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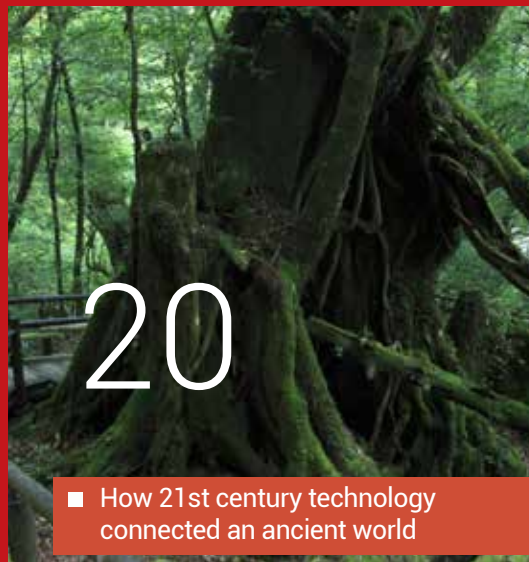
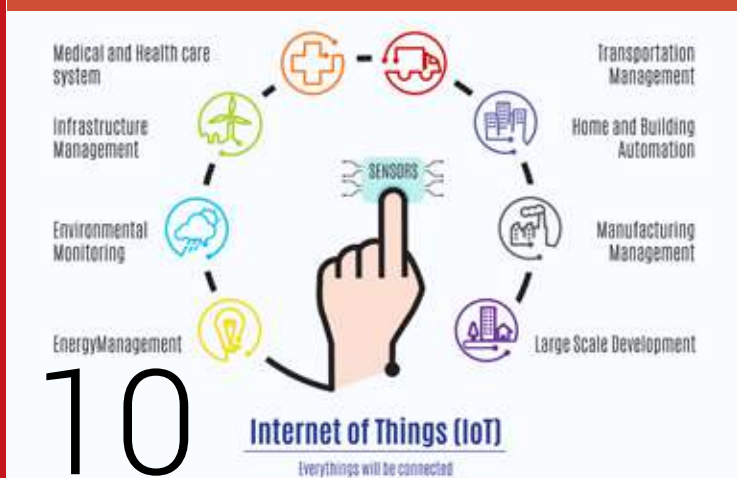
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Printing

Arab Printing Press

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Broadband for the unconnected: a David v Goliath battle

The global mobile telephony industry is an awesome behemoth. Its achievements over the past decade have been truly spectacular: it has brought real-time communication to most of the world's population and it has put functionality into the hands of many of us that would have been undreamt of a decade ago.

And it's showing no sign of slowing down: anyone following developments in the industry will be bombarded with a stream of 5G related material: announcements of technology breakthroughs, R&D partnerships, white papers etc.

It's easy to believe that the industry will be a panacea for all the world's communications problems, and of course the industry itself is unlikely to suggest otherwise. So it should come as no surprise that a Digital Societies Policy Forum, held in June in Bangkok and organized jointly by the ITU and the GSMA—the global body representing over 800 mobile network operators—should have come to the conclusion that "mobile technology is well-suited to deliver the required connectivity and content for a digital society," according to Chris Zull, the GSMA's Spectrum Director for Asia.

He added: "Today's wireless networks are able to cover a wide area with greater efficiency at lower costs than many other technologies, particularly in emerging countries with underdeveloped fixed network infrastructure and low levels of urbanization."

In a post-forum press release the GSMA claimed: "New research reports produced by the GSMA, ITU, ICANN and iOS demonstrate that the development of digital societies have the potential to help solve key challenges faced by Asian countries."

The GSMA, unhelpfully, did not identify these reports, or even indicate how many there were. I was able to locate only the GSMA's own report, *Building Digital Societies in Asia*, and that from ISOC, *Unleashing the Potential of the Internet for the ASEAN Economies*.

The GSMA's report was unequivocally in favor of mobile as the key enabler of connectivity in Asia: "Mobile technology is well-suited to deliver the required connectivity and content for a digital society," it asserted. "This is based on the capability of wireless networks to cover a wide area with greater efficiency than many other technologies, particularly in emerging countries with underdeveloped fixed network infrastructure and low levels of urbanization."

The iSOC report did not differ. It stated: "Governments need to recognize the mobile centrality of their populations and adjust their Internet access and national digital economy plans accordingly, along with developing mobile first programs."

Arrayed against these forces is the Digital Spectrum Alliance, whose head H Sama Nwana, we report in this issue (p6) saying that today's cellular technologies will not deliver broadband that is affordable and with sufficient bandwidth to most of the world's population, and that 5G is "all about giving more to the people who already have."

Not surprisingly, he says: "The Ericssons and Qualcommms of this world do not like what I am saying. The GSMA is not happy about it." They wouldn't be, and they will be formidable opponents.




Stuart Corner
Senior Editorial Manager
Telecom Review Asia Pacific

Cisco expands in China and India



Cisco has signed a memorandum of understanding (MoU) with China's National Development and Reform Commission (NDRC) to expand investment in China, focusing on areas of innovation, equity investment, R&D and job creation that, it says will "help promote the development of a high tech industry in China, while actively helping meet the country's long-term goal of innovation-driven development."

Cisco also signed an MoU with the Association of Universities (Colleges)

of Applied Science (AUAS), which was established under the guidance of China's Ministry of Education, to advance the training of information and communications technology talent. Through the existing Cisco Networking Academy Program, Cisco will invest in a four-year program with 100 universities (colleges) of applied science recommended by AUAS.

Also, in India Cisco is to provide \$20m to train 120,000 students for jobs in the digital economy, and has announced an additional \$40m investment to expand its presence in India.

Cisco says that, to help India become a world leader in manufacturing, it will use its global supply chain expertise to help build and accelerate the manufacturing ecosystem in India. The

company will organize the Cisco Design and Innovation Conference in Bengaluru in February 2016 "to bring together over 75 of Cisco's key suppliers and partners to drive collaboration on product development and IoT enabled supply chain technology."

The Cisco Networking Academy in India is one of the largest programs for Cisco worldwide. Cisco says that approximately 100,000 Indian students have been trained in 198 academies since the program's inception.

Cisco's India facility is spread over 370,000 square meters, is "designed as a campus-as-a-city for thousands of Cisco employees to work, play and learn," and "a spectacular showcase of the future of smart and connected communities in India," according to Cisco.

TNS provides pan-Asian network for Global Payments



TNS is providing a Pan-Asian telecommunications network for Global Payments, a worldwide provider of payment technology services. The network will use TNS' Dial and TNSConnect technologies to deliver "a single, seamless solution which harmonizes the payments infrastructure across the diverse range of countries and

telecommunications environments," TNS says.

According to TNS, the network "will support flexible routing and a range of connectivity options to help simplify operations which carry multiple types of transaction traffic. It is adaptable and scalable, allowing users to cost-effectively expand and enter new markets as opportunities arise."

Guido Sacchi, chief information officer at Global Payments, said:

"We have had a long-standing relationship with TNS because of their extensive global reach and ability to handle the many different protocols and methods used across the Asia Pacific region. By using TNS, we have achieved a standardized, PCI DSS solution that complies with local regulations in each market, meeting Global Payments' business requirements and allowing us to maintain a high standard of service to our customers."

Huawei teams with Vodafone to serve global enterprises



Vodafone Global Enterprise—an arm of the global mobile company set up to provide communications services to multinationals—has teamed up with Huawei to develop enterprise communications and technology services for global enterprise

customers, particularly in enterprise markets in Europe, Asia Pacific and Africa.

Their initial focus will be on the use of Huawei's fixed and mobile connectivity bonding technology for new products, investigating the opportunities for in-building coverage solutions, the development of new machine-to-machine module designs, and developing solutions for Safe City,

Internet of Things, and cloud data centers.

Mr Yan Lida, president of Huawei's Enterprise Business Group, said: "We aim to carry out joint innovations, integrate our ICT expertise and global resources, help customers cope with challenges and opportunities brought by the new industrial revolution, and push ICT transformation in the industry."

Thai mobile telco AIS deploys Alcatel-Lucent optical transport



Thai mobile service provider AIS is to deploy a 100Gbps optical transport network from Alcatel-Lucent to help meet the growing demand for

data capacity created by increasing ownership of smartphones and tablet devices, as well as by tourism.

Alcatel-Lucent is upgrading the network from Bangkok and out to the North and Northeast regions of Thailand. Work was due to be completed during the first half of 2015.

AIS will deploy Alcatel-Lucent's 1830 Photonic Service Switch (PSS) optical platform, combining it with elements of the existing 10Gbps optical network to enable it to provide high-speed, ultra-broadband Internet access in

the face of demand which is doubling year-on-year.

"This will allow AIS to evolve its transport network capacity from 10G to 100G, and 200G in the future, without additional investment in hardware," Alcatel-Lucent says. "Alcatel-Lucent's 100G/200G technology will provide AIS with critical resiliency, as well as auto-restoration features based on a Generalized Multi-Protocol Label Switching (GMPLS) control plane offering improved reliability and uninterrupted quality of experience for customers."

French bank Natixis to help Hawaiki's Aus-US cable find funding



New Zealand's Hawaiki Submarine Cable has come one step closer to realizing its, delayed, goal of building a submarine cable system linking Australia, New Zealand and the US via

a number of Pacific island nations and Hawaii. It has appointed French bank Natixis as "exclusive equity advisor" for the project and says that system implementation will start in the fourth quarter of 2015.

Hawaiki CEO, Rémi Galasso, said Hawaiki was progressing according to plan. "We have our carrier license in Australia and the network operator status in New Zealand. Next step is to engage with the US authorities for our landings in Hawaii and Oregon."

Hawaiki now says it aims to complete the project by the end of 2017, three years behind the completion date given when the project was unveiled in September 2012.

The amount of pre-sold capacity is likely to be key to the project coming to fruition. So far the company has named as customers New Zealand's REANNZ academic and research network, in July 2014 and, in 2013, iiNet and TPG and New Zealand ISPs Voyager and Orcon.

