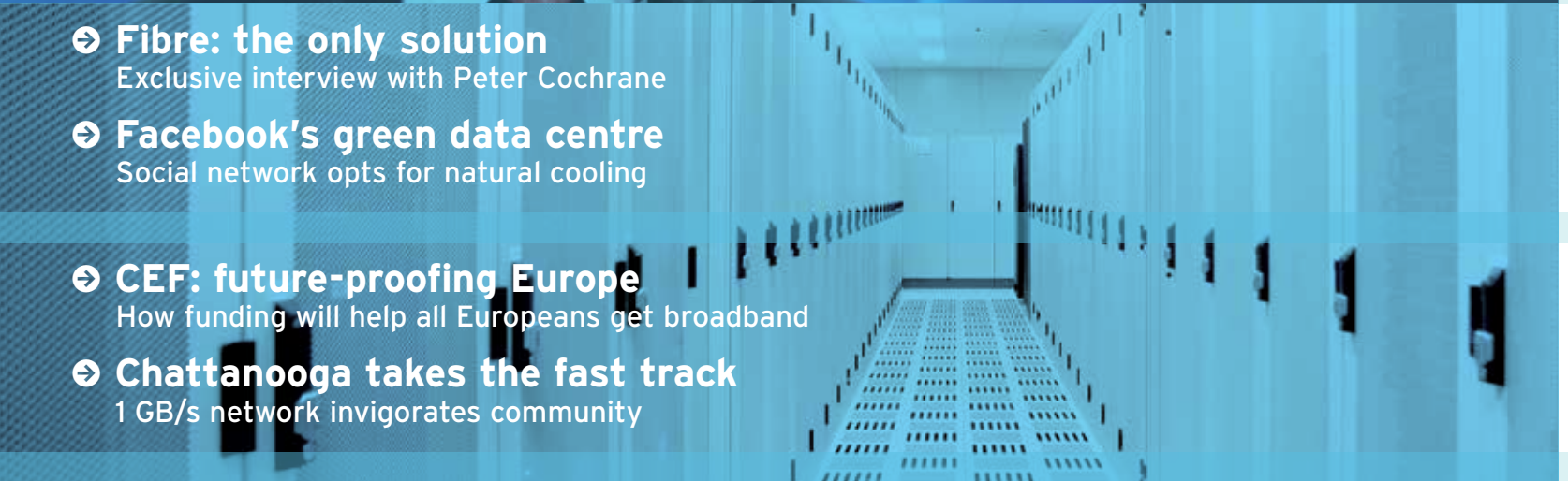


NEXST #2-12



- **Fibre: the only solution**
Exclusive interview with Peter Cochrane
- **Facebook's green data centre**
Social network opts for natural cooling
- **CEF: future-proofing Europe**
How funding will help all Europeans get broadband
- **Chattanooga takes the fast track**
1 GB/s network invigorates community



A closer look at financing fibre

Governments, investors, businesses and academics all agree on the benefits fibre can bring. However, in the large, complex field of financing, with its wide variety of stakeholders, determining who should be paying for what can

become a lengthy, complicated process. In many cases, the sheer amount of available data only adds to the confusion. In this issue, we'll be focusing on vital aspects of solving the puzzle: clear data and creative thinking. Who stands to

benefit from fibre, and in which ways? How can different parts of a network be financed by different parties? We look at new ways of analysing needs, potential returns, unique investment models, and a variety of drivers.



"What the economists don't get is that the rewards aren't linear – they're exponential."

Peter Cochrane, futurist, entrepreneur, business and engineering advisor to international industries and governments

"Even with the current Eurozone crisis, there is potentially plenty of capital for FTTH over the next eight years."

Jacek Krauze, Financial Advisor and Corporate Financier, Portland Advisors

"Broadband leads to more jobs, higher GDP and a higher GDP growth."

Tom Lindström, Director Government & Industry Relations, Ericsson

"A community without high-speed, high-quality connectivity will have trouble attracting new business."

Michael Curri, founder and CEO, Strategic Networks Group

"The internet as we know it – and, more generally, ubiquitous connectivity – is an economic powerhouse. It creates jobs and wealth, it has led to the emergence of a new generation of entrepreneurs all over the world, it has driven huge efficiency gains in businesses, with about as much, or more, still to be gained."

Benoit Felten, CEO, Diffraction Analysis

"It is not possible to maximise access while failing on fibre. The current rate of new connections is simply not enough to meet our 2020 targets. We have to intensify our efforts and get higher investments on the ground."

Neelie Kroes, EU Commissioner for Digital Agenda

#2-12


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NEXST is a periodical about the global broadband and telecoms industry.

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Art direction, design and layout LandofPlenty (Antoin Buissink) Photography ANP, Titus Brein, Corbis, Getty Images, Hollandse Hoogte

3D animations 3D-Graphicdesign.com (Alwin Brandt Corsticus) Printer Drukkerij Koopmans

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The only solution

*"The debate is now;
not 'if' or 'when',
but 'how'?"*

Peter Cochrane: futurist, entrepreneur,
business and engineering advisor

Only fibre offers a path to a sustainable future, claims *Peter Cochrane*, keynote speaker at the FTTH Conference 2012

For years, businesses, governments, operators, investors and developers have been waiting for a 'silver bullet' which would make investing in FTTH either unnecessary, or more clearly worth their while. However, according to Peter Cochrane, no killer apps, no 'one' topology or technology, will suddenly make fibre more attractive. In his opinion, the real driver for fibre is an extensive menu of options that countries and companies can choose from to meet local needs today and in the near and distant future.

LOGICAL DECISION

"For decades, we have had sufficient knowledge to make the right choices," says Peter. "The first optical local loop system rivaling copper was deployed and tested back in 1986. Just a few years later it was clear that FTTH was not only cost-effective when compared to both installed and new copper, but it also offered huge savings with regard to equipment, labour and truck rolls. However, the copper and wireless industries claimed their technologies could do the job just as well. People even began to ask really silly questions: 'Why would anyone want 64kb/s? Or 100Mb/s? Whatever would they use it for?'"

"Clearly, they were still thinking in Mb/s, whilst it has been clear for quite some time that the future is all about Gb/s. We simply must have FTTH to meet today's needs and demands, let alone tomorrow's requirements. We're already missing out on so many promising developments. Only 7% of internet-ready TV sets can gain access at sufficient speed to be used as intended. The fact that video conferencing is still underused does not signify a lack of need, demand, or suitable technology, it merely shows there's a lack of network bandwidth and connectivity. Home, remote, and mobile working would all grow exponentially if only the required bandwidth and connectivity were made available."

BLOCKING PROGRESS

"Our future, and that of the planet, lies in the hands of new technologies and new models for industry and society. We can't achieve sustainable economies if we stick with old technologies

and old industry models. Tinkering at the edges won't cure this problem, we have to make bigger changes. A lack of bandwidth and connectivity are presenting the ultimate road block to our progress and there is widespread frustration in industry, education, healthcare and in the home."

