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COMMUNICATIONS

For wireless comms professionals in the Southern Asian region

- **Delivering value-added services in a pre-paid market**
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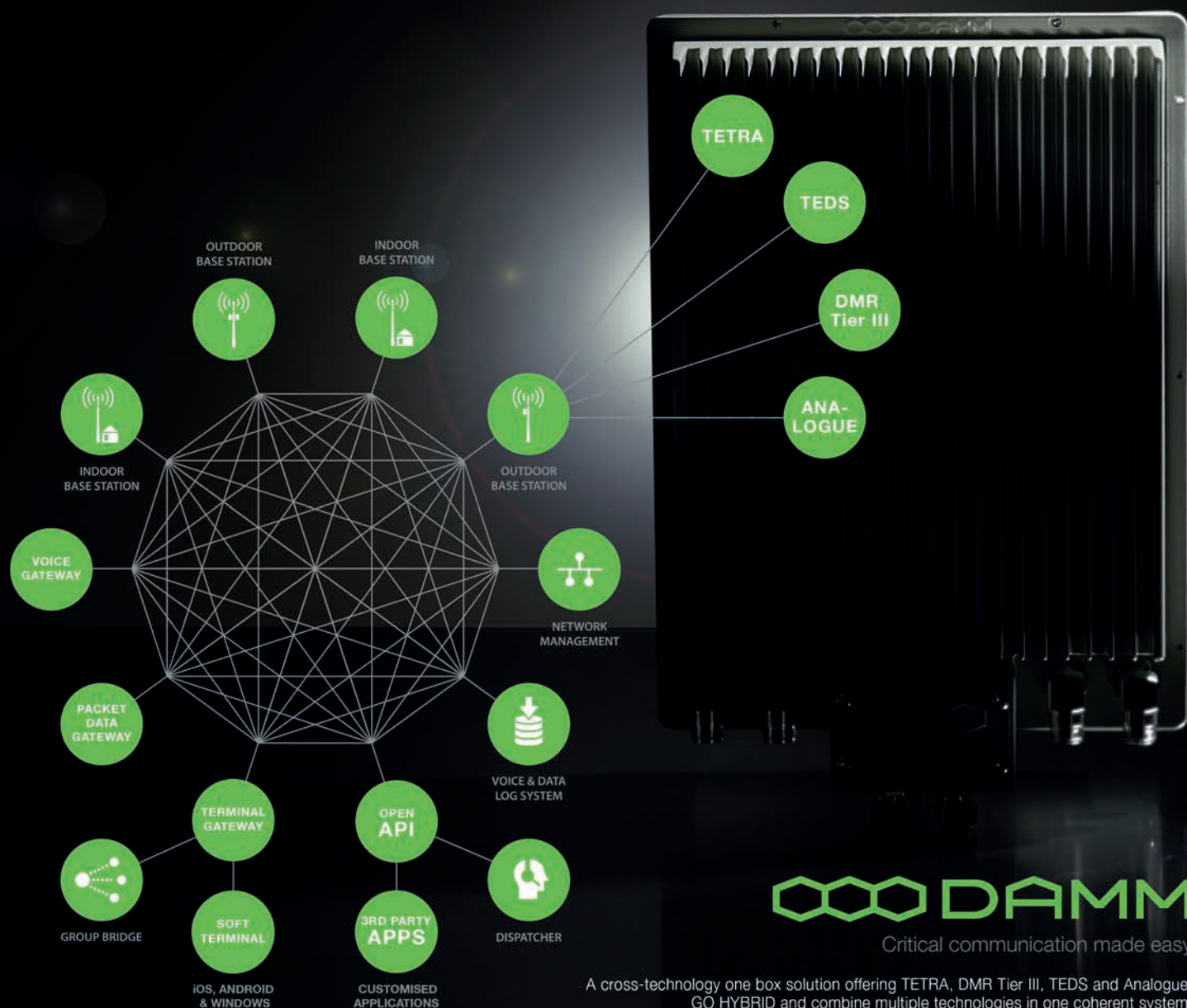
TETRA

TEDS

DMR Tier III

ANA-LOGUE

OUTDOOR BASE STATION

INDOOR BASE STATION

INDOOR BASE STATION

OUTDOOR BASE STATION

NETWORK MANAGEMENT

VOICE GATEWAY

PACKET DATA GATEWAY

VOICE & DATA LOG SYSTEM

TERMINAL GATEWAY

OPEN API

GROUP BRIDGE

SOFT TERMINAL

3RD PARTY APPS

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The BS422 HYBRID Outdoor Base Station is a cross-technology one-box solution offering TETRA, DMR Tier III, TEDS and Analogue, and allowing hybrid usage in one coherent system. BS422 offers improved syncronisation, improved redundancy, high power and extended frequency range.

The BS421 TETRA Outdoor Base Station: With its IP65 protection and compact design the BS421 Outdoor Base Station is ideal for installation in harsh environments and for direct mounting on antenna masts, buildings and towers, reducing feeder loss and installation costs considerably.

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· Dispatcher
· Voice & data Log System
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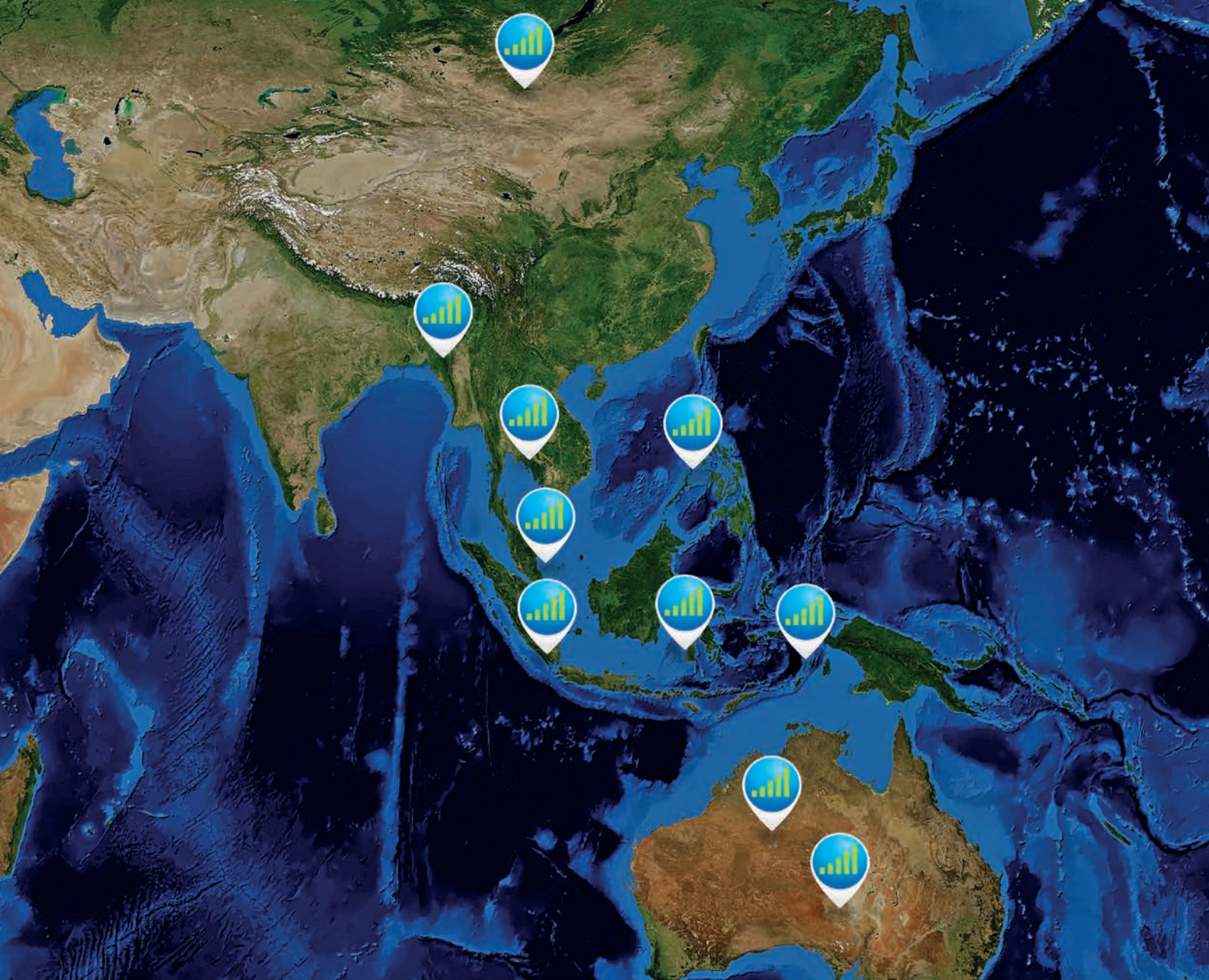Fax: +44 (0) 1932 886539
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Myanmar's first Tier IV data centre supports hybrid broadband network

Flexenclosure will build Myanmar's first Tier IV data centre for Burst Networks. Headquartered in Singapore, Burst will deliver enterprise broadband services from its teleport in Myanmar. As well as a data centre, the site will also include a NOC connecting a hybrid network of local fibre and satellite infrastructure that supports C-, Ku- and Ka-band frequencies.

Under a multi-million dollar contract, the operator will use *eCentre*, Flexenclosure's customised pre-fabricated modular data centre. It will be built in the Thilawa Special Economic Zone on the outskirts of Yangon, and as a Tier IV facility it will be certified to host mission-critical systems. The classification also means all HVAC systems are

The modular, pre-fabricated data centre will be built at Flexenclosure's factory in Sweden ready for deployment in Myanmar in early 2016.

independently dual-powered for redundancy, and their fully fault-tolerant site infrastructure gives an availability of 99.995 per cent.

The facility will comprise a 220m^2 data centre and a 110m^2 energy centre. It will support a total of 72 racks with two secure pods, two secure cages,

two 'meet me' rooms, and 40 racks in a common data centre area. Power is designed for a total IT load of 150kW, with 2N+1 power redundancy.

Flexenclosure will build the *eCentre* at its clean room factory in Vara, Sweden, with deployment in Myanmar expected in early 2016.

In a separate deal, Irrawaddy Green Towers (IGT) will install more of Flexenclosure's *eSite* hybrid power solution in and around major cities in Myanmar.

IGT is the country's largest independent towerco and Telenor has been its anchor tenant since it began operations there in 2014. IGT has already installed 225 *eSites* across the country and will now use 300 more.

While Telenor has been IGT's anchor tenant since it started operations in Myanmar in 2014, the firm is now optimising its towers to host multiple mobile operators. This is made possible by the new *eSites* which will also be configured to supply power for Ooredoo and MPT when they are implemented later this year. *(Also see News, Q1 2014.)*

Advanced LTE with the help of ZTE

Smartfren, Indonesia's first carrier to operate both hybrid LTE and CDMA networks, has gone live with new LTE-A services covering 22 cities.

Following the government allowing the use of 1800MHz spectrum for 4G earlier this year, Indonesia's five largest operators – Telkomsel, Indosat, XL Axiata, Hutchison's 3 and Smartfren – have been racing to roll out LTE.

Smartfren's LTE-A network was switched on in August in Jakarta. This followed a successful trial period and the launch of its *Andromax* range of 4G smartphones and portable Wi-Fi devices in June.

The operator has deployed ZTE's evolved node B (eNB), *Cloud Radio* network coordination system, and evolved high-rate packet data to deliver what's claimed to be the "best user experience possible".

The network supports both the FDD-LTE and TDD-LTE standards. Smartfren CTO Christian Daigneault says: "We leverage both TDD and FDD technologies to get best of both worlds: high capacity and throughput on TDD at 2300MHz, and large coverage with FDD at 850MHz."

In 2011, Smartfren became the world's first mobile operator to launch CDMA EV-DO Rev.B

Smartfren has opened new galleries, such as this one in Jakarta, to showcase its 4G products and services.

technology. By using products such as its *Universal Subscriber Profile Platform*, ZTE says the operator's core nodes in both its CDMA and LTE networks are "highly integrated" to provide a unified user database, policy control and charging policies.

The company claims this allows LTE to be deployed rapidly, facilitating maintenance and operation of 3G and 4G networks in the future, and lowering operational costs.

■ In a separate deal, ZTE is helping South East Asia Telecom (SEATEL) to build a national FDD-LTE network in Cambodia. It will exclusively provide end-to-end 4G solutions and products, including the

EPC, microwave, power, IP RAN, bearer and its online charging system.

ZTE will also provide its *Cloud Radio* and *Cloud UniCore* to help SEATEL realise flexible networking, resources sharing, and intelligent O&M functions. The vendor reckons a *Cloud UniCore*-based 4G EPC improves resource utilisation ratio to 30 per cent through self-adaptive scheduling. Additionally, ZTE says intelligent overload control helps to protect effectively against network attacks.

SEATEL's nationwide LTE infrastructure in Cambodia is a key step for its international expansion, as it is also planning to deploy LTE in other countries in the region.

Teledensity passes 100 per cent

The Nepal Telecommunications Authority (NTA) says teledensity in the country is now at 101.4 per cent with mobile subscribers using multiple SIMs.

In 2011, Nepal's population stood at 26.49m, and according to the NTA's latest management information systems report mobile penetration is now at 90.4 per cent. There are 24m mobile users, two million who use satphones or have limited mobile connectivity, as well as around 840,000 fixed line users.

The authority reckons only 75 per cent of subscribers are active, but plans to look into the market to determine the exact number.

Nepal's market is dominated by state-owned Nepal Telecom which has around 12.5 million fixed and mobile subscribers, and Ncell which has roughly 12.3 million mobile users. Data penetration has also increased in the country to hit 41.3 per cent by mid-April. Most mobile internet customers use GPRS, EDGE or W-CDMA networks.

Reliance aims to boost IoT in India

Reliance Group has its sights set on developing the Internet of Things (IoT) in India as part of two new partnerships.

As the power distribution arm of Reliance Infrastructure, Reliance Energy annually distributes more than seven billion units of electricity to its 2.9 million consumers spread across 400km² in Mumbai and its surrounding areas.

It is working with Swedish vendor Connode on building a smart city network that will connect energy meters, streetlights and distribution automation equipment using Intel's IOT *Gateways* and the *Connode 4* IPv6-based wireless mesh system.

Intel's technology is designed to support distributed intelligence, and can handle a large number of connected nodes that use IPv6 mesh as well as other IoT protocols.

It's claimed Connode's IPv6 mesh technology together with Intel *IOT Gateways* and embedded security solutions will provide a highly flexible and cost-effective total communications solution that will be easy to deploy and efficient to operate.

"It will provide a unified, horizontal communications infrastructure for multiple applications, which can grow in functionality as the market develops," says Connode CEO Björn Lindblom.

Reliance's smart city network in Mumbai will use Intel IoT gateways that support a large number of connected nodes.

Under a second partnership, Reliance Communications (RCOM) will use Jasper's *Control Center*

platform in conjunction with its 11 data centres and global *Cloud Exchange (Cloud X)* service.

RCOM recently launched five *Cloud X* nodes in Delhi, Mumbai, Chennai, Bangalore and Hyderabad. By using Jasper's *Control Center*, it aims to give more than 39,000 enterprise customers the ability to quickly and cost-effectively launch IoT services.

