonwealth Games and works hard to attract major sporting and cultural events to support economic growth. Indeed its "beating heart" will be working harder than ever when Glasgow and Berlin co-host the first European Sports Championships in 2018.

For more information on Glasgow City Council visit <http://enterprise.microsoft.com/en-gb/roles/marketing-leader/glasgow-reinventing-data/>

Actions to build a world-leading Digital Nation

The next Scottish Government must work with all stakeholders to agree long term, achievable targets:

- ▶ Give a specific Digital Nation remit to the Council of Economic Advisers
- ▶ Strengthen the Digital performance indicators of Scotland Performs, the National Scorecard
- ▶ Develop a Digital Nation Charter, building on the experience of the Digital Participation Charter
- ▶ Support the Scottish Council for Development & Industry's (SCDI's) Key Productivity Challenge and creation of a Scottish Productivity Commission
- ▶ Create a cross-party Digital Nation Committee to ensure Parliamentary oversight



Grow Scotland's Businesses

Let's focus on how Scottish business could take advantage of digital technologies.

Looking at the 2014 Digital Business Survey, published in March 2015, there is still significant scope to persuade Scottish businesses that their future is a digital future.

Of the 4,000 Scottish businesses surveyed, only 37 per cent stated that their employees were equipped with sufficient technology skills to meet the business' digital technology needs. Despite this low number however, 75 per cent stated that digital technology was essential or important to the future growth or competitiveness of their business. Furthermore, the report also found that while almost 95 per cent of Scottish businesses have internet access, only 25 per cent use cloud computing technology.

The report also found that within small and medium-sized enterprises (SMEs), only 19 per cent use the Next Generation Access (NGA) which is common for large companies.¹

NGAs are digital and telecommunication access networks, defined by the EU, which have been substantially upgraded, including use of new solutions such as fibre optic cable. NGA enables an improved service to be offered to both businesses and their customers with increased flexibility, ease of use and scalability.

¹ Office of the Chief Economic Adviser March 2015, <http://www.gov.scot/Topics/Economy/digital>

Scottish SMEs and micro businesses are crucial to Scotland's economy, accounting for about 97 per cent of all businesses in Scotland. Scottish Futures Trust's analysis suggests that world leading adoption of cloud and big data by Scotland's business community could bring an additional £5 billion of economic benefit to Scotland. In addition, according to the Scottish Futures Trust report, 47 per cent of that benefit would go to the Small Office/Home Office (SOHO) and Small-Medium Enterprise (SME) sector.

The Federation of Small Businesses also evaluated recently the role of technology in Scotland's small businesses. Technology is important to businesses of any size but as larger companies become more aware of this, they are starting to invest. In contrast, only 19 per cent of those surveyed by FSB have invested in cloud computing, an action which would save money for an SME as well as bringing improved productivity.

There is more that can be done to support small businesses. Microsoft believes that Government must intensify support for improved connectivity, digital skills and work with industry to make small companies better aware of the benefits of cloud technology.

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Figure 2 Accelerate support for small businesses



Source: FSB 'Voice of Small Business' Survey Panel (February 2012 and January 2013)

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Grow Scotland's Businesses

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Microsoft proposes that Scottish Government...

1. Improves Digital Connectivity to accelerate global business growth

Scotland needs continued investment to improve universal reach and speed to become a world-leading Digital Nation. The recent Scottish Futures Trust report notes people living rurally use 20 per cent less data on landlines than those in cities, and 28 per cent less on mobile connections. More needs to be done to address rural and island challenges. Microsoft believes connectivity and access policies should also:

- ▶ Encourage new technologies to drive adoption, irrespective of geography
- ▶ Facilitate access to unused spectrum, both licensed and unlicensed approaches
- ▶ Promote access to infrastructure to encourage innovation, choice and competition

Microsoft has played its part in piloting solutions such as White Space technology, working with the University of Strathclyde, Government and industry partners. This made Wi-Fi available on the Orkney crossing and Ofcom has approved White Space as one potential solution for improved connectivity.

2. Adopts 'Cloud First' policies in Public Sector procurement and business growth programmes

Independent studies support the need to adopt cloud technologies. A paper on the economic impact of Cloud Computing, by Professor Marco Iansiti of Harvard Business School and Gregory Richards of Keystone Strategy, predicted cloud computing will increase US GDP by between 8.64 per cent and 10.37 per cent in 2011-2021¹.

Ministerial direction would deepen the commitment to a Cloud First approach, extending the mandate of the Digital Directorate to government and public services, driving down costs, increasing flexibility and encouraging collaboration.

Public bodies should publish richer, comparable performance data gathered through "the cloud." For example, GP appointment trends, average waiting times, number of telephone consults, missed appointments etc.

Microsoft is committed to investing in Cloud, be it remote data hosting and storage centres, productivity tools such as Office 365, or ensuring products are widely compatible. Other technology firms have made similar investments as predictions of data transmission, sharing and storage growth come true. Cloud adoption in Scotland has been slower than in many countries with a consequent loss of economic benefit. Microsoft will work with industry partners, Government, universities and others to develop a Cloud First for Scotland campaign.

