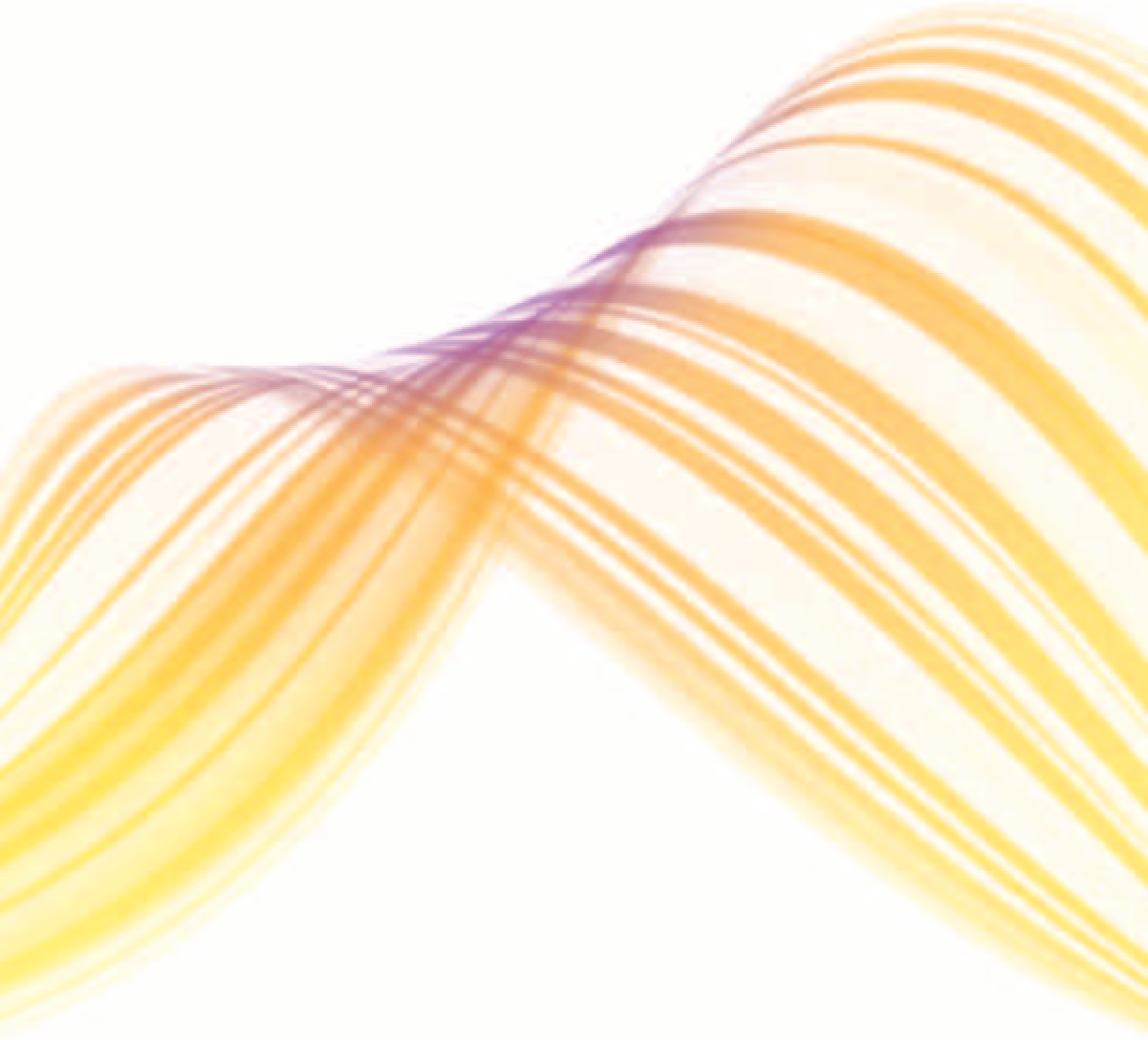
Nokia Siemens Networks

unite

Trends and insights 2009

Reinventing. The world. Connected.

Contents



Foreword

This is a time of great change for our industry.

Between now and 2015, we see both voice and data traffic growing at an extraordinary rate, with mobile data traffic growing some 300-fold. Last year alone we saw a 5-fold increase in data traffic across our customer base. However, there will also be much slower subscriber growth – the 20% annual subscription growth witnessed over the last decade is well and truly behind us.

Over the course of the next 5 years, our customers will spend a significant amount deploying LTE networks and the supporting infrastructure required for sustainable mobile broadband services. When added to the 3G-HSPA investment our industry has made in recent years and will continue to make well into the future, this adds up to an enormous amount of investment. Given this, the sector needs to work more closely than ever before to ensure the business case is there to support these major investments.

At the same time, we are all searching for, and finding, new ways to drive efficiency. We believe this trend will accelerate in the coming years.

These two factors – the need for constant investment and the need to boost efficiency – require all stakeholders to work together, finding innovative solutions that make good business sense.

Many of us – particularly those of us who have grown up in this sector – tend to think within the confines of our own vertical structures – infrastructure vendors, device manufacturers and operators – and frankly, we've not worked that well together.

Times now demand that we change our behavior.

At Nokia Siemens Networks, we are passionate about playing a key role in building a healthy future for the sector as a whole. The pages of this annual capture insights into the key trends affecting each and every one; it's a time for collaboration if we are to meet the challenges now facing our industry.

Simon Beresford-Wylie
Chief Executive Officer

Introduction

unite: trends and insights 2009 showcases the latest thinking about the future of connectivity.

Each contributor has a different vision for the future of our industry and this volume presents these different visions to compare and contrast them. Readers should then develop a good feel for the various schools of thought – regarding the rollout of LTE, for example, or how different organizations have leveraged the power of simplicity.

You will notice that this book is divided into eight sections:

1. **Realizing the economic potential of connectivity**
2. **Driving efficiency**
3. **Changing consumer lifestyles**
4. **Enriching the customer experience**
5. **Eco-efficiency and social responsibility**
6. **The evolution of telecom, IT and media ecosystems**
7. **Broadband with no boundaries**
8. **Trends in technology**

Broadly speaking, each section represents a different industry trend that brings together dedicated research, shared best practices and industry opinion.

Close readers will discover a few recurring topics. A trend in technology such as the move to fiber-optic cabling (Section 8) in a sense builds on changing consumer lifestyles (Section 3) and at the same time helps improve efficiency (Section 2).

And of course the impact of the global economic climate and the issues stemming from the credit crunch are affecting many business decisions these days. These influence how people engage with communications, with a new emphasis on reducing travel and feeling close through new communication services.

In addition, the millions of people discovering the benefits of connectivity every day appear more than once in the following pages. Most of these people are connecting for the first time using inexpensive, often previously owned mobile phones, and many will connect to the internet for the first time using mobile devices as well. Their story represents a mega-trend towards universal connectivity that is real, and continuing at breakneck speed – credit crunch or not.

These are indeed thought provoking times for the telecommunications industry.

And this book proves it.

TrendOne

Realizing the economic potential of connectivity

It is clear to most people that there is a relationship between connectivity and economic prosperity. But how can governments harness and maximize this relationship? And how are businesses adapting to realize the full economic potential of connectivity?

Futurist Andrew Zolli:

New partnerships for change

Andrew Zolli

Andrew is an expert in global foresight and innovation, studying the complex trends at the intersection of technology, sustainability and global society that are shaping our future. His firm, Z + Partners, helps senior leaders at some of the world's preeminent companies, institutions and governments see, understand and respond to complex change.

Andrew is also the Curator of *Pop!Tech*, the renowned thought leadership forum and social innovation network. He has served as Futurist-in-Residence at *Popular Science* and *American Demographics* magazines, and he is also a Visiting Fellow of the Woodrow Wilson Foundation. Andrew's writing and ideas have appeared in the *New York Times, Wired, BusinessWeek, ID, Fast Company,* and elsewhere.

In the future, we will see a continued expansion of the number of devices in the world, and new ways for people to use devices.

These trends will be driven by two subsidiary trends. The first one is the creation of a set of new business models designed to get mobile devices into the hands of people who have never had them before. And the second is the advent of very different communication services than we have had before.

It's worth considering a) the things that are going to be driving this increasing connectivity, and b) what are the specific services that will ride on top of this new connectivity?

If you talk to a lot of mobile carriers – service providers – even today you still hear a lot about communications in its "traditional" form: number of subscribers, and pricing models designed to drive subscriptions. The next big metaphorical changes that are coming to the communications industry are in areas like healthcare and banking; they are going to be applications riding on top of those mobile networks that push the mobile sector into areas it has never been before.

The mobile handset will become the central platform on top of which many other industries will deliver their services to consumers.

The mobile handset will become the central platform on top of which many other industries will deliver their services to consumers.

So far, most of our discussions about mobile devices have been about feature sets and user-interface design or new pricing models. It hasn't been about how we're going to connect people to their doctors – vertical applications where there is a lot of potential to share the cost.

This kind of innovation must come from the service providers, and the device manufacturers – if only because they understand the potential of the mobile platform so much better. Stakeholders in our industry need to work together to spark this conversation, because I don't think people in other industries really understand the potential of the technology. I feel it is incumbent upon the telecommunications industry to go out and build highly differentiated partnerships that will deliver growth, not only to this industry but other industries (banking, health care, etc.) as well.

One good example of this potential in action is a project we are working on at *Pop!Tech*, called Project Masiluleke in South Africa. What's really powerful about this project is the connection of citizens to healthcare (specifically HIV and TB-related healthcare), using mobile devices as both a social marketing tool and also a broadcast marketing tool: we are sending out more than a million messages a day to a broad audience.

In April we are rolling out Phase Two of this project, which is an at-home, ultra-low-cost HIV test that people can take, and then use their mobile devices to find the results of that test and even get advice and guidance from a counselor – again using these mobile devices.

This is a completely different way to think about medical testing, and the potential for healthcare to deliver similar services – I am thinking about testing blood-sugar levels for diabetics or blood pressure for people suffering from heart disease; stress management is another thing that could be carried out using mobile devices.

What's interesting is there is a lot of money being inefficiently spent today by traditional healthcare providers – because care now depends on people going to the doctor's office, and having their tests done there. Often these people are already sick and need assistance traveling to and from the test point. The mobile device allows us to reach out to patients in the privacy of their own homes.

If the mobile service providers could pick up just a fraction of the amount that is spent on healthcare worldwide every day that would transform the profitability of the whole industry, improving people's lives quite a bit as well.

Stakeholders in our industry need to work together to spark this conversation.

And that's just one sector.

I mentioned banking as well, and the potential for mobile connectivity to transform that industry. But in my opinion the potential exists for almost every industry and every sector.

And this, for me, is the story. It's not about handsets. It's not about the number of handsets. It's not about 3G, 4G, 5G – as much as those are important components – for me, it's not about connectivity per se. It's about utilizing the technology that already exists to create transformative new connections with other industries to improve the quality of life for everyone.

Professor Leonard Waverman:

Getting out of recession – Let's build the infrastructure of the 21st century

Although politicians have been reluctant to use the r-word – recession – it is clear that we are in a severe economic downward spiral.

The US Bureau of Labor statistics reported on December 5, 2008 that "Non-farm payroll employment fell sharply (-533,000) in November". And this "followed declines of 403,000 in September and 320,000 in October. Job losses were large and widespread across the major industry sectors in November."

The Financial Times reported on November 21 that 80,000 jobs had been cut across the world in the previous five days and that the UK had shed 30,000 jobs in the previous two weeks.

> The key to future productivity enhancement and economic growth is the infrastructure of tomorrow – bandwidth everywhere.

As a response to these unprecedented falls in employment, governments and leaders have announced large stimulus packages. U.S. President Barack Obama has led the way proposing a $136 billion infrastructure economic stimulus program, expected to generate up to 2.5 million U.S. jobs by 2011. Obama wants to make public buildings more energy-efficient; repair roads and bridges; modernize schools; increase broadband access; and ensure healthcare uses the latest technology.

European leaders revealed their recovery plan on November 26, 2008: an injection of €200 billion (1.5% of GDP), to boost demand and action "to reinforce Europe's competitiveness in the long term." The plan sets out a comprehensive program to direct action to "smart" investment: "investing in the right skills for tomorrow's needs; investing in energy efficiency to create jobs and save energy; investing in clean technologies to boost sectors like construction and automobiles in the low-carbon markets of the future; and investing in infrastructure and inter-connection to promote efficiency and innovation."

As of December 12, Canada had not come up with any stimulus package.

President Obama is correct in stressing broadband as a major infrastructure need, and Europe, Canada and other nations should listen and act. A large amount of economics research demonstrates that the U.S. lead in labor productivity growth post-1995 is largely due to the U.S. businesses advanced use of Information Communications Technology (ICT). The rest of the world has lagged the U.S. in labor productivity growth and in adoption of advanced ICT hardware, software and skills.

In recent research funded by Nokia Siemens Networks, a team of researchers at economic consulting firm LECG and I have developed a new way of measuring what the EU would call "smart" communications – the extent to which a nation uses ICT as a means of advancing productivity and economic growth. (See www.connectivityscorecard.org)

Professor Leonard Waverman

Leonard is Professor of Economics at the London Business School. He is also the in-coming dean at the Haskayne School of Business at the University of Calgary.

Professor Waverman's current research is on the growth and productivity impacts of the rollout of telecommunications and computers. His most influential publication is *Telecommunications Infrastructure and Economic Development* authored jointly with Lars Hendrik Roeller, for the *American Economic Review*, Sept' 2001. He is currently finishing a book (jointly with Melvyn Fuss), entitled *The Networked Computer*, to be published in 2008 by Cambridge University Press.

Table 1 summarizes the 2009 ranking of 25 innovation-driven and 25 resource and efficiency-driven economies. The Connectivity Scorecard 2009, which has doubled the number of countries covered in the 2008 study, ranks the United States first in the group of innovation-driven economies, while Malaysia leads the resource and efficiency-driven economies.

The Scorecard is relative; that is, a country could earn a score of 10 if it leads in each of the 32 metrics. What is most important here is the low average score, 5.0, in other words, countries are not using advanced hardware, software and skills as drivers of productivity and economic growth. The U.S. leads the world in our scorecard but note the 23% gap relative to best-in-class performance as the score of the U.S. is 7.71.

Table 1

Innovation–driven Economies	Connectivity score	Innovation–driven Economies	Connectivity score	Resource & efficiency–driven Economies	Connectivity score	Innovation–driven Economies	Connectivity score
United States	7.71	Hong Kong SAR	5.33	Malaysia	7.07	Tunisia	3.50
Sweden	7.47	France	5.22	Turkey	6.71	China	3.19
Denmark	7.18	New Zealand	4.85	Chile	6.59	Philippines	3.17
Netherlands	6.75	Belgium	4.65	South Africa	5.76	Egypt	3.02
Norway	6.51	Korea	4.17	Mexico	5.39	Sri Lanka	2.87
United Kingdom	6.44	Italy	3.99	Russia	5.37	Vietnam	2.75
Canada	6.15	Czech Republic	3.71	Argentina	5.14	India	1.88
Australia	6.14	Spain	3.49	Brazil	5.12	Indonesia	1.87
Singapore	5.99	Portugal	3.02	Colombia	4.08	Kenya	1.75
Japan	5.87	Hungary	2.72	Botswana	3.98	Bangladesh	1.60
Finland	5.82	Greece	2.62	Thailand	3.75	Pakistan	1.54
Ireland	5.70	Poland	2.49	Iran	3.62	Nigeria	1.30
Germany	5.37			Ukraine	3.60		

Table 1: The Connectivity Scorecard

The study shows that even the world's best-connected countries, such as the United States and Sweden, are not exploiting communications technologies to their fullest potential. With room for improvement on multiple measures of connectivity, we believe the worldwide gain from improving connectivity could be significantly higher.

You will note also that Korea scores relatively poorly in our measure as its businesses do not make extensive use of advanced "smart" connectivity.

The Information Superhighway is thus the most critical infrastructure need all advanced economies have

Certainly, highway systems need work in many countries. However, the key to future productivity enhancement and economic growth is the infrastructure of tomorrow – bandwidth everywhere. Broadband penetration is about equal across the U.S., Europe and Asia (Korea and Japan). But Asia leads in two critical areas going forward – speed or bandwidth – and the major means of achieving bandwidth – fiber, in the core- and access telecoms networks. While Japan and Korea have been investing heavily in fiber, upgrading the century-old copper communications infrastructure, we in the West have been lagging.

Why have we been lagging? Fiber investment is expensive and communications companies may not see the future demand. Fib-ing up the USA, Europe or Canada is so costly because of construction costs, not the cost of electronics or the fiber itself.

Verizon in the U.S. has an ambitious fiber investment program. But the costs of fiber to a home are in the order of $1000 - 2000 per household or $100 - 200 billion for 100 million households.

Getting the most advanced broadband network is not a matter of rocket science – it is a matter of construction – moving dirt

Getting the modern broadband world that President Obama appears to want is exactly the make-work, employment-rich program to help us get out of the current recession.

I therefore urge governments everywhere in their haste to stimulate economies and in their desire to advance infrastructure, to build an infrastructure for the 21st century, not one for the 20th century. If governments decide to use taxes to build their way out of recessions, let us build hugely productive assets that will advance productivity and economic growth for decades to come –
let us build the Information Superhighway.

Upwardly mobile

Mobile connectivity is helping people do more, indeed even enjoy life more, than they ever have before.

Like many people in developed economies, London-based painter James Cooper has come to rely on his 3G mobile multimedia device more than he ever thought possible. He uses his camera to record scenes that capture his imagination; he then e-mails the images to himself, downloads them onto his PC and paints the scenes in the privacy of his studio.

"I use my mobile as a kind of personal diary," he said in a recent interview.[1]

And in India, a fisherman named Jayan Kadavunkassery is equally effusive about his mobile, though for entirely different reasons.

"The two crucial changes that have happened in my lifetime," said Kadavunkassery, 37, an Andavan crewman who was interviewed by the Washington Post, "are the inboard motor and the mobile phone."[2]

Jayan said that before he got his first cell phone a few years ago, he used to arrive at port with a load of fish and hope for the best, not knowing that dealers in the next port could be offering twice as much.

Now he calls several ports while he's still at sea to find the best prices, playing the dealers against one another to drive up the price.

Generalizing about something as big and complex as "connectivity" is a tricky business – it means one thing to Cooper and still other things to Kadavunkassery. There are socioeconomic variations in usage and different attitudes between rural and urban dwellers, and young/old, male/female, blue/white collar differences continue to segment the connected world into smaller and smaller groups of people, each with its own set of wants, needs and attitudes towards "connectivity" and what it means to be connected.

Still, broadly speaking there are two undeniable global trends:

- People have an ever-increasing appetite for connectivity
- People will use services that enhance the quality of their lives

These trends are undeniable. Just look at the headlines: India signs up record 10 million new mobile users in October, 2008; Bangladesh signs up 8 million in August – this, in spite of the global economic slowdown.[3]

And this appetite for connectivity is manifesting itself everywhere. Look at the exponential growth in demand for 3G services in more mature markets – again even after the so-called credit crunch hit. What's more, according to a recent survey by Nokia Siemens Networks, in spite of the downturn people in these developed economies predict they will demand even more access in the next twelve months. [4]

Connectivity is an important part of people's lives, whether they live in emerging or developed countries, and in spite of economic uncertainty.[5]

And mobile connectivity, in particular, is helping people do more, indeed even enjoy life more, than they ever have before.

