

We're Only Going to Do This Once

Joseph Bazalgette, Chief Engineer, London Metropolitan Board of Works, 1865

INCA's Response to the Digital Communications Infrastructure Strategy Consultation

INCA represents the non-incumbent builders and operators of next generation network digital networks. Our membership is diverse and includes large companies like Vodafone and Sky alongside new entrants CityFibre, Gigaclear, UK Broadband, Hyperoptic, Fluidata and ITS Technology Group. Our members build and operate fibre, wireless, satellite and hybrid networks. They operate in both urban and rural areas. They work on the basis of private sector investment and do not demand large state subsidies to address harder to reach areas. Some of our members are public sector organisations, others are community-based networks.

None of INCA's members own an old phone network. Any company setting out to build a new communications infrastructure will not build a copper network, it will only build a fibre and/or wireless/satellite network.

Many INCA members view their activities as building the digital communications networks of the future: high capacity, symmetric and affordable. We term these '**Transformational Digital Networks**'. As yet no significant limitations to bandwidth have been found for fibre networks. Capacity on wireless networks is growing all the time (with some caveats on available spectrum and other factors). Fibre networks being built by companies like CityFibre, Hyperoptic, Gigaclear and B4RN can deliver gigabit services as easily as they can deliver 1mbps. Gigabit cities and gigabit villages are becoming a reality in the UK, built by the independent sector. Their operational costs are significantly lower than hybrid FTTC networks, they are more resilient and they deliver what they promise rather than 'up to' speeds. Customers get what they pay for, service providers have more reliable networks, the country gets the modern, up to date infrastructure it needs. Win, win, win.



INCA is helping undertake a survey of the independent sector for the 2014 Ofcom Infrastructure report.

Introduction

Q1 Views are sought on:

- a) Is this an appropriate role for Government?
- b) What other high level principles the Government might adopt?
- c) What resources do you consider the Government should aim to deploy to effectively manage its role?

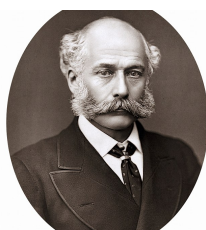
a) Is this an appropriate role for Government?

We are in the midst of fundamental change in communications technologies. From analogue to digital; from fixed to a mix of fixed and mobile; from voice and text to a rich mix of media. The old copper based telephone network served us well during the 20th century. It struggles with the new digital services and arguably today it requires very substantial public subsidy, in large areas of the country, to remain fit for purpose. It is entirely appropriate that Government considers the impact of the changes taking place.

b) What other high level principles the Government might adopt?

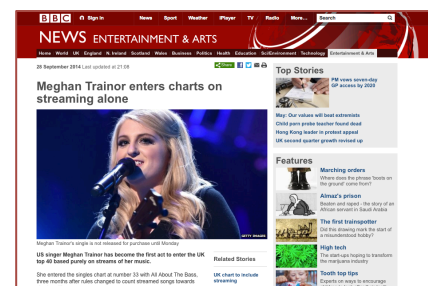
Government should take a view of the future communications needs of the country and seek to create the conditions for investment by multiple players to meet those needs. It is government's job to work with stakeholders to define what a **world class digital infrastructure** for a world class economy looks like. Government should then work to ensure that policy and the regulatory environment support investment in the new digital infrastructure.

We're Only Going to Do This Once



When Joseph Bazalgette was planning the London sewer system he came up with the dimensions of the pipes required and then decided to double them. At the time he explained, 'Well we're only going to do this once and there's always the unforeseen'. His foresight allowed for the huge expansion in London's population with a sewerage system that continues to work today. We need that sort of *Bazalgette vision* for our digital communications infrastructure. The transition from the old phone network to the new fibre and wireless networks will only happen once in our lifetimes. The new networks will provide the capability for dealing with the unforeseen.

Government policy needs to take account of the massive increase in demand for bandwidth that has occurred over the past 20 years since access to the Internet became widespread, alongside the huge growth in mobile communications that also started in the early 90s. The belief that demand will continue to increase drives investments being made by INCA members, often with 10-20 year time horizons. Government policy should support those making investments in networks which will accommodate the unforeseen - and not simply back those arguing for continued investment in the 20th century copper network.



