

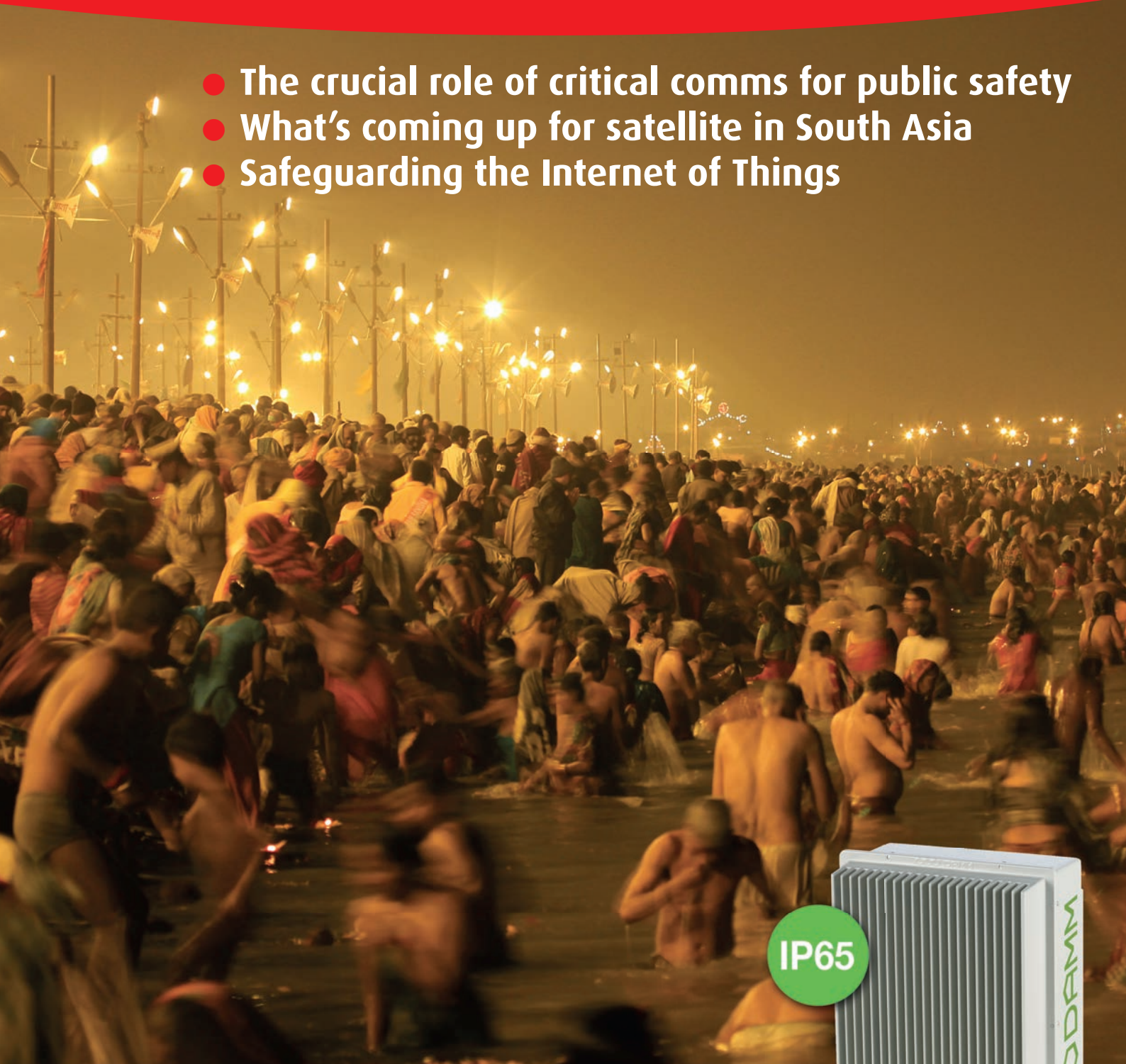
south • asian wireless

For wireless comms professionals in the Southern Asian region

COMMUNICATIONS

Q1 2016
Volume 9
Number 1

- The crucial role of critical comms for public safety
- What's coming up for satellite in South Asia
- Safeguarding the Internet of Things



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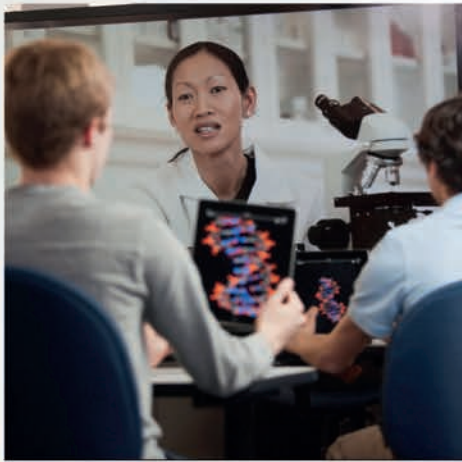


Madhya Pradesh Police chose
DAMM TetraFlex® for SIMHASTHA 2016 –
Kumbh Mela is the largest human
aggregation on earth, where more than
50 million pilgrims are expected to attend

DAMM

Critical communication made easy





Improving lives through the power of connection.

Around the world, Hughes is helping to close the digital divide and empower organizations of all kinds—from online training solutions for rural doctors in India and connecting schools in the Americas, to managed network services for businesses and governments across Europe, Asia Pacific, Africa and the Middle East. Our game-changing JUPITER™ System is the choice of leading operators globally, delivering the highest-value applications at the lowest operational cost, over both high-throughput and conventional satellites.

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Q1 2016
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Madhya Pradesh Police, India, chose DAMM to help protect 50 million pilgrims at Kumbh Mela
Read full press release at damm.dk

Explore DAMM TetraFlex® products and solutions:

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

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

Critical communication made easy

The DAMM TetraFlex® System comes complete with outdoor or indoor base stations. DAMM offers comprehensive features as well as built-in applications such as:

- Network Management
- Dispatcher
- Voice & data Log System
- Group Bridge

You can use your tablet or smartphone to benefit from coverage extension, as well as data capacity for videos and pictures. The complete range includes Android, iOS and Windows soft terminals.

Read more on www.damm.dk

Turn to page 7
to find out more about DAMM

DAMM
www.damm.dk



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EDITORIAL:

Editorial director:
Designer:
Contributors:

Rahiel Nasir
Alan McClenaghan
Cesare Garlati

ADVERTISEMENT SALES:

Sales executive: **Andrew London**
andrewl@kadiumpublishing.com

Production & circulation:

Production: **Suzanne Thomas**
suzannet@kadiumpublishing.com
Tel: +44 (0) 1932 886537
Fax: +44 (0) 1932 886539

Publishing director: **Kathy Moynihan**
+44 (0) 1932 886537

Editorial enquiries:

Tel: +44 (0) 1932 886537
Fax: +44 (0) 1932 886539
rahiehn@kadiumpublishing.com

Digitata Limited Establishes a Regional Office in Kuala Lumpur, Malaysia

Digitata Limited is pleased to announce the establishment of a new regional office in Kuala Lumpur, Malaysia and the appointment of Mr Simon Pollack as Commercial Director, APAC in order to support our recent expansion into the Asia-Pacific region.

Digitata provides solutions for mobile operators that enable them to achieve sustainable customer growth and profitable revenue generation in competitive environments, while enhancing the value of the mobile experience for their customers.

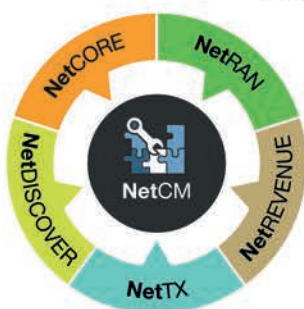
Digitata CMO, Conal Lower-Allen said, *"These are exciting times for Digitata. Following the recent acquisition by Digitata of a controlling stake in long-time partner, Rorotika Technologies, the company has extended its product portfolio and has grown in size. Digitata has also been restructured so as to combine the products and service offerings into streams that will best meet the needs of our customers and enable aggressive expansion into new territories. These territories include, amongst others, Asia-Pacific and Latin America where we are greatly expanding our regional presence."*

Digitata's new structure involves four distinct streams: Digitata Dynamic Tariffing™, Digitata Networks, Digitata Insights and Digitata Innovation.

dynamic **tariffing**™

Digitata's Dynamic Tariffing™, the established face of Digitata, with the first and leading dynamic tariffing™ solution for voice, SMS and data, allows mobile operators to dynamically change the price of calls, SMS and data depending on network elasticity, in order to offer subscribers better value and protect the network while maintaining or improving revenue.

Dynamic Tariffing™ is accompanied by a mobile app, SnapTariff that allows subscribers improved visibility of the dynamic pricing as well as better control of their data spend.



Digitata Networks provides a sophisticated, vendor-agnostic network configuration management (NetCM) and self-organising networks (NetSON) solution to transparently manage and troubleshoot all major mobile technologies (2G, 3G, LTE, Wi-Fi) and multi-domains (Core, RAN, TX).

The Digitata Networks solution offers operators cost savings through improved efficiencies gained by automating auditing, planning, optimising, configuration and operational activities.

Digitata Insights, the fun face of the company, provides innovative mobile solutions focusing on mobile engagement mechanisms, which incorporate gamification and content strategies to create extended, emotional and valuable customer engagements.

Digitata Insight's MeMe provides an innovative premier media channel and content solution that geo tags and enriches existing mobile messages based on a subscriber's location, allowing subscribers to discover new content and engage with new services.

Digitata Innovation is our "dream stream" that develops new innovations, and handles prototypes, related patents etc. Current products being incubated and developed in the Digitata Innovation wing include Glovent's GloPortal, SnapTariff, and extensive work is being done in the area of "Big Data".



digitata



Network upgrades throughout South Asia dominated by Ericsson

Ericsson has had a busy start to 2016 with news of multiple network deployments across the region.

In late February, it signed a five-year contract with Telenor Asia for the design and implementation of LTE networks and the transformation of existing 2G and 3G networks in Thailand (Dtac), Bangladesh (Grameenphone) and Myanmar.