Digicel PNG taps O3b to boost cellular backhaul



Medium earth orbit satellite network operator, O3b Networks, is to provide backhaul services to Digicel PNG in Papua New Guinea, the Digicel Group's largest market.

O3b said: "Because of the demand for additional internet bandwidth in Port Moresby, the capital city of PNG, O3b

Networks has two high throughput, low latency beams from its medium earth orbit (MEO) satellites fixed on Port Moresby for Digicel."

It added: "Digicel started using O3b services in July 2014, and increased the capacity in February 2015, and only three months later increased the capacity again, nearly a

15 percent increase in data throughput from the initial start of service. ... The connectivity provided by O3b is fuelling Digicel Broadband Mobile Network for businesses, as well as consumers. Businesses across the capital can access the internet through a Digicel Broadband Wireless Modem, while consumers use their smart phones to access the network via the 3G network.

O3b satellites are closer to the earth than conventional geostationary (GEO) satellites, so offer lower latency, increased internet speed and improves voice and video quality for the user. O3b claims that its IP trunking solution "boosts existing link capacities to rival the affordability and latency of terrestrial fiber."



Budapest 12-15 October

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A dynamic future for spectrum allocation

Cognitive radio technologies enable much more efficient use of scarce spectrum resources than today's systems where, in general, spectrum is dedicated to specific applications and technologies, even when it might be unused. The Dynamic Spectrum Alliance is pushing for regulatory changes that will enable their wide adoption.

As head of the Dynamic Spectrum Alliance (DSA), H Sama Nwana, the former head of spectrum policy in the UK, is on a mission: to bring broadband communications to the four billion people in the world who don't presently have it and, who he says, won't ever be served by cellular at rates they can afford.

The DSA is a global body lobbying for changes to spectrum policy and regulations that will enable more efficient and effective spectrum usage. The DSA's focus is on local regulatory changes that could allow access to spectrum much sooner than global processes overseen by the International Telecommunication Union (ITU).

Practically, such access is made possible through recent developments in 'cognitive

radio' technologies. These enable wireless transmitters to adjust frequency, power and other operating parameters on the fly, for example by referencing a database showing what frequencies are available in the location where they are required to operate.

There might today be more cellphone subscriptions than there are people on the planet, but according to Nwana, hopes that cellular technology will eventually deliver universal broadband are misplaced – because the economics do not stack up.

Giving broadband to everybody

He says that, at present, about three billion people have Internet access, and about four billion do not. "There are four billion people who are not online at all, according to ITU statistics, and only a small percentage of those online are getting a broadband experience, whatever definition of broadband you use.



"The current 3GPP ecosystem [cellular telephony] will not connect those four billion people and will not give a true broadband experience to a significant fraction of the three million that are connected today because the economics of the mobile industry do not scale to provide them with affordable access."

He was also dismissive of the nascent 5G technology, describing it as being "all about giving more to the people who already have."

The economics of cellular are such, he says, that the majority of revenue comes from a minority of base stations. "Typically, with 2G, if you have 10,000 base stations in a country you get 50 percent or your revenue from 10 percent of those, and 80 percent of your revenue from 30 percent of your base stations. The last 50 percent give you only 10 percent of your revenue."

"There is no incentive to expand coverage, particularly in a continent like Africa with one billion people not connected and that is bigger than China, the USA, Western Europe, India and Argentina combined."

WiFi tipped to dominate access

He predicts WiFi will emerge as the dominant broadband access technology and says that, today, WiFi operating in bands presently used for analogue TV would be much more economical. "Emerging market countries require a broadband proposition between \$2 and \$7 [per month] and those frequencies would give you significant coverage. That is why people like me are going around the world arguing for the use of WiFi in the UHF bands."

"I would like to see WiFi in TV bands because emerging market countries require a broadband proposition between \$2 and \$7 per month and you want to be able to ensure you have significant coverage."

"The goal for me is to have WiFi operating not only in the 2.4GHz and 5GHz bands but also in the TV bands. And if the only way we can do that is through dynamic spectrum access DSA technologies, so be it. Because otherwise we have to go through the international regulatory processes to have those frequencies repurposed for broadband, and that could take 15 or 20 years."

He says that shifting to digital TV transmission in Africa would easily free up sufficient spectrum. "You need low frequency spectrum for coverage and 82 percent of African countries have fewer than nine analogue channels and you can fit all those into one multiplex."

He acknowledges that, in the long term global agreement on spectrum allocations are needed but says there is no need to wait for this: any country can put in place the policy and regulation needed to free up spectrum, and the technology exists to make effective use of that spectrum.

"In some places 90 percent of the spectrum is not being used 90 percent of the time and DSA allows you to use that spectrum in different locations at different times."

"Given the glacial pace at which the ITU works do you want Africa to wait until 2020 and beyond? We can start using dynamic spectrum access today as they have done in the Philippines. They have rolled out services to 17 schools, that's 7000 students, and 35,000 people within the coverage area."



He points out that current global regulations, as developed by the ITU's most recent World Radio Communication (WRC-2012), envisaged and endorsed the use of spectrum under local regulations that were at odds with global regulations.

ITU rules permit dynamic spectrum access

He quotes François Rancy, director of the ITU Radiocommunication Bureau, saying:

"The ITU World Radiocommunication Conference of 2012 concluded that the current international regulatory framework can accommodate software defined radio and cognitive radio systems, hence dynamic spectrum access, without being changed. The development of systems implementing this concept, such as TV white spaces, is therefore essentially in the hands of national regulators in each country. For this, regulators will depend on state of the art best practices which are currently developed by ITU-R Study Groups 1, 5 and 6."

Nwana notes that a number of leading regulators have already moved to implement regulatory changes that will free up the TV white spaces. In April the DSA issued a statement saying: "Ofcom [has decided] to implement TV white space regulations, enabling access to the unused parts of radio spectrum in the 470 to 790 MHz frequency band. Likewise, the FCC has taken important steps to free up unlicensed spectrum for WiFi and other uses, across a variety of bands."

Similar development, it said, were underway in the USA. "The FCC has already permitted access to the TV white spaces and is looking to ensure that a minimum amount of unlicensed TV white space spectrum is available on a nationwide basis. The FCC has also taken important steps recently to enable further dynamic access to 3.5 GHz and 5 GHz frequencies for high-capacity wireless connectivity on a licensed and unlicensed basis."

In June the FCC opened a docket allowing public discussion regarding

the use of license-anchored technologies such as LTE-U and LAA, and the coexistence between these technologies with other unlicensed technologies, such as WiFi. The DSA commented: "As carriers look towards moving LTE into unlicensed band frequencies in order to meet increasing capacity demand on wireless networks, it will be important to ensure that coexistence mechanisms allow both license-anchored and unlicensed-only technologies to flourish. The Alliance supports the FCC's inquiry into this question."

These developments don't mean that Nwana expects making change to be easy. "My biggest opponent is inertia," he says. And, not surprisingly he adds: "The Ericssons and Qualcomms of this world do not like what I am saying. And the GSMA is not happy about it."

That should come as no surprise. **TM**

What is cognitive radio?

A cognitive radio can be programmed and configured dynamically. Its transceiver is designed to use the best wireless channels in its vicinity. It automatically detects available channels and changes its transmission or reception parameters to use those channels.

A fully cognitive radio would examine parameters such as channel occupancy, free channels, the type of data to be transmitted and the modulation types that it could use. It would factor in the regulatory requirements. Generally, a cognitive radio would exploit software defined radio technologies to enable it to reconfigure its operating parameters, so the two concepts are closely linked.

The concept of cognitive radio was first proposed by Joseph Mitola III in a seminar at the Royal Institute of Technology in Stockholm in 1998 and published in an article by Mitola and Gerald Q Maguire, Jr in 1999.



Kathrein antennas focused on Asia

Antennas. They are the quiet achievers of mobile communications, and world-leading manufacturer, Kathrein, is ramping up its presence in Asia

If you follow mobile telecommunications you'll be bombarded by news of their technological achievements by all major vendors: this 'state of the art' base station, that 'leading edge evolved packet core.' What never gets a mention is antennas: the vital link between network and user and a key contributor to the overall performance of the network.

One company, Germany-based Kathrein, knows all about antennas—for cellular networks and just about any other radiocommunications technology. It's been making them since 1919 and supplies them to many of the major cellular infrastructure vendors.

The company is ramping up its presence in the Asia Pacific, a region that is now home to the lion's share of the world's mobile phone users. "The sales network will be reorganized and human resources strengthened," the company said in a statement. "The solution and system portfolio will be expanded to meet market-specific demands."

Speaking of the company's regional expansion plans, chief sales officer, Joe Doering, said: "In the future we will be even closer to our customers by strengthening our presence in the regional markets."

Over 800 staff in Apac

Currently, Kathrein has eleven sales affiliates and partners, and more than 800 employees working in the APAC region. A regional sales headquarters already

exists in Hong Kong and is responsible for markets in China, South Korea, Japan and Taiwan. Kathrein expanded its activities in South Korea last year, and it has two plants in China.

The company is privately owned, by Anton Kathrein, grandson of the founder. He took over the reins in 2012 when just 28 years of age after the sudden death of his father. He told the BBC earlier this year: "More than 50 percent of mobile phone users are in this region so the market is massive and will grow in the future. That is the reason for us to expand here and focus on what the customer really needs, on what special solutions they need now, and how we can help them grow. The business opportunity here is massive."

But so too is the competitive threat, as the BBC interviewer pointed out. "What about the competition?" he asked. "You have the Japanese, the Chinese and the Koreans manufacturing the same products as you do and maybe at a cheaper price."

The best, not the cheapest

Kathrein responded by claiming that his company's products were superior. "We are always at the front of the market, at the forefront of technology. So throughout the development of the mobile communications industry we have always had the best and most advanced solutions. And this is the reason we have been so successful. Our products are not necessarily cheaper but they are better."

