As a continent that tests to its limit the telecoms industry’s ability to span borders and shrink geographic distances, as players grapple with a broad range of challenges and needs. There is no doubt that it is a booming continent. In the fixed broadband market alone, Asia is the fastest-growing region by connections in the world, according to the Broadband Forum, increasing by 16.2% during the first quarter of 2011. Asia’s 226.4 million broadband connections already represent 42% of the global total.

This is in a continent where vast numbers of consumers in countries like India and China will experience the Internet for the first time via a mobile device. “It is a very challenging position to be in,” said Bill Barney, CEO of network operator Pacnet, during CommunicAsia in Singapore in June. “Asia is too big, too different and too diverse,” he continued. “There are first-world and third-world countries within 20 miles of each other.”

In fact, within a convention hall’s distance of another Japan’s NTT DoCoMo was outlining its plans to extend NFC services to South Korea to cater to the demands of international travellers, while India’s VNL was explaining how its solar-powered base stations deliver basic WiFi and GSM services to rural communities (see p.18 for our article on sustainability in telecoms).

Connecting all these seemingly disparate Asian markets to the world at large is a huge web of subsea cable systems that are vulnerable to the high levels of seismic activity in the region, and the rising volume of shipping as intra-Asian trade is driven by local economic growth.

Fibre networks will play a major part in that growth. European countries would do well to follow the fibre lead of countries like Japan and Korea; but as our stories on p.7 and p.10 show, many Western nations have a long way to go to catch up as operators grapple with the economics of business models.

Asia’s mobile operators face many network challenges as subscribers soar, and self-organising networks could play a part in managing their infrastructure in future (p.14). But Asia-focused telcos face other unique challenges. According to Pacnet’s Barney, if March’s earthquake off the coast of Japan had struck 35 miles further south, Asia would have lost 80% of its connectivity to the US. “The successful [business] model for Asia is going to be very different from the rest of the world,” concluded Barney.
A roundup of the major stories in telecoms in the past month, as reported in our daily news service www.totaltele.com

BUSINESS

Mobile payments ventures

Mobile payment developments moved on space as the UK’s three largest mobile operators—Everything Everywhere, O2 and Vodafone—and T-Mobile announced plans to form a mobile payments joint venture; in Denmark operators Telia, TDC, Telenor and 3 joined forces to develop a single system for NFC payments; Ericsson launched an m-payments service across seven European countries; and Visa acquired South Africa-based mobile payments company Fundamo for US$110 million.

Vodafone gets control of Essar

Vodafone bought partner Essar’s 33% stake in its mobile joint venture in India for US$3.46 billion, taking its interest to 74%. Vodafone entered the Indian market when it bought a 67% stake in Hutchison Essar for US$11.2 billion in 2007.

Polkomtel sale agreed

Polish businessman Zygmunt Solor-Zak won the bidding to buy Polish mobile operator Polkomtel for 15.1 billion złotys (roughly US$4.5 billion), beating off TeliaSonera and A1 Partners. Vodafone will receive approximately €920 million for its 24.4% stake in Polkomtel.

EC sets new roaming caps

The European Commission is imposing new price caps for voice and data roaming within the EU. Retail price caps for making voice calls will be reduced from €0.90 per megabyte next July to €0.70/MB in 2013 and to €0.50/MB in 2014. Text messages and incoming calls will be capped at €0.10 from next July. Operators will also have to open up their networks so customers can take a separate contract to use other providers for overseas roaming.

Nortel patents sold off

A consortium of companies won the auction to buy the patent portfolio of Nortel Networks for US$4.5 billion, beating off Google which had bid $900 million. Apple, EMC, Ericsson, Microsoft, Research In Motion and Sony will now receive more than 6,000 patents.

News Corp sells Myspace

News Corp agreed to sell the Myspace social network to Specific Media, a digital media and marketing company, for US$31 million. News Corp bought the site in 2005 for US$100 million.

Telepresence deals

Orange Business Services and Telefonica struck a deal to provide telepresence interoperability across their networks, a similar partnership was agreed between Verizon and Tata Communications. And Telx signed a deal with Cisco to provide telepresence services in Mexico.

Amdocs buys Bridgewater

Amdocs agreed to buy Bridgewater Systems in a deal valuing the company at about US$214.2 million.

ICANN to extend Net domains

ICANN approved a plan to increase the number of Internet address endings, or generic top-level domains (gTLDs), from the current 22.

M2M joint venture expands

TeliaSonera joined the machine-to-machine (M2M) communications alliance up set by Orange and Deutsche Telekom earlier this year. The agreement will extend operations to Scandinavian and Baltic countries.