Ericsson will install its multi-standard *RBS 6000 BST* which supports 3G and LTE in a single cabinet. Indoor small cell solutions will also be deployed, including the *Radio Dot System* and *RBS 6402* small cell base station.



In a separate agreement, Idea Cellular will also build an LTE network and transform its existing 2G and 3G networks with Ericsson's help. It will also use the vendor's OSS.

With more than 170m subscribers, Idea is India's third largest MNO and its 4G deployment will cover selected

Ericsson claims its *Radio Dot System* has been shown to improve throughput by up to five times and reduce dropped calls to zero.

circles that serve over 40m customers. The two-year deal also includes the transformation of Idea's existing RAN infrastructure across nine circles for 2G and five circles for 3G.

Meanwhile in Singapore, Ericsson is helping Singtel prepare its LTE network to support the expected rapid growth of connected devices.

The collaboration will start with a trial of Narrow Band Internet of Things (NB-IoT) technology beginning

during the second half of this year. NB-IoT is said to enable extended coverage and much less complex devices, allowing Singtel to support new IoT use cases in areas such as smart cities, utilities and the environment.

The telco's LTE network already supports low-cost Category 1 devices which are built for IoT applications.

The group's CTO Tay Soo Meng says: "We anticipate a growing demand to connect a multitude of sensors and devices in a cost-effective manner. Focusing on power-saving capabilities in our networks enables energy efficiency benefits for the IoT ecosystem; we expect at least 10 years battery life."

Multinet to add satellite to fibre network in Pakistan

Multinet will expand its service coverage to the most remote areas of Pakistan via satellite with support from SpeedCast International.

Multinet is an infrastructure and communication solution provider for carriers and enterprises in the region. It specialises in terrestrial connectivity services using its own fibre optic infrastructure that is more than 13,000km long and covers 107 cities across Pakistan.

The company's multi-year, multi-million dollar agreement with SpeedCast will enable it to add

satellite communications solutions to its private network offerings.

To support the required connectivity and service level to end users, SpeedCast will deploy two iDirect hubs in Pakistan which will be backed by its global satellite network infrastructure.

"Multinet always strives to provide premium communication services to its customers regardless of locational constraints," says Multinet CEO Adnan Asdar. "Working with SpeedCast [we can] expand our stretch to remote areas in the country to provide high-quality VSAT services."

DTH services expanded in Nepal via AMOS-4

As part of a multi-year, multi-million dollar deal with Spacecom, Dish Media Networks (DMN) will use further capacity on *AMOS-4* to expand its *Dishhome* service in Nepal.

Founded in 2009, DMN is said to be the only DTH operator in Nepal that offers nationwide coverage. The capacity it uses for *Dishhome* on *AMOS-4* is contracted for the satellite's lifetime.

Spacecom president and CEO David Pollack claims the satellite's orbital location at 65°E is "excellent" for providing *Dishhome* with all of its satellite services in the years to come.

"Our capacity enables them to embark upon a programme to substantially grow their subscriber base as well as their broadcasting capabilities," he says. "*AMOS-4*'s strength and focus on Asia is a prime reason for their choice."

DMN CEO Sudeep Acharya adds this latest deal with Spacecom provides more bandwidth for *Dishhome*'s national network. He says it will enable it to boost the number of channels it offers and improve the viewing experience for customers. *What happened to AMOS-5? Satellite feature pp22-24*

Digi claims first with hydrogen-powered base station test

Digi is trialling a hybrid hydrogen fuel cell system to power its base stations in Malaysia. As part of a proof of concept, the telco is spearheading an industry initiative that aims to look at the possibility of using such technology to reduce or even replace diesel.

The test is currently being conducted at a pilot base station site near Rompin, Pahang. Digi says the hybrid hydrogen fuel cell system works by extracting water from the atmosphere. It then breaks the water down to produce hydrogen to power the fuel cells and generate electricity for the base

station. No greenhouse gases are released into the atmosphere during this process, and the only by-product is oxygen and water.

According to project manager Alex Kuik, currently available hybrid fuel cells are largely dependent on the delivery of hydrogen gas tanks, methanol or other fuel sources to power the cells. But the system being tested by Digi does not require any of these and is therefore carbon neutral.

He says: "The success of the testing will be dependent on multiple variables. If the system fails, it will switch over to the national grid, so



Digi is carrying out the trial at a pilot base station site near Rompin, Pahang (pictured), using a fuel cell system that is claimed to have zero emissions.

this will measure the capacity and efficiency of the system."

Digi believes it is the first operator to attempt the creation a self-sustaining system that will not require refuelling.

Its tests are funded by the Green Technical Working Group under the Malaysia Technical Standard Forum Berhad which in turn is financed by the country's regulatory body.

Market leaders lose out in record-breaking 4G auction in Thailand



Dtac will now invest the billions it had set aside for a 900MHz license in expanding its 'Super 4G' network.

Thailand's top two operators did not do as well as expected in the long-awaited 4G auction which brought in a record total of THB151.86bn (USD4.22bn) for the government.

In the sale of 900MHz spectrum last December, market leaders AIS and Dtac lost out to True Move, the country's third-largest telco, and local service provider Jasmine International. Backed by Chinese funding, True paid THB76.3bn for 10MHz of 900MHz spectrum while Jasmine paid THB75.56bn for its 10MHz block – significantly higher than the reserve price of

THB12.8bn that had been set by the regulator. Analysts reportedly said the combined bids are a world record for prices paid per megahertz.

True now has two blocks of 4G spectrum. In the November auction of 1.8MHz frequencies, it gained 15MHz with a bid of THB39.8bn, while AIS fared better here and also won with its bid of THB41bn.

Meanwhile, despite being outbid in these latest auctions, Dtac says it will now invest the THB70bn it had budgeted for a 900MHz license in expansion and marketing for its *Super 4G* network. The Telenor-owned

operator claims this will enhance the quality of its networks to offer customers three times the speed of 4G.

Telenor currently has a license to use 1800MHz spectrum although this is due to expire in 2018. It plans to increase 4G bandwidth on these frequencies to 20MHz and says this will cover 77 provinces by the second quarter of this year. The operator will also add another 5MHz to its 2100MHz spectrum which will cover all 878 districts in Thailand by Q3.

Thailand's 4G auctions were delayed by more than a year after the military seized power in May 2014.

Neptune backhaul for Bharti

Bharti Airtel will use ECI Telecom's *Neptune* line-up of products to expand its backhaul capabilities across India as it migrates from 2G, 3G, 4G and eventually to LTE-A.

Neptune is said to be designed to efficiently and reliably carry packet traffic, while maintaining essential carrier-grade characteristics such as low transit latency, hitless protection and restoration mechanisms. ECI claims its products combine a scalable modular architecture with a minimal footprint, and offer a rugged solution designed to meet any network topology.

The vendor adds that its platform offers an E2E metro-core and aggregation solution for high-performance L1 to L3 services through convergence of IP, Elastic MPLS (IP and TP), Ethernet (MEF CE2.0 certified), OTN and WDM. *Neptune* will also evolve to support NFV services and SDN applications for future metro environments.

All of ECI's transport products are managed by its unified, multilayer *LightSoft* NMS. The firm says this provides "full control" over tens of thousands of elements and "tight monitoring" of critical data traversing the network.

TelBru selects Aptilo for nationwide carrier Wi-Fi network in Brunei

Telekom Brunei Berhad (TelBru) has built a Wi-Fi network in Brunei and will enable carrier Wi-Fi services with the help of Aptilo Networks.

The fixed line telco and ISP's nationwide Wi-Fi network was officially launched at the beginning of March 2016 and is currently available at more than 50 locations.

"Wi-Fi service is part of TelBru's long-term strategy to expand its reach into the wireless segment as it moves up the value chain and offers innovative products and services to its customers," said CMO Lim Ming Soon.

According to Sweden-based Aptilo Networks, TelBru's deployment of its *Service Management Platform (SMP)* gives it a "highly scalable platform" that enables carrier Wi-Fi and supports rapid network growth.

It adds that users benefit from a "seamless" Wi-Fi experience that offers "invisible hand-offs" when roaming between hotspots.

"Carrier Wi-Fi is key to customer retention, and is also a compelling business-to-business proposition that generates revenue for carriers," said Jan Sjönell, MD, Aptilo Networks.

TelBru plans to monetise its network by enabling Wi-Fi services to verticals such as sports venues, airports and coffee shops.

It believes Wi-Fi availability can be a good marketing tool for businesses as it can attract more customers who then tend to stay much longer on the owner's premises.

The operator adds that it will also offer wholesale capacity to cellcos and establish roaming agreements with overseas MNOs to further expand their customer base.

Indosat Ooredoo and XL Axiata share 4G RAN

Indosat Ooredoo and XL Axiata have launched a Multi Operator Radio Access Network (MORAN) as part of a 4G network cooperation agreement in Indonesia.

"This plan has been discussed for the past two years," says Indosat CEO Alexander Rusli. "We hope with this collaboration we can deliver even better services to our customers by giving a wider network service across Indonesia."

Both operators are now running a 4G network in several cities, including Banyumas, Surakarta, Batam, *et al*, and plan to extend their core network

sharing to other cities to support the country's digital economy agenda.

Rusli adds that the initiative helps support the Indonesian Government's effort to reduce imports in foreign currencies, and also allows Indosat to be more efficient, reduce equipment imports, and focus on its investments within the country.

■ Indosat Ooredoo has selected Nokia Networks to power its LTE-A network. Nokia's Global Services team is deploying 4G BSs in key cities across the designated regions. It has also aggregated two carriers at 900MHz and 1800MHz to deliver



In what's claimed to be a first for Indonesia, Indosat Ooredoo and XL Axiata are now sharing a 4G RAN.

up to 150Mbps downlink speed to subscribers in the Java, Sumatra and Kalimantan regions.

Critical Communication made easy

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

A Cross-technology one-box solution

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

Need to Go Hybrid?

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

Need to migrate from Analogue?