He told *Telecom Review Asia Pacific* that, in competitive tenders, technical teams often preferred Kathrein solutions over competitors' even though they were higher priced because they delivered a more consistent performance in the long term.

Kathrein says that, at less than 0.05 percent, failure rates of its antenna products are well below industry average. It claims to use a "unique proprietary test chamber for life cycle simulation of products and systems."

The company claims to have delivered over eight million base station antennas since 1986 and to be shipping 150,000 mobile antennas and filter systems per month. It supplies all major cellular network equipment vendors and "renowned network operators" **TR**



Internet of Things (IoT)

Everything will be connected

Dell has IoT in its sights

Best known as a manufacturer of computer systems, industry giant Dell has launched a new IoT division and sees Asia as a prime market.

Computer industry giant Dell has formed a new division focusing on the market for Internet of Things, and says the Asian market is ripe for the company's offerings.

Dell announced on 28 May "a new product division focused exclusively on creating leadership IoT solutions." These solutions, it said would be produced by "bringing together ... hardware, software and services."

Dell claims to have an end-to-end approach to IoT that spans data center solutions, analytics and leadership services and that is built on "Dell's bedrock of global availability, industry leading support and trusted security options."

According to Dell's executive director, IoT Solutions, Andy Rhodes, current IoT solutions require lengthy implementations, and involve overly

ambitious scoping and complex proprietary designs that raise risks and costs. "We are helping customers build out their solutions pragmatically with a broad portfolio of IoT-enabling offerings including security, manageability, services, analytics, infrastructure, and endpoints, he says.

The move followed several announcements in 2014 as Dell ramped up its IoT strategy. These included collaborative efforts with Intel on customer projects such as building automation for smart buildings and the launch of Dell's first IoT Lab in Santa Clara, California.

Also, in June Dell opened its first IoT lab in Europe, in Limerick, Ireland. It said that the lab would be one of the bases for the new IoT division focused on bringing together end-to-end IoT solutions that span hardware, software and services.

Dell debuts IoT gateway

To kick off its new IoT division Dell unveiled a new IoT-specific product,

a new gateway "designed to help customers kick-start their solution development and begin realizing the value of IoT immediately."

Gateways, Dell said, were small, wireless or connected devices that collect, process and help to secure sensor data at the edge of a network. "Equipped with processing power, they provide customers with flexibility to perform analytics at the edge, reducing latency for data-based decisions, such as managing energy consumption or triggering a call for proactive equipment maintenance. This reduces the time and cost associated with transferring data to the cloud or data center."

The company added: "Dell's new gateways are a solid foundation for an IoT edge solution that conserves valuable network bandwidth by relaying only meaningful data back to the cloud."

Dell's New IoT arms sits within its OEM business, headed in Asia Pacific and Japan by Glen Burrows. He told *Telecom Review Asia Pacific* that the division was a long established and significant part of Dell's business.

"We are 17 years old. We support over 4000 customers. We are truly global and

we are a multibillion dollar business for Dell. In Asia Pacific we represent more than 20 percent of the global business for embedded computing customers and our core focus is around telecommunications, industrial automation and health care. Worldwide we support more than 40 verticals. We have a very broad and very wide business."

Simultaneous with the announcement of its new IoT division by its OEM business unit, another unit, Dell Services, announced an agreement with ThingWorx, a company that has developed a platform, the ThingWorx IoT platform, designed to help organizations build out IoT environments.

Partnering with ThingWorx

"Dell Services offers a combination of technology and business expertise to help customers reduce the time, cost and risk required to build innovative Internet of Things (IoT) applications," Dell explained. "As a part of the agreement, Dell's Digital Business Services has joined the ThingWorx System Integrator Program."

"As a ThingWorx system integrator partner, Dell Services offers the power of digital capabilities across cloud, mobility, social media, big data and digital transformation consulting to deliver comprehensive professional services dedicated to IoT."

ThingWorx claims to offer "the first IoT platform designed to build and run the applications of the connected world, reducing the time, cost, and risk required to build innovative applications for smart, connected products," a platform that "simplifies application development efforts by minimizing cost, and risk while accelerating time to value."

Businesses use the ThingWorx platform to deliver applications and connected systems for a range of industry verticals: manufacturing, energy, food to machine-to-machine (M2M), remote monitoring and service, as well as in emerging Internet of Things applications, including smart cities, smart grid, agriculture and transportation.

Asia in the lead on IoT

Burrows sees the IoT market in Asia as being ahead of that in other parts of the world, in part because of a greater

degree of Government involvement, and says that Dell is looking for the right IoT partners in every vertical in the region.

"Asia is out of the gate now with IoT. In every meeting I have people seem to be having the 'ahah' moment. We are getting to this place in Asia very quickly because the heavy hand of government says 'Thou must do this'."

"I feel very good about IoT in Asia because in Asia the outcomes are clear, the outcomes are real and I think that governments will play a direct role."

Burrows led a session on embedded computing in IoT at CommunicAsia in Singapore in early June where he described how Saijo Denki, one of the largest air conditioner manufacturers in Thailand, is using Dell embedded systems in an IoT application.

He told *Telecom Review Asia Pacific* "We have launched a partnership with Saijo Denki where we are providing the connectivity from the HVAC [heating ventilation and air conditioning] systems through a Dell cloud connect device to Dell servers and storage and we do the analytics to understand how the HVAC systems are working so they can run workloads for the HVAC systems in small data centers."

The Internet of air conditioners

Saijo Denki's new air conditioners ship with sensors and processors able to

perform data analytics and each unit is connected to the Internet. The system is able to determine the building's internal and external temperatures and relative humidity and adjust the air conditioner's temperature settings accordingly.

Each air conditioner is also able to self-diagnose and transmit warnings in the event of a malfunction, and can provide energy usage reports to the building management system.

Dell is also providing IoT solutions to Indian dairy farmer Chitale Dairy. Chitale sells around 60 million liters of milk annually from its own dairy farm and the small farms located near its facilities in Bhilawadi, India. "They have fitted RFID tags on the cows," Burrows said. "These are read by a sensor so they know the milk output per cow and can adjust the feed rate per cow."

Another project underway is hydraulic sensors for rice farming: monitoring rice crops to optimize water usage. Burrows explains: "One of the biggest challenge in Asia is access to potable surface water. There is huge wastage in the rice farming industry because of over irrigation. In what is called hydraulic rice farming they get three of four crops per year, basically by force feeding the rice plants. But they don't know the right level of watering so they tend to over-irrigate." **TR**





Asia moving towards mandatory SIM registration

Throughout Asia countries are moving to prevent users from acquiring cellphone services without proof of identity, all in the interests of crime prevention and criminal apprehension.

According to International Telecommunication Union (ITU) statistics, there are now more active cellphones than there are people on the planet. Last year, there were roughly six billion active cellphones in the world, a huge increase over the previous year.

The ITU highlighted these ballooning numbers during Mobile World Congress in Barcelona in February and said that most of the active devices were in Asia, particularly China and that China would be the main growth market for smartphones and cellphone in the region.

Every one of these devices requires a subscriber identification module (SIM), an integrated circuit that securely stores the international mobile subscriber identity (IMSI) and the related key used to identify and authenticate subscribers on mobile telephony devices. In short, this set of numbers uniquely identifies each mobile phone user. We rely on it to enable us to connect to our families and friends with just the click of a button.

But like all technologies that make life easier, the seamless communication made possible by mobile phones can be, and is, exploited for nefarious purposes.

The GSM Association has released a white paper entitled *The Mandatory*

Registration of Prepaid SIM Card Users. The objectives of the paper are to provide insights and recommendations on the merits or otherwise of mandating prepaid SIM registration.

According to the white paper, many countries around the world allow people to buy prepaid SIM cards from retail outlets without having to present any form of identification and with little or no paperwork. The process is more convenient than postpaid contracts where SIM card users are not only required to register their personal details but to provide significant evidence of sufficient funds before they can access mobile services.

This convenience has pushed up demand and prepaid SIMs now account for 77 percent of all SIM connections globally. They have become a major driver to the growth of mobile connections.

Mandatory registration for prepaid users emerged after the introduction of registration requirements in Brazil, Germany and Switzerland in 2003. Since then an increasing number of governments have introduced mandatory registration requirements prohibiting mobile operators from selling or activating a prepaid SIM cards unless the purchaser presents a proof of identity and registers the SIM in their real name.

By July 2013 at least 80 countries globally (including 37 on the African continent) had mandated, or were actively considering mandating, the registration of prepaid SIM users. Now countries in Asia are also making waves on mandatory registration.

Philippines

The Philippines, known as the 'texting capital of the world', is home to about 105 million mobile phone subscribers and this number will hit 117 million by 2016, according to *Business International Monitor* (BMI). BMI expects prepaid services to account for 90 percent of the total.

SIM card registration started to capture the headlines around 2013.

It was reported then by *rappler.com* that service providers were against lawmakers on deliberating on the mandatory requirement for registering mobile phone SIM cards. The report said that the Philippine Long Distance Telephone Co (PLDT), Globe Telecom and other members of the Philippine Chamber of Telecommunications Operators (PCTO) had submitted a position paper against the SIM Card Registration Act.

The same report said that the bill had been created as a result of the finding that cellphones were instrumental in a bombing incident that killed eight people in Cagayan de Oro in July the same year.

By the end of last year, newspaper *Philippine Star* reported that the House of Representatives was set to debate a bill that would require the registration of prepaid SIMs cards to help law enforcement agencies in their campaigns against criminality.

The report revealed that, under the bill, every direct seller would require the end user of a SIM card to present a valid identification with photo to ascertain the latter's identity. They would also be required to sign a control-numbered registration form issued by the respective Public Telecommunications Entity (PTE) of the SIM card being purchased.

Any end user that could not produce a valid identification with photo and who failed to complete a registration form would be refused sale of a SIM card.