One way to think of this is mobile devices and services are enabling a better life for people – not so much "connecting" devices but enabling devices that help people accomplish more than they could ever accomplish on their own.

This is true of artist James Cooper, fisherman Jayan Kadavunkassery, and the other 4 billion people connected in all parts of the world: to each and in his or her own way, connectivity enables a better life.

Flip side of the coin

But connectivity doesn't always meet the expectations that people have for it, (on devices, service fees and taxes) no matter where they live. Research shows that many people in Morocco are unhappy with the quality of their internet service – so instead of enabling a better life for them connectivity is in a sense doing the opposite: research shows their broadband connection is a source of frustration for most Moroccans.[6]

Another issue that Communications Service Providers (CSPs) and other stakeholders can address is affordability – bringing down the amount that people need to spend (on devices, software, subscription fees, taxes, etc) in order to gain and maintain access.

The most successful CSPs will take their cues from end-users themselves. In markets where penetration is high, innovative services, and unified charging and billing plans, can mean as much to the success of a CSP as affordability can mean to people in emerging markets.

The evidence is clear: if people are given access to affordable services that really matter to them, they will use these services in abundance to help enhance the quality of their lives, no matter if they live in London or a village six hundred miles from Lahoor.

This representative image does not feature any person mentioned in the above article.

Saving lives at the epicenter of HIV

Using mobile phones to fight disease gives new hope to South Africa.

In some regions of South Africa, four out of ten adults are HIV positive. Over the past fifteen years, the HIV epidemic has reached catastrophic proportions. The hope for a better future, promised by the end of apartheid, has been thwarted for millions of people.

Meanwhile, mobile communications has reached a critical mass, with 43 million mobile phones for a population of 49 million. Addressing South Africa's HIV problem with the help of mobile technology has become a feasible option.

In fact, so-called *telehealth* solutions, using telecommunications to deliver health-related services and information is a rapidly expanding field throughout the world.

Phone-based health services

Transmitting medical images online and giving health advice over the phone shows great promise. A pilot study of diabetes patients in the United States who reported health data via their mobile phones yielded excellent results, as did an SMS campaign aimed at promoting condom use among African-American youth.

In Africa, the introduction of toll-free emergency numbers in Rwanda has significantly cut down on the time it takes for a patient to receive treatment. On a larger scale, the mobile industry's global trade association, GSMA, launched the Phones for Health initiative in 2007, giving health professionals in ten African countries access to mobile-based software for health monitoring in order to track and prevent the spread of disease.

According to Dr. Howard Zucker, Assistant Director-General of the World Health Organization, "The explosive spread of mobile phone networks across the developing world has created a unique opportunity to significantly transform how countries can tackle global health challenges."

Promoting HIV testing via SMS messages

Nowhere is this transformation more urgent than in South Africa, where misconceptions about HIV and HIV testing are as widespread as the disease itself. According to recent estimates, only 2% of the population has been tested for AIDS.

One of the most ambitious telehealth initiatives to date, Project Masiluleke, aims to combat these misconceptions and promote testing. Launched on World AIDS Day on December 1, 2008, this initiative also aims to raise awareness and acceptance of HIV and AIDS in South Africa. To get the message across, the first phase of the project involves the clever use of free space in mobile text messages.

In South Africa, 95% of subscribers use prepaid service. When their account runs out, they can send free-of-charge text messages that say "Please Call Me" (PCM). Every day, South Africans send 30 million PCM messages to friends and family. This service is usually paid for by advertisers who use the 120 characters of free space left in the message field for commercial messages.

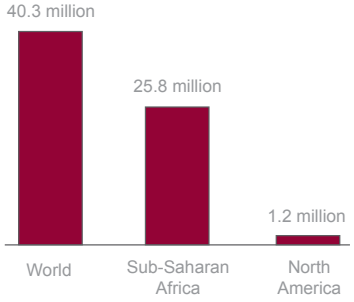
The explosive spread of mobile phone networks across the developing world has created a unique opportunity to significantly transform how countries can tackle global health challenges.

Project Masiluleke ("warm counsel" and "hope" in Zulu) uses this space to encourage people to call the AIDS Helpline.

One message says, "HIV+ & being mistreated by your family or friends? For confidential counseling call AIDS Helpline on 0800012322." Another asks, "Frequently sick, tired, losing weight and scared that you might be HIV positive? Please call AIDS Helpline 0800012322."

Every month, one million of these text messages are transmitted to mobile phones all over South Africa. To ensure that the information gets across to everyone, the messages are sent in three different languages.

People living with HIV



Social stigma makes anonymity critical

The AIDS Helpline is staffed by trained operators who provide accurate healthcare information, counseling and referrals to local clinics. During the pilot project, before the official launch, calls to the helpline doubled.

Callers remain anonymous, which is critical: despite the prevalence of HIV/AIDS in South Africa, there is still a powerful social stigma attached to the condition. Although testing and drugs are widely available, many people are reluctant to be seen at clinics for fear of being branded HIV-positive.

Next step: free home tests and virtual call centers

The second phase of Project Masiluleke will therefore include access to free home HIV tests. As well as meeting people's needs for privacy, they will also give some relief to the country's over-burdened public healthcare system. Given the size of South Africa's HIV epidemic, home testing may in fact be the only way to provide tests on a meaningful scale.

Phase Two also involves the creation of virtual call centers that will both provide employment for HIV+ patients and lessen the pressure on public clinics. Since tuberculosis is one of the main causes of death of HIV-positive people, the aim is to provide information about tuberculosis as well.

Creating a scalable solution

Project Masiluleke, was conceived at the Pop!Tech Conference in October 2006, where South African AIDS activist Zinhle "Zinny" Thabethe spoke about how the disease has affected her and her family. She invited others to join her struggle, "at the epicenter" of the AIDS epidemic, and a host of companies and individuals quickly formed an alliance to tackle the problem.

The coalition of partners that contributed resources, expertise and insight includes National Geographic, Nokia Siemens Networks, Frog Design, iTeach, the Praekelt Foundation and the local operator MTN.

Two years later, Project Masiluleke was officially announced at the Pop!Tech ideas summit. Andrew Zolli, executive director of Pop!Tech, said that the project was "designed to serve as a scalable, high-impact model that can be replicated worldwide."

Answering tomorrow's challenges

Mobile technology has the potential to address health issues wherever there is coverage. In regions of world where public health services and basic infrastructure often are insufficient, mobile telehealth initiatives could lead to dramatic improvements.

In countries with an aging population and shrinking public healthcare resources, telehealth solutions offer potential to meet the shortfall and maintain treatment standards.

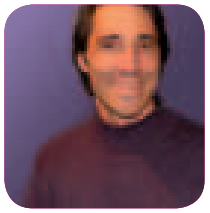
TrendTwo

Driving efficiency

Although efficiency has been important to Communications Service Providers since the beginning, two forces have combined to make efficiency the number-one buzzword in boardrooms the world over. These forces are, of course, global warming and the credit crunch.

Fredrik Jungermann:

Growing pains for crowded wireless networks



Fredrik Jungermann

Fredrik and his global team have worked on 180 operational efficiency benchmarking projects - for mobile, fixed and integrated operators globally.

Fredrik built the foundation for the practice in Nokia Networks in 2002. With the contribution from his growing team and by partnering with operators, the practice is continuously being developed.

Fredrik is based in Copenhagen, Denmark, and is a Swedish national. In a previous position in Nokia, he was based in the Netherlands. Fredrik started his career in 1989 at Telia in Sweden. In 1990, well before GSM was launched, he was given responsibility for the design of and the investments in Telia's GSM network - as all the more experienced people were dedicated to the cash-bringing analog networks. He held this position until 1995 when he joined Nokia. He holds an MSc from Lund University in Sweden.

The mobile broadband explosion is rapidly eating away at wireless network capacity. According to a recent survey, mobile data traffic is doubling each year. Some European Communication Service Providers (CSPs) have seen an eightfold increase in data traffic in the past 12 months.[7]

Fanning the flames are applications like the BBC iPlayer, which enables people to watch and listen to the previous seven days of BBC TV and radio programs on their mobile devices or computers. The huge success of iPlayer has forced one CSP (3 UK) to deal with a forty-fold increase in data traffic.[8]

Not surprisingly, mobile data revenue has also been growing. According to Nokia Siemens Networks' latest operational efficiency benchmark, mobile data revenue (excluding SMS) in mature markets has increased 55% on average in the past 12 months.[9] One CSP even experienced 147% growth in data revenue.

In emerging markets, the revenue growth rate is yet higher – averaging 267% in 12 months – one grew by a staggering 557%.

While it is true that mobile data traffic is growing at a faster clip than mobile data revenue, the figures above show that there are significant opportunities for CSPs to increase their revenue base.

The challenge instead sits in the capability to cope with the data traffic increase and to ensure that user experience is not deteriorating due to the demand. Another obvious challenge is to handle data traffic at a lower cost.

Traffic avalanche ahead

The trend will undoubtedly continue, and, while this will create more business for CSPs, the increasing revenue might not be sufficient to offset the approaching traffic avalanche. And overload is indeed a real danger: until now, it has taken a natural disaster or terrorist attack to clog up wireless network services. But, in the near future, it will become a common problem unless CSPs find ways to handle the rising pressure on existing infrastructure. According to a recent article published by Reuters, the typical 3G network will become overloaded if 40% of its subscribers use video just eight minutes a day.[10] In other words, the threat of wireless network congestion looms large.

Benchmarking for efficiency

Eventually, network hardware will need upgrading. LTE (Long Term Evolution) gear will help deal with the public's seemingly unquenchable thirst for data, but with spectrum and licenses still an issue, and LTE still undergoing live test, by most accounts commercial LTE is roughly a year away.

However, there are a several options that can help to free up network space and make room for future infrastructure upgrades. Individually, CSPs can optimize their operations and gain significant improvements by taking best practices from small and lean CSPs when it comes to partnering, automation and centralization. Nokia Siemens Networks' operational efficiency benchmarking provides CSPs with the first step in a solution. When done right – taking CSPs differentiation and strategy into account – benchmarking can indeed produce tangible results.

Sharing network resources and locations has the potential to benefit all subscribers.

Developing segmented offers

Tailoring unique offers for different segments of the market is a tactic that can increase profits as well as prevent network overload. For example, session-based offers will be attractive to many consumers since only a minority of subscribers relies non-stop on their mobile broadband connection. A growing number of subscribers prefer having pre-paid accounts with well-defined capacity limits; fostering this behavior too can help curb the increase in data traffic.

Another credit-crunch-friendly way of tackling this "capacity crunch" is to introduce different tariffs for peak- and off-peak hours.

While segmented tariffs such as these are gaining popularity, CSPs in many markets have also been offering wireless broadband access at flat rates that in some cases barely cover the underlying costs as a response to competition and to customer demand for predictable monthly fees. The success in driving traffic has been immediate, often fuelled by netbooks given away when signing up for mobile data flat rate contracts. But translating this kind of growth into profitability will remain difficult. Monitoring of fair usage is one way, but the longer-term solution is to lower the production cost of mobile data so that more capacity can be produced.

Collaborations and partnerships

All this points to the need for improving efficiency on all levels. This does not just mean cutting back on operational expenses, but finding new ways of solving problems. In converging markets, mutually beneficial collaborations and partnerships will take center stage as margins shrink and consumer expectations rise.

In the context of network overload, sharing network infrastructure is one possible tactic for achieving mutual benefit. In the UK, CSPs T-Mobile and 3 have recently created a new, shared 3G network that will provide a valuable resource to deal with increased data traffic, with no need to touch or upgrade their existing networks.[11] Traditionally, coverage has been an important differentiating factor for CSPs. But now that the focus is shifting from differentiating coverage to satisfying a growing demand for data everywhere, sharing network resources and locations has the potential to benefit all subscribers. CSPs will have to differentiate their offer based on other parameters like brand, price, service level and innovation.

With the growth in data traffic, so will the need for backbone transmission capacity. One big challenge for many CSPs today is that they do not have access to a backbone network that scales well – i.e. transmission costs increase with traffic, eating into margins when cost per increased bit is higher than revenue per increased bit. Fiber backbones solve this problem, and CSPs would certainly benefit from partnering to upgrade this critical component of their networks.

Customer satisfaction

Benchmarking is a tool for making improvements, and a useful yardstick of success is customer satisfaction. According to Ronan Dunne, CEO of O2, a loyal customer is the only valid measure of efficiency: "Any pound invested that isn't delivering a great customer experience is a pound that the customer does not value, and therefore a pound wasted."[12]

In the months to come, customer satisfaction will increasingly hinge on reliable wireless broadband access. Weathering the credit crunch, CSPs can use a variety of measures to enhance capacity. Benchmarking for increased efficiency is the first step in the direction not only to keep customers happy, but also to free up the necessary resources for future investments in new technology and high-capacity networks.

Benchmarking is a tool for making improvements, and a useful yardstick of success is customer satisfaction.

Tom Bennie, CEO, Arqiva:

The efficiency potential of network sharing

Tom Bennie, Chief Executive Officer, Arqiva

Arqiva operates at the heart of the broadcast and mobile communications industry and is at the forefront of network solutions and services in an increasingly digital world. The company provides much of the infrastructure behind television, radio and wireless communications in the UK and has a growing presence in Ireland, mainland Europe and the USA.

As chief executive officer, Tom's role is to focus on maximising performance in the three business areas of Terrestrial Broadcast, Satellite & Media and Wireless Access. He has managed the business through its sale from NTL in 2005 and subsequent expansion under Macquarie. This has included the acquisition of Inmedia Communications, the satellite broadcast business of BT and, most recently, National Grid Wireless.

Tom returned to his role in what was NTL Broadcast in October 2004 after two years as MD of NTL's business division where he was responsible for the delivery of voice, data and internet services, and where he oversaw restructuring of the business in rapidly changing markets.

Network sharing enables CSPs to offer the highest data rate, broadest coverage and most cost-effective solution to their customers.

Many communications companies regard their networks as a key differentiator. Mobile network operators have historically marketed their networks based on coverage achieved, in order to win new customers. These days coverage is less of an issue and cost pressures are mounting.

Hence the growing interest in network sharing. Sharing can take place at the site level, or by going deeper to include radio sharing or even further back into the network.

Many factors driving increased usage

Smartphones like the iPhone have driven the usage of mobile data and have helped with the development of plans for higher speeds of data and higher network capacity. The applications on the iPhone and the improved user interface have driven mobile web usage ten times more than on previous devices.

There has also been phenomenal growth in the number of dongles in the UK – a key driver in demand for mobile data. This may cause the focus for operators to shift from coverage to bandwidth. There is a need to seek new models for meeting demand and at the same time generating revenue.

Lord Carter's recent report, Digital Britain, highlights a number of new developments in the UK including universal service to all homes in the UK with a minimum 2Mb/s. The most cost-effective way to deliver this would be through a shared rural network, and Arqiva is exploring the potential to provide a 'neutral host' network open to all operators on this basis. Dedicated infrastructure makes no sense in less populated areas.

Shared infrastructure a good way forward

There are a variety of options for sharing – it does depend on the requirements of the operators involved. In some instances we have seen antenna sharing, in others we have seen complete sharing of networks. In the UK, MBNL are sharing all of these things. They have one of the leading RAN share deals in the industry and they are using a MORAN (multi-operator radio access network) solution. Arqiva has struck a long-term deal with MBNL to provide around one-third of their consolidated sites network.

Communication service providers (CSPs) can reduce both OPEX and CAPEX through network sharing. Site sharing OPEX and backhaul transmission can be shared, and network implementation CAPEX can be shared. MBNL has shown that this can be achieved with existing networks for OPEX savings – combining the 2G and 3G network of T-Mobile with the 3G network of 3 UK. Infrastructure firms in effect lower the cost of capital for back-end systems while still allowing front-end differentiation.

One thing that is clear in this time of huge uncertainty in the financial markets is that access to, and the cost of, capital is getting harder and more expensive. Therefore separating out the network back-end into a business that can reduce the total investment through sharing synergies and making the project more 'investible' to debt providers must make sense all round.

The applications on the iPhone and the improved user interface have driven mobile web usage ten times that on previous devices.

Opportunities for LTE

The same logic as applied to 3G networks could easily be applied to the rollout for LTE. Sharing costs delivers significant benefits. 10% of your sites give 50% of your revenues, so there is huge scope for economies at 90% of sites. Why wouldn't you share in small towns and rural areas?

We consider that this will be increasingly attractive for new networks for fourth generation mobile solutions, and we wait with anticipation to see how many networks will be built for LTE and WiMAX and how many service providers they will support.

There is certainly more opportunity for sharing in new networks and this may be the case in some developing countries. There will also be a greater drive for shared networks in rural areas where coverage might otherwise be uneconomic.

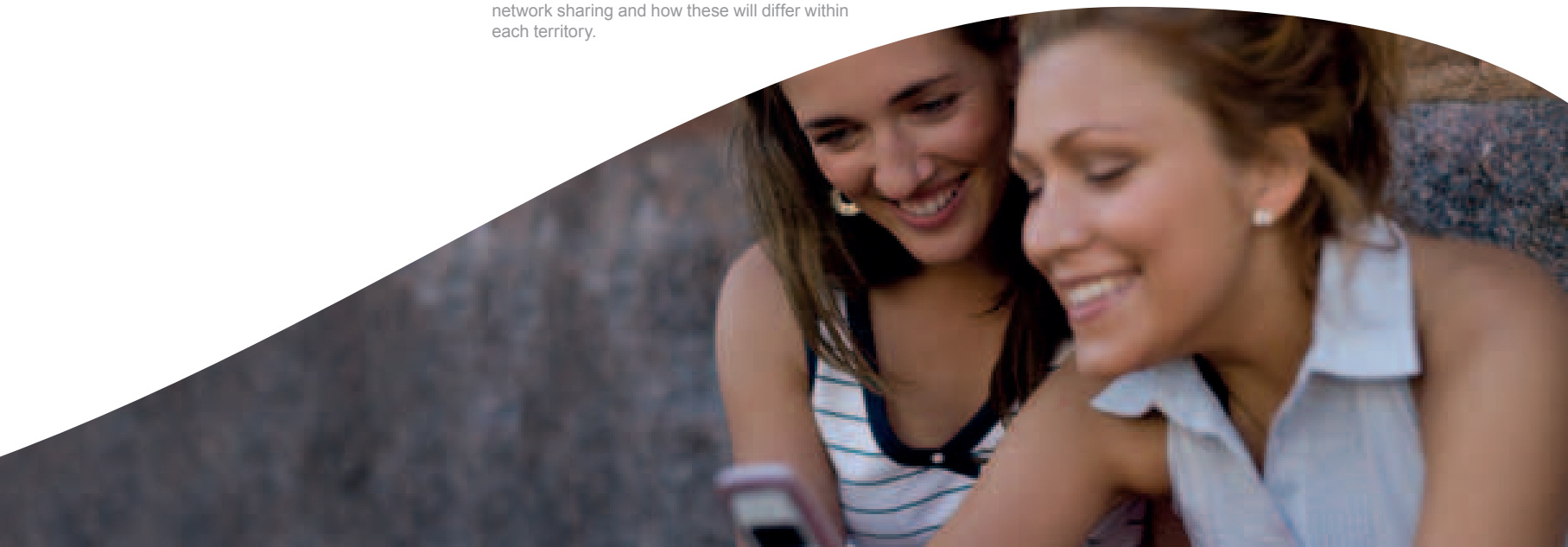
It's worth considering the original drivers for network sharing and how these will differ within each territory.

