The internet as infrastructure

Why rural connectivity is crucial to the UK's success

Alistair Carmichael / Matt Warman / Mims Davies

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Buying into broadband's bigger picture

Reliable internet access must be viewed as a basic necessity, writes Russell Haworth, CEO of Nominet

As we hurtle towards a connected future, in which the internet will underpin most aspects of our daily lives, connectivity will become a necessity and not a luxury. As a society, we need to consider the wider benefits of enabling internet connections for all and ensure no corner of the county is left out of the digital loop.

Currently, despite government incentive schemes and universal service obligations, the rollout of broadband is left largely to the market, which relies on fixed and wireless network operators justifying deployment based on their own business models. The commercial justification for broadband deployment relies on there being sufficient demand and enough people to pay for a broadband subscription. Put flippantly, are there enough people willing to pay for Netflix, or Amazon? However, rather than depending on the broad appeal of consumer services we need to think more holistically about the provision of internet services. If road building decisions followed the same approach, it would equate to only building a road if everyone living in the area bought yearly gym membership for the leisure centre at the end of the new tarmac. The business case is narrow, and overlooks the far-reaching and ultimately more impactful benefits that are available.

Internet is infrastructure as much as roads are, and could easily prove attractive to a wider range of companies investing in digital technology who stand to gain from internet-enabled communities. Health services are one of the most compelling business cases for

internet connectivity, especially in remote, rural communities that are often in the "final five per cent" or suffering with below average internet speeds. Super-fast broadband, defined as 30 Mbps, is now available to 89 per cent of UK homes, but only 59 per cent of rural dwellings can access these speeds.

We mustn't assume this is a minority; rural areas make up 85 per cent of English land and almost ten million people (almost a fifth of the population) live in rural communities. This figure is rising, and ageing – on average, 23.5 per cent of the rural population is over 65 compared to 16.3 per cent in urban areas – and this presents complicated healthcare challenges for a NHS already struggling to meet demand. It goes without saying that accessibility is an issue: only 80 per cent of rural residents live within 4km of a GP's surgery compared to 98 per cent of the urban population.

While the NHS may not have the resources to build more surgeries and hospitals, robust broadband connections in these areas would enable them to roll out telehealth options and empower their patients with healthcare monitoring apps and diagnostic tools. This would lower demand on face-to-face services and could improve the health of people in remote areas; a compelling business case for broadband.

We can't afford to rely on "one business case to rule them all" when it comes to internet connectivity – the needs run far beyond Netflix and Spotify, and the long-term, economic and social benefits are vast. It's time to shift our thinking, considering internet connectivity as essential infrastructure and invest in it accordingly, especially when it comes to the needs of the remote, rural areas of the country.

Russell Haworth joined Nominet as CEO in 2015. He leads the organisation as it develops its core registry business, explores the potential of new technologies in the global internet sector, and delivers on its commitment to ensuring the internet is a force for good.

No man is an island: why we need better broadband nationwide

Access to the internet is not consistent across the UK. Considering the advent of TV white space, the **New Statesman** asked a panel of experts to offer their thoughts on discrepancies between urban and rural areas

It is widely, and almost tacitly, accepted that an urban-rural digital divide exists within the United Kingdom. But while heading out to the countryside for a few days' break might offer welcome respite to the big city banker who wants to escape his or her email backlog, what of the people who live in these rural areas full-time? Why should they accept a less capable internet connection? What impact does this have on these areas' productivity? How will infrastructure affect people's alacrity to live somewhere? These were the principle concerns highlighted by a recent round table event staged in partnership between the *New Statesman* and Nominet at Portcullis House.

Although the UK's decision to leave the European Union brings with it an inevitable bout of uncertainty – as does the snap General Election announced in April – connectivity at home represents a rare point of cross-party consensus. If the UK is to be self-sufficient and self-serving, it needs to get its house in order. The over-emphasis and in turn over-reliance on London has been a sore spot in national discourse for some time,

and improving broadband infrastructure further afield is no longer a notion of quaint idealism, but has been catapulted, thanks to rapidly increasing digitalisation, to the forefront of policymaking. From both an international and domestic perspective, the UK needs better connectivity. From the former, it needs it for trade; from the latter, it needs to make sure that the rest of the country, outside of London, is not cut off.