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

A cross-technology
one-box solution
offering:

- TETRA
- DMR Tier III
- TEDS
- Analogue

NEW

Need the flexibility to scale in coverage and capacity?

The open decentralized architecture, based on a true IP backbone, makes DAMM TetraFlex® easy to scale. You can not only scale freely in coverage, but also in redundancy and number of carriers.

The DAMM TetraFlex® Product portfolio

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

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

The DAMM TetraFlex® Concept

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

Trusted by industry leaders worldwide

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

**Contact damm.dk
to learn more**



Floating hospitals connect with VSAT

SES has launched the first maritime VSATs on three hospital ships run by NGO Friendship in Bangladesh. With local technical help from Square Informatix, it installed the terminals on board the *Lifebuoy*, *Emirates* and *Rongdhonu* (formerly *Rainbow Warrior II*).

Using the SATMED satellite-based e-health platform (see *World News*, Q3 2014), Friendship will be able to establish communications with national and international doctors from remote areas, and provide medical counselling to marginalised communities through telemedicine.

The Emirates Friendship Hospital is one of three vessels equipped by SES.



"After implementing SATMED platform tools and services, the ships – via satellite connectivity – will be able to support and facilitate work in the areas of e-care, e-learning, e-surveillance,

e-health management, and digital imaging," said Gerhard Bethscheider, MD of SES Techcom Services.

During the inauguration ceremony held in early March, two doctors

consulted with patients from a remote island in Bangladesh known as a 'char' through teleconferencing directly from Europe. Friendship says such a facility would have been previously "inconceivable" to the country's poor and marginalised people.

Runa Khan, Friendship's founder and executive director in Bangladesh, adds: "SATMED gives us a tool by which we are able to bring in specialised services of e-learning and doctors, back office resources, and ethical decisions – all this can be centralised and the same message can be [delivered] organisation wide."

Elitecore supports public Wi-Fi services

Elitecore Technologies' service management platform (SMP) has enabled an operator in India to roll out mobile data offload and public Wi-Fi services across more than 1,000 hotspots in the country.

The telco – which has not been named but is described as "one of India's leading operators" – needed a platform where it could offer seamless Wi-Fi access at its own events, as well as portal-based in-venue Wi-Fi services across a wide range of locations such as transport hubs, hotels, malls, etc.

Elitecore says its converged platform was chosen because it will help the operator to tap new market opportunities and increase its monetisation potential.

It claims the SMP will offer "innovative" features such as location centric advertisements and deals across hotspots to generate new partnership-based revenue streams, as well as real-time reporting and analytics to launch new plans and offers.

The firm adds that its platform comes with "robust AAA", centralised DHCP for IP allocation, and a customisable captive portal with branding and advertising capabilities.

Vodafone's boosts Indian services with LTE launches and 'Superfast 3G'

Vodafone has begun rolling out 4G in India as well as boosting its 3G services in the country.

Following launches in Kerala and Karnataka, the cellco has now unveiled LTE in Kolkata. As part of a phased rollout, it introduced 4G earlier this year using 1800MHz spectrum in major business and residential corridors. The operator plans to complete coverage across all parts of the city by June 2016.

Elsewhere in India, Vodafone has launched what it calls *Superfast 3G* on its existing 3G network. It claims

the service is "faster, smarter and better" than standard 3G.

Superfast 3G is now available in Aizawl, the capital city of the state of Mizoram, where Vodafone has so far deployed 59 new 3G towers and continues to add more sites.

The operator has also recently completed the roll out of the service across Rajasthan following the construction of more than 1,110 cell sites. It is using its own 3G network based on 2100MHz spectrum. Previously, Vodafone had been providing 3G services to its

customers in Rajasthan via intra-circle roaming arrangements with other operators.

In separate news, the company has deployed Cisco's self optimising network (SON) technology. It says SON will deliver a "truly differentiated" voice and data experience for its 3G users in India, both by optimising existing sites and by streamlining the process of adding new ones.

Vodafone India plans to make its entire network SON-enabled, and has so far deployed the technology over a third of its network.

Globe Telecom transforms OSS with MYCOM

Globe Telecom has implemented proactive and service-oriented NOC solutions using MYCOM OSI's network performance management and automation products.

The telco, which is a subsidiary of Ayala Corporation and Singtel, is one of the largest in the Philippines where it has more than 50 million consumer and enterprise customers using its mobile, fixed, broadband and managed services.

As part of its OSS transformation project, Globe needed a converged network performance management product that could replace multiple silo systems and worked across all network domains, technologies and equipment vendors. It also required specific use case-based solutions to

meet a need for faster, more cost-effective and proactive network, and service operation processes that optimise customer experience and reduce churn.

MYCOM CEO Dr. Payam Taaghoul says: "We see a lot of CSPs in South East Asia trying to meet the demands of increasing data traffic and OTT services. They are competing on customer experience as well as network and service quality.

"Like Europe a few years back, they are looking at streamlining and improving their operational processes so are undergoing these OSS transformation projects."

Taaghoul says Globe will use MYCOM OSI's platform to achieve "faster, proactive and more cost-

efficient" network and service operation processes in order to decrease churn and optimise customer experience.

It has deployed the vendor's *ProOptima* converged network management solution which is said to process large volumes of performance, configuration and services data in near real time.

Globe will also use MYCOM's *ProActor* which aims to automate operations and engineering processes based on best-practice policies.

MYCOM CEO Dr. Payam Taaghoul says many of the region's CSPs are trying to meet the demands of increasing data traffic and OTT services.



Zong to establish 4G research lab

Zong, China Mobile's subsidiary in Pakistan, will develop a USD1m lab for 4G research at the Lahore University of Management Sciences (LUMS).

Under an MoU signed in mid-February, three in-building systems together with a mini customer services centre will be installed at the university as part of the lab.

Zong and LUMS believe their strategic partnership will pave the way for hundreds of students to boost their knowledge of the latest technologies. ZTE will also provide technical assistance here.

Zong was the only operator in Pakistan to be awarded 4G spectrum at 1800MHz in 2014 (*see News, Q2 issue*). It claims students will be able to "instantaneously" access online learning materials using the "unbeatable speeds" of its mobile broadband network. The cellco adds that it will also help students with their research projects and offer externships.

■ Zong's 3G frequencies in 1920-1930MHz and the 2100-2120MHz bands have been facing interference issues because of the illegal use of DECT 6.0 phones in Pakistan.

After complaining to the Pakistan Telecommunication Authority, Zong's spectrum was reportedly due to be replaced at no extra cost. The PTA has also issued a public notice that only the use of 2.4GHz cordless phones is permitted in the country.

IIT-M and Nokia to boost connectivity in rural India

The Indian Institute of Technology-Madras (IIT-M) and Nokia will create technology solutions that will enhance broadband connectivity in rural areas.

Under a three-year partnership, the vendor will fund and provide expertise for research at the institute's Centre of Excellence for Wireless Technology (CEWiT).

The project will evaluate the option of using unlicensed spectrum to deliver cost-efficient, last-mile broadband connectivity to remote rural communities. As part of the initiative, the researchers will develop effective low-cost rural access solutions based on Wi-Fi.

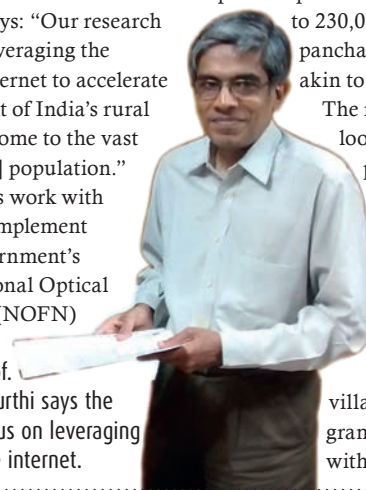
IIT-M director Professor Bhaskar Ramamurthi says: "Our research will focus on leveraging the power of the internet to accelerate the development of India's rural communities, home to the vast majority of [the] population."

Nokia says its work with CEWiT will complement the Indian government's ambitious National Optical Fibre Network (NOFN)

IIT-M director Prof. Bhaskar Ramamurthi says the research will focus on leveraging the power of the internet.

plans of providing fibre connectivity to 230,000 'gram panchayats' which are akin to local councils.

The researchers will look at ways of providing last-mile connectivity from around 238,000 gram panchayats across India to their respective villages. The majority of the villages around the gram panchayat are within a 20km radius.



VimpelCom begins to virtualise networks

VimpelCom plans to build a complete virtual network infrastructure providing 4G, 3G and 2G mobile data services to customers across five markets in 2016.

It will use ZTE's virtual Evolved Packet Core (vEPC), and started implementing the technology in Laos and Kyrgyzstan in February. Following these markets, the operator plans to introduce fully virtualised networks in Uzbekistan, Armenia, and Tajikistan during the course of the year.

Once virtualised, ZTE says VimpelCom's operations in the five countries will move from a legacy-heavy network made up of separate

elements to a common, software-driven and lean infrastructure.

VimpelCom Group CTO Yogesh Malik adds: "The reinvention of the current network to one that is software-driven and asset-light plays an important part in our digital transformation, and is a leap forward in bringing the digital world to customers as they navigate their digital lives."

In separate news, ZTE has helped AIS, Thailand's largest mobile operator, migrate 38 million customers from their existing home location registers to a new platform. Before going live with the system,

ZTE says its *Universal Subscriber Profile Platform (USPP)* was fully vetted in a series of strict proof-of-concept tests conducted with AIS.

This included overloading protection capabilities with up to nine times normal traffic, simulating a 30 per cent packet loss in IP network transmission, repeated plugging/unplugging and switching of single board computers and hard disks, and other "extreme" tests and verifications.

According to ZTE, its *USPP* simultaneously supports all GSM and UMTS subscribers, and "smoothly" achieves VoLTE and VoWiFi services.

Morpho helps Airtel in "know your customer" test



Morpho's managed services are supported by its fully integrated *MorphoTablets* as a single interface for users.

Airtel has chosen digital ID and biometrics specialist Morpho to become its key partner in an electronic know your customer (eKYC) trial in the state of Uttar Pradesh.