This will ensure public and private sectors understand the benefit that "cloud solutions" offer to drive adoption, use and productivity.

3. Promotes a Global IT Market

The ICT and digital technologies sector contributed £4.5 billion of benefit to the Scottish economy in 2013. Microsoft believes the Scottish Government should promote technology solutions developed by Scottish companies and universities by facilitating stronger partnerships and co-investment between:

- ▶ Scotland's economic development agencies
- ▶ Scotland IS and its membership
- ▶ UK T&I and British Embassy network
- ▶ Global partners of technology companies in Scotland

4. Accelerates Support for Digital Start-Ups

Microsoft believes the Scottish Government can encourage start-ups by adopting the MIT REAP recommendations, presented in 2014², in particular:

- ▶ Drive improved skills for growth through provision of education in entrepreneurship and management aligned to the digital skills essential for a Digital Nation to prosper
- ▶ Drive improved access to growth finance from public and private sources
- ▶ Promote innovation-driven entrepreneurship as a rewarding career choice through positive communication and use of role models

The Scottish Government also needs to align its cities strategy to build on successful city region clusters of tech business. Cloud technologies allow digital businesses to start and grow at locations convenient to the entrepreneur.

TechCity's 2015 Tech Nation report states 98 per cent of technology firms are small businesses. 50 per cent of UK tech companies were formed after 2008 and 51 per cent of tech businesses are in 21 clusters, including, Glasgow, Edinburgh and Dundee which rank 13th, 14th and 21st³. Success factors include low cost, flexible work space/incubators, access to start-up funding and skilled people and good connectivity.

Microsoft will continue to promote global start-up programmes including Biz Spark (software, cloud services and tech support) and Microsoft Ventures (mentoring) to start-ups and strengthen partnerships with Universities, development agencies and entrepreneurial initiatives such as ScotEdge and business incubators.

¹ http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1875893

² <http://www.hie.co.uk/business-support/entrepreneurship/mit-reap>

³ <http://www.innovate.scot/best-incubators-in-scotland>

Expand Digital Public Services to improve Public Sector productivity

The recent OECD report¹ on the UK identified the need to improve productivity in public services, particularly health and education services – with public service reform contributing to increasing economic growth and prosperity. Increased digital delivery of public services saves Government money, delivering a more efficient service for the public pound. Moreover, digital technologies enable public services to be offered on a more personalised basis, building a deep insight into the multiple needs of a single citizen or business. At a Scottish level this need for improvement was identified back in 2010 by Audit Scotland.²

The slow adoption of digital public services by Scottish Government and the public sector is one reason why public sector productivity is lower than it should be. It is also likely to be a factor in the slower than expected adoption of cloud services by Scottish businesses, especially the smaller businesses. In contrast in 2013, the UK Government announced its decision to introduce the “Cloud First” policy, which stipulated that all central Government departments – as well as the wider public sector – should consider and evaluate potential cloud solutions as a first option before they consider other solutions. The Scottish Government should accelerate the provision of digital public services and by demonstrating a preference for cloud-based

digital public services it will be able to deliver digital public services more collaboratively. But it will also encourage business to understand the benefits, thereby improving productivity both in Scottish public services and in Scottish businesses over time.

Microsoft proposes that Scottish Government...

5. Develops Cloud First Digital Public Services success criteria

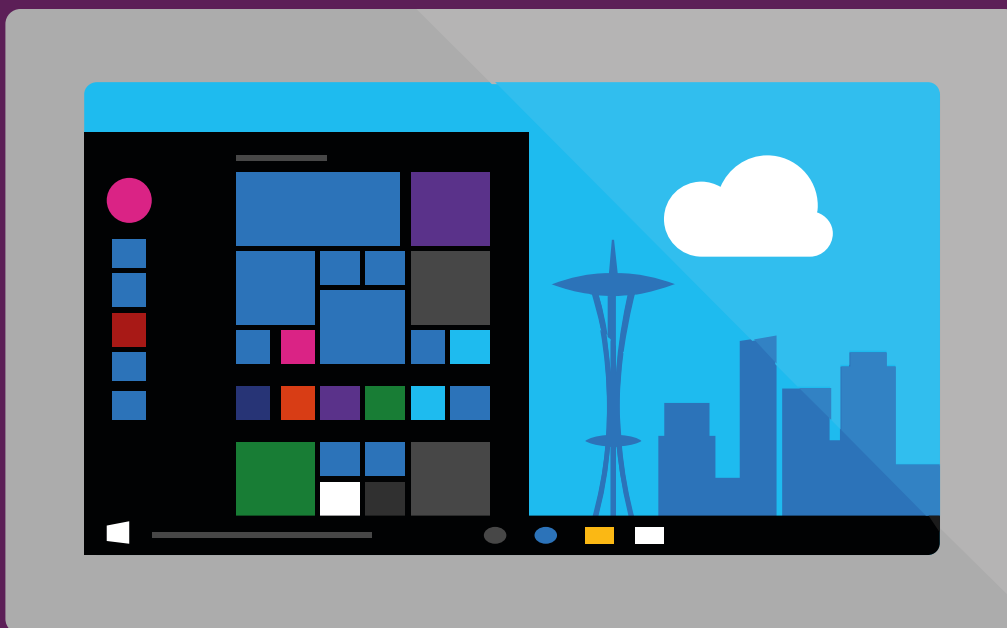
A Cloud First approach will deliver considerable savings not only within the total Scottish public sector IT budget but also within the services that the digital technologies support, as new and more efficient ways of engaging with citizens are found.

