

Digital Vision for Wales



Trusted partner for your Digital Journey

Atos

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Gavin Thomson, Senior Vice President, Wales, Scotland and Ireland, Atos

Digital Vision for Wales

The digital era offers great opportunity for the people of Wales: to create competitive advantage in today's global economy and to build a more inclusive, better-connected and stronger society.

And these are exciting times. Outside of London, Wales has the fastest-growing digital economy in Britain. New digital enterprises are being formed and there are world-class examples of innovation and digital leadership here on our doorstep.

Of course, there are challenges. Still more needs to be done to ensure digital reach and keep building skills and awareness in our communities. Yet research proves that the appetite is there - especially among Wales' discerning, and demanding, service users.

Now is the time to close the gap by exploiting a wealth of new digital capabilities. The IT Sector in Wales employs around 24,000 people and is predicted to add around £1.5 billion to the economy over the next five years. The Welsh Government's aspirations to be a leading Digital Nation are achievable through economic development and by transforming both the efficiency and effectiveness of public services through digital innovation.

At Atos, we're very aware of the extraordinary times we're living through. In parallel with Wales, we've created a Digital Vision for Scotland, for UK Government, and for London. Each vision is different, reflecting particular challenges and opportunities. This common message across these papers is that digital offers huge opportunity to enhance citizens' lives and enabling organisations to deliver their key priorities.

Here in Wales, my team and I look forward to helping to meet those challenges. Atos has a unique perspective on the opportunities that digital change puts in the hands of our customers - and our customers' customers, in this case Welsh citizens. We're committed to working with the Welsh Government and other partners to make this Digital Vision a reality.

A handwritten signature in black ink, appearing to read 'G. Thomson', written in a cursive style.



Wales at the heart

3.09m

Wales population – June 2016¹

3.19m

Wales population – estimate 2024²

53%

of the Welsh population speak Welsh daily³

84%

of households have internet access⁴

38%

get their news from the Internet⁵

101m

journeys a year via local buses⁶

582,000

of households connected to the internet via The Superfast Cymru programme⁷



53%

say their council provides high quality services⁸

83%

satisfied with the council's recycling collection⁹

33%

of households have a smart TV¹⁰

90%

of premises in Wales now have outdoor 4G coverage¹¹

65%

own and use a smartphone¹²

6.6/10

satisfied with education¹³

17.8 hours

on average spent on the internet per person per week¹⁴

¹ @ June 2016 (<http://stats.wales.gov.wales>)

² @End 2015 (www.gov.wales/nationalsurvey)

³ @End 2015 (www.gov.wales/nationalsurvey)

⁴ @ Aug 2016 (<https://www.ofcom.org.uk/>)

⁵ @End 2015 (www.gov.wales/nationalsurvey)

⁶ @ Jan 2016 (<http://gov.wales/docs/statistics/2016>)

⁷ @ Aug 2016 (<http://www.ofcom.org.uk/cm/wales>)

⁸ @End 2015 (www.gov.wales/nationalsurvey)

⁹ @End 2015 (www.gov.wales/nationalsurvey)

¹⁰ @Aug 2016 (<http://www.ofcom.org.uk/cm/wales>)

¹¹ @Aug 2016 (<http://www.ofcom.org.uk/cm/wales>)

¹² @Aug 2016 (<http://www.ofcom.org.uk/cm/wales>)

¹³ @End 2015 (www.gov.wales/nationalsurvey)

¹⁴ @Aug 2016 (<http://www.ofcom.org.uk/cm/wales>)





A question of leadership



At around three million, the population of Wales is comparable to that of Birmingham. So from that perspective, how difficult could it be to implement an over-arching digital system to improve the lives of all Welsh citizens? Two major public services (Healthcare and Social Care) could be linked together. Similarly, all Welsh businesses could be connected via one hub to streamline access to public sector procurement and help gather and store Welsh national statistics. Considering that there are now over 20 social media apps with over 100 million monthly users, a target of three million users seems reasonable. Yet, as is so often the case, the problem isn't the technology, it's the people.

For companies operating in fast-moving markets, change is essential. But public services have a different set of imperatives which often separate policy from implementation and foster an aversion to risk that hampers ambition. So what's to be done?

We all know change is difficult and that the pressures on public services are intense. As the need to realise the benefits of new technologies becomes more urgent, the temptation will be to make short-term decisions on procurement, outsourcing or, in some cases, extending existing technologies into areas where they don't fit. A longer, more considered view always requires courage - and the starting point for that will always be leadership.