The bill also included provisions authorizing the PTEs to automatically deactivate the services of an unregistered existing pre-paid SIM card subscriber. A fine of P300,000 (\$6750) would be imposed for a first offence, P500,000 (\$11,235) for a second offence and P1,000,000 (\$22,470) for each subsequent offence. Any direct seller who failed to comply with the provisions of the measure could face a fine ranging from P5,000 (\$112.00) to P50,000 (\$1,123).

The National Telecommunications Commission is mandated to promulgate the rules and regulations necessary to ensure the effective implementation of the measure if enacted.

In March 2015, the *Manila Bulletin* reported that the SIM card registration was slowly increasing as the bill neared its passage.

Indonesia

In July 2014, the *Jakarta Post* reported that all prepaid SIM card users would need to register personal information with cellular operators, or would not be given access to the latter's telecommunication services. It said that cellular operators would need to be proactive in enforcing this requirement as part of the government's efforts to prevent the use of unregistered prepaid cards for criminal activities.

Since then, Telkomsel has encouraged its customers to register at Grapari outlets, while XL Axiata and Indosat customers can go to their nearest XL Center or Galeri Indosat to register.

Operators say registering about 500,000 presently unregistered users will present a considerable challenge. In addition existing users have been given six-months from September 2014 to March 2015 to register their profiles at operators' outlets.

Thailand

The beginning of the year ushered in a major change in the Thai telecom industry. In January the National Broadcasting and Telecommunication Commission (NBTC) announced that prepaid mobile phone users would no longer be able to use their mobile service if they failed to register their personal information under the national telecom regular circular effective February 1, 2015. The registration period will run for six months until July 31, 2015.

Several reports noted that Thailand's military-led government had to enforce prepaid registration in the



interest of national security and the prevention of fraud and other crimes. Regulators said that, aside from thwarting criminal activities, the new measure was also aimed at clearing out inactive mobile SIM cards/phone numbers. Currently, Thailand has a total of 105 million mobile subscribers and 90 million, or about 85 percent, of those are prepaid.

China

China is home to 800 million mobile users about 16 percent of which are unregistered 'black cards', despite China having introduced regulation in 2013 requiring SIM cards to be registered with proof of identity. The government for several years has struggled to minimize the prevalence of these black cards.

Xinhua News Agency says that Chinese authorities will accelerate the identity confirmation of SIM throughout this year to reduce the number of black cards in circulation.

All to no avail?

SIM card registration in Asia is in full swing with several countries taking measures to make it happen and working hand in hand with operators. However All these registration efforts may do little to reduce criminal activity. According to GSMA, there are no indications that registration of SIMs has lead to significant reduction in criminal activities in those countries where it has been made mandatory. **TR**



SpeedCast seeks Asia Pacific satellite leadership

Hong Kong based, Australian Stock Exchange listed satellite service provider SpeedCast was a mid-sized regional player a few years ago. Now it is aiming for regional leadership and top five global ranking.

When satellite operator, AsiaSat sold its Hong Kong based satellite service provider, SpeedCast, to private equity group TA Associates in 2012 for \$32.2 million, Ed Sippel, managing principal – Asia Pacific at TA Associates, said: “As one of the largest VSAT operators serving Asia, the Middle East and Africa, and one of the few with a multi-country footprint, SpeedCast has the opportunity to become the leading provider in a vibrant and burgeoning market.”

The company looks to be well on its way to achieving that goal, and delivering TA Associates a very handsome profit. TA Associates floated SpeedCast on the

Australian Stock Exchange in August 2014, retaining a 24.6 percent stake, raising \$A150 million and valuing the company at \$A235m (\$US218m at that time). A pretty good result after only two years.

Things have got even better since then. The shares went on sale at \$A1.96 As at 2 July 2015 were trading at around \$A2.90, a 48 percent increase.

A string of acquisitions

Under TA Associate's control SpeedCast has made a string of acquisitions that have increased its reach both geographically and by market sector. And it has big ambitions. In an investor presentation in February 2015 the company said that, by 2018, its aim was to be “the undisputed leader in satellite service provision in the Asia Pacific

region,” a top five global player, top three global maritime player and top three global energy player.”

Acquisitions aside, CEO Pierre-Jean Beylier, says the company has been growing organically at a double digit rate annually.

“We have grown faster than the market, and I think that is because we have built a reputation for the quality for our services and the quality of our support,” he told *Telecom Review Asia Pacific*.

“There is a tremendous focus on customer satisfaction in our organization. That might seem quite basic but I don't think every organization does it well and because we are very focused on the customer we have always kept a very high level of flexibility and agility, which are key for a lot of our customers.

“In addition, I would say that we are one of the very few satellite service providers that owns and operates a global VSAT network. We don't resell services. We lease capacity on over 45 satellites.

We use 28 teleports globally. We have build a global network that enables use to serve our customers wherever they operate, and that is something very few companies have. And the others that have such a global network are headquartered in the US or Europe."

SpeedCast might have now created a global network through expansion and acquisition and to be globalizing its customer base, but the regional weighting still reflects its Hong Kong origins and a string of acquisitions in Australia.

"When we listed we had over 50 percent of our revenues coming out of Australia and the Pacific region, but today it is less than 35 percent," Beylier said.

The company has about 70 percent of its 320 strong workforce in Australia with offices in Brisbane, Sydney Adelaide and Perth and an engineering presence in Darwin. "Because we are supporting the Northern Territory network. They are one of our biggest customers," Beylier says. The company also has two teleports in Australia, in Perth and Adelaide.

"I think we are the largest satellite service provider in Australia and the Pacific to enterprise and government," Beylier said. "There is no clear data on our industry so it is difficult to talk about market shares. A lot of the companies are privately owned."

ASX listing chosen over HKEX

He explained TA Associates' decision to list the company on the Australian Stock Exchange rather than its home territory of Hong Kong by saying: "We made several acquisitions of companies that were headquartered in Australia with some or all of their business in Australia. So when we listed we had over 50 percent of our revenues coming out of Australia and the Pacific region. Also, we had a good sized transaction for the ASX. We felt we were a bit small for the Hong Kong Exchange. And we felt we had a story that was well understood in Australia. In Hong Kong, it helps to have a big China story and we didn't."

Since listing SpeedCast has made two significant acquisitions that have

extended its reach into the global oil and gas sector and, geographically into Africa: Hermes Datacomms—which offers service in 54 countries that between them hold 92 percent of the world's known oil and gas reserves—and Geolink Satellite Services.

"Hermes Datacomms is UK based but quite global with a wealth of experience serving oil and gas companies," Beylier said. "They are in Iraq, Libya, Angola, Kazakhstan, Dubai, Kenya, Algeria, Afghanistan. Those are difficult countries but ones that are important for the oil and gas sector."

Paris-based Geolink focuses on the African continent. "They have been providing services to over 20 countries in Africa and we wanted to enhance our capabilities in Africa because we see a growing demand from our customers in Asia Pacific for services into Africa," Beylier said.

Today SpeedCast claims to serve over 1,000 customers across over 3,000 terrestrial sites, predominantly in Asia Pacific, and to provide approximately 1,700 offshore rigs and vessels with satellite services. It focusses on five customer segments: telecom, maritime, natural resources, government and NGO, and enterprise.

Maritime market growing

In its investor day presentation, SpeedCast said that all sectors were growing, but the standout is Maritime with a 13.5 percent CAGR, according to Euroconsult. On Euroconsult's estimates, SpeedCast was the sixth largest provider in 2013 with a six percent share by terminal numbers.

"Penetration of VSATs in the maritime market is very low, maybe around 20 percent," Beylier said. "The maritime industry is going through the same shift we went through in our homes and offices two decades ago: from narrowband to broadband. There are thousands of vessels that are not equipped with broadband systems."

In its investor day presentation SpeedCast said the potential market



comprised: 121,000 addressable vessels, 68,000 merchant ships, 6,500 Passenger ships and 8,500 Offshore rigs and support vessels, and that annual revenues across all providers were \$760m.

The second fastest growing target market for SpeedCast, on Northern Sky Research's estimates, is cellular backhaul, with backhaul unit numbers growing at 10.3 percent CAGR across all satellite technologies.

In Asia, Beylier says much of the growth will come from the use of cellular to provide last mile connectivity in rural areas. "We see a strong need to bridge the digital divide in Asia. There are lots of programs subsidized by government and by international organizations to bring connectivity to rural populations.

"Governments are putting in place universal service obligation programs and they are reusing cellular technologies and cellular operators to bring connectivity to rural populations. That will lead to applications around distance education, telemedicine etc. As those are developed the need for bandwidth will grow." **TR**



Fortinet focuses on securing market leadership

Brothers Ken and Michael Xie launched security technology company Fortinet in 2000 with \$1m of angel funding. Today Fortinet is a profitable NASDAQ listed company with billion dollar revenues and a top three security company. Its aim is to be number one.

On most analysts' estimates fifteen-year-old security technology company, Fortinet, is number two in Asia Pacific and number three globally, but it's aiming to be number one globally by 2020.

That might be something of a challenge, if for no other reason than the security market being hard to define, and getting harder. Some of Fortinet's major competitors, especially

market leader Cisco, see security less and less as a distinct technology that can be corralled into its own market and more as an inherent feature of every other hard or soft information technology product.

For example, Cisco has just announced "new offerings to embed security throughout the extended network – from the data center out to endpoints, branch offices, and the cloud – for pervasive threat visibility and control." David Goeckeler, senior vice president and general manager

of Cisco's Security Business Group, said: "To protect against today's threats ... security must be pervasively embedded across the entire network infrastructure."

Market leader by device shipments

This doesn't faze Fortinet. And on one measure at least it is already the market leader. According to IDC's *Worldwide Security Appliances Tracker*, March 2015, Fortinet's FortiGate device is the world's most deployed security device with over two million units shipped to date. On IDC's reckoning Fortinet sold just over 400,000 units of FortiGate in 2014, almost double its nearest rival, a Cisco device (not identified in information provided by Fortinet).

Market definition challenges

notwithstanding, IDC still tracks the global market for security appliances. In 2014 it ranked the top five players as being: Cisco

with a 17.77 percent market share; Check Point, 12.97 percent; Fortinet, 7.34 percent; Palo Alto Networks, 7.26 percent and McAfee, 5.08 percent.

