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President & CEO,
Netcracker Technology

Expanding the Power of Transformation

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Building on success: expanding the power of transformation

by Andrew Feinberg, President and CEO of NetCracker Technology

Technology is eroding the traditional borders between ICT sectors by converging business, entertainment and, indeed, all applications onto a single platform. Broadband makes vast amounts of content readily available, but it is content that gives relevance to technology. Still, few content providers and telecom providers work closely together enough - each wants to 'own' the customer and receive a larger portion of the revenue. This conflict of interest frequently forestalls fuller relationships between the two and stifles more effective cooperation.

Andrew Feinberg is President and CEO of NetCracker Technology where he shapes NetCracker's corporate strategy and worldwide business operations. Under Andrew's leadership, NetCracker has experienced steady, profitable growth. Andrew has steered the company to become an integrated provider of OSS software, services, and telecom expertise with a single focus on customer success. Prior to leading NetCracker, Andrew worked at Bain & Company Private Equity Group where he oversaw transactions in the telecommunications, software, and hardware industries. Before joining Bain, he was a strategy consultant for the telecommunications, cable, and software industries advising customers on corporate strategy in the U.S., Europe, and Latin America. Andrew holds an MBA from the Wharton School and a B.S. from Bentley College.

NetCracker's CEO, Andrew Feinberg, offers MEA operators a proven approach to transformation

Transformation is a global phenomenon in the telecom world. Even before the worldwide recession began in late 2008, service providers were feeling the heat from new competition. Their profit margins were under pressure, and customer retention was becoming more difficult. New competition was eroding their traditional, close customer relationships by delivering information, entertainment, and communications in a far more user-friendly way.

Few companies understand transformation better than NetCracker Technology. In the past decade NetCracker participated in the largest number of business and infrastructure transformations in the industry and in February 2010, the company announced a large-scale business expansion whereby its parent company, NEC Corporation, consolidated its Telecom Operations and Management Systems (TOMS) software and services business under NetCracker. As a result of this multi-billion dollar infusion of assets, NetCracker became the world's largest provider of end-to-end TOMS solutions. Building on its track record for delivering high ROI transformation programs to leading carriers around the world, NetCracker now possesses the resources and solutions required to help operators of all sizes increase their competitive edge in a highly demanding, rapidly evolving telecommunications marketplace.

Identifying the key drivers behind service provider transformation

Historically three underlying factors have driven telecom transformation: 1) The desire for service providers to reduce their overall cost of operations; 2) The need to become much more agile in creating and delivering new services; and 3) The increased demand for improved customer responsiveness and focus on customer service.

At a strategic level, service providers have been asking critical questions such as, 'How do we continue to deliver sustainable value?' How do we maximize the technology dividend? How do we carve out a space in the fast-changing world of information, entertainment, and communications access and delivery?

The compelling need to address these issues and questions has been the impetus for driving transformation in the communications industry.

Defining transformation

NetCracker's approach to delivering successful transformation projects has been shaped by its extensive history of providing solutions to operators who need answers to the questions outlined above. In this sense, NetCracker has had immediate, firsthand experience helping to define transformation for operators - whether it is business transformation from the top down or incremental transformational approaches designed for specific, targeted projects.

The most common types of transformation projects are these three:

- Projects driven by a significant infrastructure upgrade, predominantly on the network side, to accelerate the delivery of rich media services via high-capacity access, for both fixed and mobile providers

- Projects driven by migration to next-generation IT capabilities in order to deliver higher levels of business agility and customer responsiveness and to reduce costs

- Projects driven by business transformation - transformation that fundamentally alters the traditional business model and gives service providers a new way to engage with their customers along with the ability to create, deliver, and manage new services

In the last decade, the majority of transformation projects have been in the first two categories, and in many ways they create the foundation for the third. NetCracker has been deeply involved in all three types, enabling service providers to rapidly monetize their investments in the Network, rationalize their systems, and deploy the platforms and infrastructure required to re-engineer their businesses.

Committing to transformational success

Undertaking any transformational project requires significant strategic and financial investment - and at NetCracker we understand that failure is not an option. Our experience has demonstrated that the following six factors are common to all successful transformation projects, regardless of their nature, and service providers should keep them in mind when undertaking large-scale transformations:

1. *Understanding & articulating business objectives*. Business objectives must be clearly understood and articulated. Ideally these objectives should be applicable to a service provider's end-to-end business processes. They should also be measurable and drive all the transformational components including architecture, roadmap, and technology choices.

2. *Strong ownership & support by c-level executives*. The second success factor is strong ownership of the transformation project and support that comes straight from the top of the organization. This buy-in from C-level executives ensures sustained funding, effective governance during the transformation project, and long-term commitment to the program.

3. *Flexible architecture & technology*. The architecture must be flexible enough to adapt to changes - changes driven by technology as well as internal and external factors. The architecture and technology must also be future proof, scalable, and standards based.

4. *Choosing the right partner*. Transformation projects are large and complex and depend on the expertise and experience of all the parties involved. To this end, service providers need to choose partners with proven product capabilities as well as service capabilities that include data migration, integration, and all other complex areas. Partners should also understand the dynamics of service provider business as well as the technology. They should have the ability to scale to the needs of the transformation project and be able to provide sustained support throughout the program.

5. *Implementation & execution*. Implementation and execution must be guided by strong project governance to ensure that the project is completed on time and within budget. This builds the credibility of the partner that is delivering the program and ensures that its business value is realized on time as expected.

6. *Thinking outside the box*. Finally, we advocate thinking outside the box when implementing large transformation programs. Service providers should be open to new models of engaging with partners and vendors - models that could involve managed services, risk sharing engagements, and joint ownership. These various models - some of which have demonstrated their value in other domains - bring in much more commitment from all the partners that are involved in delivering transformation projects.

What's next for service providers & NetCracker: managing the digital lifestyle

It is important to understand that transformation will continue, as service providers make significant investments in the next generation of networks - 4G for mobile and gigabit access for fixed. The resulting explosion in bandwidth will create new opportunities and challenges. On the enterprise side, service providers will have the opportunity, through cloud computing, to offer a wider range of applications and services - far more than just high speed access and connectivity. On the mass market side, the consumer home will become the new battleground - for managing connectivity and devices as well as owning the movement of bits inside the house. Device activated services, machine-to-machine (M2M) interactions, and smart grid are all beginning to converge in the home. In the wireless world, mobile transactions are set to accelerate with new smart devices, enabling a much higher level of content interaction than ever before.

For over a decade, NetCracker has been focused on one thing: helping communications service providers be the best at what they do - deliver the next generation of communications services and look ahead to providing customers with the next generation of information and entertainment services as well.

In 2010, we are still committed to this goal. With our multi-billion dollar expansion into the TOMS domain and the support of our parent company, we have more resources - from customer-facing systems to Network Management and service platforms, paired with our service capabilities and a global reach - to help service providers gear up for the next phase of transformation in their business and in the industry. ●

Connections

Making it all work together effectively - the technology and its applications - in an economically viable manner is an extraordinarily complex job. Technological convergence, of course, plays a big part; without Swiss army knife multipurpose, multimode devices, and without integrated networks it will not, cannot, happen. Then too, there are the 'soft' contributions of regulation, billing, applications, education and the like that tie the technology into society, the economy, businesses and our lives. Connect-World will look into this intricate interplay - the 'soft' mediation that lets technology - both hard and soft - function in the 'real' world.

The theme of this issue of *Connect-World Africa and the Middle East 2010* is *Tying it together*.

Fredric J. Morris,
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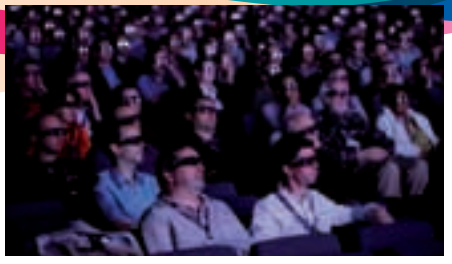

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Intelligent Mobile Connectivity for Remote Users

'The Altobridge Remote Community Solution'

Expensive satellite transmission used for backhauling calls, has been the major barrier facing Mobile Network Operators the world over when considering mobile service roll-outs to remote user groups in emerging markets - but not anymore.

No challenges, just solutions

Solving the challenges of transmission – and many others besides – is the Remote Community Solution from Altobridge, which delivers a more 'Intelligent' Base Transceiver Station (*BTS*) site to the MNO than any other solution.

Like peas in a pod, the new Altobridge POD BTS at the heart of the Remote Community Solution differentiates the system from others by delivering a series of intelligent 'green' functions' to the installation: Intelligent Transmission Management, Intelligent Power Management, an Intelligent Data-at-the-Edge™-of-the-network capability, and efficient handling of the BTS radio resource. All of these functions enable a compelling and unbeatable 'green' business case for a more efficient, low-cost, intelligent and profitable BTS site.

Intelligence Defines Altobridge Solutions

Intelligence designed into the Altobridge technology manages and restricts the use of expensive transmission bandwidth by combining two of its patented technology platforms. First is the Altobridge Split Architecture™, which ensures an 'on-demand' use of the satellite link when only revenue-generating traffic is occurring, and uses the lowest level of bandwidth in the industry at 5-8kbps per call. This system not only cuts transmission costs, it also cuts power consumption, which is further reduced with a 'night mode'.

The second is the Altobridge Local Connectivity™ Platform, which enables the intelligent switching of all local calls locally at the base station or handover between base station clusters. This eliminates unnecessary transmission costs, double satellite hops and improves network quality thereby encouraging longer call holding times resulting in increased call revenues. As up to 70% of calls can be local, significant opportunities exist to reduce transmission costs in all areas of the network.

The systems based on these platforms have proven to significantly cut backhaul and power costs and have been successfully deployed on wireless telecoms networks, aircraft and ocean-going vessels around the world. The benefits of these two technologies, combined in the Remote Community Solution with the POD BTS and including a Fully Managed Service offering and VSAT bundling, make this the most cost-effective solution for rural communities on the market and one which is being used in the Far East by leading mobile operators, including Maxis in Malaysia and MobiCom in Mongolia.

Green Power

One of the strengths of the Altobridge Remote Community solution is that it has one of the lowest power consumption figures on the market. Intelligent power optimisation is crucial to reducing power consumption. For solar installations, the solution has an intelligent 'Night Mode' reducing power use at night during low traffic periods. The intelligent control of the BTS can be used to vary services and coverage at night, or during periods of low power availability. Further power savings are achieved through intelligent management of the power amplifier.

A Perfect Acquisition

Following the strategic acquisition of the ADC Mobile Network Solutions base station and switching business in December 2009, Altobridge can now offer customers a broader portfolio of products and services resulting in even greater cost savings. These new offerings include both a complete end-to-end network solution and network extensions by interfacing with existing networks, both are available with Fully Managed Services.

Commenting on the acquisition, Mike Fitzgerald, Altobridge CEO, said, "When we acquired the Mobile Network Solutions division of ADC at the start of 2010, along with its full hardware portfolio, we acquired the perfect hardware solution with which to integrate our technology. By doing so, we can now offer MNOs the most intelligent, turnkey system for delivering lower transmission costs, lower power consumption and optimum returns from the delivery of mobile services to remote communities."

The Altobridge Remote Community Solution has been deployed in a number of places in Africa

Altobridge has three main business units: Remote Community solutions for MNOs, Software / IP licensing for vendor channel partners, and Government Solutions for private network requirements, the latter with its Secure Portable GSM Network in operational service with leading North American Government agencies. ●

For more information visit: www.altobridge.com

“Be the change you want to see”

by Ajay Pandey, MD & CEO, Neotel

Competitive telecommunications markets and regulatory flexibility are still a work in progress in South Africa. Lack of competition in the telecommunications sector has hampered South Africa’s economy by keeping service pricing well above world averages and limiting access to modern converged communications services. Alternate service providers have been at the forefront of the effort to offer true competition and provide affordable, technologically advanced, connectivity - via new submarine cables and infrastructure sharing with mobile operators and lobbying for geographic number portability.

Ajay Pandey is Neotel’s Managing Director and CEO; he has had more than 14 years experience in the Telecommunications Industry. Prior to Neotel, Mr Pandey was with VSNL in India, (Tata Communications Limited), as President of the project for the company’s telecom initiative in South Africa. Mr Pandey, held many positions at the General Manager level in the Tata groups’ telecommunications business. He started his career with an engineering company, but spent eight years with the Xerox Corporation in India.

Ajay Pandey earned a BSc in Computer Sciences and Mathematics, University of Pretoria, South Africa. He is also a Certified Executive IBM Architect and a Fellow of the British Computer Society (CITP).

Mahatma Gandhi coined the phrase used above as the title in circumstances light years removed from the subject of technology - but the principle works in any context in which people have to move from an old order to a new one.