Reliance Group companies will be the anchor clients on the IoT platform, but discussions are also under way with several organisations and state governments across India for further deployments.

YahClick launches first Ka-band service in Pakistan

Yahsat has officially launched its *YahClick* satellite broadband service in Pakistan. The UAE-based operator says consumers anywhere in the country, including places where terrestrial infrastructure is currently not yet available, will now be able to instantly connect to broadband via a small satellite dish and modem, without the "frustration" of congested networks.

YahClick uses Ka-band connectivity via *Yahsat's Y1A* satellite that was launched in 2011 and *Y1B* which went up a year later. The service is already being used to link more than 154 ATMs for many of Pakistan's leading banks serving its most isolated locations, as well as for connecting 1,600 students and supporting election offices in remote areas.

Yahsat CEO Masood M. Sharif Mahmood claims "exceptional" demand has led to *YahClick's* rapid growth to become the largest satellite internet provider in Africa and a dominant player in the Afghan market.

He adds: "Our consumer launch in Pakistan is a significant milestone for *YahClick*. Regulatory approval by the Pakistani authorities for consumer use paves the way for us to continue our global growth strategy in this promising market."

Clicksat has now partnered with Yahsat and will distribute the service in the country. It will also offer local operational and customer care.

Part of REDtone Pakistan, Clicksat has offices in Karachi, Lahore, Islamabad and Multan, and claims it is able to serve any part of the country.

Cloud service enables data backup in Indonesia

Elasitas has launched a new service to enable mobile subscribers in Indonesia to backup their personal data to a secure, cloud-based platform.

As a mobile technology specialist, Elasitas says it works with all the leading operators in Indonesia. Its new solution, which it has branded as *BackApp,* uses the *LinqUs Smart Backup* platform offered in SaaS mode by Gemalto Allynis Services.

The firm reckons its service will enable a potential 40 million mobile subscribers in Indonesia to backup, synchronise, and restore personal data stored on their handsets. It says *BackApp*, is completely handset-agnostic, allowing end-users to securely transfer data across different devices and platforms. The app can be downloaded and a

variety of service plans are available to suit individual storage needs.

Elasitas adds that the solution is scalable and reliable, and helps operator to expand their footprint to the "broadest" base of subscribers.

Michael Au, the company's South Asia and Japan president, says: "In emerging markets like Indonesia where smartphone penetration is exploding, small businesses in particular rely on the integrity of their phonebook contacts, and we offer them a simple way to protect their corporate data."

According to a survey it conducted earlier this year, Gemalto reckons 80 per cent of mobile subscribers would use cloud-based data backup services if offered by their operators.

Secure and reliable comms for Indonesian mines

Indonesia's second-largest coal mining contractor, BUMA, will use DAMM´s TETRA solutions for critical radio communication in the open pit mine of Kideco.

According to DAMM, the single most important challenge for BUMA was to secure reliable and failsafe communication at anytime. As a result, it provided a dual carrier multi node outdoor *TetraFlex* system with built-in applications such as dispatcher, voice and application

gateways. It also included the *Group Bridge* application to bridge TETRA to existing analogue networks already operating in Indonesian mines.

The company says *TetraFlex* offers integrated cross-platform technology solutions for critical communication. Optimised for direct installation in harsh environments, the system's outdoor base station features an IP65 enclosure and offers full redundancy.

DAMM says *TetraFlex's* 100 per cent IP-based distributed architecture

also gives full flexibility in site and capacity expansions, even during operation.

The Danish-based vendor adds that its system was a "clear choice" for BUMA as it offers easy integration to third-party applications such as AVL.

To fulfil the need for non-critical voice and data communication, the company says it also provided its *TetraFlex Android Client* enabling TETRA on soft terminals, in this case via Wi-Fi.

DAMM's TetraFlex outdoor base station is optimised for direct installation in harsh environments and has an IP65 enclosure.

Digitata, Leader in Dynamic Tariffing, Acquires Controlling Stake in Rorotika Technologies

Digitata Limited is pleased to announce that they have recently acquired a controlling stake in long-time partner company, Rorotika Technologies (Pty) Ltd. Since its inception in 2008, Digitata Limited has worked hand-in-hand with our partner, Rorotika Technologies, who provides development and support services for Digitata's Dynamic Tariffing™ solution, the first and leading dynamic tariffing™ solution for voice, SMS and data.

Regarding the acquisition of Rorotika Technologies, **Mr Ted Bartlett**, CEO of Digitata Limited said:

"Following years of successful collaboration, the joining of Digitata and Rorotika was a logical next step in the relationship between the two companies, and we look forward to bringing the services and products provided by Rorotika into the Digitata fold and under the Digitata brand. The joining of the two companies will ensure a closer working relationship and will allow us to improve our service to our customers, to expand our product offering and to streamline our operations."

Mr Tinus Neethling, CEO of Rorotika Technologies Limited said:

"Rorotika is pleased to be joining forces with long-time partner, Digitata Limited. The two companies have worked effectively side by side for so long that the success of this venture is already assured, and we look forward to moving ahead under the Digitata banner".

The acquisition of Rorotika will ensure improved efficiencies in our world-leading Dynamic Tariffing™ product and service offering. For over 7 years Dynamic Tariffing™ has provided mobile network operators with a unique platform to attract new customers, retain the existing customer base and retain profitable revenues, while protecting the quality of the mobile network.
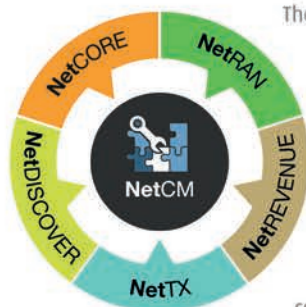
The acquisition also brings with it other lines of business that will be of interest and benefit to Digitata's Mobile Network Operator customers.

These include a sophisticated, vendor-agnostic network configuration management solution (NetCM) from the forward-looking Rorotika Networks (now Digitata Networks) to transparently manage and troubleshoot all major mobile technologies (2G, 3G, LTE, Wi-Fi) and multi-domains (Core, RAN, TX). The solution offers operators cost savings through improved efficiencies gained by automating auditing, planning, optimising, configuration and operational activities.

In addition, innovative Rorotika subsidiary, Rorotika Mobile will now fall under the Digitata brand too. There are clear synergies between this mobile gaming offering and Digitata's own MeMe Mobile offering and the marrying of the two concepts under one brand will facilitate both reach and deep engagement with mobile subscribers in emerging markets, though fun, selected content and competition.

www.digitata.com ~ marketing@digitata.com

Turkish operator to enter Pakistan?

ICT minister Anusha Rahman has reportedly held talks with the Turkish ambassador.

Pakistan's government reportedly plans to conduct a new 3G/4G auction and wants to attract foreign bidders.

According to local media, ICT minister Anusha Rahman has held talks with the Turkish ambassador to discuss the high demand for new spectrum in Pakistan.

Rahman apparently told officials at the meeting that she wanted Turkish mobile companies to participate in the spectrum sale which would include 850MHz which the government has reserved for a new market entrant. As yet, there is no confirmed date for a new auction although reports suggest it could be held soon.

Following years of delay, the Pakistan Telecommunication Authority finally conducted a 3G auction last year and also included the sale of 4G frequencies *(see News, Q1 2014)*. The country's five existing cellcos – Mobilink, Telenor, Ufone and Zong – were all awarded licenses.

But the auction brought in much less than the USD1.5bn the government was expecting in revenues, and the sale failed to attract any new foreign interest as hoped.

U Mobile to develop 'pre5G'

U Mobile and ZTE will work on the development of 'pre5G' mobile broadband technologies in Malaysia.

Under a recently signed deal, U Mobile plans to make significant network upgrades using ZTE's proprietary pre5G technologies including MIMO. The two firms will also collaborate on the research and development of 5G.

Mobile data demand is soaring in Malaysia, and 70 per cent of U Mobile's subscribers are said to be smartphone users. According to a consumer behaviour study earlier this year, the country has South East Asia's highest internet usage with the public spending an average of 219 minutes each day browsing the web.

ZTE says 5G research is key to its strategy of becoming a global leader in next-generation network technology. In 2014, the company says it was the first to propose the pre5G concept, and at *Mobile World Congress* in March 2015 it launched a pre5G base station featuring an integrated BBU and RRU. ZTE says this enables carriers to emulate the behaviour of future 5G networks on existing LTE network infrastructure.

The company adds that its pre5G base station enhances spectral efficiency of current LTE networks between four to six times by using massive MIMO technology.

ZTE and U Mobile have already been working together in Malaysia. Earlier this year, the vendor was commissioned to expand and optimise the operator's 3G and 4G networks in major cities.

Neural fights fraud in Singapore and boosts business control in Malaysia

Neural Technologies is helping two separate operators optimise their OSS/BSS platforms.

In a deal valued at around USD1m, StarHub will use the UK-based risk management and analytics specialist's *Minotaur* fraud management system in Singapore.

StarHub is the country's second largest telco and provides 4G, 3G and 2G services. Under a new supply agreement, Neural says it will provide the operator with "comprehensive protection" against a broad range of fraud types across its entire business.

According to Neural, *Minotaur* is flexible, reliable and simplifies the complexity of Big Data. It adds that its solutions are focused on investigating and analysing fraud activities via a single, flexible platform, and are interoperable with the industry's most popular business tools and common IT platforms.

In a second deal, an unnamed operator in Malaysia will use the *Optimus* platform from Neural Technologies Systems Integration Solutions (NTSIS). This is the first contract for NTSIS since it was incorporated into the Neural group in August.

The operator will use *Optimus* as a flexible business logic control system to centralise its services control workflows to various back-end-systems. NTSIS says it will consolidate the required processes and create a single platform that can be used throughout the mobile service provider's business.

It adds *Optimus* will shorten the time to market for new services since the reusable workflows will already be in place. The solution will also reduce the costs associated with change requests to vendors when new services are introduced.

In addition to its customer-facing systems, the operator is also considering using the platform to run its internal processes.
StarHub showcase LTE-A at 600Mbps using MIMO – News, p9

ABS plans to enhance comms through Dialog

ABS (Asia Broadcast Satellite) will use Newtec's *Dialog* system to launch next-generation VSAT and data services.

As a multi-service platform, Newtec claims its system guarantees optimal modulation and bandwidth allocation, whether it is being used for enterprise, consumer broadband, backhaul, mobility or high throughput satellite networks.

"*Dialog* is unique in that it enables operators to build their network and diversify their services as their business grows and the market changes," claims Newtec CEO Serge Van Herck.

The system also features *Mx-DMA*, the vendor's new patented return link technology for cross-dimensional multiple access. Together with *HighResCoding, Mx-DMA* is said to incorporate the best features of MF-TDMA and SCPC technologies, enabling services to run more efficiently than ever before over satellite. Users can still also opt to run the the platform in either SCPC or MF-TDMA.

ABS has ordered a Newtec *4IF Dialog Hub* which will be deployed at one of its regional teleport facilities in Asia. The first installation phase is expected to be completed in July 2015.

The *Dialog 41F* features Newtec's new patented return link technology for cross-dimensional multiple access.

StarHub showcases 600Mbps LTE-A

In what's claimed to be a first for Southeast Asia, StarHub has demonstrated 600Mbps data transmission speeds as part of an LTE-A trial in Singapore.

StarHub CTO Mock Pak Lum says: "4G is still on the evolution path, and we are readying ourselves to meet the ever-growing demand for bandwidth-heavy applications and services on faster, more advanced smartphones."

The 600Mbps data transmission speeds were achieved through combined 4x4 MIMO technology

CTO Mock Pak Lum says StarHub is preparing to meet booming demand for bandwidth on more advanced smartphones.

along with Carrier Aggregation (CA). StarHub carried out the technical demo at its headquarters using technology from Nokia Networks which included the *Flexi Multiradio 10* base station.

In addition, the two companies say they have also successfully tested three band CA using a commercial mobile device. They claim the successful trials of 4x4 MIMO and multiband CA pave the way towards even faster mobile broadband in future.

LTE-A 4X4 MIMO doubles download speeds using four transmit and four receive antennas for communication between a mobile device and the base station. According to Nokia, future mobile networks will need to use massive MIMO

technologies to address hundreds of thousands of data applications sharing the same network, each with its own requirements.

Ray Owen, Nokia Network's Singapore head says: "With this trial, we have proven that our technology is suitably equipped to help StarHub in coping with the forthcoming data deluge, a scenario wherein networks have to be ready to deal with download demands of gigabytes per person per day." *(Also see U Mobile to develop 'pre5G' in Malaysia, p8).*

Uninor claims history with network overhaul in India

Telenor's Indian subsidiary Uninor has partnered with Huawei in what's been hailed as one of the largest single network modernisation deals.

With licenses in Assam and operations in the six circles of UP (West), UP (East), Bihar (including Jharkhand), Andhra Pradesh, Maharashtra and Gujarat, Uninor says it covers more than 50 per cent of India's population.

In August, it announced a deal with Huawei India to modernise its entire telecom network. It says all 24,000 base stations will be swapped for new, state-of-the-art equipment that is efficient and future ready.

The project will be spread over three years and also involves Huawei becoming Uninor's managed services

partner. The vendor says its managed services delivery system includes integrating multi-vendors, planning and optimisation, maintenance, and customer experience management.

According to Uninor, this is the largest agreement of its kind in the Indian telecoms industry and also within the Telenor Group. It says the modernisation will enhance network capacity to offer "superior" experience on voice as well as any advanced internet service.

The operator also plans to deploy green energy solutions. These include Huawei's latest single RAN base stations which promise to lower power consumption, increase spectral efficiency, optimise network cost, and improve indoor coverage.

AWCC debuts Super Wi-Fi in Kabul and 3G in Helmand

The Afghan Wireless Communication Company (AWCC) has launched a new Wi-Fi service in Kabul City, and also expanded its 3G network to Helmand Province.

In Kabul, customers can now use AWCC's *Super WiFi* high-speed wireless internet services using more than 350 hotspots. The operator says these have been strategically positioned throughout the city to provide 'true broadband'. Both mobile and fixed users will benefit from high-speed internet access to the home or office.

AWCC is also using its new Wi-Fi network in Kabul for data offloading. The operator says subscribers can use their 3G bundles to take advantage of faster Wi-Fi services in areas where its 3G accelerator is available.

The company adds that *Super WiFi* users will benefit from the "highest levels" of security and account protection. Customers access the service by using a double password login system which AWCC calls its "Super Secure" login protocol.

The 3G network in Helmand was announced in August and also features HD Voice. AWCC claims its high definition network prevents dropped calls and will provide deep indoor coverage throughout the province.

The operator has utilised Dual Carrier-HSPA+ at each of its 3G sites. It says this is the first time high-speed uplink packet access has been used in Afghanistan, and enables uplink data rates of up to 42Mbps per cell.

Anite to help GrameenPhone fine tune its network

GrameenPhone will use test equipment from Anite to enhance its network.

The operator, which is the largest in Bangladesh and part of Telenor, will use Anite's *Nemo* series of products to analyse wireless voice quality and network data. *Invex II* and *Walker Air* will be deployed to benchmark wireless broadband networks, both outdoors and indoors, while the *Xynergy Drive Test* module will be used for automated processing and the centralised online management of collected data.

Invex II is a mobile benchmarking, measurement and optimisation system. Anite claims it combines intuitive software and scalable military-

The portable Anite *Invex II* (above) and *Walker Air* (left) benchmarking tools.

grade hardware designed to create a "superior" benchmarking solution for wireless broadband networks.