What's more, this frustration can only grow exponentially in the future. "3D printing, for example, is going mainstream in industry now and soon it will be in every office, and later, every home" says Peter. "This is revolutionising the way we think about design and production. We're moving from bulk materials and the destruction of resources to new ways of realising complex structures, and integrated components such as tolls and gearboxes. The first prototype bicycle and car have been printed, whilst in the medical field, bone elements, such as the human jaw, have been successfully replaced by printed components. Today, we can even manipulate a single atom and program individual cells to create human tissue, with replacement spinal discs already at the animal testing stage."

"And there is much more! Nano and bio sensors are providing new inroads into ultra-fast genome decoding, and disease detection and identification. This will change medicine and healthcare completely by putting more capability into the hands of the user. We might confidently predict that self and home care will eclipse hospital and state care in the coming decades."

GREAT PROMISE

"Beyond all this is a 'networked world' that sees crowd sourcing as a business tool, with distributed problem solving and design as the norm. In addition, cloud computing will not take off or be cost-effective without sufficient bandwidth and connectivity to enable on-line applications and resources to be accessed at speed. One of the most promising new technologies now emerging in this space is voice accessible artificial intelligence on a massive scale."

"This has already been demonstrated by IBM Watson and is being adopted by the medical profession in the USA where it is demonstrating a greater accuracy of diagnosis than any human doctor. ➔

➡ “Without doubt the future holds great promise, but to be an active player and contributor we need high-speed networks to connect all participating peoples and nations. To be outside this community will mean being outside the 21st century economy as the world moves forward.”

GREEN LIGHT

There are several reasons that the roll-out of FTTH is taking place so slowly, according to Peter Cochrane. These include vested interests, outdated business models and a lack of real understanding or the will to change. But the economic case for fibre really doesn't require further proof, he says. No one is seeing or forecasting a downturn in net traffic and the rise of wireless devices means more optical fibre everywhere.

“Despite the slow uptake, optical fibre has already revolutionised telecoms at national and international level. It has sidelined satellites, enabled the internet, vastly reduced costs and improved profit margins. Fibre has reduced faults by more than 99% and increased capacity by an absolutely stunning power of more than 106. Looking back, it is hard to think of another telecom technology that has seen more debate, more vacillation, and less real action than FTTH. It has taken over 20 years for the worlds of government, regulation and industry to get the picture. But now I think we can safely assume that we have a ‘green light’ and deployment is no longer optional. The debate is now; not ‘if’ or ‘when’, but ‘how’?” ➡

SOCIO-ECONOMIC BENEFITS

An extensive study conducted by Ericsson, Arthur D. Little and Chalmers University of Technology confirms that increased broadband speed contributes significantly to economic growth.

Doubling broadband speed equals a 0.3% increase in GDP. This has been measured in the 2-20 Mb/s range, but there is sufficient reason to assume this is also the case for higher speeds. Automating and simplifying processes, increasing productivity and improving access to basic services such as education and health all lead to positive effects.

ECONOMIC DEVELOPMENT

Strategic Networks Group have extensively researched how better broadband leads to higher productivity in the USA. In a nutshell: for a business or organisation, 10% more internet means 24% higher revenues and 7% reduced costs. Furthermore, according to Strategic Networks Group, the positive ROI on e-solutions for improving productivity is 8.9% higher for fibre users than for cable users and 14.2 percent higher than for DSL users.

**10% more internet means
24% higher revenues and
7% reduced costs**



Peter Cochrane, FTTH Conference Keynote Speaker, entrepreneur, business and engineering advisor

Peter Cochrane has over 40 years of experience in the creation and deployment of new technologies and starting of new businesses. He has been a planning and

R&D engineer, Head of Research and CTO at BT and responsible for developments that eventually led to IP, eCommerce, eRetail and eLogistics. He

now runs his own consultancy company, invests in start-ups and acts as an advisor to industry and governments.
cochrane.org.uk



Home of the web

For companies and institutions that rely heavily on their online presence, a data centre offers vital benefits

The internet is a worldwide network of networks, connected with the Internet Protocol (IP). At an Internet Exchange, Internet Service Providers (ISPs) can interconnect these independent networks. For companies and institutions which depend on an online presence, data centres at these exchanges offers vital benefits like cooling, physical security, monitoring, more bandwidth, low latency, storage across multiple locations and backup power.

GLOBAL EXCHANGE LEADER

The Amsterdam Internet Exchange (AMS-IX) is one of the world's largest and fastest growing Internet Exchanges. Keywords are neutrality and an independent environment. All major Dutch internet companies, and many international

ISPs, have established connections with AMS-IX. Here, ultra-fast connections to access devices of 10 Gigabit and multiples thereof are common, with 100 Gigabit Ethernet (100GE) on its way. The infrastructure is housed in eight data centres in and around Amsterdam in secure and controlled environments. Each site is equipped with access devices which enable connections to the AMS-IX infrastructure.

ORIGINS OF THE INTERNET

One of the AMS-IX data centres is located at Nikhef, the National Institute for Subatomic Physics. "Our scientists and technicians have been involved in the development of the internet right from the very start," says Wim Heubers, head of Nikhef's ICT department. "The

motivation has always been scientists' needs to make disparate information and databases accessible in a quick and simple manner. The origins of the current data centre can be traced back to 1980, when we made a connection to CERN in Geneva, with a 1200 Baud modem. At the start, in 1996, the exchange was small and informal but now, following the enormous expansion of the internet, AMS-IX is one of the most important in Europe, with almost 400 clients.

"Considering the World Wide Web only became a reality less than 20 years ago, it is amazing how the amount of traffic has increased, and continues to grow exponentially. Without today's advances in fibre technology, accommodating this would simply be unimaginable." ◀

Joining forces

In Schleswig-Holstein, Germany, nine fibre projects have been bundled together as one, in order to reach the size required to be funded by the European Investment Bank



"The Investitionsbank Schleswig-Holstein (IBSH, or Schleswig-Holstein Investment Bank) has been financing broadband, and fibre projects in particular, for several years now, through public sector loans," says Olaf Tölke, Head of Public Sector and Infrastructure Financing at the bank. "In 2009 we started developing our 'IB.Broadband' product, which includes consulting, long-term financing and funding for other banks. To successfully finance nine small and medium-sized projects fibre projects requiring €490 million, IBSH bundled them together as one project, and called it 'Broadband Schleswig-Holstein'."

SINGLE ENTITY

A local intermediary 'translated' the bank's requirements to the projects, municipalities, and corporations involved. This approach allowed the European Investment Bank (EIB) and Landwirtschaftliche Rentenbank to evaluate the loan as they would any other, and award it money issued by the EU and the federal government for projects in the region. "In this model, IBSH carries the risk," states Olaf. "We also operate, benchmark and check the project as one single entity, although each individual project has to be

profitable in the long run. This was a new approach for EIB, and now the pilot has been concluded, we are ready to copy and roll it out elsewhere."