An example of how policy and regulation is falling behind actual experience is in the area of services for SMEs. The FSB has [recently argued](#) that small businesses are being short changed in the current superfast broadband deployment. Ofcom does not regard business connectivity as any particular challenge – after all businesses can buy leased lines anywhere, at a price. However most SMEs cannot afford leased line prices yet many increasingly need high speed, symmetric services. This is particularly true in the creative industries sector which is recognised as an important and growing part of the economy, dominated by SMEs.

INCA members are starting to pick up the challenge of connecting business parks which are being by-passed in BT's subsidised roll out. The first INCA-supported project is not in a deeply rural area, but in the middle of Shoreditch, London where 90 SMEs in the Perseverance Works suffering inadequate services will soon benefit from 100mbps symmetric connectivity, in an FTTP network delivered by Fibre Options, for sub-£100 pm.



c) What resources do you consider the Government should aim to deploy to effectively manage its role?

Government can deploy financial resources to support policy. INCA members have argued that using just one approach – gap funding – in rural areas has limited competition and investment. We advocate using a variety of measures to stimulate private investment and get a much bigger bang for the taxpayer's buck.

Secondly government can help with expertise. Local authorities have been burdened with becoming telecoms experts in the current round of BDUK projects, supported by the BDUK team in London. Few local authorities were properly equipped from the outset to fulfill that function. Stefan Stanislawski of Ventura has argued that in future government could usefully create a small number of 'fibre development corporations' to take on the role of local expertise and investment.

Section 1

Q2 What potential opportunities are there for Government to leverage its combined buying power to support policy objectives?

Government bodies, both national and local have substantial buying power that should be used to support investment in new digital networks. In this way 'anchor tenancy' arrangements will help to make the investment case more robust by reducing demand risks. CityFibre's Gigabit City JV with TalkTalk and Sky in York is an example. At a recent London

Connectivity Summit Dido Harding CEO of Talk Talk described York City Council as the fourth partner in the project, reflecting on their support and local leadership role.

Q3 If migration to IPV6 is required, are there any barriers to that migration and if so how might these be addressed?

IPv6 is widely regarded as being necessary to prevent the exhaustion of the Internet address space. Government's role should be to monitor and encourage adoption and to work to prevent any anti-competitive practices emerging.

Section 2 - What might future demand look like?

Q4 Is an ongoing disparity of provision of broadband services inevitable? If so should this be addressed and how might this be done most effectively?

There are always areas that are more or less attractive to commercial investors. However it is unacceptable that some areas should remain disadvantaged simply because of their geography.

Universal Service

We have a universal service obligation that largely overcame such disadvantages in fixed line telephony. The USO needs to be modernised to favour investment in new digital networks in more challenging areas. The US has a Universal Service Fund to help meet the needs of more rural areas – available to a variety of providers. Stefan Stansilawski of Venture Partners argued for a modernised USO in his report '[Financing Stimulus for FTTH](#)' and subsequently in response to this consultation. We support that position, it could be a very attractive mechanism to get more resources into deployment by a variety of players without automatic resort to using state aid to subsidise the incumbent.

Dark Fibre

One of the greatest barriers to private (including community) investment in new infrastructure in rural areas is access to affordable backhaul. One INCA member, owned by a utility services company installs 150-200 FTTH connections per week in newly built properties on greenfield sites. Their parent installs 2000 gas/water/electricity connections per week – 10x more. This is in part because some developers choose BT OpenReach. However seven out of every ten proposals that go across IFNL's desk have to be rejected because of a lack of affordable backhaul in the area. This failure means that they are unable to invest in future-proofed FTTH connections for those new homes.

The current rounds of BDUK funding mean that most rural fibre connections to BT cabinets are being made with public funding. BT should be forced to offer an affordable dark fibre product that will facilitate further private and community investment in high speed rural networks. Government previously described this as the 'digital village pump', a commitment that has seems to have been forgotten in the current process. PIA has been shown to be an

inadequate product with only one INCA member making use of it. We need to go much further in opening up the publicly funded infrastructure to enable competitive provision.