Walker Air is a portable tool for indoor benchmarking and multi-technology measurements. The

Android-based system enables extensive synchronised measurements to be performed, and comprises a master tablet and up to seven test terminals

connected via Bluetooth. Meanwhile, *Xynergy* is described as a "powerful, scalable, and easy-to-use" web-based enterprise-level platform for analysing drive tests, OSS call trace, small cell/DAS, and network management data.

Siddharth Dash, sales director at Anite's network testing business, says: "With this suite of integrated products, GrameenPhone will be able to efficiently measure the quality of end-user experience, effectively analyse the results, automate data processing, and make it instantly available online. This will enable them to effectively fine-tune the network – all to the benefit of the end-users."

LTE-A in Maldives

Dhiraagu has launched the first commercial LTE-A service in the Maldives. But the operator, which claims to be the largest telecoms services provider on the islands, warns there are very few LTE-A supported handsets currently available in the market. It says customers must ensure their devices support Carrier Aggregation using 1800MHz and 2600MHz. Dhiraagu says it launched the service as part of efforts to be a "front runner in introducing the latest mobile broadband technologies in the Maldives".

Bangladesh bus Wi-Fi

In what's claimed to be a first in Bangladesh, Green Line bus passengers on the Dhaka-Cox's Bazaar and Dhaka-Sylhet routes will be able to access the internet via Wi-Fi connectivity provided through Grameenphone's 3G devices. Green Line says it plans to introduce the service across all its routes in the future. Grameenphone states its ambition is to provide "internet for all" in Bangladesh.

LTE roaming extended

Syniverse is providing Dialog Axiata with a single-connection access to its IPX backbone network. The firm claims the Sri Lankan operator's reach has now been expanded across the world's LTE networks. Syniverse says its IPX Network currently serves more than 1,000 LTE roaming routes and includes more than 100 LTE direct connections. The firm claims this make it possible for it to deploy LTE and VoLTE around the globe. Dialog and Syniverse have been partners for 10 years and have worked together on data clearing, roaming fraud protection, text and multimedia messaging, and Wi-Fi roaming.

Ooredoo launches M2M platform in Indonesia

Indosat and Ericsson have launched a cloud-based M2M platform in Indonesia. It's claimed the *Device Connection Platform* uses "innovative" technologies suited to developing markets to create connected solutions to existing problems.

Indosat is the first member of the Ooredoo Group to launch the platform, with Qatar, Algeria and Tunisia scheduled to follow later this year.

"Our cloud-based M2M service delivers a higher, faster level of support and more agile service for business customers," claims Ooredoo Group CEO Dr. Nasser Marafih. "Additionally, the platform will play a key role in speeding up the implementation of smart city technologies."

ICT minister Rudiantara says Indonesia's new M2M system will be more transparent for operators.

The Qatari telco is already working with a number of organisations to support the development of smart cities, and has signed a strategic alliance with KT Corporation of Korea to introduce new concepts and innovations.

In Indonesia, IoT/M2M technology is expected to drive business growth in sectors such as banking, transportation, energy, and public services.

■ In a separate development, LS telcom has provided SDPPI (Indonesia's Directorate of Resources and Equipment of Post and Information) with a new M2M licensing system. It worked with its local partner SIGMA on the system which permits the use of RF-based M2M integration.

Indonesia's new M2M system has now been inaugurated by the country's Ministry of Communications and Information Technology. Minister Rudiantara said it will mean operators can now manage licenses and pay bills directly online. "With this system the licensing process will be swift, transparent and accountable," he said.

Germany-based LS telcom designs and develops software and system solutions for wireless telecoms. It is also a specialist provider of spectrum management systems and their integration with monitoring systems.

BSS enables CAT Telecom MVNE strategy

CAT Telecom and Suvitech will use Elitecore Technologies' end-to-end pre-integrated BSS stack to enable their MVNE (mobile virtual network enable) strategy in Thailand.

Under a public-private partnership, CAT is working with local IT company Suvitech as its MVNE. The firm will be the operator's sole provider of network infrastructure and services, such as sub-systems, BSS and OSS, to MVNOs. CAT's acting president Col. Sanpachai Huvanandan says the MVNE platform will assist with IT backup operations, enhance competitiveness and cut costs.

The operator will use Elitecore's BSS platform to support building the MVNE infrastructure. Elitecore says it will enable multi-brand strategy, including the launch of new partner brands and multiple MVNOs on the same stack.

According to the vendor, its platform offers integrated real-time billing, policy control and customer management that allows MVNOs to create product catalogues. This then enables basic services such as voice and data to be bundled with next-generation services like sponsored data, OTT partnerships supporting a whole range of devices, IoT-enabled applications, etc.

The company claims its future-ready platform eliminates the need for operators to deploy multiple solutions when they are ready to expand.

Singapore fibre rollout strengthens its position as a global hub for cloud

Epsilon has rolled out new fibre infrastructure in Singapore to strengthen its local reach for cloud and communication service provider customers across Asia-Pacific.

The privately owned global communications service provider says the deployment will support the growth of cloud services both locally in Singapore and across the region.

Epsilon will use local fibre infrastructure to connect five additional data centres in Singapore including Global Switch, Equinix, Keppel DigiHub, 1-Net and Digital Realty.

Together with enterprise locations, these data centres will be connected to Epsilon's global network which spans APAC, the Middle East, Europe and North America.

"The future is on demand network infrastructure that is ready to serve the needs of the cloud," says CEO Andreas Hipp. "This fibre rollout will enhance our connectivity to local data centres and enterprise locations while also supporting our solutions for customers connecting their cloud services. We see Asia-Pacific as a key driver for growth in cloud and Singapore as a

Epsilon CEO Andreas Hipp sees APAC as a key driver for cloud growth.

major global hub for cloud services."

This latest network deployment follows Epsilon's implementation of a 100G backbone network in Europe last year. It says both its Singapore network and the development of its 100G infrastructure have been specifically designed to support cloud, content and high-performance communications services on a global scale.
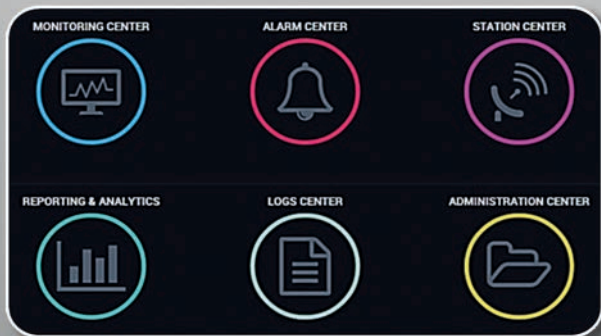
Digital divide will be "fully bridged" by 2019

O3b founder raises USD500m from major global companies to develop and launch hundreds of LEO satellites.

OneWeb says it's signed the largest ever commercial launch deals with more than 65 rockets, including 21 orders from Arianespace and 39 from Virgin Galactic.

A new company is planning to launch hundreds of satellites into low Earth orbit (LEO) as part of an ambitious mission to "fully" bridge the digital divide by 2019. While such claims could easily be dismissed as PR hype from yet another start-up firm, OneWeb's impressive roll call of partners and supporters suggests otherwise.

The company has been set up by US telecoms entrepreneur Greg Wyler who is said to have helped create Africa's first commercial 3G mobile and FTTH networks when he owned Terracom Communications (now Rwandatel) in Rwanda. Wyler went on to found O3b Networks in 2007.

Speaking at a press conference in London in June, he announced that OneWeb has now raised USD500m of funding. Investors include: Airbus Group; Bharti Enterprises; Coca Cola Company; Hughes Network Systems; Intelsat; Qualcomm; Virgin Group; and Mexican triple-play provider Totalplay, which is owned by Ricardo Salinas.

Using Ku-band capacity specially allocated by the ITU together with patent-pending technology, OneWeb claims its system will bring more than 10Tbps of new capacity to rural areas around the world, offering fibre-quality internet connectivity.

Airbus will initially manufacture 900 satellites for the company. These will be mass produced 'micro satellites' that are said to be easier to build, use fewer components, and weigh less than 150kg making them cheaper to launch. The satellites will also use OneWeb's innovative *Progressive Pitch* system. The firm claims this allows it to unlock spectrum in the "most efficient" way by gradually and slightly tilting the satellites as they approach the equator to ensure they never cause or receive interference.

The spacecraft will be launched into a near-polar orbit at an altitude of 500km before raising themselves to their operational locations. While the initial production satellites will go up in late 2017, the bulk of the launches will be a continuous campaign starting in 2018. Indications suggest that OneWeb will need around 648 satellites in space before it can begin commercial services – a rapid launch schedule is therefore crucial.

In what's claimed to be the largest-ever deal for commercial rockets, the firm has signed 21 Soyuz launch orders from Arianespace and 39 from Virgin Galactic. Virgin said its *LauncherOne* vehicle will be able to launch and replace satellites at just a few hours' notice. OneWeb also has options for eight additional Soyuz and Arianespace rockets. These will be available starting in 2021 to support the replenishment and enhancement of its constellation.

Qualcomm will build the air links in both directions as well as the reference designs for OneWeb's terminals which will support local area Wi-Fi as well as all cellular services from mobile operators. According to Qualcomm's executive chairman Dr. Paul Jacobs, the system will create "backhaul in the skies".

OneWeb's ground segment will be designed and developed by Hughes Network Systems.

Satellite is the only option

Bharti chairman and group CEO Sunil Bharti Mittal reckons OneWeb's proposition is a "game changer" for remote areas such as the Himalayan region or the jungles of Africa. He said: "This project will mitigate the problems we are facing in connecting the rural, difficult areas and the last remaining populations onto broadband networks. The only way to do it is through satcoms."

Wyler clearly supports this. He says cable costs GBP4,000 per kilometre on a telephone pole (if one exists) and dismisses fibre as a technology for connecting rural areas. "Cities have cable and fibre because the houses are close together. But as the houses move further apart it becomes more and more expensive per home to connect."

So what about MEO (medium Earth orbit satellites? While GEO (geostationary) satellites orbit at a height of around 36,000km, companies such as O3b Networks promised to connect the unconnected using MEO spacecraft that are placed into orbit at 8,062km above the planet.

Some experts are forecasting that high-throughput LEO satellites will threaten MEO missions, and could even lead to their demise. Wyler disagrees: "O3b is up and running today and has 12 satellites. It provides core trunking services to telecom operators and is not designed for direct to consumer [services].

"OneWeb is a different system. It uses an inexpensive terminal which you can place [for example] direct to schools. O3b has a different type of terminal and is doing an excellent job; it is a different company and does a different thing on the infrastructure side."

Will LEO work this time?

Intelsat is investing USD25m into OneWeb and the two companies will also collaborate on developing hybrid LEO/GEO end-user terminals. In addition, Intelsat will use OneWeb's LEO platform with its forthcoming *EPIC* high throughput satellite (HTS) system to complement its GEO services.

This is not the first time LEO satellites have been explored. In the mid-1990s, Teledesic poured more than USD9bn into its plan for a fleet of over 800 satellites that would orbit at an altitude of 700km. But the commercial failure of similar operations, such as those from Iridium and Globalstar, prompted Teledesic to abandon its programme in 2002.

So why will LEO constellations work today? And why haven't the big hitters in the satellite industry invested in their own low or medium orbit programmes?

"We looked at the opportunities in MEO and with O3b as an example," said Intelsat CEO Stephen Spengler. "What they were trying to do didn't fit into our strategy. O3b is very much a point-to-point trunking application and we felt that had different longevity in the marketplace. Our long-term strategy has been GEO and that's been very successful. The bulk of the applications can be supported very well from GEO, and so we're going to continue with that as the core of our strategy."

Intelsat CEO Stephen Spengler (left) and OneWeb founder Greg Wyler (right) believe satcoms need to leverage the broader telecom technology ecosystem.

Spengler also pointed out that while Intelsat may be a major player in the telecoms sector, it is not actually a huge company. "So we look at the broader technology landscape and the ecosystem to see what is happening in different places. When Greg came along and brought us up to speed with the work he's been doing, it was very intriguing.

"We're in a different era now from the one we had with Teledesic, Iridium and Globalstar. Technology really has advanced. It's moved a long way and Greg has actually pushed it even further and is taking a different approach.

"We fundamentally believe what he believes: we really have to leverage the broader telecom technology ecosystem to help change satcoms. Satellite has operated in a microcosm in the broader telecom industry for many years. For us to now develop the price, performance and the accessibility that is required for a lot of these applications, we have to think more broadly."

By operating in Ku-band, Spengler said OneWeb offers a natural fit for Intelsat, its fleet and global coverage. He added that by working together, the two companies will, for the first time, integrate LEO and GEO satellites, connecting customers from pole to pole on a "seamless" basis.

"LEO is of interest to our aeronautical customers, and those in the maritime and oil and gas sectors who operate at very high latitudes. [At Intelsat] we can't do the poles effectively. So a LEO system allows us to work with our mobility customers and give them pole to pole, high-performance coverage. A MEO system is based on the equator so you're

not going to get full coverage from top to bottom. The other thing is that when you look at spot beam systems, sometimes there's congestion. So OneWeb is going to give us another layer of growth.

"There are also going to be certain situations where the low latency of a LEO system will be beneficial. We don't believe latency is an issue across the broader set of applications, but in certain applications it's going to be beneficial for certain customers. So we'll be able to bring that to the equation."

Spengler said OneWeb's throughput rates will be comparable to Intelsat's *EPIC* system. For example, this could provide up to 50Mbps or more to aeronautical customers, and OneWeb will be about the same for such applications.

Satellite connectivity is often criticised for its high costs and this, coupled with the fact that operators continue to struggle with ARPUs especially in remote and rural areas, limit the technology's appeal. But Spengler reckons this will change.

"One of the markets we're focused on with *EPIC* is wireless network extension to the rural areas. With *EPIC* we're going to bring in different performance levels and higher performing services. We're going to be able to lower the economic equation for these operators, and we're going to have smaller kit capable in these remote areas."

Spengler pointed out that MNOs continue to use satellite for backhaul in Africa and are still making money. For example, he said Intelsat is currently working with Hughes to provide cost-effective, rural cellular backhaul in the DRC for a large operator.

"With *EPIC* we're going to take another step in terms of performance and economics. OneWeb is going to be very complementary. There are going to be some networks that fit better with *EPIC*, other networks that fit very well with OneWeb, and still others that fit with a combination of the two. That's our vision for these kinds of services."

Wyler said the next phase of OneWeb's development will involve working with countries, operators and aid organisations to help them realise their goals of "open and ubiquitous" access. He added: "The dream of fully bridging the digital divide is on track to be a reality in 2019. We have the key elements in place: regulatory, technology, launches, satellites, as well as commercial operators in over 50 countries and territories."

Eight bidders for Reliance Infratel

Reliance Communications (RCOM), the Indian mobile operator owned by Anil Ambani, has shortlisted eight bidders for its Infratel towers division.

In May this year, the company announced it would either sell a controlling 51 per cent stake in the division or settle for a 100 per cent sale.

The bidders reportedly include: Bharti Infratel, American Tower Corp, and US private equity firms Carlyle Group, Providence Equity Partners, Blackstone, Farallon Capital Management and Tilman Financial. The eighth company is not known but UK-based private equity investment group Apax Partners has been mentioned in some reports.