Morpho says the test will demonstrate how fraud can be avoided whilst at the same time implementing a flexible and environmentally-friendly solution.

As part of the proof of concept, the company will develop a new, digitally-based subscriber on-boarding process for Airtel and meet increasing demand

for data reliability. A registration scheme is being carried out at various retail points in Lucknow, the state capital, using the secure and well-established system from India's unique identification authority Aadhaar.

Morpho claims its eKYC solution provides Airtel with "innovative technologies and services" to enable one of the first paperless ID experiences performed for an MNO in India.

The company says its managed services, which are supported by fully integrated *MorphoTablets* as the single interface for users, include the front- and back-end applications. End

users are said to benefit from greater convenience, avoiding the need to provide multiple kinds of papers and enabling a quicker activation of the subscription.

"As people and objects become more connected, security and authentication have taken on a new dimension," says Yves Portalier, VP and GM of Morpho's telecom business unit. "Morpho is focused on digital ID solutions that enable service providers to reinforce authentication processes and guarantee secure access to multiple devices and accounts."

Keeping kids safe



Ufone has launched the *UWatch* in Pakistan

in an effort to keep families connected without the need to buy a young child a smartphone. The wearable mobile watch provides two-way voice calling as well as real-time location via GSM/GPS positioning. It can be securely controlled and customised by parents using the *UWatch* app available on *Android* and *iOS* platforms. They can also set up 'Safe Zones' to receive notifications when their child has left or entered certain locations.

Uplifted in the Maldives



Dhiraagu is claiming a first in the Maldives with its new *Pick me up* service. It enables users who are low on credit to send a text asking either a family member or friend to pick them up. It works via a USSD code – customers simply dial *200# and follow the instructions. The service is free for all Dhiraagu subscribers, and can even be used with a zero balance. Dhiraagu has more than 350,000 connections across the islands. It completed a nationwide 3G rollout last September and also commercially launched LTE-A in the same month.

Satellites for Vietnam



Vietnam will launch three new satellites over the next few years. They include the 50kg *MicroDragon* which will be designed by local engineers with the support of Japanese experts. It will be used to observe coastal areas to evaluate water quality and track marine food resources to inform the country's aquaculture breeding sector. An *Epsilon* rocket built by Japan's IHI Aerospace will launch the *MicroDragon* in 2018. The other spacecraft include the 10kg *NanoDragon* in 2016 and the 500kg *LOTUSat-2* in 2020.

Orchid One supports AWCC migration from TDM to IP

The Afghan Wireless Communications Company (AWCC) will use Cataleya's *Orchid One* session and application management platform to support its migration from a legacy TDM network to all-IP infrastructure.

Founded in 2002, AWCC offers 2G and 3G services as well as fixed wireless internet access. It is said to be the country's first mobile operator to deliver enhanced voice connectivity such as HD Voice.

It will use *Orchid One* as an international voice-switching platform, addressing QoS, QoE, interworking, and transcoding. The platform will be initially deployed in Kabul, but there are plans to expand its rollout to additional cities.

Cataleya CEO Jay Jayasimha says there's a "tremendous opportunity" for supporting IP networking.



AWCC's CTO Mike Hoban says: "No matter what market you operate in, voice quality is critical. *Orchid One* is able to support our vision for high-quality mobile services in Afghanistan."

With Cataleya's help, he believes AWCC will be able to deliver "even more" benefits to mobile subscribers,

businesses and communities throughout the country.

This latest implementation of *Orchid One* in South Asia follows Bangla Trac's deployment of the platform in Bangladesh last year (see *News*, Q4 2015). According to Cataleya CEO Jay Jayasimha, there is a "tremendous opportunity" in supporting IP networking in developing markets, and in enabling customers to offer the best possible QoS and QoE.

He adds: "Over the last 12 to 18 months, we have deployed *Orchid One* in 13 networks globally, and we are developing new solutions for fraud identification and mitigation as well as other IP-based solutions."

Grameenphone continues "aggressive" 3G rollouts throughout Bangladesh

Grameenphone says all 10,000 base stations it currently has installed across Bangladesh will support 3G services by June 2016. The operator has already converted more than 5,500 BSTs since introducing 3G in late 2013.

Speaking earlier this year, Grameenphone CEO Rajeev Sethi said: "It is our intention to add nearly 1,700 more 3G sites by the end of the first quarter of this year. The addition

will reach 3G services to nearly 90 per cent of the subscriber base in that time."

The operator said it currently has more than 15.2m data users on its network and wants to grow this to 50m by 2019. Sethi was keen to point out that Grameenphone's ambition was not just about reach but also customer experience: "Which is why we had invested in 10MHz of 3G spectrum from the onset. This initial

investment has allowed us to continue to lead the industry with HD Voice and Digital Clarity, and double speed HSPA for excellent user experience in voice and data services."

The celco said that thanks to its "aggressive" 3G rollout plan, it has covered all of Bangladesh's districts six months sooner than the 36 months conditionality stipulated in its 3G license agreement.

Connecting to celebrities on 'Twitter-like' voice service

In what's claimed to be a first in Sri Lanka, Dialog Axiata has introduced a new voice service that enables its subscribers to 'talk' to celebrities.

The operator has launched *StarFriends*, the premium celebrity content service from Sri Lankan mobile marketing and entertainment solutions provider zMessenger.

StarFriends enables celebrities to record voice messages and send them directly to their fans. Messages can be quickly updated and are delivered instantly to create what's described as a 'Twitter-like' voice experience.

Actors Yureni Noshika and Roshan Ranawana, singer Raini Charuka, and musician Lahiru Perera, are among some of the celebrities fans can now connect with via *StarFriends*.

zMessenger CEO and co-founder Jayomi Lokuliyana said: "We believe this will give control back to stars to truly connect with their fans and treat them as friends, to make themselves more relevant, and to engage in real time with their 'loyal' fans by creating authentic content."

Dialog's *StarFriends* service is powered by Kirusa's *Open Multimodal*



Sri Lankan singer Raini Charuka is one of many stars Dialog subscribers can hear from using the new *StarFriends* service.

Platform. This is integrated with the operator's network, runs on carrier-grade equipment, and is built on top of enterprise-class open source software components. Kirusa says this ensures that the carrier is not locked into any proprietary technology standards.

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MCMC to reallocate spectrum in Malaysia: targets top four MNOs

The Malaysian Communications and Multimedia Commission (MCMC) has announced plans to reallocate spectrum in the 900MHz and 1800MHz bands later this year.

According to MCMC chairman Halim Shafie, this is in line with the government's decision to optimise the use of spectrum resources through reallocation and bidding.

There are currently eight operators in Malaysia's mobile market. Shafie said the two frequency bands will be assigned for a fee to Celcom, Digi, Maxis and U Mobile, for a period of 15 years. The commission intends to issue the assignment to all four operators by August 2016 for full implementation by 1 July 2017.

Shafie explained that these four operators were chosen because they

already have "sufficient infrastructure" to expand on in order to increase competition in the industry.

He added that the reallocation takes into account the development of the sector and the nation as a whole. "Specifically, a high priority has been put on communications coverage, quality of service and affordability of services."

The MCMC has yet to determine a fee for the reallocated spectrum. But it did acknowledge that the four MNOs need to have sufficient capital to introduce and expand services.

Shafie said that similar to the previous practice for 3G spectrum, payments will be in phases which will allow the operators to roll out services and not pass the cost on to their subscribers.

The MCMC also plans to address the optimal usage of other relevant spectrum bands, such as 700MHz, 2300MHz, 2600MHz, etc., by the end of 2016.

Malaysia's top three mobile operators are Celcom (Axiata), Maxis and Digi. While there has so far been no specific reaction from Celcom about the commission's plan, both Maxis and Digi did immediately issue press statements.

Maxis said reallocation in the 900MHz and 1800MHz bands would reduce the spectrum available to 2 x 10MHz and 2 x 20MHz respectively. It said it will make further announcements after it had conducted a detailed review.

Digi confirmed that it has been allocated 2 x 5MHz of 900MHz

and 2 x 20MHz of 1800MHz. It welcomed the move, and said that the "certainty" on allocation and tenure of these two bands will allow for better investment planning and optimal network design.

According to Digi, the improved spectrum portfolio for the 900MHz band will mean it can continue to bring high-quality and high-speed internet to its millions of customers nationwide.

The operator added that it also notes the importance of taking a holistic view on spectrum: "[The company] welcomes the timely review of 700MHz, 2300MHz and 2600MHz bands by the end of 2016, as having a fair and balanced portfolio is crucial to delivering affordable and quality internet services to meet growing demands."

Sri Lankan Government buys into Google's Project Loon

The Sri Lankan government has bought a stake in *Project Loon*, the Google initiative that aims to deliver broadband to underserved areas using mesh networks created by hot air balloons floating in the stratosphere.

At the start of February, Sri Lanka's telecommunications minister Harin Fernando said the government will have a 25 per cent stake in a joint-venture setup with Google in return for the spectrum that will be allocated for the project.

He added that there would be no other state-funded investment into the initiative, and that 10 per cent of the joint venture will be offered to the country's existing telcos. Fernando told local reporters: "Our objective is to extend coverage so that the entire island will be covered. With competition, tariffs will also come down."

According to the minister, most of Sri Lanka's ISPs support *Project Loon* as a way of extending their coverage and offering lower prices for data services to consumers.

This latest move follows last year's announcement that Indonesia's three biggest operators also plan to begin testing *Project Loon* later in 2016 (see *News*, Q4 2015).



Local villagers and police found the wreckage of a Google balloon and its equipment in Gampola.

In Sri Lanka, testing the giant helium-filled balloons (each one measures 12 metres tall and 15 metres wide) and equipment needed for the project has already begun, and could last up to a year.

According to a widely reported incident in mid-February, one of the balloons crashed during its maiden test flight. Locals found the deflated balloon with its electronic equipment in a tea plantation in Gampola, central Sri Lanka.

The country's ICT Agency, which is working with Google, claimed the landing was planned and controlled. On *Twitter*, the agency's chief, Muhunthan Canagey, claimed that the balloon had "safely landed under standard operating procedures as a part of the test".