In South Africa’s telecommunications market the move from a monopolistic, tightly regulated fixed-line situation into a less regulated, highly competitive one is still a work in progress.

Making sense of competition

Competition is the life blood of a healthy economy, but the lack of competition in the telecommunications sector has, for many decades, held the South African economy for ransom by call rates and bandwidth pricing as much as five times higher than in Europe, United States and other parts of the world. South African businesses therefore, have, been at a serious disadvantage communicating with their customers and supply chains in other markets.

Competition in and of itself is no longer enough to make a real difference in the quality of existence of businesses and consumers. Simply having two fixed line providers of the same sort, for instance, does drive prices down - because, theoretically, subscribers have a choice between two similar services.

But, that elementary type of competition is not enough to change doing business and the way one lives in a country that has always done telephony in one particular way - in a Henry Ford landscape where, “you can have any colour you want as long as it’s black”.
South African subscribers have never had access to converged communications services at work or home, so that they don’t know how to shop for them. They don’t know what to ask for and they don’t know how to compare one service with another. In other words, is a market that has ‘latent communication needs’.

Living proof

So, it’s been up to the alternate infrastructure and telecoms challengers, to educate the public - to tie the familiar telecommunications concepts they understand to those they have not heard of and help them

"South Africa's first converged communications providers have changed the way telecommunications are delivered in this country by bringing new technology into play. So, thanks to Next Generation Networks (NGN), organisations can now have voice, data, and the Internet in a single pipe."

make sense of what their voice, data, and Internet options really should be.

The challengers have had to provide - and must continue to provide since there is no true competition in the market - examples of what modern communications have to offer.

Until recently, South Africa had only one submarine cable (*SAT3/SAFE*) connecting it with the rest of the world. This elderly infrastructure has already failed three times in 2010, so subscribers afraid of relying on traditional redundant systems - have sought alternative service providers for greater reliability and access speeds.

In 2009, the SEACOM cable, which runs down the eastern African seaboard landed at Mtunzini on the south east coast of South Africa. Access to this cable is managed from Midrand in the middle of South Africa.

The Eastern African Submarine Cable System (*EASsy*) is due to go live in August 2010, and the West African Cable System (*WACS*, still under construction) - will help give South African telecommunications subscribers unlimited access to international connectivity and bandwidth. The other end of that international connectivity, is linked to overseas operators with relationships with almost 400 other operators globally that, together can handle some 30 billion voice minutes.

In other words, when it comes to international bandwidth, speed, reliability, and access, South African subscribers are now truly tied together with the world.

Sharing resources

At an in-country infrastructure level, telecommunication companies need to compete on the streets when it comes to brand, products, services and price. It makes no sense, however, for each telecommunication company to try and build its own wired and wireless infrastructure in the face of a monopolistic incumbent that has millions of miles of copper cable already laid. Some thousands of kilometres of fibre optical cable and copper have been laid in major urban areas in the past three years. Still, none of the operators can possibly put enough cable in the ground fast enough to catch up with the former monopoly quickly enough to really liberate the South African subscriber from economic disadvantage.

Partnerships with South Africa's two largest mobile telecommunication companies, Vodacom and MTN, who each also have significant and influential shares of the rest of the African market, can give the submarine cable service providers immediate access to MTN's and Vodacom's 20-year old infrastructures and gives the mobile operators access to the newly expanded international bandwidth and reach.

Naturally, all these organisations benefit. More importantly, the South African subscriber benefits from better access, better speeds, and massively increased reliability.

Services that mean something

Then there's the issue of tying together service options in such a way that the subscriber, business or private, has total freedom of choice as to how, when, and where communication takes place.

South Africa's first converged communications providers have changed the way telecommunications are delivered in this country by bringing new technology into play. So, thanks to Next Generation Networks (*NGN*), organisations can now have voice, data, and the Internet in a single pipe. Previously, they'd have had to have the monopoly build another ring of infrastructure around their existing systems in order to get only a circumscribed increase in bandwidth and access and questionable service quality based on an ageing legacy infrastructure to which newer equipment has to be cobbled.

Service offerings need to be commoditised to serve different markets in ways most appropriate to them - for instance, by creating a local Internet-based Cloud for wholesale customers who would otherwise have to connect via the United Kingdom.

Next generation networks (*NGN*) are focused on the enterprise market, where the single pipe for voice, data, and the Internet is a priority. Packet network give the flexibility to offer consumers a wide range of affordable mix and match products that meet their financial needs. Developing an infrastructure in both fixed line and wireless environments, and tying together the technology with appropriate services and products, enables an operator to be all things to all subscribers.

Making change official

To be a truly effective consumer advocate and change agent, however, you can't, as a telecommunication company, stop at knitting together infrastructure, access, bandwidth, products, and services - though that is hardly small potatoes.

You must also pro-actively lobby for positive regulatory change - and provide input to the change so that it is both coherent and appropriate to the end user.

To that end, service providers need to campaign strongly for geographic number portability (*GNP*) in South Africa. This will enable subscribers to change fixed line providers without having to change their fixed line numbers. Gratifyingly, GNP is now starting to roll out; the consumer phase is due to kick off at the end of April 2010.

However, GNP is only useful if the last mile of cable to consumers and businesses is unbundled from the clutches of the monopoly - so that subscribers don't have to wait for their new provider to lay new cable to their doors and then pay to help amortise the cost. Local Loop Unbundling (*LLU*) is legislated for South Africa for 2011. There will be some real resistance to it, but LLU is needed to ensure that life is finally given to South Africans' legal right to freedom of communication and freedom of access to information.

Technology of any sort is about change - the kind of change that permeates every aspect of society. It is both absurd and irresponsible to try and benefit commercially from this sort of change without committing your own prosperity and progress to the change you want other people to accept. That means making the change comprehensible and then pulling all the threads together so that the change you're advocating works positively for everyone touched by it. ●

Stable financial ecosystems for Africa

by John Dick, CIO of Western Union

Africa lacks a financial ecosystem that covers more than the major cities and a small, privileged, part of the population. The explosive growth of mobile telephone ownership and usage is changing this. The mobile pre-paid charge-up system lets 'unbanked' mobile owners send and receive credits within countries and cross-border between individuals and businesses. As a result, a financial ecosystem is emerging that combines the network and systems of mobile operators with the ability of financial institutions to handle financial transactions.

John R. Dick is Western Union's Senior Vice President and Chief Information Officer (CIO); he is responsible for all of the company's information systems and technology. Mr Dick has more than 28 years of financial services and information technology experience. Most recently, he served as EVP and CIO of Regions Financial Corporation. Earlier, Mr Dick served in senior leadership and consulting positions with GMAC, First Union Corporation (now Wachovia), Price Waterhouse and Crestar Bank (now Suntrust). Mr Dick has served on the Information Technology board of American University's Kogod Graduate School of Business, and the global advisory boards of Microsoft and NCR Teradata.

John R. Dick is a graduate of the University of Virginia; he earned a Masters of Business Administration degree from Virginia Commonwealth University and graduated from the School for Bank Administration at the University of Wisconsin. Mr Dick completed the executive leadership programs at the Center for Creative Leadership and the MIT Sloan School of Business.

Over the last several years, companies in every industry have spent enormous amounts seeking to understand and adapt to the rapidly evolving digital landscape. Digital financial transactions of every sort continue to evolve. As digital financial transactions have increased, 'consumerization' of technology, including the consumer's use of self-service, has driven the demand for mobility and multi-channel applications. More than convenience, in some parts of the world, mobility and self-service have become the standard for access and empowerment.

In the rush to adjust and innovate, companies must challenge themselves. They must be willing to change not only their thinking, but their operating models to best leverage their knowledge, core competencies and technologies to generate new opportunities in the evolving financial ecosystem's value chain. Their success will help the developing ecosystem flourish and ensure its relevance in a rapidly changing world. Leaders who hope to retain leadership roles as the financial ecosystem evolves must find ways to remain relevant and to help build new paradigms.

Relevance demands merging assets from a business and technological perspective. It's about securing roles that multi-nationals moving enormous sums of money globally each day can play in developing thriving, sustainable financial ecosystems. Most importantly, it's about understanding the implications that bringing technologies together can have on a population, a geographic region and, ultimately, with connectivity and interoperability, society at large.

Let's take a specific example: intra-country and cross-border mobile banking in Africa. In more developed areas of the world, multi-channel account access and mobile banking are centred on convenience. Convenient transactions with the assurance of safety, accuracy and regulatory compliance create a compelling value proposition for consumers and companies alike.

In Africa, financial services are evolving rapidly because mobile operators now offer m-banking transactions to a significant part of the population. Mobile money transfer in particular has gained extraordinary traction in countries that have high percentages of 'unbanked' consumers, such as Kenya. For example, Kenya's Safaricom Ltd., a network operator partially owned by Vodafone, has more than 8.5 million customers using an m-wallet service that lets Kenyans transfer money domestically and, with select countries, across borders via text message. This development has had a significant impact on financial inclusion – whereas,

according to the World Bank , only around ten per cent of the population previously had access to financial services, according to the FinAccess National Survey, over 40 per cent of the adult population are now formally served, as Kenyans embrace mobile technology.

Across the continent as a whole, mobile penetration, which is a remarkable 48 per cent , has provided access to financial services to banked and unbanked populations alike, in select countries. This is particularly noteworthy since an estimated 80 per cent of the adult population across sub-Saharan African is unbanked.

By eliminating the need to provide a physical location for banking transactions, mobile finance is proving to be highly viable way to extend banking services to millions of individuals in regions where there previously was little if any financial and communications infrastructure. Clearly the opportunity is growing daily, but to convert this opportunity into stable economic growth within Africa, there is a need for a financial ecosystem that provides access to transactions, whether inflows, outflows, payments or banking, within countries and across borders, on mobile or transportable across other electronic and traditional channels .

Today's 'electronic' finance within African nations varies widely. Regardless of whether it is anchored by m-wallets, e-wallets or even prepaid cards, mobile financial operations in most countries are typically highly fragmented. Each network is a unique blend of mobile network operators, the financial entities legally authorised to provide banking and payment services, and mobile platform providers that enable transactions between consumer devices and financial entities. A multitude of players are seeking to determine and secure their place in the value chain. In most cases, sustainable economic models are far from certain.

If this burgeoning financial ecosystem is to flourish and contribute to the economic stability of African nations, many support systems must be added and interoperability must advance. Regulatory compliance is crucial in any financial transaction, but countries have widely varying laws and inconsistent regulations regarding transaction limits and rules for authentication; this makes cross-border transactions complex.

The complexities of complying with the many constantly changing regulations and laws in Africa's 53 countries encourages most mobile and traditional financial entities on the continent to seek out partners with sufficiently broad expertise to efficiently provide cross-border financial services. In addition, compliance - both regulatory and legal - is but one component of the full range of systems needed to sustain the financial services industry in Africa.

Building a stable financial ecosystem requires systems that range from security – including theft, anti-fraud, money-laundering and anti-terrorist safeguards – to those that support basic cross-border cash flows, such as currency translation, and ultimately, settlement. Add to this the need to deliver physical cash, to provide business continuity and multi-channel availability and the list grows exponentially.

Given this complexity, is it worth the time and resources for even the most sophisticated mobile operators in Africa to attempt to build an end-to-end system capable of sustaining a full-range financial ecosystem? Would it better to find a business partner with proven systems and capabilities in place? It appears that what is most needed is collaboration among strong mobile partners and proven financial services providers that understand local, national cultural and regulatory issues, whilst having the network technologies and capabilities to assure ecosystem stability and global connectivity. Ideally, such relationships provide the robust, scalable back-office that connects the network and addresses the crucial authentication, compliance and security issues. Economies of scale will increasingly drive consolidation and optimization of many of these services.

If mobile banking, m-wallets and e-wallets are to become the personal and commercial financial instruments of choice in Africa and elsewhere around the globe, the mobile banking infrastructure must be secure and provide consistent, compatible transaction tracking, regardless of whether the transaction is in-person, via the Internet, a mobile device, an SMS message or any other suitable medium. Looking beyond today's consumer-to-consumer applications, these capabilities become even more crucial as small and mid-size businesses dealing with larger transactions, increasingly utilize both intra-country and cross-border mobile payment systems to support their growing enterprises.

The acceptance of mobile financial services is growing most rapidly in developing nations and regions where few of the traditional banking and financial options exist and where local trade and relatively simple needs fuel monetary movement. Access to cross-border transactions and payments to consumers and businesses is becoming an increasingly important requirement. Equally crucial to the successful evolution of the financial ecosystem is focus and communication on how regionalized solutions are integrated.

Over the next few years, the financial services industry anticipates that the developing financial ecosystems in Africa will continue to fuel the growth and expansion of mobile financial services. Certainly, the challenges that accompany the growing use of mobile financial services are many. Today this growth creates a significant window of opportunity for multi-nationals and global financial services firms to facilitate both intra-country and cross-border transactions by applying their time-proven back-office and operational capabilities, transaction expertise, global scale and highly reliable telecommunications networks.