However, the knowledge gained from the data provided by service users, service suppliers and the commissioning bodies enables Government to gain insight into service trends and user behaviour including levels of satisfaction. It is essential that Government responds to growing consumer expectations to drive continuous improvement, benchmark performance by service providers and make available on demand transparent performance measures across all public services.

¹ <http://www.oecd.org/unitedkingdom/economic-survey-united-kingdom.htm>

² http://www.audit-scotland.gov.uk/docs/central/2010/nr_100225_improving_efficiency.pdf

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Expand Digital Public Services

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6. Appoint a Chief Digital Officer to the Leadership Board

The enhanced focus will help to set priorities and ensure the engagement and coordination of relevant agencies across all levels of Government in pursuing the digital Government agenda.

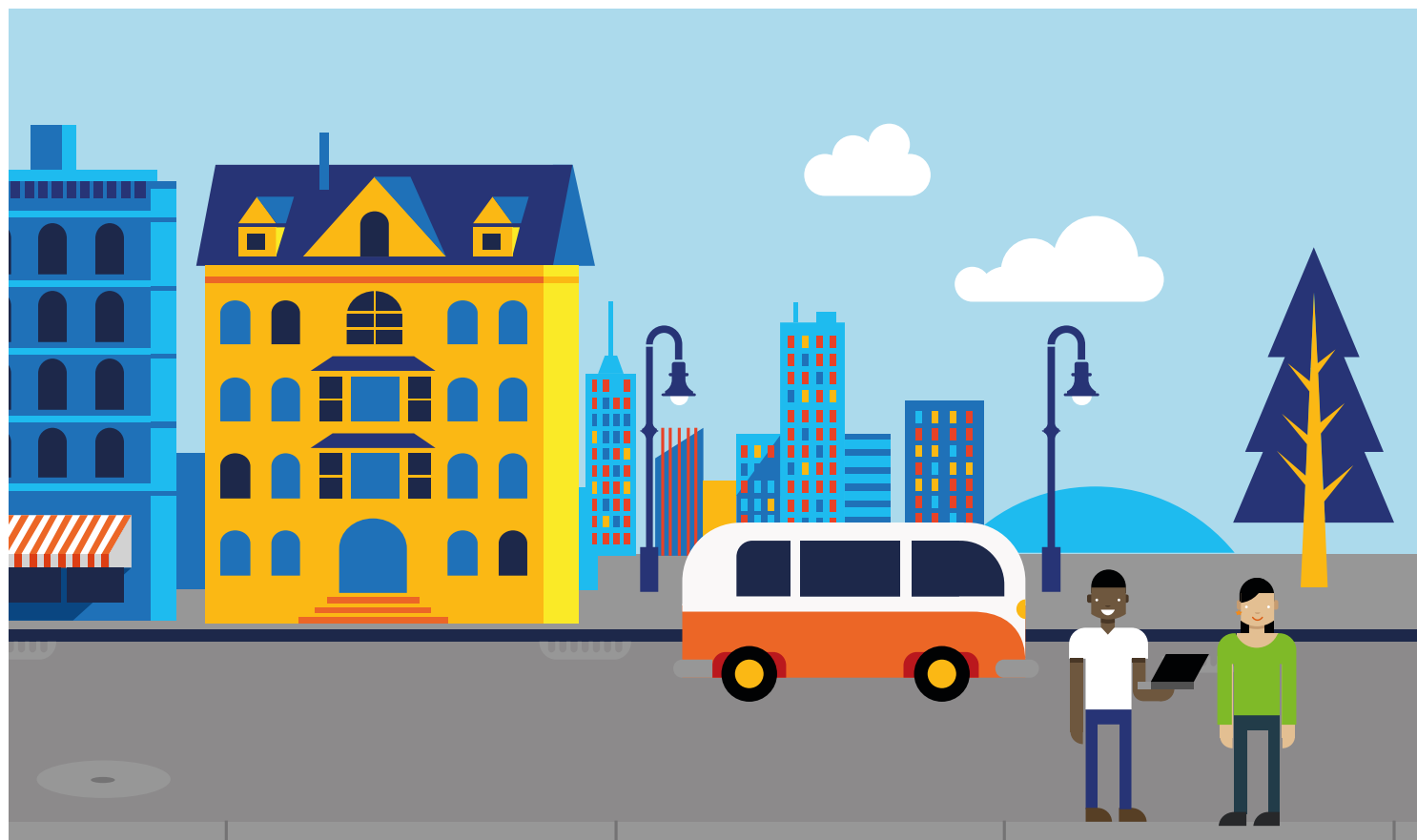
7. Level the playing field for SMEs in Government Procurement of ICT and Digital Services