UK spectrum trading begins

Ofcom gave clearance for UK mobile operators to start trading spectrum in the 900-MHz, 1800-MHz and 2100-MHz bands.

Facebook integrates Skype

Facebook signed an agreement to integrate Skype calling into its social network, a week after Google announced video calling in its Google Plus service.

Tata increases Neteol share

Indian operator Tata Communications increased its stake in South African fixed line operator Neteol from 49% to 61.5% by acquiring Telecom Namibia’s share.

Mobile payments ventures

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in November.

while KT Corp said it will launch

lg uplus both launched services

operator Rogers Communications

services while SingTel plans to

half of this year; in Singapore

out an lTe network in the second

follow by year end; canadian

south korea, sk T elekom and

foreign investors will

sprint nextel and lightsquared

T elstra signed agreements to sell

Telstra NBN agreement

announced a network-sharing

the retail part of the operator.

Network sharing in Denmark

TeliaSonera and Telenor

the fourth 3g licence

relaying 15 december respectively for

2.5 billion from the auctions.

E 2 billion. And france set

was issued to the sole bidder, a

MVNO launches

UK-based Lycamobile launched an

Mvno in France; Swiss telco

Cablecom will enter the mobile

market via an MVNO agreement

with Orange; and China Telecom

plans to launch an MVNO in the

UK next year.

Belgium awards 3G licence

Belgium’s fourth 3g licence

was issued to the sole bidder, a

consortium made up of cable

operators Telenet and Tntex, for

€71.5 million.

Vodafone outsourcing

Ericsson signed a five-year deal

to manage Vodafone Italy’s fixed

and mobile networks. It already

provides managed services for

Vodafone in Germany, the UK

and the Netherlands.

Spain/France auctions

Spain began auctions of spectrum

in the 800-MHz, 900-MHz and

2.6-GHz bands, aiming to raise up

to €2 billion. And France set
deadlines of 15 September and

15 December respectively for

bids for 2.6-GHz and 800-MHz

spectrum, aiming to raise at least

€2.5 billion from the auctions.

Fastweb IP backbone deal

Fastweb selected nokia Siemens

Networks and Juniper Networks

to increase the capacity of its IP

network backbone in Italy.

China Telecom moving to IP

China Telecom selected Alcatel-

Lucent to provide equipment for an

IMS deployment due to be rolled out to six provinces

covering 120 million people.

Australian spectrum auction

NBN Co was the biggest winner in

Australia’s auction of spectrum in

the 2300-MHz band.

-71.5 million.

Corrections

Rupert Pearce will take over

as chief executive of satellite

company Inmarsat from 1

January 2012. Current CEO

Andrew Sukawaty will become executive chairman.

AT&T Labs appoints new head

Krish Prabhu was appointed head

of AT&T Labs, replacing CEO

Keith Campbell, who is retiring.

Prabhu started his career at

AT&T Bell Labs in 1980 and was

CEO of Akamai USA and Tellabs.

RIM streaming

Blackberry maker Research In

Motion said it will cut jobs and

restructure the company after

delays in launching its latest line

of smartphones.

Telecom’s new European head

Germany’s Deutsche Telekom

appointed Claudia Nemat from

consulting fims McKinsey to

head up its European operations from

October.

Bharti restructuring

India’s Bharti Airtel will split its

organisation into separate consumer and business

operations. Reports suggest that

could lead to up to 2,000 job cuts.

Telefonica cuts agreed

Telefonica reached an agreement

with labour unions to cut up to

6,500 jobs over three years.

Cisco readies job cuts

Cisco readied to cut up to 10,000 jobs, or

about 14% of its workforce.

Cisco’s world woes

The third profit warning in 12

months at Cable & Wireless

Worldwide led to the resigna-
tion of chief executive Jim

Marsh and called into ques-
tion the company’s demerger

from C&W Communications,

completed in March 2010. Chairman John Puthero, who

presided over the demerger, will take over as CEO from

Marsh (pictured) in order to

assume a more hands-on role

in the business. C&W World-

wide now expects Ebitda in

the year to March 2012 to

be 5%-10% below market

expectations with a similar

impact on cash-flow; and it has

halved its fiscal 2012

dividend to $2.25 pence as a

consequence of reduced cash

flow. The company said sales orders in the first

10 weeks of the year have

been lower than expected, and

as a result gross margin

will be below current market

expectations. C&W World-

wide in March announced a £10 million investment in

cloud computing in a bid to

offset the decline in demand for

fixed line services. “It has been easy to lose sight

of what this business could be; it is my intention to reas-

sert and realise that future,” the company said it will

“accelerate the investments necessary to deliver growth” in

those areas. C&W Worldwide

shares have fallen 65% since

the group demerged from

its international arm. Senior

executive chairman John

Barton will become chairman of the company and Penny

Hughes will be the new senior

independent director.