STATE GOVERNMENT

"In my view, very fast internet is absolutely necessary, as a basic infrastructure," Olaf concludes. "Municipalities benefit from the roll-out because citizens – even the younger ones – and corporations don't move away. In Schleswig-Holstein, with lots of agricultural regions, it's even more necessary to put a great deal of effort into motivating investors – which is what we're doing." ←

LOCAL FUNDING

For the state government, broadband expansion is high on the political agenda, so local strategy proposals have been developed in addition to the country's national broadband strategy. This has resulted in a regional broadband financing programme, which provides funding for underserved communities, and information and advice to municipalities, corporations and projects on broadband issues.



Olaf Tölke, Head of Public Sector and Infrastructure Financing at the Investitionsbank Schleswig-Holstein

Olaf Tölke, Head of Public Sector and Infrastructure Financing at the Investitionsbank Schleswig-Holstein, manages the 'Broadband Schleswig-

Holstein' project with a total amount of 15 projects today and an investment of at least €1 billion. Previously, he was credit analyst, project manager, head of

basic policies and procedures, and chief commercial officer at Schleswig-Holstein Energy Agency.
www.ib-sh.de

South Westphalia's constitutional network

Where access is not profitable for large network operators, a municipality-owned telco provides connections. *Stefan Glusa*, Executive Director of TKG Südwestfalen mbH, explains



Germany's high-altitude South Westphalia region spans some 6,000 square kilometres, and its least-inhabited areas house no more than 86 inhabitants per square kilometre. Population has been steadily declining for some time now, and a lack of internet had been hampering the local economy. This was seen as contrary to the national constitution, which states that all Germans have a right to equality of

living conditions – including infrastructure.

UNBUNDLING INFRASTRUCTURE

Local authorities were inspired by Australia's National Broadband Network, rolled out by the state-owned NBN Co. This led to the foundation of a South Westphalian municipality-owned telecommunications company, which takes an innovative public-private

partnership (PPP) approach within the sector. The successful concept might well be adopted by governments in need of an organisational structure for providing broadband in rural areas. Telekommunikationsgesellschaft (TKG) Südwestfalen mbH builds and owns its own network, successfully unbundling infrastructure from services. This has made it possible to provide high-speed broadband

coverage in a topographically challenging, large and diverse rural district. In the long term, TKG would like to get high-speed connections to every building in the wider area.

PUBLIC PARTICIPATION

"Our mission is to enable private operators to serve underserved areas," explains Stefan Glusa. "Because of the long-term return on investment, only municipal shareholders ☒

☒ Traditionally, market entrants lacked access to the fixed-line copper local loop owned by incumbent local exchange carriers. A policy instrument

known as local loop unbundling ensures incumbent carriers lease (parts of) their telecommunications network to competitors. Local loop unbundling intends

to stimulate competition, broadband penetration and provide communities with economic benefits through broadband and internet access.



we were able and willing to pre-finance the infrastructure. In our experience, private telcos are only prepared to take care of about 75% of the market, and consider the remaining quarter too costly.

"That's why we chose a public participation model (PPM), combining publicly owned networks with additional private and corporate investments. This required a lot of preparatory work, as well as highly individualised planning, roll-out and constant monitoring – leading to excellent results. The PPM approach makes it possible for the communities to 'own' next-generation access infrastructure in areas where it would not have been built by private companies.

Rapidly minimising the gap between urban and rural areas is becoming more and more important. Especially in areas where there are a large number of decentralised

industrial production sites and medium-sized, privately owned companies. This is a very common aspect of the South Westphalian region's economic structure."

FURTHER EXPANSION

"For local government, it is also important to see the many small villages, with less than 2,000 inhabitants, provided for. These villages account for up to 40% of all residents in the district. The city of Schmallenberg, for example, consists of 82 separate villages, some of which have less than 20 households. This is a real challenge in terms of designing a network and providing services.

"So far the TKG has been

able to expand its core network to adjacent districts in the south, south-east and north. With an annual budget of some €1.5 million, the TKG will carefully continue roll-out over the next three years. The choice of future projects is supported by the TKG's own civil engineering coordination database, which provides a detailed overview of current and future activities by other public construction authorities. This includes countryside highways, district and city road works, water, electricity and utility projects, and underground work in general. Whenever there is a chance for a joint public-private opportunity, the TKG will start a new FTTx project."



Stefan Glusa, Executive Director of TKG Südwestfalen mbH

Stefan Glusa, MA, has worked at improving broadband coverage in rural areas since 2005. He was lead project manager of the 'Broadband-Initiative Hochsauerlandkreis'

pilot project for the expansion of infrastructure in the Hochsauerlandkreis district, co-funded by the federal state of North Rhine-Westphalia. In 2008

he became Executive Director of TKG Südwestfalen mbH.

www.tkg-swf.de/

The real cost of broadband

When Neelie Kroes announced broadband targets of 100 Mb/s for 50% of all Europeans by 2020, the European Commission consulted the FTTH Council Europe – with surprising results

“Europe’s governments and major industry organisations are increasingly partnering with our Policy and Regulation Experts Group,” explains Hartwig Tauber, Director General, FTTH Council Europe. “We’ve been taking part in several EU public consultation procedures, in which stakeholders and experts provide commentary on a document or proposal. In calculating the total cost of providing Europe with broadband, the EU had taken a ‘top down’ approach. However, we started from scratch and worked through the figures ‘bottom up’, using the most advanced network planning software.

“Calculations were made for both PON and point-to-point topologies, based on microducts, which are common in Europe. A network with 70 active and passive components was defined, and current market prices for materials and labour, which vary by country, were

collected. Detailed Eurostat data on population demographics and density was included. Calculations were extrapolated to work out the cost of the digital agenda target, but also lower and higher degrees of penetration.”

THE RESULT

For 100% coverage and 50% adoption, the Council arrived at a cost of €190 billion. An important contributor to this lower costing is the correction for density: in a rural area, the official figure for population density might be ten households per square kilometre. However, these won’t be distributed across the full square kilometre. People tend to live fairly close together, often along natural features like rivers or valleys, and share infrastructures. In major cities, there are recreational areas, with no fibre. Where there might be 3,000 households per square mile, there’s no need to take fibre to rivers or parks within that

square mile, so the actual deployment cost is lower.

FURTHER SAVINGS

Factoring in what’s already actually been deployed, or is in the process of being deployed, brings down the cost further. In addition, even greater savings can be realised through infrastructure sharing. This could be through existing telecommunications ducts, or in ducts owned by other parties, such as gasworks and electricity companies. Or even by using aerial cables in places. In effect, the European Commission’s previously calculated cost of getting fibre across Europe – €280 billion – could turn out to be at least a third lower. The difference could make fibre projects far more attractive to investors and governments. Using the new cost methodology can help create a practical, realistic scenario and devise or refine national broadband plans. ←



Hartwig Tauber, Director General, FTTH Council Europe

The **FTTH Council Europe** is an industry organisation with a mission to accelerate the availability of fibre-based networks

to consumers and businesses, in order to deliver a flow of new services that enhance the quality of life, contribute to a

better environment and increase economic competitiveness.
www.ftthcouncil.eu

Access to broadband should be a legal right, according to Suvi Lindén, Finland's former Minister for Communications and currently Special Envoy for the ITU's Broadband Committee. That's why all Finnish homes should have fibre connections by 2020

The right to fibre for Finland

In recent years, Finland has seen a marked change in its communications infrastructure policy. "Broadband connections are no longer a luxury, but necessary tools in day-to-day life," says Suvi. "Our public sector, for example, can improve its productivity by using next-generation communication technologies as an integral part of its services. Without adequate communications connections, citizens cannot be part of today's information society. That's why our government set down ambitious goals for broadband deployment in 2008."