Scottish public sector spent £1.4 billion in 2010 on ICT Technology and Services. It is estimated by Deloitte within the Scottish Futures Trust report that Government could save up to £230 million each year across Scottish public services if it mandated greater collaboration and greater combined usage of cloud technologies. The creation of a Scottish digital ecosystem, combining infrastructure, services and standards that are available and reusable across the public sector could not only reduce cost but ensure consistent quality and facilitate interoperability. This in turn drives collaboration and knowledge sharing; for example, a single client view of a citizen requiring a significant number of health and social care interventions. Frequently the small business is more agile in developing local solutions whilst needing local proof of concept to grow its international footprint.

8. Increases Community Benefit weighting when evaluating tender submissions

Microsoft believes passionately that the role of technology is to empower individuals and organisations to do more, to achieve more. Our partners share that philosophy and welcome the inclusion of community benefit clauses in tender documents. It seems only right that major public contracts and public money should benefit the local community where the service is being delivered. Such community benefits are best related to the expertise of the organisations tendering and aligned to the particular needs of the organisation buying the service or its clients.

The tremendous success of the Microsoft Modern Apprentice programme developed by NVT, a Microsoft partner, after winning a major IT contract to support the recent staging of the Commonwealth Games in Glasgow is testament to that shared belief in bringing additional, relevant benefit to the community when delivering a contract. Likewise, the creation of 200 new jobs and the availability of 60 Modern Apprentice places that CGI has announced in Edinburgh after their recent seven-year ICT outsourcing contract was confirmed by City of Edinburgh Council.



Develop Digital Skills and Education



“Our passion is to enable people to thrive in this mobile-first and cloud-first world.”

Satya Nadella, CEO, Microsoft

No country will prosper in the 21st century without a growing educated, skilled workforce, who also have a broad appreciation of digital skills. And yet in the recent 2014 Survey on Scotland's Digital Economy only 26 per cent of businesses stated that they are doing something to develop their current employees' digital technology skills – by providing training for example – while only 18 per cent stated that they are planning to do this in the future. Furthermore, 54 per cent stated that they were not currently taking action to develop their employees' digital skills and had no plans to do so in the future.

Despite these findings, there is a desire among a majority of businesses that already use digital technologies to further develop their usage.

The report found¹:

- ▶ 77% of businesses wanted to increase their usage of digital technologies
- ▶ Over 70% of businesses with a website or using social media respectively were hoping to develop or use more of the technology in question
- ▶ 60% were hoping to develop their usage of cloud computing, and 58% wanted to expand their use of mobile internet and technologies
- ▶ 46% of businesses using management software were hoping to develop or increase their use of this type of technology

¹ Source: Digital Economy Business Survey 2014

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Develop Digital Skills and Education

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Microsoft is passionate about “Closing the Divide”. The planet has more young people than ever before but youth unemployment is double the rate of the adult population and is on course to reach 12.8 per cent by 2018 according to a 2013 International Labour Organisation study.

Scotland as a world-leading digital nation could enable the creation of an additional 175,000 Scottish jobs by 2030, a six per cent increase in overall employment rates. Increased demand for labour in a more productive digital environment could also boost earnings by £2,000 per worker. With Modern Apprentices, Microsoft is proud of the partnership forged between Government, Microsoft and its partners during this Parliament to deliver 2,016 IT Modern Apprentice roles by 2016, achieved ahead of plan in 2015 at nearly 2,300 – yet we can all do much more.

Microsoft proposes that Scottish Government...

9. Develops specific provision for Digital Skills certifications across all Growth Sectors

The extra value of recognised qualifications is well understood by employers of all sizes. An approach that builds on the early success of the Digital Skills Action Plan would be the formal creation of a Digital Skills partnership for each Growth Sector. These partnerships would enable Microsoft and others to leverage their digital education and skills programmes in Scotland to make a direct contribution to employability, including an expanded Modern Apprentice programme, the IT Academy Programme and Teacher Education programmes.