Mobile Infrastructure Sharing

FWA operators have a similar problem with access to mobile infrastructure. Again this is identified in our interviews as part of the forthcoming Ofcom infrastructure report. By ensuring that FWA operators have affordable access to masts and backhaul, rural areas will become more cost-effective to serve.

Q5 How symmetrical will digital communications networks have to be in the future? Will this differ across user types? What implications does this have for fixed and wireless broadband provision?

This question is only really relevant in the context of old assymmetric xDSL networks. INCA members building fibre and wireless networks tend to build networks that are fully symmetric (with the exception of those deploying FTTH using GPON architecture).

Do customers need symmetry? Yes, if they can get it.

When first generation broadband started to take off ten years ago we did not use cloud services to store files for business or social use, we did not typically upload photos or video to social networks and we did not use video-conferencing as a matter of course. For many people these are now commonplace activities, particularly those who work in the 'knowledge economy' sectors. Greater symmetry in digital networks means that all of these activities become easier and less prone to failure.

Q6 Which countries should be our benchmarks on communications infrastructure to ensure that businesses remain in the UK and continue to invest?

The countries we should benchmark ourselves against are those which are investing in their digital communications infrastructure. We need a world class digital infrastructure to remain a world class economy and attract the capital that can deliver new innovations, businesses and jobs.

One of the sectors that the UK excels in is creative industries. Production chains often involve both large companies and SMEs moving around huge quantities of digital information. Howard Arnault-Ham, Head of IT at Aardman commented: *'A company like Aardman Animations relies on high speed digital networks to connect with all members of the production chain. If those networks are not up to scratch the whole process can suffer and that is not in anyone's interest.'*



Q7 What metrics do you think should or will become relevant in comparing network performance in different countries? What metrics should most appropriately be used as the basis to set objectives for government policy?

Again this question is only really relevant for xDSL copper networks. If you are connected to Hyperoptic's FTTB services, you can have a 1Gbps symmetric service for about £60 per month including the line rental. B4RN offer a similar gigabit service in rural Lancashire. FWA networks cannot yet offer the same bandwidth but are equivalent (or arguably superior to) FTTC services.

At the very minimum we should aim to surpass the European Digital Agenda targets. The Scottish Government ambition to create a 'World Class Digital Infrastructure' by 2020 is one that the rest of the UK should emulate.

Section 3 - Scenarios

Questions 8 to 22

It is impossible to predict bandwidth requirements with any degree of certainty. A similar exercise conducted in 2004 would have calculated bandwidth needs in the absence of widespread adoption of Skype, BBC Iplayer, Netflix, social media, mobile apps, dropbox, Google Drive, i-cloud, online banking, government services etc. etc. It is highly likely that the conclusion would have been that 512kbps-2mbps would be plenty for the foreseeable future.

INCA members are investing in networks and technologies that can deliver great customer experience at affordable price points for any of the scenarios proposed. Like Bazalgette they are building for the 'unforeseen'.

General

Q23 Are there factors, for example technical or unrelated to the regulatory framework, that could create bottlenecks and delay future infrastructure deployment in the UK in this timeframe, that would result in demand not being met or the UK not being seen as a leading digital nation?

The biggest challenge for policy-makers is not a paucity of investment - there is plenty of investment for infrastructure available - but in creating the policy and regulatory conditions that will facilitate investment being made. We operate in an industry with one dominant, monopoly player that frequently operates in an anti-competitive manner. Unless that player is constrained it will continue to operate in a way that restricts competition and hampers those seeking to invest. Because BT already derives its revenues from the existing phone network and the uplift from network investment is marginal, it is difficult for BT to justify the investment case in fibre to the premises. By contrast for new entrants like CityFibre, Hyperoptic, Gigaclear or UKB all revenue is new revenue and supports their case for investment. Public policy should support those seeking investment for new fibre and wireless networks, not simply subsidise the old copper network with grant funding.

Q24 Do you expect commercial providers to deliver future infrastructure and meet demand on a purely commercial basis, or is some form of public intervention likely? If public intervention is likely how might that work with the commercial provision of infrastructure? What form might that intervention take?