Myanmar Government names foreign partner for fourth license

Viettel has reportedly been chosen by the Myanmar Government as part of the joint venture that will launch the country's fourth mobile network.

In January, the Ministry of Communications and Information Technology announced that seven operators had submitted 'Expressions of Interest' to be part of the joint venture. While it did not name the applicants at the time, it said that they came from Asia, Europe, the Middle East and Africa.

Myanmar's government first announced the prospect of issuing a fourth license last year (see *Wireless Business*, Q3 2015). It will be granted to a joint venture comprising local firms/investors who, together with the Government, will own a 51 per cent shareholding in the operation. A foreign telco – which has now been named by the *Myanmar Times* as Vietnamese military-owned operator Viettel – will own the rest.

BlackBerry to stay in Pakistan

BlackBerry has decided to remain in Pakistan market after the government rescinded its order for the company to shut down its operations last year (see *Wireless Business*, Q4 2015).

In a blog posted at the end of December, BlackBerry COO Marty Beard wrote: "We are grateful to the Pakistan Telecommunication Authority and the Pakistani government for accepting BlackBerry's position that we cannot provide the content of our customers' BES [BlackBerry Enterprise Server] traffic, nor will we provide access to our BES servers."

He added that the company will now continue to serve the country's market "for years to come", including introducing new products and services.

Sharing active infrastructure now allowed in India

Operators in India can now share active as well as passive infrastructure. The move follows the Department of Telecom changing competition rules as part of an effort to help cellcos cut capex by up to 35 per cent.

DoT said the infrastructure that can be shared includes antennas, feeder cables, Node B, RAN and transmission systems.

The sharing of active infrastructure will also enable cellcos to act on the new rules for sharing spectrum that were introduced last September. Reliance Jio Infocomm and RCOM are likely to be among the first to benefit here following their talks to

share spectrum (*see Wireless Business, Q4 2015*) which have now been agreed.

Axiata and Airtel to merge businesses in Bangladesh

Axiata Group Berhad and Bharti Airtel have now signed a definitive agreement to merge their operations in Bangladesh. The two companies first began talks about combining Robi Axiata and Airtel Bangladesh last September.

After signing the deal at the end of January, Axiata and Airtel said the combined entity will operate as Robi and serve around 40 million customers. The proposed transaction is expected to complete in the first half of 2016 and is subject to the usual conditions and approvals.

When it's finalised, Axiata will own a 68.7 per cent controlling stake in Robi while Bharti will hold 25 per cent. The remaining 6.3 per cent will be held by the existing shareholder, NTT DOCOMO of Japan.

It's claimed the joint strengths of Robi and Airtel will deliver the "widest" mobile network coverage across Bangladesh, strengthening the operator's position in mobile internet as well as consolidating its status as the country's second-largest operator.

Nokia now controls Alcatel-Lucent

Nokia now owns Alcatel-Lucent. In January, the Finnish company said it had gained control after buying nearly 80 per cent of Alca-Lu's outstanding shares via a public exchange offer.

Nokia first announced the merger last year in a deal which at the time valued Alcatel-Lucent at EUR15.6bn (*see Wireless Business, Q2 2015*).

Nokia Corporation – the name given to the merged entity – has now assembled its new leadership team and board of directors.

Rajeev Suri remains president and CEO while Risto Siilasmaa continues as chairman. Olivier Piou has been elected vice chairman.

Suri also chairs the group leadership team which, amongst others, includes: Samih Elhage as president of mobile networks; Basil Alwan as president of IP/optical networks; Ramzi Haidamus as president, Nokia technologies; Ashish Chowdhary as chief customer operations officer; and

Marc Rouanne as chief innovation and operating officer.

PCCW Global and PLDT sign interconnection agreement

PCCW Global and PLDT are aiming to improve voice and data connectivity between Hong Kong and the Philippines following their signing of an IPX multi-service interconnection agreement.

According to the two companies, the deal will enable them to expand their relationship in new market segments, while improving their existing portfolios and mutually benefiting their fixed, mobile and international customers.

PLDT chairman Manny V. Pangilinan says: "With PCCW

NEW APPOINTMENTS

| Date | Name | New employer | New position | Previous employer | Previous position |
|----------|------------------------|---------------------------|---------------------------------|--------------------------|---|
| 10/12/15 | Keith Wilson | Revector | CFO | Dhiraagu Maldives | CEO |
| 10/12/15 | Paul David | Revector | CCO | Luminet Data/Urban Wimax | Sales & marketing director |
| 11/1/16 | Jon Eddy | VimpelCom | Head of emerging markets | Dtac | CEO |
| 11/1/16 | William Zhao | Huawei Technologies India | COO | Huawei | Director of product development unit, carrier software line |
| 13/1/16 | Scott Jackson | Infinera | VP, subsea business group | 4-D Security Solutions | CTO |
| 14/1/16 | Christopher Schlaeffer | VimpelCom | Chief digital officer | yetu & NYOUM | Founder & CEO |
| 15/1/16 | Scott Willis | Zinwave | CEO | Goodman Networks | EVP & chief sales & marketing executive |
| 19/1/16 | Patrick Joggerst | GENBAND | EVP of global sales & marketing | GENBAND | CMO |
| 1/2/16 | Jacques Kerrest | Intelsat | EVP & CFO | DPC Data Inc. | President |
| 2/2/16 | Ross Spearman | Tait Communications | CTO | Ericsson US | VP & CTO |
| 10/2/16 | Charlotte Thomsen | Danimex Communication | CEO | Danimex Communication | Deputy CEO |
| 25/2/16 | Dr. Edmund Kong | MEASAT | CTO | Orbital ATK | Product line chief engineer |

INVESTMENTS, MERGERS & ACQUISITIONS

| Date | Buyer | Seller | Item | Price | Notes |
|----------|-------------------------|----------------------|-----------------|----------|---|
| 21/12/15 | Axiata Group Berhad | Ncell | Company | | Axiata is proposing to buy Reynolds Holdings Ltd from TeliaSonera UTA Holdings & SEA Telecom Investments. The acquisition of Reynolds for the purchase price of USD1.365bn plus customary adjustments at closing, effectively secures Axiata an 80% equity interest & controlling stake in Nepal mobile operator Ncell. |
| 22/12/15 | O3b Networks | Various investors | Finance package | USD358m | Package comprises \$184m in a covered COFACE bond, along with \$143m in equity & \$31m in debt. O3b is using the funds to purchase eight new satellites & launch four of them. |
| 29/12/15 | SpeedCast International | NewCom International | Company | NA | Satcoms provider NewCom specialises in the South & Central American regions. SpeedCast says the acquisition will strengthen its capabilities to serve & support its customers globally, including in the South American market where it did not previously have a direct presence. |
| 4/2/16 | Cisco | Jasper Technologies | Company | USD1.4bn | Cisco says proposed acquisition will mean it can offer a complete IoT service solution that is interoperable across devices, & works with IoT service providers, application developers & an ecosystem of partners. |

Global's proven expertise in delivering advanced and quality services, we believe that this agreement will enable us to deliver a broader range of digital services to our customers, especially our overseas Filipinos in Hong Kong and their families back home."

PCCW Global says PLDT is a major partner in many of its projects, and the IPX interconnection was a "natural step" for it to take.

It adds that mobile operators connected to its global IPX can also take advantage of the *MobileXchange* service suite which includes VoIPX, VoLTE, LTE roaming, GRX, SCCP and cloud-based applications.

PCCW claims this gives operators "unprecedented potential" to differentiate themselves in both roaming and domestic services.

Inmarsat expands in Singapore

Inmarsat has opened a new office in

Singapore to support what it says is a "growing" Asia Pacific customer base.

The satellite operator says the 1,700m² site in Toa Payoh is its largest facility in the region. It will serve as the company's APAC hub providing a new solutions lab, demonstration capabilities, training rooms, a knowledge and support centre, in addition to enhanced production and storage facilities.

Singapore has been Inmarsat's Asia Pacific headquarters since 2008. The company says its decision to invest in a new and expanded facility was driven by the country's "outstanding infrastructure, innovative culture and deep pool of talent" which it aims to capitalise on as it expands in the region to meet increasing demand.

Coinciding with the opening of the new office, Inmarsat has also signed an agreement with local partner Singtel for the provision of L-TAC

services. This will enable the telco to provide beyond line of sight mobile communications to a broad range of government users in APAC.

Syniverse expands global data roaming reach for BSNL

Indian telco BSNL will expand its global data roaming capability with the help of Syniverse.

The agreement is said to build on a long relationship between the two companies and will enable the operator to expand its reach via a single-connection system to data roaming with mobile operators worldwide.

"The surge in data demand driven by smart devices has transformed the mobile world, and made connectivity more crucial than ever before for users who leave home," says Shri R.K. Mittal, director (CM), BSNL. "Through one agreement and one connection, the Syniverse GRX

Network Solution enables us to provide our customers with comprehensive data roaming coverage around the world while significantly streamlining our technical implementation and infrastructure cost."

According to Syniverse, the scalability of its platform gives users "seamless" access to their data network when they roam nationally and internationally, regardless of their operators' roaming partner networks.

In addition to providing the reach and capabilities their subscribers demand, the firm reckons operators also gain the benefit of quicker implementation of roaming services and reduced cost and time to market.

With offices throughout the world, Syniverse specialises in processing global transactions and claims to connect more than 1,500 mobile service providers, enterprises, ISPs and OTTs in nearly 200 countries and territories.