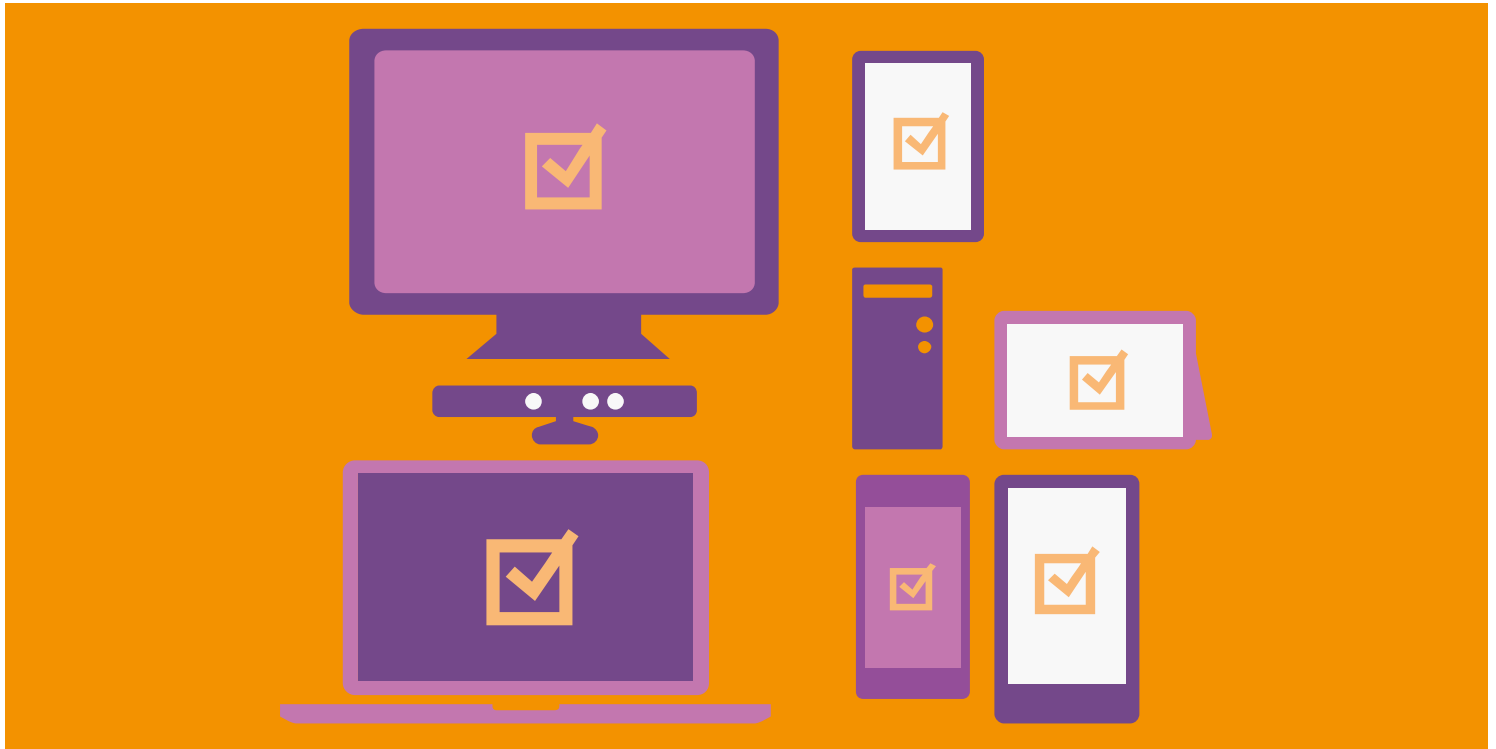
Across all Growth Sectors, the Digital Skills partnerships will:

- ▶ Agree and make available a core set of digital skills qualifications from primary through secondary and into higher education
- ▶ Seek agreement between Government, its agency, Skills Development Scotland, Education partners and industry bodies, establishing a flexible yet mandatory framework for achieving a minimum level of workplace focused digital skills within secondary school or college
- ▶ Develop further joint initiatives to address gender imbalance within the technology industry
- ▶ Develop targeted solutions to support an attributable reduction in youth unemployment, working in partnership with Young Scot, Project Scotland and other third sector partners to reach school leavers who require additional support to gain employment

Microsoft is incredibly proud of its contribution to the education sector worldwide and Scotland is no exception. New generations of students see their access to technology anytime anywhere as a right, be it for social, educational or professional purposes. Universities and colleges have embraced technology and made available an online approach to learning, teaching and sector-wide communication including access to a range of collaboration tools.



Develop Digital Education



Using digital technologies provides the flexibility to encourage learning to take place anytime, anywhere and on any device. Microsoft is committed to shaping and creating a thriving digital learning culture at home as well as in school.

Glow is a world-class national intranet for schools, a cloud-based platform incorporating Office 365 and with free access to Office productivity tools for the majority of Scottish students. The Glow digital environment for learning is available across Scotland and supports teachers to deliver digitally enabled teaching outcomes from age

three to eighteen. Glow is offered by the Scottish Government to all local authority schools and provides a powerful digital learning solution which supports the delivery of Curriculum for Excellence. Microsoft is proud to be a long-term partner in digital education. Continuing innovation in the platform and improved access to devices has lifted usage by both teachers and pupils.