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www.totaltele.com July/August 2011
European incumbent operators and altnets face a considerable challenge to make returns on their investment in fibre networks over the next ten years, but they cannot afford to slow down deployments in the face of stiff competition from cable operators. That is one of the key conclusions in a recent report from Arthur D. Little and Exane BNP Paribas on superfast broadband in Europe that shows cable operators are still in the driving seat with telcos needing to catch up.

“Cable operators have the lowest cost to upgrade their access network to superfast broadband,” say the analysts in the report Superfast Broadband: Catch up if you can. “The move not only creates value for them but also is likely to increase their overall profitability.”

Across the nine European countries analysed telcos have connected only 1.5% of households with superfast broadband, defined as offering at least 50-megabits-per-second download speeds. The analyst companies say 4% of households in those countries have been passed with fibre-to-the-home networks (FTTH), 16% with VDSL and 34% with Doocis 3.0 cable technology.

But they say services are set to expand: cable operators are upgrading more than 90% of their footprint to Doocis 3.0, and incumbent telecoms operators already have announced €18 billion in capex by 2015 to roll out FTTH to 16% of households and fibre-to-the-cabinet (FTTC)/VDSL to another 28%. If those plans are followed through, that would represent 44% household coverage compared to just 20% today. What’s more, they estimate €36-€40 billion of additional capex that has yet to be announced by incumbents in the nine countries studied in the report (Austria, Belgium, France, Germany, Italy, the Netherlands, Portugal, Spain and the UK).

But it is clear that operators are taking a considerable risk when it comes to return on that investment. While the report outlines the very different situations in each country assessed, in general incumbents should expect deployment of fibre to be “just about neutral in terms of return on capital employed [ROCE] in the long term”.

In fact, the analysts say ROCE for incumbents typically could fall from 14% on average for a European fixed-line operator in 2010 to just 12% in 2021 following fibre rollout, using a set of base case assumptions: rollout in very high-density areas (predominantly cities); retail broadband share of 50%; superfast broadband ARPU of €51-€55 per month; significant re-use of existing infrastructure such as ducts; and excluding wholesale revenues (see table on p.8 for full ROCE and capex/opex estimates).

The picture is even bleaker for altnets: “Alternative carriers will not be able to make a positive return from their fibre investment on a standalone basis, even in the long term,” say the analysts. They estimate ROCE for altnets of -13% on FTTH in 2021 and -14% on fibre-to-the-building (FTTB) networks.

In order to address the situation altnets will need to reduce capex and opex significantly through network sharing, securing access to existing ducts and focusing on rollout in very specific locations—selected cities or even streets—where they can guarantee high penetration. Alternatively, they could make use of wholesale fibre services where available, but that would lead to loss of differentiation; compounding matters, the analysts expect European regulators to be less accommodating to altnets on fibre networks than on copper infrastructure. Cable operators remain the best placed to profit, using Docsis 3.0 technology. They face the lowest cost to upgrade their networks and already enjoy ROCE of 25%–40%—likely to rise or be maintained at an average level of 18% in 2021 given the incremental investments modelled in the report. But in spite of the economic challenge, it seems that operators remain sanguine.
‘The financial risk is worth taking given the potential positive strategic benefits’

The report authors say of the 94 telecommunication operators they are able to increase market share or recovery.”

Indeed, the base case scenario for operators can be improved considerably if they are able to increase market share and/or ARPU. An incumbent operator can be improved considerably if they plan to do in France and Italy, for example (see story on p.10).

In terms of capital expenditure, the analysts estimate network upgrade alone—constituting 75% of total cumulative capex—to be €150 per home passed for cable operators moving to Docsis 3.0, compared to €388 for FTTC/VDSL for an incumbent and €525–€770 for FTTH. But while FTTC/VDSL requires much lower capex it is only a short-term fix in terms of profitability, say the analysts. Operators taking that route will need to upgrade to FTTH eventually in order to compete with the higher-speed services offered by cable operators—100–500 Mbps for Docsis 3.0 compared to 30–50 Mbps for FTTC/VDSL—and the strategy will to some extent lead to a duplication of capex in the long run.