Ultimately, success in tying together technologies, networks, infrastructures and back office capabilities to capitalize on the evolution of digital channels will expand the ability to move money between different entities, whether it's from an individual to a bank, from a mobile operator to another business, or an individual to a family member in another country. Bringing this global expertise to the growth of mobile financial services can significantly stabilize and enhance the sustainability of financial ecosystems in the region. In that way, the promise of financial access and empowerment to new generations of Africans can be realized. ●

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A new era of interconnectivity

by Oman Sultan, CEO, Emirates Integrated Telecommunications Company, du

Technology is eroding the traditional borders between ICT sectors by converging business, entertainment and, indeed, all applications onto a single platform. Broadband makes vast amounts of content readily available, but it is content that gives relevance to technology. Still, few content providers and telecom providers work closely together enough - each wants to 'own' the customer and receive a larger portion of the revenue. This conflict of interest frequently forestalls fuller relationships between the two and stifles more effective cooperation.

Osman Sultan is the CEO of Emirates Integrated Telecommunications Company, du; he has worked in telecommunications and information technology in Europe, North America and the Middle East. Prior to du, Mr. Sultan served at the helm of the Egyptian Company for Mobile Services (MobiNil), a company he helped set up. Mr. Sultan was the Chairman of the Arab Working Group for the Private Sector in the International Telecommunications Union (ITU) from 2003 to 2005. He began his professional career with the France Telecom Group.

Mr Sultan has received several awards including for The Best Web Site-Legal Product from the American Information Association; the Man of the Year award (1996) from the Professional Electronic Information Services Community in France and the prestigious award from MENA Crysta as a Media Man.

Osman Sultan earned his degree in engineering.

Telecommunication as we know it has come a long way. The constantly evolving technology of mobile telecommunications has redefined the way we communicate today. Following the evolution of fixed-mobile convergence, multiple platforms began to converge and integrate onto a single device using advanced mobile broadband technology- today's multi-functional mobile phone device.

A mobile handset now operates as an SMS messaging device, an iPod, a mobile TV and a gaming device. It provides ring-back services, video and voice mail and access to the World Wide Web, it also enables conference calls and lets you receive and send email. What's more, a mobile phone now lets you tweet and update your Facebook, you can also transfer credits via your handset. The number of state-of-the-art technologies packed into a single device is increasing and this gives consumers a much more convenient, convergent, communication experience.

The bigger picture

As applications and functions unite onto a single platform, this fully integrated communication experience is ushering in a revolutionary era of interconnectivity. The boundaries between the various industries are becoming increasingly blurred. The old borders between different sectors are eroded by convergent technologies. For example, mobile convergence has united business and entertainment functions onto a single platform, bringing a convergence of the telecommunication and media industries, which is not only transforming the telecommunication world and causing the media world to explode, but effectively triggering new behaviours, cultures and social and business environments.

Similarly, geographical boundaries are breaking down, as anytime, anywhere mobile technology closes the gap between time zones and locations, brings the world closer together and accelerates the rate of globalisation.

Convergence as a tool

The rate of technological advance affects everyone's lifestyle. With the proliferation of advanced broadband technology, one man can often do what hundreds of employees were needed for in the past. For example, one man can shoot and broadcast a movie by uploading it to YouTube, or single-handedly source vast amounts of information via Google, which provides easy access to an extensive archive of material.

People now perform many functions online including studying, conducting business and performing banking transactions. The quality and speed of the Internet have had to improve to keep up with the modern consumers' ever-growing demands and requirements; high-capacity, high-speed, broadband Internet is absolutely essential to today's society. It's no longer the digital home - it's the digital lifestyle, and operators have to keep up with constantly evolving customer demands and with all the advances in broadband technology for home, business and mobile services.

Convergence and integration is increasingly essential to enjoy the benefits of anytime, anywhere communications and entertainment. Technological innovation is revolutionising our habits - how we watch video and listen to music, how we stay in touch with our family and friends and how we collaborate with co-workers and business associates across the globe. The convergence between communication tools brings business, entertainment and information to our fingertips wherever we are, with fixed and wireless working seamlessly on three critical screens - the computer, the TV and the mobile phone. With new multi-media technologies constantly fostering the proliferation of mobile convergence, the three screens will no doubt eventually become a fully integrated, unified single screen experience.

Technology and content

Although we can be sure that technologies will continue to evolve and tie the world together with increasingly convergent connectivity, it is difficult to predict exactly how these technologies will develop and alter our lifestyles. It is almost impossible to prepare for technology, which continues to evolve. However, we can effectively evaluate content, one of the key elements in technological evolution. Content and technology have an intense and interdependent relationship, technology makes content available to consumers, but it is the content that gives relevance to its functionality.

It is, after all, the content, as it is selected by the end-users themselves that humanises high-tech appliances. So a deep understanding of the changing role of content providers is crucial for telecom providers. The content to end-user cycle is a four-step process - content creation, to channels, to devices, to end-users - the process of content creation by content providers, its transportation by telecommunication providers and its conversion for access by end users. End-users demand greater accessibility to vast amounts of highly diverse content and this is driving the accelerated convergence of technology.

Direct contact between content providers and telecom providers would make the content-to-end-user process more efficient, but generally, they do not yet work together closely enough. This is partly due to the desire of each party to 'own' the customer and receive a larger portion of the revenue; this conflict frequently forestalls fuller relationships between the two industries, and stifles more effective, cooperative, communication and entertainment experiences.

Content and interconnectivity

Content and the role of content providers are currently being redefined. With the rise of interactive social media, portals such as Facebook and Twitter let anyone become a publisher and YouTube, where everyone can create and share images or movie, lets anyone be a broadcaster. So, by uploading their content to portals, ordinary people are altering the landscape of the entertainment and media sectors. As content provision becomes more and more interactive and integrated, and technology adapts to keep up with public demand, telecom operators - the channel between content creation and user generated content - must keep up with, and prepare themselves for, the change.

The lack of restrictions regarding access to content on the Internet lets content can be easily accessed and adapted by almost anyone. Access to content stored in 'virtual space' and transported to end-users via the telecom sector's communication channels, is therefore nurturing creativity, as content is continually adapted via an interactive platform. By closing the gap between content and end-users who reuse this content to develop new content, access to content is fostering a new era of interactive and interconnected productivity.

Nurturing tomorrow's talent

Whatever the future holds for technology, content and telecommunications, the most efficient way to prepare for tomorrow is to innovate, to keep one step ahead, by investing in creative young minds, and giving them the confidence, support and resources to develop their skills and talents. The single most important factor for growth, for carrying forward the vision, values and mission of any organisation is its people. Today's young talents are tomorrow's leaders. A rich talent pool is crucial to a nation's progress and to enriching communities with their discoveries and path-breaking development strategies.

Technology such as broadband is essential in almost every sector - from education and employment to community and recreation; it also helps tie all these areas together. Access to, and awareness of, electronic and information technology is paramount in helping students prepare for and succeed in tomorrow's new world. This sort of access is essential to nurture a cadre of bright, young minds, to build technological skills and an in-depth understanding of a cutting-edge, multi-platform, convergent business environment. The UAE, for example, has made great strides in applying state-of-the-art technologies to its academic programmes in order to keep pace with today's educational needs.

A brave new world

Technology will surely continue to push the boundaries of telecommunication. Operators need to respond to the constantly evolving demands of customers and adapt to an increasingly convergent world; they must adopt the latest technologies, adapt their services, and liaise with the necessary industries. Telecommunications will become an even greater part of our everyday lives as we move towards higher levels of convergence and usher in a new era of integrated connectivity. Operators need to ensure that they keep up with today's communication requirements, and prepare themselves for tomorrow's - somewhat smaller- world.

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‘Future proofing’ your telecoms operations

By Mohammed Zainalabedin, GM, Zain, Bahrain

In Bahrain, the growing use of increasingly sophisticated applications - mobile money, entertainment, social networking, entertainment, advanced business systems etc. - makes it difficult for operators to keep up with the demand for bandwidth. Bahrain’s compact size and well-regulated telecoms sector, though, make it an ideal innovation centre for telecoms companies experimenting with advanced 3G/4G networks and services and for early strategic transition to an all-IP technology that can ‘future-proof’ mobile offerings and let operators add to existing services seamlessly.

Mohammed Zainalabedin is the General Manager of Zain, Bahrain; he has been with Zain Bahrain since its operations started in the Kingdom in 2003. Prior to joining Zain Bahrain, Mr Zainalabedin had a decade of experience in the IT field working for companies such as International Turnkey Systems where he held the position of the core banking group manager in the banking group. Earlier this year, he was named one of the ‘Top 40’ most influential telecoms leaders of the Middle East by the prestigious industry journal, Global Telecoms Business.

Mr Zainalabedin holds a BSc Hons in Computer Engineering from King Fahad University of Petroleum and Minerals, Saudi Arabia.

Talking on your mobile phone? Sending a text message? These obviously still make up a big portion of mobile phone usage in the Kingdom of Bahrain, where telecoms liberalization in 2002 re-shaped the sector. Increasingly, though, the mobile phone is being used as a lifestyle tool, allowing users to both conduct important business transactions and manage their leisure activities.

We are working in a world where we often communicate with faceless machines and wireless exchanges. You can pay your utility bills and traffic fines over the phone by accessing Bahrain’s award-winning e-Government portal; you can download movies and music of course and rig a webcam to keep a long-distance check on your storefront or babysitter via MMS. Many banks are linking up with telecom companies to offer 24x7mobile phone banking or even to ping customers when credit card transactions are completed.

Telecommunications in the Gulf Cooperation Council (GCC) come with a completely different perspective, than, for example, in Africa. While volume here is not as high as Africa or Asia, the region is hungry for new technology and GCC customers are eager to invest in the latest technology. The benefit of this trend is that GCC telecoms service providers are more willing to bring new technology to their networks.

Bahrain’s compact size and well-regulated telecoms sector make it an ideal innovation centre for telecoms companies, leading to many telecom service providers, ranging from mobile telephony operators to broadband service providers, to push the envelope consistently with nation-wide 3G, 3.5G and WiMAX-powered offerings.

Bahrain has also shown a remarkable ability to put in place e-governance mechanisms; these have made it imperative for telecoms service providers to ensure that they have the technology ready to offer their customers access to an ever-growing list of uses that they can put their mobile phones to. This hunger for increased broadband capacity to power the expanding use of mobile phones has pushed investment in Long Term Evolution (LTE) technology to the forefront. At US$50 million, it is an expensive investment. We have sought to usher in one of the most extensive technological upgrades in the GCC region to respond to trends in telecommunications usage that will change in the years ahead. The move to LTE will boost the customer experience today - it will enable faster data downloads, an overall enhanced mobile customer experience, improved coverage and capacity and will deliver better products and services in line with the future needs of the sector.

The region’s first LTE project which Nokia Siemens Networks is carrying out will enable faster data downloads, an overall enhanced mobile customer experience, improved coverage and capacity and will deliver better

products and services in line with the future needs of the sector.

LTE will provide data throughputs in excess of 100 Mbps (*Megabits per second*). Flipping through web pages containing images, flash items, or any other "heavy" components will seem to be instantaneous. If you have emails waiting to be downloaded from your email provider's server to your PC then that will take a few short seconds. So will be the downloading of music tracks. And with LTE, downloads that take hours today will take minutes in the future.

There is another attribute of data connection that LTE significantly improves. This is called latency. Latency is the time taken for the data sent from one end (say a server somewhere in the internet cloud) to start reaching the other end (say an internet user). And whereas a high throughput means that you get large amounts of data per second (i.e. Megabits per second), a short latency means that the response time from you clicking the mouse until you see the effect of that clicking is short. LTE will boast latencies in the region of ten milliseconds, compared to the 3-digit figures of today's mobile broadband networks. The benefit of such short latency shows in applications such an online gaming whereby a number of people could be sitting at different places – even different continents – and together playing a computer game. Here the short latency will give the players the feeling of being together in one room.

These benefits of LTE come from many advances both in the radio network and the IP (internet protocol) network architecture. LTE brings a lot of advances in the radio system, made possible by the advances in recent years in computing power embedded in the radio systems. Thus we have the so-called smart antenna techniques, bringing about high efficiencies in the utilization of the scarce radio spectrum resources, while providing signal coverage in the most difficult situations, such as being indoor or moving at high speeds. Advances in the IP networking means that the architecture is much flatter, leading to the low latency mentioned earlier. Such an advanced all-IP network caters also for the carriage of voice with superior quality, bringing about great efficiencies in the network operation.