The Scottish Futures Trust report highlighted what success would look like by 2030 (see Figure 3).

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Figure 3 What success would look like



Anytime Anywhere Learning

Every user has and can use a personal device with access to the internet



1 to 1 device ratio

Continuous, customised learning



Digital Skills requirement

Embedded within Teacher Training and Teacher CPD



Digital Education Strategy

Utilises technology to deliver personalised learning for hard to reach and disenfranchised pupils

The Microsoft Digital Blueprint

Develop Digital Education

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Microsoft proposes that Scottish Government...

10. Includes a specific commitment to use of education technologies within the Scotland Performs scorecard, utilising the broad principles outlined above in the Scottish Futures Trust report

11. Includes an agreed set of Digital Education aspirations within the Digital Nation Charter

12. Benchmarks the impact of continued investment in digital technologies to improve learning and teaching outcomes against an agreed grouping of leading digital nations

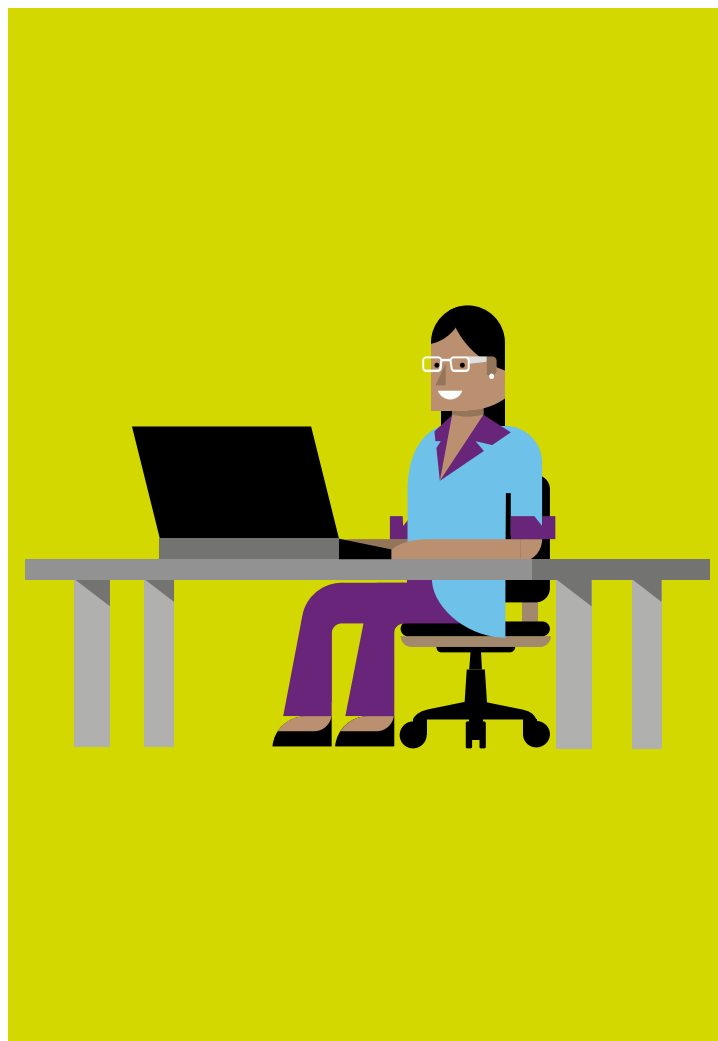
13. Commits to universal provision of Computer Science qualifications across all schools

Microsoft will continue to invest in Scottish education to maximise the return on investment in Scotland-wide provision of digital tools to improve learning and teaching outcomes for all pupils and teachers, irrespective of location or subject. However, Microsoft recognises also that there is a shortage of digital skills in the Scottish workplace, indeed globally.

It is therefore vital that Scottish Government addresses the specific training and employment opportunity presented by much greater investment in computer science teaching. The Scottish Government needs urgently to align the proposed Growth Sector Digital Skills Action Plans with a renewed emphasis on investment in the teaching of computer science in all Scottish schools, recruitment of additional specialised teaching staff, and increased funding for current computer science initiatives.

Microsoft knows that investment in young people is vital to deliver future prosperity. Microsoft's own investments will include expanding the Showcase Schools programme, continued growth in the Innovative Educator programme for teachers and encouraging Scottish schools, teachers and pupils to participate in a range of global technology related skills development programmes and challenge programmes.

The Showcase Schools programme has demonstrated that joint investment by the involved parties can transform the education experience for teachers and pupils alike. Showcase Schools are a leadership-focused initiative to highlight innovative leadership and teaching across globally recognised schools. Showcase School leadership teams are part of a professional community that recognises and amplifies the use of technology to drive school-wide transformation and efficiencies. We want Scottish schools to be ambitious and, working in partnership with Scottish local authorities and Education Scotland, we want to have one Showcase School in every local authority within three years, 32 in total.