In strong contrast to Birmingham, the Welsh public sector has multiple silos and variables. We have eight Health Boards, 22 Local Authorities and four Police Forces. So while there are huge opportunities to share services and data, making significant savings and learn from each other, there is no policy or central governing body to lead it.

Public service leaders and decision-makers need to be brave and look up from the day-to-day. That bravery may involve embarking on a year-long leadership development programme that includes building a new digital team. Or it may be to halt progress on an internal IT project and find other organisations to collaborate with around what you have in common: the needs of the citizens you serve.

But is that possible in the face of daily pressures? It's a tough call.







A smarter Wales: game-changers for Government



The fifth Welsh Assembly was elected at a time of great change and opportunity for Wales. The challenges of ongoing devolution combined with the rising expectations of Welsh taxpayers are creating demands that won't easily be met through 'traditional' means. Against a backdrop of continuing austerity and an ageing population, it's clear that new game-changing approaches are needed.

In this context, reforming the delivery of public services through digital transformation becomes increasingly critical. The Welsh Government has an opportunity to lead by example and create the foundations for local authorities, education and health services to follow suit. The key steps to progress include:

- defining coherent strategies and policies to encourage the growth of digital services
- establishing shared service models and technology platforms that offer more flexibility and efficiency

- adopting 'cloud-first' thinking and agile methodologies where appropriate
- incentivising the development of digital skills wherever possible.

Above all, change must be citizen-centred and driven by the need to improve services, address problems and create opportunities for the citizens of Wales.

The digital revolution has the power to change lives and strengthen our society, but won't be fully effective if it is constrained by 'old-world' technologies, approaches and ideas. That's why the Welsh Government, under the scrutiny of the Assembly, must challenge itself to be faster, bolder and more innovative in finding new ways to deliver the benefits of digital transformation and other public sector bodies must collaborate and commit themselves to follow suit.

How do Welsh citizens and consumers behave in comparison to the rest of the British Isles?

Demanding digital: Wales in focus

Wales is riding high on a digital wave. Outside of London, Wales has the fastest growing digital economy in Britain, with the nation's number of digital businesses increasing by almost 10% in 2015 according to a recent survey.

Key findings for 'Demanding Digital: Wales in focus' are taken from our Atos UK wide independently commissioned report, Demanding Digital: The Rise of the Digitally Discerning Consumer, where we asked 3,150 consumers and citizens to reveal what drives them to digital services and, crucially, what causes them to walk away and disengage. In the full report we explore consumers' and citizens' attitudes towards and experiences of digital services across ten public and private sector markets.

Download the full report: uk.atos.net/demanding-digital

The future outlook is bright, too. While the overall number of Welsh firms specialising in digital technology continues to track behind the rest of the UK, expectations are high that the Celtic nation's current boom will continue. Plans to develop an "internet coast" along the Swansea Bay over the next 20 years point to a long-term future for Wales' burgeoning digital economy.

If Welsh enterprises are waking up to the benefits of digital business, so too are the nation's citizens and consumers. Almost 20% of Welsh respondents in our survey say that they rapaciously seek out new digital services and applications. This is one of the largest geographical responses - ahead of London and third only to the Midlands and South East of England.

This healthy appetite seems to translate into a more scrupulous attitude towards the long-term appeal of digital services, too. When compared to overall responses around the factors that drive consumers away from digital services, the threat of their data being stolen or a service becoming more complex gives Welsh respondents less cause for concern, while they are more likely than average to resent worsening performance (46% against a national average of 44%) or a lack of long-term benefits (38% / 35%).



Even amongst those Welsh respondents who proactively shun digital services (those identifying in the “resistant” group) they are less likely than the average UK wide resistant consumer to have issues with factors such as:

Wales	UK	
17%	22%	security
8%	18%	reliability
13%	18%	overall distaste for digital.

Instead they are more likely to think that digital services are more complex than:

Wales	UK	
54%	42%	talking to a real person
25%	22%	that they're too slow
21%	18%	that they don't see the benefit.

Asked what factors might draw them to digital services, reluctant Welsh respondents were more likely than average to suggest that they would need a guarantee that the digital route would be faster, that it would be less complicated or that it would frequently live up to their expectations. If the overall response to our research demonstrated that today's consumer is digitally discerning and highly demanding, this resistant Welsh group serves almost as a replica in miniature of that larger picture.