On IDC's figures Fortinet has managed to claw its way one rung up the global ladder since 2012 when it had a share of 5.83 percent, ousting Juniper Networks from the number three spot along the way. In Asia Pacific, IDC's figures for market shares for 2014 were: Cisco/Sourcefire, 12.43 percent (Cisco acquired Sourcefire in October 2013); Fortinet, 6.95 percent; Checkpoint, 6.83 percent; and Huawei, 5.51 percent.

Fortinet is certainly on a rapid growth trajectory; billings in 2014 were 31 percent up on the previous year (\$896m) and Q1 FY15 revenues were up 26 percent year-over-year to \$212.9m.

Commenting on the result, market watcher, the Motley Fool, said: "Fortinet appears to be entering the high-burn phase of a fast-growing software enterprise, as it's now plowing much of its money back into business development to propel faster top-line growth."

That was certainly the message coming across loud and clear at Fortinet's first *Fast & Secure* partner and analyst conference in Asia Pacific, held in Hong Kong in late May.

Asia Pacific presently accounts for about 25 percent of the company's global revenues, 40 percent of which come from North America, but according to George Chang, vice president for South East Asia and Hong Kong, Asia Pacific is one of the highest growth markets and will be the focus of much of the company's efforts to hit the number one spot, especially those countries in the region where Fortinet is not already the lead player.

Focus on Asia Pacific

"Asia Pac is a key focus area for Fortinet and ANZ is one area we will focus on very heavily this year," he told journalists during a briefing session at the company's *Fast & Secure* event.

According to Frost & Sullivan's figures Fortinet is already the lead player in Japan with 21 percent of a market estimated to be worth \$595m, number one in Taiwan



with 24.4 percent of a \$56.8m market and number one in South East Asia and Hong Kong with 16.3 percent of a \$424m market.

The standout exception is ANZ where Fortinet is ranked only seventh with a seven percent market share. Despite its relatively small population of around 30 million ANZ is a significant market. It is worth some \$343m, about half the value of the market in the order-of-magnitude more populous China.

According to Fortinet's recently appointed regional director for ANZ and South Pacific, Jon McGettigan, the best growth opportunities in the region are in Australia.

"ANZ was one of our lowest performing regions so it gives us the best opportunities and there is a lot of requirement for security in Australia because of Government requirements and the high adoption of cloud computing," he said.

Of the region generally, Chang said: "We are going to invest a lot more into those areas where we are not number one. We will increase headcounts in sales and marketing. We will have more R&D teams in place to support the local partners. We have already expanded our regional HQ in Singapore. And we are going to invest a lot more into marketing campaigns."

Chang said the company had a very broad market focus: "We play in a lot of different areas. We have next generation firewalls, we are big in the telco space, we work heavily with MSSPs [managed security service providers]. We have pretty much a full range for end-to-end security."

Fortinet presented figures showing 36 percent of its revenues coming from entry level customers, 26 percent from mid range and 38 percent from high end customers. Its biggest verticals are: telcos, 19 percent; technology companies, 19 percent; public sector/government, 11 percent and finance & insurance, 10 percent.

Struggling in Australia

McGettigan admitted that Fortinet had struggled in Australia, in contrast to New Zealand where it holds the number three spot. "Australia has had some challenges with our go to market strategy, but we have improved on a number of areas. Channel is one of them. And we have had a lot of activity to improve brand awareness. We used to call it the 'Fortiwho?' factor, which was long gone in other regions."

He added: "We have been doing a lot of hiring, 12 in Q1 and we have to hire 15 more. We have expanded our channel team to tackle the SMB market and we have hired a new marketing director, Tracey Roberts.

The company is also planning to stage its *Fast & Secure* event in Australia. "The plan at the moment is for August," McGettigan said. "We would like to do it in three to five cities, but that depends on the budget. We probably won't do it in NZ. We will fly people from NZ."

Fortinet goes to market exclusively through a two tier channel model with master distributors and reseller/service provider partners. In Australia its distributor is Exclusive Networks, which acquired former distributor, WhiteGold Solutions, and in New Zealand Exclusive Networks and Ingram Micro are its distributors. **TR**



Analytics plus intelligence drives operator income

Joachim Ebinger, Nokia's head of sales for Advanced Customer Solutions in MEA, explains how mobile operators can optimize infrastructure and delight customers while managing the challenges of big data thrown up by today's mobile networks.

NOKIA

Top line growth is no longer guaranteed for mobile operators. To maintain acceptable profitability levels, they must implement efficiency drives, cut costs and reduce churn.

Customer experience management (CEM) has propelled operational support systems (OSS), business support systems (BSS) and other analytics tools to the frontline in the battle to understand customer behavior and build a composite picture of customer user patterns that can be used to pro-actively offer the end user the best quality of service, raise their satisfaction level and make them less likely to churn.

Joachim Ebinger, Nokia's head of sales for Advanced Customer Solutions in MEA, says mobile operators know they need to move away from a bucket plan approach to their services, and more carefully consider return on investment and cost/benefit analysis of their investments. He says this should be a focused process. "Why are we so excited about CEM? Because it is a new era in the telecom business where many markets have seen topline growth flattening or even decreasing and investment behavior has had to change."

A new measure of success

Ebinger is of the opinion that, from the sales perspective, mobile operators ought to move from the mindset of adding SIMs as a measure of growth and success, to targeting high value customers with the view to actively engaging in retention activities for this segment.

The network itself remains an operator's key asset, and while the infrastructure's geographic reach and performance remain critical performance indicators, so too do customer satisfaction levels and

the consideration of Net Promoter Score (NPS), he argues. This means measuring customer satisfaction levels for all aspects of the service: network quality, customer care, price plans and more.

Essentially, NPS is a management tool that can be used to gauge the strength of a company's customer relationships. It serves as an alternative to traditional customer satisfaction research and claims to be correlated with revenue growth.

"What we are witnessing is a shift from a network view of the business to a customer view," Ebinger says. "Nokia has been promoting the use of a customer experience index to ensure the customer view of the network aligns with the internal network view."

While the parameters for measuring the quality of voice services have not changed markedly throughout the cellular era, the intelligence that is being added to data networks is increasingly being matched to specific populations, which opens up the potential for powerful tools such as predictive marketing.

Introducing predictive marketing

At Mobile World Congress in Barcelona in March Nokia detailed its predictive marketing solutions that are helping evolve CEM in two distinct ways: by providing mobile operators with the full picture of mobile customers' service experiences; and by offering the operators tools to create targeted marketing campaigns for certain customer segments and measure the success of those campaigns in real-time.

Nokia claims that, with these tools, mobile operators can automatically deliver the right personalized message to the right customer, increase revenue and improve customer loyalty. According to Nokia, until now, it has been difficult for mobile operators to convert complex customer experience data from networks, devices and services into

useful marketing insights and action. With Nokia predictive marketing, contextual customer data is captured close to real-time and used to segment and target marketing messages dynamically. The ability to rapidly create new campaigns and deliver them via the recipient's preferred channel simplifies what previously has been both time consuming and labor intensive, Nokia says.

"Weighing up investment decisions based on the impact per client is the best level of analysis," says Ebinger. "And given the growth in big data, mobile operators need an affordable means by which to relate the information that is extracted to be made relevant to specific use cases."

Nokia has been very vocal over the last couple of years about its focus on analytics that look to use the large amount of data available to operators in order to create experience-driven networks and highly-automated operations.

New analytical tools

The company has been pushing its analytical tools, which are helping mobile operators through the challenges thrown up by the expansion of big data, and assisting them to generate new incremental revenue streams.

Such solutions include:

- **Nokia Predictive Services Suite.** This introduces a new service called Predictive Care, a service based on a machine learning concepts to detect network elements' behavioral anomalies, to predict and resolve issues before they impact customers.
- **Nokia iSON Manager.** This has been developed to deal with the automation of multi-vendor heterogeneous networks. It uses millions of data points, such as geo-location data, to improve network efficiency. During a trial



What we are
witnessing is a shift
from a network view
of the business to a
customer view,



in a live network with KT, it helped reduce the Korean operator's LTE radio network energy consumption by 40 percent.

- **Nokia Emergency Alert Solution.** This enables operators and public safety authorities to use network subscriber data to convey important, potentially life-saving information and alerts to people known to be in an emergency area.

"Good momentum" is how Ebinger describes the market reaction to Nokia's CEM efforts. "Operators in the region are facing similar challenges to those in other parts of the world with revenue-generation peaking," he says. "There has been a silo approach to managing customers in the past, and there have been many point solutions in the past. Cross-function discussions are now being held, and Nokia has deep experience in this exact area, so I am extremely upbeat about what is occurring in this respect." **TR**



How 21st century technology connected an ancient world

Today's tourists don't just want to take pictures and videos: they want to share them in real time. With cellphone towers barred from the World Heritage listed Yakusugi Forest on Japan's Yakushima Island they couldn't do that, until KDDI rose to the challenge.

Off the southern tip of Kyushu, Japan, lies the subtropical Yakushima Island, a prominent tourist location that attracts more than 300,000 visitors every year—for one very important reason: trees.

These aren't just any trees; they're ancient Japanese cedars known as "Yakusugi". Many have been growing for over a thousand years; a few are believed to be several thousand years old.

Local residents and tourists alike enjoy hiking through the breathtaking Yakusugi Forest. More than 1,900

species of flora and local wildlife, including monkeys and deer, call the forest home. When visiting Yakusugi, hikers often snap pictures and capture video to keep as treasured memories.

But there's a catch to the Yakusugi tourist experience: to preserve its pristine condition as an official Natural World Heritage Site, mobile network operators are forbidden from erecting unsightly base stations within its borders. So visitors are unable to share their experiences with friends and family real time. Yakusugi is a haven for nature-lovers, but a barren desert for cell signals.

That all changed when KDDI Corporation assumed the challenge

of providing comprehensive 4G LTE coverage within and around the majestic island forest.

