



Summary of Discussion at the Information Society Alliance (EURIM) workshop
'Join the Networks – bringing the broadband and green agendas together'
at the Parliamentary and the Internet Conference October 13th 2011

Background

The UK faces converging investment demands for smart metering, smart grid and fibre networks as our fixed and mobile communications and other utility networks come under increasing pressure. The sums quoted dwarf the £530 million Government is making available to bring broadband to those parts that markets will not reach. Those for smart metering alone are in the range £1 - 4.5 billion.

But these sums do not take into account the savings that can be made by pooling spend on public service networks, sharing existing infrastructures and mixing technologies and business models according to local needs - provided the barriers are removed.

So how much infrastructure and network sharing is practical and what are the barriers?

How can we bring the Green Energy and Information Society agendas together in affordable investment programmes that will help reboot UK manufacturing as well as the creative industries?

The points made during the morning workshop 'Rolling out broadband to the final third' included:

- The availability of broadband is among the standard solicitor's questions for domestic property transactions, can impact the value of commercial properties hundreds of thousands of pounds and is the top priority for the economic development teams of many councils.
- UK targets for 2015 are modest compared to what could be achieved if currently agreed public funding and that available from industry were joined up, regulatory and planning obstacles removed and 4G spectrum made available at the same time as the rest of Europe.

Main Points:

1. There is enough funding available to build the best broadband in Europe by 2015 provided we make effective use of existing infrastructures and do not duplicate spend on civil engineering separate broadband and smart metering.
2. The obstacles to joining up are mainly regulatory and legal and to do with conflicting business interests and models rather than underlying technology.
3. The more dynamic the market (with genuine competition between varied and evolving service offerings) the important the need for "open" standards to enable inter-operability and choice.
4. The relevant standards have four layers:
 - Catalogues of physical assets (ducts, poles etc.): these appear simplest but are least well-developed and do not meet business needs. There is a trade off between the cost of accuracy and the benefits in operating and maintaining the networks.

- Network components: the standards for technical inter-operability are relatively mature and it may be that we already have all that is needed for the next decade.
 - Operational standards: (performance levels, latency, bandwidth, traffic management) these exist and need to be openly shared to make a reality of inter-operability.
 - Business standards, covering the components of charging and service level agreements (e.g. resilience, reliability, quality of service) are also needed to enable genuine choice.
5. There is a chicken and egg situation with regard to 4G and fibre networks. The backhaul needs of 4G transform the business case for fibre deployment. Is the rapid deployment of 4G across the rest of the EU (well ahead of the UK) because they already have the fibre or is driving the roll-out of the backhaul networks on which others can piggyback?
 6. The education sector already operates national (Janet) and regional (created by the Regional Broadband Consortia from 2002 onwards) networks using a variety of owned and shared infrastructures under a variety of contracts, some of which include shared use by local authorities and communities.
 7. Many of those making new proposals for community and other networks are looking to the education sector as “anchor tenants”. This makes good sense but the cost of selling to, and more importantly supporting (learning content and security as well as technical) is rarely considered. This is particularly important given government plans to devolve budget and other responsibilities to individual schools. It needs to be factored in.

Chairman: Therese Coffey MP - Suffolk Coastal

Lead Participants: Rich Hampshire - Practice Lead, Smart Grids and Smart Metering, Logica
 Anthony l’Anson – Client Director, Strategic Industries, Alcatel Lucent
 Greg Hill - CEO, South Eastern Grid for Learning
 Malcolm Corbett - CEO, Independent Networks Co-operative Association
 Dr Chris Francis – Technical Relations, IBM

The points made in discussion included:

1) Rich Hampshire - Practice Lead, Smart Grids and Smart Metering, Logica

- a) The spend on UK communications infrastructure over the next few years to 2015 is set to be much larger than the usually quoted figures. The OJEU notice for the DECC smart metering PQQ identified the comms costs in the range of £330m to £1.525bn for each of the 3 largely equivalent areas, giving a total of £1 - £4.5 billion. This should be added to the £530 million for Rural Broadband, £150 million for mobile infrastructure, the many contracts for Local and Central Government communications spend (including those for education, health, transport and defence), the UK share of the £7 billion announced by the European Union, the £2.5 billion announced by BT and the investment plans of the other fixed and mobile operators.
- b) 80% of the spend on communications network is on civil infrastructure (ducts, poles etc.) and we already have a surprisingly large number of duplicated networks serving central and local government, education, health, transport, gas, electricity, water and defence. These use a complex (and largely unmapped) patchwork quilt of routes, fibres and equipment, some of which they “own” and some of which they already “share” (e.g. when they use “leased lines” supplied by BT and its competitors).
- c) Logica is helping the Information Society Alliance (EURIM) organise a study http://www.eurim.org.uk/activities/psd/shared_services/SharedNetworkServices.pdf into the issues that need to be addressed to get much better value from the infrastructure spend and help pull-through economic recovery bringing forward and reducing the investment necessary to achieve the best broadband in Europe by 2015 at the same time as bringing forward and reducing the cost of smart metering. If the networks in prospect are also suitable for upgrading to handle the needs for smart grid (and the better management of energy needs) then the benefits are even more dramatic.

2) **Anthony l'Anson – Client Director, Strategic Industries, Alcatel Lucent**

The sharing of infrastructures is already commonplace across other parts of the world including Europe. There are a number of basic lessons that we need to learn but the problems are to do with regulation and politics not technology.

<http://www.eurim.org.uk/activities/ke/111013presentation-ianson.pdf>

3) **Greg Hill - Director, South East Grid for Learning**

Describing the UK's education network is difficult because what it is depends upon your context at the time. Besides, what it is is not important - it's what it does.

- To the national conference in Bristol last month it is a collaborative, professional organisation trying to present a single "persona" to others.
- To members of the cultural sector I met last week, it is a reliable and secure transport system that brings their online resources to the nation's learners.
- To education managers it is a source of advice on e-Safety, Information Assurance and security – SWGfL Winner "360° Safe".
- To teachers it is a source of educational resources and professional development.
- To learners it is a safe online space in which to collaborate.

In the context of this discussion, however, it is yet another feature of NEN that interests us. Yesterday, I was working with a local authority in the South East, helping them to use our service contracts to procure a WAN infrastructure and service that would deliver their requirements for schools and the rest of the Council.

So, in that context, what is the NEN?

Ten regional organisations in England, plus three devolved administrations, using JANET as a backbone to create a single network for education.

The regional organisations (or Regional Broadband Consortia) were established in around 2000 to bring "business class" broadband services to schools.

By 2006 (with a 99% confidence rating) all schools in England were connected.

Key factors in ensuring this:

1. A clear Government strategy, announced and supported by Ministers and published to schools.
2. Central incentives in grant funding – that had to be matched by LAs.
3. Requirements for regional collaboration. Created new, energetic governance models; provided aggregation opportunities and economies of scale.
4. Relatively light touch from the centre permitted local innovation, inclusion and delivery.

Since 2007 there has been a continuing process of review and refresh. Against a stark reduction of central funds, revenue costs have fallen to schools. Costs have fallen but not by enough – 2 Mbps at £20k, now 100 Mbps at £10k.

Bandwidths have risen – doubling every 18 months.

Connections have risen – 3,000 to 4,500 in the South East.

But more complex with fragmentation of schools' market. Reducing appetite for cross-subsidies; aggressive selling of poorly understood technologies directly to schools.

And, within that, greater reliance on the schools' sector to perform "anchor customer" role in ambitious LA procurements for Shared Services and PSN.

In this environment, we need to be careful. If we wish schools to be part of the bigger, aggregated, picture of shared networks delivering shared services, someone needs to tell them!

4) **Malcolm Corbett - CEO, Independent Networks Co-operative Association**

Even at the level of sharing existing infrastructure (ducts, masts and poles) linking the broadband and energy agendas seems to be difficult in this country. Efforts by civil servants to bring the utility companies into this debate appear to have borne little fruit so far.

It doesn't have to be like this. In other countries energy and telecoms can work together successfully. In rural Denmark local energy distribution co-ops have been [rolling out fibre](#) to the home since 2007. These organisations are used to building infrastructure with a payback period of 20+ years and understand that as well as providing new next generation broadband services they can evolve their smart grid & smart metering programmes in tandem. By 2012 they aim to have all homes and businesses in their region of Jutland connected to fibre.

Similarly in the United States the rural energy and telecommunications co-ops are working together on a common agenda. Set up from the 1940s onwards to serve rural Americans, the utility co-ops have created organisations like the [National Rural Telecommunications Co-operative](#) to strengthen their broadband and energy services through 'integrated smart grid technologies and energy efficiency solutions, wireless technologies, long distance programs, mobile phone service, IP backbone services, and programming distribution rights for video providers'.