A powerful tool to improve efficiency

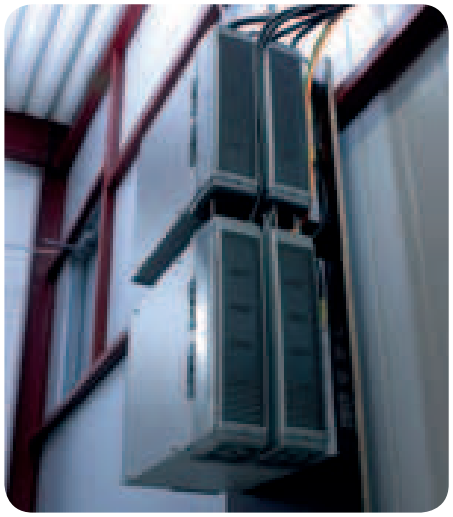
Network sharing enables CSPs to offer the highest data rate, broadest coverage and most cost-effective solution to their customers. One of the challenges they face is the differentiation of customer offerings, but this can be achieved in the applications and services layer and does not need to rely on separate networks. As I said earlier, infrastructure firms lower the cost of capital for back-end systems while still allowing front-end differentiation.

For site providers like Arqiva, the challenge is whether to fight the increasing trend in site sharing, or whether to embrace it. We have decided that network sharing (in its many forms) is inevitable and have decided to help the MNOs achieve their strategic goals. That means we get a greater share of the site share market, and we are better placed to take advantage of the new network roll-outs – whether that's 3G infill, 4G or mobile TV.

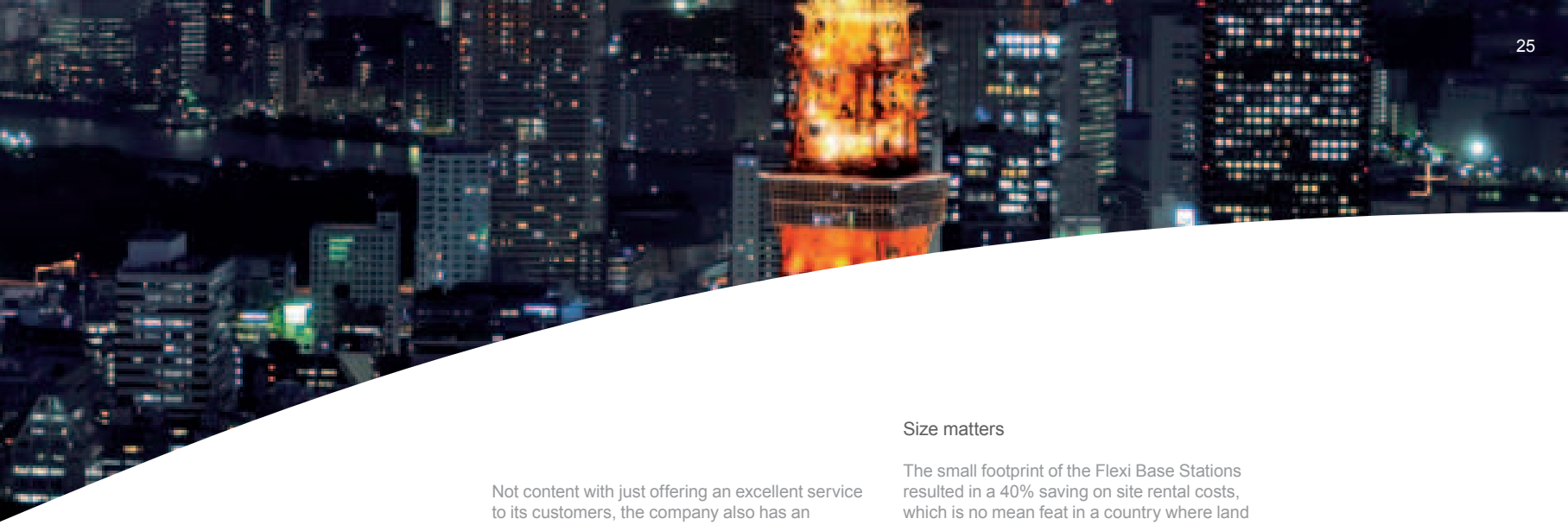
We are convinced that greater network sharing will be a feature of future service/technology deployment and a business such as Arqiva, perhaps in partnership with others, can add real value to the consumer offering and MNO profitability. However, we're also clear that a "one size fits all" approach is not appropriate. Network sharing will make more sense for some operators than others and to a greater degree in some parts or locations of the network deployment. Arqiva's ability to mix and match the solution to meet individual operators' needs will be important in helping to optimize the benefits.



Smart energy savings spells increased efficiency and reduced CO_2 emissions



As many as 75% of Japanese subscribers use mobile internet, generating 40% of the world's mobile data revenues. In order to keep up with demand from its twenty million customers, Japanese operator SoftBank Mobile had to maximize the efficiency of its network as well as prepare for new technologies and for a greener future.



With four out of five subscribers using 3G, it is no surprise that Japan has the highest density of base stations in the world.

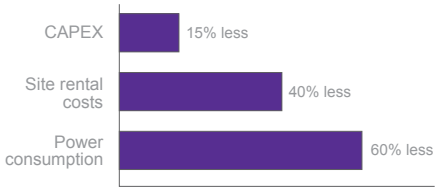
Not content with just offering an excellent service to its customers, the company also has an ambitious environmental agenda, with the long-term goal of reducing carbon emissions to zero. This commitment to the environment extends into activities such as the Green Network System Technology Development, a research project that aims to reduce data center and network power consumption by 30%. SoftBank Mobile is also a member of The Green Grid, an alliance of leading industry players working to build new standards for efficient data center energy management. Efficiency without ecology was not an option for SoftBank Mobile. Therefore, the new network upgrade had to take long-term sustainability into account as well.

A subscriber base of super-users

With four out of five subscribers using 3G, it is no surprise that Japan has the highest density of base stations in the world. SoftBank Mobile alone operates 50,000 base stations to keep their web-savvy customers connected 24/7.

To further extend the capacity of their large network, the company chose Nokia Siemens Networks Flexi BTS, a platform that includes next-generation base stations with an efficient and compact form factor.

Benefits at a glance



Size matters

The small footprint of the Flexi Base Stations resulted in a 40% saving on site rental costs, which is no mean feat in a country where land space comes at a premium. And, since one base station is light enough to be hand-carried to the tower, it can be installed without using a crane, which cuts costs further as well as keeping emissions to a minimum.

Compared to conventional sites, the initial investment in these compact base stations is on average 15% lower. But their small size belies their capacity. Via software migration, they can accommodate intense traffic peaks and greatly increase overall network capacity.

Says Junichi Miyakawa, EVP, Director & CTO, Softbank Mobile Corp, ”Nokia Siemens Networks provided Softbank Mobile with a hassle-free upgrade path to new technologies via a simple software change.”

Cutting power consumption by 60%

Size and flexibility aside, the solution’s greatest long-term advantage is perhaps its efficient use of energy. The Flexi BTS can accommodate the traffic generated by millions of mobile super-users, while at the same time cutting power consumption by as much as 60%, which is a significant step towards reducing carbon emissions.

Junichi Miyakawa explains, ”We have built up this relationship of trust with Nokia Siemens Networks, and it is our goal to offer good services that are competitively priced. Going one step further, together, we could show the industry the future in three to five years’ time.”

It is a future that looks set to be greener than ever. When environmental concerns and efficiency demands can be answered by drastically cutting costs and reducing capital investment, it’s a no brainer.

Changing consumer lifestyles

Ask anyone you know and they will tell you pretty much the same thing: “connectivity” has come to play a central role in people’s lives. And the heart of this connectivity is digital.

Mobile phone or life enabler?

Innovative partnerships between corporations and consumers are quite literally changing the way we communicate.

In mid-2008 a popular Indian blogger asked his readers if they could ever live without their mobile phones and more than 90% of them said no.[13] It sounds farfetched, but just a decade ago the idea of "mobile" telephones was a tremendous novelty to people – not just in India but also the Americas, and Europe and China, too. Now, most of us living in all but the most remote corners of the world could never imagine life without our mobile phones.

And internet access, too, has become essential to people – whether they gain access via fixed or mobile devices. One survey in 2008 found that respondents would rather give up sex for two weeks than internet access for the same period of time.[14]

What's more, in recent years mobile devices have replaced alarm clocks, wristwatches, cameras, photo albums, CD players, video cameras and monitors, address books, calendars, calculators, maps – the list goes on and on. And now these tiny powerhouses are even taking on such worthy opponents such as the PC and TV, leaving even casual observers to wonder if there's anything mobile devices can't or won't swallow up in the near future.

And it doesn't really matter to people how the technology works – they will connect their smartphones to Wi-Fi networks as easily as they will connect using 3G – implying that if their hardware will accommodate it they will also happily switch between WiMAX and LTE when CSPs rollout those standards in coming years.

In other words, the convergence of fixed-line and mobile networks is indeed coming to pass – though not in exactly the way that people thought it would. And it is also interesting to note that consumers are less aware about the technology and much more interested in the new services they can access.

The new Ovi Store, for example, launched by Nokia at the Mobile World Congress, brings together partners like Facebook, MySpace, Glu, Fox Mobile Group and Qik. Together they will become an unparalleled media distribution network that will turn mobile devices into powerhouses for new services and applications.

Most of us living in all but the most remote corners of the world could never imagine life without our mobile phones.

Different people, different products and services

Already a few years back, a *Time Magazine* article noted that many people in developed economies are multitasking with different forms of technology, and even within the same family brothers, sisters, mothers and fathers each can use different technologies in different ways.[15] This fact is important to note: CSPs which offer a wide variety of services may find themselves better placed for growth in the future.

Not just a one-way street

But consumers are very discriminating in what they choose to purchase. Only those products and services that really enhance the quality of people's lives take root and flourish. The Nokia Comes With Music campaign in the UK, Singapore and Australia is a perfect example of this. Nokia gave buyers unlimited free access to millions of tracks by a range of great artists for a whole year. Once the year was past, the music was theirs to keep.

Open source – another source of inspiration

Another trend that's helping to produce innovative new products and services that actually matter to people is the trend towards open-source mobile platforms such as Symbian and Android. These platforms allow applications to be created by the broadest possible range of developers, giving them the ability to develop exciting new applications that make mobile devices work better.

Developers compete for the opportunity to reach a truly global audience with their mobile applications. These range from simple games such as Tetris to elaborate, location-based applications like Skyhook, which utilizes Symbian's location-based platform and Wi-Fi location mapping to improve upon traditional GPS location devices, which can cease to work in low-coverage areas such as restaurants.

The success of open-source platforms in helping a wide range of people to produce new mobile platforms, and consumer-focused goods and services like the smartphones show that people will help companies produce connectivity technologies that really make a difference to their lives. But their success too shows something a bit more subtle: no matter how connected people feel right now (via e-mail, voice communications, social networking, picture sharing sites, and fast mobile connections enabled by flat network architecture), surely there are new opportunities waiting just around the corner for us to connect people even more, even better, in all kinds of markets.

Mobile as the 7th of the Mass Media

Some day soon – within about five years – most phones in use around the world will be equivalent in performance to the iPhone today (screen size, data connection speed, etc)

Tomi T Ahonen

The author of six books about mobile communications, Tomi lectures at Oxford University, advises Global 500 companies worldwide and lives in Hong Kong. To learn more about *Mobile as 7th of the Mass Media* please visit: www.7thmassmedia.com

Look how quickly all personal computers were more capable than the original Apple Macintosh computer.

In addition, in our world, when a new cellphone is automatically replaced every 18 months, how quickly will many people stop replacing the old family PC that nobody uses any more. Moreover, recognize that while today the iPhone or Nokia N95 may seem like an extremely valuable gadget, after two generations and thus three years, they are the hand-me-down phones given to 10-year-olds as their first or second phones, when we buy "superphones" that are far more powerful for our own needs.

What of the small screen and lousy keypad?

Yes, I hear that all the time. Again, on first glance, it is easy to fall prey to the misconception that cellphones would have "fatal flaws" due to the tiny screen and poor keypad. These are not fatal limitations by any means; and in both cases, there are far more powerful benefits to outweigh the screen and keypad; abilities that make the cellphone far superior for media consumption. The screen is also in our pocket every day and we look at it more than once per hour, all waking hours, on average. The keypad has less keys than a PC keyboard that is true; but the phone also has the camera – a powerful scanner – which gives it far greater creative as different from the internet as TV is from radio.

As different from the internet as TV is from radio

With its seven unique benefits, mobile as a mass media channel is as different from the internet as TV is from radio. As TV was soon absorbing most of the content concepts from radio, soon, cellphones will absorb most of the content from the internet. Whether services have already migrated to cellphones, with more internet access to USA-based services coming from cellphones than personal computers, as Telephia and Comscore reported in November 2006. Soon other web services will follow.

Before long, as the content owners and application developers learn to create new, unique content for mobile, a vast new media opportunity will emerge. Already, music on mobile is almost five times larger than music on the internet. However, most music on mobile is ringing tones, ringback tones, and other such music services that would not even work on the internet or on an iPod.

Seven unique benefits of 7th mass media

1. Cellphone is the first personal mass media channel
2. Cellphone is permanently carried
3. Cellphone is always on
4. Only cellphone provides a built-in payment channel
5. Cellphone is available at point of creative impulse, enabling user-generated content
6. Cellphone is the first media with near-perfect audience data
7. Only cellphone captures social context of media consumption

Audience Data Accuracy by Media

AMF Ventures measured the relative accuracies of measuring audience data by the three major media channels; TV, internet and mobile in 2007 and found that:

- On TV, the total audience data that can be captured is 1%
- On the internet, the total audience data that can be captured is 10%
- On mobile, the total audience data that can be captured is 90%

Source: *AMF Ventures 2007*

Much like on TV we have reality TV shows and music videos and the CNN ticker, these are all broadcast TV innovations that would not work on radio (nor indeed, in the cinema). Yes, soon the time will come when media content and services on cellphones will be better than those on the internet. In addition, if you travel to Japan or South Korea or India – countries where the majority of internet access is from cellphones already – that is the case today. Content is formatted for the small screen as a default, as that is the predominant access device.

The Guardian newspaper reported on 24th May 2007 that the global value of paid content on mobile at 31 billion dollars was bigger than paid content revenues on the fixed wireline internet at 25 billion dollars worldwide. We have already passed the tipping point. The younger media has passed its older sibling in size. Moreover, mobile content revenues for 2007 reached 45 billion dollars worldwide. More devices, more users, growing faster; now already more revenues. There is no going back.

Will not kill other media

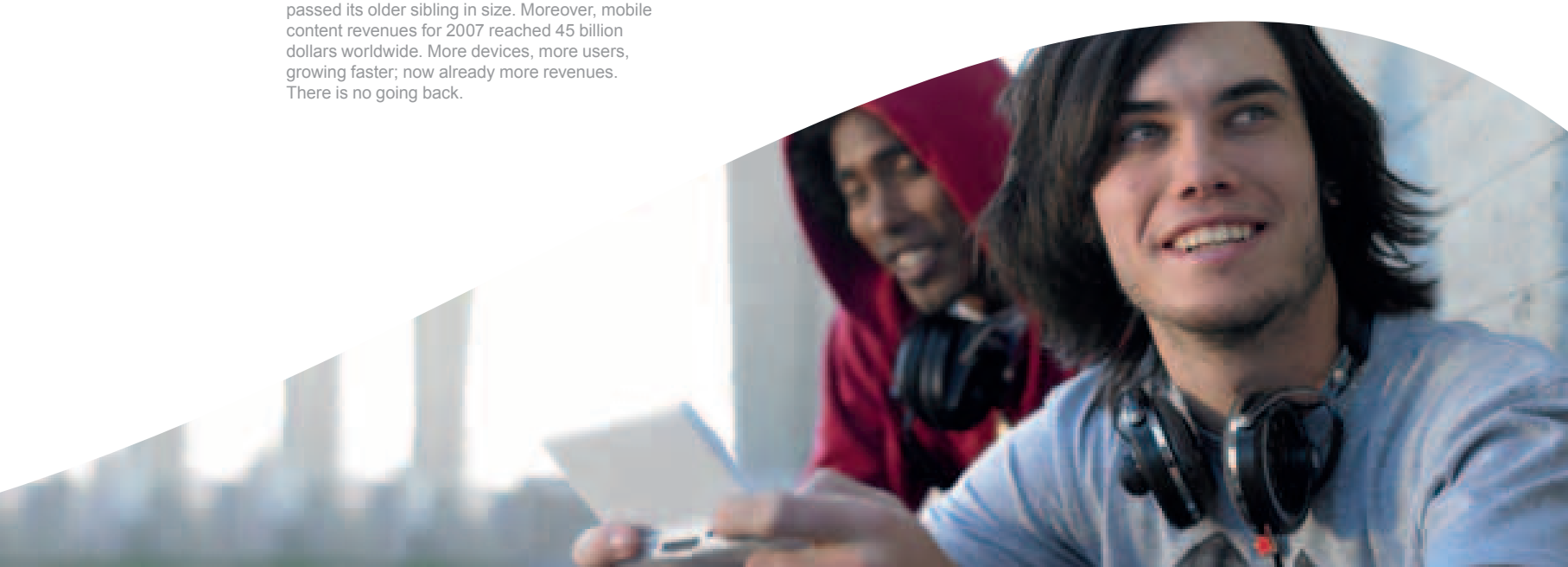
Like we saw with the emergence of newer media channels, the new medium will not kill the older media. All seven mass media will continue. However, what I stress in my workshops, seminars and executive briefings all around the world, and at my short courses at Oxford University, is that mobile as the Seventh of the Mass Media is the youngest, newest, most far-reaching and most powerful. With seven unique benefits that cannot be replicated on legacy mass media, not even efficiently on the internet.

Here is where we have enormous opportunities. As recordings created global giants out of EMI, Warner Music and Universal; and how Cinema created a motion picture industry out of Hollywood, Bollywood etc; each dawn of a new mass media channel has created economic openings for new companies to establish global positions. We saw it again over the past ten years as the internet spawned billion-dollar giants out of Ebay, Google and Amazon. Now we are facing the dawn of another new industry. It will have its own creative and technical competences, unique to this medium, as different as it is to edit a newspaper compared to directing a live TV news studio. New competences will be needed and here the young, SMS-addicted Generation C for Community youth will be in the driver's seat for inventing and mastering the new required professional competences.