Yet even where operators do invest in FTTH, the consensus is that ARPU uplift will be limited or non-existent unless they are able to sign up significant numbers of customers to new services: “We are not convinced that customers are ready to pay for faster speeds, so ARPU uplift will mainly depend on operators’ ability to offer new, additional services.” In many cases that means triple-play services with differentiated bundles and richer TV offerings including video-on-demand and high-definition or 3D TV. In turn, those TV and video revenues could be threatened by over-the-top service providers.

The table on p.7 shows estimates for ARPU and revenues for a typical incumbent operator to 2021, taking into account: new customers gained from competitors; those TV and video revenues could be threatened by over-the-top service providers.

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Most operators still are not committing to large-scale fibre-to-the-home deployments, but there have been some key recent announcements. **By Joanne Taaffe**

With FTTH business models in Europe, a number of countries are considerably behind deployments in Japan—where 58% of all broadband connections are fibre—and South Korea (9%). The fibre-to-the-home council—which is due to release new figures at Broadband World Forum in September—says there were 8.1 million FTTH subscribers in Europe at the end of last year and 31 million homes passed, excluding Russia where there were just 0.9 million FTTH subscribers. But some operators have made key fibre project announcements and spending commitments in recent months (see box on p.12).

Several factors have undermined the business case for private investment in FTTH in much of Europe today, including a lack of clear consumer demand, argues analyst at Analysys Mason. "There is a real demand-side problem, when [FTTH] has been deployed [demand] has not been particularly strong and that [has] made operators sit up," says Rupert Wood, principal analyst at Analysys Mason. "Take-up levels in France have been pretty poor," for example, he says.

French regulator Arcep reported 56,600 FTTH and FTTC subscribers at the end of the first quarter of this year, out of a total of 21.774 million total broadband subscribers. That lack of demand is not just evident in Europe. New Zealand's second largest operator TelstraClear last month withdrew its 100-Mbps fibre service in Christchurch and abandoned plans to launch in Wellington, blaming a lack of demand. According to TeleGeography, the government's wholesale fibre-to-the-premises (FTTT) Ultra Fast Broadband initiative will enable ISPs to deliver 100-Mbps fibre services at much lower costs than retail operators from 2015.

Analysys Mason's recent studies suggest that trends in consumer broadband usage are shifting away from the consumption of ever higher quantities of fixed broadband capacity and towards mobile usage. "[The trend] is not moving to ultra-high-speed media-intensive [usage]: It's moving to lighter [data consumption] and value in portability," says Wood. The development of a new ecosystem around higher-speed mobile networks and smartphones isn't the only change.

Advances in the performance of xDSL mean operators can deliver content such as high-definition (HD) film and multiplayer gaming services over existing copper networks, say analysts. As things stand, many operators consider their networks are able to meet end-users' current demands. "I don't need 100-Mbps services at home" today, says Grabenhofer, however, operator at Nokia Siemens Networks.

In addition, there are signs that operators may struggle to charge a premium for retail FTTH access. "There is not a lot of evidence that [operators can charge]...a premium," says Wood at Analysys Mason. "The studies we've done show almost no difference whatsoever. It's very difficult to compare it at a retail level, but if you compare it at a wholesale level there is a bit of a premium for VDSL and FTTC [fibre-to-the-cabinet services]."

Arthur D. Little and Exane BNP Paribas in their report Superfast broadband: catch up if you can say operators face a challenge raising demand for fibre services and in increasing broadband ARPU. "There is no clear demand for faster Internet access and superfast broadband does not come with a specific killer app," says the analysts. But the report says fibre will become a key facilitator of the digital home, and says the operators interviewed for the report overwhelmingly say the main application that can drive uptake is HD TV, followed by multiscreen entertainment, connecting devices such as tablets and smartphones to home broadband, video-on-demand and gaming.

The report says while there are considerable differences in pricing and competitive conditions for superfast broadband—FTTH and next-generation cable—operators moving from ADSL to fibre networks could expect to see an uplift in blended median ARPU typically in the region of €1 per month compared to current levels (see story p.7).

Indeed, in many cases operators will have to wait a long time to see a return on investment (ROI): up to 20 years, depending on the region covered. I T Openreach, for example, estimates it will have a 12-year return on investment in FTTC and FTTP infrastructure in the UK.
which is relatively densely populated, according to a spokesman. Analysts say BT has estimated the cost of a national fibre rollout as equating to approximately £1,080 per household passed.

“The ROI for FTTH is 12 to 17 years, which makes it extremely challenging for traditional operators,” says Stuart Orr, head of European communications at Accenture. “Who pays? End users? [And is it funded by] government bonds? Or is it paid for by private operators? [by sales of] content?”