In terms of standardization, LTE also sets precedence. Until now there have been multiple standards for mobile networks worldwide, from the first generation that appeared in the early 80s, to today's third generation. Thus we have seen, and continue to see, different non-compatible standards used in North America, Europe, Japan, and other regions of the world. LTE is the standard that all regions in the world will adopt as their fourth generation mobile technology. For the Middle East, Bahrain is the starting point for this to happen.

Why now? In a market where competition is getting fiercer, the investment in LTE technology makes sense when set against the growing customer demand for sophisticated mobile telephony and broadband experience. It gives the operator an opportunity to make an early strategic transition to an all-IP, which will have a direct impact on the quality of communications experienced by its customers. As we evolve to a more 'lifestyle-enabled' telecoms experience, LTE will give telecoms service providers the capacity to put services first and ride the surge of innovation in the sector.

In short, this is the technology that will 'future-proof' mobile offerings, allowing us to add layers to the existing portfolio seamlessly. ●

A Smarter Planet

by Clifford Foster, Chief Technology Officer for IBM Sub-Saharan Africa & IBM Distinguished Engineer

There will soon be two billion people on the Web and a trillion interconnected objects - sensors, appliances, phones, cameras, RFID tags - and systems; people and objects will 'speak' to one another. Massive amounts information produced by the interaction of all those things will be analysed in real time by 'smart systems' that will anticipate events and proactively resolve problems before they occur. We are becoming an instrumented, interconnected, intelligent planet with smart cities, businesses, utilities and homes.

Clifford Foster is IBM's Chief Technology Officer for Sub-Saharan Africa. Mr Foster is a Partner in GBS (Global Business Services) IBM's consulting arm and is one of a select few ever appointed as a Distinguished Engineer by IBM. He specialises in the financial services sector. Prior to joining IBM, Mr Foster worked with Andersen Consulting (Accenture) as part of a high-profile team that transformed the credit lending business of a large corporate bank. Mr Foster joined Andersen Consulting after selling a systems integration company he founded where he sold, built and implemented many first-of-a-kind solutions in South Africa. Mr Foster began his career as a systems engineer, designing and building a large SCADA (Supervisory Control and Data Acquisition) system.

Mr Foster was named a Fellow of the British Computer Society (CITP) in 2007.

Clifford Foster earned a BSc in Computer Sciences and Mathematics from the University of Pretoria, South Africa.

We know the world is becoming smaller and flatter. However, something else is going on that will ultimately have a greater impact on business and society - the world is about to become smarter. Rather than referring to humanity's collective IQ, this is about the world's infrastructure becoming intelligent.

Traditionally, we have thought about IT as the realm of data centres, software, personal computers and networks. Infrastructure has always been the buildings, roads and pipelines. In the past, these infrastructures and IT co-existed; now the digital and physical infrastructures of the world are converging.

This convergence heralds an exciting new age, an age where technology plays a strategic role in addressing vital issues of our time, such as water shortages, energy waste and traffic jams, while driving the next wave of economic growth.

Instrumented, interconnected, intelligent

Consider that by 2010 there will be more than one billion transistors for every human on the planet and around 33 billion Radio Frequency Identification (*RFID*) tags in circulation. The world is becoming increasingly instrumented with sensors being embedded in all sorts of ecosystems, from hospitals to retails stores, even natural systems like rivers.

The world is also becoming increasingly interconnected, with a projected two billion people on the Web by 2011 and a trillion interconnected objects - sensors, appliances, phones, cameras, RFID tags - comprising the 'Internet of Things' and creating a world where systems, people and objects 'speak' to one another.

The amount of information produced by the interaction of all those things will be unprecedented and the next step is to analyse this data

"Climate change, rising energy prices and technology advances have been reshaping the collective mindset of consumers, turning many 'passive ratepayers' into highly informed, environmentally conscious customers who want a role in using power. Now, with the emergence of the technologies that make smart grids possible, companies can provide their customers with the information and control they need to actually change their behaviour patterns and reduce usage and costs."

in real time to create insight or intelligence. Smart systems will enable us to anticipate events and proactively make decisions that will prevent problems from happening before they occur.

Smarter cities

An example of such a smart system can be found in Stockholm, where a smart traffic system has reduced traffic into and out of the city by 20 per cent and cut carbon emissions by 12 per cent. At the beginning of 2006, the city implemented a free-flow road charging system using laser, camera and information technology to seamlessly detect, identify and charge vehicles, as they pass control points on the way in or out of the city centre. The system reduced congestion, thus helping to alleviate environmental damage, and helped boost productivity in Stockholm.

Smarter energy

Currently, between 40 and 70 per cent of energy is lost during transmission in Africa and less than 20 per cent of Africans have access to electricity for personal use, but if a significant amounts of energy can be saved the cost of providing energy to the rest will fall.

Climate change, rising energy prices and technology advances have been reshaping the collective mindset of consumers, turning many 'passive ratepayers' into highly informed, environmentally conscious customers who want a role in using power. Now, with the emergence of the technologies that make smart grids possible, companies can provide their customers with the information and control they need to actually change their behaviour patterns and reduce usage and costs.

For example, Pacific Northwest National Laboratory has helped homeowners reduce energy costs by up to 10 per cent, by turning ordinary thermostats into intelligent devices tied to the grid system, which automatically control power consumption based on pricing signals and customer preference.

Participants decided how much they were willing to spend, and their appliances adjusted the amount of energy they consumed in response to fluctuating prices, e.g. if the price goes up, the thermostat shifts down a few degrees. This ensured the best cost for the customer and better load balancing for the grid, reducing overall peak loads by 15 per cent.

A smart grid brings intelligence to a utility system; they can also incorporate new sustainable energies such as wind and solar generation.

Smarter business

Consider that every week businesses waste 5.3 hours per employee because of inefficient processes. Smarter organisations are transforming their infrastructure and processes to take advantage of an instrumented, interconnected and intelligent planet.

Businesses around the world are recognising that they need to reinvent their infrastructures and processes to allow their people to collaborate with each other, their customers and their partners; to foster creativity and problem solving and to enable the very act of enterprise.

Smarter businesses are managing large volumes of information in real-time, incorporating ana-lytics and predictive modelling, pervasively collecting and sharing information across the entire value chain and speeding time to value by delivering trusted, accurate and timely information to the right decision makers.

Taking advantage of a smarter planet

However, if we are going to realise the enormous potential of a smarter planet, we have to reinvent the business and IT infrastructure of the 21st century in the same way that we industrialised our factory floors in the 20th - making it more efficient, more dynamic, less com-plex and less costly.

By implementing innovative technologies such as virtualisation, cloud computing and stream processing, organisations can conserve energy, consolidate resources, and make information secure and available whenever and wherever it's needed.

Virtualisation is a powerful catalytic element to realising a smarter planet, as it can help companies reinvent their data centres, eliminating up to 70 per cent of their servers and 80 per cent of their floor space, reducing energy consumption and costs. Cloud computing provides IT resources and services independent of a specific physical infrastructure, and reliably delivers them to the end-user over the Internet or intranet. Stream processing technology could provide the ultimate performance: millions of messages per second with millisecond to sub-millisecond response. This is about processing information in-flight rather than from storage.

Using a dynamic infrastructure, companies can integrate an intelligent business infrastructure with the necessary underlying design of a flexible, secure and seamlessly managed IT infrastructure so the organisation can respond quickly and successfully to changes as dynamically as they occur.

In addition, by taking a systemic view of its value chain, including workforce, manufacturing, supply chain, IT, transportation, customers and facilities, an organisation can realise the benefits of environmental sustainability.

Smart systems have the potential to enhance all aspects of our lives. Forward-thinking nations, companies and communities will leverage this to improve the lives of people, positively impact the environment and drive new business opportunities. Will you? ●

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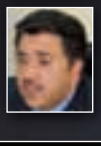

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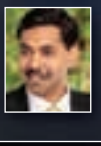

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Can wireless solve the African puzzle?

by Cosimo Malesci, Vice President of Marketing, Fluidmesh Networks

Voice and broadband communications are essential for Africa's economic and social growth, but building sustainable business models for mobile is still a challenge. Local regulations hamper wireless rollout and each country regulates spectrum differently. There is also little information and regarding local regulations. This is a showstopper for large investors because it increases investment risks. Technology is bringing affordable handsets and cutting the costs of network infrastructure, but to make wireless truly affordable governments need to cut taxes on service and consumer and network equipment.

Cosimo Malesci is the Vice President of Marketing at Fluidmesh Networks, Inc. Mr Malesci co-founded Fluidmesh five years ago when he was 23 years old and a Master student at MIT. This new venture has allowed him to apply his understanding of engineering to the wireless world.

Cosimo Malesci earned Bachelor and Master degrees in Ocean Engineering - both from the Massachusetts Institute of Technology.

The African continent is a big challenge for the deployment of wireless networks for cellular or broadband connectivity. There is no master plan, but wireless networks are spreading independently at record speeds throughout Africa, providing better communications, more efficient business interaction and new job opportunities. Not surprisingly, easier communication is also improving the quality of life for Africa's people offering access to better education, information about health and diseases, and a host of other vital services. A stable wireless network and reliable connectivity is essential for progress, but much remains to be done before this can happen.

Africa is the world's second largest continent after Asia. Its population of roughly one billion people also makes it the second most-populous continent. More than one thousand languages are spoken in its 53 countries. Africa is also the continent richest in natural resources; it has 90 per cent of the world's cobalt, 90 per cent of its platinum, 50 per cent of its gold, and 98 per cent of its chromium. The Democratic Republic of Congo, by itself, has 70 per cent of the world's columbite-tantalite - extensively used to manufacture the capacitors in most of today's electronic devices.

Africa is also the poorest and most underdeveloped continent in the world. Roughly 50 per cent of Africa is rural and has no access to electricity According to the World Bank in 2005, more than 80 per cent of the population of Sub-Saharan Africa lives with less than US$2.50 a day and about 50 per cent lives with less than US$1.25 a day. That means that there are close to 400 million people living in dire poverty and the economic situation in much of Africa s not improving. The poverty rate has actually gone slightly up in the last thirty years and the Sub-Saharan region has been the least successful in reducing poverty worldwide.

What causes this disparity between resources and economic development? Deadly diseases such as HIV and malaria, corrupt governments with little or no central planning abilities, high levels of illiteracy, lack of access to foreign investment capital, and frequent tribal and military conflicts are just some of the issues that Africa faces daily.

These same challenges - and others - are also faced when trying to create a sustainable business model to deploy the networks required to resolve Africa's connectivity needs. Given the diversity of economic and political situations found throughout the continent, there is no single business model that will work in every region. Nevertheless,

the combination of better spectrum regulation, more cost effective mobile devices, and more flexible and cost effective wireless backhaul solutions for both cellular and broadband services, is helping Africa make great progress connecting its people and improving their standard of living.

Local regulations pose some of the biggest barriers to deploying an effective wireless infrastructure. Each African country has its own, often quite different, regulations for spectrum usage and this has become one of the greatest obstacles to the deployment of wireless infrastructure. The process is made even more complicated by the lack of information about local regulations, which makes this task even harder. Although this gray area in spectrum usage policies might present an opportunity for some, it is definitely a showstopper for most large cellular carriers because it strongly increases the risk of their investment and is a big problem for outside investors as well. Moreover, government instability, a common problem in many African countries, adds a substantial amount of risk to any investment. Deploying a cellular network is a long-term investment; it requires careful planning of revenues for a period of many years. Clear, easily accessible, regulations - together with a stable government - can play a major role in developing a sustainable network deployment.

The lack of specific regulations about spectrum usage often leads to a second problem - bureaucracy. Timing is vital when deploying a wireless network. Spending months or even years getting approvals from the local regulator is a process that scares many potential investors away. When mixed with a far from glorious track record of government corruption, the end result is not hard to imagine. These problems stifle the development of mid and small size carriers that lack the capital and the political connections to make their business possible and usually limit network reach.

The cost of the wireless infrastructure and potential return on investment (ROI) affects the interest of the carriers, so it plays a key role in the expansion of wireless in Africa. Limiting the cost of the hardware used for the cellular backhaul infrastructure can increase ROI.

Current technology gives carriers an interesting alternative to reduce the cost of the backhaul infrastructure - sub-6.0 GHz backhaul solutions including IP-compatible 2.4, 4.9, and 5.1-5.8 GHz bridges based on OFDM technology. This technology is often used for the synchronization between cellular towers. When the budget is limited - fairly common in Africa - sub 6.0 GHz backhaul systems should be considered. Compared to a traditional microwave backhaul, a sub-6.0 GHz solution can be up to 80 per cent less expensive; its performances is stable regardless of the weather and it is quicker to deploy.

Sub- 6.0 GHz solutions used to have limited throughput. However, with the recent introduction of MIMO technology, sub-6.0 GHz wireless can now provide up to 150 Mbps of sustainable bandwidth, making it viable for the latest high-bandwidth applications running on today's cell phones. Moreover, since sub-6.0 GHz wireless backhaul systems use relatively little power, solar panels can supply the power. This makes sub-6.0 GHz even more suitable for rural deployments than traditional microwave bridges.