Mobile will bring about a new media ecosystem and be fertile grounds for new giant corporations of the next decade. Those companies will be built understanding mobile, its unique benefits, and services, applications and media formats that will capitalize on the new areas, will be built with the tools in this book. Most importantly, the eventual winners will not be those who only copy the legacy media; one has to "create magic".

Only those who understand the power of mobile as the newest mass media channel will be able to share in its success. Just like those who understood interactivity and search on the web, or those who understood reality and celebrity on TV. I should mention that even though we have six newer rivals to it, the first mass media - print at 500 years - is still very healthy, and none of the seven is seriously at risk of ending as a commercial opportunity. So while the internet and the cellphone show very powerful strengths to cannibalize areas of the established five media, all seven mass media will co-exist for a long time to come.

With that, it is clear that mobile is the only mass media channel capable of replicating each of the previous six media, and mobile offers seven unique benefits. It will become an increasingly important media channel for all media content. Maurice Levy, the CEO of Publicis, the world's second largest media company, put it very well in 2006 when he said, "In a couple of years, most of the information you share, most of the advertising you read, most of the messages you send, most of the music you listen to will transit through your cell phone."



Connectivity changes world's largest island nation

Providing telecommunications in Indonesia involves some serious challenges. One is the size of the country, 700,000 square miles, and another is the fact that it is composed of 17,000 islands with dense forests and high mountains. The situation is not made any easier by the nation's continuing political unrest and economic difficulties.

Extraordinary growth

In spite of this, Indonesia has seen a continuing expansion of its mobile networks. At the end of 2000, there were around 3.7 million Indonesian mobile subscribers. Today that figure has grown by at least thirty times, to more than 116 million. This extraordinary development is projected to continue, with an estimated 130 million subscribers in 2010.

The expanding mobile network is emerging as one of the country's most important pieces of infrastructure. Due to Indonesia's geographic layout and level of economic development, the cable grid is nowhere near as extensive as the new mobile phone networks. Many islands lack regular phone lines, let alone cable broadband, and mobile connectivity is filling the void at a breakneck pace.

New networks congested within a week

The mobile phone represents an opportunity, not just to get in touch while on the go, but to get in touch, period. This goes a long way to explain the exponential growth in rural areas where communication technology has never been available before.

One of Indonesia's largest operators, Telkomsel, made a pioneering investment in the region known as Area IV, comprising the islands of Kalimantan, Maluku, Papua and Suawesi. Like most of Indonesia, the region's geography is challenging. To bring coverage to this remote area, equipment and staff had to be brought in by helicopter.

The overall lack of traditional technology-enabled services in Area IV meant that mobile coverage was very eagerly anticipated. Within a week of the launch, networks were congested and had to be extended to accommodate demand. Telkomsel's efforts in Area IV were rewarded with an average revenue per user of 10-11 US dollars, which is roughly twice the average ARPU in Indonesia. Though not affluent, people in this region make a decent living from working in local industries, and can afford to pay for communication services.

The convergent nature of mobile communications represents a sudden and unprecedented information revolution, giving access to a variety of hitherto unavailable knowledge.

Increased economic development

Nokia Siemens Networks has been working alongside Telkomsel throughout the Area IV project, enabling the rapid expansion of the operator's network. Thanks to a successful long-term collaboration, Telkomsel now covers about 65% of Indonesia's rural areas.

The economic growth that follows in the footsteps of mobile communication is well known, and rural Indonesia is no exception. For example, the oil and mining communities of Papua and South Sulawesi respectively have seen higher levels of growth since mobile communication services were introduced.

First-time connectivity also has an impact that goes well beyond any bottom line. But mobile phones are also starting to play a pioneering role in several fields that have previously suffered due to insufficient infrastructure.

Connectivity saves lives

Healthcare is a prime case in point. In some regions of Indonesia, a system for collecting information on avian flu among birds via simple text messaging is already in place. A recent, successful Indonesian telemedicine project involved regular check-ups of patients in remote regions via mobile phones. This represents a degree of service that most people in developed countries take for granted. But in a developing country, a simple phone call can spell the difference between life and death.

This was certainly the case when Indonesian midwives were given mobile phones and a 24-hour number that they could call and ask a doctor or an obstetrician for medical advice when assisting women with complicated pregnancies or births. In a country that has one of Southeast Asia's highest maternal mortality rates, and where over 4% of babies die at birth, this was much-needed help that proved to be as efficient as it was simple.

Breaking the silence on sex

In mature mobile markets, all available media is starting to converge to the mobile format. In Indonesia, the convergent nature of mobile communications represents a sudden and unprecedented information revolution, giving access to a variety of hitherto unavailable knowledge.

For example, sex education is all but absent from Indonesian classrooms, since it's a taboo subject. Instead, young people learn about sex primarily from watching pornographic films. Like adolescents everywhere, they have many questions about sex, but have nowhere to turn for answers.

Enter Dr Love – a sex counselor from Singapore, backed by an Indonesian condom brand. Young people can send anonymous text messages to his hotline and get their questions answered on a web site by a panel of medical professionals. Says Dr Love, aka Dr. Wei Siang Yu, "If doctors can support public health and use current multimedia technology, many social problems can be solved."

Changing values

Connectivity is certain to increase productivity and improve a range of information-enabled services, including healthcare and education, as well as transform Indonesian cultural values in the process.

Perhaps it is the lack of infrastructure in other areas, along with the inherent difficulty of communicating in a large and spread-out region, that makes the country take to connectivity like fish to water. Human beings are hard-wired to get in touch with each other, and now, finally, Indonesians have the means.

TrendFour

Enriching the customer experience

With the commoditization of services, and the ever-increasing number of disruptive new players entering the marketplace, now, more than ever there is a real need for CSPs to differentiate themselves from competitors.

Colin Graf von Hardenberg:

Wooing the masses to connect, and connect more often

Colin Graf von Hardenberg

Colin is responsible for the Business Intelligence unit in Strategy and Business Development. Prior to Nokia Siemens Networks, he was responsible for Strategy Development and Strategy Controlling in Siemens Com Strategy. His career covers several positions in Finance for Development, Sales and Manufacturing. He was heading the Mobile Phones Supply Chain introduction and was responsible for the Global Operations function there. Colin spent four years in the US focusing on the turnaround of former Rolm and global integration of the R&D function into Siemens.

Colin was born in 1958 in Germany. He holds a diploma and a PhD in Economics, both from the Hamburg University. He is married and has two children.

Now is the time to invest in user-friendly applications, improve service coverage and up the speed of downloading. Failing to do so will leave large groups of people outside of the connectivity revolution – and ready to be swooped up by clever competitors.

While seemingly everyone is using the internet for socializing, banking, shopping and reading the news, some people just don't see the point. As many as a third of US adults who don't have an internet connection do not particularly want one. British statistics show similar figures.

A few years ago, this might have seemed trivial. But today, being connected is increasingly necessary to access basic services and information. A large group of people, many of them marching under the banner of technology skepticism, are going to find themselves at a dead end.

Government has a large part to play in addressing this issue, especially since authorities in many countries increasingly rely on the internet for communicating with the public. But communication service providers would also do well to pause for thought. This is a huge untapped market of "late adopters" that could almost be regarded as a benchmark - if service providers can reach this group of people, they can reach anyone.

What is more, when the internet goes mobile, many in this group might go online for the first time via their mobile phones. How can we convince them, and, perhaps even more importantly, increase mobile usage in the large group of subscribers who enjoy being connected, but are not early adopters or technology fans?

I believe the answer is threefold: The services offered have to be easy to use, they have to be secure, and connection speeds must be high enough to make online services convenient to use everywhere.

Simplest is always the best

The most successful market offerings are always the simplest: easy to use, with obvious benefits and easy-to-understand pricing. The winner is not always the cheapest alternative on the market, but the one that is the simplest to use and to understand. A case in point is the iPhone, with its hard-to-beat user friendliness.

Most users struggle with complex services, which is why, for example, mobile e-mail took so long to take off, even among internet-savvy users. Services have to function in an intuitive way, without complicated settings to contend with.

This is equally true for business applications. People want the same degree of usability, whether at work or at play. Easy-to-use business applications will also give a bigger boost to productivity compared to clunky software that doesn't take the user perspective into account. Simplicity delivers results.

Making fast connections available

Speed and availability are other important aspects of improving the end-user experience. Many people who don't see the point of an internet connection may only have experienced dial-up modem speeds. Not even the most user-friendly interface can compensate for sluggish downloads. Fast connections have to be made widely available, not only in urban areas but everywhere where people need to go online.

Connecting the next billion is not only a question of building networks in the emerging markets, but offering excellent coverage in every part of the developed world as well.

Changing behaviors present new opportunities

In the current economic climate, investing in user-friendly applications and extended network capacity might seem risky. But waiting is riskier. Users will flock to the service provider that can offer simpler, better and more efficient services. The question is not if, but when, that is going to happen.

Right now, many people are changing the way they use the internet, at work as well as outside the office, due to the economic downturn. As we all know, whenever there is change, there is also opportunity, and service providers need to be there to seize it.

For example, businesses are increasingly replacing travel by video calls. Also, more and more people are using their phones to find the best prices and get maps, directions and location information. They may not buy new phones, but they become more creative with what they already have.

Communication service providers need to ask themselves what people do when they need to save money. That's where the opportunity is. Gaining insight from available customer data will also help to provide clues as to which new services subscribers would be interested in.

Differentiating through security

At the moment, online security is not a decisive factor in consumer choice. But, as more and more people get connected, it will become a key issue. Especially when it comes to mobile connectivity, security risks might stop people from using their phones to go online.

People depend on the integrity of their applications. When buying software as a service, which means that you have all your documents and applications online instead of your local hard drive, you have to feel sure that your space is protected like your own home.

For any service provider who would want to differentiate by offering the best security, the field is wide open at the moment. Now would be the right time to start raising people's security awareness. Businesses are already making measures to protect themselves, but individuals are still unconcerned.

Universal accessibility

As we are approaching a digital society, where we access a majority of our services, information and entertainment through mobile devices, we need to make the internet accessible to everyone.

This puts the stress on adhering to simplicity, offering good connectivity everywhere and making sure that end-users can be confident in their applications' security. The service providers who are able to offer this, and package it in a way that is relevant even to reluctant consumers, will have a big share of the market for the taking.

Mobile broadband sweeps across Latin America

Mexico has joined the mobile broadband party following the launch of Telcel's 3G network, which is proving a big hit with subscribers.

Marco Quatorze

Latin American subscribers are taking up mobile broadband with enthusiasm. So says América Móvil, the region's leading CSP, which has been steadily launching 3G services in 15 markets since 2008.

"There has been an explosion in the use of mobile internet access. Mobility plus data is what customers want and we are seeing very good results with 3G," says Marco Quatorze, Director of Value Added Services for América Móvil. "Fixed broadband penetration is limited in Latin America. 3G brings a new way to access internet services. With the mobile we are offering many people their first experience of personal internet access, which is really important because the internet is a necessity in the 21st century, not a luxury."

América Móvil also reports that the sheer convenience of mobile broadband is appealing to customers. "It is so easy to install a PC dongle. Customers simply plug it in, avoiding the inconvenience of a technician visiting their house to install fixed access. This convenience means that people will pay the 20% higher tariffs for mobile broadband compared to fixed broadband," comments Quatorze.

The success of PC dongles in particular opens up revenue opportunities, says Quatorze.

"In a few years we will be the most important internet service provider in Latin America. A powerful advantage over pure ISPs is our strong billing and customer care relationship with our customers. One company that could previously bill only by credit card, was able to multiply its sales tenfold by partnering with us and using our billing capabilities."

América Móvil also plans to offer its own value added services for PCs, such as anti-virus and IPTV, as well as the existing ringtone and music download services for handsets.

"With 3G, the customer experience is much better and we are seeing a rise in usage," Quatorze says.

Yet one of the key challenges is building an understanding among subscribers of how to get the most from mobile broadband over handsets. "We need to reach the mass market. For example we changed all our marketing material to refer to 'internet on your phone', because people didn't understand the previous description of 'data services'. To get the message out, we will use a combination of TV advertising, local channels, media relations and more – showing people the value of mobile internet is our priority for the next 12 months."

The right time to deploy 3G

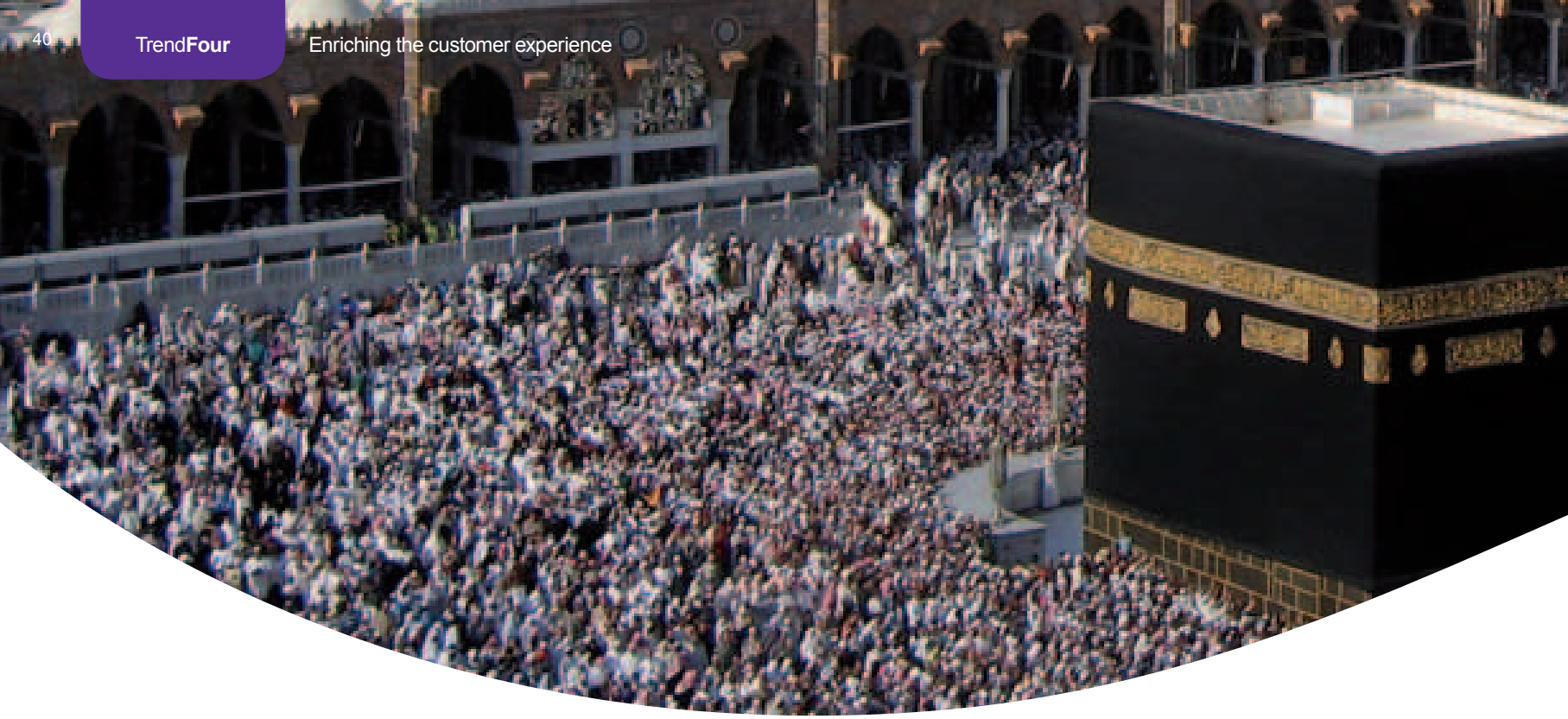
"There are several reasons why the time is ripe to deploy mobile broadband in Latin America," explains Quatorze. "Revenues here are lower than in the mature markets of Europe, Japan and North America. So we need to work with proven but advanced technologies and HSDPA fits this need well. We cannot test technologies in this region. Secondly, Latin America has some of the world's biggest cities, demanding huge capacity. 3G is a more efficient way to increase capacity than GSM.

"We also invest in data services to help offset declining voice margins. Furthermore, we have been able to use the old TDMA frequencies, which have been freed up by the deployment of GSM. This means we can run 3G over the 850 MHz band which gives us much better coverage than the 2100 MHz used in Europe."

Local support is vital

"Nokia Siemens Networks is one of our key 3G suppliers in almost all the countries in which we operate. We have enjoyed a long and successful business relationship with the company. Unlike other vendors, Nokia Siemens Networks has established a strong local presence in Latin America with engineering teams in all the regions. This closeness is really important to us and gives us very good confidence in the company," says Quatorze.

3G is a more efficient way to increase capacity than GSM.



Faithful mobile users test network limits in Mecca

The largest annual pilgrimage in the world brings about three million Muslims to the city of Mecca in Saudi Arabia. Known as the Hajj, the event is one of the most important in the Islamic calendar. The number of visitors is increasing every year, and, along with it, the pressure on the mobile network in the 15 square km area.

Phenomenal traffic surges

In just one week, pilgrims during a recent Hajj made 450 million calls and sent one billion SMS messages. During peak hours, traffic touches a phenomenal two million erlangs. This surge puts extraordinary demands on national operator Saudi Telecom Company (STC).

Zaid Al-Shabanat, STC Operations GM, says, “Maintaining the quality of calls while ensuring visiting pilgrims stay connected has never been an easy task, but it is one that we have been able to fulfill with the support of Nokia Siemens Networks for close to a decade now.”

Before 2001, blocked calls and congested networks were not uncommon in Mecca during the pilgrimage.

Multiplying network capacity once a year

Since 2001, Nokia Siemens Networks is the sole GSM and 3G supplier to STC during the Hajj. From start to finish, the Hajj is a two-week event. When the pilgrimage is over, 90% of the network is drawn down, and has to be put back up again the following year. The temporary nature of the Hajj adds one more dimension of complexity to an already impressive challenge.

Every year, in a very short space of time, dedicated teams for network planning, optimization and implementation have to get the network on air, prior to the pilgrims' arrival. Also, coping with high-density traffic in a very confined geographical area requires robust equipment that can perform reliably under critical conditions.

24-hour network monitoring

The implementation involves setting up and rolling out several base station controllers (BSCs) and base tower stations. Last year, a number of new technologies were deployed, such as mega BSCs and high speed signaling links. Also, for the first time, EDGE was used to provide support for advanced mobile services.

During the Hajj, field teams maintain the network around the clock with the help of nonstop monitoring and remote support services. This vigilant network supervision ensures that traffic runs smoothly throughout the pilgrimage in every area of Mecca.

A solution fit for the Olympic games

The solution deployed to handle the Hajj traffic surge attracted international interest, most notably from Chinese operators preparing for the Olympic games. The Chinese molded their solution based on the one in Mecca, which turned out to be a very successful strategy.

Before 2001, blocked calls and congested networks were not uncommon in Mecca during the pilgrimage. Since then, traffic has doubled many times over, but the successful collaboration between STC and Nokia Siemens Network ensures that pilgrims can freely share their once-in-a-lifetime experience with friends and family.

Ali Damiri, Head of Saudi, Levant and Iran sub-region for Nokia Siemens Networks, explains, "Every year, the pilgrimage generates an unprecedented amount of traffic and a disproportionate tele-density during the period it lasts. The onus is on us to rise to the challenge and we are constantly looking at ways to innovate and improve our solution to help STC manage the massive influx."