None of the bids are binding but according to some sources a deal will be announced in the coming weeks.

Reliance Infratel is 96 per cent owned by RCOM with the remaining shares held by investment funds. The firm is expecting a valuation of INR25,000-30,000 crore for its infrastructure arm which operates more than 45,000 towers and 120,000km of fibre in India – said to be the country's largest cable network.

■ Russian private investment company Sistema has entered into exclusive discussions with RCOM on a potential merger with Sistema Shyam TeleServices Ltd. (SSTL), its Indian telecoms business.

In an announcement in June, Sistema said a merger could be through a stock swap. But it pointed out that the discussions were non-binding in nature and there was no certainty of a transaction at this stage.

Worldwide broadband slows sharply

Broadband internet is failing to reach those who could benefit most, according to the 2015 edition of the ITU's *State of Broadband* report. It says while access is reaching near saturation in the world's rich nations, it is not advancing fast in the developing world.

The report reveals that 57 per cent of the world's population remains offline. The situation in the 48 UN-designated 'Least Developed Countries' is particularly critical, with more than 90 per cent of people in such states without any kind of internet connectivity.

ITU secretary-general Houlin Zhao, who also serves as co-vice chair of the UN's Broadband Commission, says: "The market has done its work connecting the world's wealthier nations, where a strong business case for network rollout can easily be made. Our important challenge now is to find ways of getting online the four billion people who still lack the benefits of internet connectivity, and this will be a primary focus of the commission going forward."

The lowest levels of internet access are mostly in sub-Saharan Africa where it is available to less than two per cent of the population in Guinea, Somalia, Burundi, Timor Leste and Eritrea.

However, this year's figures show that Asia-Pacific now accounts for half of all active mobile broadband subscriptions, with Macao, China taking top place with 322 active mobile broadband subscriptions per 100 people. It's followed by Singapore with 156 subscriptions per 100 people, and Kuwait with 140 subscriptions per 100 people.

Other key South Asian countries ranked in the ITU's active mobile broadband subscriptions table of 195 member states include: Thailand (26); Malaysia (52); Indonesia (84); India (155); and Pakistan (156).

Globecomm clinches multi-million dollar deals

Globecomm says it has been awarded more than USD14 million in contracts from television and data service providers in Malaysia and Indonesia.

While the company has withheld the names of its customers, it says in Indonesia it is installing multiple antennas supporting eight transponders' worth of DTH content for a broadcaster.

Globecomm is also deploying two large hubs for a major VSAT network, providing corporate voice and data services to the region. The firm says

the deals in Indonesia validate its decision earlier this year to open a new office in Jakarta.

For another broadcaster in Malaysian, the company is migrating an existing programme acquisition antenna facility to a new location, while upgrading systems to access more satellite capacity.

Tower sharing for Thai operators

AIS (Advanced Info Service) and dtac TriNet have agreed to share their towers in Thailand.

The companies say their partnership will focus on improving service quality for 3G subscribers as well as meeting the demands of their customers nationwide.

"We are launching a pilot, and by the end of this year we expect AIS and dtac TriNet to operate 2,000 shared telecom towers," says Weerawat Kiattipongthaworn, AIS' senior EVP of operations.

The operators say their agreement supports the government's digital economy strategy which aims to expand mobile internet coverage as much as possible. It also complies with the Thai regulator's policy of promoting shared infrastructure and equipment.

Simoco expands reach in Thailand

Simoco, the global designer and manufacturer of radio systems, has extended its reach in Thailand by

LATEST COMPANY RESULTS

Date	Company	Country	Period	Currency	Sales (m)	EBITDA (m)	EPS (units)	Notes
18/5/15	Arianespace	France	FY14	EUR	1.399 (bn)	NA	NA	41% increase over 2013 revenue of €989m; described 2014 as a "record year" with 11 launches.
19/5/15	Vodafone Group	UK	FY14	GBP	42,227	11,915	21.75	Reports 10.1% rise in group earnings. But MEA & APAC 0.8 decrease to £12.03m. Data customers reported to be increasing across these regions & now number 115.5m.
30/6/15	Eutelsat	France	FY 14-15	EUR	1,476.4	1,131.7	1,590	Total revenues are up 4.0% YoY. Targets revenue growth of 2-3% for FY 15-16, & will continue to focus its investment policy on high growth markets in Africa, Latin America, Middle East, Asia-Pacific & Russia.
22/7/15	Telenor Group	Norway	2Q15	NOK	30.2 (bn)	10,571	2.42	Group reports organic revenue growth of 6%. Competition tough in Thailand where dtac is still going through turnaround process; stable performance in Pakistan; over 10m subscribers now in Myanmar; ARPU down in Bangladesh, India & Malaysia.
13/8/15	Singtel	Singapore	1Q16	SGD	942	NA	NA	Group recorded a net exceptional gain of S$47m with divestment gains from venture investments & Airtel Africa's tower assets.
12/8/15	Gilat Satellite Networks	Israel	2Q15	USD	44.3	(2.5)	0.21	EBITDA for 2Q15 was a loss of $2.5m compared with an income of $3.9m in 2Q14. Interim CEO Dov Baharav blamed weaker performances in defence sector & Colombian market.
20/8/15	Axiata Group Berhad	Malaysia	2Q15	MYR	9.5 (bn)	3.5 (bn)	0.08	Interests & operations in Bangladesh (Robi), Cambodia (Smart), India (Idea), Indonesia (XL), Malaysia (Celcom), Singapore (M1) & Sri Lanka (Dialog) all showed growth.
1/9/15	ZTE	China	1H15	RMB	45.9 (bn)	NA	0.47	43.1% profit rise was helped by increased international orders for LTE equipment. Strong orders also reported for optical transport networks & broadband systems.

signing up Turnkey Communication Services (TKC) as a distribution partner. Based in Bangkok, TKC will offer Simoco products and expertise to meet the local demand for DMR and analogue radio systems.

Chris Moore, regional director for Simoco SE Asia, says: "[TKC] have a consultative attitude to systems selling, which works with our own approach of understanding what our end users require and building radio solutions accordingly."

Nokia to boost Bharti 3G
Bharti Airtel has signed a four-year deal with Nokia Networks for a 3G network rollout in India. The vendor will deliver radio and services as well as enhanced infrastructure.

Nokia will roll out Bharti's 3G network in five new telecom circles, and expand its networks in three existing ones. The deal includes planning and optimisation, implementation, operations, project management, and care services such as hardware and software maintenance as well as competence development.

Bharti will use Nokia's *Flexi Multiradio 10* base station. This is a software-defined radio platform which also features the vendor's *Flexi Lite*, a small all-in-one base station optimised for indoor and outdoor micro-cell deployments. Nokia claims it offers "superior" capacity and coverage in densely crowded areas.

Fourth license for Myanmar
Myanmar's Government is planning to promote competition in the country's mobile market with a fourth license.

Ooredoo, Telenor and the incumbent MPT all currently run mobile networks in the country. MPT was operated by the Ministry of Communications and Information Technology (MCIT), but in July 2014 it signed a partnership with KDDI and Sumitomo to help boost access to mobile telecoms in the country (*see Wireless Business, Q3 14*).

According to reports, 17 local firms have applied to join a consortium that is hoping to win the fourth license. The MCIT says it will only shortlist companies that have been in business for at least three months and have confirmed capital of at least MMK3bn (USD2.3m).

The selected firms will work with a foreign partner. The final consortium is expected to be awarded a 15-year license by the end of the year.

Vodafone claims it is now one of India's largest retailers
With more than 9,800 branded retail stores, Vodafone India reckons it can now be counted amongst the largest retailers in the country. The company says it has further enhanced its nationwide footprint of branded stores by opening 200 outlets as well as 1,000 'Vodafone Mini Stores' across the country since April 2014.

In a separate announcement earlier this year, the operator said it will enable business members of six Best Price Modern Wholesale stores, owned and operated by Walmart India, to make payments using *M-Pesa*.

Meanwhile in late August, Vodafone India confirmed it will launch its 4G services by end of the 2015 calendar year. Important data markets including Mumbai, Delhi, Kolkata, Bengaluru and Kochi will be part of the first wave of the rollout. In addition, it will also roll out its own 3G networks in seven circles – Assam, North East, UP West, Rajasthan, Karnataka, Kerala and Odisha, to expand its overall 3G footprint to 16 circles nationwide.

NEW APPOINTMENTS

Date	Name	New employer	New position	Previous employer	Previous position
16/6/15	Bret Griess	CSG International	President	CSG International	EVP & COO
22/6/15	Karen Schmidt	Intelsat	VP marketing	Comcast	VP of business marketing
22/6/15	Collin Tan	Purple WiFi	Regional Manager, ASEAN	1Care Global	MD
1/7/15	Alexander Matuschka	VimpelCom	Group chief performance officer	Nokia Networks	Chief transformation officer
15/7/15	Jos Baart	Flexenclosure	VP of sales & marketing	Flexenclosure	Sales director
20/7/15	Jonathan McKay	CBNL	Chairman	Ubiquisys	Chairman
27/7/15	Sunil Lalvani	Qualcomm	VP & president of Qualcomm India	BlackBerry	MD, India
28/7/15	Nitin Madhavan	Neural Technologies	Sales executive for India & Africa	Connectiva Analytics & Insights	Sales
31/7/15	Bart Morselt	VimpelCom	Group head of investor relations	Swisscom	Head of investor relations
11/8/15	Jeremy Povey	Dialogue Group	CFO	Capita Integrated Business Solutions	Finance consultant (interim)
17/8/15	Judd Cain	Tait Communications	Regional manager for EMEA & UK	Tait Communications	Head of global services
17/8/15	Suresh Bagrodia	Telewings (Uninor)	CFO	Vodafone India	Business finance officer
24/8/15	Mats Granryd	GSMA	Director general (as from Jan 2016)	Tele2 Group	President & CEO
2/9/15	Mitchell Klein	Z-Wave Alliance	Executive director	Universal Remote Control	Senior executive

INVESTMENTS, MERGERS & ACQUISITIONS

Date	Buyer	Seller	Item	Price	Notes
28/7/15	SpeedCast International	SAIT Communications	Company	NA	SAIT Communications specialises in providing L-band satellite services in the southern European maritime market, particularly Greece & Cyprus.
13/8/15	Keysight Technologies	Anite	Company	USD600m	Keysight is aiming to strengthen its wireless portfolio & expand its software offerings as it transitions to a software-oriented solutions company.
27/8/15	Bharti Airtel	Augere Wireless Broadband	Company	NA	Augere is owned by France Telecom and several private-equity firms. It has 20MHz of 2.3GHz spectrum in Madhya Pradesh-Chhattisgarh but never launched 4G and was looking for a buyer for its license. The company is reportedly worth $23.5m.
8/9/15	CommScope	Airvana	Company	NA	CommScope says acquisition of the US-based provider of LTE & 3G small cell solutions will expand its capabilities in providing indoor wireless capacity & coverage.

Critical Communication made easy

DAMM is a world-leading provider of Critical Radio and broadband Communication solutions to industrial, commercial and public safety customers. The DAMM TetraFlex® system is 100% IP based. It offers the most rugged, reliable and easily scalable communication system available for mission critical communication. The full package from DAMM includes infrastructure, built-in applications as well as soft terminals.

A Cross-technology one-box solution

DAMM's latest innovation, the new BS422 outdoor base station, is a cross-technology one-box solution offering TETRA, DMR Tier III, TEDS and Analogue in one integrated system. With the new BS422 Outdoor Base Station you can work across technologies and be more flexible than ever. Simply choose the technology to match your current needs – and scale anytime to meet changing voice and data demands with a simple click. Additionally the BS422 offers improved synchronisation, improved redundancy, high power and an extended frequency range.

Need to Go Hybrid?

The BS422 allows hybrid usage combining multiple technologies in one coherent system with full integration. This can be done in a more permanent network setup, where several technologies, for example TETRA and TEDS are combined in one system to meet the need of voice and data communication.

Need to migrate from Analogue?

The unique BS422 enables easy migration from Analogue to digital. Same hardware, same software – simply upgrade to digital with one click. Combine multiple technologies in one system and secure a smooth, efficient migration with the use of existing Analogue radios in an Analogue/TETRA setup.

A cross-technology one-box solution offering:

- TETRA
- DMR Tier III
- TEDS
- Analogue

NEW

Need the flexibility to scale in coverage and capacity?

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The DAMM TetraFlex® Product portfolio

The DAMM TetraFlex® System comes complete with outdoor or indoor base stations used in any combination and now even across technologies.

DAMM offers built-in applications including Network Management, Dispatcher, Voice & Data Log System and Group Bridge giving you full control and allowing you to manage your assets and improve performance. With the TetraFlex® Client you can use your tablet or smartphone to benefit from coverage extension, as well as data capacity for videos and pictures. The complete range includes Android, iOS and Windows, offering communication operating through WiFi, LTE(4G) or other technologies.

The DAMM TetraFlex® Concept

The DAMM decentralised infrastructure means the network design is a 100% IP-based architecture with distributed intelligence. This gives full flexibility in site and capacity expansions, meeting the constantly changing needs of the industry. Each site can stand alone with the full TETRA feature set. DAMM TetraFlex® offers integrated solutions with a true IP backbone, and boasts features that are ideal for mission critical communications, such as scalability, redundancy and remote management.

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Hundreds of successful companies worldwide have put their trust in DAMM´s TetraFlex® system, and are now enjoying the benefits of staying agile in a changing and highly competitive market. Let's help you think big, start small and scale fast.

IP65

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Outdoor bridge system can extend Wi-Fi connectivity to more than 20km away

Ruckus Wireless claims its *ZoneFlex P300* is the industry's first long-range outdoor Wi-Fi bridging system.

Supporting RF capacity up to 867Mbps, each bridge has a specially designed 5GHz, dual-polarised

MANUFACTURER:
Ruckus Wireless

PRODUCT: ZoneFlex P300

MORE INFORMATION:
www.ruckuswireless.com

directional antenna system that provides up to 14dBi of gain. There are also external antenna connections to increase effective distance.

It's claimed the system offers hundreds of megabits of performance at line-of-sight distances up to 8km via the internal antennas, and over 20km using external antennas.

According to Ruckus, by combining the signals received across two distinct polarisations (vertical and horizontal), and across high-gain directional antenna elements, *P300* bridges can maximise the received S/N ratio,

resulting in more reliable connectivity and the highest-possible performance between two or more points.

The system can provide 30º of coverage from one root bridge with internal antennas to handle many receiving bridges, or 360º of coverage with external antennas. In addition, it features a dedicated sniffer radio for radar avoidance pre-scan.

Measuring 18 x 15 x 8.6 cms and weighing 2.5kg, each bridge can be wall- or pole-mounted. Ruckus says automatic pairing and precision alignment via LED-based aiming

software between bridges provides easy installation. Root bridges can support up to 10 node links, and multiple networks can be segmented by VLANs. Each bridge is secured using AES encryption.

Easier microwave links with upgraded design tool

With *iQ.linkXG v9.5*, Comsearch believes it's created the first microwave link design tool tailored for small cell backhaul, where non-line-of-sight (NLOS) conditions often apply. The upgraded version is also said to make it much easier to

MANUFACTURER: Comsearch

PRODUCT: iQ.linkXG v9.5

MORE INFORMATION:
www.comsearch.com

configure microwave links powered by adaptive modulation radios.