But it isn't only those who shy away from digital that serve as an exemplar for the wider survey - the trend continues when we look at the broader Welsh audience. Receptive Welsh respondents are more likely than the average consumer to suggest that a complicated digital service is the primary reason to drive them away, while their rapacious countrymen said the same of a slow or clunky service.

Welsh citizens and consumers have one thing in common: they are demanding and discerning in equal measure about what digital needs to offer them.



Improving local democracy and delivery: there's an app for that?



From the transactional to the social, our changing lives are increasingly lived online. The landscape for local government services is changing too.

Local councils deliver services which affect communities every day of their lives. Increasingly, those communities want to interact with their council and shape their use of local services online.

We're entering a world of boundless possibility: one in which constantly evolving technology has a crucial role to play in tackling the very 'real world' issues of increasingly constrained local government finances, together with a huge growth in demand for local public services.

Our councils are responding. Many have already taken steps to deliver more accessible websites, and to shift key transactions online. Recent research suggests that local government as a whole in the UK expects to deliver more than two-thirds of local public services online by 2019.

From reporting service issues and managing council tax payments, to the live streaming of council meetings and decision-making processes, our communities are being offered an increasing array of choices on how to engage with their local council online.

The challenge for local government in Wales is to evolve this further. Yes, we must harness digital technology to improve the efficiency and responsiveness of our local services. But we must also harvest it for all it is worth to protect, reinvigorate and improve the local democratic process itself.

Our councils are architects of their local environment, and successful transformation of public services in Wales will rely heavily on those services becoming more responsive to community needs and delivered by councils or their partners at a local level.

From more effective demand management, to an increased use of data analytics to evaluate how local people actually use and move around their local services, digital technology offers endless opportunities to ensure local services are actively shaped by local priorities and needs.

The question of digital innovation is not just one of improved service delivery, but something far more fundamental. It is a question of community empowerment and how emerging technology can be used to 'bridge the gap' and help tackle a stark and growing democratic deficit.

Through constant innovation our local councils have an opportunity, and a duty, to harness digital technology to empower their communities and offer them an ever-increasing say on how local public services are delivered in Wales.







Destination digital: Wales' transport network

Each of us makes, on average, around 1,000 journeys a year in Wales and 300,000 people commute across a local authority boundary to get to work. Inevitably some of those journeys will be disrupted by unplanned events on the roads or public transport networks. So imagine being connected, while travelling, to your own personal 'digital ecosystem'. Wouldn't you feel more reassured and empowered with constant access to reliable real-time information through whatever device you choose?

Increasingly, infrastructure providers and transport operators can harness digital technology to inform and support travellers at every key stage of their postcode-to-postcode journey. From station and terminus design, to roads and railways, the challenges are similar: integration between modes and facilities to better inform choice and decision-making.

On its own, technology is not enough. Data must be shared in a common format to form a 'single version of the truth' and business processes must change to put the traveller at the heart. Looking forward, the capabilities of consumer digital technologies will only increase and the 'show me digital' generation will demand more and more services that are relevant to their journey.

In terms of how this could apply to the future transport network in Wales, the expectation is that:

- smart mobile device ticketing will be available on all bus and rail services across the nation, including facilities for contactless card payments
- travellers on the planned new South Wales and possibly North Wales Metro systems will want to plan, pay for and change their journeys through one integrated and mobile digital system
- active travel will be integrated into the new digital systems, with easy access to information about cycling and walking routes
- journey information will be recorded to ensure that the network is always improved to meet passenger needs (while keeping digital transactions anonymous)
- rail and bus passengers will expect to use their time effectively to work or plan their social and family times, requiring good connectivity and power sources.

With the planned improvements to the main road network within the National Transport Plan, (such as the M4 relief road and improvements to the A55, A470 and A465) technology will increasingly play a key role in tackling congestion and addressing safety concerns; for example, by controlling the flow and speed of traffic and providing better information for motorists. There will be an expectation that technology is a central feature in the design of infrastructure.

Intelligent and connected assets will increasingly become the norm. From sensors that capture air pollution levels to fully autonomous vehicles, the Internet of Things has the potential to revolutionise the way we travel, and the information we receive along the way.

Could Wales pioneer the introduction of ideas now being developed by Dutch innovators of 'smart highways' - lanes that can recognise and then charge electric cars, glow-in-the-dark road surfaces and cycle lanes, interactive 'use when needed' road lighting, and road signs that automatically respond to specific traffic situations?