Volker Held:
Enriching the customer experience

Volker Held

Volker works in the Strategic Marketing team at Nokia Siemens Networks, based in Munich. He is responsible for the "Enriched Customer Experience" theme. Prior to joining the Marketing team, Volker spent four years in core networks sales. Before that he had several management and senior positions in Portfolio Management and Business Consulting at Siemens. His experience in telecommunications comprises the mobile, the fixed and the enterprise segment as well as the phone business. Volker holds a Masters in Economics.

Volker, will you start by explaining what you mean by "customer experience"? Is this a new idea?

In the industry, many people talk about, for example, customer service or the technical quality of the service provided, like coverage and connection speeds. But when we work with the concept "customer experience" we take a 360° view and look at all the touch points a supplier has with its customers. Our aim is to improve every interaction.

I would say "customer experience" is about improving every point of interaction between a service provider and its customers, from service quality and service offering to customer care and billing.

Would you say the aim is to make things simpler for the consumer?

Yes, we take the perspective of the end-user and look at how their lives can be simplified to make them more satisfied and loyal.

For example, new technical options and features do not necessarily make the client's life easier. Communication service providers need to make their services easy to use and simple to understand. Customers want to find out which services are right for them, and what the benefits are for them.

You need to make it easy for the customer to choose, by taking their needs as your starting point. For example, the pricing has to be clear. And customer care must be easy to reach and they should be able to fix most problems during the first call.

Can you talk a little about the importance of data management in this context?

First of all, market research shows that 87% of CSPs do not have a unified view of their customer data. But a unified customer view is a vital first step if you want to know who your customer is. Many companies have lots of customer data, but the data records are separate, so you need to collect basic information and be able to access it in one view.

Secondly, you need data on user behavior. Which services are they using or not using?

And finally you need to understand the motivating factors behind customer choices. Why are they using certain services? You have to find out their preferences. This makes it easier to tailor new services and improve your overall service offering.

You have to make all this end-user data available in one database, have the applications to manage it and turn that data into useful information and insight. CSPs can make good use of this information in many areas of their business, for example marketing, customer care and provisioning systems. Our solutions give their employees relevant access to customer data and allow them to make use of it in their day-to-day work.

As CSPs roll out different services, customers will have different profiles. Does that make it even more important to keep track of who is using what?

When you ask CSPs why they want more user insights, they often reply that they need more sophisticated user profiles and make them available for different service areas. The more you know, the more freedom you have to generate revenue in different ways. CSPs can, for example, respond to customer behavior by optimizing their service portfolios.

Do customer expectations and experiences in emerging markets differ from those in mature markets?

In developing markets, you often have two markets in one. In urban areas, customers tend to have the same expectations as in the US or Europe. But in rural areas, many people are happy just to have a connection. They also have less money to spend on telecommunications, and you have to adapt your market approach accordingly. Differences between income groups are highlighted in emerging markets. Low cost connectivity with the option of micropayments are needed in those markets.

What about subscriber data management solutions? Can CSPs take advantage of them even in rural areas of emerging markets?

Yes. Emerging markets use same services, basically. Data management solutions allow you to see the value of a certain customer. This is important when margins are low, as they tend to be in rural areas of emerging markets. These tend to be low ARPU markets, where providers have to work at keeping up their margins. This makes it all the more important to tailor your offers exactly to the willingness-to-pay of the different customer segments of your customer base.

How do improvements to the end-user experience affect the network?

Simplifying the life of the customer does not directly relate to the network. But if we consider the service portfolio, the situation has changed considerably. Big operators used to build their content and applications on their service platforms. Today, operators have to handle lots of third-party application and several partner collaborations.

In other words, you predict that we are going to see more strategic partnerships with third parties to enhance customer experience?

Yes, you have completely different requirements when it comes to service delivery than what you had earlier. Things were simpler with the old walled garden model, when operators did everything on their own. But now they have to manage an open ecosystem of partners and suppliers, which is much more complicated. It makes your network much more complex. But it's not unmanageable. There are solutions for handling your ecosystem.

So, things are simpler for consumers but more challenging for businesses?

For sure.

Our aim is to improve every interaction.

Shifting gears a bit, will you give us one or two examples of how CSPs have worked to enrich customer experience?

The Web'n'Walk mobile broadband offering of our customer T-Mobile is one of the first that comes to mind. When you look at the figures, they have a 90% satisfaction rating, very high acquisition rates since around 40% of the broadband customers are new to T-Mobile. There are of course several reasons for this: the excellent quality of their network, strong partnerships with service providers from the internet, convenient access, single sign-on to services that can be customized – you just press one button and get connected with your favorite services.

Another example is the Finnish fixed and mobile operator Elisa, which was able to boost customer satisfaction by increasing the number of customer enquiries that could be solved during the first call to 98%. This was possible because the agents answering the phones had access to full customer profile. It's a great example of how you can improve customer care if you have the proper customer insight.

So everyone benefits.

Yes, everyone.

Eco-efficiency and social responsibility

The connection between our behavior and the well being of our planet has never been clearer. With what we know today, our concept of business as usual has to change - and not just a little bit. We need to bring the sustainability perspective into everything we do.

Peter Hellmonds: CSR and the triple bottom line

Peter Hellmonds

Peter is Head of CSR at Nokia Siemens Networks. Prior to this, he was Vice President of Public and International Affairs at Siemens Communications, part of Siemens AG in Munich. In 1977 Peter began his first career as an apprentice and sales manager in the electricity generation sector. After eight years in business, he went on to study international relations at renowned diplomacy schools.

Peter is a graduate of the School of Foreign Service at Georgetown University, and holds advanced degrees from both the School of Advanced International Studies at Johns Hopkins University and the Woodrow Wilson School of Public and International Affairs at Princeton University. After that, he joined the World Bank in 1992 as a consultant in ICT Policy and Strategy, and moved back to the private sector in 1994.

First of all, Peter, can you tell us about the role you play at Nokia Siemens Networks? What sort of people do you work with internally and externally?

With my team of two and our Corporate Affairs colleagues in several countries we communicate our company's position with respect to CSR to stakeholders inside and outside of the company.

Let me remind you: we are a young company but the Nokia/Siemens heritage runs deep. Since the merger my team and I have identified the best practices shared by both of our parent companies, and as a starting point, these similarities, these shared best practices, represent our heritage. Our approach has been not to break completely with the past, but to create our own new identity from the best aspects of our lineage, with our specific focus as an infrastructure supplier in the ICT sector.

Much of what my team has been doing since the merger is to communicate to the various stakeholders how this new company is different from its parent companies, and how it is similar. One difference is our audience – both Nokia and Siemens are perceived to be consumer brands, and this new company, Nokia Siemens Networks, focuses primarily on large corporate customers in communications. This is one difference, but not the only one.

Having a different audience affects the way we formulate our CSR approach. When Nokia does something good for the community, then a consumer might say, "That was a kind gesture. Next time I buy a phone I will consider a Nokia." But if this new company, Nokia Siemens Networks, does something good then consumers will probably not go out and purchase a new base station.

A good CSR policy should always have a positive effect on the company's bottom line. Otherwise, in my opinion, it should be changed. Let me explain what I mean by that.

The above could be interpreted to imply that the opinions of the average consumer would not matter to us. While it may be true that we do not sell any additional base station or network management solution to a consumer, the communities in which we work and live are very important to us, and through our customers the consumer really does matter most of all; if a company such as ours does not have its house in order, the punishment (again from our customers) would be swift and severe. With this in mind another one of my preoccupations during these first two years of Nokia Siemens Networks has been to ensure that we have a system in place that helps us keep track of our ethical, environmental, and socially responsible management. I am not responsible for putting the system in place, but to make sure that the people who are responsible for it know about it and talk about it, both at the corporate level and in the factories.

This work has been very important in reducing the risk to our reputation, and it's also something that our customers value very highly. People within our organization now understand that good CSR can help a company's bottom line, even if that company focuses primarily on B2B. It's another tool we can use to help us become the first-choice supplier for our customers.

Last year, for instance, we were selected Outstanding Performer of the Year by Vodafone, and they judged us in seven categories. One of these was CSR, and our score in CSR helped raise our overall score. This is tangible evidence that CSR matters to our customers, and can benefit our bottom line with the world's largest operator.

But any company hoping to do this must first get its house in order, then do good things, and then talk about it. Not the other way around, because that strategy could prove disastrous for the company's credibility …

There is a phrase that people use these days – triple bottom line. Can you tell us about your vision for Nokia Siemens Networks and the opportunities that CSR has to improve its triple bottom line?

Let me first tell you what the phrase triple bottom line is currently understood to mean. Everyone understands what you mean by the financial bottom line. You have to make a profit, pay taxes, and so on. Now, with global warming in particular raising environmental awareness, companies are trying to improve energy efficiency as well, and it turns out this is not only good for the environment but good for business. So, for instance, our Flexi base stations save energy (money) and reduce a network's carbon footprint so that's a double bottom line for our customers. The third bottom line has a social dimension to it: you need to respect the laws, pay employees well, give them a safe working environment and ensure a good work-life balance. Providing all of these things makes you an employer of choice.

People within our organization now understand that good CSR can help a company's bottom line, even if that company focuses primarily on B2B.

Additionally, with respect to the social dimension, companies like ours can work with our customers on community programs – we have done this in India, for instance, with one of our customers to improve the quality of life for a group of school children. This is another way to improve the social bottom line.

The point is, if you simply focus on the price, in monetary terms, on delivery time, specifications and features of your products and services, that's just one kind of dialogue, but there are other issues as well, things that our customers care about, we can increase our customer relationship by working together for such social causes.

With respect to connectivity and the social impact of connectivity – which as you know is enormous – sometimes I think our customers don't quite realize the financial opportunities in targeting low-income, rural populations because they need to re-think their business models. They understand the benefit to society of connectivity, but can't identify the financial benefit; incentivizing local entrepreneurs to help generate sales is one thing they can do to generate income from rural connectivity.

Triple Bottom Line (TBL)

- People
- Planet
- Profit

Can you tell us about how your company works with government regulators and NGOs to improve connectivity?

Well, as you might suspect we work with a large number of different organizations all across the world. For instance the ITU – International Telecommunications Union – which is perhaps the oldest United Nations organization, is holding a conference in Tonga discussing how to bring the benefits of rural connectivity to the island countries in Asia. Some of my colleagues in the Asia Pacific region will be there, along with ministers from these Asia Pacific countries, to discuss these issues. So conferences like this are important to raise awareness for how our communications solutions can help the remote communities.

Two years ago we also invited government and regulatory agency representatives from twenty different countries in Africa to visit us for a whole week, and here we had the opportunity to discuss connectivity and what it means and will mean for Africa, working through the regulatory issues, etc.

I am travelling to Cairo for a conference on Sunday of this week, invited by the Egyptian Regulatory Authority to give our point of view on the future of connectivity… So yes, these are just a few examples!

It must be very difficult – with each government having its own rules and regulations.

Surprisingly, we see more similarities than you might think. And there are recurring themes – the benefits of deregulation, introduction of competition, the best practices with respect to spectrum allocation, etc. Now, with the digitization of radio and TV, we see countries working to re-use the spectrum that this digitization has made available, and the argument to use this spectrum for mobile broadband, for instance, makes sense in most places.

China Mobile delivers green Beijing Summer Games with Flexi Base Stations

China Mobile dedicated itself to provide reliable mobile communications for 6.5 million spectators, athletes and officials at the Beijing 2008 Summer Games. Flexi Base Stations helped the operator to serve more traffic, achieve 100% call success rates and ensure the best possible service for VIP customers – while significantly improving environmental sustainability and reducing carbon footprint.

The Summer Games inevitably offer major challenges to their host country. For China Mobile in 2008, providing flawless mobile communications to existing subscribers and some 6.5 million national and international visitors, all of whom expected extensive voice, data and Internet services, this was perhaps the operator's toughest-ever assignment.

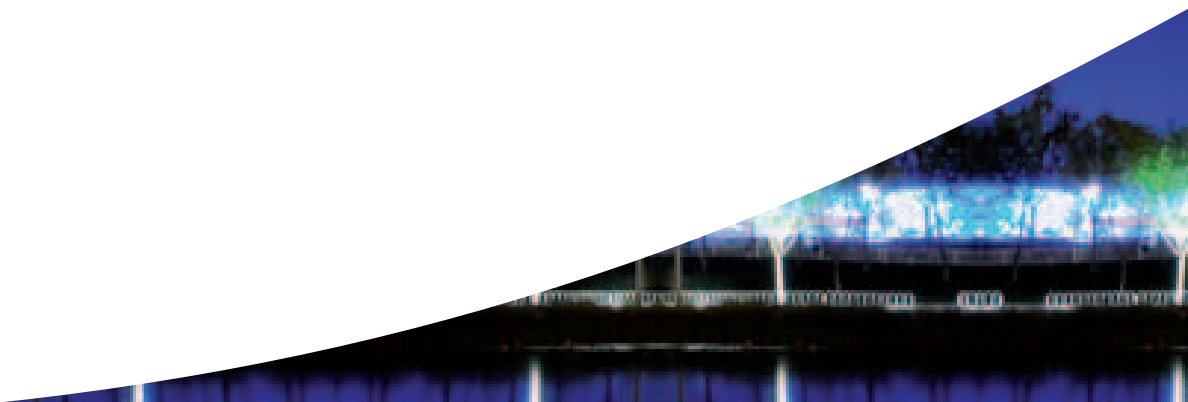
To secure the necessary additional capacity, significant network expansion was clearly one vital requirement. Yet that expansion had to be completed inside demanding time, budget and environmental constraints – and with the whole world watching.

The latest Flexi BTS is 95% recyclable.

6,700 sites in 46 sport venues - 10 base stations per day

The Flexi Base Station is Nokia Siemens Networks' "small" answer to the big challenges of rolling out and expanding mobile networks. Compact and light enough to be hand-carried in just two modules, and easily mounted in a wide range of indoor and outdoor locations, Flexi delivers rapid rollout of macro base station capacity from a minimal physical footprint.

China Mobile chose to expand its network infrastructure by more than 6,700 sites using these base stations. This expansion program ran from mid-2006 to March 2008 at a speed of some 10 base stations per day. Fortunately, having upgraded its network in late 2007 to the latest intelligent software features, China Mobile could hold down its network signaling overheads and thus serve more user traffic, more cost-effectively.



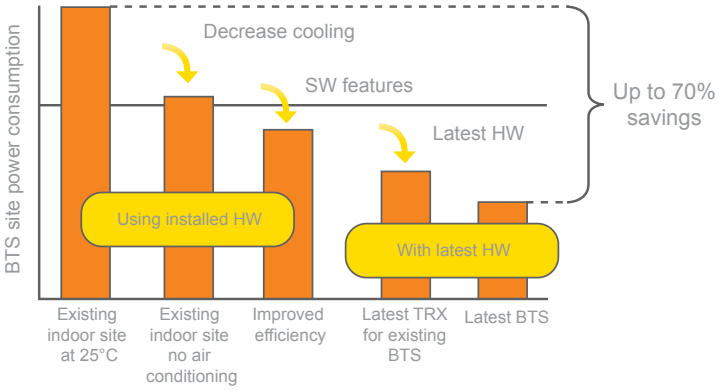
More environmentally sustainable: 70% savings energy consumption

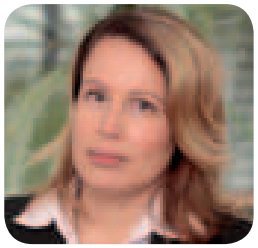
China Mobile chose Flexi Base Stations from Nokia Siemens Networks, not only for their size, performance and reliability, but also because of their environmental credentials.

The Flexi Base Station's exceptionally low power consumption – 70% lower than traditional base station sites, 35% better than its closest competitor BTS – together with its small size both contribute significantly to environmental performance and low CO_2 footprint. The Flexi BTS is environmentally sound over its entire life-cycle: production demands 80% less material and packaging, transport and installation energy costs are reduced, remote software-upgrade normally eliminates HW-exchange, and at the end of its operation, the latest Flexi BTS is 95% recyclable.

In Beijing last summer, both China Mobile and the Flexi BTS showed the world what is possible in communications. What's more, like all world-class performers, they made it look so easy.

Power consumption of a complete GSM & WCDMA BTS site





Anne Larilahti and Andrew Clark: Understanding the differences between trend and trendy

Anne Larilahti

Anne leads Nokia Siemens Networks Environmentally Sustainable Business (ESB) program focusing on business development, solution creation and global implementation in co-operation with Nokia Siemens Networks solution portfolio management, industry marketing and business units. She supports Nokia Siemens Networks brand team - stakeholder engagement, analyst relations and environmental trend analyzes are part of her responsibilities as well.

Andrew Clark

Andrew joined Nokia Siemens Networks at its formation in April 2007. Working in Corporate Affairs, Andrew is a member of the core environmental affairs team and has the responsibility for coordinating environmental regulatory activities.

Prior to joining Nokia Siemens Networks Andrew has held various positions in Nokia since joining the company in 1995, most recently concentrating on radio communications safety and regulatory issues.

Earlier in his career Andrew has worked in a variety of industry sectors including oil and automation.

Anne, you have written elsewhere about the relationship between businesses and the planet – and how this relationship has changed in recent years. I wonder if you can explain to our readers what you mean by this?

Larilahti: The main point that I would like to make is that we need to treat the planet as a stakeholder in its own right, and we haven't really done this before. I think the reason we haven't done this is because a stakeholder is someone with whom corporations have a two-way dialogue, and with the planet it has been a one-way relationship. We exploited, more or less sustainably, but there wasn't really a feedback from the planet or an understanding at the time. But now the other direction is getting very clear and the impact of climate change on business is clear – rising material prices, for instance. Even insurance payments are getting higher in areas where we are preparing for increased flooding, so the relationship is clearly two-way.

Traditionally, it was the non-governmental organizations that were speaking for the planet, and that is good – it's important they continue to do so – but I would suggest that in order to be a truly responsible company you need to think about the planet directly, rather than relying on the WWF or Greenpeace to do that thinking for you.

Another thing that is important is that a company has to set its KPIs, so we are actually measuring our real impact on the environment. To give you an example a good KPI in my opinion is the CO_2 emissions of the company. We should concern ourselves with our real impact on the environment, and not a subjective measure or ranking from outside sources.

Clark: And when it comes to KPIs, many organizations talk about them, but it's very important to understand how credible they are – actually being able to show, in a constructive way, that you have done what you set out to do. And also that the KPI is relevant.

Right now, at Nokia Siemens Neworks, we are using KPIs to up the pace of environmental action and also to help us.

Larilahti: The ICT sector as a whole contributes about 2% of the world's carbon emissions, and our first goal should be to make that percentage as small as possible – minimizing our own footprint and being as energy-efficient as possibly. But then the more important and bigger opportunity is what the ICT sector can offer the rest of the world to help reduce the other 98%. For example, aviation: more teleconferencing can help reduce the need for travel. And electronic files reduce the need for paper. Operational efficiencies gained by ICT can be many-fold. So that is where the real opportunity is, in my opinion.