UNIVERSAL SERVICE

"We wanted every permanent residence to have reasonably priced access to a subscriber connection, with an average downstream rate of at least 1 Mb/s, by the end of 2010, without relying on public funding. This rate of 1 Mb/s was defined as a universal service. Of course, faster and more symmetrical connections will be needed in the future, as both downstream and upstream rates need to be higher.

"A rate of 100 Mb/s will provide better


opportunities for teleworking and the development of social networking services. By the end of 2015, we want virtually all permanent residences to be within two kilometres of an optical fibre or cable network. The speed for the last mile depends on the needs of the household. For some people, wireless technology might be sufficient, but many households will demand fibre to the home, making universal 100 Mb/s connections viable. The government and municipalities will support this in areas where lower costs for investments are sought after. For example, by including optical fibre, or at least ducts, as part of municipal planning. Planned road constructions and electrical network maintenance will be fully exploited for fibre roll-out.

"Coverage of around 95% is expected to be achieved as telecom operators roll out high-speed connections in built-up areas. To extend that coverage to 99%, partly-subsidised high-speed connections will need to be taken to around 120,000 households in rural areas. To cover the

last 5%, public aid will be made available to selected projects, some 800 in total. In some cases, a cooperative society or group of municipalities has established a company in order to set up a fibre project, instead of leaving this to traditional telecom operators."

BALANCING DIFFERENCES

"Rural broadband is important because it gives people hope, by supporting job creation, for example," Suvi explains. "In addition, information society services, such as teleworking and remote healthcare, are just as important in rural areas as they are in cities, if not more so. However, some operators are cutting back services in the fixed copper network in rural areas. In our major cities, the current household price for a 100 Mb/s subscriber connection can be the same as for a 1 Mb/s connection in non-built-up areas. Optical fibre connections will balance the regional differences in the supply of communication services, meeting the future needs for both mobile and fixed broadband connections." ◀

A portrait of Suvi Lindén, a woman with short blonde hair, looking upwards and to the left with a slight smile. She is wearing a white collared shirt and a red vest with a colorful, abstract pattern of green and blue circles. The background is dark.

*“Information
society services
are just as
important in
rural areas as
they are in cities”*

Suvi Lindén

NORTHERN SAVONIA

This remote region of Finland consists of 21 municipalities with seven cities and 248,000 inhabitants. 69% of the workforce is employed in the

service sector, 23% in industry and construction and 8% in agriculture and forestry. Tourism and information technology, especially healthcare services, have been growing strongly.

One-fifth of the region's surface consists of water, which made digging trenches particularly challenging, so a local cooperative society was founded to enable fibre roll-out.

NEXST NEWS

News and views on all the latest FTTH and telecoms developments



600 MILLION LINES WORLDWIDE

GROWTH IN DEVELOPING MARKETS

The number of active broadband wireline subscribers reached 597 million at the end of 2011, passing the 600-million threshold this quarter, according to figures from Point Topic released by the Broadband Forum. New installations have slowed in developed markets with

high-penetration rates, but growth is strong in developing markets such as Brazil, Russia, India and China. Although Europe is still the top region, China is the fastest growing country, with over 12 million subscribers. "This is an exciting return to higher growth figures and points to a strengthening in the broadband market," says Robin Mersh, Broadband Forum CEO.

www.broadband-forum.org

INTERNET USERS IN THE WORLD

X103

1995: 16.000.000
2010: 1650.000.000

EU DIGITAL AGENDA SURVEY UNDERWAY

POINT TOPIC MAPS EU BROADBAND

The broadband communications services information provider Point Topic is working on the most detailed European broadband coverage mapping survey ever undertaken. Commissioned by the European Commission, the project is aimed at over 300 European broadband operators and their national regulators, and includes all 27 EU countries, plus Norway and Iceland. It will help monitor how far Europe

has progressed towards its objective of ubiquitous superfast broadband and where action will be most needed to achieve the EU Digital Agenda targets.

The new survey covers more broadband-delivering technologies than previous projects, focuses on superfast next-generation networks, delivering speeds of 30 Mb/s and more, and maps broadband coverage at local levels to uncover gaps and weaknesses. Key results will be published online as part of the EU's Digital Agenda Scoreboard.

www.point-topic.com



NTT COM LAUNCH IN INDONESIA

JAPANESE COMPANY EXPANDS ACROSS REGION

NTT Indonesia, a local subsidiary of Japan's NTT Com, has launched a fibre network in the East Jakarta Industrial Park. The company plans to build and operate more fibre networks in industrial parks and offices countrywide. In December 2011, NTT Indonesia received a fixed-line operating license from

the Indonesian government, making NTT Com the first foreign carrier to operate an end-to-end fibre network in the country.

Previously, the company announced a collaboration with the Lao National Internet Center to provide Laotian ISPs with access to its Tier-1 network. NTT Com also plans to upgrade its PC-1 cross-Pacific cable to true 100G by mid-2013, more than tripling capacity to 10Tb/s.

www.id.ntt.com

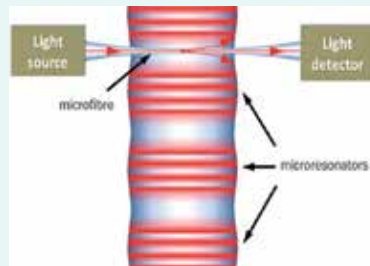
#1-12

**BULGING FIBRE
BREAKTHROUGH****NEW TECHNOLOGY
MAY LEAD TO OPTICAL
COMPUTING**

Switching and processing data usually requires light pulses to be converted to electrical signals and then back into light, which costs energy. According to US researchers, a low-loss, fibre-based resonator allows all-optical switching without significant losses that could vastly boost the performance of networks. With a single resonator, the researchers claim to have trapped light for 100

times longer than is possible with lithographically-made resonators. The device, essentially a 20–40 µm bulge in an optical fibre, is much more efficient than conventional silicon designs and may even lead to all-optical computers.

www.opticsinfobase.org

**5 EASY STEPS FROM
ODP TO CLIENT****RETRACTANET^{XS} DIRECT
BURIED SOLUTION**

RETRACTANET^{XS}

HIDDEN EXTRAS

Scan the code above to watch an animated demonstration of the RetractableNet^{XS} system.