Nevertheless, there is hope that additional capacity will spur the usage of new services such as DVD, high-speed gaming, or the delivery of health, education and other social services over very high-speed broadband connections. If the operator could encourage very high-speed broadband take-up by offering premium services exclusively over FTTH, “if the operator tries to price the service based on available bandwidth it doesn’t resonate,” says Ana Pesovic, wireless marketing manager at Alcatel-Lucent. “Instead, operators can consider offering services, such as premium sport, uniquely over fibre in order to encourage the transition.”

Operators could also use FTTH to explore new business models, such as providing huge pipes of bandwidth that make “the expensive choker of quality of service in streaming…an expensive irrelevancy”, says Wood. In turn that could circumvent some net neutrality concerns currently playing out in Europe.

But for other operators the success of over-the-top content services raises doubts about their ability to charge for their own differentiated content.

Much could also depend on regulation in individual countries in future, should European regulators support service-based competition and make it easier for operators to develop new wholesale or charging models that place a premium on over-the-top content providers’ services. Karl Wermig, head of NVA customer solutions, EMEA, at Alcatel-Lucent, says Europe’s operators are currently wondering whether they have missed an opportunity to invest in networks earlier.

In June, TeliaSonera said it will invest more than 8 billion Swedish kronor (around £600 million) in fibre networks across its territories by the end of 2014, with some 76% of that earmarked for Sweden and the remainder for Finland, Denmark, Norway, Estonia, Lithuania and Latvia. TeliaSonera has set a target of covering 1 million homes in Sweden with fibre broadband connections and a further 1.3 million homes in the Nordic and Baltic countries during the period.

France Telecom earlier this year set out plans to reach 60% of households, or some 15 million homes, with FTTH by 2020, with an interim target of 10 million households by 2015. The operator said it will spend €2 billion to the end of 2015 to build out its network. It also is targeting 4 million households; and Bouygues Telecom and SFR at the end of last year, according to the FTTH Council Europe. Telecom Italia has said it plans to cover 10% of households with fibre by 2016 and has committed up to €3-4 billion in capex; and a €2 billion joint project between Fastweb, Vodafone and Wind aims to cover all of Italy’s 10 million people in the ‘FTH’ within reach of 10 million people in Italy’s fifteen largest cities by 2015.

In Spain, Telefónica has said it will invest in fibre networks from around 340,000 homes at the end of February to 1 million by the end of this year. It has committed around €1 billion in capex so far.

According to the FTTH Council, Eastern European countries lead the way when it comes to FTTH subscriber penetration in the continent currently, with Lithuania in the top spot at the end of the first quarter of 2011, ahead of Slovenia and Slovakia. In the Baltic region, the Lithuanian operator TEO said its fibre network covers 700,000 households, roughly half the country’s population.

In China, the country is the dominant operator of FTTH services. In a new report Ovum predicts that China’s FTTH subscribers will reach 100 million in 2016, representing more than 50% of the world’s subscribers. In July, China Telecom selected Alcatel-Lucent as a vendor for its Broadband China Fibre Cities project, which this year aims to connect 26 million people to fibre broadband within reach of 10 million people in Italy’s fifteen largest cities by 2015.

In 2010 we predicted a shake up in the global operator rankings due to new strategies. In 2011 we examine whether these changes have materialised and look at the current drivers behind the new rankings.

mHealth Update - 14 September

mHealth is revolutionising healthcare on every level - social, environmental, and economic. What are the opportunities for operators?

Global 100 Operators - 18 October

In 2010 we predicted a shake up in the global operator rankings due to new strategies. In 2011 we examine whether these changes have materialised and look at the current drivers behind the new rankings.

For more information or to book your place, please contact breakfast@totaltele.com
Self-organising networks promise to help mobile operators simplify the management of their infrastructure and to control challenges, remains... by roy rubenstein

mobile networks are becoming so complicated that operators are turning to self-organising network (son) technology to help with their management. proponents say that only by using son technology will operators be able to manage and optimise their networks without operational costs spiralling out of control, in addition, the ability to optimise the network in real time could considerably benefit operators' revenues.

one operator which has implemented son across part of its network has already added 25,000 new subscribers and reduced churn by 7,000 users in a year, according to consultancy solution matrix. that could lead to considerable revenues and a payback period of less than one year (see table below).

but there is a mismatch between what wireless operators want in terms of son and what vendors are offering. son technology is part of the third generation partnership project's (3gpp) long term evolution (lte) standard, and vendors are focusing on son for lte. yet operators want son to span all their networks including 2g and 4g.