According to Comsearch, small cell planning can involve both LOS and NLOS paths, the latter of which presents a special challenge to designing networks where signal loss predictions are critical.
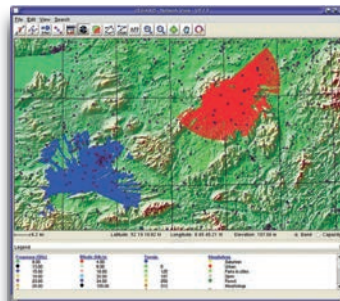
The firm says it has developed unique and proprietary models that look at the true obstruction environment along a path to better calculate losses. It says these models have been validated with a major radio vendor using existing network

designs and integrated into the latest version of *iQ.linkXG*.

In addition, Comsearch says the use of adaptive modulation radios has made it difficult for link designers to

quickly engineer microwave paths. It says power, fade margins and predicted performance must be evaluated for all the modulations configured for a path, not just one.

In order to simplify the design of microwave links with such complex radios, Comsearch has come up with what it describes as a "highly intuitive" GUI that takes guesswork out of the equation. It reckons engineers can now easily configure power levels for their radios by using the simplified interface, and instantly see the impact on path performance.

Advantech ups the power on latest generation BUC

Advantech Wireless says its second generation *Super Compact TT Series C-band BUC SSPA / SSPB* offers a 60 per cent RF power increase, while reducing energy consumption by 30 per cent.

In terms of linear power, it's claimed the 300W unit is the equivalent of a previous 500W SSPA, and of a 750W TWT. The new version is also 45 per cent lighter and smaller than its 200W predecessor. Advantech says the new units are specifically designed for maritime applications where bandwidth demand

has increased exponentially, and where the high temperature in the radome is always a challenge.

It adds that improved GaN reliability and the smaller form factor enable "perfect integration" into ship stabilised antennas for better balancing, and where heat generation has to be reduced to the minimum.

MANUFACTURER:
Advantech Wireless

PRODUCT: TT Series BUC

MORE INFORMATION: www.
advantechwireless.com

Wireless networks 10,000 times more energy efficient

GreenTouch has revealed new tools, technologies and architectures which it claims can improve energy efficiencies of mobile networks by more than 10,000 times.

Two tools are now publicly available. *GWATT* is a web-based interactive application that provides a complete view into the entire GreenTouch portfolio of technologies and their end-to-end energy impact.

Flexible Power is said to be an advanced power model and software tool that provides realistic power consumption values for a variety of current and future cellular base station types, configurations and scenarios.

GreenTouch consortium members have also demonstrated technologies which include a number of previously unannounced innovations. For example, *BCG2* architecture uses densely deployed small cells with intelligent sleep modes, and completely separates the signalling and data functions in a cell network.

MANUFACTURER:
GreenTouch

PRODUCT: Various

MORE INFORMATION:
www.greentouch.org

Traffic Steering Manager boosts network capacity

Nokia Networks reckons it has solved the complexities of coordinating the dozens of load balancing and traffic steering features available in mobile broadband networks.

MANUFACTURER:
Nokia Networks

PRODUCT:
Traffic Steering Manager

MORE INFORMATION:
www.nokia.com

The firm says its *Traffic Steering Manager (TSM)* is the first all-inclusive solution to automatically direct traffic to the most effective radio network layer. This ensures more efficient use of existing infrastructure, and its claimed cellcos can effectively increase network capacity by 10 per cent.

The centralised system is said to combine all radio technologies, including Wi-Fi, macro and small cells, as well as the core network to dynamically orchestrate network capacity utilisation. Nokia says it coordinates a multitude of load balancing and

traffic steering functions in networks to use all the capacity available in multi-technology, multi-layer and multi-vendor hetnets.

Traffic is steered according to network conditions. Other criteria, such as device capabilities and SLAs, can also be taken into account when planning efficient service delivery and network utilisation

Nokia adds that if capacity limits are reached, the value-based traffic steering enabled by the *TSM* ensures that the network is used according to business priorities.

Flex accelerates in-flight broadband connectivity

Intelsat has introduced a new service for the commercial air transport market. *IntelsatOne Flex* is described as an enterprise grade, customisable, 'wholesale Mbps' managed mobility service. It enables Intelsat's distributors and their aeronautical customers to

MANUFACTURER: Intelsat

PRODUCT: IntelsatOne Flex

MORE INFORMATION:
www.intelsat.com

access bandwidth when and where it is needed the most, without the complexity of managing multiple beams and satellites.

The service aggregates Intelsat's global satellite fleet and terrestrial network into a simplified ecosystem.

The company says it will enable its partners to maintain control over their network by allowing them to continue to manage the customisation, contention and prioritisation of individual airborne terminals without the overhead of multiple network builds and inefficient use of bandwidth.

IntelsatOne Flex enables users to leverage wide beams for broadcast applications to the plane and spot beams for high throughput data. They can also customise QoS for 'wholesale Mbps' procured on a region-by-region basis to provide access to pre-defined zones.

Intelsat says this can be done with guaranteed SLAs and committed information rate (CIR) plans.

The new service can also streamline capacity management for geographic expansion and surge. Intelsat says it provides flexibility across multiple satellite beams, resulting in a more predictable cost structure directly matched to revenue generating activities.

# iBuildNet offers vendor-free DAS solution

Ranplan has developed *iBuildNet DAS*, the latest addition to its range of vendor-independent software tools for indoor and outdoor wireless network planning, design and optimisation.

The software is billed as an "advanced" solution for designing

MANUFACTURER: Ranplan

PRODUCT: iBuildNet

MORE INFORMATION:
www.ranplan.co.uk

and optimising networks that use distributed antenna systems (DAS). It supports multi-system technologies to deliver what's said to be a seamless network environment.

Ranplan says the tool significantly reduces the time it takes to plan and deploy complex DAS systems. It claims *iBuildNet DAS* uses advanced 3D modelling, fast and accurate 3D ray-tracing, and powerful analytics to optimise antenna location type, power, and channel assignment.

iBuildNet DAS can also be used with Ranplan's *iBuildNet Tablet*
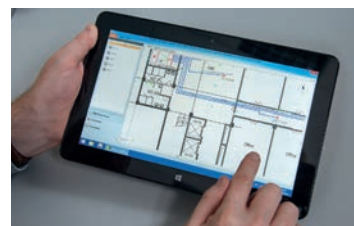
Planner (pictured). The company says this is an automated on-site tool designed to enable installers to quote, plan, deploy and optimise a network to deliver maximum coverage and QoE in the shortest possible time, and at the lowest possible cost.

CRT optimises use of scarce spectrum

Cognitive radio technology (CRT) developed under the EU-funded *QOSMOS* project could help to meet the future challenges of using limited spectrum resources for increasing data demand.

CRT dynamically optimises radio spectrum use by accessing under-utilised portions and sharing it across devices.

Michael Fitch of British Telecom, which coordinated QOSMOS, says the idea is to break down silos: "Every new service and technology needs a new spectrum, and silos are formed when there are umpteen different devices that use umpteen different parts of the spectrum."

Project partners developed three technologies: a central manager that controls the spectrum 'portfolio' in real-time for a region or country; a resource manager that allocates the spectrum to individual systems and senses the environment; and a cognitive radio terminal.

They also developed a prototype transceiver to generate filter bank multi-carrier transmission (FBMC) waveforms. With FBMC transmission, spectrum is carved out in rectangular blocks so that it is tightly packed for more efficient use. The technology is expected to replace OFDM which is more commonly used today.

Members of the QOSMOS consortium also conducted a value chain analysis and developed business use cases that compared the costs of accessing under-utilised spectrum against that of buying new spectrum.

They identified the areas where CRT could be commercialised. For example, existing owners of spectrum could rent out their assets for short periods of time, while network managers could offer premium spectrum management services.

As a result, QOSMOS members believe an entirely new market in micro-trading spectrum could develop over time.

Sowing the seeds of next-generation VAS

Vodafone has identified six mobile services which it says could boost the incomes of 70 million Indian farmers by USD9 billion in 2020.

PHOTO: CONNECTED FARMING IN INDIA, VODAFONE

Will the advent of 4G/LTE boost the availability of value-added services in South Asia? DAVE HOWELL finds out.

Based on forecasts from TechNavio, the worldwide mobile VAS market will grow at a CAGR of 10.62 per cent over 2013-2018. What began with non-voice services such as SMS and MMS now includes mobile banking and more.

According to Tecnotree, the global provider of telecom IT solutions for the management of products, customers and revenue, 4G/LTE is currently being planned or is in its initial phases in Asia and will naturally bring more opportunities for mobile operators.

"In Europe, for example, mobile broadband is a serious threat for the fixed line ISPs providing cable connectivity and is quite rapidly replacing landlines," says Pekka Kangas, the company's business development director. "On the VAS side, the extended bandwidth is enabling the delivery of richer content, more applications, etc. This means that the role of the operator can continue to go in the direction of bit pipe providers."

That may be true if the MNOs let it happen. What's clear, however, is that the development of fast access thanks to LTE is the foundation onto which all next-generation VAS will be built.

"LTE's faster speeds and greater capacity significantly changes the ways in which subscribers can use their mobile devices," says Chris Halbard, EVP of Synchronoss. "These faster speeds and lower latency gives a better experience for dense data services, like real-time video and apps, while also providing sufficient bandwidth to enable strong security without undermining performance."

Synchronoss provides personal cloud solutions and software-based activation for connected devices across the globe using its patented technology. Halbard believes the advent of LTE provides mobile operators with the perfect opportunity to use the cloud as a low-cost VAS for subscribers. More on that later.

Follow the money

Mobile financial services (MFS) have been a focus for VAS providers across developing regions that are driven by the need to 'bank the unbanked'. In its *State of the Industry – Mobile Financial Services for the Unbanked* report published last year, the GSM Association says services are now available in 61 per cent of the world's developing countries *(see figure 1: The percentage of developing markets with mobile money per region)*.

Many operators have launched MFS in South Asia, including Roshan in Afghanistan, Grameenphone in Bangladesh, Vodafone in India, Telenor in Pakistan, Dialog in Sri Lanka, to name but a few *(also see figure 2: Number of live mobile money services for the unbanked by country)*.

Whilst sub-Saharan Africa still accounts for the majority of live services globally (53 per cent), half of all launches in 2014 occurred outside the region, with the Latin America and Caribbean, East Asia and Pacific, and South Asia regions each seeing three new launches.

The GSMA says while competition is intensifying in markets where mobile money is available, an increasing number of cellcos are developing interoperable solutions. "In 2014, MNOs interconnected their services in Pakistan, Sri Lanka and Tanzania, following in the footsteps of MNOs in Indonesia, where interoperability was implemented in 2013," says the association.

Despite the rise of MFS, the introduction of other value-added services has not been smooth across the region.

For instance, Jayanth Kolla, founder and partner at Convergence Catalyst, says: "Indian mobile carriers had the opportunity to grow the share of non-voice revenues through VAS before the advent of smartphones and apps-led data growth. But not only did they fail to innovate on creating compelling products and services, they stifled innovation by other ecosystem players by demanding a 70 per cent share of VAS revenues."

Moreover, he points out that instead of educating, encouraging and motivating customers to adopt and use VAS, Indian carriers used "myopic" sales tactics such as outbound dialling marketing calls, URLs in SMSs, flash SMS, etc.

"They failed to create the stickiness for these services which led to a 60 per cent churn rate across the portfolio of VAS services in India during 2008-10, and VAS failing to grow more than 10 per cent of overall revenues," says Kolla.

Few would dispute the fact that mobile operators need to see real value in VAS and not consider it as something to simply bolt on to existing services

For example, Paul Palmer, Asia board director for the Mobile Ecosystem Forum, says: "It's very clear that the industry needs to take a different approach to VAS when thinking about the next billion yet to be connected users. Most of them will be accessing the internet for the very first time on mobile, and so VAS applications need to be tailored to mobile devices and able to deal with many of the challenges of this region that are not seen elsewhere.

"Vendors will continue to develop applications that are relevant to the entire subscriber community. To do this they need to continue investment into services that will work on lower-end feature phones for some time to come."

Leveraging technology

Synchronoss believes the cloud can help operators realise LTE's potential, and Halbard agrees with Palmer when he says: "But it's up to operators to

develop and roll out new and innovative features and services that maximise [LTE's] extra speed and capacity, while also delivering the smooth, high-quality experience that subscribers expect."

According to Halbard, operators who provide cloud services to their subscribers enjoy better results than those that haven't, in terms of increased service uptake, higher data usage and improved subscriber loyalty. And it doesn't end there.

"Operators with their own self-branded cloud solution can provide innovative features and products that complement their storage offerings, such as mobile music sharing and media streaming services. These extra services lower churn rates since customers have little or no reason to move to OTT players who offer similar services."

He points out that what's important for the operator is to offer a broad range of VAS that appeal to an equally broad range of audiences.

Earlier this year, Synchronoss launched its *Personal Cloud* and network activation services solutions in Vietnam. The firm has deployed its white-label platform to optimise the country's wholesale telecoms services business, provision subscribers with new smartphones, and also provide them with their own personal cloud-based backup and storage service for mobile data.
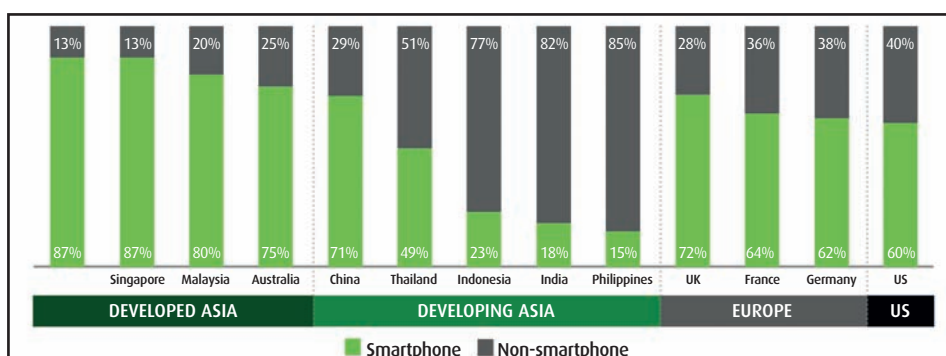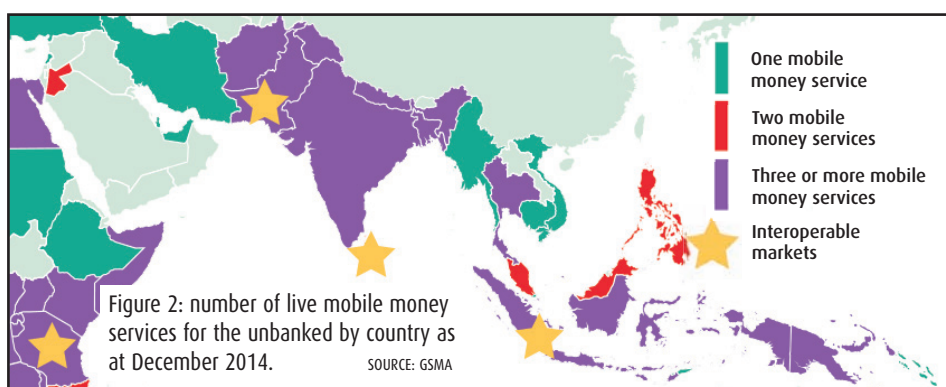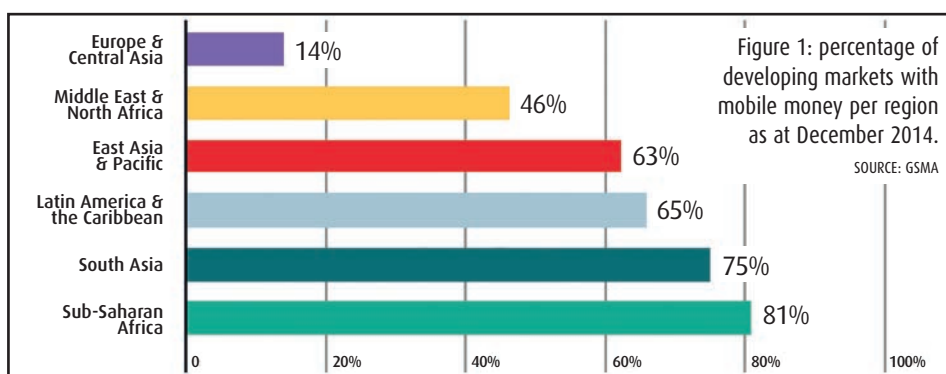
Vietnam has 136.9 million mobile users including 29.1 million 3G subscriptions, according to June 2015 data from the country's General Statistics Office. It is also said to be the fastest-growing smartphone market in Southeast Asia. Citing data from IDC, Synchronoss says smartphone shipments into Vietnam totalled 11.6 million units in 2014, representing year-on-year growth of 57 per cent, and sales will continue to increase for at least the next five years. *(Also see figure 3: Smartphone penetration.)*

"The arrival of affordable smartphones and low-cost data plans in Vietnam and other high-growth emerging markets has created demand among subscribers in these regions for mobile-first content and services," says Halbard.