Prysmian RetractableNet^{XS} employs a specially manufactured cable filled with smaller fibre modules, which runs from the Optical Distribution Point to the customer premises. Modules are cut at one point in the network and retracted to another, where they are fed or blown directly to the customer premises through microducts.

The solution is easy to use, fast, flexible and reliable: highly efficient for both existing neighbourhoods and greenfield deployments. Saving on skilled labour and materials, it provides quick connections at a low Total Cost of Ownership. Compared to traditional P2P solutions, RetractableNet^{XS} can reduce overall OSP network deployment cost by up to 10%. Currently, major field testing is underway - more on this in the upcoming edition of NEXST.

<http://tinyurl.com/retractanetxs>

**PRYSTYLE: MAKING
CABLE FASHIONABLE**
**ITALIAN DESIGNERS TAKE
TO RECYCLING**

Italian jewellery designers Scarti have come up with a fantastic way to recycle cable offcuts, which are discarded in the production process. At the hands of expert designers, these segments are combined with natural materials to create striking,

colourful and wearable works of art.

"Art and our cables - two very different worlds - magically come together to create an exclusive and unexpected reality: Scarti Jewels. The beauty of this transformation is even capable of surprising people like us, who deal with systems and technology on a daily basis," says Cinzia Farisè, CEO Prysmian India.

<http://www.prystyle.it>





Future-proofing Europe

The European Commission's Anna Krzyzanowska explains how funding will help Europeans get access to basic broadband by 2013, and fast and ultra-fast broadband by 2020

“The European Commission is proposing a €50-billion funding plan as part of the EU budget proposals for 2014 to 2020,” states Anna Krzyzanowska, Head of the EC DG Information Society ‘Evaluation and Monitoring’ Unit. “The fund is intended to encourage private and public investors to finance projects which, in some cases, would otherwise not be built. The €50-billion budget encompasses trans-European networks in the fields of transport (€31.7 billion) energy (€9.1 billion) and telecommunications (€9.2 billion on broadband and digital service infrastructures). This builds on existing policies and previous work in areas such as access to multilingual resources, public sector information, safer internet, digital libraries and digitised cultural heritage.

2020 VISION

“The EU’s growth and jobs strategy ‘Europe 2020’ requires smart, sustainable and fully interconnected transport,


energy and digital networks, most of which will be ICT-enabled in some way. Effective interconnection of networks can only be achieved at the European level, guaranteeing minimum cost to all citizens. The the Connecting Europe Facility (CEF) aims to support infrastructures with a European and single market dimension. It also aims to build an environment conducive to private investment and develop instruments that will be attractive vehicles for specialised infrastructure investors. CEF seeks to find common solutions for all sectors, wherever possible and practical.”

BEST PRACTICES

Introducing CEF as a common funding framework has four advantages. It helps simplify the EU legal framework concerning infrastructures funding. It contributes in providing a coherent and transparent approach to EU funding. The progressively increasing interdependency

between economic infrastructure projects, networks and sectors can lead to economies of scale. Finally, lessons learned and best practices can be easily shared.

STEPS AHEAD

“Looking at target areas, we’re planning to provide grants to rural regions in particular. In suburban areas, the introduction of innovative financial instruments should tip the scale towards fibre investment. Urban areas are not a priority, as the market should deliver there. Beneficiaries could include telecoms operators – incumbent or new entrant – utilities, regional bodies including municipalities, public private partnerships and new alliances and partnerships, including equipment providers. Wherever there’s a business case that needs a little strengthening, we can support in different ways, with a variety of financial instruments. 

Loans and guarantees, for example, or bonds and equity. This is a different approach to the more traditional provision of grants.”

SPECIFIC PROJECTS

“We’re paying special interest to specific projects and areas. Smart energy services, for example, in which

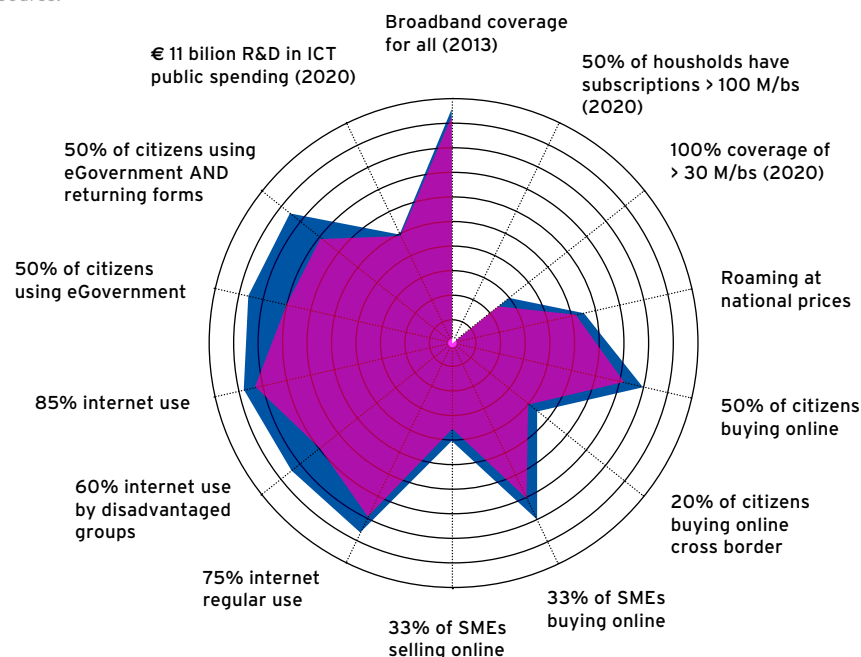
we’re interested in linking energy and telecoms infrastructure. Where safety and security are concerned, we’re looking at making the internet safer for children and at critical information infrastructures. Also high on the agenda are setting up cross-border business, eGovernment, eHealth, eIdentification for secure transactions

and eJustice. Regarding this last point, information on judicial systems and improving access to justice throughout the EU are targeted specifically. For broadband infrastructure, we’re looking at supporting mapping, planning and feasibility studies. In the area of digital services, we’re targeting promotion and policy support.”

HOW THE EU SCORES ON THE DIGITAL AGENDA TARGETS

Pink = 2010, Bleu = 2011. Targets refer to 2015 unless otherwise is stated

Source:



ENCOURAGING INVESTORS

In October 2011, the EC proposed a plan which will fund €50 billion-worth of investments intended to improve Europe’s transport, energy

and digital networks from 2014 to 2020. The €9.2 billion envisaged for broadband and digital service infrastructures will help to reach ultra-fast

internet targets. The goal is to provide all Europeans with 30 Mb/s and 50% of European households with 100 Mb/s by 2020. Ultra-fast broadband will

help in developing services in the areas of eGovernment, eHealth, public sector information, digital libraries, digitised cultural heritage, and much more.