telekom austria has assessed the son offerings of five vendors. “what we have learnt is [that] son is a fabulous experience in 4g [lte],” says armin sumesgutner, head of network planning at telekom austria. “what we haven’t seen so far is the full integration across a single radio access network.” currently, telekom austria is adopting a single radio access network (ran) architecture where only one vendor’s equipment is used at a site.

this allows for optimisation across the wireless standards, both for son and in terms of such issues as antenna design and site power consumption.

vendors have invested their r&d dollars preparing for lte and view additional investment in son for 4g as wasteful, says johannes ritter, a partner at solution matrix, which has worked on son with operators including vodafone, t-mobile and vodafone. “operators only want to buy what nobody offers: son end-to-end for voice and data on 2g, 4g and lte,” he says.

moreover, son has limited value to operators currently: lte is only now being deployed, and optimisation requirements are limited because those networks are new. “all the issues around coverage, bandwidth, utilisation, optimising between neighbouring cells to avoid interference—all the things son can do—are currently not a pressing problem in lte,” says ritter.

son enables the fine-tuning of parameters to enable optimal network capacity and coverage, says kamakshi srivath, director of the wireless cto organisation at alcatel-lucent. the adaptation is performed by algorithms within the base station that use measurements from end terminals.

one aspect of lte that makes it suited to son-like algorithms is that more intelligence is pushed into the base station,” says srivath. “there are now policies in place to ensure that what was previously done manually. there is also a specified interface between base stations that aids information sharing.

we are finding that optimal administration and management (oam&m) systems of the network on standalone hardware,” says yves bellègo, manager for network technology at teliaSonera. “this [son] is a big area and there is a lot to be gained from it,” says tommy ljunngren, vice president, system development, technology solutions, business area mobility at teliaSonera.

“mobile systems are becoming so complex that we can’t have an engineer looking at every site, every day,” says bellègo. “if we do not have son we have to rely on our optimisation engineers, and since the systems are becoming so complex solving any on-site issue will take time.”

son also allows operators’ revenues, if they are able to convince users to upgrade to lte and more advanced data services. “such optimisation improves user experience,” says bellègo. “that is a vital consideration for operators who want to retain their customers. lte is superior to 3g and 2g. we are able to offer a more advanced service experience.”

an example benefit of son is the automatic relationship (anr) between base stations. when a terminal discovers a new base station’s signal, it forwards the information to its existing base station and initiates the setting up of neighbour relations.

for example, if a subscriber moves from one radio access network (ran) to another, the new ran decommissioning anr using a chipset from qualcomm and sonera’s live network in november 2010, it is an immediate benefit for operators because the network had established the vast majority of the anr that had been manually planned prior to that,” says thomas norman, product line manager, network technology at sonera. “we did not drop one single call. had there not been any neighbour relations prior to that, no user would have noticed.”

without anr an operator must first plan the network to establish the desired relationships. this is then verified using a drive test that identifies any spots in the network where calls are dropped due to an absence of a relationship between base stations. a second network planning iteration is required, as is a further drive test.

this is not typical of macro cells and that are not typical of small cells. “management of marketing at network analytics and optimisation company actrix. “they are managing multiple technologies and their relationships for reducing sites effort in the networks is hard, and it really is not being serviced by vendors and by the standards committee.”

large vendors also acknowledge operators’ needs. “son needs to cover multi technology networks, it can’t be limited to lte only,” says oksi keski-oja, product line manager, network optimisation, at nokia Siemens networks.

“this is one area where the vendors...
Self-organising networks: the development stages

There are three main elements that make up SON: self-configuration, self-healing and self-optimisation. Self-configuration adds functionality to simplify network deployments while self-healing enables a base station to undertake fault detection and fault recovery. “In 2G and 3G networks over the years, a hardware fault in a base station has required a manual restart,” says Koki-Oja at Nokia Siemens Networks. “Now as part of this self-healing, this reaction is done in an automated way after certain alarms are raised.” Meanwhile self-optimisation, the largest of the three categories, incorporates features that set the optimal values for the network elements as part of the trade-off between coverage and capacity.

The main SON efforts in 3GPP Release 8 focused on simplifying network configuration. Those include automatic neighbour relation (ANR) where a newly deployed base station makes aware of its neighbours based on terminal input. Other features include auto cell ID planning and ‘plug and play’. “Each base station needs a separate cell ID to not interfere with each other,” says Alcatel-Lucent’s Seymour. “Plug and play figures out what IP address the base station should have.” These are tasks that previously have been performed manually.