Synchronoss claims its network and device activation service solutions are carrier-grade SaaS platforms that enable MNOs and OEMs to activate and provision new devices and service bundles for users, seamlessly and automatically.

However, cloud isn't the only solution available to MNOs when it comes to delivering VAS via LTE. Rich Communication Services (RCS) represent the evolution of operator messaging from legacy circuit switched services such as SMS/MMS to one that is IP-based. Openmind Networks offers a single platform enabling customers to deliver VAS such as RCS. It believes that as LTE infrastructure becomes more widespread across key mobile economies, RCS enable operators to offer many of the features that users have come to expect from OTT players, including presence and location information capabilities.

Derek McElhinney, the company's senior consultant, says: "RCS over LTE enables the best quality of experience and drives greater data usage (LTE users consume a lot more data).

Figure 1: percentage of developing markets with mobile money per region as at December 2014.
SOURCE: GSMA

Figure 2: number of live mobile money services for the unbanked by country as at December 2014.
SOURCE: GSMA

Figure 3: Smartphone penetration in APAC is highest in Hong Kong and Singapore followed by Malaysia. Penetration in the region's developing countries, while trailing its more developed markets, is gaining traction.
SOURCE: NIELSEN

Furthermore, the real business case for RCS lies in the evolution of operator services in order to stay relevant to their users in the face of stiff competition from OTT messaging players. It is this relevance that is of the highest importance."

McElhinney says operators can deploy RCS either as a hosted platform or build it in their own network. "One of the advantages of using a cloud-based hosted platform in emerging markets is that operators can begin to develop, test and deploy new richer services very quickly, with minimal disruption and cost."

He adds that other operators may opt to build their own RCS platforms as part of an ongoing infrastructure investment. For example, many are already making investments in IMS platforms to support VoLTE which shares the same investment and capabilities as RCS.

"Embracing VoLTE enables voice, data and video services to be more cost effectively and simply delivered over a single IP network. If an operator has made this initial investment in IMS for VoLTE, it is then a straightforward and affordable process to install an RCS application

server into the network," says McElhinney.

But will any of this work in developing markets that are still dominated by pre-paid basic or feature phone users? If the future of VAS depends upon LTE then greater smartphone penetration is essential for its success.

McElhinney points out that another advantage of RCS is that full LTE coverage is not a pre-requisite for deployment. He says richer communications can be deployed over 2G and 3G, allowing operators to get a head start instead of waiting for 4G to succeed.

The GSMA adds that in terms of MFS, the diversification of the types of interfaces customers can use to access mobile money accounts can help providers to target different market segments.

For example, in its report above, the association states that the IVR interface can be adapted to numerous local languages and dialects, thus helping providers target illiterate communities as well as people who aren't comfortable interacting with data services (typically USSD) on a mobile.

Furthermore, the GSMA says well-designed apps can "dramatically improve" user experience

by providing rich user interfaces and enhanced functionality. "Apps are also helping operators to target the growing segment of smartphones users in developing markets. As low-cost smartphones and data packages become more widely available, the number of operators offering mobile money apps is likely to increase."

VAS in action

Mobile financial services are key VAS applications in emerging market today. But as mobile data penetration increases, VAS will continue to reach into other areas such as entertainment and enterprise applications.

While Tecnotree's Kangas believes VAS are not about apps, he says it's quite obvious that operators will need to think carefully about incorporating their own apps for various handset platforms.

"These clients could include self-care apps, opening new horizons for end users by managing their own preferences and services. While they could be considered as VAS, the nature of these apps is more in the care/CRM/BSS side of the operator business."

The challenge for operators in Asia is that they now need to take the massive installed mobile user base and expand with VAS to create a new environment for growth.

"Within many operators, cooperation is needed internally, and recent organisational trends have caused deep silos in their internal operations/communications," says Kangas. "It is clear that VAS vendors today struggle slightly in 'mingling' between operator organisations, and some VAS vendors have needed to bring various different operator functions to the same table."

One of those functions has now grown to include data analytics. France-based Intersec specialises in solutions for mobile operators to leverage 'Big Data' and capture and monetise their subscriber information. The firm's CMO Laurent Michel says that as the world becomes increasingly mobile and connected, our way of communicating and consuming media and services is radically changing.

"What is considered a comfort service today will become a must-have tomorrow," says Michel. "LTE holds strong promises of value development by being the key enabler to increase the share of VAS in revenue mix beyond the usual ~10 per cent we experienced in the 2G/3G era.

"Whether it will be achieved depends on the telecom operators' ability to design new business models that value LTE beyond the sole argument of speed. Operators should take advantage of the LTE capacity by working with other industries (e.g. healthcare, financial, transportation, etc.) to create new VAS products for subscribers and for new revenue streams."

One of the advantages of analysing subscriber behaviour is that it enables MNOs to target specific customers with specific services. For example India's third-biggest MNO, Idea Cellular, recently switched from using segmented mass-marketing campaigns to contextual ones with the help of Mahindra Comviva. The operator is using the vendor's *iECON (interactive End-of-Call Notifications)* platform and claims analytics-based contextual marketing has allowed it to achieve a "significant" increase in recharge value. "Rapid behavioural changes by consumers require focused and personalised marketing solutions," said Sashi Shankar, Idea Cellular's CMO. "The solution is based on understanding the customer's intent rather than mass-marketing campaigns."

iEOCN aims to improve marketing effectiveness by delivering contextual offers with end-of-call notification. It is designed to help mobile operators automate and manage end-to-end marketing workflow, from targeting, sending of offers and fulfilment tracking, to reporting.

Mahindra Comviva says *iEOCN* has enabled Idea Cellular to reduce customer churn, enhance customer loyalty by executing personalised and interactive campaigns, and has generated incremental revenue for the operator.

Earlier this year, Idea Cellular launched another innovative VAS, this time using technology from Telenity. The cellco's *WFTPLUS* service is aimed at enterprise users, enabling them to track employees and corporate resources via their mobile phones. It is based on Telenity's *CanVAS SmartTrail* platform which utilises mobile network-based positioning technologies to determine and track the location of selected cellphones that have been registered to the *WFTPLUS* service.

According to the vendor, *CanVAS SmartTrail* provides enterprises with an administrative account to add, delete and modify information about the mobile phones to be traced. An interactive GUI presents an instant snapshot of the current location of all registered employees through a heat map-style window.

Service administrators can zoom in and out of the map to get a more detailed view of teams and individuals. They can create multiple 'geo-fence' areas to receive automatic email alerts when a tracked resource 'enters' or 'exits' these areas. Historical location information of a selected employee is also drawn on the map showing the details of the routes he/she has taken with timestamp information.

Telenity points out that to protect employee privacy, the solution enables selection of the days and hours for tracing and limits the location visibility to working hours only. Bharti Airtel is also now using *CanVAS SmartTrail* for its *TraceMate+* enterprise resource tracking service.

The real value of VAS

What differentiates the significance of mobile technologies in developing markets compared to developed ones is that they have a proven socio-economic impact. This is where value-added services really come into their own in Asia. For example, earlier this year Vodafone published its *Connected Farming in India* report which concluded that the introduction of six simple mobile services could boost the incomes of 70 million Indian small-scale farmers by an average of USD128 per annum.

It's estimated that more than 200 million people in India currently work in agriculture, and around 100 million of them are farmers. Around 62 per cent own less than one hectare of land, significantly increasing their exposure to the effects of crop failure, pests, disease and volatile market pricing.

In its research conducted with Accenture Strategy, Vodafone said the following six mobile services offer the potential to transform Indian farmers' lives and livelihoods:

Agricultural information services to provide early warnings of weather events, information on the best times to harvest, and advice on crop techniques to enhance yields. The services could increase an estimated 60 million Indian farmers' annual incomes by an average of USD89 a year in 2020.

Receipt services to provide greater transparency in daily commodity supply chains, allowing farmers to raise their incomes by improving efficiency and eliminating fraud.

Payments and loans enabling farmers to access simple and secure financial products and services using mobile money payment systems such as *M-Pesa* which Vodafone India launched in April 2013. The operator says access to highly cost-effective micro-finance and quick and transparent electronic payment systems could provide an annual benefit of USD690 for some farmers in 2020, representing a 39 per cent increase in their average farming incomes.

Field auditing to enable the monitoring of quality, sustainability and certification requirements. This allows farmers to move away from paper records and adopt instead electronic reporting via tablets and mobile data, greatly enhancing efficiency and potentially increasing annual average income by USD612 for some.

Supply chain networking enabling small-scale producers to transact with local cooperatives through simple but robust information services and mobile money systems. These could boost some farmers' annual incomes by USD271 in 2020.

Smartphone-enabled services to provide deeper functionality and richer sources of information than is possible using basic SMS and voicemail services. These could lead to an increase in average annual farming incomes of USD675 for more than four million farmers in five years' time.

Serpil Timuray, Vodafone Group's regional chief executive for MEA and APAC, said: "One-third of humanity relies on food grown by 500 million smallholder farmers with less than two hectares of land. Mobile has a critically important role to play in increasing agricultural resilience and enhancing quality of life for some of the poorest people on Earth." ∎

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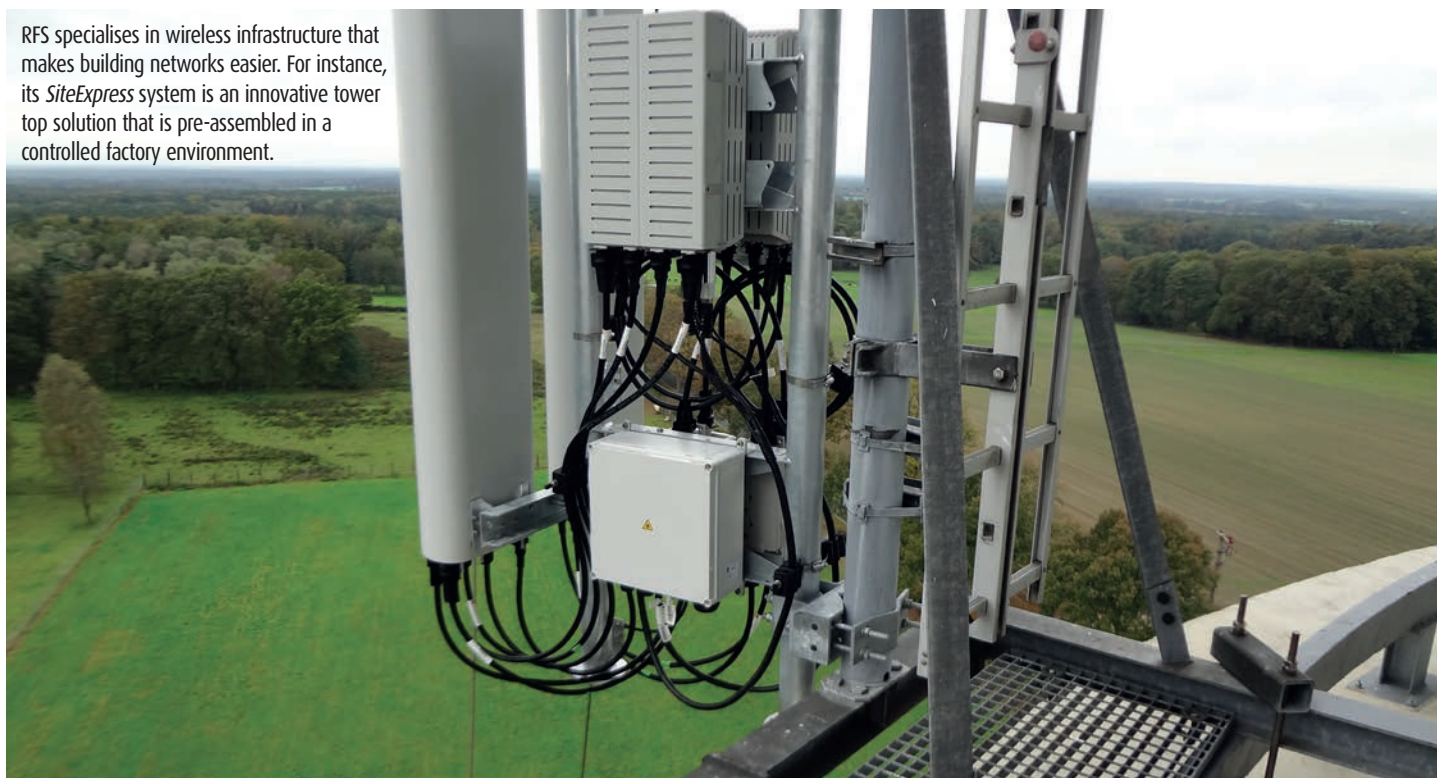
RFS specialises in wireless infrastructure that makes building networks easier. For instance, its *SiteExpress* system is an innovative tower top solution that is pre-assembled in a controlled factory environment.

On the right frequency

RFS has been developing unique wireless infrastructure solutions for over 70 years. JEAN-LOUIS HUREL explains how the company is helping network builders overcome the challenges they face.

Radio Frequency Systems' (RFS) roots go back to the start of the 20th century when the Hackethal Wire Company was founded in Germany. It made improved electric cables using a new insulation technique, and over the next six decades the firm went on to develop a significant portfolio of patents.

These include the world's first RF power cable with a corrugated steel outer conductor in 1951, the first corrugated elliptical waveguide in 1961, the first corrugated seam-welded foam dielectric cable a year later, amongst others. Many of these

innovations are still used by RFS today as part of its *HELIFLEX* and *CELLFLEX* cable brands.