Anna Krzyzanowska, Head of the EC DG Information Society ‘Evaluation and Monitoring’ Unit

Anna Krzyzanowska joined the European Commission in 2005, assuming responsibility for implementing Risk-Sharing Finance Facility, a €10-billion loan facility for

research intensive companies, developed by DG RTD and the European Investment Bank. She is currently Head of the Commission’s DG Information Society ‘Evaluation and

Monitoring’ Unit and also coordinating the DG efforts related to Connecting Europe Facility in the area of broadband and digital service infrastructures.



The world's leading social network intends to build one of the most energy-efficient and environmentally friendly data centres in Luleå, Sweden, making the region a major node for European data traffic

“After a rigorous review process of sites across Europe, we concluded that Luleå offered the best package of resources – including a suitable climate for environmental cooling, clean power resources, available land, talented regional workforce and supportive business and corporate environments,” says Tom Furlong, Director of Site Operations at Facebook. “Luleå’s city authorities, the Ministry of Enterprise, and Invest Sweden have been tremendously persuasive in helping us make this decision. We look forward to joining the community and working with them to provide faster, more reliable and a more robust service to people around the world, who rely on Facebook to connect and share.”

TOUGH DECISION

“Finding the right location was a truly tough decision, as there were several good candidates,” explains Janne Fredriksson, spokesperson for Facebook Nordic. “Luleå was chosen because the region very successfully met a combination of criteria. For one thing, the cold climate offers natural cooling. We have access to renewable energy from the adjacent river, which generates twice as much electric power than the Hoover Dam in the USA.”

NEW ERA

“In addition, there’s a stable electrical grid already in place, as the region has served the mining and construction industries successfully for many years.

Finally, we have direct access to desired competences at the nearby university. We believe that this substantial financial investment can mean quite a bit to the local community, both in terms of jobs created and exchange of competence for the region. To maximise future collaboration with the local community, we also expect to work with local players as much as we can. We are still in the construction phase, and further details will be worked out as we go along.”

“Facebook’s data centre in Luleå marks the beginning of a new era, as we are now entering a digital industrial age,” concludes Mayor Karl Petersen, an enthusiastic Facebook user with more than 1,350 friends. ➡



For Facebook, sustainability, environmentally friendly processes and energy efficiency are all key success factors. For more details, see the Open Compute Project, founded by Facebook, at www.opencompute.org

MAKING MORE POSSIBLE WITH SINGLE MODE

Single mode G.657 ITU bend-immune fibres, initially aimed at the challenges of in-building access, are making a whole new range of solutions possible, explains Alain Bertaina, Single mode Product Management at Prysmian Group

The industry has welcomed Prysmian Group's robust, easy to install optical fibre that handles like copper. Originally intended for access applications, especially tackling the challenges of indoor FTTH, its bend-immunity and complete compliance with legacy networks have since opened up a whole new range of applications.

"Light doesn't escape from this fibre even when it goes around sharp corners and bends," explains Alain. "That property is especially useful for central office applications where a great deal of power can be injected into fibres as systems evolve. Normally, when a cord made of regular fibre is bent, some power escapes the fibre core. This heats the coating which, in turn, stresses the fibre. The results can be dramatic.

For operators, power reliability under bend is key, and with bend-immune fibres that is totally secured.

"What we figured out is that you can also leverage the characteristics of this fibre to deliver more flexible outdoor designs. You can pack more fibres in a limited space, and reduce the cable sizes. Even when the fibres are packed for high-fibre count, denser cables in ever-more aggressive designs, cable performance is secured. This means you can vastly increase fibre density. As space in most metropolitan areas is very expensive, this is a key benefit. Getting into any kind of right of way, whether it is a building or a duct, means paying fees, so higher density translates to better OPEX, hence TCO."



HIDDEN EXTRAS

Scan the code above to watch an animated demonstration of the Single mode system.



SECURING UPPER BANDS

"Fibre loss or attenuation can be subject to increase when aggressive cable designs are requested to tackle customer challenges, be it capacity, harsh environments or installation techniques. But by offering immunity to external stress effects at fibre level, we can trigger unprecedented, innovative cable solutions.

"Another interesting point: fibre potential transmission bandwidth is huge, offering close to 400nm, ranging from the O-band at 1260nm to the U-band at 1650nm. In access networks and next-generation PONs, the need has appeared for usability of this type of upper band wavelengths. In these higher regions, regular fibres are, by nature, more sensitive to bending

and therefore exposed to significant attenuation increases. But our bend-immune, legacy-compliant fibre basically solves such problems. It opens up and secures transmission in all bands, including such high band applications."

IN PRACTISE

"Some operators, especially incumbents, are used to working with specific cable types and changes might take time. Of course, a few alternative carriers might be able to deploy changes faster, when they don't own a legacy infrastructure and have freedom to start from scratch with the newest designs. However, irrespective of the implementation time, all operators need to be convinced of performance.

"That's why we're presently, analysing individual cases with customers. We're looking at challenges they have in the field and creating innovative solutions, based on bend insensitivity, together with them. Some operators are considering switching entirely to this type of fibre to future-proof their access network. Some others have already done so. We now have projects running all over the five continents with this fibre. And this is a virtuous circle. With every new application, we get more data, and that is helping us explain the benefits of solutions in a quantitative way to trigger further applications with other customers. Now, we can present real figures and data and convert it to client's situation and requirements. Very often they'll say: "We didn't think of G.657 this way - let's try it!" ←



Alain Bertaina, Single mode Product Management at Prysmian Group

The **Prysmian Group** is a global leader in the development, design, manufacturing, supply

and installation of a wide range of cables for diverse applications in the energy and

telecommunication sectors. The group has a strong position in high added value markets.

Up to speed in Chatt

Chattanooga's Electric Power Board (EPB) is one of the first community-owned utilities to install a 100% fibre-optic network. The city is now offering the only community-wide 1 Gb/s residential and business service in the USA

Chattanooga's municipal utility wanted a solution which could support the realisation of a smart grid, but more importantly deliver value to the community by improving quality of life and opening up economic opportunities. It soon became clear that fibre technology was the key to increasing reliability well into the future. The US Department of Energy also saw the project's benefits and awarded EPB a \$111.5-million stimulus grant to speed things up further.

LIVING LABORATORY

EPB has rolled out fibre optics throughout their entire customer service area. More than 150,000 homes and businesses now have access to ultra-fast communications services and, by the end of the year, they will be equipped with a 'smart meter'. Interestingly, the smart grid requirements drove this particular business case, instead of more traditional drivers such as TV, the internet and phone services. Twenty-two large industries have signed up to EPB's time-of-use (TOU) rate programme, and it has been projected that together they will save \$2.3 million on their energy costs annually. Furthermore, by installing intelligent switches, outage duration can be reduced by 40% on average.

The smart grid and fully fibre-optic



infrastructure soon attracted new business. Volkswagen decided to house its new North American manufacturing headquarters, and Amazon built its distribution plant here. "Chattanooga is light years ahead when it comes to providing ultra-fast broadband," says Tom Edd Wilson, President and CEO of the Chattanooga Area Chamber of Commerce. "By offering the fastest available speeds to a whole community comprising a diverse population living in both urban and rural areas, the city has become a living laboratory for today's innovations and tomorrow's companies."