While the destination looks very desirable, the journey is all about how we access content, pay for services and go from A to B in a best-value and unhindered way. If strategies for new assets and passenger services fail to recognise the value of new digital capabilities, these major opportunities for the transport sector could be missed.



Connected Care: a vision for the future

Digital transformation is now essential if the NHS in Wales is to achieve the step change needed to fill the current gaps in health, care, quality, funding and efficiency.

Across Wales, there is still a need for major investment in electronic patient record platforms; the focus for 2016 and beyond will be on how to realise the value of patient data to improve the health of our communities. Health Boards will need to share patient data efficiently and securely with GPs and community health providers, third sector care providers and local authorities. This is essential for creating new models of care and longitudinal pathways to improve patient experience and health outcomes. A key theme for the next decade will be data interoperability and healthcare analytics.

Atos envisions a new health economy that delivers Connected Care, where patients, carers and providers are supported by integrated systems that empower them to make the right choices; where interactions are immediate, simple, intuitive, efficient; where there is trust in the security, reliability and integrity of information; where digital services transform healthcare delivery and open up a new dynamic health economy for citizens. In an everything-connected world, real-time recording of events will be the norm. We see a world of early self-diagnostics and disease prevention, availability of integrated real-time data across patient pathways, and routine analysis of Big Data to identify risk and deliver proactive personalised care.

Connected Care in action

By 2020 patients, their carers and professionals will be connected through digital platforms and tools. They will be informed and empowered to use resources effectively and make the right choices for the patient in real-time.

Helping a citizen to monitor her own health and well-being



The citizen's wearable monitor [1] sends digital observations that are of potential concern to her pre-agreed [3] list of clinical providers.



The citizen has already given digital consent [2] to use these clinical observations. They are run through the Virtual Doctor learning algorithm [4], which continuously augments its learning from the stream of normal and abnormal data.



The Virtual Doctor has concluded that there is a sign of a trend that needs more detailed investigation based on the citizen's genomic data [5].



The citizen's unified communications [6] have already established the nearest diagnostic centre with appointments available to match her diary.

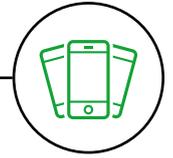


Because of her monitored positive living index [7], she doesn't need a pre-approval for this expenditure from her Clinical Commissioning Group, which has analysed her as a low risk for health investments.



The diagnostics centre invoices for the work using the digital certificate authorisation [8] she carries on her smartphone.

1. Wearable monitoring devices connected to an economy of data service
2. Digital consent for use of Person Identifiable Data
3. Loyalty agreements between citizens and healthcare providers
4. Virtual Doctor, using learning algorithms and data volumes from Internet of Things data feeds
5. Genomic Big Data processing and analytics
6. Unified communications and presence monitoring to identify geo-locations and integrated appointment scheduling
7. Well-being risk stratification based on lifestyle monitoring and health markers
8. Near field communication to transmit the digital certificate of personal expenditure.



How can local authorities embrace digital?



A survey by PricewaterhouseCoopers in early 2016 found that over 80% of UK local authority CEOs think it likely that some councils will fail to deliver essential services or will get into serious financial trouble in the next three years. In such a high-risk environment, where demands continue to rise even as budgets fall, it's no longer enough to rely on delivering 'cuts' or even 'reform' to ensure that services can be maintained.

Radical, transformative change in the way that local authorities deliver services is necessary to increase public sector productivity, drive out waste and meet key policy objectives. In parallel, citizens are demanding improved quality, more information and greater integration from the services they receive locally. In Wales we face additional issues: the specific challenges of geography, demographic imbalances and the economic climate all increase demands further.

Digital innovation must play a key role in addressing these challenges, but the question is how to enable digital transformation in such a complex, high-pressure environment with so many variables. At Atos, we believe the answer lies in focusing on four core digital principles of excellence for unlocking new digital opportunities:

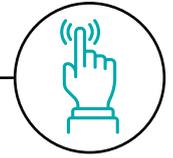
- **Focus on the Customer:** The most important digital principle is to maintain focus on the end-user, or the citizen, as the person around whom all services are designed, built and delivered. The benefits of new technology, cost savings and efficiency gains must all be clearly translated onto the citizen and be visible or measurable by them.

- **Foster Collaboration** between local authorities, health, education and emergency services to extract greater value from the data they hold by using analytics tools and comparing datasets. Working together also creates opportunities to share learning and increase the use of shared services and common technology platforms to reduce costs.