Beyond aesthetic restrictions, the island's dense vegetation made it impossible to locate base stations high enough to be of any real value. So experts at KDDI's Fukuoka Engineering Center thought "outside the island." The chose to deploy a base station on Tanegashima Island, approximately 35kms northwest of Yakushima.

However, to ensure LTE signals could reach Yakushima from Tanegashima, KDDI needed a special narrow-beam, high-gain antenna.

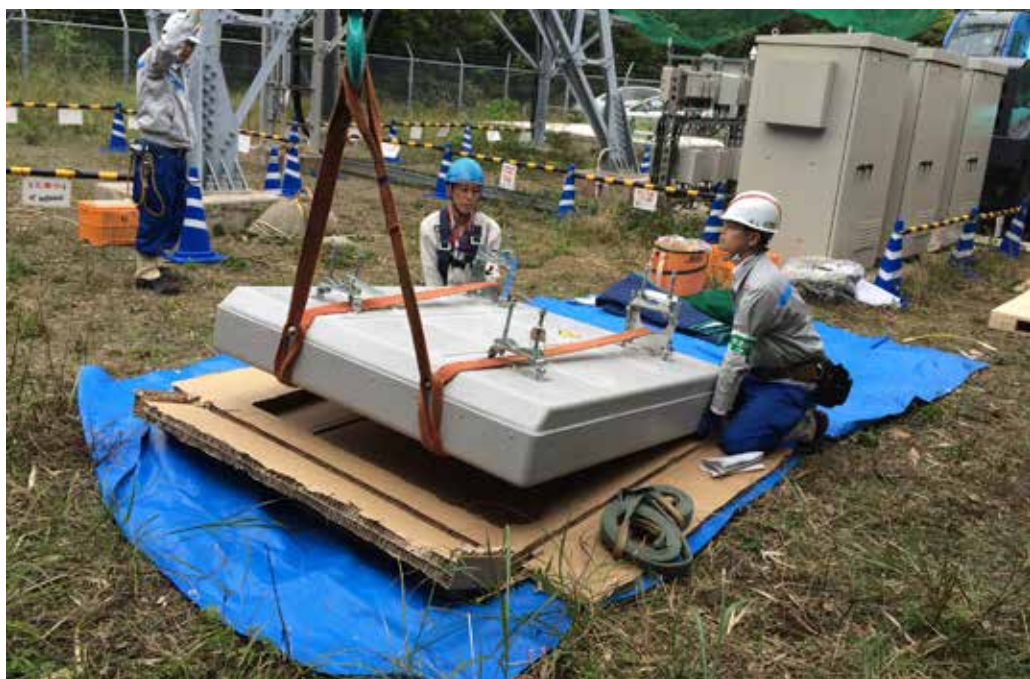
KDDI had prior experience ensuring wireless coverage over a maximum radius of only 10kms. To achieve reliable coverage over 35kms KDDI chose CommScope's five-beam antenna, a device that emits a narrow, 14 degree beam with 20 dBi gain.

The antenna was designed to improve wireless capacity at stadia and large live events and is capable of emitting five narrow beams using CommScope's sector sculpting technique. This increases capacity five-fold without increasing interference levels—a crucial advantage for 4G LTE systems.

Hardware performance and reliability were key factors in KDDI's decision to partner with CommScope. Also, KDDI was under considerable time pressure: it needed to have mobile coverage of Yakushima before Golden Week, a major holiday in Japan when the island attracts many visitors. That deadline gave KDDI only two months to have the system up and running.

Once the antenna was deployed, the KDDI team hiked deep into the forest to test signal reliability at the oldest remaining tree, the Jomon Sugi, 1300 meters above sea level.

When the team arrived at the ancient tree, everyone checked their cellphones and all were elated to see



a reliable 4G LTE signal. The trail guide was so surprised and impressed by having cellphone coverage that he said he would switch to KDDI as soon as possible.

Now visitors to Yakushima Island can share the mysteries of Yakusugi Forest with friends and family in real time.

Masanori Fushimi, KDDI Fukuoka Engineering Center, said: "CommScope's five-beam antenna solution and innovative sector sculpting technique enabled us to overcome a huge technical hurdle at Yakusugi Forest. We're so happy to share our excitement by allowing our customers to use their cellphones on the island." **TR**



Taking 4K from myth to market

The next generation of ultra-high definition television is gathering pace, but certain challenges are keeping the technology from exploding in the market. James Wu, president of Carrier Network Business Group, Huawei Middle East, throws the spotlight on the hurdles.

The hype around "4K Technology" has been all too evident in recent months. All major content creators are discussing plans to generate more 4K-quality content. Operators and carriers are promising to support the technology. Device manufacturers are already starting to introduce 4K technology on handheld devices. So what's the reality behind the rhetoric? What are the prospects for 4K?

Many new technology concepts enter popular consciousness encapsulated in buzz phrases but unaccompanied by any real understanding as to what they mean. 4K is no exception. So it is up to the industry to define what 4K includes, why it finds itself in sudden demand, and what opportunities it presents to the ICT sector at large.

In its simplest form, 4K is ultra-high definition. It's a picture more than eight million pixels in its entirety, or more specifically, 3840 x 2160 pixels. It can deliver four times as much detail as 1080p full HD. The translates to greatly improved picture quality and depth. For a tech-savvy generation being billed as one of the largest-spending in history, these kinds of electronic offerings are high on the shopping list.

Furthermore, 4K has the potential to become a mainstream video format in the region. Manufacturers are already working to deliver platforms which support it. Sony has sold the largest number of 4K TVs in the world outside of Japan. According to Strategy Analytics, shipments of 4K TVs grew by a whopping 633 percent in 2014, to 12.1 million units of which 75 percent were sold to Asian Pacific markets. Studios are ramping up delivery of 4K-ready content, and once the two align, adoption can truly begin.

4K a bandwidth glutton

However, 4K ultra-high definition television is extremely bandwidth hungry. Content created in 4K will generate significantly larger file sizes than 1080p. These attributes create



serious challenges for sharing and storing, or 4K content. These are still barriers to uptake, but they are diminishing.

For operators, 4K is a game changer. It could transform them from being carriers to being true service and content providers. We recommend that these operators actually consider forming dedicated business units for 4K, or at least consider how cross-industry tie-ups can be leveraged.

The technology will, however, require a higher burst throughput at two to four times the bit rate of HD. It's difficult for the free-to-air or pay TV satellite operators to launch a 4K video service, but fortunately some of the region's telecom operators who already have fiber infrastructure can address this challenge easily. These providers can launch higher bandwidth broadband packages to meet the demand of 4K applications, or even launch a 4K triple-play package to increase the average revenue per user.

As for 4K content, that is still taking time to materialize, but major content creators from some of the largest markets in the world are busy building their 4K offerings. This provides carriers with some relief, especially those who are relying on third-party services to strengthen their selling proposition. Amazon, Netflix and YouTube have all been making noises in this space, with Netflix's popular *House of Cards* being the first title to see ultra-HD quality. Sony has launched a download service, dubbed Video Unlimited 4K, which has now tied up with DreamWorks and Technicolor to offer a streaming service.

The penetration of 4K TVs has yet to reach the levels of HD (which surpasses 80 percent of households). Research from Parks Associates suggests that this will take about a decade. However, that would be around three years faster than HD.

Huawei's role in 4K

Where Huawei is really adding value is with our commitment to invest \$4

billion in fixed broadband technologies. This will help support the rise of 4K technologies: multiple streaming from the same home, mobile device downloads and so on.

On top of this, we're collaborating and supporting content creators, such as Sony which is one of the leading creators of 4K content. Our 4K solution ensures that users experience instant loading, no screen mess, no lag time and fast channel changing. Moreover, our business model ensures we leverage the offerings of each member of the supply chain, from the content creator to the terminal operator to the broadband supplier. We demonstrated this commitment when we helped China Telecom Sichuan develop its commercial 4K TV network service in China.

In our efforts to improve fixed broadband services, we'll also be investing heavily in R&D so that we can research new ways of developing chipsets and algorithms to better support reliable connectivity. It's time to take 4K from myth to market. **TE**



Connected cars: more than meets the road

Within the next few years communications capabilities and a wide range of technologies for vehicle function monitoring, driver and passenger entertainment and information will become commonplace, completely transforming the motor industry and the experience of drivers and passengers alike.

The lines dividing automobiles, technology and telecom continue to blur as connected cars hit the streets. According to a Business Insider report, the connected car market is growing at a compound annual growth rate of 45 percent,

10 times as fast as the overall car market.

It has been estimated that by 2020, nearly 220 million connected cars will be on the road. It is also estimated that 75 percent of the 92 million cars built annually will ship with hardware that provides internet connectivity.

According to a survey undertaken by McKinsey & Co, carmakers estimate that more than 25 percent of consumers are well informed and already prioritizing a car's connectivity over other features/specifications such as engine power and fuel efficiency when choosing a car.

Consumers said they were particularly satisfied with embedded software that allows them to stream music, look up movie schedules or provide access to other services such as traffic and weather alerts. Car enthusiasts are also much in favor of technologies like assisted parking.

Ever since the advent of connectivity in cars, manufacturers have been struggling to innovate and incorporate new connectivity-dependent features into their cars. Today only up-market



luxury models come with the full range of connectivity features, but just as with earlier innovations like disc brakes, anti-lock braking systems and airbags, these features will be available on the full range of cars over the next few years.

So what benefits can a connected car really offer? In summary: a whole new ecosystem that melds technology, automobiles and telecommunications.

Forty years ago, the personal computer was considered a great innovation especially for those accustomed to using a typewriter. Twenty years later the internet opened up a vast range of, previously undreamt of, new possibilities. Similarly, connected car technology can be expected to usher in a new wave of innovation.

However, all innovations spur the need for new laws and new policies, which usually follow technical innovations by several years. Given the destructive power of the motor vehicle, such legislation should, if possible, anticipate technology, and around the world lawmakers are already looking at the issues.