The SON focus in Release 9 is network optimisation. For example, base stations can communicate their respective loads to enable traffic balancing between 3G and LTE networks. There are also mechanisms to improve user cell handover performance. Network optimisation is extended further in Release 10 to improve coverage and capacity. Alcatel-Lucent is pushing for features to be added to Release 10 to extend SON into the core of the network to benefit the user experience. For example, SON could decide which network—WiFi, 3G or LTE—to place a user based on factors such as profile and applications they are using rather than merely air interface considerations. “If [an operator] have a Gold User, I may never want to put them on 3G,” says Seymour.

stories vary a lot; we provide SON functionality for all these technologies.”

Providing SON across a vendor’s wire-less standards equipment helps, but Telekom Austria stresses that its networks use technology from multiple vendors. “What we don’t see is an approach of inter-working,” says Sumesgutner. “This is a big issue, because what it takes is full optimisation and this can’t be achieved with the existing tools we have from the vendors.”

One way to manage multi-vendor equipment is by adding an extra vendor-independent layer. “The vendors have no interest in that [extra layer] as it would be the kiss of death [for them],” says Ritter at Solution Matrix.

Actix provides SON functionality to NCE, but also it provides a layer above SON. “We provide an abstraction layer which allows operators to focus on the overall network quality experienced by subscribers rather than focus on vendor-specific technology issues,” says Dirk Stachchorra, SON product manager at Actix. Here SON elements are monitored and used as input for a broader network optimisation, such as maintaining quality while minimising manual effort, and where decisions are made over a longer timescale than SON.

Third-party network optimisation players such as Actix and Aircom have a role here, says Ritter, but the deepest understanding is what happens within the hardware and that is the equipment vendors’ domain, only so much can be done with standards-defined interfaces coming from the hardware.

Yet if operators are denied the full picture, there are additional techniques they can use, says Ritter. One is to insert probes and use active testing in their networks. Both provide extra information and reduce operators’ need for drive tests, also a key goal of SON.

“Drive testing is expensive: up to €400,000 per test,” says Ritter. Moreover, a drive test only covers a specific area and is by definition retrospective. “You may do it only every nine months because of cost and that is too late,” says Ritter.

Active testing places a hardware device in the network to simulate customer behaviour, but this too is expensive. Several devices are needed in base stations across a country if dropped calls, coverage, bandwidth and latency issues are to be monitored across the network. In a 3G network probes are used with the radio network controller (RNC) to measure traffic in real time. Typically, 40 RNCs are needed per operator, per country. Using probes and active testing, operators can eliminate most drive testing while optimising their 2G, 3G and LTE networks. “[By doing that] they could get a SON—maybe not fully automated but much less manual than now,” says Ritter. Indeed, that would be vastly superior to many operators’ current setups.

Solution Matrix says one small European operator has been identifying bandwidth and dropped call problems only when complaints at its call centre rise above a certain threshold. “Then they send out a guy to measure,” says Ritter. Even the largest European operators only have probes in 40% or 50% of a country, covering 80% of the traffic.

Ritter advises operators to adopt SON in stages. “They can optimise an area and end up deploying a lot less equipment using SON,” he says. In his company’s operator example for a typical LTE network, based on 8,000 eNodeB base stations, SON can reduce the total needed by 40% (55%). Assuming each base station costs €400,000 and the same amount again is spent in operational expenses over five years, the SON-related savings equate to €2 million (see table p.14). “SON does this; humans can’t. Tuning each cell and countering interference [manually] is like playing 3D chess,” says Ritter.

Another SON challenge is that only self-configuration is active so far; self-optimisation is still to be proven in a large, live network. “Self-optimisation routines within the equipment itself are not live yet,” says Bowker at Aircom. Vendors are trialling things but none of the commercial deployments are using self-optimisation.

Operators must also ensure that handsets incorporate support for SON. “The situation now is that the network is a little bit ahead of the devices on many things,” says Ericsson’s Norén.

These practical SON issues will preoccupy operators for some time. But longer term, they expect SON to broaden its scope and optimise users’ service experience. “We are in the starting phase: a lot of technology and network planning issues,” says Sumesgutner at Telekom Austria. “But we also see the necessity for a broader set of parameters to be recognised and optimised by the [SON] system [to enhance user experience].”
Agressive marketing by some operators of their sustainability credentials could be paying off as pan-European enterprises look to bolster their environmental strategies. But other big-name telcos are in danger of missing out on enterprise and public sector contracts by not getting their corporate social responsibility (CSR) messages across.