Clark: You have made the business case and I think it's also possible to speculate that there might also be a social dividend. With

tele- and video-conferencing and other modern communications technologies, not only do you have a direct economic benefit but also you spend less time travelling around in cars, fewer accidents, less of a load on hospitals, a better quality of life. If you have a vision it is possible. Time will tell.

Larilahti: Yes, and telecommunications companies, in particular, can do a lot, because they have a direct relationship with consumers. So there is a lot of potential because consumers, we know, do care about environmental issues.

For example, there was a joint project between Nokia and one of its customers in the UK, to ship phones without a charger. Many consumers have taken advantage of this because it costs less and they already have a charger – why get another one when you already have a Nokia charger? This is good for the environment, good for the consumer, and good for the CSP because it gave them a point of differentiation.

You hear a lot of people talking about how the credit crunch is forcing environmental concerns off the table for the time being, till businesses and governments fix the economy. Do you see this happening, or is this just the media creating a story where there might not be much of one?

Larilahti: We need to make a clear distinction here what we mean by "trend" versus "trendy". The environment is not quite as trendy as it was six months ago. Now everybody wants to talk about the credit crunch, but the fact is that environmental issues, and scarcity of raw materials, and other issues such as these have not disappeared – they are still there.

These issues are not getting as much bandwidth as they did from the media, say, one year ago, and politicians, too, have talked less and less about the environment, but the issues, the problems, have not gone away. The credit crunch will come and go, but environmental issues will remain.

So there is no change, really, other than a change in perception.

Clark: And, just adding to that, there is a sort of convergence as well. Because quite often good business sense – maximizing our profitability – goes hand-in-hand with good environmental practice. Many of our products are much smaller now, require less raw materials and are easier to recycle than their predecessors. They use less energy and improve efficiency. These are all good things for the environment, and they are good for business as well.

The perception is that you have to pay more to be a good environmental citizen. But with smart thinking, actually being a good environmental citizen can be good for the bottom line.

And I think there is an awareness of that – especially in the B2B marketplace.

Larilahti: Absolutely. We need to be clear that we are not only doing these things because we are good citizens but also because these activities improve our competitive position in the marketplace. This is something that we should not hide. Three years ago it may have perceived as wrong to combine financial and environmental arguments. In the end the planet doesn't really care why we do good things for the environment, as long as we take action. That's all the earth cares about.

> The credit crunch will come and go, but environmental issues will remain.

And for us, the financial bottom line matters a lot. It's like when you're on the airplane, and you're told to put on your oxygen mask before you help any other people. Our business needs financial health before it can make a difference to others.

And if you're not financially healthy, you might cease to exist …

Larilahti: Exactly. And I think one of the subtle but very big changes that have happened in recent times is that corporations are not afraid to say this. It's possible to have a good financial track record as well as a good environmental one.

TrendSix

Telecom, IT and media ecosystems

The so-called “garden model” of service development, where communication service providers could do everything in-house, is quickly going out the window. It is being replaced by open ecosystems with third-party developers delivering content and software, while operators focus on enabling the distribution and delivery.

Harry Järn: Cross-industry collaboration

Harry Järn

Harry is a strategic marketing executive at Nokia Siemens Networks based in Espoo, Finland. His specialities are strategy, competitive and industry analysis, financing, mergers and acquisitions and joint venture feasibility studies, negotiations and contracting.

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Harry, today we are talking about new media ecosystems. What's your take on this phenomenon?

Cross-industry collaboration represents a huge opportunity for all industries, not just ours. Many of the traditional roles that companies used to play, in terms of being a service provider or content provider for example, don't facilitate this kind of business transformation. Communications service providers (CSPs), as well as IT and other media and content companies will have to re-position themselves and reconsider their future roles in the value networks/ecosystems: they may have to assume several different roles, depending on the service in question. They need to identify new ways of cooperation and new ways to join forces to create the products and services that will be driving the market tomorrow.

Can you provide us with one or two examples?

Many of the new collaborations we're likely to see in the next few years will hinge on long term evolution (LTE) and the possibilities that this new technology facilitates. There is still time to create new business around LTE, but it's important not to become too tech-focused. The technology is not an end in itself; it's a means to create new content and services. I would actually like to turn the topic the other way around: the success of LTE will depend on the industry's ability to create new and compelling end-user services. And this requires collaboration across traditional boundaries.

There are plenty of good examples of how things can go wrong when you go it alone. For example, the Disney Group has tried to enter the telecommunications market as a virtual network operator, thinking that their brand would be strong enough to appeal to their target audience. It hasn't worked out very well so far, which just goes to show how critically important it is for all of these different players to cooperate. Not even a strong, established brand such as Disney is strong enough to compete on its own merits.

The same can be true for established CSPs trying to enter other markets: CSPs are very strong in their own telco domain whereas content and media companies are strong in theirs. In order to thrive, they need to co-exist.

How about mobile advertising? How do you foresee this affecting the landscape, for advertisers, CSPs and end-users?

As you know there is a lot of competition in this rapidly evolving field too, but mobile advertising can succeed if it's done properly. And it can thrive in all kinds of market conditions, not only in the more developed and wealthy western countries: Vodacom in South Africa is a fantastic example of a CSP that has created a whole portfolio of different kinds of mobile advertising products that addresses a range of market segments, from subscribers with limited means to high-end mobile users.

Vodacom is an established South African CSP, but it has succeeded in breaking the mold and stands out as an exciting alternative to the more traditional advertising media such as radio and outdoor.

For end-users I believe mobile advertising could be a way for more tailored product information (meaning potentially less irrelevant spam), delivered in the right time and in the right place.

When mobile advertising grows and develops, it's going to become more content-heavy and need more bandwidth, which is where LTE comes in. The technology is not a business in itself; it's a business enabler.

Do you see fewer and fewer players getting bigger and bigger, or are there opportunities for smaller operators – I'm thinking about companies like Blyk – to thrive in this new ecosystem?

Personally, I don't believe that we will see any global, fully integrated CSPs. But we may see horizontalization of the industry to different degrees (Net Co and Serv Co), or a global network of different CSPs developing in cooperation with one another, as well as a host of smaller collaborations between CSPs to keep costs down. Vendors may also play their role here in assuming new roles in the emerging new value networks.

Meanwhile, there will be plenty of space for niche providers like Blyk. Today, there are fewer information barriers when it comes to service development, which means that smaller operators can set up shop and become competitive a lot more quickly than they used to. And I believe locality and local content can provide major competitive advantage to smaller, nimbler and local service providers.

We also need to keep in mind the national regulatory limitations (data) and concerns consumers have towards multinational megaplayers and their potential impact on identity thefts and overall data leakage: people are most likely less willing to give away personal data regarding their habits and consumption patterns to a huge megaplayer than to a locally trusted service provider.

What about network simplification? How can CSPs look to pass the benefits of simplification along to end-users?

That will depend on which part of the industry we're talking about. CSPs and media companies will have to create the right kind of systems to deliver benefits to their customers. For us, as technology providers, this means that we will have to change along with our customers to meet their demands. If they change their business behavior, we will have to change accordingly. Simplifying is always good. The simple solution is always better than the more complex one – is it not?

When mobile advertising grows and develops, it's going to become more content-heavy and need more bandwidth, which is where LTE comes in.

The technology is not a business in itself; it's a business enabler.

The main thing to understand is people in our industry have always talked about base stations and what new service we can offer the end-user, but all that is changing. Voice will continue to be very important, but you will see this combined with other services in new, exciting ways. As markets started to saturate, CSPs turned their attention to improving efficiency. In many markets we have moved even further: traditional growth (i.e. voice and some limited data, like SMS) has come to an end; there are no more new subscribers coming into the marketplace.

So the question is, how do you stimulate growth? How do you improve profitability when there aren't any new customers out there? CSPs are being required to re-think their strategies, their business models, and here we come back to the very beginning – the situation requires all of us to foster these new ecosystems and then, further along, mix and match these new ecosystems to succeed.

Survival of the fittest.

Yes, but the very *idea* of fitness is changing. That is what's so interesting: we need to figure out how to stay fit for the business we want to be in.

Success for no-frills service provider

Pioneering German communication service provider (CSP) E-Plus was the first to successfully launch sub-brands to target niche markets. Four years and several brands later, the no-frills CSP boasts a highly segmented subscriber base of 16 million people. Now it is planning to leverage this extraordinary asset and take its business in a new direction.

Back in 2005, E-Plus was fighting an uneven battle in the saturated German mobile market. Vodafone and T-Mobile were aggressively pushing their full-service offering to high-end users, while competition in the low-cost market was getting tougher by the minute.

One operator, several brands

In a bid to differentiate its offering from rivals, E-Plus launched a whole range of independent sub-brands, in addition to its own. Most of the brands had a low-cost, no-frills focus, but each was targeting a different audience.

Simyo was the first to hit the market. It was the most basic of basic products: a prepaid SIM card for low-cost voice calls, only for sale online. Instead of subsidizing handsets, E-Plus offered subscribers reduced minute prices.

Finding niche target groups

Following up the success of Simyo, the operator launched another four brands in six months, all no-frills, SIM-only affairs. VIVA Mobile added SMS functionality to the Simyo offering and BASE offered frequent users reassuring flat rates. Another first was a co-branded SIM called Aldi Talks, which was sold exclusively in Aldi Stores, targeting the typically price-sensitive Aldi customer.

An even more groundbreaking success was the launch of the Ay Yildiz brand. Referring to the Turkish flag, the name means “moon star” in Turkish. Around 2.5 million Turks live in Germany, but this was the first time any operator had targeted them with a dedicated mobile brand offering with a tailored pricing matching the needs of the segment: prices for the traffic between Turkey and Germany were optimized.

Multi-brand strategy raises margins

This decisive break from the usual strategy of attracting customers to a single high-value core brand paid off. E-Plus is today the third largest operator in Germany with 16 million subscribers. Using the same back office and network for all brands has helped to push costs down, and raise margins by as much as 50%.

In a world where mass marketing is increasingly a thing of the past, knowing your customers' needs and preferences is a highly valuable asset.

Having independent service providers (MVNOs) in charge of the focused customer acquisition and relying heavily on online sales points has brought subscriber acquisition costs down by 50% and has helped to increased usage by 33% in a traditionally low-usage market. E-Plus has thus been able to improve both their profitability and their market share in a fully saturated and heavily competitive German market! An achievement very seldom seen in any industry.

Impressive figures aside, E-Plus's biggest success is proving to be its highly segmented customer base. In a world where mass marketing is increasingly a thing of the past, knowing your customers' needs and preferences is a highly valuable asset.

A new direction

This led E-Plus CEO Thorsten Dirks to announce a completely new strategic direction at the beginning of 2008. He predicted that, in three years, declining tariffs would render call-based business models obsolete. In the near future, end-users are going to pay a flat rate for basic services and operators will have to make money from advertisers and partners instead.

Inspired by Google's business model, Thorsten Dirks revealed that E-Plus is going to open up access to its customer base to advertisers and partners like Yahoo and Microsoft. Research shows that a majority of subscribers are willing to receive advertising in exchange for cheap services, provided that the advertising is meaningful to them.

From single brand, to house of brands, to partner ecosystem

Moving away from the traditional telco "one-brand-fits-all" model to a house of brands and further to an ecosystem of external partners has been a radical case of business transformation that has proved very successful, but it might be a very well-timed move. Call tariffs are already hitting rock bottom, and full-service operators are increasingly relying on data traffic to remain profitable.

In this climate, abandoning the traditional and proven success strategy to leverage the value of a uniquely segmented customer base is probably less risky than it would seem at first glance.

Christian Hernandez Gallardo: Google and the revenue potential of the mobile platform

Christian Hernandez Gallardo

Christian Hernandez Gallardo is Google's Head of Distribution Partnerships and oversees the commercial aspects of Google's mobile and desktop products and partnerships across EMEA. He also leads the incubation of Google's mobile advertising efforts in the region. Christian has been actively involved in the definition and partnerships of innovative new products including the Android mobile OS, the Google Chrome browser and Google Maps for Mobile.

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Christian, can you tell us a little about Google's collaborative efforts with other companies, especially in the mobile space?

Yes, one certainty in the mobile space is that you need strong partnerships to succeed. Success here means users discovering mobile services and being able to access them and use them. On PCs, there are a minimum number of operating systems, and this simplicity enables anyone to open a browser – be it Internet Explorer, Firefox, Safari, Chrome or whatever – type in Google and find us. But in the mobile space you have different platforms, different Java versions, different networks…

So we actively search out and partner with handset manufacturers and operators, to help create solutions around Google services that seamlessly integrate with their and our business strategies. And I think this has been very successful. We have a broad number of partnerships, from Japan to Brazil to Europe, Africa, North America. Obviously, Nokia is one of our key partners on the handset side; and many of our operator-partners rely on Nokia Siemens Networks.

How do you see consumers utilizing the mobile internet, compared to the way you see them using the internet at home or at work?

Well, to start with, I can think of one thing that's very similar: users want choice. This is something you will hear us talk about quite often at Google; we believe that openness is critical, and we put a lot of investment into the idea of open access, with respect to mobile, and fixed access as well.

Interestingly enough, in the mobile space, we have discovered that people are willing to go through a lot of pain to get Google on their phones. By "pain" I mean, clicking on unlock-menu-browser-"goto"-typing in google.com all before they can even type in their query. By the time you actually get the results from Google it's taken a lot of time, a lot of effort, and yet people do it over and over and over again. So what we are trying to do is make that process a whole lot simpler. It's analogous to what we have done for your PC at home where we have something called Google Toolbar, which makes it easy for people to type in a search, and in which we integrate your previous search history, suggest search terms and save your bookmarks.

We are trying to bring that simplicity, that ease of use, to the mobile device. The product is called the Google Mobile Application and the notion is that when you turn on your phone there will be a Google search box immediately available on the idle screen. You type in your search, it gives you suggestions, integrates your location, and so forth.

Of course, one major difference between fixed and mobile access is the importance of location within the context of the query. We optimize Google results for mobile devices taking into account that you are looking at these results on a smaller screen. You are not necessarily browsing but searching for a very specific thing – so it's 'finding' rather than 'browsing', if you see the point I am trying to make…

Sure. People are out on the street, looking for the address of a restaurant…

Exactly. Location is a key driver of queries on a mobile device. Of course, we have Google Maps on the web, but Google Maps on mobile, which you can download onto your mobile device, has been amazingly successful. And as you mentioned if you are out on the street looking for a pizzeria or a cinema, having a visual map representation on your mobile device can be extremely useful to you. In 2008 we launched a feature for Google Maps called My Location, in which we effectively use a combination of cell tower data combined with something you might call Google "magic" – by which I mean some intelligent algorithms on the back-end – so we can determine where you are standing within a certain radius, and based on that we can give you information that's relevant to you in that location.

What this means is that every mobile device with My Location is effectively location-enabled. You don't need a GPS chip to fix your location anymore – just download Google Maps with My Location.

So location, and the ability to use location to provide a number of different experiences is quite exciting to us, and to consumers as well. There is a huge opportunity here, huge potential, which we have only begun to realize…

I know that it's difficult to generalize, but how do you work with operators to help realize the full potential of mobile connectivity?

One of the issues here is scale, and one of the reasons for our success in recent years is because a lot of our offerings are based on a kind of self-serve model. So any operator can go on to the web and sign up for a Google search box that they can put on their own portal. And it can be branded with their own logos. Much like AOL on the web: if you search using AOL, you will see that search is "powered by Google". So any operator can get that on their portal and now have a Google-powered search engine for their users.

We also do some deeper integration with operator-partners such as KDDI, NTT DoCoMo, Vodafone, Sprint and others, offering more custom-tailored services based around that search box.

What we have found is that what you might call 'discoverability' is an issue – getting people to do their queries on the portal. So what we are working on with operators today is something we talked about earlier – the Google Mobile Application – and the ability for users to easily discover services and getting answers to their queries.

We have discovered that – be it the Google Mobile application that users can download from the web onto their phone, or a partner-developed search box such as the ones deployed by Sprint, and NTT DoCoMo – the immediacy of accessibility has a massive (and I mean "massive!") impact on queries which immediately translates to greater usage of the mobile web on the device.

With this increase in data traffic operators are thinking more and more about revenue and wondering how they can generate revenue from data. If I may ask you, have you had any conversations with operators about this and if so, what do you tell them?

In conversations with our operator partners, they seem to have two sets of concerns. The first is about how they can build services that will help them monetize the growing use of the mobile web on their devices. The second is the fact that as usage of the mobile web goes up, operators are concerned about bandwidth utilization and offloading some of this traffic. We specifically talk a lot about this around our YouTube video service. The issue of bandwidth and speeds affects not only the operator but also the user experience when buffering and playing a video. So what we have done for the benefit of our users (and our partners) is to optimize these videos for use either over a 3G network or over WiFi.

Getting back to your question, though, we have masses of research that tell us the number one key driver to get people accessing the internet on their mobile devices is a flat-rate monthly bill. If you start to charge people per megabyte then they just won't use it. If I tell my cab driver about Google Maps on his mobile device then the first question that he asks me is not how does it work, but how much is it going to cost me? It is interesting to see the US start to pull ahead of Europe in terms of service adoption, and realizing that a large part of that is tied to widely available flat-rate data plans. US consumers never had to consider the cost of each individual Google query, or each individual YouTube video watched.

We see this across the world, from Indonesia, to South Africa to the UK: flat-rate data pricing, even on low-end devices, is the primary driver of usage.

Our message to operators throughout the world is please, employ these flat-rate plans wherever you can and you will then see consumers browsing, searching more, using more services.

As the usage grows Google and others can help operators monetize that usage, to be sure. We are seeing some forward-thinking operators, such as Hutchison 3G, embrace services (Skype, Google, Facebook) as not only a customer acquisition and retention tool but also as an ARPU driver.

Christian, what have we missed? What would you like to tell our readers about Google's mobile efforts that we have so far neglected to discuss?

I think the most important thing that is happening right now is the standardization of experiences on mobile devices. If you think about PCs, for the most part we have one dominant operating system (Windows) and the ubiquity of that operating system makes it easy for developers to create new products. When it comes to mobile devices, you've got RIM, Symbian, Windows Mobile, Android, Java version X, Y and Z – from an operator's perspective it's a nightmare managing all these different platforms.

What we are seeing is the standardization of mobile browsers around an Open Source rendering technology called WebKit. It's the open source engine that runs the Safari browser, both on the web and the iPhone. It's already on hundreds of millions of Nokia devices. It's the same engine that runs on Android phones and the new Palm Pre devices. By the end of 2009 there will be hundreds of millions of phones in-market running this technology called WebKit, and this is going to drive all sorts of innovation not only from within Google but elsewhere. Application developers will be able to use web technologies (JavaScript, AJAX, HTML5) to develop and iterate applications much more quickly. I think it'll make our lives easier to have a common experience across devices, and this really will make this the era of the mobile – as everybody has been saying for the past decade.

At Google we believe that everyone will begin to realize the monetization potential of mobile once the browser becomes a platform, and we really believe that that transformation, which started in 2008, will only continue to grow in the years ahead.

That will be great news for our readers – especially now when revenue is such a big issue for them. Christian, I thank you for your time.

Thank you.