If wireless is to be successful in Africa, the number of network subscribers needs to be large enough to justify the initial investment in infrastructure. Given the living conditions of many African people, this might seem a bit of a challenge. However, technology is once again coming to the rescue. Thanks to an effort by the ITU and manufacturers to reduce the cost of mobile phones to levels affordable in developing regions and the rising number of customers worldwide, the price of cell phones has dropped dramatically; they are now affordable by a great many customers in the poorest parts of the continent.

In order for this model to work, however, governments need to reduce taxes on wireless consumer devices and, as well, facilitate the development of local business to service the cellular industry. Given the size of the African market and the record-breaking growth rate in cell phone usage, the demand for cell phone related services and applications will certainly grow and become a substantial source of revenue for many African countries. With good, reliable, low-cost communications, professional training to develop technical skills and its low cost of labour, Africa could also become an attractive option for companies in more developed countries to out-source some of their needs.

Although cell phones are currently the leaders in wireless connectivity, wireless broadband access is also needed to improve lives and facilitate business.

Due to cost and technical limitations, wireless broadband will not become as widespread as cellular phones for many years to come. Although deploying wireless broadband is similar to cellular, access and backhaul are generally more expensive to provide so a considerably higher number of subscribers per square miles is needed to guarantee a return on investment. The limited electrical infrastructure, the low population density and the size of the African continent make broadband connectivity economically feasible only in the most populated areas. In addition, although 3G and 4G smartphones can do a lot with wireless broadband, many broadband applications really require a laptop or a desktop - both substantially more expensive devices than smartphones - to be truly effective. The combination of these factors has slowed the expansion of broadband connectivity in Africa. The only viable way to speed up broadband rollout would be an organized and coordinated effort by governments in each country to allocate funds to subsidise broadband in economically marginal regions. That said, it seems that cell phone networks will lead the wireless revolution in Africa. ●

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Is OSS the key to recovery?

by Tony Kalcina, Chief Product Officer, Clarity International Ltd

Given Africa's low ARPUs, competition and the need to build out both their services and infrastructures, operators count upon lean operations and innovative services to survive. Operators' ability innovate, cut costs, optimise network utilisation, rollout new services, and target customer needs depends on their Operational Support Systems (*OSS*) and the data analyses they provide. Best of breed OSS solutions, with modules from a variety of vendors are often unwieldy and inefficient. Unified OSS answers operators' next generation network questions better.

Tony Kalcina is the Chief Product Officer of Clarity International Ltd; he has 30 years experience in the global telecoms industry. As Founder of Clarity, Mr Kalcina led the company as its CEO for its first ten years of operations. Previously, he was the founding CEO of a Malaysian IT company delivering BSS and OSS solutions. He also worked as the GM of IT at a newly established Malaysian telecoms company. Mr Kalcina spent ten years at Telstra (OTC) where he started as an R&D Engineer and later held senior roles in Operations, Engineering and IT.

Tony Kalcina has a BE (Electrical Engineering) and BSc (Honours) in Computer Science and Physics from the University of Sydney.

The economic gloom may be slowly lifting, but the telecoms industry remains hard-hit. The struggle with refinancing and technology transformation after the perfect economic storm will continue for several years to come. Yet, operators in emerging markets have proved surprisingly resilient in the current financial crisis, with 96 million new subscribers signing up across Africa in the year to March 2009.

To survive, operators across Africa have learnt to support lean operations. They have leveraged economies of scale, kept up with intense competition and created innovative services to survive. Yet the challenges of low ARPU and the distorted relationship between bandwidth growth and revenue, is creating a competition driven price war that will see significant industry rationalisation.

In the face of these challenges, there are essentially two routes operators can take to improve their financial situation. The first focuses on streamlining efficiency and reducing operational expenditure (*OpEx*) through automation, more effective asset management and better network capacity utilisation.

The second route is customer-centric and concentrates on both attracting and retaining subscribers through the faster rollout of new services, more competitive service level agreements (*SLAs*) and better customer targeting through subscriber data analysis. Effective creation of new demand in markets without effective competition through customer centric value innovation that widen the reach within a market space that is uncontested.

Few operators disagree that these are the routes to greater financial stability, or that their capacity to make such changes is dependent on their Operational Support Systems (*OSS*). Unfortunately, then the discord begins.

The OSS dichotomy

There are currently two basic schools of thought when it comes to OSS. The classic approach is to integrate many different 'best of breed' systems. This proposition does not seem unreasonable, with each layer of the OSS driven by proven, cutting-edge software from multiple vendors, theoretically reducing the risk of a failed deployment.

However, best of breed solutions create a number of additional problems, not least of which is the inherent fragmentation of the OSS environment. In best of breed deployments, information tends to be stored in silos that require constant synchronisation. Indeed, it would not be unusual for an operator to have entirely different platforms managing the network, provisioning services and tracking customer information. Unsurprisingly, operators often face difficulties in integrating these different software units, so that they share data effectively without integrity issues or severe access latencies.

In contrast, 'unified' OSS focuses on simplification. All the elements of a unified OSS are built on one database, a real-time correlation engine and a workflow engine, allowing operational data to be easily consolidated. By cutting through the complexity and simplifying the solution, the operators can quickly understand network and service behaviour and map it to topology to empower the customer with network capability and better manage the customer experience. A centralised workflow spanning end-to-end operational processes can manage everything from network planning to

end-user fault reports. Moreover, a unified OSS can be deployed faster and with lower risks than traditional best of breed solutions, since it avoids integration and data synchronisation costs. Recent industry studies have shown that best of breed integration ends up costing three to seven times more than unified OSS implementation and take three to five times longer.

A growing number of operators are now opting for a 'best-of-suite' approach to OSS, which is essentially a halfway house between disparate best of breed OSS modules and a fully integrated unified OSS. The greater level of product integration allows best-of-suite solutions to be more effective. Yet, while the best-of-suite approach has undeniable advantages over a best of breed approach, a unified OSS supersedes both for exactly the same reasons.

Whichever OSS approach an operator selects will have a dramatic impact upon their ability to manage subscriber data and next generation network (NGN) services.

Divided we fall?

Until recently, simply understanding the bits and bytes of the network was the key focus for operators, but this process bore little or no relation to the customer experience. Nowadays operators are highly focused on understanding the customer experience and meeting the commitments made in the SLA (service level agreement) in order to avoid customer churn.

The OSS has become an invaluable resource of data about the usage of products and services. Unified OSS attempts to take operational network data and turn it into something a business can use. Intelligent analysis of data might allow an operator to, for example, identify customers who are likely to purchase more NGN services and who may churn if not adequately served. This process is complex; the data correlation is separated from the operational systems, since the extensive number crunching needed can cause operational systems to grind to a halt.

If you start with an OSS that stores this data in separate silos, it is a great deal harder to piece together a holistic view of the customer and their experience. As the information is in silos, even if you can access the data you need, data called Bill in one database may be Bob in another. Data needs to be stored in a unified manner, if a correlation is to make sense. Industry analysts like Light Reading agree that there is an urgent need "for the consolidation and common management of product and customer information".

Next generation services

Operators are currently striving to differentiate themselves within an expanding competitive landscape by searching for ways to brand and bundle new services like VoIP, VoD and IPTV. These services hold the key to not only raising subscriber ARPU, but also to attracting new customers and reducing churn. If operators fail to implement NGN services and generate another source of revenue from subscribers, they risk becoming dumb 'pipes' - simple utility providers, with the new overlay players (such as Google, Skype and Apple) taking over customer ownership.

An operator's OSS not only needs to be able to support the rapid deployment of such services, it must also be capable of multiple deployments in a relatively short time-frame. This is essential if an operator is to keep pace with competitors, in an environment where the lack of a single NGN service may cause significant subscriber churn and a rapid decline in new sign-ups.

In many emerging markets, OSS is helping telcos manage technology updates, reach new customers with next generation services, replace creaking infrastructure or leapfrog to next generation networks (*NGN*). Telcos in Africa are deploying no fewer than eight new fibre optic undersea cable projects during the next two to three years. 3G and CDMA2000 are also capturing public interest, but they may be challenged by WiMAX and by technologies such as Power Line Communications (PLC), which continue to exploit niche opportunities. Operators in Africa are evaluating technology, looking for the best fit for their specific challenges and OSS must support this evalution.

Once again, due to their inherently fragmented nature, best of breed OSS solutions often fail to deliver the promise of seamless automation. These systems often require extensive system customisation prior to each deployment. Operators need to deliver new products and services without needing to overhaul their systems for each new offering. The service implementation cycle should take weeks, not months. Yankee Group has agreed that unified OSS solutions are the only way carriers can effectively streamline their service delivery and service management environment.

NGN services are becoming interlinked to a greater extent and require more data sharing for their management. Operators are attempting to deliver unified service via quad-play, but this requires a unified architecture. Integrating voice, data and video traffic onto a single, Internet Protocol (IP) based next generation network lets enterprises achieve a truly converged network that can deliver any call, any piece of data and any image or application, anywhere in real-time.

A converged customer-centric focus is essential, since operators need to manage fulfilment and assurance for many processes. Additionally, advanced services like IPTV are often more expensive so subscribers expect a better customer experience. Any best of breed OSS attempting to deliver these services will be under intense pressure. Moreover, these services must manage much more customer data. Gone are the days when an operator merely had to track phone numbers; now operators must monitor new identifiers, such as email and IP addresses.

Operators should seek a unified service delivery engine that creates and defines new services for all their systems. OSS at the forefront of business development plans puts great pressure on suppliers, developers and integrators to increase the pace of evolution and the type of functionality offered. The principles of NGN, and more specifically IP Multimedia Subsystems (IMS), will help achieve these goals. By breaking down silos and supporting horizontal layers of common intelligence, it is possible to build highly integrated flexible systems while the opening up of IT-oriented gateways; open interfaces make it possible to extract value and introduce new partners into the value chain.

The future of OSS

While unified OSS may not be the right choice for every operator, the tactics it supports are certainly ones that everyone should be pursuing. The pressures placed on OSS to work with unified customer data will only increase over time.

In the long-term, operators need an automated service delivery system that empowers subscribers to serve themselves. They should be able to select a defined group of products and services from an operator, using a unified order management provisioning inventory and activation engine. This information would feed a real-time analytical engine that understands the behaviour of the network and the servers in relation to the customer. This analytical engine would provide fault management, performance management, SLA management and automatically orchestrate changes in the network and activate field staff to ensure that customer SLAs are met.

This kind of next generation customer management will only be possible through unified OSS solutions. ●

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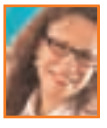
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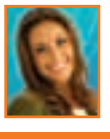
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Blowing your way – wind powered base stations

by Mats Vilander, GM for EMEA, Zephyr Corporation

Wind is an ancient source of power, but today we are harnessing it as a sustainable, low-cost, ecologically friendly substitute for common sources of electrical power for rural mobile radio base stations. The GSMA, estimates a need for nearly 639 thousand off-grid base stations in emerging markets by 2012; they hope to have 118 thousand of these powered with renewable energy. Operators using wind power can save between 50 and 100 per cent of their diesel consumption at remote sites.

Mats Vilander is the Zephyr Corporation's General Manager for the EMEA region where their small wind turbines power the base stations of a number of operators in the Middle East and Africa. Mr Vilander has held executive positions in Ericsson, ZTE, Price Waterhouse and Andersen Global Corporate Finance; he was also Managing Director of the Swedish Venture Capital Association Station Company. During his career Mr Vilander has completed and led over 15 GSM license bids all over the world.

Mats Vilander holds a MBA from UCLA in Finance and a M.Sc. and B.Sc. in Finance and Economics from Stockholm School of Business and Uppsala University.

Wind power has been around for thousands of years and has evolved from powering windmills to grind grain into a reliable, sustainable and cost-effective energy source. Of course, telecoms are not the only industry that is benefiting from the commercialisation of wind power.

A market study by NextGen Research, Global Wind Power Market: The Outlook for Renewable Energy Generation by Wind Turbines and Wind Farms, forecasts that global wind-based electrical generation capacity will reach 318.5 GW (gigawatts) by 2013. NextGen says that spurring this growth will be a boom in China's renewable energy industry; government support in the form of subsidies, feed-in tariffs and renewable portfolio standards, and international goals for renewable energy usage established under accords like the Kyoto Protocol and the EU's Renewables Directive.

The mobile trade organisation, the GSMA, estimates a rollout of nearly 639,000 off-grid base stations in emerging markets by 2012 and is aiming for 118,000 of these to be powered with renewable energy.