By 1966, Hackethal had become Kabelmetal, and following various global company mergers, the RFS Group became established in 1999 with Alcatel as its parent company.

Today, France-based RFS has six factories around the world, as well as five R&D centres in Australia, China, France, Germany and the US. Jean-Louis Hurel joined the company in July 2014 following a career that spanned almost a quarter of a century with Alcatel/Alcatel-Lucent.

His last position before he left the firm was vice president of its GSM business unit. He is therefore no stranger to the wireless business or indeed Asia, including China, where he has spent a lot of time visiting customers, partners and suppliers.

According to Hurel, what makes the continent so interesting for RFS is that operators are trying to address the two challenges of coverage and capacity for LTE as well as for 3G and 3G+ both at the same time. Different technologies such as LTE FDD and TDD are offered, and the operators can define the best choice depending

on their network evolution strategy. "Without having to update or re-invest more, they can really fit and adapt their investment to reach their target," he says.

As an example, Hurel talks about how that has been applied to base station antennas. "When the very first LTE adopters started, they put in additional antennas in order not to disturb the existing 3G antennas and radio access. They therefore installed antennas that offered one band per antenna, and then an additional one which meant increased visual 'disturbance' on the different radio sites.

"But now multi-band antennas are able to offer, for example, 3G at 900MHz, LTE at 1800MHz, etc., on the same band. And of course, because there are multiple combinations of this, they can also offer higher bands such as LTE 2.6GHz."

This approach of offering more bands and much larger spectrum has become fundamental to RFS' development of base station antennas. For example, earlier this year in May it introduced two new ultra-broadband models in its *RF X-TREME* range. The company says the *APXVBLL20X-C* and *APXVBLL20X-C-I20* facilitate triple-band site upgrades for reduced cell interference in high traffic areas, and can be used for multiple bands such as LTE 700, LTE 800, Digital Dividend 2, CDMA, GSM, DCS, UMTS and LTE 2.6.

Hurel claims that while some rival firms also offer high-capacity, multi-band antennas that can support a broad frequency range, they do not offer the same gain performance which RFS has maximised across its product line-up.

But he adds that what really sets the company's antennas apart from the competition is a unique radome design that dramatically reduces wind load and minimises tower loading. Hurel reckons the wind load resistance that RFS now offers on its antennas is double that offered by products from rival manufacturers.

"In places that are close to the desert, the fact that you are able to load the different towers and pylons (or even rooftops) without having to suffer from problems from wind is something that really helps. It also enables the cell planners to do the best optimisation.

"We have invested a lot in the low width of our antennas. We have carried out a great deal of work in simulations, as well as testing the life and aerodynamic shape of our radomes in different chambers. If your antenna is not able to resist the wind, this is something that can definitely be a bottleneck. You have to reinforce your pylon and that can be painful. This is what we mean by optimising the cost of ownership."

Hybrid solutions

RFS sells its portfolio of products via OEM firms such as Alcatel-Lucent, Ericsson, Huawei, Nokia, ZTE, etc., as well as directly to operators like Globe, Viettel, China Mobile, Ooredoo and others. Ooredoo is a key customer, not only in the Middle East and Maghreb countries, but also in South East Asia where RFS' business has grown.

"In 2014, globally and especially in Europe, investment has not grown especially for this type of business and that has been valid for our total addressable market. But RFS has had growing revenues in South Asia from large deployments in new network constructions such as Myanmar.

"What is for sure is that in 2015 we are focusing to perform better in the market which is expecting to grow by around 10 per cent although we expect it to be higher than that."

Hurel agrees that the acceleration of LTE deployments will drive that growth. But he also points to a growing trend for hybrid solutions. "Operators are rolling out LTE both in 800MHz as well as in 2.6GHz for the places where capacity is required, but they are also re-farming the 1800MHz band which is currently being used only by GSM. Like most of the operators in Europe, they are not shutting down GSM because that really remains their 'bread and butter', especially if we talk about voice.

"The operators are going to their sites, implementing LTE, and are also putting UMTS in the 900MHz band at the same time. This is when they take advantage of not only installing a complete and new solution for the antenna, but also for the cabling between the remote radio head [RRH] and antenna, as well between the RRH and the baseband unit. This is a trend that we have observed. It has started to take off with good results and we strongly believe it will be an important growth factor."

Hurel says RFS' optimised hybrid solutions integrate the DC cables needed to feed the RRHs with the optical fibre cable that provides the signal from the baseband unit which is co-located with, or very close to, the base station antenna.

"When this trend started, there was a kind of mixed configuration of conventional solutions where all the electronics were co-located with the macro base station. They required long feeder cables of around 60 metres or more, going from the ground or the technical room to the top of the tower.

"Now that the power amplifier is remote and has been put inside the RRH which has come very close to the antenna, those cables can often be three metres or even less. But you still need a way to provide power to the remote radio head, and feed the RRH with the signal. With a hybrid solution, both the DC cable and the fibre cable are bundled together into a single cable which offers all the flexibility to expand or deploy a new remote radio head.

"For example with Oordeoo, we have had large deployments of our *HYBRIFLEX* hybrid solution. It's a really flexible solution both during and after the installation because you can put in some additional pairs of optical fibre and DC cable and that will last and allows you to expand a site in the future. We have had such deployments for Oordeoo in Tunisia and Algeria, as well in the greenfield operation it deployed in Myanmar around two years ago."

To adapt to all site configurations, RFS also delivers stand-alone DC cables and fibre cables

in order to adapt to the total cost of ownership constraint of the operators.

Evolution of microwave

RFS has long invested in products for microwave backhaul. Hurel believes the technology still has a long way to go in South Asia – despite the advent of fibre, which suffers from the complexity of civil works and the threat of vandalism, and the availability of satellite which he says remains a costly option.

"The operators keep using microwave backhaul to roll out and control the overall end-to-end quality of service of their network. On top of that, apart from places where the spectrum located for microwave links is extremely busy, there is still room for expansion in South Asia."

According to Hurel, one area that is a current focus for developing microwave technology is for backhauling small cells. In 2014, RFS introduced *Invisiline*, an integrated solution that features transparent antennas that have been designed to minimise visual impact by allowing better integration into any urban environment.

"We worked with new materials which not only allowed us to get extremely good performance but also enabled total integration with the small cell and the microwave. *Invisiline* also works well for making the links 'stronger' in terms of disturbance, as well as in solutions to double or more the capacity without having to completely change the microwave equipment."

Another area for innovation is miniaturisation. A few months ago, RFS added the *SFA04-W800* to its *Invisiline* range and claimed it was the industry's smallest E-band (80GHz) microwave antenna. The company says the antenna's 122mm reflector and 166mm radome diameter means it is "visually unobtrusive" in any landscape.

Hurel is keen to point out that RFS' customer base goes beyond mobile operators. For more than 40 years, the company has been providing communications technology for railways, metro systems, road tunnels and underground mines.

Here, its solutions include the unique *RADIAFLEX* radiating cables which can be used to support indoor coverage needs for 2G, 3G, 4G, TETRA, and multi-band GSM-R mission critical services. As well as being LTE-ready, Hurel points out that *RADIAFLEX* is also MIMO-ready.

He adds that RFS is currently working on deployments of the coverage for the metro systems in several big cities in China, and expects further contracts for metro projects in many Asian countries. ∎

Jean-Louis Hurel, VP portfolio & strategy, RFS

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- **Infrastructure & Service providers for wired & wireless technologies**

If a managed service provider offers BSS, it must be able to understand the intricacies of a billing system and all the functions it supports.

Don't be a sheep when it comes to BaaS

Should you follow the industry trend of handing over your BSS to a managed service provider? ALAM GILL explains what 'Billing as a Service' should really mean.

Around the world, recognition of the part played by improved communications in delivering economic growth during a time of global recession has led to several governments taking action to increase the take-up of high-speed broadband services. But at what price? After more than 20 years working with telecom companies across the globe, I can speak from experience when I say the world is littered with failed billing projects.

Common symptoms include: constant project delays; significant cost overruns; unrealised potential of strategic platforms that become legacy replicas; and continual scope versus change management angst and disputes between service providers and their system integrators/vendors.

Despite these common multiple symptoms, what is interesting is that most stem from a single common root cause.

Often, billing projects tend to focus on managing to 'requirements'. Enormous amounts of energy and effort are spent in capturing and managing specific requirements, rather than focusing on business outcomes such as delivering tangible improvements in 'time to market' and managing and expanding customer experience. This means if requirements are not 100 per cent accurate and complete, then the basis of the project is fundamentally unstable.

More importantly, by managing purely for requirements, service providers and system integrators fall into the trap of being bound to carefully crafted sets of words which always tend to favour one party over another and also assume a constant and non-changing world. And therein lies the fundamental problem: billing transformations take time, and time means change, yet requirements are static and fixed.

This is why managed service providers (MSPs) in general aim to shift the focus from 'delivering to requirements' to 'delivering to business outcomes'. Creating a world-class billing capability fit for today's business requirements and future innovation is a journey, not a point in time solution.

Delivering business outcomes

BSS applications, and billing systems in particular, are an integral part of the business. So naturally, many critical business outcomes are directly tied to such systems.

The effectiveness of the billing system can impact the ability of service providers to launch timely offerings, and almost always has a direct correlation with customer satisfaction. For example, improving the billing experience has a huge impact on an organisation's net promoter score, which measures customer loyalty and the likelihood that he or she will recommend your products and services to a friend or colleague.

So unlike system integrators (SIs) and independent software vendors (ISVs), MSPs tend to take a holistic view of the business. They start with a clear understanding of the challenges and the expected outcomes to deliver solutions and services that are 'fit for use' rather than just conform to requirements.

More so, effective MSPs understand the need and value of innovation, and recognise that the world is forever evolving. Hence, they tend to ensure that business outcomes incorporate continuous innovation and ongoing service improvement as part of their core offering.

So the real question is, can any MSP truly deliver billing as a managed service?

Are all MSPs equal?

The simple answer is no. Generally speaking, while most people would visit their general medical practitioner for a check-up and/or to address minor ailments, no sane person has ever agreed to have heart surgery performed by anyone other than a specialised heart surgeon. In this respect, the approach to using a billing platform as a managed service is no different.

BSS, and especially billing systems, hold the heart of the organisation (i.e. the product model) and pump the events continuously from downstream systems and through to upstream systems and direct users. They are the central nervous system of telecom operations and impact key business success factors such as time to market, customer satisfaction and of course, profitability. As a result, in-depth, specific expertise is needed to get the billing system right.

So handing over the transformation of the billing domain to a generic MSP is no different to asking a general medical practitioner to perform open heart surgery. While they might be familiar with key concepts and processes, they lack the intimate understanding and experience that a specialist surgeon possesses.

How can a generic MSP truly understand the intricacies of the billing system and services if it doesn't live and breathe this for many years across many customers? How can it manage to deliver business outcomes if it doesn't have an inherent understanding of the billing domain and how it affects customer satisfaction?

More importantly, how can an MSP contribute to innovation and deliver continuous service improvement if it is not investing R&D money into billing technology roadmaps? BSS specialists have defined frameworks and models that anticipate billing issues and proactively aim to eradicate them based on years of best practice.

The reality is this: generic MSPs will strive to deliver business outcomes, and will most likely deliver cost optimisation across a broad cross-section of the organisation. However, they will not be able exploit and enhance the fundamental business outcomes that are critical in today's digital era, such as time-to-market, customer satisfaction and service predictability/agility. To realise these benefits requires a deep understanding of billing technology and billing services to assess, baseline and continually improve billing service maturity.

'BaaS' – what should it really mean?

'Billing as a Service' (BaaS) invokes connotations of cloud-based billing solutions. However, what it should mean is something much broader and yet much more specialised. It should encompass:

❖ The agility that a SaaS cloud solution implies but with the ability to be delivered on any platform, hosted or otherwise

❖ Quality management frameworks and risk management models that control and assure billing specific conditions

❖ Billing domain knowledge and best practices founded on years of global operations and billing technology experiences

❖ An inherent understanding of billing pain points, and a proactive approach to continually improve billing maturity

❖ An internal ongoing investment in billing technology and operational best practices to ensure continual innovation and service improvement

❖ A service-oriented billing approach able to capitalise on the digital era

The billing system is one of the best places to leverage managed services and a service-oriented approach. No other system touches the customer experience so frequently, nor has the potential to significantly improve the customer interaction and time-to-market.

But just focusing on the billing system as a piece of technology won't get you there – consideration of the entire ecosystem of people, processes and technology as a whole must be at the forefront of any managed services endeavour.

Today's digital world requires a new way of thinking about all of these three elements as enablers of the customer journey, and that's where the next generation of managed services, the service-oriented approach, fits in. This approach is built upon collaboration of stakeholders from across the business (not just IT), and looks to solve business problems without creating new ones.

A new business model is emerging in leading telcos. They have created an 'innovation team' comprised of marketing, IT, product management and the MSP to identify business objectives, establish common goals, and proactively identify issues that can thwart results.

The service-oriented approach can create dramatic and meaningful results for the business. A great recent example is work CSG performed for one of its managed services clients who wanted to shorten the amount of time it took to create and launch a new product. CSG helped the provider look across the entire process of launching a product to identify the gaps and address each one. With this more agile, holistic approach, the provider was empowered to release four to five new offerings every week.

This transformation didn't happen overnight, and it didn't look to a single technology for the answer. Instead, it required collaborating with all of the company's relevant stakeholders, mapping out a process, and optimising the right systems to make it all happen.

The service-oriented approach also puts the customer at the centre of the business, and explores every opportunity to build better interactions, create loyalty and build new revenue streams.

While technology can address parts of the interaction it often overlooks the whole. The marketing department may want to launch a new service, but how will that new service impact core systems such as ordering, billing and everything in between? And most importantly, what type of experience will the customer have? How do we make the customer journey a smooth and fast one?

A service-driven approach looks at the entire process from beginning to end and maps the technology to that process. It understands how all systems interrelate across the whole experience – not just one point along the journey.

Thirdly, the approach focuses on putting in place the people, processes and technology to work in harmony instead of in silos. It's people – and their skills and expertise – that bring new products to life, create innovative opportunities and enable faster time to market. Processes and technologies help bring those ideas to fruition. Businesses must take into account all three to support new digital services and meet customer expectations.

Asia's growing need for a holistic view

The Asia-Pacific region is in particular need of addressing loyalty issues amongst customers. According to Analysys Mason, APAC consumer loyalty is lower than worldwide trends: only 29 per cent of consumers have never switched operators, compared with a global average of 37 per cent. And with multiple SIM usage prevalent (for example, 73 per cent of consumers in Indonesia have multiple SIMs) a holistic view of the customer is essential, albeit difficult.

At the same time connections in the region, both human and machine, are growing rapidly. Driven by the powerhouses of India and China – the sources, according to Ovum, of the most new mobile subscriptions globally – the telecoms landscape is changing dramatically. Not least among the drivers of this change is the Internet of Things, with the APAC market forecast to grow to USD59bn by 2020.