- **Be Brave** in embracing new technologies, changing approaches and challenging established thinking. This is the key to successful innovation. There is little value in investing in technology if the processes and structures that use it are not also examined, adapted and improved. This could mean anything from changes to the procurement, delivery and support of services to the wholesale transformation of service delivery via new channels or with new methods.

- **Learn Fast** by gaining insight and understanding digital possibilities, developing the skills and capabilities needed to deliver, and staying current and informed in a fast-moving world. This is also about being agile in terms of delivery and being able to adapt as new information or understanding of the requirement emerges.

In Atos we employ these principles throughout our approach to digital transformation and use them to ensure that we don't miss opportunities, allow the technology to take over or lose sight of the objectives. For local authorities, whatever their stage of digital maturity, we recommend a similar approach to changing the way organisations embrace digital thinking so that it becomes the key to the radical transformation that's now needed.



Joining up data to transform the lives of Welsh citizens



As technologies advance, there are increasing opportunities to use data as a real enabler to improve, and even save lives. Using joined-up data as a catalyst for transformation will also help to maximise value from the Welsh pound.

Reaching vulnerable people more effectively

In Gwent, for example, the data gathered, matched and analysed during the recent Multi Agency Vulnerability Intelligence Service (MAVIS) pilot has produced unprecedented insights into the needs of vulnerable Welsh citizens. When the dots are joined and a more holistic view of an individual is created, the possibilities really are life-changing and life-saving. With predictive intelligence, early intervention plans can be put in place to avoid destructive and potentially lethal patterns such as domestic abuse, child abuse and alcohol abuse. Access to real-time data on mobile devices can equip our frontline emergency services with an up-to-date holistic view of a resident before they knock on the door. And if implemented across Wales, MAVIS can provide intelligence which could save tens of millions of pounds across police forces, local authorities, and health and social care budgets.

Using data and analytics to improve health outcomes

Analysis and intelligence from joined-up data can also transform health outcomes for patients across Wales. The amount of healthcare data available has exploded and even today, NHS Health Boards are starting to

use analytics to understand demand in different parts of the community and target resources more accurately to where they're most needed. And technology is making it possible to process and understand ever-greater volumes of rich 'big data', leading to breakthroughs in medical science - and especially genomics. As computing gets more and more powerful, this rapidly growing area of research is helping healthcare systems to evolve towards the 'P4' medicine paradigm (predictive, preventive, personalised and participatory). Clinicians can spot trends in population health and use genomics to identify specific health risks in individuals and devise more personalised medicine and care regimes.

What's stopping us?

The vast volumes of rich data that are now gathered, shared and stored will only increase. With secure data-transmission capabilities, excellence in cyber security and a Wales-wide network which securely connects public sector organisations already available, there is no major technology barrier to data sharing. This is an exciting information landscape - and there are multiple opportunities for Welsh public sector organisations to use data to predict need and even prevent problems happening in the first place. This will empower organisations to save serious money and make decisions that really do put citizens at the heart.



A vision for cyber security in Wales



Cyber security vision

Public concerns about cyber security are growing: people need reassurance that organisations will safeguard and manage their personal data effectively and ethically. At the same time, if organisations are going to reap the full benefits of digital transformation, cyber security should enable - not constrain - innovation.

In terms of the cyber threat, residents and businesses in Wales face the same underlying challenges as elsewhere. Any citizen or organisation may become a target for cyber criminals, so we need to be sure that when using new technologies we don't leave ourselves open to attack. Atos is the Worldwide IT Partner for the Olympic and Paralympic Games. When Atos builds the infrastructure for each Olympic Games, we do so knowing that for the 17-day period of the competition, it will become one of the world's top cyber security targets: our communities and businesses have exposure perpetually.

Public confidence is already being tested. Local authorities elsewhere in the UK have recently suffered malicious or financially motivated cyber attacks. It is crucial that digitally enhancing infrastructures (such as utilities, transport and health) doesn't increase cyber security vulnerability. Services have to be 'secured by design' from the outset. And as the move to the cloud accelerates, there is a pressing need to ensure that cyber security capability, monitoring and response are incorporated into cloud services from the start.