The telecoms industry as a whole now accepts that diesel-generators are neither a commercially sustainable nor an environmentally sensible way of powering base stations in off-grid locations. The GSMA is doing all it can to make sure that it meets the 118,000 target through its Green Power for Mobile (GPM) initiative which encourages operators to opt for base stations powered by renewable energy in off-grid areas instead of diesel generators.

"Renewable energy base stations are the best way for mobile operators to extend their networks off-grid while minimising energy costs and their impact on the environment", says David Taverner, Senior Programme Manager for the GSMA's GPM.

There's no lack of sun in the Middle East and Africa, so when we've discussed

"According to Allen Nogee, an analyst at telecoms research firm In-Stat: "While diesel pollution is an environmental issue, what bothers operators the most is the cost of powering and securing the generators. Diesel fuel has to be trucked to remote sites, and theft of diesel fuel and equipment can cost operators millions of dollars."

alternative power in the region in the past we have usually been talking about solar. All the big vendors including Alcatel-Lucent, Ericsson, Huawei and VNL have solar-powered base stations in their portfolios. Still, solar does have its drawbacks. First, it is not suited to areas prone to fog and clouds. Second, the panels require a large space and are relatively easy to steal, so they usually require a surrounding fence and constant on-site security - all of which adds to the cost of deployment.

Wind power is now a real option in the region - although you might not recall the last time you were caught in a gale in the Middle East or Africa! Take a look at this wind chart of Africa and you'll see that many areas can easily support wind turbines.

If you want to check wind speeds in your area then NASA, the US space agency, has global wind maps that show wind speeds at 40 metres above the earth's surface. Combining this with historical weather data makes it quite straightforward to work out if a site might be used for wind power.

It seems as though the industry has been talking about wind power for a long time; the good news is that the technology has improved massively over the last few years. Previously wind turbines weren't really mature enough for deployment on a mass-scale. They were too expensive, required a lot of maintenance and the turbines were large, heavy, difficult to install – and, most importantly, required high wind speeds.

All these problems have been solved with a new generation of small wind turbines which are lightweight, can be installed on existing towers and can generate energy at much lower wind speeds than previously of around 3 metres per second. With the correct installation maintenance can be reduced to zero as today's turbines can be controlled and checked remotely.

Commercial wind turbine deployments

We are now starting to see wind-powered commercial base stations in the Middle East and Africa in both off-grid and on-grid areas, at new sites and retrofitted at existing sites.

In off-grid situations wind power reduce the reliance on diesel generators. Operators who have implemented wind power are saving around 50 per cent of the diesel consumption for existing remote rural sites, sometimes up to 100 per cent of diesel (at repeater sites). Plus, of course, the costs of transporting the diesel and risks need to be factored in.

According to Allen Nogee, an analyst at telecoms research firm In-Stat: "While diesel pollution is an environmental issue, what bothers operators the most is the cost of powering and securing the generators. Diesel fuel has to be trucked to remote sites, and theft of diesel fuel and equipment can cost operators millions of dollars. The solution is for operators to at least partially power remote base stations with wind turbines, solar panels, or both. This is truly a case where it pays to be green."

Some operators, to compliment solar-generated power, also use wind. Solar is used during the day and wind is used day and night to both power the network and charge up batteries.

Cost and ROI of wind power.

The business case for an existing site depends on a number of factors:

- Average wind speed in the area/site
- Height of the tower
- Site load, maximum load during the day
- Site design, the number of TRX, base station type, transmission
- Installed battery capacity
- Wind as a backup, or primary source, solar elements
- Accessibility of site

Obviously costs also depend on the vendor chosen, but as an estimate, the cost of buying and installing two turbines to power a typical rural GSM base station requiring 600 watts on an existing tower with 6-7 m/s of wind is around ZAR 114,000 – 152,000 (approximately US $ 15,380- 20,500).

The In-Stat research company predicts that by 2014, over 230,000 cellular base stations in developing countries will be solar-powered or wind-powered.

Certainly wind power is now ready for commercial deployment. Some governments are intervening to support the use of wind power and encourage the creation of mini wind farms that can be used by a number of operators. The old way of using diesel as the primary energy source or backup results in higher costs over time while wind has the opposite effect. ●

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Data centres and the global information explosion

by Pat O'Brien, Managing Director, ADC GmbH, and President, Global Connectivity Solutions, ADC

To fully develop their potential, Middle East and African nations need access to the same bandwidth-intensive applications and content used in Europe and North America. Internet traffic will quintuple between 2008 and 2013 and this growth demands extremely efficient, 'green', data centres. Developing nations can learn from mistakes made elsewhere in the world, to design infrastructure and select active components, to minimise their capital investment, reduce operating costs, avoid costly downtime, prepare for the future and reduce total cost of ownership.

Pat O'Brien is the Managing Director of ADC GmbH, Germany, the company's headquarters for Europe, the Middle East, and Africa.

Mr O'Brien is also the President of ADC's Global Connectivity Solutions Business Unit. During Mr O'Brien's 17-year career with the company, he has held a variety of positions with increasing responsibility including President and Regional Director of the Americas

Region and President of the Copper and Fiber Connectivity Business Unit. Before joining ADC, Mr O'Brien served at Contel Telephone, now Verizon, in a network planning capacity.

Pat O'Brien holds a Bachelor of Science degree in Electrical Engineering from Iowa State University.

As nations around the world struggle with the global recession, they increasingly rely on information and communications technologies (ICT) to revive and strengthen their economies. In fact, according to the official report of the World Economic Forum's annual meeting in Davos, Switzerland last year, ICT can be "the foundation of a sustainable global economy". The report also states that these technologies will enable "a digital revolution that can uplift parts of the world hitherto not reached by the agricultural and industrial revolutions".

Prior to the onset of the global downturn, many developing nations began to put in place the ICT infrastructures needed to deliver health, education and e-government services to their citizens, as well as to support business organizations, including telecoms service providers. For example, 30 nations in Sub-Saharan Africa have been working with the World Bank over the last decade to increase their ICT usage.

In an on-line discussion forum last July, World Bank economist Christine Zhen-Wei Qiang said that between 2000 and 2007, total telecoms investment in the region was US$20 billion. Africa is, she said, "the fastest-growing region in the global cellular market", with the number of mobile subscribers rising from 2 million in 2000 to over 150 million in 2007.

As these and other countries continue to invest in ICT, via both public- and private-sector initiatives, to help revive and grow their individual economies, they focus on four primary ICT categories:

- access or connectivity, via mobile phones, PCs, laptops and other devices;
- the fixed and wireless networks that tie those access devices together;
- the applications, both business and personal, that traverse those networks; and
- the data centres needed to store, manage and disseminate the information generated by the three preceding categories.

"As nations liberalise their telecommunications markets, more competitors invest in networks to provide services to individuals and businesses. With the growth in networks, in the diversity of applications and of traffic volumes, more data centres will be needed, and they will assume an ever larger and important role."

Data centres and development

As nations liberalise their telecommunications markets, more competitors invest in networks to provide services to individuals and businesses. With the growth in networks, in the diversity of applications and of traffic volumes, more data centres will be needed, and they will assume an ever larger and important role. Consequently, governments and business organizations have an opportunity to build next-generation data centres that tackle, right from the start, many of the issues now plaguing current-generation data centres in other regions of the world.

Clearly individuals in the Middle East and Africa want access to the same applications already enjoyed by many people in Europe and North America. Bandwidth-intensive multimedia content is the name of the global game, fuelled by applications such as IPTV, Internet gaming, file sharing and mobile broadband.

Similarly, national and local business organizations, along with multinational companies investing and operating in the region, increasingly rely on sophisticated, high-speed communications infrastructures. In fact, according to a June 2009 report issued by RCNOS, a market research and information analysis firm based in Noida, India, the ICT market in the Middle East "has the highest growth potential in the world". The region's "booming industrial sector", together with various government initiatives - including telecoms liberalisation and privatisation - are fuelling ICT industry growth. "These governments are heavily investing in the development of Internet infrastructure," the report states, "to compete with the global Internet environment".

Major industry sectors in the Middle East and Africa include banking and finance, construction and real estate, ICT, mining; manufacturing, oil, gas and petrochemicals, pharmaceuticals, tourism, and, of course, government. With their mission-critical information moving across communications infrastructures, these data-driven industries demand the same levels of security, network uptime and business continuity - based on high-performance data centres - which their counterparts around the world demand.
It is no surprise that the Middle East and Africa will contribute an ever-increasing portion of the rising flood of traffic on worldwide networks.

A traffic explosion

The volume of Internet Protocol (IP) traffic flowing across global networks will quintuple between 2008 and 2013, with a compound annual growth rate (CAGR) of 40 per cent, according to the 2009 edition of the annual Cisco Visual Networking Index. At the same time, business IP traffic on the public Internet will grow by 31 per cent, according to the Cisco study, while enterprise IP traffic remaining within the corporate WAN will grow by 36 per cent.

This enormous growth rate will demand extremely efficient data centres. As noted earlier, Western operators today are struggling to upgrade their current-generation data centres to handle these burgeoning demands. By heeding those hard- that learned lessons, operators in other nations have the opportunity to build data centres, right from the start, that:

- are future-proof for at least the next 5-10 years, with the scalable bandwidth, high-speed connections and fast servers/ample storage capacity needed to accommodate the inevitable growth in data volumes;

- operate in an energy-efficient, 'green', manner; and

- integrate comprehensive solutions to address high-density connectivity and management needs, as well as power and cooling systems that support rapid growth and superior network performance.

A holistic view of the data centre

Deploying a new data centre is a huge undertaking, one that presents a great deal of risk. In most cases, there is only one chance to get it right. While the active components often receive the greatest attention, data-centre owners and designers are starting to recognize the importance of the physical environment for that new equipment - the power, cooling and management of the multiple cable connections required to keep the network functioning at peak performance. Historically, equipment manufacturers have helped to define the data-centre environment, playing a significant role in customer decisions regarding construction, layout, and management. That fact gives data-centre operators in the Middle East and Africa an opportunity to avoid another early mistake made by their counterparts in other countries: equipment manufacturers alone should not dictate the data centre design and management. Data centre operators have to maintain a holistic view of the network components, their connectivity and their functional operability.

Such a holistic view helps to ensure uninterrupted service and continuous access, both of which are critical to the daily operation and productivity of data-centric businesses. Depending on the enterprise in question, downtime can cost anywhere from US$50,000 to more than US$6 million per hour, and 70 per cent of network downtime stems from physical-layer problems, specifically cabling faults. Operators in developing countries know they must design their data centre infrastructures for maximum redundancy, reliability and availability.

Design for maximum reliability

As the nations of the Middle East and Africa join other regions of the world in moving closer toward a global, online culture, their need for maximum network reliability will only increase. Satisfying that need demands an optimised data centre, one in which all components work together to ensure 1) reliable access to the data centre's resources, and 2) the flexibility to satisfy unforeseen future requirements. Neglecting any aspect of the design is likely to leave the data centre vulnerable to very costly failure or to early obsolescence.

Key design considerations include:

Power - The lifeblood of the data centre, power must have adequate levels of redundancy to satisfy all access requirements.

Cooling - Cooling equipment and airflow strategies are essential to ensuring data

"Designers must adequately plan space and allocate it flexibly if the data centre is to accommodate both current and future needs. High-density cabling and connectivity solutions require less rack, floor and pathway space, thereby allowing sufficient room for flexible reconfiguration and growth."

centre viability. The correct copper and fibre-based equipment satisfies port density requirements and maximizes airflow through the centre, as well as through individual cabinets.

Space - Designers must adequately plan space and allocate it flexibly if the data centre is to accommodate both current and future needs. High-density cabling and connectivity solutions require less rack, floor and pathway space, thereby allowing sufficient room for flexible reconfiguration and growth.

Cable Management - The ability to handle disaster recovery, upgrades and modifications is essential to optimising any data centre anywhere in the world. It starts with strategic, unified cable management, and leading data centre designers see the cabling system as a permanent and generic resource that can easily accommodate new applications and technologies. Like the electrical system, it is a highly reliable and flexible utility into which the operator can plug any new application.

Designing data centres for tomorrow's needs

Developing nations, by learning from mistakes made in other regions of the world, have a unique opportunity to build the data centre of the future today. By placing as much emphasis on infrastructure design as they do on selecting the right active components, data centre operators can minimise their capital investment, reduce operating costs, avoid costly downtime, prepare for the future and reduce total cost of ownership. In achieving those goals, they can satisfy the growing range of connectivity requirements on the part of both businesses and individuals.