Alistair Carmichael MP represents the Scottish seat of Orkney and Shetland, an island community, and suggested that previous UK roll outs of internet technology had prioritised more urban areas. As a result, his constituency was struggling to retain or attract new people. He said: "The telescope through which we [Orkney and Shetland] are seen is one that starts at one end of this country. If you look at every iteration of how this story has developed – broadband roll out, 4G and possibly 5G after that – it's always done like 'Oh we'll do the big population centres first and do the smaller, more difficult areas later'. Rural communities around this country,

"Businesses are at a risk of digital exclusion"

though, will stay the same." Carmichael added: "Of course this matters for island communities in particular. If you live in an island community and you don't get these things [broadband, suitable infrastructure], then you are probably going to leave."

Mims Davies, the MP for Eastleigh and Parliamentary Private Secretary to Digital Policy Minister Matt Hancock, went on to point out that the digital access divide was contributing to myriad social problems across the UK. Indeed, according to the latest Ofcom Connected Nations Report, around 8 per cent of UK premises (2.4m) in 2015 were unable to receive broadband speeds faster than 10Mbs – what we continue to regard as the minimum download speed needed to fulfil the basic needs of the average UK household. Although this figure has since fallen to 5 per cent, this still means 1.4m premises are being poorly served. Davies said: "It's worth noting that a minority can still encompass millions of people. The availability of superfast broadband has improved, but a significant number of homes and businesses are still at a very real risk of

digital exclusion."

Davies then correlated this lack of access to a lack of basic digital skills, which is undermining the UK's general quality of life. She continued: "We've got a serious lack of digital skills. Around 23 per cent of adults are still unable to use the internet properly. This means things like booking tickets for travel or applying for jobs become much harder when they don't need to be. We're digitalising but some people are getting left behind."

To this effect, we can consider that a Consumer Digital Index report by Lloyds Banking Group found that customers online in the UK can save an average of £744 per year, or £516 for low-income consumers. The Federation of Small Businesses (FSB) also found that 94 per cent of UK small business members view reliable internet connection as a key business requirement, and yet less than half of rural small businesses are satisfied with the quality of their broadband provision, compared with 28 per cent in urban areas.

So, is there a solution to the UK's digital malaise? Nominet is working towards one and the company's CEO **Russell Haworth** was keen to champion the innovations being made in TV white space (TVWS). He explained: "The majority of internet traffic is coming from wireless devices such as smartphones and the Internet of Things (IoT). The wireless spectrum that enables this connectivity is already in short supply and is nearing the limits of its capacity. If the current licensing model stays the same, demand is bound to outstrip supply. Dynamic Spectrum Management (DSM) is an approach to improve the efficiency of wireless spectrum usage with a centrally co-ordinating database. The majority of the spectrum is under used, and by understanding the current and intended usage, DSM enables it to be utilised more efficiently than a single-user approach."

And where exactly does TVWS fit into all this? "TVWS is the name given to parts of the wireless spectrum that were freed up during the digital TV switchover. Using DSM to manage

"We can end this over-reliance on London"

usage, TVWS radios offer broadband speeds over several kilometres and the signal can travel through permanent obstacles such as buildings and trees. TVWS is free for anyone to use and build their own network. It's well suited for a range of uses, including providing broadband connectivity to rural communities. The switch to wireless eases the pressure on old-copper-wire infrastructure. The copper wires that are used to carry standard (ADSL) broadband mean that your internet is going to be slower, the further you live away from your telephone exchange. Ultimately, a lack of connectivity is undermining productivity. We're looking at how Nominet can provide support. We are figuring out what we can do to play a broader role in an 'internet society'."

While he conceded that the new technology is "not a panacea" for all of the UK's digital anxieties, Nominet's research and development director **Adam Leach**, believes TVWS carries an exciting opportunity. He beamed: "It's the first example of us dynamically sharing our spectrum. We're using space that was previously only used for TV and now we have the chance to do much more with it."

The FSB's chair of the DCMS Portfolio **David Webb** said: "Small businesses welcome any technology which will fill the void which currently exists between those with superfast broadband and those excluded. Without suitable broadband, small businesses will continue to be disadvantaged as they look to improve their productivity."

Michael Armitage, founder and director of Broadway Partners, meanwhile, described TVWS as a "fantastic new toy" which "elevates the idea of 100 per cent [digital connectivity] to a very achievable aspiration." Carmichael noted that he too had been "sold on" TVWS and commented: "We need to stop looking at the country as a single whole and start getting solutions that work for each of the communities. Constituents don't care if it's fibre or bandwidth or satellite or however it is provided, they care that it works. Many good suggestions came from the alternative digital providers around their use of bandwidth freed up by the TV change from analogue to digital, which I hope ministers in government will get this message once and for all."