Our Microsoft Innovative Educator (MIE) programme is a parallel programme, identifying and supporting volunteer teacher ambassadors who are passionate about both teaching and the role of technology in supporting their pupil experience. We recruited a small number of teachers, learning from a successful pilot with Renfrewshire schools, who have done a fantastic job sharing ideas and supporting other teachers. We now have an ambition to have 300 Innovative Educators in place across Scotland by 2017, and in line with Scotland's Digital Nation ambition, we want to be supporting one in every school across Scotland by 2020, which would be around 2,600 in total. We cannot do that alone of course and we need everyone to sign up to achieving such goals as it is only through strong partnerships that we can succeed together.

Grow Digital Health

Greater investment in Digital Health will get Scotland's population healthier and fitter and bring huge cost savings to enable reinvestment. Deloitte's analysis prepared for the Scottish Futures Trust indicates the scale of saving possible and the practical benefits to the citizen if Scotland commits to becoming a leading nation in digital health (see Figure 4).

We also need to look at the huge opportunity that the scaled-up collection of data gives health service planners. Microsoft has invested hugely in being on the leading edge of data science. We are already working with major private Scotland headquartered companies to harness the power of data being gathered globally in other sectors. Scottish Universities have long recognised the significance of the data revolution in predicting future trends and in allocating resources. The Scottish Government has encouraged public services providers to understand the benefits and Microsoft welcomes the creation of The Data Lab as a focal point for collaboration. In truth the process of collating large amounts of statistical information – or data – and packaging it to reveal wider patterns or insights which could in turn save lives, reduce waiting times, or simply save money has been around in healthcare since Florence Nightingale. Combined with today's computing and networking power, "big data" can deliver a revolution in Scotland's health, care and wellbeing services. Moreover the data is not only for the benefit of the medical profession. It is a revolution that has been too long in coming in Scotland, to the detriment of Scotland's citizens and we must all do more to encourage more rapid progress.

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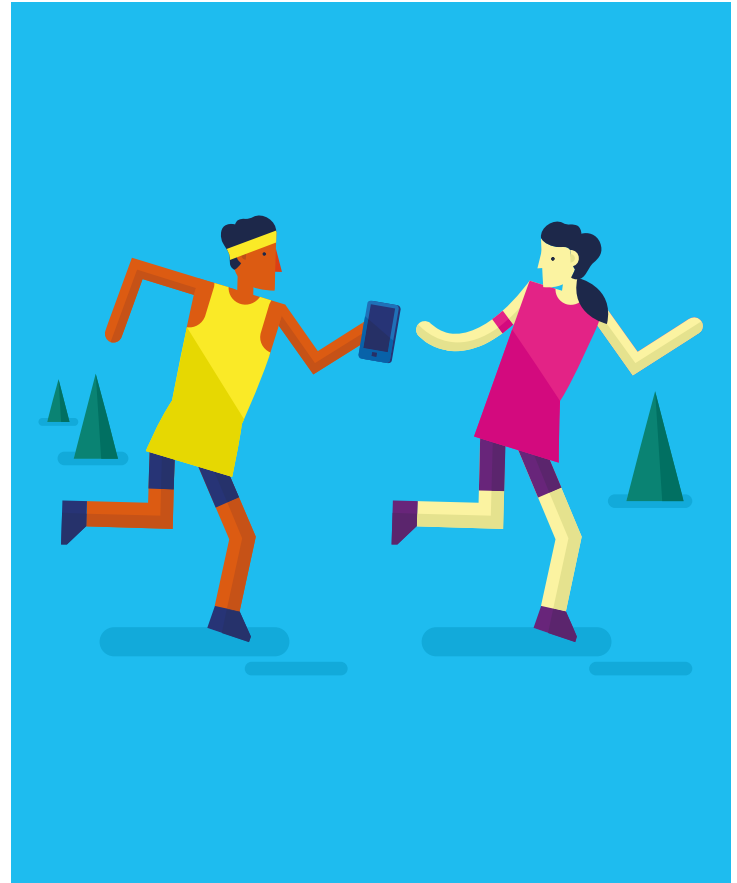


Figure 4 Cost saving impacts of enhanced digitalisation in healthcare

Activity	£££ Cost saving	Citizen benefit
Online pre-assessment in primary care	Telephone or online assessment can save around 46,000 GP hours per week, leading to annual incremental savings of £130 million	Saves time for the citizen and the GP, alerts GP more quickly to urgent referrals
Remote follow-up in secondary care	Remote follow-up in secondary care can save around 2.5m in in-person appointments, leading to additional annual savings of £48m	Huge benefit to those living in remote and rural communities, and for those patients who may not drive and need to rely on public transport
Telemonitoring for patients with chronic illness	Telemedicine can lead to a 15 per cent reduction in hospital admissions for chronic illness, amounting to annual incremental savings of approximately £8m	Any reduction in hospital admissions reduces pressure on acute services, freeing resources for urgent interventions
Clinical Decision Support tools	By reducing redundant tests, clinical decision support tools can reduce laboratory test cost by an incremental £80m annually	More immediate interaction between patient and doctor, earlier diagnosis as not waiting for laboratory test results unless essential
Online appointment booking in primary care	Online appointment booking can save 20,000 hours per week spent during in-person booking annually, which can lead to incremental savings of £8m	Online booking is more convenient for the patient, gives the patient a reminder on their phone, is more flexible and can be shared if appropriate

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Grow Digital Health

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Figure 5 Impact of digitalisation on health outcomes

Scenario: Seamless interoperability between different IT systems and availability of remote consultation facilities for everyone who needs them.