CALLING ALL GEEKS

The GIG Tank™ initiative (www.thegigcity.com) is awarding prizes of up to \$300,000 in seed money and cash for the best, most innovative bandwidth-intensive ideas using this Gb/s network. This included the 'Geek Hunt', launched on Facebook and Twitter with a video asking people to tag the geekiest, most brilliant friends in their social network. GIG Tank™ participants will have access to the only large-scale Gigabit network in America as well as a full range of support from local business acceleration and incubation resources. Winners will be announced in August.

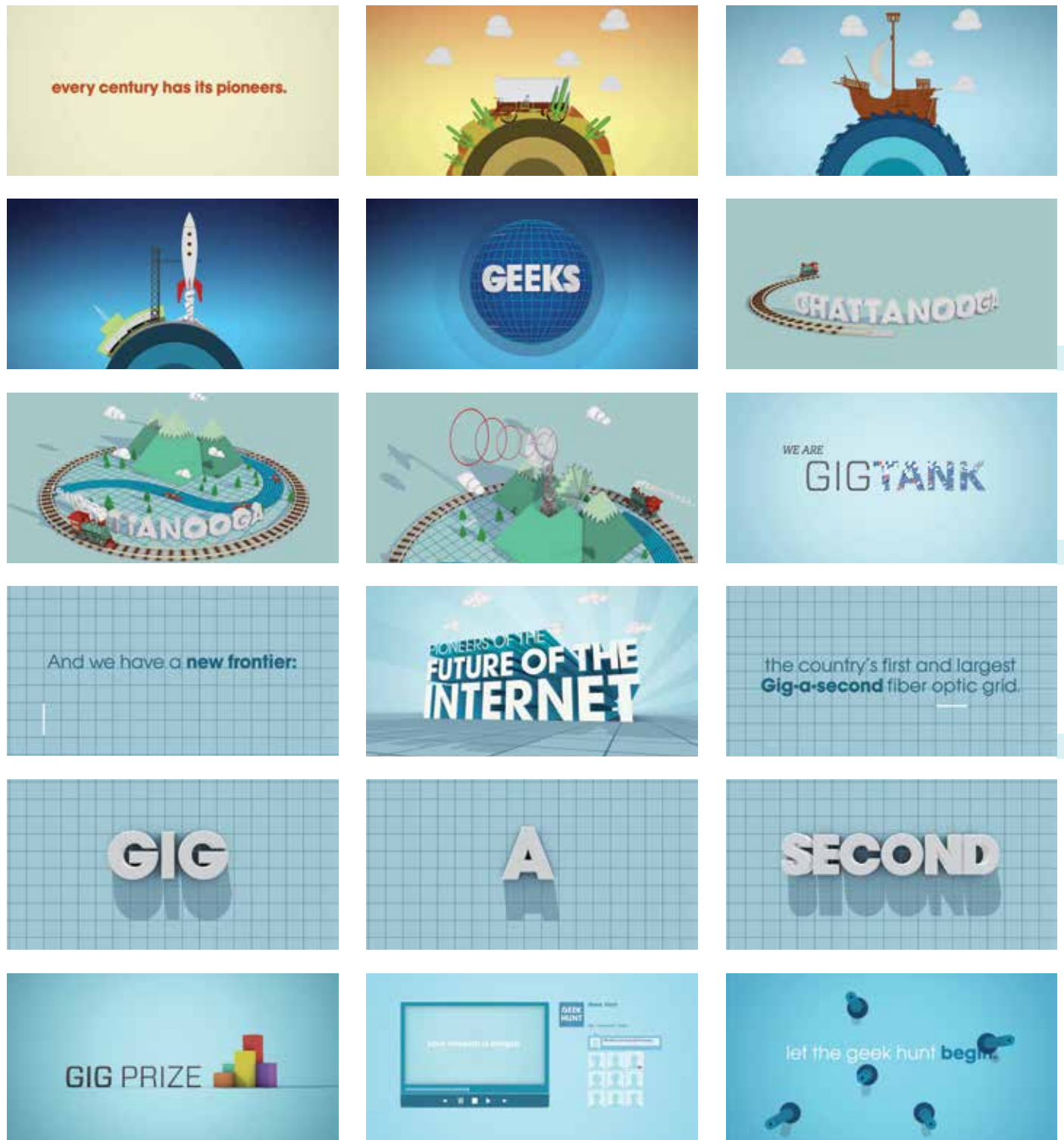


☞ Pupils of Calvin Donaldson primary school, during the celebrations for the start of construction on the new

Volkswagen plant in Chattanooga, on 14 May 2009. 150,000 cars were anticipated to be produced there from 2011 onwards.

Volkswagen America planned to invest \$1 billion in the plant and employ 2,000 people.

Chattanooga, USA



Chattanooga's GIG TANK is on the lookout for 'Geeks' to cross the new frontier: 1Gb/s. www.thegigcity.com

WHO WANTS 1 GIGABIT ANYWAY?



WHO WANTS 1 GIGABIT ANYWAY?

Telecom Think-Tank is busy researching the dynamics of 1 Gb/s adoption as part of a study which was also used by EPB in their network project. "When preparing a Gb/s fibre roll-out, it is vital to determine exactly which kind of people want this kind of speed, and what they actually do with this bandwidth," explains Joe Savage, Managing Director, Telecom Think-Tank Inc. "We're studying this extensively and the data available so far is really interesting. Gigabit access is emerging in a number of locations around the world. Subscribers are leading-edge technophiles who are exploring the capabilities of ultra-fast broadband. By examining what they're doing with this access, we can see which direction broadband usage will be taking in the near future. It's these early adopters that allow technologies to become mainstream.

"In our research, we found

there is a lot of interest in all kind of 'futuristic' apps, such as virtual presence for education, business, family and medicine. Full motion websites, very large, extreme high-definition displays, and remote control of avatar-like robots also drew a lot of interest. Also worth pointing out is the fact that Gigabit subscribers spend an average of eight hours a day online, significantly more than the US 2.5 hour average.

"They're also content creators. Hong Kong Broadband, the first operator to offer 1 Gb/s service, cites three times more upload traffic than download in their network. This really calls for fibre. We've also been reviewing network characteristics of those service providers who are delivering Gigabit service. For them, service differentiation is important to succeed. They need to deliver in the areas of speed, bundle value and home productivity."



↑ A South Korean woman uses her mobile phone to buy a product at the virtual retail shop at Seolleung subway station in Seoul



↑ A young pupil uses a high-definition interactive whiteboard at a class taking part in a 'virtual school'



↑ Google Art Project offers virtual tours and high-definition scans of artwork from museums around the globe



Joe Savage, Managing Director, Telecom Think-Tank Inc.

Joe Savage has more than 40 years executive level experience in telecommunications and optical networking, including CEO and corporate

director positions with a number of optical equipment companies. He began his career in fibre optics in the 1970s, helping to build the first fibre production facility at

Western Electric in Norcross, Georgia, USA. From 2005 to 2011, Joe served as President of the Fiber to the Home Council, North America.