What should the role of government be in bringing about greater rural connectivity across the UK? **Matt Warman**, the MP for Boston and Skegness and former technology editor of *The Daily Telegraph*, offered: "The

government's job has to be to enable local communities to access public money insofar as they can and then tackle the problems themselves, directly. The final phase is not going to be achieved by throwing money at the same situation, of course, but if we allow local councils to have more control over their issues, I'm optimistic. There's certainly a commercial case for it – if smaller, more rural areas are transformed and better connected, they can become more productive and have a greater reach. It's up to make sure that happens." **Michael Powell**, rural programmes manager at Monmouthshire Business and Enterprise, shared this opinion of devolved responsibility. "The only way," he stressed, "that we can sort this out is in small groups. You have to have a local champion – they know the geography and the local culture of an area and can manage the funds. It's possible that a local authority can do that."

Fellow Conservative Davies echoed Warman's point about reach. She said:

CONNECTING
RURAL COMMUNITIES

Many remote communities suffer from slow broadband. Working with Broadway Partners, Nominet is supporting the first commercial rollout of TV white space (TVWS) broadband in Europe on Arran by providing access to its TVWS database, planning tools and technical advice.

TVWS refers to frequencies made available following the switchover to digital terrestrial television. So it doesn't interfere with TV signals, Nominet's database tells devices what frequencies to use, at what power and for how long.

TVWS enables two-way wireless links at relatively high-data rates over long distances. The signal can travel through buildings and trees, enabling broadband connectivity in areas that would be difficult to reach with other technologies.

The network in Arran uses a combination of fibre, microwave links and TVWS radios and this approach will be extended to other areas in the UK.

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nominet.uk/tvws

"By harnessing digital, you've got the opportunity to turn a small, bespoke business into a global brand." Davies also pointed out that better connectivity could help deliver services and cited healthcare as an area in need of improvement. "You've got instances of patients visiting doctors and having to tell them on arrival what medication they're taking, but really that should be information that's being sent across and accessed in advance. We need to build a trust in sharing digital information."

That UK politics and policy are largely articulated through the prism of the capital, the round table addressed, was one of the key barriers to more digital inclusion. Round table chair **Stephen Bush**, the *New Statesman*'s special correspondent, asked the participants to make the case for rural connectivity to Londoners. How will it benefit them? How will it benefit UK plc?

Julian McGougan, head of technology at techUK, said a failure to raise the UK's overall connectivity standards was a willingness to miss out on huge market potential as well as a negligence of responsibility to provide the same quality of life nationwide. He answered: "Rural communities that aren't connected are just people waiting to buy things. If you're in a rural area with no post office or cinema, then delivering things online might be the best solution. If there's no cinema, maybe something like Netflix is the answer. Online banking, likewise, could be a practical e-service. If the government is serious about connectivity as part of its Industrial Strategy, it can't afford to have disenfranchised taxpayers in this country."

Ultimately, Warman underscored, a strong and reliable broadband connection needs to stop being viewed as a luxury and start being seen as a "basic necessity" for everyone in the UK. Citing a "sort of social contract", Carmichael asked: "You wouldn't question why you had to provide an area with electricity or water, so why should you do so when it comes to the internet?" In short, a lack of digital connectivity means that the UK stands to miss out on a huge economic growth opportunity. This can extend to the public sector, as Davies drew attention to through outmoded and inefficient healthcare databases, and a lamentably short supply of digital skills. Leach, warning of the dangers that an enduringly London-centric UK will encounter, concluded: "We need to share our infrastructure and that is the key to success. If we have a more liberal approach to how we access the internet, we can end this over-reliance on London and open up a host of opportunities to everyone."

A VIBRANT DIGITAL FUTURE

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Nominet Propella is an initiative that supports future generations to professionalise their digital skills to propel them into employment, while at the same time helping SMEs grow their business and gain opportunities through digital approaches. It is the first 'experience exchange' of its kind in the UK.

• SAFE & TRUSTED

We provide a Domain Name System (DNS) service to help protect the UK government and all Public Service Network (PSN) connected organisations from malware, phishing, botnets and other threats.

• TACKLING SOCIAL CHALLENGES

Our charitable foundation the Nominet Trust is the UK's leading dedicated social tech funder. It provides grant funding and support to organisations with a social mission that are using digital technology to address significant social challenges.

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at nominet.uk