LATEST COMPANY RESULTS

| Date | Company | Country | Period | Currency | Sales (m) | EBITDA (m) | EPS (units) | Notes |
|---------|-----------------|------------|--------|----------|------------|------------|-------------|---|
| 3/12/15 | IDT Corporation | US | 1Q16 | USD | 390.6 | 13.0 | 0.19 | Compared to 1Q15, consolidated revenue decreased 5.4% while consolidated adjusted EBITDA increased 24.6%. Plans to launch new version of <i>Boss Revolution</i> app during 2Q16. |
| 18/1/16 | M1 | Singapore | FY15 | SGD | 1,157.2 | NA | 0.8 | Year-on-year revenue increase of 7.5% due to higher handset sales. Service revenue decreased 1.1% to SGD822.3m due to lower international call services revenue. Mobile data revenue up 10.7 percentage points y-o-y to 46.3% of service revenue. |
| 27/1/16 | Ericsson | Sweden | FY15 | SEK | 246.9 (bn) | NA | 3.70 | India, Indonesia & Mexico remained strong while Russia, Brazil & parts of Middle East continued to be weak, mainly due to macroeconomic developments. Reported y-o-y sales for South East Asia & Oceania up 21%; India up 74%. |
| 1/2/16 | Bharti Airtel | India | 4Q15 | INR | 240,659 | 84,748 | NA | 22.2% slide in net profit for 4Q as higher costs offset solid revenue growth. Earnings in India up 11.6% y-o-y to INR176.94bn driven by 10.1% rise in mobile revenue and 19.1% increase in B2B and digital TV. |
| 4/2/16 | Maxis | Malaysia | FY15 | MYR | 8,539 | 1,121 | NA | Service revenue grew 3.8% from a year ago, driven by solid pre-paid and improved core post-paid performance. Claims to have widest LTE network in Malaysia with 71% population coverage. |
| 10/2/16 | Telenor | Norway | 4Q15 | NOK | 33,487 | 10,860 | 7.5 | Organic revenue growth of 2%. dtac added 400,000 customers in Thailand; performance in Malaysia hampered by tough competition on data and international calls as well as a weakening currency; Bangladesh & Pakistan show strong performance; Myanmar ended year with 14m subscribers. |
| 12/2/16 | Singtel Group | Singapore | 3Q15 | SGD | 4,474 | 1,220 | NA | Operating revenue up 6% in constant currency terms with mobile data, ICT services & digital marketing driving growth. But network & spectrum investments diluted results - net profit for the quarter slid 2% to SGD954m. |
| 17/2/16 | Eutelsat | France | 1H16 | EUR | 774.4 | 600.3 | 1.09 | Expects to meet full-year target of growth of 2 to 3% at constant currency & excluding non-recurring revenues, taking into account new satellites recently entered into service. However, given the termination of a contract for HTS capacity on <i>EUTELSAT 3B</i> & slower growth of <i>KA-SAT</i> , outlook is expected at lower end of this range. |
| 22/2/16 | Intelsat | Luxembourg | 4Q15 | USD | 571.3* | 443.5* | 0.55* | *Preliminary results. Net income expected to be \$49.1m, prior to the effect of any impairments, for the three months ended 31 December 2015. This compares to \$16.2m for the same period in 2014. EBITDA for 4Q14 was \$462m. |
| 26/2/16 | SES | Luxembourg | FY15 | EUR | 2,014.5 | 1,494.2 | 1.30 | Y-o-y revenues up 5% (-3.2% at constant currency). Will launch seven new satellites between 2016 and end-2017 to add to the 52 in orbit as at December 2015. Schedule includes SES-9 & SES-12, both for APAC. |

Full potential of mission-critical LTE now 'unlocked' for public safety

Nokia Networks has unveiled a portfolio of products for an end-to-end public safety network using LTE. It says its fully featured public safety LTE voice and data

MANUFACTURER:
Nokia Networks

PRODUCT:
Public safety LTE network

MORE INFORMATION:
www.nokia.com

communications solutions are 3GPP compliant, including QoS, high availability, mobility, security and resilient IP connectivity.

The network is built on a wide variety of Nokia products which include its: RAN; EPC; VoLTE platform; IMS; *Core in a Box*; management solutions; self-organising networks; and *Liquid* technology.

At its heart is the vendor's LTE *Network in a Box*, or *NIB*. This offers standard authorised IP connectivity and can be installed in a vehicle, such as an ambulance or a fire truck, to

create what's claimed to be a reliable 4G network in minutes in areas without cellular coverage.

Nokia says the *NIB*'s computing capabilities enable the integration of new applications at the edge of the mobile network. These include push-to-talk, group calls and messaging, location tracking, as well as advanced broadband functionalities such as situational awareness and real-time video streaming.

The firm says the entire infrastructure provides end-to-end security for public safety applications, protecting



devices and networks. It adds that the solution is supported by a "comprehensive" partner portfolio including devices, applications, and interworking functions for legacy systems such as TETRA and P25.

Hytera DMR handsets support RFID

Hytera has expanded its portfolio of critical comms devices with the *PD4* series. The new line-up includes two compact handsets, the *PD405* and the

MANUFACTURER: Hytera

PRODUCT: PD4 series

MORE INFORMATION:
www.hytera-mobilfunk.com

PD415, which both support conventional DMR as well as analogue radio.

One of the key features of the series is an RFID reader module which is integrated into the *PD415* as standard. The radios can then be used in Hytera's *Patrol* system, enabling users such as security guards to scan distributed checkpoints in a building and send their current location to a control room where their positions are monitored in real-time on a digital map.

As well as the *PD415*, the *Patrol* system includes management software, RFID identity cards, and RFID check points. The radio itself also has an open application programming interface for RFID-based third-party developments.

Both the *PD405* and the *PD415* support mixed analogue and digital channel operation, pre-programmed text message transmission, and feature TDMA direct mode which



allows up to two simultaneous calls, even without repeaters. The *PD404* is dust- and waterproof according to IP55, while the *PD415* is IP54 rated.

JMA unveils high power remote for DAS

JMA Wireless has introduced the high-power *UltraWatt* remote unit to its *Teko* distributed antenna system (DAS). It reckons the new unit has a 390W peak power capability, and is ideal for supporting multi-operator, multi-technology applications that serve large, high-capacity environments.

Unlike other offerings currently in the marketplace, JMA says the *UltraWatt*'s EVM (error vector magnitude) performance is 256 QAM



ready, and claims it provides robust coverage and capacity with one of the smallest footprints in the industry. It claims the unit represents the best performing high-power remote in the industry with EVM below one per cent.

JMA adds that the *UltraWatt* leverages advanced amplifier techniques that enable the handling of average power versus peak power considerations, thereby optimising for peak to average ratio results.

MANUFACTURER:
JMA Wireless

PRODUCT: UltraWatt

MORE INFORMATION:
www.jmawireless.com

Ensuring complete control of M2M and IoT services

Starhome Mach says its new M2M portfolio provides operators, system integrators and service providers with new ways to globalise the Internet of Things (IoT), and differentiate service levels on an individual device level basis.

According to the mobile inter-carrier services specialist, IoT/M2M visibility and control is a key requirement that many operators are lacking today. The firm reckons its new OSS/BSS software empowers operators to identify inbound devices and take appropriate action. This ranges from offering the host differentiated service for the device, to steering it away from the network if it is poorly configured or has no commercial value.

Starhome Mach says it provides further differentiation of services with

multiple coverage and technology choices. For example, providers can decide upon SIM localisation or optimised roaming routes depending on the enterprise cost profile and quality requirements.

The company provides mechanisms which its claims not only limit risk but also maximise margins for the operator and enhance the service provided to both machines and people.

MANUFACTURER:
Starhome Mach

PRODUCT:
M2M/IoT portfolio

MORE INFORMATION:
www.starhomemach.com

Point-to-multipoint platform for challenging RF areas

Cambium Networks has launched a 900MHz version of its flagship *PMP 450* point-to-multipoint wireless platform. It says the new *PMP 450i* access point allows for deeper frequency propagation to suit the needs of rural broadband deployments, SCADA and sensor data backhaul, and even

MANUFACTURER:
Cambium Networks

PRODUCT: PMP 450i

MORE INFORMATION:
www.cambiumnetworks.com

video surveillance applications.

According to Cambium, the propagation characteristics of 900MHz frequencies “outperform” many others and are ideal for connecting subscribers and sensors that are difficult to reach. It says the *PMP 450i* has the same capacity as its other *PMP 450* radios, and provides the infrastructure needed to deploy networks in non-line-of-sight and remote environments.

Cambium says users of its *PMP 100* systems can now upgrade and

unlock 900MHz capacity with the *PMP 450* platform. “We expect to achieve three to four times the amount of available bandwidth in the same channel size, even in the same

noisy and interference-prone environments,” claims the firm.

The *450i* is said to offer 100Mbps subscriber capacity in a 20MHz channel. It is 802.3at compatible, includes an auxiliary port, and customers can re-use the 30 VDC power supplies common to the *PMP 100*.



First DVB-S2X VSAT modem launched

Newtec describes the *MDM5000* as its most advanced VSAT modem to date. It is said to be the first to support wideband DVB-S2X, and is capable of receiving forward carriers of up to 140MHz and processing more than 200Mbps of throughput.

With forward symbol rates from 1 to 133 Mbaud and coding up to 256APSK,

MANUFACTURER: Newtecc

PRODUCT: MDM5000

MORE INFORMATION:
www.newtec.eu

it's claimed the *MDM5000* will boost efficiency and performance on legacy satellites while “fully unleashing” the potential of next-generation high throughput satellites (HTS). On the return channel, Newtec says the device supports SCPC, TDMA, and its unique *Mx-DMA* technology for up to 75Mbps.

It is designed to handle a wide range of services, including internet access, VoIP and backhauling, along with video contribution and multicasting.

As with Newtec's previous *Dialog* modems, the *MDM5000* incorporates Layer-3 routing, advanced QoS, TCP acceleration, pre-fetching, compression and encryption.

It also supports a new Layer-2 mode, facilitating integration with various networking topologies and routing protocols, like MPLS and BGP. Dual demodulators for “seamless” beam switching on future HTS networks are also included.



Access point and backhaul in a single unit

Proxim Wireless has combined a WLAN access point with a carrier class wireless point-to-point backhaul radio and integrated them into a single ruggedised enclosure for outdoor deployments.

The *ORiNOCO QB-9100* features

MANUFACTURER:
Proxim Wireless

PRODUCT:
ORiNOCO QB-9100

MORE INFORMATION:
www.proxim.com

Proxim's *ORiNOCO* 2.4GHz AP and *Tsunami Quickbridge* 5GHz PTP backhaul radio. The company says combining the two functions into a single unit is designed to reduce hardware footprint, capital outlay, and recurring site rental costs.