Connecting communities

The current 'fibreing' of Scotland's Almond area is being financed through a social enterprise model. *NExsT* discusses the ins and outs of the project, the technology, and its effect on the community with three of the people involved

The area takes its name from the river Almond, flowing west of Edinburgh, from the Pentland Hills to the River Forth at Cramond. This river runs through a diverse geo-demographic and economic area, comprising industrial and rural activities and a wide variety of socio-economic groups, with the most affluent residential areas closer to Edinburgh.

Initially, the network will be built to serve some 12,000 homes and businesses, in and around Edinburgh City Airport. Almond Networks is seeking to become a Scottish Charitable Incorporated Organisation (SCIO). Its primary function will be to build, operate, and maintain fibre optic network(s) that will be available to all domestic, commercial, industrial and public sector premises within one or more geographical areas.



📍 River Forth at Cramond

THE PROJECT PERSPECTIVE

“My involvement started some two years ago, with a conversation about the poor service people get west of Edinburgh,” says Geoff Fairclough, Project Leader, Almond Networks “I work one and a half kilometres from the Davidson Mains exchange and the connection is noticeably poorer there than for people living nearby. Shannon’s Law* dictates that signal strength decreases as telephone line length increases, and after one and a half kilometres from the exchange the connection degrades exponentially, to a point that you can’t perform everyday tasks. Many of the consumers we’re speaking to are more than four kilometres away from the exchange.”

HIGH PRIORITY

“Today’s business opportunities arise on the back of fast connections. We don’t only want to attract more business to the area, we also want it to be sustainable and, to make that happen, broadband is essential. We have a real digital divide here, and in the west of our region a relatively large number of people fall into the lower income bracket. Many can’t afford superfast broadband, but would benefit from a better connection. The government have placed this region high on their list of priorities, but there doesn’t really seem to be any funds available. When

I spoke to the local authorities, they didn’t have a local broadband plan. So we founded Almond Networks.

“For inspiration, we looked towards the project in Nuenen, the Netherlands, with its stunning 93% take-up rate. That project illustrates the strengths of a community network and its possibilities for rejuvenating a region. We became a member of the Edinburgh Social Enterprise Network and, together with our affiliation to other voluntary groups, we now have 2,500 contacts in all kinds of volunteer organisations. Going through all the funding application channels turned out to be more time-consuming than we’d expected, but now we’re in an application procedure with the European Investment Bank (EIB).”

DIY MENTALITY

“Our connected community concept means people at home benefit from faster speeds, as well as anyone else connected to our network. That includes businesses, but also schools and so on. For example, we aim to connect teachers to their pupils, doctors to their patients; clergy to their parishioners, as

well as making it possible for more people to work from home or receive treatment at home. To achieve this, we offer low-cost, and in some cases free, broadband, as a community asset. Government targets consider anything up to 4 Mb/s as sufficient, but we disagree. We’re not just providing fast broadband, we’re bringing superfast – 100 Mb/s plus – and possibly ultrafast broadband in the future.

“Initial domestic connections are planned for next year, with public and commercial premises to follow as soon as possible. After that, we may expand our geographical area to the west and south of the district we are currently covering. This is still within the zone which the governments rates high in requiring support. Our mentality remains: ‘if nobody else will build it, we’ll do it ourselves’. Prysmian, Draka and all our other partners have really bought into that.”

THE COMMUNITY PERSPECTIVE

“I was introduced to Geoff and his team by a friend of mine,” says Jim Leggett, who is helping provide a community perspective for the project. “He suggested

* $C = B \log_2 \left(1 + \frac{S}{N} \right)$

The Shannon-Hartley theorem tells the maximum rate at which information can

be transmitted over a specified bandwidth channel in the presence of noise

I might be able to contribute some advice and local knowledge, as I live within the project's Almond target area. I also have an entrepreneurial background in the mobile telecoms industry, having founded and developed two businesses. My current focus is wireless systems, in particular M2M technology. My personal interest in this is achieving a better quality broadband service where I live. Like many others, my family would like to subscribe to 'on demand' services such as Netflix. This would be achievable with faster broadband at peak times."

VESTED INTERESTS

"The main broadband providers in this area are BT, Sky and Virgin Media. BT have a vested interest in harnessing the local loop copper delivered ADSL cash cow as they generate between £10-£15 per month revenue from each domestic connection. I believe there is a latent demand for faster broadband, as most of the area is served by ADSL technology delivered over the BT copper local loop. At peak times, demand leads to a significant drop in download speed. This is so pronounced that services such as BBC iPlayer cannot be reliably accessed during the evenings.

"I suggested to Geoff that the community may benefit from FTTH

in respect of telemedicine, remote monitoring of vulnerable individuals, community broadcasting, community education and community IP/CCTV in conjunction with the Lothian & Borders Police Almond Initiative. It is my view that if a social enterprise model such as Geoff's is to succeed then engaging with local community groups across the area will be essential."

THE NETWORK PERSPECTIVE


"For us, there were some challenges with regards to this network – time constraints, available data, figuring out where to deploy the fibre....," says Adam Ashenden, Connectivity and Fibre Systems Manager, Telecom Solutions, Prysmian Group.

"Also, this is the first time Prysmian and Draka products are going to be knowingly used together, in a complementary sense, for designing as well as building the network. The convergence of the two organisations is allowing us to come up with even stronger solutions.

"One of the biggest issues in designing a network, especially one like this for 12,000 homes, is being able to enter figures in the knowledge they are absolutely accurate. When you apply for funding, you have to be sure that the figures in the application are not going to be significantly different from the actual roll-out."

NO SURPRISES

"We also need to build the most efficient network possible, in this case with three points-of-presence (POPs) located in different areas. That's where Prysmian's and Draka's advanced network planning and optimisation tools come in. These help us ensure everything is located in the best possible spot. The software also showed us that one of the originally planned POPs was far too modest in size. It just couldn't handle the number of connections we needed. The convergence of the two organisations has, in effect, allowed us to address these issues at the start of the design phase and come up with realistic figures.

"We visited the region and carried out topographical surveys and were also provided with aerial maps and GIS information from the local authority. We could input planned buildings, too; in Kirkliston for example, 650 new dwellings are scheduled to be built. We entered the design and topology preferences, number of connections, house locations and drops, and the software helped us work out the most efficient way to build and configure it all. For example, by looking at utilising existing infrastructure such as ducts and poles. Working in this way brings down deployment costs significantly, and makes sure there are no big, unpleasant surprises during roll-out." 

BUILDING A CITY RING NETWORK



Experience our **HIGHLY INNOVATIVE SOLUTIONS**
that will enable you to meet future challenges in the field of
COPPER AND FIBRE DEPLOYMENT
and the ever growing need for bandwidth

Ensure that the **VITAL CONNECTIONS**
for information and communication
are carried out **EFFECTIVELY, EFFICIENTLY,**
EVERYWHERE

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