The World Economic Forum's annual report, citing a February 2009 study by McKinsey & Co., noted that raising broadband penetration in emerging markets to current Western European levels "could add US$300 billion to US$420 billion in GDP and create ten million to 14 million new jobs". If, as Leonard Weaverman, dean of the University of Calgary's Haskayne School of Business said, ICT is "the key infrastructure" of the 21st Century, then the data centre surely is a key element of that infrastructure. ●

SIM card marketing - a competitive edge

by Stuart Cochran, Chief Technology Officer, Evolving Systems

Operators often flood the market with cheap or free SIM cards and free credits to capture new customers and win market share. Since mobile phone numbers must be allocated in advance to each SIM, distributing great quantities of SIM cards wastes much of the operator's limited number of mobile telephone numbers as a large percentage are never used. Dynamic SIM Allocation (DSA) resolves this problem; it lets operators defer the allocation of mobile numbers until the new SIM card is first used.

Stuart Cochran, Chief Technology Officer, Evolving Systems; he is responsible for global product management and development and directs innovation and technology strategy. Mr Cochrane joined Evolving Systems as a non-executive vice president of the Activation Market Unit when the company acquired Tertio Telecoms Limited, a UK-based supplier of activation and mediation software to communications service providers. Mr Cochran later assumed responsibility for the company's Mediation Market Unit and was subsequently promoted to chief technology officer. Mr Cochran held a number of posts including Director of Product Strategy and Management and Director of Product Management, Development and Marketing.

Stuart Cochran earned a Masters (MSc) degree in Computing and Computer Modelling of Optoelectronic Devices and Systems and an honours (BSc) degree in theoretical physics from University of Newcastle.

Resisting the worst ravages of the global economic downturn, the mobile communications sector has continued to grow and prosper over recent years. The progress of broadband penetration, smartphones and connected devices, and cloud-based services has further intensified rivalries among communications service providers (CSP). Rather than sitting on lucrative monopolies, most operators today are battling a broad range of competitors head-to-head.

Services, applications and product bundles are all developing rapidly as network operators fight to maintain their existing customer base and to recruit and retain new customers. As a result, operators often seek to differentiate in any way they can, constantly launching new services, handsets, rate plans and other marketing incentives to gain additional subscribers and to lure new business opportunities away from the competition.

However, most operators today have structural or process issues that make these initiatives difficult to achieve. Fortunately, a new approach has emerged, based around a technology known as Dynamic SIM Allocation (DSA), which both enables operators to run new marketing initiatives cost-effectively and remove barriers to their timely implementation.

Scoping the initiatives

Marketing initiatives fall into two main categories: those that support new distribution models and those that promote new devices, services or applications. A novel approach to the former can seek to use customers as an extension of the company's own marketing team or sales force.

Operators are increasingly making SIM-only offers, either online or in magazines and offering free cards to users prepared to sign up to specific product packages. Often, network operators give away multiple prepaid SIM cards to prospects in the expectation they will keep one and pass the remainder on to friends and family. In the future, they might also offer free credit to users every time someone they have introduced to the service uses the card or tops up their account.

Mobile broadband is a prime example of a new service that is growing rapidly - with laptops or netbooks as the devices of choice, using 3G technology embedded either in the device itself or in a USB dongle. Another service, likely to be driven by regulation in the future, is exemplified by eCall, a European Commission project intended to bring rapid assistance to motorists involved in a collision anywhere in the European Union. The project aims to employ a hardware black box installed in vehicles that will wirelessly send airbag deployment and impact sensor information, as well as automatically alerting emergency services and providing them with location details.

The scale of the challenge

In a highly competitive marketplace, the successful rollout of these types of initiatives is critical as operators battle to achieve an edge over their rivals. Unfortunately, their ability to deliver such programmes in a timely and cost-effective manner is often limited. The key issue is that most such schemes call for greatly increased distribution of SIM cards. In fact, the ultimate aim of these initiatives, which are often spearheaded by operator marketing departments, is to flood the market with cheap or free SIM cards in order to try and win market share.

This presents a range of logistical challenges. Current processes for distributing prepaid SIMs involve pre-provisioning of critical resources. Not only must mobile phone numbers (Mobile Station International Subscriber Directory Number - MSISDN) be allocated to each SIM, but multiple entries must also be made in network databases.

The databases involved have finite capacity. This fact in itself often place operators' plans in jeopardy. It is very difficult, almost impossible, for example, to distribute 500,000 SIM cards packaged for a specific marketing campaign or promotion when there is insufficient capacity to provision these in advance in the network.

New initiatives, therefore, can have a significant cost in terms of the capacity they use. They are also likely to require investment in additional systems to accommodate entries for SIM cards that, although distributed to potential customers, are never used. The proportion of give-away cards subsequently topped up is typically small, for example. Operators need to carry out some hard cost benefit calculations here to work out whether the necessary investment makes economic sense. If the expected take-up of such a promotion is 50 per cent, for example, there may be no business case for investing in the required capacity.

There are also issues with the numbers themselves. In many markets, MSISDNs either are in short supply or are, at the very least, closely regulated. Sometimes, operators are even forced to delay new subscriptions because they have literally run out of available phone numbers. The problem stems from the link between unused SIM cards and wasted telephone numbers. Every unused, pre-provisioned SIM card on the network means an unused MSISDN. National regulators and their numbering authorities, in particular, are naturally eager to limit this because unnecessary MSISDN wastage not only adds an administrative burden; it also rapidly depletes stocks of available numbers. As a result, regulators have now started to impose conditions on the network operator community before they release new numbers.

Some regulators have set minimum utilisation rates, with operators forced to report on their record of managing number ranges efficiently before releasing additional ranges. Others have gone one step further and started to charge for numbers.

As a result, allocating new MSISDN ranges is often a prohibitively expensive process for operators. Coupled with this, difficulty or delays in obtaining MSISDN ranges can hold-up or even prevent SIM orders needed to support marketing campaigns from taking place.

Scoping out a new approach

So what is the solution to these apparently intractable problems? What operators need is a fully integrated approach to significantly increasing the volumes of SIM card distributions, without having to allocate these critical resources in advance.

By achieving this, they would not only significantly reduce the cost of conducting such promotional campaigns but they would also allow themselves to be more agile, enabling them to experiment with new ideas and concepts and giving themselves a better chance of increasing pick-up and growing the customer base.

The challenge they face is that with current technology a SIM that is not pre-provisioned cannot connect to the network; anyone trying to use such a SIM card would get an error message on their device. The new Dynamic SIM Allocation (DSA) approach resolves this issue by allowing operators to defer the allocation of both network database entries and MSISDNs until the new SIM card is first used.

The key to DSA lies in innovative new technology, capable of building a key link in the network by supporting interaction between the new SIM card and the systems provisioning the network resources, even though the SIM card itself remains unable to connect to the network in the conventional sense.

With the help of DSA, the operator can even determine the type of device in use or interact directly with the end-user via that device to ensure that the appropriate set of services, options and personalisations are applied.

With the emergence of DSA, and its ability to defer the allocation of network resources until the time of first use, operators can now deliver the cost-effective and timely marketing campaigns they need to stay ahead of growing competition and drive significant revenue growth. Their search for a compelling solution to their ongoing marketing challenges may finally be at an end. ●

A holistic view of network security

by William Tickner, CEO of Omnix Software

When the subject is network security, most of us think of hackers, phishers, crackers, firewalls, anti-virus software and the like. In remote regions, network security means keeping criminals from stealing diesel generators, radio equipment and copper cabling. Managers of these networks worry about the cost of physical security for their networks. The extra cost of 'green' network solutions - of solar and wind powered energy - is hard to justify since it increases the risk of equipment theft and raises insurance costs.

William Tickner is CEO of Omnix Software; he has over 20 years experience in building specialist technology businesses including communications operators' billing, customer care, operational support and user services needs. Before joining Omnix, Mr Tickner was Vice-President, EMEA of Clarity, a provider of telco operational support systems (OSS). Mr Tickner previously served as a Vice-President at Convergys Corporation where he led business development teams in Europe and Asia Pacific. Prior to Convergys, Mr Tickner led EMEA business development for Geneva Technology. Geneva was later acquired by Convergys. Mr Tickner also has held senior commercial management roles at two technology start-ups. Mr Tickner currently also acts as a non-executive director at three Powerlan Group companies providing strategic and commercial support to the management teams.

William Tickner holds an Executive MBA from Henley Business School, UK.

With mobile communications now an integral part of life the world over, mobile operators have had to adapt to the safety and security challenges of many different markets. While the top priority for operators has always been the safety of workers, customers and the general public, they also face on-going challenges to the security of their equipment and business structures.

In this chilly economic climate, many operators have to cut costs; they are increasingly focussing on avoiding expensive pitfalls associated with network safety and security. Careful preparation for these problems through tying the network together with ongoing network planning and monitoring, holds the key to reducing lost revenue and unnecessarily high operational expenditure (*OPEX*).

Securing the network

While theft and vandalism are challenges operators face in every market, their specific targets can vary wildly. In many African countries the unreliability of the national electricity grid has meant that operators often rely on diesel generators to provide the primary power for base stations and other communications sites. However, the unstable power supply has also raised the value of power generating equipment, increasing the incidence of generator, diesel and transformer theft.

One operator in Nigeria is currently replacing 5-10 generators a month due to theft. In addition, Mr. Ahmad Farroukh, CEO of MTN Nigeria, has commented that, "all MTN sites are manned by private security agencies, but thefts occur because thieves tend to be adequately armed with ammunition, guns [and] self-loading trucks".[1]

Some of the popular 'green' solutions offered by vendors can even add to the risk of theft of power supply equipment. While the marketing and ethical arguments for providing green solutions are convincing, the additional expense of solar and wind powered sources is hard to justify since it increases the likelihood of the equipment's theft.

Vandalism is also a growing problem in many African communities. Local residents are often unhappy with telecoms operators for paying 'insufficient' site rental, for generating noise pollution or for accidental diesel spillages. Local communities can even become angry that mobile operators do not provide services outside of their remit, such as for road construction and community power supplies.

Operators have experienced intimidation of their site maintenance contractors and, as well, the severing of optic fibre cables and the destruction of generators.[2] Nevertheless, many African populations now regard their mobile phones as indispensable - indeed telecoms is often their only reliably functioning utility -

[1] *Source: AllAfrica.com, 2008 - http://allafrica.com/stories/200810130352.html*
[2] *Source: NigerianVillageSquare.com, 2008 - http://www.nigeriavillagesquare.com/articles/nigerian-ict-with-emmanuel-okoegwale/nigeria-mobile-operators-and-their-host-communi.html*

and react badly to any drop in the quality of service (*QoS*). It is imperative then that operators not only respond quickly to site outages, but also ensure they have deployed adequate security to protect both their personnel and equipment, keeping OPEX as low as possible while guaranteeing QoS, thereby attracting new subscribers and decreasing churn.

Other common targets of theft are the large and expensive copper co-axial feeder cable and the components running up the towers to connect the base station antennas. The soaring price of copper has made telecoms infrastructure an ideal target for thieves. Although the price of copper fell during the last few months of 2008 (from over US$3 a pound to today's price of around US$2), it remains an attractive target for thieves. South Africa spends 500 million Rand (US $67 million) on replacing stolen cables every year, while the cost to firms whose power has been cut or phone lines stolen is perhaps ten times that.[3]

For mobile operators, as previously mentioned, the expensive co-axial copper feeder cable, acting as a waveguide, connecting either the mobile operator's RF base station or microwave transmission antennas are often targeted by thieves. Even optic fibre cable links are damaged when thieves mistake it for standard copper cabling.

In the past, the ability to accurately monitor and report on assets has largely been a question of honesty on the part of the operators' network departments. Now, this is a matter of board concern that requires integration into financial management processes to guarantee accuracy and confidence. If assets are undeclared or their whereabouts are unknown, penalties can also be enforced for breaches of legislation. It is imperative that network infrastructure is monitored to provide a real-time and realistic view of assets in order to comply with legislation. Continuous external audit programmes can ensure that network assets are in place and that fraudulent transactions have not occurred.

Site planning is essential to ensure that communications sites have all the appropriate security precautions, from site fencing to security guards, they require. These types of thefts can create power outages, phone outages and equipment failures. Very often the damage is sufficient to shut down multiple base stations, repeaters or other communications sites, and customers might even be in real danger and, for example, be unable to call emergency services.

In developed markets, base station and other communications sites are subject to a rigorous clearance procedure that addresses issues like worker safety, radio interference, aviation safety and the need to minimise the number of sites, towers and other constructions. During the planning of new sites, operators must consider elements like anti-climbing defences on communications towers, warning beacons on masts near flight paths, safety railings around rooftop base stations and compliance with non-ionising radiation legislation to take public safety fears into account.

Tower sites in emerging markets often face similar legislation, but more lax enforcement. It is not uncommon for mobile towers in developing countries to be over-loaded with equipment, have non-functioning aircraft warning lights and other serious breaches of safety norms. During the planning and construction of sites, operators often fail to carry out quality assurance audits, checking elements like the site's foundation to guarantee sufficient wind tolerance and structural integrity. This is essential, given that communications towers can consist of more than ten tons of galvanized iron and many hundreds of components that must be bolted together correctly with the right torque for the tower to remain erect.