A new survey by Verdantix, on the perceptions of sustainability strategy decision-makers at pan-European companies, ranks AT&T, BT, Orange, Swisscom and Telefonica as the operators leading the way in the provisioning of sustainable telecoms services. Their concerted moves to apply sustainability across their products and services, coupled with in-depth organisational commitments to sustainability, are proving key to their ability to impress purchasing executives, says the research company.

“Telecoms operators [that] can’t communicate their own energy, environment and sustainability performance are now at a competitive disadvantage,” says Verdantix director David Metcalfe. “This is particularly true when bidding for public telecoms sector contracts.”

The third annual study compared the sustainable telecoms solutions—encompassing energy, environment and social metrics—of 18 of the largest operators providing services in Europe, based on interviews with 15 decision-makers in pan-European enterprises. “From 2012, poor performance on sustainability will become a significant competitive disadvantage,” conclude the report analysts.

Total Telecom+ has shown, some operators are actively talking up their environmental credentials—one of the key elements of sustainability—by providing statistics on how they are tackling emissions in their own organisations and on the broader sustainability efforts such as video conferencing and telepresence, solar base stations, machine-to-machine (M2M) communications, and server and storage virtualisation (Total Telecom+ March). France Telecom/Orange and Deutsche Telekom both have set a target of reducing CO2 emissions by 20% by 2020 compared to 2006 levels, and BT aims to reduce its carbon emission intensity by 80% by the end of 2020 from 1997 levels, having already reduced them by 53% since that base year.

BT, which says it is “one of the top 10 consumers of electricity in the UK,” this year won planning approval for its first wind farm, it aims to generate around 1% of its UK electricity demand from the farm by 2012 and 20% of its energy needs from renewable sources by 2016. The operator this year also set up a new climate change procurement standard) requiring all its suppliers to measure and set carbon emissions and set reduction targets.

BT was the telecoms sector leader in the Dow Jones Sustainability Index—seen by many as the key measure of companies’ sustainability initiatives—in Europe from 2002 to 2009, but has been overtaken by Telefonica for the past two years. Telefonica in its latest corporate responsibility report says in 2010 it achieved “over half of [its] target 30% set reduction targets.

Verdantix says the global e-sustainability Initiative (GeSI), backed by many leading operators, has published a standardised calculation methodology for carbon savings and produces a Global e-Sustainability Initiative from 2012. See BT says 2012 many of their competitors will follow this approach.

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HSPA SETS RECORDS
WCDMA HSPA connections reached 100 million worldwide by the end of June, making it the fastest growing wireless technology ever says Wireless Intelligence. The unaffiliated company says 19 million HSPA connections are being added each month and forecasts one billion connections by the end of 2012. There are now 310 HSPA networks across 132 countries, worldwide, and 88 HSPA networks across 95 countries have been upgraded to HSUPA with a further 52 upgrades planned. LTE networks are also showing rapid growth, reaching one million connections just 28 months after the first commercial networks launched and expected to grow to 1 million by 2015.

$50 billion
Value of NFC mobile contactless payments worldwide by 2014 (Juniper Research)

WESTERN EUROPE LEADS IN VOIP SUBS
Voice over IP subscriber reached 120 million connections by the end of last year, an increase of 12.6% during 2010 and 2.9% during the fourth quarter, according to new statistics from Point Topic. The analyst company defines VoIP as a subscription service that does not require a PC, so includes PSTN-type services but excludes Skype. Western Europe leads the way by region with subscribers growing by 8.6% last year to reach 39.2 million. In terms of countries, the US, Japan and France account for nearly 70 million of the 120 million total. The US is the leading VoIP nation with over 26 million subscribers, most of which take services from cable companies; in Japan there are 24 million VoIP subscribers; while France has 18.6 million. Point Topic estimates 93% of broadband subscribers in France also have a VoIP service, compared to 72% in Japan and 30% in the US.

VOIP SUBSCRIBERS BY REGION

Region | 2009Q4 | 2010Q4 | YOY % Increase
--- | --- | --- | ---
Asia-Pacific | 29,062,670 | 33,509,289 | 15.3%
Eastern Europe | 1,162,440 | 1,452,807 | 25.5%
Latin America | 3,769,670 | 4,371,200 | 15.6%
North America | 27,991,070 | 30,756,000 | 10.4%
South and East Asia | 5,808,000 | 7,338,000 | 26.4%
Western Europe | 29,346,288 | 42,666,721 | 46.6%
Global Total | 106,075,175 | 120,466,071 | 12.8%

Source: Point Topic

$20 billion
Value of the global optical networking market by 2016. (Opus)