Digital Scotland 2020 Achieveing World-Class Digital Infrastructure

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Document reference number	DHI+DDMMYY+doctype+000X *DHI080516S0016*
	- E = exploratory report - L = lab report - F = factory report - S = summary document - LR = literature review - RR = research report - MR = market research - MAP = mapping - V=video - O= other

Publication date	8/5/2016
Revision date	
Revision number	

Purpose of document	Summarisation of documents of high importance for the Business Case
Project detail (delete row if appropriate)	(project name, project owner(s), dates, organisation(s) involved)
Other detail (delete row if appropriate)	

Related projects	Names and doc reference numbers
Keywords	Digital first; next generation broadband; infrastructure; network; cloud; mobile; fiber optic;

<table>
<tr><td>Name of Strategy:</td><td>Digital Scotland 2020: Achieving World-Class digital infrastructure: a final report to the Scottish Government</td></tr>
<tr><td>Date:</td><td>6th Feb 2013</td></tr>
<tr><td>URL:</td><td>http://www.gov.scot/Resource/0041/00414982.pdf</td></tr>
<tr><td>Key words:</td><td>Digital first, next generation broadband, infrastructure, network, cloud, mobile, fiber optic</td></tr>
<tr><td>Why does this strategy exist?</td><td>To find out what world-class digital infrastructure looks like and how to realise that in Scotland by 2020.</td></tr>
<tr><td>Summary:</td><td>This independent report provides an assessment of: what world-class looks like elsewhere, the characteristics of those countries and regions that have or are delivering world-class digital infrastructure; and what lessons could be learned and applied to Scotland in order for it to be world-class.

The Scottish Government has committed to developing and delivering world-class digital infrastructure across Scotland by 2020.

This report explores the possibilities for World Class infrastructure and imagines a panorama of potential applications and services. The objective is to stimulate debate about World Class in 2020 utilising research and case studies from other leading countries, and while this study provides a set of recommendations it is not meant to provide all the answers.

Five case studies were chosen – Australia, Ireland, South Korea, Lithuania and Sweden – on the basis of their visions and achievements with respect to digital infrastructure and the digital society, and the lessons they can provide for what Scotland should consider or avoid going forward.

36 policy recommendations made:

Infrastructure deployment:

    1. examine options to share network access rollout costs with other utilities</td></tr>
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2. Leverage other utility infrastructure

3. Public networks – SWAN, Education and health

4. New buildings and certification programme

5. Tools to enable infrastructure and technology deployment

6. Rural area deployment

7. Aggregation of diverse rural networks

8. Open access

9. Network roaming in rural areas

Fostering demand stimulation and take up

1. Review current and past demand stimulation programmes

2. Leverage digital solutions in education

3. Leverage public sector research and university research programme which focus on demand stimulation

4. Created targeted stimulation programmes (financial, educational, training) for the last 10% of unconnected citizens

5. Targets and awareness campaigns promoting new public sector services

6. Targeted opportunities (analogous examples of the Estonian ID-card system)

7. Participation in national and international research

8. Review of tax credits for SMEs

9. Explore targets for mobile and on the move and flexible working activities

Funding options:

1. Design a national roll-out plan

2. Detailed financial modelling and choice of suitable financing structures

3. Structuring and Marketing of financing facilities

4. Documentation and closing of financing facility

5. Arrange public funding for parallel demand stimulation programmes

6. Manage financing facilities

	Regulatory recommendations: 1. Mandated access to infrastructure 2. Spectrum re-assignment 3. License obligations in spectrum licences 4. Monitor Universal service 5. Monitor revision of relevant markets susceptible to Ex-Ante regulation 6. Prepare for Wrodl Radio Conference (WRC) 15 and subsequent WRCs 7. Monitor plans and take proactive actions for future release of spectrum beyond 4G 8. Copper to Fibre switchover
Key goals and means to achieve them:	Goal: Having a Digital ecosystem of ubiquitous computing, the Internet of Things, Big Data and Cloud computing available in Scotland (see fig 3, p. 2) • Ubiquitous Computing which embeds the power to store, process and communicate in a vast array of devices; • The internet of Things bringing the processes that allow a service to provide device surveillance, location and support tele-presence or tele-operation • Cloud services that provide the platform for the software and the service • Big data which brings data stores with hundreds of gigabytes and terabytes of data into play and makes it and its derivatives available through "Cloud Services". The networks of 2020 are hybrids (of fixed, cloud, mobile, fibre), but their nature is less and less visible to the end user. Case studies in the report: Australia, Ireland, Lithuania, South Korea and Sweden. Five lessons learned: 1. Successful broadband development programs generally emanate from a confluence of market forces, government initiatives and user cultures;

2. All the countries are pursuing dual-mode broadband strategies, combining fixed broadband and mobile broadband initiatives. However, the two tracks are being pursued in different manners, given the strong market wind behind mobile services and the take-up of tablets, smartphones, dongles and other wireless device;

3. If government intends to "force" broadband operators to extend their coverage to what they consider commercially non-viable areas, it is useful for the government to also stimulate or otherwise facilitate the emergence of the respective demand;

4. With Sweden and Lithuania as partial exceptions, broadband development has generally called for supra-regulatory initiatives on the government side, as traditional regulatory approaches often result in procedural stalemates;

5. South Korea's relatively directional approach to ensuring broadband involvement and inclusiveness (down to the level of farmers, military recruits and prison inmates) is likely to have produced positive results, given the leading level of broadband adoption that South Korea has managed to achieve. However, overall, there has been limited evidence as to the effectiveness of the demand stimulation and user involvement projects that have been pursued in most of the countries.

To stimulate demand for and take up of digital services, the international cases provide three types of action:

1. Programmes aimed at increasing adoption and use of internet connectivity
2. Programmes that seek to transform public-sector institutions, such as schools, hospitals, and government itself, by means of new online systems and practices; and
3. Stimulating business use, in particular online retailing

Actions to foster access to under-served rural areas:

1. Imposing strong coverage conditions in the service licenses;
2. Requiring infrastructure sharing
3. Provide subsidies to one or more operators by means of a tender

	4. Outright government funding or middle-mile or last-mile connections in rural or other under-served areas.
Expected outcomes:	Vision for Digital Scotland 2020 transformed by World Class Infrastructure: • The ability to communicate intuitively with any device anywhere, anytime. • Instant access to information and services throughout Scotland regardless of location. • Mobile, on the move working is the norm. Travel planning is simplicity itself. • Innovative, new business models are erupting as firms leverage the power of anything, anywhere, anytime communications stimulating and reinforcing economic growth. • International e-commerce transactions are standard practice for both consumers and small businesses. Imaginative SMEs are spearheading new collaboration techniques to gain and retain market share. • Personalised, just in time teaching combined with global access to expert resources is transforming education and training for both the workforce and student populations. • Firms are able to upskill all level of workers quickly and easily with individual training programmes. • <mark>The transformation of health and social care is empowering the elderly and enabling them to live independently for longer. Health care professionals create distinctive programmes for individuals' wellbeing. Health care facilities are all interconnected allowing for fast, effective patient management during emergencies and for routine or chronic disease management.</mark> • Smart TVs are prevalent in half of all homes and these homes are fully connected to the digital world. Games consoles and smart TVs are the two primary platforms connecting a myriad of sensor –enabled household devices. The co-mingling of virtual reality and gaming allows people to become an integral part of their entertainment.
Key quotes:	"Connectivity enables anything, anywhere, anytime"

	"The default engagement with healthcare I online – from booking to remote support. All citizens use a wide range of e-health services – body area networks."
	"Two infrastructure elements will dominate in 2020 and support the goal of any device, anytime, anywhere and they are : fibre and towers." (p. 23)
	2020 vision relies on three enabling elements. - Demand for stimulation to drive take up and use - Funding - Regulation/legislation
Parent/child document (of what)?	Relates to/expands Scotland's Digital Future strategies.