Public intervention may be necessary to support the investment case in harder to reach areas. However in the current funding regime government has created serious impediments by using just one form of intervention – gap funding to subsidise the incumbent's 'commercial' case. This has led to projects with a competition of one, a state aid intensity ranging from 51%-90% (or higher) and widespread criticism from the National Audit Office and Public Accounts Committee for lack of transparency and inability to properly judge value for money.

Other countries are being more imaginative in their approach to public support whether it be through a mix of grant and loan financing as used by the US Dept of Agriculture (Rural Broadband Access loans) guarantees to back commercial financing as used in Finland and Scandinavia, or forms of co-investment. In the UK only one player demands massive grant subsidy - BT. Other players are interested in a variety of forms support that can help make the investment case stack up, but pure subsidy is at the bottom of their list.

Coupled with an updated form of USO public intervention needs to be tailored to encourage competitive private investment in new infrastructure, rather than discourage it. Opening up access to BT's passive infrastructure and dark fibre on competitive terms will help make the investment case in rural areas much more robust.

Q25 Which current or draft legislation might prevent or facilitate the emergence of any of the scenarios?

It is important that government policy makes a clear statement about the characteristics of the future digital networks we need. Our view is clear, policy should encourage investment in the new networks, not seek to subsidise the old copper network.

Q26 Do you have views on which scenario (or combination of scenarios) is most likely and should influence the development of future strategy?

From the point of view of maximising the impact of digital networks on the economy future strategy obviously needs to be based on supporting the development of networks that can deliver the maximum bandwidth, symmetry and reliability for the lowest prices to consumers and businesses. In this way any scenario for usage can be accommodated and maximum benefit achieved.

Section 4 Competition and regulation

Q27 How might efficient investment in communications infrastructure be supported, for example by changes in the regulatory framework?

- BT's behaviour needs to be addressed. Its unwillingness to provide detailed and timely information on subsidised superfast deployment and its attempts to stifle competitive projects act as a disincentive to investment.
- The Universal Service Obligation should be updated for the digital age with a flow of funds to support building new networks in hard to reach areas.
- BT should be mandated to provide PIA and dark fibre access on commercial terms attractive to alternative providers.

Q28 Are there any further measures necessary to incentivise the rollout of future mobile infrastructure in currently underserved areas?

INCA's FWA members have argued the case for acilitating access to private sector land, for the installation of fixed and wireless telecommunications networks. UK Broadband suggests that *'this should be done in a number of ways. Firstly through reform of the Electronic Communications Code. Secondly, through collaboration between local and city authorities and landlords. Inability to access buildings to install radio equipment is the biggest inhibitor UKB faces to further investment and rapid network roll-out in the UK.'*

Q29 Is there a role for a revised USO or USC to ensure that minimum consumer demand requirements are met and to reduce the potential for a new digital divide? What might this look like?

Stefan Stanislawski makes a very good argument:

This is a crucial issue in my view. I suggest USO is modernised being defined as provision of effectively open access fibre (layer 1) and open ports (layer 2) to the boundary of each premise in the country. The market will take care of the rest including what is an acceptable basic minimum service. There is no longer a need to tie USO to voice when we have near ubiquitous mobile coverage and the trend around the world is to dump the fixed line.

Q30 In terms of supporting future innovation and long-term investment in infrastructure, what areas of broadcasting regulation may have served its purpose by 2025 -2030 (or indeed earlier). What future technical developments may also have longer term implications for regulation and wider public policy?

No comment.

Q31 Are there changes to the EU Framework that the UK might seek to encourage more competition in UK markets?

Q32 Should Government seek changes to the European Framework which put more reliance on competition law and how might this be done?

INCA member UK Broadband has written a very helpful response to Qs31 & 32:

We have taken questions 31 and 32 together. Our view is that parts of the EU Regulatory Framework are no longer fit for purpose. The fundamental issue is that they seek to regulate competition in services, not in the underlying networks over which services are provided. This has several undesirable consequences.

Remedies for one service only. It leads to NRAs prescribing remedies which may be applied in one services market only. The well-known example of this is Passive Infrastructure Access which, according to Ofcom's regulation, could only be used by BT's competitors to provide services in the market downstream from that in which the remedy was prescribed, i.e. it could only be used for the provision of mass market residential broadband services. This put BT's competitors at an immediate disadvantage because BT itself is able to use its ducts and poles howsoever it chooses. BT is able to apportion the cost of the duct and the cable within it across its leased lines service and also the services it provides to connect wireless network equipment.