Safe Digital Transformation

A high proportion of small and micro businesses operate mostly from mobile devices and use social media to advertise their products and services. Often their livelihoods depend on whatever security is provided by the Apps they use and their smart-phone provider. It is just as important that these small businesses assess their vulnerabilities to embrace new market opportunities. Atos' SME Harbour programme is designed to find emerging SMEs in the technology sector and work in partnership to grow their business with us; fundamental to that is ensuring that each SME is fully protected from the cyber threat.

At Atos, we believe in the concept of a cyber security Value Chain that enables us to enhance digital capability and increase value while also managing existing and emerging cyber security risks and staying compliant with data protection and IT Governance requirements.

Cyber security, if properly managed, can flip over from being simply a threat, to becoming an enabler and a value enhancer. For residents, commuters, retailers, public services and commercial organisations across Wales, digital relationships need to flourish within an effective Trust and Compliance regime that inherently protects against cyber threats and maintains privacy. This enables businesses to succeed and empowers citizens to engage with public services safely and effectively.



Digital education for the future

Wales' aspiration to be a Digital Nation creates challenges and opportunities for schools, colleges, universities and employers alike. Much of tomorrow's workforce must be developers, engineers, leaders and innovators of technology. This demands higher levels of ICT competence and life-long learning. And it's why the Welsh Government intends to make digital literacy the third main pillar of the curriculum, along with literacy and numeracy.

A recent independent review of ICT in Wales found that children and young people thought the current ICT curriculum was out of date and disconnected with emerging digital technologies. For teachers, a common complaint was the lack of available and one-to-one equipment - despite many millions of pounds being spent on digital technology from interactive whiteboards to tablets. Along with Professor Graham Donaldson's review of Curriculum and Assessment in Wales, both reports highlighted how digital competence will be a central part of a child's success in life.

The digital classroom needs to accommodate more innovative approaches to learning and assessment. Wales could learn from countries such as Denmark, the Netherlands and Northern Ireland who are all at different stages of developing gaming techniques for interactive learning. Parents and carers could be more engaged in their children's learning by mapping progress and celebrating achievements in partnership with teachers.

Developing digital resources to support the learning of three to nineteen-year-olds in Wales is already underway through Hwb, Wales' bilingual virtual learning environment. Could this, in time, be extended for broader community learning similar to the Open University?

Universal digital inclusion

All this is predicated on good access to fast broadband for pupils, teachers, parents and carers alike. The National Survey for Wales confirmed that 19% of the Welsh adult population do not regularly use the internet. The Government's Digital Communities Wales programme is tackling digital exclusion and supporting around 15,000 people and 400 organisations each year with training. The aim is that everyone who wants to benefit from using digital technologies can do so by 2020.

There is also a need for more digital tools. Should every child be equipped with a mobile, laptop or tablet? Should superfast broadband be available free to every learner? Or it will emerge how to use already-available resources more effectively, changing mindsets so that technology is no longer an 'add-on' but a tool for all learning activities? Teachers need time to train, to explore and to use these technologies with support from the wider digital community.

Further and higher education

In challenging financial times, there is also increased pressure on our tertiary education institutions to deliver more learning online and empower a greater spectrum of learners through technology. Delivering a digital curriculum, a flexible digital environment, and a robust approach to the use of devices, technologies and data must be the aspiration. Wales' digital strategy in Higher Education is increasing use of technology at universities, such interactive computer-generated models at Swansea University to teach human anatomy or 'Y Porth', Coleg Cymraeg Cenedlaethol's platform for delivering and managing Welsh medium provision.

In fact, technology has the potential to enhance all aspects of campus life and student engagement. Could we see all students using one smart card to access remote learning, use on-campus facilities and tailor their virtual learning environments? Our institutions must keep pace, create the innovators of the future and become digital showcases for Wales.

The impact of digital on every aspect of education could be transformational. And while none of us can predict the learning environments of the future, we should focus now on maximising opportunities and shaping the services our learners deserve.







Investing in our digital future

The business services sector provides jobs and drives economic growth across Wales. Almost one in ten Welsh workers are employed by the sector, which accounts for 7.1% of gross value added to the nation's economy. Business services companies therefore play a key role in driving innovation and digital enablement across Welsh public services, businesses and day-to-day life.

The Welsh Government identified five objectives underpinning its 'Delivering a Digital Wales' policy: inclusivity, skills, economy, public services and infrastructure. From providing information dashboards to the nation's hospitals to delivering electrification upgrades for Wales' railways, from investing in innovation in business to supporting digital inclusion, this sector is already working with Wales to achieve better-connected services and communities.