Laws and regulation

US transportation secretary, Anthony Foxx, said that US regulators last year began working on regulations requiring the new light-duty vehicles sold in the United States to be equipped

with wireless chips so they can communicate over the airwaves.

He said the potential of vehicle to vehicle (V2V) communication was enormous: to improve safety, reduce traffic congestion and save fuel.

In the US a group of government engineers and a consortium of leading automakers that includes General Motors, Toyota and Volkswagen have worked for more than a decade to write the rules on the subject. They have specified a Dedicated Short-Range Communications, (DSRC) technology for communications. The automakers' main lobbying group in Washington, the Alliance of Automobile Manufacturers, has acknowledged the benefits of DSRC technology, but has identified a number of issues that, it says, must be resolved.

The United States might have already started working on legislation for connected cars, but much work on commercial arrangements between service providers, equipment manufacturers and automakers needs to be undertaken.

New business models needed

According to GSMA's whitepaper on connected cars, in order to fully capture the opportunities presented by evolving consumers' demands and technological advancements, automakers and mobile operators need

to re-evaluate their business models to exploit the full potential of connected car services. The GSMA argues that streaming services and traffic notifications are just tip of the iceberg of the connected car opportunity.

The connected car market is inherently complex and its foundations not yet secured. It requires business model innovations covering its supply chain, delivery channels and service bundling. These new business models need to be supported by strategic partnerships between mobile operators and automakers.

The recent partnership of Daimler Chrysler and Qualcomm is a significant step in the development of connected cars, although the initial partnership focuses on wireless recharging of mobile phones in cars as well as recharging of electric cars without cables. Thomas Weber, Daimler's board member for research and development, said: "We are eager to jointly explore possible fields of future cooperation with an internationally leading tech firm like Qualcomm."

There is no doubt that the connected car has arrived. Today our main connected car experience is listening to music on the road, having Internet access and advanced traffic updates. Tomorrow will bring collision avoidance, coordinated routing advice to minimize traffic congestion, and much, much more. **TR**



The rise of C-RAN

Mobile networks are being called on to do more with less: serve more users with more bandwidth at less cost and using less energy. One solution is to move from a distributed to a centralized network architecture.

According to Fujitsu, global mobile data traffic grew by a staggering 81 percent in 2013 and is expected to reach 15.9 exabytes per month by 2018. However, the spectrum available for network expansion is scarce, and availability constrained by regulations.

Operators that intend to increase their coverage and capacity by setting up new base stations face an array of challenges like infrastructure setup cost and operating expenses. Costs

of optical backhaul links from base stations are high. Terrain and local conditions can make deployment of new fiber challenging.

In addition, mobile base stations are energy guzzlers, consuming more than 80 percent of the total power drawn by a typical mobile network. Thus, there is a need to reduce energy consumption, cost and carbon footprint while at the same time increasing capacity and throughput to meet increased demand.

A cloud based solution

These challenges demand new technologies and architectures with

low power consumption, agile traffic management and high reliability. Cloud radio access networks, or centralized radio access networks, C-RAN, are emerging as the answer to some of the challenges.

C-RAN leverages a distributed base station architecture to enable a host of benefits, such as capex and opex savings, increased asset utilization and savings on energy.

The radio access network component of a traditional cellular networks is built with many stand-alone base stations, each covering a small area. A group of base stations can provide coverage over a continuous area. Each base station transmits signals to and receives signals from mobile devices in its area and forwards the data payload to the core network via backhaul.

The centralized RAN concept separates the radio and antenna parts



from the digital baseband path and pools multiple baseband units (BBUs) in a central office, or base station hotel. These digital-only base stations are linked via fiber to remote radio heads (RRHs). Intel, IBM and other hardware suppliers are actively promoting the C-RAN concept for mobile network architectures.

China Mobile a C-RAN pioneer

China Mobile started to promote the idea of C-RAN publicly in April 2010. It is also very active in various international standard organizations for the promotion of R&D on C-RAN. China Mobile has conducted numerous C-RAN trials, and is expected to deploy C-RAN commercial networks this year.

C-RAN supporters believe this type of architecture offers numerous advantages. From its collaboration with China Mobile, Intel has estimated that this new architecture produces 30-60 percent savings in total cost of ownership; depending on the need for fiber.

ZTE, IBM, Huawei and Intel are among companies who signed a Memorandum of Understanding (MoU) on April 23, 2010, to collaborate in the development of C-Ran.

In summary the benefits of C-RAN are:

- Energy efficiency and power cost reduction. With the centralized

processing of the C-RAN architecture, the number of base station sites can be reduced significantly, reducing the need for air conditioning and other onsite power-consuming equipment, lowering capex and opex.

- Capacity and spectral efficiency improvement. In C-RAN, virtual base stations (macro, micro or nano) are aggregated in a large physical BBU pool where they can easily share signaling, data and channel state information for active users in the system. With C-RAN, it is much easier to implement algorithms to mitigate inter-cell interference and improve spectral efficiency. For example, cooperative multipoint processing technology (CoMP in LTE-Advanced), can easily be implemented within the C-RAN infrastructure.

- Adaptability to non-uniform traffic. C-RAN architecture can efficiently handle non-uniform data traffic due to the load-balancing capability in the distributed BBU pool.

- Smart internet traffic offload. Aggregation of the baseband functionality in C-RAN provides a central port for traffic offload and content management to handle growing Internet traffic from smartphones and other portable devices. The benefits are reduced

backhaul traffic, reduced core network traffic and reduced latency, all leading to a better q user experience.

- Network extensibility. C-RAN architecture supports multi-standard operations and multi-cell collaborative signal processing, making it easier to upgrade and expand network capacity from the aggregated point. The integration of SDN architecture with C-RAN enables new software applications and intelligence in the network. The C-RAN architecture inherently facilitates flexible network topology designs.

Complementing not competing

Although C-RAN is perceived to be competing with small cells, that is not the case. The two are complementary to each other because small cells are more suited to homes and small offices while C-RAN is more efficient in terms of buildings and public venues like shopping malls and airports.

According to ABI forecasts, by 2018, the total number of remote radio head shipments with LTE base will amount to more than two million units, almost double the number shipped in 2013. In addition, the global C-RAN market is expected to grow from \$1.71 billion in 2013 to \$11.31 billion in 2018, a compound annual growth rate (CAGR) of 45.9 percent. **TR**

OVUM forecasts FTTx optics to exceed \$1bn in 2015



Ovum says the market for FTTx optics will reach a new record level in excess of \$1b in 2015, following a record-breaking \$953m in 2014.

Julie Kunstler, principal analyst in Ovum's intelligent networks and components team, said: "Numerous positive factors are driving the FTTx optics market to new levels, including FTTH network deployments by China Mobile and the continued network builds by China Telecom and China Unicom."

Other positive trends contributing to the strong growth, according to Ovum, are FTTx network deployments by North American MSOs, Google Fiber's expansion plan, US telco deployment plans, European deployment plans, continued deployments in the Middle East, small deployments in South and Central America and Africa, and the movement toward FTTP or FTTH (which require more PON ONT optics).

Ovum's PON optical components forecast does not include any large FTTx deployments in the heavily populated countries of India, Brazil, and Indonesia. "Large deployments in these countries would provide a significant uptick to the units forecast and consequently

to revenues," said Kunstler, "As would faster deployments of next-gen PON because the ASPs for next-gen PON optics are higher than those for non-next-gen."

The largest potential downside to the forecast could come from a slowdown in FTTx deployments by the Chinese operators. China is the single largest consumer of PON optics in the world and any slowdown would negatively impact the forecast. However, Ovum believes that China's newest operator entrant into FTTx, China Mobile, is well positioned to deploy an FTTx network, bring existing mobile customers onto its new wireline broadband network, and offer additional services.

Global Cloud Xchange and Equinix interconnect



Reliance Communications subsidiary, Global Cloud Xchange (GCX), and Equinix have struck an interconnect deal that enables direct access to the

Equinix Cloud Exchange via GCX's Cloud X Fusion at six major locations: Los Angeles, Ashburn, London, Frankfurt, Tokyo and Singapore.

GCX says its Cloud X Fusion will deliver enterprise grade connectivity directly into the Equinix Cloud Platform. "The joining of the two ecosystems will enable the ability to extend the reach of the Equinix Cloud Exchange which is currently available in 19 carrier neutral data center locations to all 105 Equinix IBXs facilities across GCX's privately owned global subsea fiber infrastructure.

Cloud X Fusion is part of GCX's Cloud X portfolio, a proprietary platform designed to "seamlessly combine the speed and power of fiber optics with the agility,

flexibility and cost-efficiencies of 'pay-as-you-go' cloud computing; available globally and controlled by a simple-to-use user portal."

Bill Barney, CEO of Global Cloud Xchange, said: "This collaboration empowers enterprises to simplify and accelerate their increasingly strategic deployments of cloud and demonstrates another milestone in our global cloud strategy. Through the interconnection of Cloud X Fusion and Equinix Cloud Exchange, customers will instantly benefit from the added flexibility and global reach to be more competitive, especially as we look at new opportunities in today's fastest growing emerging markets including the Middle East and India."

IHS profiles leading optical gear vendors



IHS Infonetics has released details of its Optical Network Hardware Vendor Scorecard, which profiles and analyzes

the 10 top revenue producers of optical hardware—Adva, Alcatel-Lucent, Ciena, Cisco, Coriant, ECI, Fujitsu, Huawei,

Infinera and ZTE—saying that the optical equipment market is fracturing into one of traditional service providers and another of competitive service providers and internet content providers.

"The leaders in our 2015 optical scorecard—Ciena, Cisco and Infinera—are focusing on one of these markets or have the necessary scale to address both with independent

solutions," said Andrew Schmitt, research director for carrier transport networking at IHS.

The scorecard uses actual data and metrics, including market presence (market share, financials and buyer feedback on product reliability and service/support) and market momentum (market share momentum, software intensity, buyer feedback on vendors' technology innovation).