Solutions

Operators who are proactive about maintaining their assets are the first to benefit from knowing when damaged or stolen technology must be replaced, what it should be replaced with, whether or not the equipment is under warranty and if the required replacement component is in a warehouse somewhere waiting to be deployed. Making sure that existing equipment remains functional and that new equipment is brought 'on-air' as soon as possible also ensures that assets are generating revenue rather than remaining idle. This keeps inventory levels down and leverages real return from fixed assets.

Mobile operators must also track and manage high-value assets throughout their networks to ensure they can account for all their base-station and transmission equipment widely dispersed among hundreds, or even thousands of sites. Without such tracking and management, equipment can be stolen or damaged, adding unnecessary costs to the operator and eating into vital revenues. In addition, without an accurate picture of their infrastructure assets data including for example equipment parameter detail, operators must dispatch a survey team to physically review each site, causing delays and inefficiencies for even minor upgrades or site alterations.

The last line of defence for mobile operators is the insurance claim. Network auditing is essential if operators are to provide an accurate view of their assets and secure insurance policies for the best value. Insurance can protect the operator against losses resulting from vandalism or the theft of equipment.

When insurance companies don't have precise per site equipment asset data for evaluation, insurance brokers underwriting network assets often overestimate a quotation to ensure it is buffered, as a precaution, to cover the value of the site should a claim be made. The operator, though, has to pay an ongoing unnecessary price for this precautionary overvaluation. On the other hand, if the operator can provide a very precise, computerised record of all its assets, including relevant depreciation, then it will stand in a good position to negotiate a substantial discount from the insurance provider, which might typically represent 10-20 per cent of the total site insurance premium.

While no mobile operator can entirely protect themselves against theft, vandalism or regulatory and legal penalties, a cohesive, holistic approach to network management is essential. If factors like theft and vandalism are taken into account during the planning stage of a network rollout, asset-tracking systems can ensure that masts deployed in high-risk areas have the maximum possible protection. These systems can also ensure that all mast sites receive the safety equipment and certification they require, as well as reminding operators to keep these clearances up to date.

In confronting these challenges, project planning, asset management and maintenance tracking are often overlooked weapons in an operator's arsenal - yet they may also be their most powerful ones.

[3] *Source: Telegraph.co.uk, 2007 - http://www.telegraph.co.uk/news/worldnews/1555530/Power-line-theft-leaves-South-Africa-in-dark.html*

DTT: Driving convergence in Africa

by Jason Lobel, Regional Sales Director for Africa, NDS

In the last decade, more than 300 million Africans made their first phone call or surfed the Internet for the first time. Telecom backbones, especially under-sea fibre-optic cable systems, are starting to link Africa to Africa and to the world. Internet connectivity lags due to the price of PCs and limited broadband connectivity. Set-top boxes that convert analogue TVs to receive digital television, though, are inexpensive and can - especially with government subsidies - provide Africa's people with cost-effective Internet access.

Jason Lobel is NDS Limited's Regional Sales Director for Africa; he has extensive experience with conditional access, middle-ware and DVR solutions. Jason Lobel previously worked for Ericsson in various sales and business development positions, and has worked with many of Africa's major networks including MTN, Vodacom, Celtel/Zain, Telkom and Econet. Mr Lobel spent his early career working as management consultant for Andersen as well as KPMG where he specialized in market development and corporate strategy. Lobel has assisted various multi-national blue-chip companies in both the telecoms and non-telecoms space. These include FirstRand, Sasol, Cinergy Corp, Kumba Resources (now part of Anglo Amercian) KWV Distell and Sanlam.

Jason Lobel holds a BCOM Hons, Economics from Rhodes University.

For more than a decade, convergence has been featured in just about every broadcasting, telecommunications and high tech conference. In the developed world, convergence is already underway, but what about developing regions such as Africa?

When most non-Africans think of Africa, they normally associate the continent with poverty, underdeveloped economies and dilapidated infrastructures. Over 80 per cent of the world's Highly Indebted Poor Countries (*HIPCs*) are located in Africa and the majority of Africans do not have access to the Internet, let alone a broadband connection.

Africa's telecom boom

The reality is that Africa has the most abundant mineral resources in the world. Over the past decade, many African governments have liberalised both their political and economic policies. As a result, Africa's abundant mineral wealth has started to pay dividends that are now trickling back to its citizens in the form of proceeds of Foreign Direct Investment (*FDI*). FDI in Africa has increased fivefold over the past 12 years. A significant part of these capital injections has been for telecommunications infrastructure, so, as a result, more than 300 million Africans made their first phone call or surfed the Internet for the first time during this period.

This demand for telecommunications has led many of the world's largest telecommunications providers, such as Vodafone, Bharti, MTN, Tata and France Telecom, to make extensive investments and acquisitions across the continent. Initially, the main focus was on the rapid deployment of mobile networks, but more recently the investment focus has started to shift from 'last mile' connectivity towards backbone services.

The most significant investment today is in under-sea fibre-optic cable systems that will link Africa to the rest of the world. Over the next three years, no fewer than six undersea cable systems will be laid along the coast of the continent. The first of these new systems to go live was Seacom in July 2009, with a capacity of nearly 1.3 terabits per second. The benefits were almost immediate, leading to a significant decrease in wholesale backbone prices. This in turn has sparked a price war in both the wholesale and retail Internet access markets that will mean more affordable services for end users.

Mass-market connectivity

One of the biggest barriers to mass-market Internet adoption has been the price of PCs. While PC prices have fallen dramatically over the past ten years, basic entry level PCs and net books still cost $400-$800 - the equivalent of six months' salary for four out of five people living in Sub-Saharan Africa, who survive on less than US$2.50 per person per day.

By contrast, the price of a digital set-top box (*STB*) has continued to decline to a level that is now affordable for a significant number of African households, making it, rather than

the PC, the catalyst for a converged future. For example, the price of an MPEG-4 DTT STB today is around US$50 and prices continue to fall.

The STB

Almost all countries across the world have initiated programmes to migrate their broadcasting services from analogue to digital. While many European, Asian and Northern American countries have been planning their digital migration for the past decade, African governments have only now begun in earnest to plan their switchover to digital broadcasting. The International Telecoms Union (*ITU*) has set a deadline of July 2015. With the deadline fast approaching, a number of African policy makers have been spurred into action.

Africa can, of course, learn from the lessons of DTT (*Digital Terrestrial Television*) implementations elsewhere and avoid the MPEG-2 legacy issue faced by Europe. MPEG-4 a is more robust and efficient format that not only caters for new services such as HD (high definition) but also features a more efficient compression technology that allows better bandwidth utilisation.

The fact that many African countries have very old and small footprints of analogue broadcasting infrastructure means that there is a very small legacy base to consider when introducing digital transmission in these markets. The only major legacy base that regulators will need to consider is the installed base of analogue television sets. Ultimately, this issue will be directly addressed by the STB. The bottom line is that African DTT will be cheaper for both broadcasters to deploy and end-users to acquire.

DTT migration in Africa

In a developed market, many consumers can afford to go out and buy a new television set with an integrated digital tuner capable of receiving DTT transmissions. In Africa, few households can afford a new digital television, but this is rather a blessing than a challenge. With a digital broadcast infrastructure up and running in many parts of the world, television manufactures have begun to dump large volumes of analogue television sets into late digital adoption markets such as Africa. This means that now, more than ever, many African households can afford to buy a television.

The savings are significant as it is far cheaper to purchase an analogue television together with a DTT STB (which converts a digital transmission back to analogue), than it is to buy a digital television. The knock-on effect is also favourable, as these are nations well versed in redistributing their wares to others in the community. This means that the penetration of television usage across Africa will continue to grow exponentially.

Another contributing factor to the timing of Africa's digital migration is the maturity of the continent's mobile networks. Many mobile network operators had to build their own backbone networks to support their operations and, as mobile subscriber additions begin to fall off, are now investigating alternative revenue streams, the most notable of which is selling excess capacity on the backbone networks to wholesale users. These backbones have sufficient capacity to distribute television signal to the DTT transmitters and offer a much more affordable solution for DTT providers than building their own.

STB subsidies

With a little over five years to go until the shutdown of analogue broadcasting signal worldwide, almost no countries in Africa have deployed commercial digital broadcasting networks with full national coverage. This means that most African countries will have dual illumination periods of between one and three years.

If African governments are serious about meeting the 2015 deadline - which they are as signatories of the ITU - then attractive incentives would have to be introduced to coax users into making the switch. Not surprisingly, a number of countries are looking at zero rating sales taxes and import duties on STBs to lower end-user prices. Some markets, such as Kenya and South Africa, have taken this a step further by proposing to subsidise STBs.

However subsidies are not only about driving rapid uptake. Even at US$50, the STB will be a significant purchase for most households in Africa, with approximately 30-40 per cent not being able to afford a STB at all.

More than a digital TV tuner

Yet STBs are now so much more than a zapper box, and even entry-level DTT STBs destined for Africa could soon be Internet-capable as USB ports become a standard feature. Broadcasters, STB manufactures and specialist STB software developers have made significant investments into the field of middleware, user interfaces and interactive applications. Today, STBs can run a myriad of applications from Video on Demand (VoD) to gaming, email and Web browsing.

The Internet and STBs

In terms of applications to run on connected STBs, the possibilities are endless. eGoverment services are obvious candidates for the Internet-connected DTT STB. Most economists agree that the key to stimulating long-term economic growth is to promote the development of small and medium enterprises. One example could be using a connected STB to submit a registration for a new company. According to doingbusiness.org, an initiative by the International Finance Corporation (IFC), Africa is the most expensive part of the world in which to set up a new company; it costs 20 times more than in Europe. Moving such procedures online, and accessible by a connected STB, could make a significant impact to economic development on the continent. Similar claims could be made for other government services as such education and revenue services.

STBs can access much more than just eGovernment services. One can also view social media such as Twitter, Facebook and YouTube via a STB. Then too, with Adobe Flash embedded into STB middleware solutions, STBs could run virtually any Internet application. These Web 2.0 applications could further be enhanced by utilising broadcaster programming information metadata. For instance, Facebook users could share which programmes they are watching with their friends and make recommendations about the programme over Twitter.

The market conditions are only now starting to come together to lay the foundation for a successful introduction of DTT in Africa. There is a strong case for sharing infrastructure with telecom networks as this will not only provide a backbone to distribute DTT signals nationally, but can also be used as a return path to provide Internet connectivity to the box.

The STB is poised to become Africa's most prolific digital device after the mobile phone, particularly with the help of government subsidies. Connecting these STBs will unlock a plethora of new services to Africa's masses that will not only promote sustainable development, but will also connect a vast number of Africans to the world.

Interestingly enough, in Africa it is convergence that will be driving connectivity rather than connectivity driving convergence, and the chosen platform for connecting Africa's masses in the home will be the Internet-connected STB. ●

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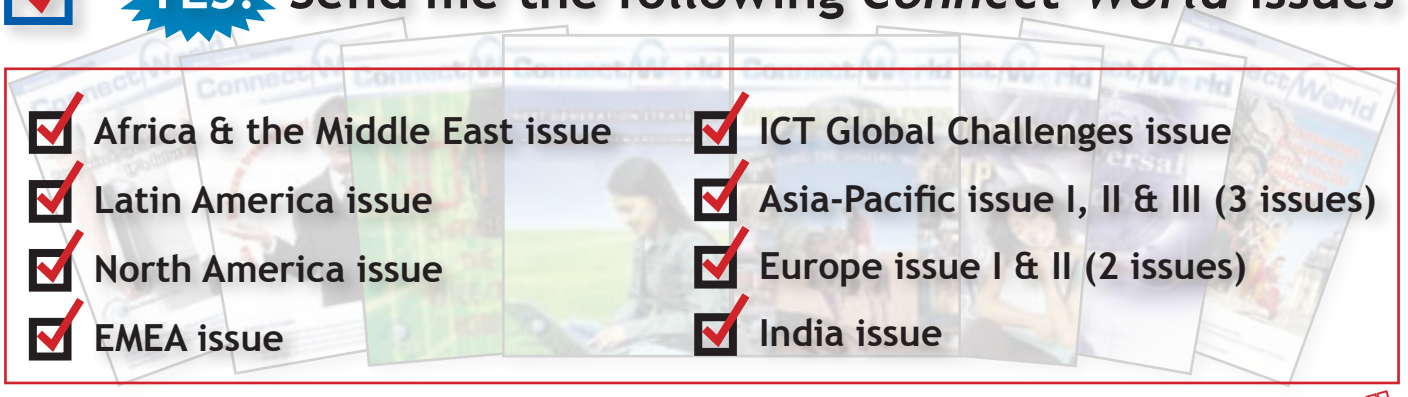

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