As local authorities provide around 80% of local public services in Wales, BSA members will play a central role in their service integration and transformation efforts. A report by the Welsh Government in 2015 found that digital technologies were already being used in local Government to merge back-office services, improve websites, boost access to Wi-Fi, and support residents at home with social care needs. The next step is to create a local digital revolution that encompasses citizen interaction, infrastructure, data and digital democracy. This is one which the business services sector is uniquely placed to support.

Creating innovation networks for Welsh businesses

Wales is a growing tech centre, with over 28,000 people in digital employment in South Wales alone. Through initiatives such as Tech Nation, Wales has attracted a significant number of tech start-ups and digital pioneers particularly in areas such as Health Tech, Data Management and Analytics, and Artificial Intelligence. Investment has been effectively distributed through initiatives such as the Business Wales' Digital Development Fund, Cardiff University's Fusion IP partnership, supporting growth and putting Wales on the map as an attractive emerging tech hub.

BSA members work closely with SMEs and start-ups developing technological solutions relevant to service delivery. This includes everything from apps that help engineers monitor boilers, to data analytics that identify and predict service demand. Through supporting or incubating tech innovators, large companies enable them to expand, giving them the backing and capacity to upscale their digital products and continue to develop ideas. This networking creates an environment of digital investment and agility which in turn attracts new business and growth.

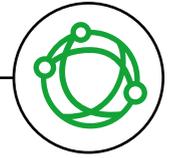
Digital inclusion

Underpinning Wales' success is digital capability, not just at a commercial and governmental level, but for individuals. The Welsh Government has a target to help 95% of people gain at least basic digital skills over the next five years. To support this, Welsh councils are involved in digital inclusion projects, teaching skills to those who have lacked the opportunity or resource to learn. But with local authorities facing funding challenges, greater emphasis on cross-sector solutions is needed to tackle digital exclusion.

The private sector is working with SME partners on local digital inclusion projects. The business services sector collaborates with the Welsh Government and councils on a range of contracts, offering additional social value by engaging with local communities. Through staff volunteer days to teach ICT at the town library, providing hardware or office space to local start-ups or funding programmes for children to learn coding, businesses are helping to build the skills to enable all of Wales to gain from digital growth.

'Social value' increasingly means providing access to services and facilities that enhance communities. As digital engagement will underpin the ability to improve lives in future, the role of digital outreach will need more emphasis. 'Digital social value' will need to be clearly identified, focusing on enabling, enhancing, connecting and offering greater choices to the people of Wales.

The Business Services Association is a policy and research organisation. It brings together all those who are interested in delivering efficient, flexible and cost-effective service and infrastructure projects across the private and public sectors.



Citizen digital ecosystem

There are a multitude of forces driving adoption of new technology. Availability, commoditisation, pay-as-you-go contracts, minimum upfront investment, emerging technologies, trends and citizen demand have all influenced and created new products and services over the years. The pace of change and technology adoption is faster now than ever. In Wales, there are three compelling reasons which mean that now is the time for public services to take advantage of the opportunities that digital transformation brings to create a new relationship with citizens.

1. Reduced budgets

The newly elected Welsh Government will require that Local Authorities and other public services in Wales to deliver 'more for less' in the years ahead. To face the challenges of increasing public expectation, population growth and value for money, leadership within Welsh public services must be decisive, brave, learn fast, leverage innovation and accelerate collaboration between silos across all sectors.

2. Increased citizen demand and expectation

Many Welsh citizens expect a personalised and digital public service, tailored and predictive - just like their Amazon account. Receiving excellent online services or even using mobile apps that exceed expectation used to be a pleasant surprise. Yet now, Welsh citizens are beginning to want much more from technology in all areas. A mass of citizens are digitally maturing and will soon simply expect their local councils, hospitals, transport, and education services to provide the same kind of automated, personalised and modernised experience that they have in all other aspects of their lives.

3. The technology is available

More and more people use mobile devices, anywhere anytime. Some public services recognise that this new operating environment enables them to adopt a more pragmatic, two-speed technology investment: balancing traditional IT priorities such as stability, reliability, security, and efficiency, with digital speed and agility to deliver innovation and real-time cutting-edge services. As citizens become more digitally connected with public services, the data that they generate will enable Welsh public services to gain actionable intelligence about behaviour and preferences that has never before been available, establishing a virtuous circle of data informed continuous public service improvement.