NGMN Alliance launches 5G work program



The Next Generation Mobile Networks (NGMN) Alliance has launched a work program that, it says, highlights its commitment to guide the industry, based on global end-to-end requirements for 5G.

According to the Alliance, it builds on and evolves guidelines in its White Paper published earlier this year and will support the standardization and subsequent availability of 5G for 2020 and beyond.

NGMN's partners—operators, vendors and research institutes—agreed on the main 5G NGMN work items for the coming months:

- Business Principles: business models, operator capabilities, vertical industry services;
- Requirements & Architecture: technical requirements, architecture guidelines, SDO input;
- Spectrum: spectrum position for WRC-15, 5G spectrum requirements and evaluation;
- IPR: standard essential patent declaration and assessment, 5G patent pool.

The NGMN says its partners have committed a significant number of experts to contribute to the different

teams of the work program.

The NGMN work items will be taken forward by:

- The Business Principles Group, which aims to ensure that 5G will be architected and underpinned by solid business principles;
- The Requirements & Architecture project that aims to provide timely guidance on 5G solutions to all relevant industry stakeholders;
- Spectrum work to ensure continuous contributions to international fora and groups regarding NGMN spectrum requirements, in order to ensure the allocation of sufficient spectrum for future 5G services.

Samsung unveils new modules for IoT applications



Samsung has unveiled its ARTIK platform, billed as "an open platform that includes a best-in-class family of integrated production-ready modules, advanced software, development boards, drivers, tools, security features and cloud connectivity designed to help accelerate development of a new generation of better, smarter IoT devices, solutions and services."

According to Samsung it will allow faster, simpler development of new enterprise, industrial and consumer applications for the Internet of Things (IoT).

Young Sohn, president and chief strategy officer, Samsung Electronics, said: "We are providing the industry's most advanced, open and secure platform for developing IoT products. By leveraging Samsung's high-volume manufacturing, advanced silicon process and packaging technologies, and extensive ecosystem, ARTIK allows developers to rapidly turn great ideas into market leading IoT products and applications."

He added: "Industry requirements for IoT devices vary in terms of battery life, computational horsepower and form factor. With this family of ARTIK offerings, Samsung is directly addressing the needs of the widest range of customers, uses and applications."

The Samsung ARTIK platform comes in a variety of configurations that Samsung says have been designed to meet the specific requirements of a wide range of devices from wearables and home automation to smart lighting and industrial applications.

SK Telecom and Nokia advance 5G technology



SK Telecom and Nokia Networks say they have successfully verified the performance of their co-developed user plane and control plane separation

technique. This technique is essential for building hybrid core network architecture that offers benefits of both centralized and distributed network models and one of the key enabling technologies for hybrid core network architecture for 5G.

With the technology, the core network architecture is restructured into a hybrid network model with distributed user plane functions, controlled by centralized control plane functions for optimal delivery of massive data.

Also, SK Telecom and Nokia Networks have opened a 5G research and development center at Nokia Networks' Korean office. The center will serve as a venue where researchers from the two companies will study and develop core 5G technologies, including gigabit-level data transmission technology and cloud-based virtualized base stations. The two companies plan to open a 5G testbed before the end of 2015 to verify and demonstrate 5G technologies.

Akamai adds four in Asia Pacific

Content Delivery Network provider, Akamai Technologies, has made four appointments to its senior executive ranks in Asia Pacific.

Michael M Afergan has been appointed senior vice president, products, Asia Pacific & Japan (APJ). He joined Akamai in 1999 as one of Akamai's first technical leaders and moves to Singapore from Akamai's corporate headquarters in Cambridge, Massachusetts.



Lalitha Bhaskara joins Akamai as vice president, corporate development, APJ. Before joining Akamai, she served as head of markets strategy for Asia Pacific and Japan for SAP for five years.



Duncan Nursey has joined Akamai as regional vice president, carriers, APJ. He joins Akamai from Samsung where he was responsible for developing the Samsung Enterprise business solutions and products, working with telcos across Southeast Asia, Australia, New Zealand and Taiwan. Prior to this he held leadership positions with Dimension Data, ECI Telecom and EDS.



Vaughan Woods has been appointed regional vice president, sales, South Asia. He is responsible for sales across ASEAN, Australia and New Zealand. He joins Akamai from his previous role as a venture capital incubator and consultant for startups. He has also held sales management positions and regional leadership roles in Asia Pacific with IBM, Rationale, 3Par, HP and BEA. In October 2014 Akamai appointed Graeme Beardsell as managing director markets for APJ and has expanded offices in Australia, Japan and Korea over the last few months.



Digital Realty ramps up Asian focus



Data center operator, Digital Realty Trust, has appointed **Daryl Dunbar** as managing director for Asia Pacific. He takes over from **Bernard Geoghegan**, who previously oversaw both Europe and APAC. Prior to joining Digital Realty Dunbar was head of IT services at Colt Technology Services. He will be based in Singapore.



Digital Realty has also appointed **Damien Spillane** director of sales engineering for Asia Pacific under a strategy to increase its footprint across the region. He will focus on the key markets of Australia, Hong Kong and Japan. He joined Digital Realty in 2011 as head of engineering for Australia.

Superloop gets new CEO



Superloop, a provider of dark fiber connectivity to network providers and enterprises in Australia and Singapore, has appointed **Daniel Abrahams** as CEO. Founder **Bevan Slattery** will remain as executive chairman to support the company's expansion across the Asia Pacific Region.

Abrahams has a background in strategy and business development, finance, risk, capital management and governance gained across various industries including infrastructure, transportation, financial services, energy, and consulting. He is a Fellow with CPA Australia and the Governance Institute of Australia.

FireEye expands AsiaPac channel program



Security technology company, FireEye, has appointed **Sean Kopelke** as director of global alliances for Asia Pacific and Japan and **Lani Edwards** as head of channels for Australia and New Zealand. Prior to joining FireEye, Kopelke was senior director of Symantec's technical sales organisation in Australia and New Zealand. Edwards was previously head of channels for Juniper Networks Australia New Zealand.



LivePerson appoints Asia Pacific director



LivePerson, which operates a cloud-based platform that enables businesses to connect in real-time with their customers via websites, social media and mobile devices, has named **Steve Fitzjohn** as regional director for Asia Pacific, based in Melbourne. He succeeds **Dustin Dean** who has been appointed executive vice president of global sales and customer success, overseeing the US and APAC and expanding the company's footprint in Taiwan, Hong Kong and Singapore. Fitzjohn joined LivePerson following the acquisition of Engage, an Australian provider of cloud-based customer contact solutions, in 2012.

Symantec names senior vice president - sales for APJ



IT security company Symantec has named **Sanjay Rohatgi** as its sales leader for Asia Pacific & Japan (APJ). He will be based in Singapore and takes over from Adrian Jones who has been promoted to executive vice president for worldwide sales. Rohatgi was previously vice president – sales for Symantec in India. Rohatgi joined Symantec from Cisco where he was most recently managing director, service provider for India and SAARC.

Palo Alto Networks appoints chief security officer for Asia Pacific



Enterprise security, company Palo Alto Networks, has appointed **Sean Duca** as vice president & regional chief security officer (CSO) for Asia Pacific, based in Sydney. Symantec says he is "widely recognized as a thought leader in the technology industry [and] has provided expert guidance and advice to the Australian government around online safety issues, and on cybersecurity matters to the public and private sector within Asia Pacific." Prior to joining Palo Alto he spent 15 years with Intel Security, most recently as the company's chief technology officer for Asia Pacific.

Tripleplay Services names new Asian MD



Tripleplay a UK based supplier of digital signage, IPTV and video streaming software, has named **Paul Christy** as managing director for its Asia Pacific territory. The company's digital signage, IPTV and video streaming software solutions are deployed into organisations of all sizes and industry sectors across the world including education, hospitality, healthcare, retail, banking, sports and enterprise.

SolarWinds names John F Rizzo as Pacific SVP & GM



IT performance management software vendor, SolarWinds, has appointed **John F Rizzo** as senior vice president and general manager for Australia, New Zealand and Japan, based in Sydney. He joined SolarWinds in 2013 at its headquarters in Austin Texas where he helped drive the company's marketing activities and customer experience initiatives. Before that he was chief marketing officer of Jive Software from 2011 to 2013. Earlier in his career he held senior positions at Apple and Intel. 

Telecom Review Summit 'Its all about Networking' 2015



Following the great success of the 2014 edition, Telecom Review Summit will gather global leaders and experts of the telecom and ICT industry, for the sixth consecutive year, in a friendly environment to discuss the latest market trends.

Date: 13 December 2015

Place: Intercontinental Hotel, Dubai Festival City, Dubai, UAE

July 2015

Mobile World Congress Shanghai



Mobile World Congress Shanghai will celebrate the amazing possibilities that mobile brings. Attendees will experience the future of mobile unlimited through a massive technology exhibition featuring 250+ exhibitors, a world-class thought-leadership conference with engaging keynote speakers and compelling panel sessions, in addition to C-Level networking opportunities, and specialty expo zones and pavilions devoted to mobile gaming, i-accessories, devices, apps, emerging startups and more.

Date: 15-17th July 2015

Place: Shanghai New International Expo Centre, China

October 2015

LTE Asia



Celebrating its ninth year, LTE Asia is returning to Singapore with an extended conference program and new speakers from the whole ecosystem to give greater depth and breadth of discussion around the region's most pertinent mobile broadband developments.

Date: 6-8 October 2015

Place: Suntec, Singapore

<http://asia.lteconference.com>

November 2015

COMMUNICAST MYANMAR



ommuniCast 2015 will combine a professional exhibition with additional events, which will include the second Myanmar Satellite Forum. A selection of sponsorship

opportunities will be offered for the show, for the Satellite Forum and for a combination of the two. The show, that brings together professional visitors and companies, will set a new benchmark for projecting the forward development of the country's ICT industry.

Date: 17-19 November 2015

Place: Myanma Event Park(MEP), Yangon

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