TrendSeven

Broadband with no boundaries

How will communication service providers cope with consumers' ever-increasing demand for broadband on the move? In both developed and emerging economies this demand is skyrocketing and, what's more, most experts predict this demand will grow even faster as time goes on.

Kenneth Karlberg: The power of simplicity

Kenneth Karlberg

Kenneth is President and Head of Business Area Mobility Services, TeliaSonera AB

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Kenneth, will you tell our readers a little about TeliaSonera? What is the company's vision and mission?

Our mission focuses on simplicity and we believe that simplicity makes everything possible. That's where we start. We are present in a number of different markets, which creates some challenges for us, but we use the idea of simplicity to drive all of our decisions. We are well established in the Nordic and the Baltic markets. Here we typically hold a leadership position and in these markets it is very much about developing new services beyond the edge of the market and technology development. Exploiting, for instance, the opportunities created by mobile broadband.

We are also building our presence in Eurasia, which is much more of a greenfield activity for us, where the focus is on "traditional growth", you could say – what we had in the Nordic/Baltic regions some years ago. And then we have Spain, where we also consider ourselves to be a greenfield operator and where growth is our primary objective.

So simplicity makes everything possible in all these regions: the Nordic/Baltics, Eurasia and Spain. We are organized according to three business areas: Mobility Services, Broadband Services, and Eurasia. This third one is a little bit different because it is a geographic description, rather than a business description, but the business in Eurasia is basically 100% mobile.

You mentioned that simplicity is a big part of your mission. Is that simplicity for end-users, simplicity within your organization, or both?

Simplicity is valid for internal work, technologies, setup or anything, but the emphasis is of course on the customer interface.

You also mentioned mobile broadband. What broader trends such as the migration towards mobile broadband do you see in the coming years?

That's an interesting question. First of all we have to define our starting point, because we have different positions in different markets. In the Swedish and Finnish markets we are a major player in both fixed and mobile. And in the rest of markets we are basically a mobile player, with a smaller quantity of fixed and broadband services. One obvious trend is that traditional narrow-band fixed telephony is slowly fading out. That is not a new trend – it has been going on for some years – but I would say that the speed of that is increasing.

With respect to broadband, I would say that all operators – not just TeliaSonera – try to use broadband connections for more than just internet access, combining broadband with TV and with voice. This is another interesting trend, in my opinion.

Simplicity is valid for internal work, technologies, setup or anything, but the emphasis is of course on the customer interface.

Then you have another big trend which is that all customer accesses are going wireless. This is a strong trend both on the corporate side and consumer side – customers prefer wireless solutions.

Another trend is the increased demand for capacity behind the wall, if I can put it that way. Looking forward, seeing higher and higher speeds and larger and larger volumes in the wireless accesses, we realize there will also be a demand for larger and larger capacity levels in the fibers that are feeding those antennas.

I think these are the biggest trends on the higher level; of course we can dig down and see other interesting trends as well, but from a group perspective and from the top, these are the most interesting ones.

Building on the last point you made, about this ever-increasing appetite for wireless access, what technologies are you investing in to ensure TeliaSonera's long-term success?

When it comes to fiber it's a matter of having a huge pipe. When it comes to customer accesses – the radio interfaces, the wireless interfaces – we are following what I call the GSM development path. GSM, GPRS, EDGE, UMTS, HSPA, WLAN, HSPA+, LTE, and we are combining that with our WiFi offering, HomeRun. We do not at present invest in mobile WiMAX.

What technologies are you using to improve rural connectivity?

We have to differentiate between the different markets here. Rural access is a challenge in Sweden and Finland, where we have an obligation to provide access and connectivity to everyone. Over time I believe the fixed way of providing access to customers in the rural areas will be replaced by some sort of radio technology. I don't know exactly what this one might be today, and I'm talking about very rural parts where you might have one cottage in a very remote location.

Can you tell us a little about your main targets for mobile broadband?

One is the battle of mobile data, two is the battle of the home and office, and three is the battle of content and services. These are our main areas of focus for the mobility part of the business. Talking about ambitions and targets for mobile data, we see no reason why we should be weaker in market share on mobile data than we are on voice.

Can you compare and contrast consumers' use of laptops and mobile devices?

When you look at the figures with respect to data usage, there is no device on the market that comes close to the iPhone, there's no doubt about it. The main explanation, I believe, is its ease of use. Looking at the data, we can see that even existing customers who change from one mobile device to the iPhone, show a dramatic increase in usage. But then of course you have to realize the fact that the customers going for the iPhone, are also interested in using it to access data. But anyway when you compare the same customers switching devices, you get a clear picture, and it's a huge difference.

However, hand-held devices don't come close to the laptop. Even the most frequent iPhone usage is not even close to the average laptop usage. That is of course because of the fact that even if you download the same newspaper you have a lower byte-need on an iPhone than when you do it on a PC. Not because the newspaper page is different, but because the device as such requires different amounts of information. When you talk about usage in the network – which is an increasing problem for an operator – then of course it is the laptop users who use the most, not the iPhone users.

Continued...

So, to a large extent the increase in our subscriber base comes from mobile data and machine-to-machine services.

Which services do you see greatest uptake from consumers and where do you see the main opportunities?

What is growing today is mobile data (specifically, SIM cards for accessing the internet), and we are talking very much about machine-to-machine communication, which is also growing. So, to a large extent the increase in our subscriber base comes from mobile data and machine-to-machine services.

Interestingly, when we look at minutes of use you often see a decreasing trend. But that does not mean the customers use our services less than before; it only means that we have more subscriptions that are not connected to the traditional voice network. The usage of networks is growing. Customers use mobile services more and more. Talking about specific services, the killer application for mobile industry, indeed the telecommunications industry in general, is mobility.

That's the consumers' point of view, as well. It doesn't really matter to them how they access this information…

Clearly this is the consumers' point of view. Everything you did with your fixed access, you basically do with your mobile. But you supplement this with location-based services, navigation, using your mobile phone while you are commuting, stuck in traffic, getting more and more interested in the possibilities of mobile connectivity. Endless possibilities! That of course drives usage. I can't really see a specific service in that sense – it is pure mobility which is driving this usage.

How is the current financial crisis affecting your business?

Like everyone else, we are concerned about the economic downturn. However, when it comes to evidence we cannot see that it has had an effect on our business so far. When we look at pure figures, straightforward number-crunching, we cannot see any effect on usage.

Also, as companies seek to cut costs their employees will travel less, and communicate more often using video- or tele-conferencing. This will drive usage and revenue – provided these businesses stay operational. We are following the economic situation very closely, but so far we have not seen any real proof that the downturn is affecting our business.

Finally, will you tell us a little about your relationship with Nokia Siemens Networks? How do you work with them?

I would say that we have a very close relationship. We are very open and know each other quite well. As with any relationship it goes up and it goes down, but that is part of life! I would describe our relationship as strong and good, going a long way back. We are very lucky to have the two biggest infrastructure suppliers here in the Nordic region. We work very closely with Nokia Siemens Networks and have a strong relationship with them. Is there anything more I would expect from our relationship? No.

Bringing broadband to Germany at breakneck pace

When communication service provider HanseNet and its consumer brand, Alice, wanted to go from local operator to nationwide communications provider, they could not afford to drag their feet. The company laid out an ambitious strategy for growth in 2004, when the market was already highly competitive.

The first step was to extend coverage outside of its home base, Hamburg, to the main urban areas of Berlin, Frankfurt, Munich and Stuttgart. To successfully realize its plans, Alice needed first-mover advantage, as well as an excellent product. With its sights set on growing in the consumer market, as well as reaching business users, the company wanted to offer triple-play services (mobile services, fixed internet/phone and TV) that would have a broad appeal.

Time-saving technical solution

After analyzing HanseNet's network and network traffic, Nokia Siemens Networks' solutioneers proposed a single all-Ethernet architecture that kept the need for integration to a minimum, saving time as well as money. Service quality is maintained thanks to VLAN tagging, which can distinguish between different residential and business services, and gives higher priority to delay-sensitive services like voice and broadcast TV.

Solutions for private as well as business customers

The solution enables HanseNet to provide a high quality, scaleable triple play of voice, high speed broadband and TV with video on demand, offering residential customers the convenience of a single provider for all services. The same infrastructure also delivers quality VPN services to tens of thousands of large and small companies.

A six-month head start

Since the proposed solution did not need time-consuming technical integration, HanseNet was able to save about six months and launch Alice exceptionally fast. Cutting the time to market and offering a high-quality product gave HanseNet the advantage it needed.

During the first year, the number of subscribers climbed from 70,000 to 400,000. Four years after the initial launch, Alice had 2.5 million customers. Revenues have also been steadily increasing, in spite of the fierce price competition in the German market.

Support every step of the way

"Although we began as a relatively small player, we have big ambitions. Nokia Siemens Networks offered us a huge choice of integrated services, so we could get into new markets without delay. And with its comprehensive geographical presence throughout the country, the company was there to support us every step of the way." says Frank Hinz - General Affairs, HanseNet Telekommunikation GmbH

"Although we began as a relatively small player, we have big ambitions. Nokia Siemens Networks offered us a huge choice of integrated services."

Frank Hinz - General Affairs,
HanseNet Telekommunikation GmbH

Alan Hadden: LTE and more

Alan Hadden

Alan has been President of the Global mobile Suppliers Association (GSA) since its formation in 1998.

Previously he was on the senior management team of a PCN/GSM 1800 operator (today called T-Mobile UK), involved in start-up, launch and expansion phases. He assisted with discussions with key stakeholders and overseas regulators to establish 1800 MHz as a mainstream band for cellular and new mobile businesses.

Alan's 2nd book, *Mobile Broadband with HSPA, LTE and Beyond: Services, Markets and Business Opportunities*, will be published later this year by John Wiley & Sons (www.wiley.com).

Alan, you have been in the industry more than twenty years, first as a regulator, then on the operator side, and now as president of the GSA. What major trends can you identify for our readers? Can you talk a little about these trends?

Well, you can look at it as a kind of journey. In the beginning the business was about making voice mobile, but now we're at the phase of the journey where we're making the internet mobile.

On that journey we have seen the ability to support many millions of customers. Ten years ago there were a hundred million mobile subscribers worldwide, and now GSM adds a hundred million people every few weeks.

We have been hearing a lot about UMTS900 and its ability to help operators to extend voice, data and mobile broadband services coverage at the same time as reducing operating costs. Can you tell us about UMTS900 and how it fits into this journey you described?

UMTS900 – a lower RF frequency solution – has two main advantages over its higher frequency (2100MHz) counterpart: indoor coverage is improved in urban areas, and UMTS900 is much less expensive to deploy in rural areas.

How does it work?

It all comes down to simple physics. The lower the frequency the further the signal travels. So if an operator requires four base stations to cover a certain area with 2100MHz, they might just need one or two base stations with 900 MHz.

These lower frequency networks make good sense in rural areas, and urban areas too because the 900MHz signal typically penetrates buildings better, giving end-users the seamless coverage they now demand. This is particularly important given that laptops enabled with mobile broadband connectivity are typically used in indoor static situations.

And fewer base stations… this is the reason operators see such dramatic reductions in OPEX and CAPEX: you need so many fewer base station sites so the network is much less expensive to build and to operate. We worked with Elisa on a UMTS900 case study and learned that Elisa could save 50 – 70% on its build out costs by deploying UMTS900 compared to achieving the same coverage using 2100 MHz. With better coverage and lower costs it's a win-win situation for everybody – operators and end-users. I would stress however that it's not an either-or situation. We are not saying that UMTS900 should be used instead of 2100 MHz. UMTS900 and 2100 MHz systems are complementary. Deployments in the 2100 MHz band in the cities provides a capacity layer where it's needed, whereas UMTS900 deployed in rural and suburban environments significantly reduces expenditures and extends voice and mobile broadband more quickly as existing GSM sites are re-used.

And the availability of UMTS900-compatible devices is improving. Over 70 devices have now been launched, supporting data speeds comparable with 2100 MHz devices, and the 900/2100MHz combination for WCDMA-HSPA is expected to become much more commonplace.

Some operators see their network data traffic growing exponentially every year, and this staggering growth rate will continue.

And LTE? Can operators justify a transition to 900MHz and then LTE after that?

It's apples and oranges, really. They both have different strengths. UMTS900 for the coverage, and LTE for capacity, lightning-fast data transfer speeds, and lowest cost per byte delivered. In proof of concept tests carried out recently, we saw transfer speeds up to 250 Mbps in the downlink direction and 50 Mbps in the uplink shown by NTT DoCoMo with LTE, which is startling. That's so much faster than anything we are using now, and confirms that LTE is on track and should meet or even exceed expectations.

LTE provides operators with several important benefits, including significantly increased peak data rates, increased cell performance, reduced latency, ability to be deployed in scalable bandwidths, co-existence with GSM/EDGE/UMTS-HSPA systems and reduced CAPEX/OPEX.

And because LTE is backwards-compatible I think you will see a lot of operators deploying LTE according to what makes sense to them, in particular with regard to existing systems, which will typically include 2G/GSM, GPRS/EDGE, WCDMA-HSPA, HSPA+ as well as LTE. There is also the question of which frequencies will be used for LTE deployments. Existing spectrum might be possible, although it is crucial not to impact existing customers, so careful re-farming techniques must be employed. Using new, clean contiguous spectrum may be preferred for LTE, especially where the greatest data throughput speeds are needed. Though being new, there may be significant costs of acquiring such spectrum, and it may take some time. In the US for example, we have heard how Verizon Wireless plans to deploy LTE in its recently acquired 700 MHz spectrum. Elsewhere the 2.6 GHz band will be preferred. We're seeing the demand for data increasing all the time, so it's natural that this new LTE infrastructure holds great appeal for operators. Fast data transfer rates are what people demand today, with their smartphones, and mobile TV, etc., and again according to this journey we talked about earlier the demand for data is only going to increase. Network speeds and device capabilities are rapidly increasing but it is not clear right now how much data speed will be required by individual users in the future over and above what is experienced today, which is very good. With LTE, operators might not necessarily assign the headline throughput capabilities to individual users, but instead use it to support even greater numbers of customers. With HSPA we have seen network speeds evolving to the point at which today over 70% of commercial HSDPA networks support 3.6 Mbps peak, and over a third support 7.2 Mbps peak.

What are the biggest challenges to operators, getting them to accept LTE?

I think that everybody understands that LTE is good and necessary, and will be beneficial to end-users, who are demanding access to mobile broadband for the best experience within the context of the mass market. What operators aren't sure of is how much the licences for new spectrum are going to cost, and timing is an issue – when will governments start to auction off the spectrum? Nobody knows how much they're going to have to pay, so they are waiting to see what happens with the licences before preparing their infrastructure.

And looking even further forward what do we see?

Looking forward we see continued data growth – as I mentioned data transfer rates are growing very quickly. Some operators see their network data traffic growing exponentially every year, and this staggering growth rate will continue.

We've also seen user devices appear in many forms, and these too will continue to drive this demand for data, which LTE has been designed to accommodate. There are now around 1,100 HSPA broadband user devices launched in the market, and LTE functionality is already beginning to be added to chipset designs.

We'll also see LTE connectivity pushing into laptops, into personal media players, smaller PCs. Some cameras now have HSPA connectivity. We're seeing routers appear in the home and offices, so that instead of connecting to traditional fixed-line operators you're connecting to mobile operators instead. So what we have is the blurring of competition between mobile operators and fixed operators, with each becoming more of an all-service operator.

So looking forward this is where LTE will help. The ability to support convergent services will be interesting, where you can reliably stream or download video, which you might have done to your big screen at home, you can now download anywhere, on the user's choice of device – laptop or mobile. So I think we'll see much more convergent solutions, convergent offerings, enabled by LTE.

I think another thing we can look forward to is the mobile network, the LTE network, being used for many more things than it is used for today. So the motorcar will become a terminal, as will household appliances. We'll see mobile connectivity in most if not all aspects of our lives.

If you make the device simple, make the interface intuitive, keep the billing simple, and target the lowest cost of ownership, then people will embrace these products and services. And coverage is a big piece of the puzzle as well…

All of this will come into play as we move towards this ubiquitous broadband network.

TrendEight

The future – trends in technology

This is a time of rapid change for the ICT sector – with economic and environmental realities contributing to the need for companies to improve efficiency, utilize renewable resources and differentiate their offering better, faster, and more economically than ever before.

Stephan Scholz: Bringing the future to life

Stephan Scholz

Stephan is the Chief Technology Officer of Nokia Siemens Networks – in this capacity he is responsible for all research activities and future technology developments.

He joined Siemens in 1990 after graduating from the Technische Universität München and the Max Planck Institute for High Energy Physics.

In Siemens Communications he was heading the Carrier Development worldwide being responsible for all carrier products including softswitches, gateways and next generation applications like IPTV, and their respective network management.

Previous to this, he was Senior Vice President of Wireline Networks Carrier Convergence, Vice President of Product Management at Siemens' Wireline Networks Carrier Switching Division, and held various sales, marketing and business management positions at Siemens Information Communication Networks, in the United States from 1997 to 1999.

What are currently the biggest trends in connectivity?

There are three major challenges on everybody's mind right now. The first is the increasing number of subscribers in rural and mostly low ARPU regions. That's where the growth in voice calls is coming from now. Before too long, there are going to be a billion new subscribers in these areas. The question is how communication service providers are going to bring connectivity to these out-of-the-way places while remaining profitable.

The second challenge is the increase in data traffic we are seeing in mature markets. More and more often, people are using their mobile phones to go online. That's where the growth is coming from in these areas. In five to seven years, we will have a hundred times the traffic there is today. But subscribers are not willing to pay a hundred times more - quite the contrary. Many will only accept to pay a flat rate. To handle this scenario, communication service providers have to become more efficient on every level.

Also, how are communication service providers going to increase their revenue in a saturated market, when subscribers are increasingly unwilling to pay for all the new services they want? The hunt for new revenue streams is the third big challenge that everyone in the business will have to contend with.

What technologies is Nokia Siemens Networks providing customers to help them deal with these challenges?

In the long run, we believe that everyone will have to switch to an all-IP based architecture to keep costs down. That is going to be the only way to cope with the increase in traffic. There is not going to be any real difference between fixed and mobile, which also points towards IP-based architecture.

We have also been pioneering the LTE field for several years. In 2006, we were the first to conduct LTE demonstrations. Our Flexi BTS is on the market and fully prepared for this new technology.

When it comes to fixed broadband, everything is going to be optical fiber sooner or later. In a couple of years, we will be able to offer next-generation optical fiber cable that provides amazingly fast connections at much lower costs. In a couple of years, online applications are going to be so large that current fixed connection bandwidth will become an issue again. Next-generation optical fiber solves this problem.

Laying new cables is very costly. Maybe you do it once every twenty, thirty years. This new technology is so good that more and more communication service providers indicate they will be able to wait a few years until it's ready. We believe it's a very good long-term investment; much better than anything that is available today.

You mentioned Nokia Siemens Networks pioneering role in developing LTE. What are you currently doing to bring the technology out on the market?

Nokia Siemens Networks enables the fastest LTE network deployment with the e-2-e solution and field-proven BTS hardware. Deliveries of the LTE compatible Flexi Base Station are under way, since September 2008 and at MWC we launched our core network solutions for LTE.

