

1.1 Introduction

- 1.1 Improvements to digital access can create opportunities for the people of Wales to gain an advantage in the global economy and to build a more inclusive, better-connected and stronger society. Outside of London, Wales has the fastest-growing digital industry in Britain. The IT Sector in Wales employs around 24,000 people and is predicted to add £1.5 billion to the economy over the next five years. But more still needs to be done to ensure that access to world-class digital technology is available in all of our communities; to enable our citizens to develop digital skills and awareness and allow them to access the full benefits of the digital economy.
- 1.2 Atos is pleased to offer its support to this inquiry by the Economy, Infrastructure and Skills committee and would be delighted to attend a meeting of the committee to provide further details, if invited. Our contribution will firstly consider the requirements for digital access and the key opportunities it provides. We will then focus on how alternative technologies could be used to extend digital access by improving or supplementing existing broadband and mobile coverage. Finally, we will summarise other key factors that need to be considered to ensure that investments in digital infrastructure are successful.

2 Demanding Digital

- 2.1 The requirement for digital access is an increasingly critical factor for businesses, public sector bodies and individuals in Wales.
- For business, it offers the ability to access global as well as national and local markets; interact rapidly and efficiently with customers and suppliers; gain vital information and connect to networks of support and opportunity.
 - Public sector bodies require wide-scale digital access in order to provide progressive, high value services to the citizens they serve but also to enable them to connect and share vital information and extract greater value from the data they hold; from more effective demand management, to an increased use of data analytics to evaluate and improve services.

- Individuals stand to benefit from the services and products that business and the public sector can provide digitally. Many people no longer use traditional home phones and receive most of their services through mobile devices or have abandoned traditional media in favour of digital on-demand services. For others, the challenge is, more importantly, to achieve *digital inclusion* so that they are not deprived of the benefits of access to digital services.

In all of these cases there is a common factor, which is the need for continuous availability of internet access at a wide range of locations (or whilst mobile) with the quality and reliability to make digital services usable and acceptable.

- 2.2 For many areas in Wales, the availability of 3G & 4G mobile coverage and the delivery of superfast broadband is patchy and incomplete. Sadly, this is often the case in areas where social deprivation, remoteness or lack of transport infrastructure makes digital inclusion all the more essential. The investments in Superfast Cymru and pressures on mobile providers have established a baseline of service across Wales but have not supplied access to all the areas that need it most. To achieve full digital inclusion for all communities in Wales will require a more thoughtful and innovative approach to overcome the challenges of geography and demographics within realistic budgetary constraints.

3 Applying Innovations in Technology

- 3.1 The technology options available to support digital access offer a range of possibilities to suit different geographic, demographic and economic needs. Table 1 provides a summary of the principal options, their approximate UK coverage and a comparison of performance and cost:

Technology/ Service	Typical UK Coverage	Max Speed of Download	Cost per bit
Cellular 4G/LTE	Large areas of UK subject to carriers	100 Mbit/s	Medium
Cellular 3G	Majority of UK subject to carriers	42 Mbit/s	Medium
Satcom	Full UK	26 Mbit/s	Highest
DSL	Majority of UK subject to carriers	80 Mbps	Lowest
Fibre	Majority of UK subject to carriers	10 Gbps	Lowest
Radio	Majority of UK subject to handoff POP proximity	2Gbps	Medium

Table 1. Digital access - technology options

3.2 There is no single technology that ideally suits all scenarios. For example, achieving 100% coverage of 4G (or even 3G) would be challenged by the mountainous terrain in some regions of Wales. Similarly, the cost of delivering Satcom access versus its limited performance means that it might only be suitable for the most remote or inaccessible locations and may not suit some business uses at all. In general terms the suitability of all these options can be summarised as follows:

- Cellular 4G /LTE - Becoming more widely available and affordable but still sparse in rural areas. Dependence on a single operator in many areas has risks but technology solutions can provide mitigation.
- Cellular 3G – Low data rates, but currently acceptable for most uses. Similar risks to 4G, but extender & multi-operator remedies are available.
- Satcom – Useful in very remote regions but still the highest cost for low data rates. Support to mobile users depends on Wi-fi.
- Fibre/DSL - Availability of infrastructure restricts choice at many locations. May not be immediately available or economically feasible for remote locations. Support to mobile users depends on Wi-fi.
- Radio – Enables extension of other services from existing locations. A more flexible option for some terrain. Support to mobile users depends on Wi-fi.

3.3 With a range of options available, any of which could be most suitable in certain circumstances, the innovation challenge becomes “*How to select the right technology for each location.*” This requires a comprehensive analysis of regional cellular mobile coverage aligned to a detailed understanding of domestic and business needs, especially in hard-to-reach locations. A methodology or set of rules should be developed and applied to ensure that the best technology is selected for each set of circumstances and that a sound business case exists to support the full range of investments.

3.4 In some cases isolated or remote communities may have need of composite solutions (e.g. Fibre connections extended by Radio links). Once again, innovative thinking will be required to look at all permutations and possibilities to arrive at a solution that offers digital inclusion at an acceptable cost.

4 Optimising Investment

- 4.1 Digital access also requires the end-user – whether they are citizens, business owners, employees or volunteers – to have the skills and available devices to make use of the infrastructure. Therefore, a key component of further programmes should be an analysis of the effectiveness of initiatives to provide training and access to technology for users, and commitment to further investment in these areas where needed.
- 4.2 Finally, and critically, it is essential that plans for improvements to digital infrastructure are linked into an overarching digital strategy that clearly defines how the public sector will deliver digital service transformation and the specific economic benefits it will offer to the private sector.

5 Summary

- 5.1 In this paper we have summarised some of the key points regarding the justification for extended digital access, the main technology options and the best approach that Atos believes could be taken. The most critical point, is that to extract value from further investment for the individuals, organisations and businesses that need it most requires an innovative, holistic approach based on a clear digital strategy with a flexible view of all of the technology options available.

Mark Donovan

Client Executive, Atos Wales

Atos is a business technology partner with firm roots and an extensive presence in Wales. We are committed to helping our partners in the Welsh Government, NHS Wales, many educational institutions and other public sector bodies, as well as the private sector, with cost effective solutions to deliver their ambitions in digital transformation, big data, cyber security, and technological innovation.

For further details of our [Digital Vision for Wales](http://uk.atos.net/en-uk/home/your-business/government/government-in-wales/digital-vision-for-wales.html), click on the link or go to:
<http://uk.atos.net/en-uk/home/your-business/government/government-in-wales/digital-vision-for-wales.html>