The digital age is truly upon us, with all the associated ramifications that implies. In a survey by Chetan Sharma Consulting, more than 35 per cent of respondents said that significant shifts in global trade and GDP would result from the automation and digitisation of industries, while just under 30 per cent felt they would benefit as a result of the changes. Amidst all of this change, the timing is perfect to explore a service-oriented approach to designing teams, business processes and systems that will prepare operators for success as the market grows. ■

Alam Gill,
SVP of international managed services,
CSG International

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ICT and the fight against Ebola

Inveneo, the US-based non-profit social enterprise, has delivered 100 new high-speed internet connections in Sierra Leone and Liberia as part of the joint *Ebola Response Connectivity Initiative*.

ERCI aims to establish sustainable infrastructure for high-speed internet access in remote parts of the two countries. Inveneo says this plays a key role in preventing and/or mitigating future disease outbreaks while helping organisations respond more effectively to community needs.

Inveneo launched ERCI earlier this year in partnership with Facebook, the Paul G. Allen Family Foundation, Cisco, EveryLayer, and NetHope. It says it reached the milestone of 100 connections in less than five months.

Executive director Bruce Baikie adds that the commitment and close collaboration of all the partners was essential in the success of the rollout. "The true stars of this project were the field teams, which included staff from Inveneo and Damsel, [our] certified partner in Sierra Leone," he says.

"The field teams were just incredible, scaling rooftops and towers up to 175 feet high to install equipment underneath the blazing hot West African sun, six or more days a week in the realisation that every connection counts to help save a life and create a more resilient healthcare system."

As part the ERCI project, Inveneo is running a tower team climbing safety course at a training site in Freetown, Senegal. Here, delegates are shown how to rig for haul and rescue.

Gilat to power China's first Ka-band HTS network

Gilat Satellite Networks has teamed up with Space Star Technology Co (SSTC) to jointly provide the satcoms network for *Chinasat 16* (also known as *16 Zhongxing* or *ZX-16*), the first Ka-band, multi-spot-beam, high throughput satellite (HTS) in China.

Under what it describes as a "unique" partnership, Gilat will provide multiple network segments and VSAT terminals using its *SkyEdge II-c* technology. It says this will create a network enabling high-speed mobile and fixed services, including airborne, maritime, train and land mobility, to be delivered via satellite throughout the country.

Additionally, the firm says it will share its expertise and experience with SSTC to develop satellite-enabled applications to improve the quality of life for citizens in remote locations.

Chinasat 16 is being built by the China Academy of Space Technology and is due to be launched to 110.5°E in 2017.

Dov Baharav, Gilat's interim CEO and chairman, says the agreement represents a "momentous opportunity" not just for his company but also for China. He adds: "China [will] be at the forefront of next-generation fixed and mobile satellite services, while providing consumers, businesses and government organisations across with valuable high-speed broadband services."

Gilat will deliver multiple network segments and VSAT terminals using its *SkyEdge II-c* platform.

TETRA swims to victory at the largest international aquatic sports event

Danish TETRA specialist DAMM provided secure and reliable communications during the recent FINA World Championships held in Kazan, Russia during July and August.

The company supplied various products and services including a 16-site *TetraFlex* system with an intelligent decentralised network design and full redundancy, as well as its built-in applications such as the *Dispatcher* and *Log Server*.

The TETRA system was integrated into the Emergency and Fast Response Centre, providing location data to the emergency dispatchers.

DAMM says the infrastructure was built using its "compact and rugged" IP65 encapsulated outdoor base station which provided coverage for more than 1,000 radios.

Users included event organisers, emergency responders, security, police, ambulance, press, the power distribution company, and others.

Said to be the largest international water sports event, the championships are organised by the Fédération Internationale de Natation (FINA), the world governing body for swimming, diving and water polo. This year's games brought together more than 2,400 athletes and 1,800 officials representing 190 nations.

DAMM adds that *TetraFlex* was used at the event as it had already proved itself in Kazan. The system was initially installed in the city for the 27th World University Summer Olympics in 2013.
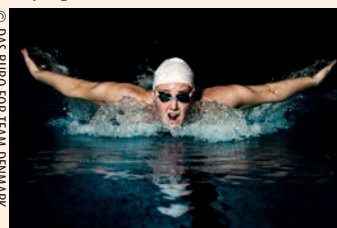
Over 2,400 athletes, including Denmark's Jeanette Ottesen seen here, participated at the event which was covered by DAMM's *TetraFlex* system.

LG Uplus launches VoLTE roaming service

Syniverse has helped South Korea's LG Uplus launch the world's first commercial VoLTE roaming service featuring HD voice.

The new service will enable the operator's subscribers to roam on to KDDI's network in Japan, and will also allow LG Uplus to expand coverage to additional markets in the future.

Syniverse installed the VoLTE solution using its IPX network. The firm says this interconnects many of the world's networks to make LTE roaming possible, and claims it has nearly 800 LTE roaming routes reaching more than 200 operators in 44 countries.

LG Uplus' general manager Hong Jun Choi says: "Because LTE roaming is the pre-requisite to launch VoLTE, Syniverse's reach to nearly every operator that has launched LTE roaming enables us to achieve the critical reach and coverage our subscribers will demand."

According to Syniverse, the three key emerging VoLTE implementation models being implemented by operators include: VoLTE through S8 home routing; local breakout; and VoLTE interconnect.

LG Uplus' VoLTE service uses Syniverse's S8 home-routed platform. It's claimed this allows operators to rapidly deploy VoLTE by leveraging their existing LTE data roaming connections.

"Unprecedented" images of the planet expected from new satellite

The European Space Agency (ESA) has begun its "most ambitious" Earth observation programme to date. Its *Copernicus* mission is based on a constellation of two identical satellites – *Sentinel-2A* was launched in June from the agency's spaceport in French Guiana, while *Sentinel 2B* is scheduled for mid-2016.

Once launched, both satellites will cover all land surfaces, large islands and coastal waters every five days, optimising global coverage and data delivery for numerous applications.

ESA says each satellite's payload includes an innovative high-resolution camera with 13 spectral bands for a new perspective of the planet's land and vegetation.

"The combination of high resolution, novel spectral capabilities, a field of vision covering 290km, and frequent revisit times will provide unprecedented views of Earth," says the agency.

Amongst its applications, *Copernicus* will provide information for agricultural practices, helping in the management of food security. Images of floods, volcanic eruptions and landslides will contribute to disaster mapping and help humanitarian relief efforts.

The *Sentinels* will also benefit from the ESA's European Data Relay System. This is creating a network for the continuous relay of low-orbit satellite information, and will enable

Sentinel-2A was launched in June via the ESA's spaceport in French Guiana.

data to be transmitted faster using laser links.

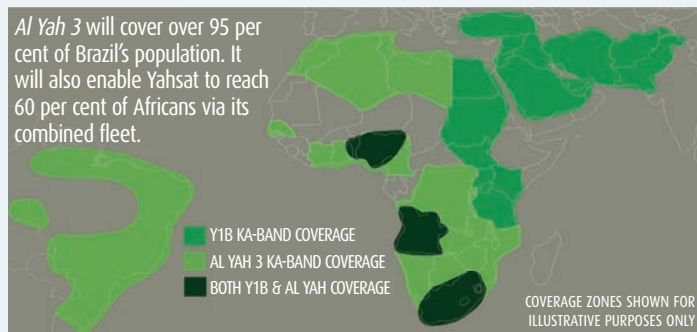## Yahsat completes critical design review of Al Yah 3

UAE-based operator Yahsat has successfully completed the critical design review (CDR) for its third satellite *Al Yah 3*. This means that all specifications and requirements have been captured into the spacecraft's final design, and that its components can now be put together.

As a result, the company says it remains on track to launch the satellite during the final quarter of 2016

Al Yah 3 is an all Ka-band, high throughput satellite that will be built by Orbital Sciences Corporation using the *GEOStar-3* platform and a hybrid electric propulsion system. Yahsat says it will bring high-speed, affordable satellite broadband services to the African and Brazilian markets, as well as high data rate backhaul links for ISPs and telcos.

Al Yah 3 will cover over 95 per cent of Brazil's population. It will also enable Yahsat to reach 60 per cent of Africans via its combined fleet.

Y1B KA-BAND COVERAGE
AL YAH 3 KA-BAND COVERAGE
BOTH Y1B & AL YAH COVERAGE

COVERAGE ZONES SHOWN FOR ILLUSTRATIVE PURPOSES ONLY

GSM-R system upgrade for Europe's fastest railway

Spain's railway operator has awarded a EUR339m (USD377m) contract for the upgrade of the GSM-R system on its high-speed train networks. Under a 10-year deal, Administrador de Infraestructuras Ferroviarias' (Adif) will work with Nokia Networks, Siemens and Thales.

Nokia will provide its GSM-R core network for geo-redundancy and greater reliability. The firm will supply its *Subscriber Data Management, Network Directory Server*, HLR and *NetAct* management systems.

It will also maintain the comms system, including transport and radio networks, video surveillance, fixed telecoms, and remote power systems. In addition, Nokia will supply services for system integration, network operations and care, as well as remote management from its NOCs.

Siemens will be responsible for maintaining the energy SCADA system of the total network and fixed comms on the Madrid-Seville line. It will also upgrade the remote terminal units for the switchgear control.

Thales Spain will maintain and modernising the fixed comms and CCTV system on various parts of the high-speed rail network, including the link connecting Madrid, Barcelona and the French Border.

Adif has been offering high-speed rail services in Spain since 1992. The country is said to have the longest high-speed railway network in Europe, and the second-largest in the world after China.

Adif says its network now stretches more than 3,100km across Spain, with 300 high-speed trains running every day at an average speed of 222kph.

Bolivian Space Agency certifies Newtec modems

Agencia Boliviana Espacial (Bolivian Space Agency) says it's successfully conducted trials of transmitting more than 500Mbps using 120MHz Ka-band spectrum.

The tests used Newtec's *MDM6000* series modems. As well as being able to transmit up to 425Mbps bi-directionally, the vendor claims its modems operate at much lower rates as required for multi-carrier applications, and also offer support for different standards.

The demos showed how the firm's equipment can be used for applications such as mobile backhaul. During one test, 2Mbps was transmitted over 1MHz bandwidth using a 1.2m antenna and a 4W hub. It was carried out from the remote to a hub station in Amachuma in Bolivia's La Paz region, and at an elevation of over 4,000m above sea level.

In another demonstration, 153Mbps was achieved over 36MHz from the hub to the remote station using the same hub and antenna, as well as with a 9m antenna and 200W hub in a set-up typical of VSAT operators. Newtec says the hub to hub (9m and 200W to 9m) test recorded

a result of 257Mbps into 60MHz, an arrangement appropriate for IP trunking, and optical fibre restoration or backup.

ABE's Amachuma teleport is 4,000m above sea level in Bolivia's La Paz region.

Dutch renew TETRA service

Critical communications specialist Hytera Mobilfunk has reached a deal with the Netherlands government to renew the country's C2000 emergency services network. C2000 is believed to be one of the first nationwide TETRA networks in Europe, and much of its hardware and software is now reaching its end of life. The renewal consists of three parts: the voice network between control rooms and emergency workers; the paging network for the alarm system; and the radio control for the operations centre.

Small cells in Bahrain

Batelco is deploying public access 3G enterprise small cells across the Kingdom of Bahrain. As part of a multi-million dollar deal with end-to-end solution provider ip.access, the operator is also covering residential and SoHo indoor deployments across the region. In addition, Batelco has started a 4G trial with the aim of rolling out ip.access LTE small cells later this year. "Small cells provide coverage exactly where our customers need it and mean we can maintain high quality service levels at all times and in all locations," said the operator's CEO, Muna Al Hashemi.

Telenor ends 3G in 2020

Telenor Norway will shut down its 3G network in 2020, five years before it plans to close 2G. Speaking to investors in early June, CTO Magnus Zetterberg said Telenor's 4G network, which was established in Norway in 2012, now accounts for 60 per cent of all data traffic in the country. He said the company is now targeting a data centric model, and its long-term view is to "dismantle" legacy networks and have 99 per cent of the population covered by 4G.

Improving experience at the individual level

JDSU is helping Japan's SoftBank Mobile (SBM) to improve customer satisfaction by using location intelligence data from its network. The operator will implement the vendor's *ariesoGEO* platform and *GEOperformance* application across its 3G and LTE networks in Tokyo.

JDSU says its geolocation solution is designed for customer-centric RAN planning, optimisation and troubleshooting. The vendor claims *ariesoGEO* is the only solution that

JDSU's Sue Spradley says SoftBank will now be able to maximise the value of geolocated customer data.

supports 2G, 3G and LTE radio access generations.

SBM will leverage the platform's location intelligence features to provide information in near real-time about the customer experience down to the individual subscriber level.

This in turn will enable efficient segmentation and the ability to focus on VIP customer groups, such as corporate accounts.

Sue Spradley, SVP and GM of JDSU's network and service enablement business segment, says: "We will ensure that SoftBank Mobile is able to rapidly adopt new working practices, helping it to maximise the value of geolocated customer data and achieve expected business benefits quickly and seamlessly."

Telefónica and FIEB to apply Internet of Things to biodiversity research

The Internet of Things (IoT) will be used to protect wildlife and ensure animal welfare in Spain as part of an agreement between Telefónica and the Fundación para la Investigación en Etología y Biodiversidad (FIEB; Research Foundation for Biodiversity and Ethology).

Under the partnership, FIEB says it will be able to deploy the most advanced M2M technologies to monitor and analyse the behaviour of the animals kept in its facilities just outside Madrid.

An extensive network of surveillance cameras and numerous environmental sensors will continuously provide the foundation's experts and other researchers with data relating to living conditions, temperature, humidity, sounds, etc. They will also

FIEB will implement a network of surveillance cameras and environmental sensors to monitor animals kept in its facilities just outside Madrid.

be able to remotely observe the physical conditions, typical behaviour, and daily habits of all the animals that live in their enclosures.

Telefónica says that as well as ensuring the animals are kept in ideal living conditions, the systems also keep direct human contact to a minimum. This is said to be a very important factor for certain species, especially if the ultimate aim is to release them into their natural environment.

FIEB president Alejandro Fernández says he wants 2015 to be the year in which the foundation starts to deploy the newest technology and make it available to researchers and conservationists.

"At FIEB we believe that new technologies are one of the greatest allies in the search for research excellence in ethology and biodiversity protection. This goal is made possible, thanks to the agreement reached with Telefónica."

Slovenia telco launches triple play via 4G

Telekom Slovenije has developed a solution to provide subscribers with internet, fixed line services and television over its 4G network. The telco launched the solution in areas in Slovenia where broadband cable connections are not possible but LTE is available.

Telekom Slovenije says it is one of the first operators to offer such a solution. Its in-house experts created the entire architecture for the platform, including the network for content provision, systems integration,

and the backend systems for service and content management.

To take advantage of the new service, subscribers will receive a modem with SIM-card, an IPTV set-top box, and what's described as a "powerful" set of outdoor antennas. The telco says the user experience will be comparable to that of using its fixed network, with internet access rates of up to 10Mbps for downloads and 2Mbps for uploads.

Telekom Slovenije adds that its aim is to provide 'hybrid coverage'. It say this means it will offer services

via a range of paths, both wired and wireless, while the user experience will remain the same, regardless of the technology supporting it.

"Technological advance requires ever greater network convergence," says Matjaž Beričič, director of convergent core network. "The objective of this type of development is to provide reliable, simple and excellent user experience in accessing the desired services – anytime, anywhere – regardless of the technology and network, which can either be fixed or mobile."

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