QB-9100 products can all be centrally managed using *ProximVision Advanced*, Proxim's hybrid controller-network management system. The firm says this gives network administrators “great” flexibility and control of

individual units in hetnet environments. It enables rapid deployments by automating configuration processes, exhaustive software-based device configuration capabilities, and easy upgradability.

With its very high throughput 866Mbps data rate, jumbo frame support, and IEEE 1588v2 synchronisation, Proxim says the *QB-9100* products provide all the necessary features and capacity for backhauling small cells. Moreover, the integrated 802.11n AP enables the offload of data to Wi-Fi.



ALSO LOOK OUT FOR

Perpetual power using energy harvested from RF signals

A UK company has launched what's claimed to be revolutionary new technology that turns RF waves into usable electricity to charge low-power devices.

'Freevolt' was developed by an international team from Drayson Technologies and Imperial College, London. It harnesses the unused wireless energy generated by transmission signals on mobile, Wi-Fi and broadcast networks.

Paul Drayson, CEO and chairman of Drayson Technologies, says Freevolt solves the problem of harvesting usable energy from a small RF signal. “Companies have been researching how to harvest energy from Wi-Fi, cellular and broadcast networks for many years. But it is difficult because there is only a small amount of energy to harvest and achieving the right level of rectifying efficiency has been the issue – until now.”

The Freevolt harvester comprises a multi-band antenna and rectifier which is said to be capable of absorbing energy from multiple RF bands at almost any orientation. It's claimed the small, lightweight design is scalable and suitable for a range of uses, such as low-energy devices in the Internet of Things which can be perpetually powered.

Drayson will be the first company to market the patent-pending technology which is now commercially available for license to the international developer and business communities.

The first commercial application of Freevolt is the *CleanSpace Tag*, a totally portable personal air pollution sensor that was co-developed with the PA Consulting Group. The idea behind *CleanSpace* is to create a crowd-sourced network of personal air sensors, initially across the UK before expanding to major cities across the world. The aim is to start a social movement where people can connect and work together to reduce air pollution.



PMR: In the public safety vanguard

The Bengaluru City Police's mobile command vehicle is now equipped with Zetron's DCS 5020 digital console system. This has significantly improved the force's ability to deploy onsite surveillance operations, as well as maintain safety and security during rapidly escalating incidents or events.

Wherever there are mass gatherings of people, critical comms technologies can help create a safer social environment.

Every 12 years, millions of Hindus gather in the Indian city of Ujjain in Madhya Pradesh to celebrate Simhastha. Also known as the Maha Kumbh, the 'mela' (or festival) takes place when Jupiter is in the constellation of Leo. It is said to be the world's largest aggregation of people, and around 50 million are expected to attend the event this year which takes place over a four-week period from April to May.

As part of the preparations, 23,000 police personnel, 80 thousand administrative staff and 60 thousand volunteers are planned to be deployed. As a result, the Madhya Pradesh Police (MPP) will use a TETRA radio trunking system to serve and coordinate the communication needs of all crowd management, and law and order activities.

Following a detailed evaluation process and field trials alongside other digital technologies such as P25 TDMA and DMR, the MPP concluded that TETRA offered "far superior" features and functionalities. The technology's open standard proved important for the organisation as it meant it could choose the best radio terminals available to meet its operational requirements.

The MPP's new communication solution is based on the TetraFlex platform from Danish critical communications specialist DAMM. It replaces an existing P25 analogue system and is expected

to serve the police force's requirements not only during Simhastha but also for the next fifteen years.

The deployment comprises DAMM's multi-site outdoor system along with gateways for interconnection to the telephony and existing analogue networks. The vendor has also provided its TetraFlex Voice and Data Logging system to ensure all communication over the digital radio trunking system is logged, stored and available for retrieval and playback during an audit process.

According to DAMM, its TetraFlex base station is the "perfect choice" for events such as the Simhastha due to its decentralised architecture and its capability of being installed outdoors which minimises the space required as well as installation costs. The company's COO Allan Detlefsen adds: "The fact that TetraFlex allows for communication not only with TETRA terminals but with regular smartphones enables expanded use during as well as after the Simhastha 2016."

This latest deal for DAMM in India is the second time its system has been used by an Indian police force. In 2011, the vendor won the contract to provide the Tamil Nadu Police (TNP) with TETRA-based communication and control room applications. At the time, the TNP was said to be the country's fifth-largest state police force with more than 87,900 personnel covering an area of 130,059km².

Working with its local partner Consort Digital together with the main contractor Purple Infotech, DAMM was responsible for the entire project. It upgraded and expanded the TNP's infrastructure using its completely IP-based TetraFlex system with distributed architecture to provide the much needed fault tolerance to the communication network.

The company adds that its also provided "comprehensive" control room applications such as *Dispatcher Workstation* and *Automatic Location System* which supported the TNP in establishing robust, user-friendly and flexible control rooms. The TETRA radios were supplied by Sepura.

Police motor ahead with in-vehicle digital console

With more than 10 million inhabitants, Bengaluru's (formerly Bangalore) population has more than doubled in size since 2001 and is now India's third most-populous city.

Needless to say, this creates considerable law-enforcement and security challenges for the Bengaluru City Police (BCP). It fulfils its mission through a network of 'beats' that are staffed by foot- and vehicle-patrol officers, day and night. Additional support is provided by special mobile

and traffic units, along with armed mobile strike-force units that are stationed in strategic areas throughout the city.

To keep pace with the city's growth and establishment as a major technological hub, the Karnataka state government has invested in a police modernisation plan to update the BCP's security and law-enforcement operations.

The equipment it had used previously was time-consuming and cumbersome to set up. Surveillance cameras and power and data cables had to be installed several days before an event, and communications took place over walkie-talkies that were not centrally coordinated. Furthermore, the equipment did not support the rapid deployment or centralisation required to effectively manage rapidly developing situations or emergencies.

In 2014, Bengaluru-based product design and system engineering company Mistral Solutions was chosen to provide the BCP with a new mobile command-and-control vehicle. Pawan Vashisht, the company's GM for homeland security, said that because the Karnataka State Police was already successfully using a Zetron system, it provided a great reference for the vendor.

Now equipped with Zetron's *DCS 5020* digital console system, the vehicle is delivering the centralised communication and surveillance capabilities the BCP requires to deploy its operations quickly and manage events effectively on the ground. Vashisht said that compared to other solutions, the *DCS-5020* is a more appropriate size for vehicle deployment and offers better sound quality.

Also, unlike other solutions that are button-based, he said Zetron's console is PC-based and uses touchscreens. It's claimed this makes it much easier to learn and operate. "When all of these factors were taken into account, it was clear that the *DCS-5020* offered the best features for this application; it also came in at a better price," said Vashisht.

The integrated communications solution chosen to equip the command vehicle included: two *DCS-5020* digital switches; two basic dual radio-module channels; two telephone exchange modules; and one operator console with PTT foot switch, headset and microphone; and one instant recall recorder license. Surveillance equipment included: a mast-mounted, pan-tilt-zoom camera

and Wi-Fi antenna; six wireless, battery-powered cameras; two wireless transceivers with body cameras; and two operator stations.

Zetron said implementing multiple systems in a mobile environment required some creative problem solving. For instance, because the equipment was being installed in a medium-sized vehicle, the available rack space for the dispatch console and other systems was severely limited. So Mistral set up the equipment to make highly efficient use of the space.

The equipment also had to be installed to withstand the rigours of its mobile setting. "Mistral put the IT racks on a ruggedised base with shock and vibration mounts," said Vashisht. "With the help of Zetron's Australasia team, Mistral also designed and installed rack-mount trays for the speakers to minimise vibration."

Once the equipment installation was complete, operators were introduced to the *DCS-5020* and other systems through a one-day, hands-on training session. Mistral's team followed this up by accompanying the police on several deployments to make sure operators felt confident using the new kit. "Even operators who are not very familiar with English were able to quickly understand the touchscreens, icons and features on the *DCS-5020*," said Vashisht.

Following the success of the vehicle deployment, Mistral planned to provide the *DCS-5020* to police control rooms that dispatch help whenever a citizen calls in with an emergency.

Meanwhile in Vietnam, traffic police were using a conventional analogue network but wanted to move to a private digital trunked system that would deliver benefits such as greater coverage and clearer voice communications.

In 2014, the country's Ministry of Public Security asked Tait to deliver a trunked digital radio network as part of its traffic police pilot project. Together with a local partner, the vendor provided a single site UHF DMR Tier 3 network with packet data. Tait also provided system and network design, as well as project management services to help ensure a successful outcome for the project which began in August 2014.

The ministry has developed its own automatic vehicle location system and Tait provided the

interface to it. The packet data functionality is used for sending small files, such as personal identification data, over the DMR network from the control centre to the field mobile radio connected to a portable PC.

To mitigate the risk of a technology migration, the ministry chose to proceed with a pilot phase before implementing a full-scale, five-six site digital trunked system. Tait said this approach helped to avoid the budget constraints associated with large, single implementations, and was also expected to help ensure support for the change as the project progressed.

William Phan, Asia country manager for Tait Communications Asia-Pacific, said: "The pilot project and phased migration to digital will allow Vietnam's Ministry of Public Security to schedule the upgrade at a time that best suits their requirements and budget."

Malaysia doubles up on TETRA

The Government Integrated Radio Network (GIRN) is a nationwide TETRA system that helps to ensure public safety in Malaysia. It is used by up to 14 public safety agencies, and is managed and operated by the Sapura Group which was established in the country as a technology specialist in 1975.

Because Malaysia's state territory consists of the Malay Peninsula in the west and the Malay part of the island of Borneo in the east, the security agencies' communications networks were separated both spatially and logistically. Every user organisation had its own system which was not set up nationally but regionally sub-divided. Communication breakdowns were common. All this resulted in delays, especially in the coordination of rescue forces during emergency situations.