Neither of these examples is the same as linking two sets of government priorities but they demonstrate that on the ground, co-operative approaches involving both sectors can work. At a time of big ambitions for broadband and energy efficiency, but straitened circumstances, maybe it is about time that the ministers involved got together to encourage the different players to climb out of their silos and develop a co-ordinated agenda.

5) **Dr Chris Francis – Technical Relations, IBM**

We are using a very loose use of the term "standards". There are probably four broad layers:

a) Physical access infrastructure - ducts and poles. This area looks to be the simplest but is the least well developed. The benefits from improving and standardising the way these are described to the "market" needs to be offset against the cost of maintaining an accurate asset registry.

b) Network infrastructure layer - the 'telecoms' layer of cable/fibre/switches etc. The standards here are relatively mature so there is little reason to believe that more work is needed, other than to ensure that those responsible are aware of what has already been done.

c) The network capability or performance layer – bandwidth, latency, reliability etc. If you are offering or planning to use a network you need a common way of communicating its capability and performance. There is work in this area but it needs more attention with national exercises put into international context if we are to have effective inter-operability at the operational level.

d) Legal & management - charging basis, liabilities, traffic management and service level arrangements. There is a need to agree a common, possibly automated, way of understanding the wide range of capabilities and the business models behind the offerings: from high cost, high performance through to "best efforts" so that offers can be matched to requirements. This appears to be pretty much a blank sheet with much that is static or negotiated on a case-by-case basis. Work in this area is essential if we are to have a genuinely open market.

The alternative to effective standards is effective brokerage in the market - with the brokers setting the 'rules' of engagement. But they may well do so in ways that suit current dominant players and/or create new ones – closing off the market to future change.

6) Other points

- a) The Technology issues are resolved, the issue is clarity in policy and clarity of language used – there isn't a common understanding of vocabulary used.
- b) We have a false dichotomy between interventionist behaviours which aim to deal with supposed market failure and operational behaviours which deal with making things happen.
- c) There was agreement that there is an opportunity to align bits of infrastructure.
- d) Timing (to exploit windows of opportunity with regard to contract renewals and funding availability, private sector as well as public sector) is important if sharing is to actually happen.
- e) The delay in spectrum decisions/actions means that the UK is missing the demand for fibre backhaul for 4th generation mobile networks that is driving investment in fibre networks across the rest of the EU. But deployment of 4G in Sweden was accelerated because they had already put in place a dark fibre network rather than waiting to justify it (the Kevin Costner, build it and they will come!). Sweden has a fully automated dark fibre trading platform!
- f) There was disagreement over the risk that, because government does not understand what drives private sector investment, it will act too early and put in investment that the market will deliver anyway – when the 4G spectrum is available. It was said that we need to understand the impact of cross cutting initiatives and the overall economics of broadband, 4G, smart metering and public service delivery programmes if timing can be aligned
- g) Comments around planning consents – e.g. place conditions in permissions that fibre is laid as part of the build programme. For example British Gas is said to put down Tb fibre when they are doing civil works. 80% of the cost of laying networks is the "civils" – so they get a potential massive benefit at a marginal cost.
- h) Comment that divergent agendas may lead to duplication of effort. The case cited is the Smart Meter / Smart Grid example. Existing cellular networks can support smart meters – but fixed line networks will be required for Smart Grid as IP latency at the (cellular) "air" interface meant it wasn't suitable for smart grids.
- i) The education sector already operates national (Janet) and regional (created by the Regional Broadband Consortia from 2000 onwards) networks using a variety of owned and shared infrastructures under a variety of contracts, some of which include shared use by local authorities and communities.
- j) Many of those making new proposals for community and other networks are looking to the education sector as "anchor tenants". This makes good sense but the cost of selling to and more importantly supporting schools and academies (including learning content and security as well as technical support) is rarely considered. This is particularly important given government plans to devolve budget and other responsibilities to individual schools. It needs to be factored in.

7) Conclusions

There is much to be gained (savings in time, cost and scarce resources) from bringing together the planned investments in civil engineering and network infrastructures but there are issues that need to be considered as a matter of urgency if the UK is to meet its targets for broadband and for smart metering to time and at affordable cost without mortgaging the future.

The comments made in the course of the meeting will be fed into the group planning the Information Society Alliance (EURIM) Study on "Shared Network Infrastructures".

http://www.eurim.org.uk/activities/psd/shared_services/SharedNetworkServices.pdf