Health literacy and illness protection	<ul style="list-style-type: none">▶ Almost all adults have a high level of health literacy, reflecting high internet and device penetration levels.▶ Improved health literacy could be associated with an incremental 1,800 lives saved in 2030.▶ Almost everyone uses health applications on their mobiles. Fully customised health data and treatment plans are available to patients.
Electronic systems and patient experience	A fully interoperable patient management system is in place, with advanced functionalities like clinical decision support tools. These assist physicians in prescribing the best course of treatment.
Telemedicine and health outcomes	Almost everyone who can benefit from telemedicine has access to it. More than 4,500 additional lives could be saved due to telemedicine among those with chronic disease in 2030

Source: Deloitte analysis for Scottish Futures Trust: http://www.scottishfuturestrust.org.uk/files/publications/Impact_of_digitalisation_in_Scotland.pdf

In today's connected Cloud First Mobile First world, health professionals, care workers, families and citizens are all increasingly able to collect significant amounts of data, including medical data, using fitness trackers, Microsoft Band, smart watches, monitors and a range of other health devices.

Such an approach can improve individual health, improve response times when professional intervention is required and deliver a more personal service at reduced costs – an imperative to the health service, especially in this era of austerity. A move to cloud services not only provides the wherewithal for organisations to reduce costly overheads associated with the current methods of data storage and management, but also opens that information up to wider application.

E-health can also lead to improved outcomes such as reduced mortality or fewer hospital admissions. For example, the use of telemedicine is currently limited, with 100,000 people having access to these services¹. We need to accelerate towards the scenario described in Figure 5 above. Of course, it saves money which can be reinvested in care, but just as importantly, it saves lives.

Microsoft proposes that Scottish Government...

14. Includes a specific commitment to tracking access to and usage of Digital Health services within the Scotland Performs scorecard

15. Includes an agreed set of Digital Health outcomes within the Digital Nation Charter

16. Benchmarks the impact of continued investment in digital technologies, including greater use of data analytics, to improve Health outcomes against an agreed grouping of leading digital nations.

¹ Source: Reshaping Care for Older People, Audit Scotland, 2014



Conclusion

Decisions taken in the next Parliament, and the priorities chosen, will determine if Scotland is prepared to seize the opportunity to become a leading Digital Nation by 2030 – an achievement that will benefit every citizen and business in Scotland.

However, real success will be achieved only in the longer term – 15 years or more. Scotland has made progress in connectivity, in skills and some businesses have seen the benefit in “going digital”.

All who are involved in delivering the vision need to be able to demonstrate real leadership, to inspire Scottish citizens and businesses to participate. Continuing improvement of Scotland’s digital infrastructure is as important today as investment in sewerage systems was in the Victorian era.

We can look around us for inspiration and vision that has driven local economic development – The Kelpies in Falkirk, the Clyde riverside

redevelopment in Glasgow and the reinvention of Dundee’s waterfront with the arrival of the V&A alongside RRS Discovery.

Scotland has every reason to be proud of its heritage and history. However, just as Dundee and Glasgow have reinvented themselves in the face of huge global pressures on their once traditional industries of jute production or shipbuilding, Scotland can seize the opportunity to become a truly great Digital Nation.

The successful creation of a world leading Digital Nation within 15 years is an achievement that would, in the 21st century, define a nation for generations to come.

Are you ready to play your part, to take on that challenge, to develop a shared vision? Or ready to, as Andrew Carnegie said, “Achieve! Achieve!”?

Microsoft, and our partners, are ready.



Due to open in 2018, V&A Museum of Design Dundee will be an international centre for design innovation and is part of a broader £1bn, 30 year redevelopment designed to reconnect the city with its waterfront. The museum is sited next to RRS Discovery, Scott's Antarctic research vessel.

Microsoft is a world-wide leader in providing devices, services and solutions to help people and business realise their full potential. Microsoft is committed to working with the democratically elected representatives of the countries in which it operates and therefore appreciates the opportunity to present its Digital Blueprint for Scotland.

We welcome debate and engagement with representative organisations from public, private and third sector and are proud of our positive and growing impact on Scotland’s economy.

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The opinions and views in this Blueprint are designed to stimulate debate that will support Scotland's quest to be a leading Digital Nation and do not necessarily represent the views of the Microsoft Corporation

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