It is non-sensical that BT or Ofcom should "police" the use to which passive infrastructure is put.

Lowest common denominator – moving at the pace of the incumbent. By examining the level of competition in certain services markets only, the Framework effectively stifles the ability of competitors to innovate and requires all operators to move in the market at the pace of the dominant operator.

For example, in the market for business connectivity services, Ofcom examines competition in the market for services [>1 Gbit/s]. However, this overlooks the fact that a market cannot effectively develop if providers themselves are limited by the prescribed services they can buy from BT. If, on the other hand, they were given access to the underlying fibre (in the form of "dark" fibre) then they'd be able to develop products and services which didn't simply mimic those offered by BT.

UKB would advocate a less prescriptive, less silo-based form of economic regulation, and a greater emphasis on competition in the broader sense.

We recall the early days of local loop unbundling, when the product was there in nominal terms, but was not industrialised and therefore not fit for purpose. BT was effectively maintaining a stranglehold on the local access market. It was a threat of a referral of the market to the MMC, as it was then, that produced the so-called "Undertakings", which in turn saw the introduction of functional separation and the creation of Openreach.

The Undertakings were successful as far as they went, but they are now ten years old and still contain a number of areas of carve out (such as Wavestream) and, with the advent of FTTC-based wholesale products, there are signs that BT is starting to re-assert a position of dominance.

It is time, therefore, for intervention once again – either in the form of adequate regulation of BT’s network, or in the form of a referral to the CMA.

It is unacceptable that BT still does not offer a dark fibre product. The result of this is that the needs of data hungry businesses and the backhaul needs of data hungry mobile and wireless networks are not being met.

In terms of passive products which industry requires, we would expect that, whilst duct and pole access would potentially be useful for short distance extensions in the access network, dark fibre is absolutely necessary for longer sections, which are sometimes known as backhaul.

We add one simple comment: in an era in which much of the funding to provide FTTC in rural areas comes from the state, it makes no sense to allow it to be locked up by a private monopoly provider when it could help to support investment by alternative players in new fibre and wireless networks.

Q33 In what ways can you see competition driving technological change in the UK in the future?

Competition often drives innovation. INCA members are building new infrastructures that will facilitate the development and deployment of innovative new services. As new entrants they need support from policy-makers and regulators who should understand that disruptive change is not in the interests of all players. With the right policy and regulatory framework competition can thrive and investment in new networks will be forthcoming.

A critical question will be what to do with the old copper infrastructure as new fibre and wireless networks are built.

Q34 How can the regulatory framework keep up to date with new business models and changes in technology?

Some INCA members have characterised the current regulatory regime as regulating by ‘looking in the rear view mirror’. To some extent it is inevitable that regulators will base their actions on what has gone before. However it is important that regulators understand the issues for those independent providers beyond the current duopoly of BT and Virgin. There are clear indications that this is starting to happen with inclusion of the altnets in the 2014 Ofcom Infrastructure Report.

Q35 Are there any changes to legislation other than the Communications Act that would incentivise the provision of communications infrastructure?

Q36 Would there be benefits to investment from a focus on broadband only services? Are there any barriers to the emergence and adoption of broadband only services, whilst still providing necessary access to emergency services?

Broadband is a service delivered over a physical infrastructure. It makes more sense to consider the different investment parameters for passive infrastructure (long term, stable returns) and the services delivered over the active layer (more volatile, higher risk/reward). Policy can then focus on encouraging investment at all layers. Part of the problem with a functionally rather than structurally separated BT is that there is always tension between the investment needs of the infrastructure arm and the other divisions. Arguably that is why many of us don't have fibre optic connections today based on the replacement component of the monthly line rental charge. Companies like CityFibre have clearly identified these issues and focus on being one thing only – a passive infrastructure company. That makes them more attractive to investors.

Section 5 – Facilitating and Encouraging Investment

Q37 How might copper access networks evolve over time alongside other access technologies? Is there a role for policymakers in helping manage any transition from copper to other access networks?