Progress to date

The excitement and benefits that mobile devices 'anywhere anytime' can bring has to be balanced with the reality of a skills gap in Wales and the availability of robust, good-quality underpinning communications. Incredibly, nearly one in five Welsh adults aren't online. In some places, that figure is as high as one in three. Wales is behind the UK average, with only 85% of households accessing the internet daily or almost daily. People are being held back because no-one has shown them how to use the internet or because they are living in remote rural locations and do not have access to a basic communications infrastructure that enables them to get online. These people are often isolated and their economic prospects worsened because they don't or can't use the internet regularly.

The way forward

The skills gap is being addressed, with many Government-sponsored initiatives and digital volunteers in Wales changing people's lives - helping them communicate with friends and family, shop, send email, apply for jobs and get help with benefits online. However, we must think outside the box, and with pace, for the benefit of people to whom basic communications infrastructure is simply not available. Today there are numerous ways, including more widespread use of wireless, satellite and microwave technologies, which intelligently overcome communications blackspots and bypass the need to dig up roads over extended periods of time in an attempt to lay fibres. There are faster, more economic, more resilient options to underpin the communications infrastructure and digital journey for the rurally isolated in Wales.

The authors of this report are excited and committed to helping Wales develop and deliver a Digital Vision for Wales that provides the opportunities and services that the citizens of Wales deserve.





His dashboard will:

-  Review the quietest and cheapest times to travel on the bus.
-  Cross reference his friends' itineraries and letting him know if they overlap.
-  Check for social events that are aligned to his interests.
-  Mine social media to find out where the people he 'follows' will be having lunch that week.
-  Assess the air quality across the day at various locations.
-  Remind him it's his mother's birthday and source relevant special offers for a gift.
-  Advise to avoid travel routes with waste collections and temporary roadworks.
-  Suggest the best coffee houses to work at in between meetings.
-  Recommend events and exhibitions close to him that don't have school visits planned.

On his journeys it will:

-  Tell him about the weather at the places he is visiting and if he goes off route.
-  Check whether there are incidents on his route and redirect him accordingly.
-  Update him on his friends' whereabouts.



Josh, 30, freelance worker who mainly works from home



Exciting times for Wales



The internet services that are helping to transform our lives (sometimes called Over the Top (OTT) services) are delivered via an ever-growing network of providers. These services are encouraging us to change how we communicate with each other and how we consume information and interact with the world.

Many of us no longer have a traditional home telephone and receive all our services through our mobile device; and we're abandoning traditional broadcast media in ever-greater numbers in favour of digital on-demand services. Corporate IT departments now use on-premise and cloud-based OTT services to create their own 'Bring Your Own Device' environments. Retailers are embracing new real-time channels to listen, respond and deliver more personalised services to their customers. Digital and mobile tools and services, Software as a Service (SaaS) applications and the infrastructure that support these are increasingly prevalent.

In Wales, there is tremendous potential to gain a sizeable share of these lucrative new markets. We must continue to develop digital skills and create new technology companies to rise to the challenge. Examples already underway include:

- The Alacrity Foundation, the only charitable digital technology incubator in Europe, based in Newport, South Wales. Alacrity is focused on creating new technology companies and provides the best applied post-graduate business skill training in the UK. Ten

rapidly growing and promising companies have already graduated from the Alacrity programme. This number is rising at a rate of about three a year.

- The Computational Foundry at the Bay Campus of Swansea University, which is committed to transforming South Wales and the rest of the nation into a global destination for computer scientists by creating a digital ecosystem for computer science research.

And there have been other excellent advances. BT has built an Ultra Broadband Test Bed in the Swansea City area which is used for trialling new enterprise services and has been widely praised as the basis for plans now underway to extend broadband services to all of Wales.

The Swansea Bay City Region has applied for a City Deal - where the Internet is the focus for new business - as it relates to the Internet of Health and Well-Being, the Internet of Energy and the Internet of Economic Acceleration.

There is also a growing capability to educate our young people in the right skills (particularly software coding).

Much is being achieved in Wales to create the optimum environment for us all to grasp the opportunities of the new digital age, for Government, enterprises and citizens to continue to advance our society. These are exciting times for change, exciting times for young people - and exciting times for Wales.



By 2017 nearly 50% of global calls and up to 70% of the 1.07 billion voice service consumers will be served by OTT players.

By the end of 2016, the ratio of text messages via OTT applications versus traditional SMS services will be 4:1.

Skype now delivers over 40% of international voice and video traffic.

Acknowledgements



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Let's start a discussion together



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