Nokia Siemens Networks and PMC were chosen by NTT DoCoMo for its Super 3G/ Long Term Evolution BTS project (Dec 2007), NTT DoCoMo selected Fujitsu to provide Nokia Siemens Networks' Core technology for its Super 3G / LTE Core Network– (PR Oct 27 2008), NSN has LTE trial agreement with Vodafone Germany (Sept 23, 2008)

Nokia Siemens Networks also runs LTE test labs in China, Germany and the United States. We chose these locations to be close to the customers who we believe are going to be the first to launch LTE.

We support both the TDD and the FDD "flavors" of LTE in our research. Handsets will probably support both varieties as well, to facilitate roaming between regions that use different versions of the technology.

Right now, we are working on LTE Advanced, or 4G, a technology that gives mobile users a connection speed of up to 1 Gigabit per second. In December 2008 we demonstrated relaying technology for LTE Advanced.

It's a technology that not only gives a great end-user experience, but also provides consistent coverage at the cell edge, where users are the furthest from the base station. Relaying technology can be integrated in normal base station platforms and does not require additional backhaul.

Will LTE solve any problems for communication service providers who are suffering from the economic downturn?

If all goes according to plan, the first deployments for LTE services are foreseen end of 2009 with volume rollouts of commercial networks in early 2010. Rollouts for trial networks have already started.

Let's hope that the economy will have improved by then! Having said that, LTE is by far the best solution for providing bandwidth at a low cost.

When it comes to fixed broadband, everything is going to be optical fiber sooner or later.

Various vendors like Nokia are also preparing for the rollout of commercial end user devices. The first LTE users are probably going to be laptop owners, not phone users, since laptop modems will be the first to carry this new technology.

Can LTE help communication service providers reduce churn?

Subscribers need more bandwidth, and LTE is going to make them happy by shortening download times and generally providing a superior customer experience. So the answer would be yes. It is also a potential driver for fixed to mobile substitution in countries like Finland where we already see the first initial evidence.

However, we expect that voice calls, SMS and MMS are going to remain the main sources of revenue for some time yet. To reduce churn while preparing for LTE, communication service providers will have to look at the entire customer experience to keep subscribers loyal.

As the economic climate cools down, efficiency is quickly becoming a hot topic. What kind of solutions does Nokia Siemens Networks provide to improve efficiency?

You can look at efficiency from several different angles. One is pure cost reduction. For example, we have several requests for solutions for network sharing, particularly in Europe. Many communication service providers, especially small and medium-sized players, need to share network resources due to the high costs of maintaining the physical network.

By introducing new technology, you always increase complexity. Unfortunately, you can't get rid of all the old technology as you move forward. 2G, 3G, different data and voice networks - they all need to be administered differently. To this end, we have an efficient management system that lets our clients handle all their different technologies in a streamlined way, eliminating the need for new management systems when a new technology is added.

Looking into the future, fixed, mobile and even TV networks are going to merge. These networks all come with different types of databases. One of our unique technologies for improving efficiency is the "one database" system that lets communication service providers keep all network data collected and accessible from one point in the system.

Reducing energy consumption is another important way of increasing efficiency. The energy bill is a major part of communication service providers' costs. We have actually had cases where energy costs have been the limiting factor when rolling out the network.

To use less energy is an important part of every company's overall social and environmental responsibility. Aside from reducing network energy consumption, we are also working to improve the energy efficiency of the core, and increase the use of renewable energy sources.

Telecom solutions can also help to save energy, the obvious example being teleconferencing, which cuts back on travel expenses as well as CO_2 emissions.

We also have a solution for intelligent energy. At the moment it's on the experimental stage, but the results so far are very promising. Information about who is using a certain area in a building is transmitted through the telecommunications network and fed into the energy supply system. Energy is then switched off automatically in the areas that are not being used.

Any final thoughts on the future of the industry?

We are going to see the IT and telecommunications industries converge even more in the future. For example, HP and IBM are already trying to get a foot in the door by offering solutions for communication service providers, like billing, charging and CRM solutions, as well as frameworks for application integration.

Parallel to this development, the telecommunications industry is going to become even more focused on connectivity and technology. Content and end-user applications are going to be developed by third-party collaborators, and not by the telecom companies themselves. In spite of the current world economy, I believe we have a very exciting time ahead of us, with lots of opportunities for new players as well as established companies.

Ajit Jaokar:
The internet of things and mobile devices

Ajit Jaokar

Ajit is the founder of the London-based publishing and research company futuretext, which focuses on emerging web and mobile technologies. His blog, the *OpenGardensBlog* ,was recently named a top-twenty wireless blog and he is the author of *Mobile Web 2.0* and *Social Media Marketing*. Ajit chairs the Next Generation Mobile Applications Panel at the University of Oxford and also conducts the University's courses on Mobile Web 2.0 and LTE services.

The ideas presented here will be included in Ajit's forthcoming book, *Beyond Web 2.0: Web 3.0 and the Internet of Things*

The recent Australian bush fires were tragic. But they also made me think of a technology that could have perhaps predicted or at least reduced the impact of this tragedy. Technologies like Smartdust and RFID (Radio frequency identification) could play a role in predicting and detecting risks such as fire or other natural tragedies. In doing so, they have the potential to make a significant difference to our lives.

Human beings have always sought to influence their environment – be it the course of rivers or the spread of fires. Intelligent objects have the potential to create an environment where technology becomes ubiquitous and seamless. Intelligence, i.e. the technology itself, disappears into the background and creates a world that adapts itself to humans through sensors (call it RFID, Smartdust etc). These technologies are collectively called the internet of things. The internet of things links the physical world of goods and items with the virtual world. The technology at the forefront of the Internet of Things is RFID.

At first glance, the internet of things sounds like Science Fiction. Some applications like the 'intelligent fridge' have always been proposed as examples of the internet of things. So too have business-led 'big brother' services such as the ability to detect a person when they walk inside a building so that their PC automatically boots up – saving the employer a minute or two!

Governments have also had their own agendas for technology that can see, hear and sense ubiquitously.

All these developments have been well publicized; but services like the intelligent fridge, surveillance and business applications of RFID are not the real drivers for widespread adoption of the internet of things since they do not make a significant impact to the lives of many people. I am a fan of the inventor Dean Kamen, who once said, 'I don't work on a project unless I believe that it will dramatically improve life for a bunch of people.' The operative words being dramatically improve life for a bunch of people. Therein lies the problem with the intelligent fridge: it does not really make a quantum leap in the quality of our lives.

Not so the prevention of forest fires. Which clearly does improve lives – as long as the technology becomes feasible and cheap enough to deploy on a mass scale.

Thus, I believe that applications which make a significant difference to the quality of life for many people will be the real drivers for technologies like the internet of things. In addition, the current global recession offers an opportunity for forward thinking governments to lay the foundations of a new infrastructure that will make a difference to citizens and business. Thus, the timing could be right for discussing the internet of things.

The technology behind the Internet of things itself is not new. As early as 2005, the ITU had created a very comprehensive report on the internet of things.

The internet of things is based on three key ideas:

- device processing and storage power increases exponentially
- technology becomes smaller and more ubiquitous until technology weaves itself in the very fabric of life. We see the effects of these two trends all around us - with more powerful phones, smaller disk drives etc.
- the ability of devices to 'connect and to sense' (i.e. the ability to be intelligent)

The social impact of these three technological trends is the key driver to the internet of things.

Beyond Web 2.0 - Web 3.0 and the internet of things

Web 2.0 taught us the possibilities when people became creators of data. Beyond Web 2.0, the internet of things – which the EU calls Web 3.0 – shows the potential of new services when devices become creators of content. The management or harnessing that intelligence derived from devices could lead to many new services and possibilities. Again, the idea is not new. In the dotcom era, Sun Microsystems tried the same idea with concepts like Jini – a network architecture for the construction of distributed systems in the form of modular cooperating services.

Intelligent devices are significant because if we consider the idea of Web 2.0, then Web 2.0 applies Metcalfe's law to connections between people. The internet of things takes Metcalfe's law to connections between devices. (Metcalfe's law states that the value of a telecommunications network is proportional to the square of the number of connected users of the system). In both these cases, the entities being connected are creators of data.

There are other factors that are driving the uptake of the internet of things/intelligent devices: security, greater bandwidth, increased international travel and trade, the need for greater security and cloud computing.

Adoption of the internet of things

What are the drivers for the internet of things? For simplicity, let us treat internet of things as any RFID-enabled object. There are four possibilities: vertical industries (the supply chain), public transportation (the London Underground, for instance), mobile phones, and finally mass efforts from a government or organizations such as the EU to actively promote RFID and similar technologies.

To understand these areas, we have to understand four specific technologies:

EPC (Electronic product code):
this is a global numbering scheme to uniquely identify any object in the world. EPC compliant tags have been used by several RFID rollouts such as from Walmart. EPC is primarily concerned with tracking an object through the supply chain.

Radio frequency identification (RFID):
is an automatic identification method, relying on storing and remotely retrieving data using devices called RFID tags or transponders. There are generally two types of RFID tags – active RFID tags, which contain a battery, and passive RFID tags, which have no battery.

Near-field communication (NFC):
is a short-range high frequency wireless communication technology which enables the exchange of data between devices over about a 10 cm distance. Payments, ticketing, smart posters to download more information about an object etc are applications of NFC.

The SIM card:
a Subscriber Identity Module (SIM) on a removable SIM card securely stores the service-subscriber key (IMSI) used to identify a subscriber on mobile telephony devices (such as computers and mobile phones).

Sure, it would be ideal if EPC, NFC, RFID and SIM worked together – but life is not that simple: for starters, EPC and NFC rely upon different frequencies.

A paper entitled "Connecting the Mobile Phone with the Internet of Things" explains:

> The steps necessary to harmonize EPC and NFC as already shown, the major barriers for accessing the EPC global infrastructure by means of NFC-enabled phones are the different frequencies promoted by EPC global and NFC. On the one hand, mobile phones could implement the current EPC Gen 2 standard, which would require the integration of UHF readers into mobile phones. At present, commercially available mobile phones with integrated UHF readers do not exist.
> One reason is managing the part-overlap of UHF RFID with the communication frequency used by mobile phones. Another reason is that NFC phones operating at HF are fully compatible with the established smartcard standards that are currently used for various business applications, whereas a UHF infrastructure for end-consumer application.[16]

So, for the moment, RFID (passive tags) and hence internet-of-things initiatives are being driven by specific industry verticals. If a more "open" approach can emerge from this chaos, it could become very big. Hence the need for governments to take a more active role in the future.

At the moment, there are different standards being driven by different bodies with varying motivations. For instance, NFC is leaning towards transportation and also to Telecoms. The EPC tags are being standardised by the supply chain folk and (surprise, surprise) they use different frequencies.

As early as 2004, ABI research wrote, "Half of cell phones will be RFID-enabled by 2009."

Well here it is 2009, and that prediction is wide off the mark.

There are a number of reasons for this. RFID is a broad term but not all RFIDs are created equal. There are number of main standards and these are not integrated the way they should be. This lack of integration inhibits widespread adoption on the telecommunication side.

> Intelligent objects have the potential to create an environment where technology becomes ubiquitous and seamless.

On the transportation side, there is wider adoption. For example, the Oyster Card in London and other similar systems. Of course, companies like Wal-Mart use RFID for supply-chain management. Niche vertical applications are fine, but – apart from transportation – they don't affect the public.

In addition, there are technical limitations for which phones cannot act as RFID readers for instance many RFID tags are un-powered and so the reader's signal needs to generate enough inductive current to make them function. This has significant power-management implications, if you wanted to build the reader into a handset. Having said this, there are existing mobile deployments for RFID readers into phones – one example is FeliCa in Japan.

Who is driving the internet of things?

At the moment, there are pockets of RFID implementations in supply chain and in transportation. So, we can say that the ubiquitous vision of the Internet of things does not yet exist.

However, the recession presents an opportunity for forward thinking governing bodies to invest in infrastructure that can truly create a viable and vibrant ecosystem that benefits both citizens and businesses.

Author's note: This was a much more complex article to write than I had first thought. I would like to acknowledge the help of Dean Buble, C Enrique Ortiz, Frederic Martinent and Simon Cavill in clarifying the concepts for this article.

> The environment is not quite as trendy as it was six months ago but the fact is that environmental issues, and scarcity of raw materials, and other issues such as these have not disappeared – they are still there.

Anne Larilahti

> Only those who understand the power of mobile as the new mass media channel will be able to share in its success.

Tomi T Ahonen

“The key to future productivity enhancement and economic growth is the infrastructure of tomorrow – bandwidth everywhere.”

Leonard Waverman

“The mobile handset will become the central platform on top of which many other industries will deliver their services to consumers.”

Andrew Zolli

“At Google we believe that everyone will begin to realize the monetization potential of mobile once the browser becomes a platform, and we really believe that that transformation, which started in 2008, will only continue to grow in the years ahead.”

Christian Hernandez Gallardo

“When mobile advertising grows and develops it’s going to become more content-heavy and need more bandwidth, which is where LTE comes in. The technology is not a business in itself; it’s a business enabler.”

Harry Järn

Nokia Siemens Networks solutions

Turbulent times require fresh thinking and award-winning technology. Based on decades of solid industry experience, our solutions are designed to make a significant improvement to your performance, long-term as well as short-term.
Our collaborative way of working puts your business needs in focus of every project, whatever the situation may be.

Nokia Siemens Networks solutions

Solution 1
Mobile backhaul solutions for increased profitability

The boom in mobile data traffic is putting networks under increasing pressure. Most communication service providers will need a new and more efficient backhaul solution in order to profitably cope with demand.

Nokia Siemens Networks offers a holistic, consultative approach to mobile backhaul, giving every customer a tailored end-to-end solution to optimize network efficiency. A gradual migration, from the classic architectures via a transitional, hybrid stage to the fully packet-based radio access network, ensures a smooth upgrade.

Our thoroughly tested solution features a Carrier Ethernet Transport architecture that enables the most efficient backhauling across the network. The integration of packet features in base stations provides a network layout that is rich in features as well as future proof.

Solution 2
Improving performance by network and service optimization

Designed to maximize network efficiency and quality, Nokia Siemens Networks solutions for network optimization ensure that network capacity, availability, and performance are at target levels.

We offer a complete package of tools and services to improve network performance, service reliability and end-user experience. Focusing on the entire network life cycle, our solutions cover all network technologies for mobile, fixed and converged networks.

So far, we have delivered more than 200 network and service optimization projects worldwide, including 80 projects in multi-vendor environments. Projects have resulted in 50% reduction of customer complaints, improved target achievement and significantly lower operating costs.

Solution 3
Profitability through improved customer experience

According to the Amdocs Global Customer Experience Survey, “Both consumers and businesses say that they are more likely to stick with an operator based on the quality of the customer experience than on the cost of its service.”

As many as 80% of communication service providers believe that they deliver superior customer experience, while only 8% of end-users agree. Customer experience is a key to profitability but few manage to live up to their promises.

The Nokia Siemens Networks Optimized End-user Experience solution covers the design, development and maintenance of an efficient and high-quality architecture to deliver services to end-users. Both tangible and intangible elements of the service experience are identified, managed and improved in an effort to increase the overall Quality of Experience (QoE) and the end user’s perception of the product or service.

A high-quality end-user experience can differentiate from the competition and increase loyalty, retain business, increase ARPU and, ultimately, increase profitability. Nokia Siemens Networks have successfully delivered 200 End-user Experience solutions worldwide.

Solution 4
Unified Subscriber Data Management – turning data into insight

Having access to detailed subscriber data is a big business advantage for communication service providers. However, as many as 87% do not have a unified view of subscriber data. It is often split across multiple applications and databases, creating duplication and complexity.

By integrating all subscriber data into a single repository and making qualitative use of it, communication service providers can achieve a truly customer-focused business.

Nokia Siemens Networks offers a complete subscriber management solution with a common repository, application front-end and provisioning system. Unified Subscriber Data Management (SDM) provides knowledge on how subscribers use the services, what they want and when and where they want it.

Strategic use of subscriber data turns information into insight, which is one of the key assets for success. This gives an edge on the competition and can be used to inform strategic decisions on how to, for example, increase customer satisfaction, reduce churn and significantly lower operating costs.

Solution 5
Award-winning solution for improved energy efficiency

Reducing energy consumption is high on most communication service providers' agenda. It can bring significant cost savings and may also reduce environmental impact.

At the GSMA Global Mobile Awards 2009, our Flexi Base Station won the prestigious Best Network Technology Advance Award for its energy efficiency in combination with a high performance and technological innovation.

The Flexi Base Station is just 20% the size and weight of traditional network equipment, designed for both indoor and outdoor use, and can reduce site energy consumption by up to 70% while improving overall network performance.

It is a cornerstone of our solution for radio access energy efficiency, which encompasses intelligent network planning, advanced technology and software, and hardware like the Flexi Base Station. It enables service providers to cut back on the number of base stations needed, while minimizing the energy consumption of each.

Solution 6
Outsourcing improves network and service quality

With competition growing more intense, service providers have to focus on their core business. Outsourcing network related activities is an efficient way of freeing up resources to work on business critical tasks.

Our outsourcing solution is highly flexible. We can cover all or parts of a service provider's network related activities, offering a scalable working model with predictable costs, accountability and high quality, governed by service level agreements.

Our global delivery capacity and expertise ensures continuous improvements of network and service quality, as well as improved technology management. We use a delivery model based on industry standards, providing high degree of automation and best in class methodology. We currently operate and manage multi-vendor networks serving more than 150 million subscribers globally.

Solution 7
Enabling rural connectivity

Village Connection is a unique GSM and IP-based solution that extends mobile voice and data coverage to rural villages, making rural coverage a realistic business opportunity. It is a cost-efficient addition to existing GSM networks, effectively extending coverage beyond the point at which a conventional network rollout would be too expensive.

A village entrepreneur or local franchise can manage the Village Connection access point. The new services contribute to the whole community, while the entrepreneur benefits from the business opportunity.

The solution brings affordable GSM and SMS services to remote locations, helping the local population to reap the socio-economic benefits of connectivity while ensuring a sustainable business for the service provider.

Solution 8
Long Term Evolution (LTE) brings mobile broadband to everyone

Within five years, mobile broadband penetration is expected to exceed 50% in mature markets. This prognosis means that threat of network overload is looming large. Furthermore, the increase in mobile data traffic is not expected to bring about a corresponding growth in revenue. Consumers keep demanding more for less. To stay profitable, communication service providers need to address these trends and turn them into opportunities.

The way forward for mobile connectivity is Long Term Evolution (LTE) technology. With LTE, service providers can provide mobile broadband at the speeds that consumers demand, while cutting costs and keeping up profits.

Our product and service portfolio contains a full end-to-end solution for LTE/SAE networks. We have been pioneering the field and aim to provide the lowest cost per megabyte compared to other solutions, as well as the lowest total cost of ownership. Already in 2008 we launched a commercially available platform for LTE communication. Today we can offer the fastest network deployment with field-proven hardware, along with a small footprint and reduced energy consumption.

Notes

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Every effort is made to ensure that our communications materials have as little impact on the environment as possible