The fact that this is Q37 of 44 suggests that either (a) the idea of mandating copper switch-off is not seen as a viable policy option or (b) is not regarded as sufficiently important.

INCA members have argued that setting a date for the closure of the copper network would give certainty to investors and drive investment into fibre and wireless networks. However it has enormous ramifications requiring a substantial consultation all by itself.

Q38 Views are sought on whether there are any additional actions the Government should consider to ensure:

- a) That the provision of all areas of the UK's digital communications infrastructure remains competitive in order to ensure that the UK can take full advantage of growth opportunities in the Digital Age;
- b) Aside from legislation and adapting the regulatory framework in the broad sense which other actions should the Government take to encourage investment in communications infrastructure?
- c) That potential investment in the provision of digital communications infrastructure offers a suitable risk and reward profile to ensure that they can be financed by the private sector

See answers above.

Q39 Views are sought on:

- a) The case for the UK to invest to gain 'early mover advantage';
- b) What areas in particular the UK should aim to see investment;
- c) Are there any actions not covered elsewhere in this report that the government should consider to ensure digital communications infrastructure is in place before it is needed and such that it helps generate need.

The UK is far behind the early movers in FTTH.

Q40 How can we maximise the current R&D and innovation UK landscape to help take advantage of the opportunities provided by future technologies? What needs to be done by Government and its agencies, and industry to tackle any gaps?

No comment at this stage.

Q41 In which future communications technologies do you consider the UK has, or could achieve, an international leadership position?

No comment at this stage.

Q42 What more might government and industry do to exploit future technologies, associated new applications and emerging business models?

It would be very useful for government to encourage a dialogue between those building the new digital networks and those seeking to exploit them. INCA tried this in a small way at our conference 'Transform Digital' in May 2014 when we encouraged people involved in digital manufacturing and the creative sectors to participate and engage in dialogue with people building the networks. If INCA members can build networks that start to have the characteristics of 'Infinite Bandwidth, Zero Latency', coupled with low-cost, what will this mean for innovation and business processes?

Q43 What role might local bodies have in facilitating the future delivery of digital communications infrastructure?

Local bodies have been at the centre of the process for providing financial support in this round of BDUK funding. They can and should play an even more important role in defining the local requirements and creating conditions for investment. Many are starting to look beyond BT to the independent sector to fulfill their ambitions for world class digital infrastructure. Grant funded procurement is not the only way in which local bodies can help create favourable conditions for investment.

Some recent examples of innovative approaches include:

- The city of York, partnered with CityFibre and its Gigabit City JV with Sky and TalkTalk. York's own public services network will run over the new fibre infrastructure.
- The London Borough of Hammersmith and Fulham has entered into a concession arrangement with INCA member ITS Technology Group to make use of its CCTV duct infrastructure to deploy new fibre and wireless networks. Both partners stand to gain financially.
- West Oxfordshire District Council is providing investment rather than grant aid to the Cotswolds Broadband project seeking to deliver 100% coverage in their rural areas.
- Northamptonshire County Council is actively seeking to develop funding mechanisms that will benefit non-incumbent providers.
- Kent County Council has provided support to independent provider Callflow Solutions as well as to BT through their main BDUK programme.

More broadly it would make sense for policy-makers to start considering how regional/local needs can be met. For instance INCA will run a seminar involving core cities on 26th November in Birmingham designed to look at their needs and how they can become more attractive for private investment in new fibre and wireless networks.

The idea of fibre development corporations put forward by Stefan Stanislawski warrant further consideration. They could act as regional catalysts offering both expertise and investment in new networks.

Q44 How can council's maximise the digital communications infrastructure in their local area to support their work on economic regeneration?

The new development of local 'digital exchanges' is worth exploring further. These are being designed to offer carrier neutral 'meet-me' points with facilities to house a range of digital and creative businesses. Essentially these could become regional Internet exchanges fostering a new wave of creative collaboration.

Malcolm Corbett, CEO Independent Networks Co-operative Association.

Malcolm.Corbett@inca.coop

www.inca.coop

Skype: malcolmcorbett

Tel: +44 7770 896534

This response represents the broad views of a number of INCA members consulted during July-September 2014

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