In 2007, the government decided that an integrated nationwide trunked radio network was needed. At the time, the Sapura Group's partners included Nokia Siemens Networks (now Nokia Networks) as an integrator, and Hytera Mobilfunk (formerly known as Rohde and Schwarz PMR).

The mobile radio network Hytera developed offered more than 10 user groups a common communication platform. At the same time, every authority gained the possibility to communicate independently. To achieve the goal of a homogeneous wireless system, the company used its *ACCESSNET-T* TETRA network architecture. Hytera says this decentralised architecture is particularly beneficial for large networks such as GIRN as it means less connections in the transport network and rules out communication problems.

The company networked the regional base stations and switching nodes (such as those under the authority of the administrative district) combining VPNs with cluster technology to bundle individual sub-networks. The entire project was implemented in several expansion stages. It included 70 *ACCESSNET-T* switching nodes, more than 500 base stations each



Around 50 million people are expected at this year's Simhashta festival in India. The local police will use DAMM's *TetraFlex* radio trunking system (inset) to coordinate all law enforcement activities, both during and after the event.



(1) Hytera's *Smart Dispatch* system provides the Pakistan Air Force with offline mapping engine support; (2) the PAF has linked six air bases using the vendor's *RD98X* IP-based digital repeater; air force personnel have been equipped with the *MD78XG* mobile (3) and *PD78XG* portable (4) radios.

with up to eight TETRA carriers, and 12 highly available switching centres with fully redundant components. At the time of the installation, Hytera said 10,000 mobile stations were registered onto a network which could accommodate a total of 70,000 subscribers and could be easily expanded upon demand.

An integrated network management system permanently monitors all the components of the wireless system and analyses the network's current performance using KPIs. As a result, the nodes are interconnected using highly available communication channels: voice and data traffic is automatically redirected as soon as interferences occur on a connection path.

In 2012, Sapura decided to enlarge the existing TETRA system by adding a second network. This new system had to offer the highest reliability and availability, as well as incorporate the most advanced TETRA services, especially communications security. To achieve these aims, Sapura chose to deploy all-IP *NEBULA* infrastructure from Spain-based Teltronic (which was acquired by UK critical comms specialist Sepura in 2015). As a result, GIRN would end up being composed of two TETRA infrastructures supplied by two different manufacturers.

It was vital that both networks worked as a single system – users in one network had to be able to communicate with those in the other without any changes in their operational schemes. To meet such requirements, Teltronic designed and developed a new network interface called *CISIS*. This allows *NEBULA* to connect with another network from a different manufacturer. It connects with *CISIS* using Ethernet/IP, while Hytera's TETRA system connects via an air interface which is the common standardised language for all TETRA equipment.

Teltronic says with the infrastructures interconnected in this manner, systems appear to the user as a single network in which all services – including individual or group calls, SDS and status messages, terminal authentication, end-to-end encryption, etc. – are guaranteed regardless of which network users are connected.

Teltronic's network includes 112 site base stations distributed in five network segments. It says the TETRA air interface encryption has been upgraded from Class 2 to Class 3, and redundancy in elements such as central nodes allows for achieving close to 100 per cent system availability. Backhaul is based on Ethernet/IP which replaces the previous E1 links.

Flying high with DMR

In 2012, Hytera saw more action in South Asia's public safety market, this time with the Pakistan Air Force. With 65,000 full-time personnel (including 3,000 pilots), 10,000 reservists and 902 aircraft, the PAF needs communication systems that can work with its command centre without interference, and can connect quickly with other comms systems such as ground-to-air equipment.

The organisation wanted to upgrade its previous analogue communication with digital technology so that it could build rapid and efficient systems with full coverage of air bases across Pakistan.

Among its very specific requirements, the PAF wanted a system that offered full coverage and clear voice transmissions across the noisy environment of an air base. It also needed high-level encryption to control comms privacy, and a continuous recording system to log all calls.

Hytera provided a two-carrier, four-channel Digital Mobile Radio system with support for up to 200 terminals. Six air bases were linked using the vendor's *RD98X* IP-based digital repeater for seamless base-to-base communications.

The vendor said it not only installed a high-performance continuous recording system in the PAF's command centre, but also set up its *Smart Dispatch* system to record calls from all four channels. The system also provides the PAF with offline mapping engine support as it did not want to use internet maps for tracking. Hytera added that DMR technology offers enhanced built-in encryption capability, ensuring higher confidentiality of communications.

Other equipment supplied by the company included its *PD78XG* portable radios and *MD78XG* mobiles. PAF users now have access to rich data and voice services and selectable functions such as message, GPS and voice dispatching, history data management, and backup.

Furthermore, the solution can also support follow-up extension which was another requirement for the PAF which needed a system that had sufficient capacity for expansion. As with all DMR technology, it can double the channels needed using the same spectrum resources. DMR is also compatible with the organisation's existing analogue system, thus ensuring a smooth digital transition. ■



Linking infrastructures: the Government Integrated Radio Network (GIRN) is Malaysia's nationwide public safety network. It is actually a combination of two different TETRA systems: one originally supplied by Hytera Mobilfunk and a second one later developed by Teltronic which amalgamated the two.

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Rocket power

OneWeb and Airbus Defence and Space have set up a new joint company to design and build 900 satellites as part of an ambitious mission to eliminate the digital divide by 2019.



With a host of satellite launches scheduled for 2016 and beyond, RAHIEL NASIR looks at what's on the horizon for South Asia.

2016 will prove to be a milestone year for Intelsat as it has now launched its first spacecraft to use *EpicNG*, its much vaunted high-throughput satellite (HTS) platform. *Intelsat 29e* went up on 27 January. While it is aimed at the Americas and the North Atlantic region, it will be followed by three more *Epic* satellites later this year including *Intelsat 33e* which is expected to go up during the second half.

From its orbital position of 60°E, *Intelsat 33e* will serve Asia, Africa, the Middle East and Europe. It will offer Ka-band global beams, Ku-band multi-spot and Eurasia beams, as well as C-band coverage for sub-Saharan Africa.

Intelsat is also co-developing another satellite for the Asia-Pacific region that will use its *EpicNG* platform. *Horizons 3e* is being built as part of an equal joint venture with Japan's SKY Perfect JSAT which has a fleet of 16 spacecraft and is said to be Asia's largest satellite operator. When it's launched to 169°E during the second half of 2018, *Horizons 3e* will complete Intelsat's global footprint for *EpicNG*. (Also see News, Q4 2015.)

Space age platforms

EpicNG works with C-, Ku- and Ka-bands, wide and spot beams, as well as frequency re-use

technology to provide a variety of customer benefits. The platform is fully integrated with Intelsat's existing fleet and global *IntelsatOne* terrestrial network. The company reckons it provides "unprecedented adaptability" for a customer's network configuration and topology, allowing them to leverage installed hardware and to operate mixed spectrum networks.

One of *EpicNG*'s features is an all-digital payload design that was initially developed by Boeing for use on the US Department of Defense's Wideband Global SATCOM satellites. Intelsat says it allows connectivity in any bandwidth increment from any beam to any beam, and means independent frequency selection of the uplink and downlink.

The company goes on to claim that *EpicNG* will provide three to five times more capacity per satellite than its traditional fleet. It adds that the expected throughput will vary according to application and satellite, but is expected to be in the range of 25-60Gbps which is typically 10 times more than its traditional fleet.

Gilat Satellite Networks (GSN) is also aiming to break new ground in the market with its own platform. Using software-defined networking, the company says its distributed *X-Architecture* offers a single system for satellite operators and service providers to address the growing demands of HTS.

According to the company, its programmable cloud-based architecture supports networks of any size, and uses traditional wide beam and high-throughput satellites to deliver managed services in hosted or virtual business models.

GSN claims *X-Architecture* has been built to support dynamic on-demand services, and features unique cloud bandwidth management capabilities which allow both mobility and VNO services over spot beam satellites. It adds that flexibility is enabled by a distributed architecture which separates data centre functions from baseband elements. It says the network is easily controlled by *TotalNMS*, its global, unified and centralised network management system.

Not one to be left behind, Eutelsat is also developing a software-based satellite system. It says *Quantum* will be the first universal satellite to repeatedly adjust to business requirements and be able to operate anywhere in the world. The company claims *Quantum* represents a first in the commercial satellite industry by enabling the complete electronic synthesis of 'receive' and 'transmit' coverages in Ku-band, including on-board jamming detection and mitigation.

Using the technology, customers will be able to actively define the performance and flexibility they need. Eutelsat says it will give them access to

premium capacity through footprint shaping and steering, power and frequency band pairing. The first *Quantum* class satellite will be manufactured by Airbus Defence and Space (ADS) and is expected to launch in 2018.

Quantum is one of five satellites that Eutelsat will be launching between now and 2019. As well as routine fleet renewal, the company says its aim is to expand coverage and resources in fast-growing markets such as Asia, Africa and Latin America.

According to Eutelsat, 172°E is a “prime gateway” for satellite services in the APAC region and it plans to launch *EUTELSAT 172A* to this orbital slot next year. The new satellite will host three distinct payloads.

Firstly, it will offer C-band to deliver increased power and broader coverage to enhance the current service provided to existing customers via *EUTELSAT 172A*. It will also tap into new growth markets in South East Asia.

Secondly, the satellite will feature a regular Ku-band payload. It's claimed this will double capacity at 172°E and connect to five improved service areas: North Pacific, North East Asia, South East Pacific, South West Pacific and South Pacific.

Thirdly, *EUTELSAT 172A* will include a high throughput Ku-band payload specifically designed for in-flight broadband. Eutelsat says this will feature multiple user spots optimised to serve densely-used Asian and trans-Pacific flight paths and interconnected to gateways.

Going electric

Following last year's launch of *ABS-3A* – one of the world's first satellites to use an all-electric propulsion system – ABS is now finalising plans for *ABS-2A*. It is expected to lift-off on a SpaceX *Falcon 9* rocket in the coming months, and like *ABS-3A* it has been built using Boeing's all-electric 702SP platform.

ABS-2A will be co-located with *ABS-2* at 75°E from where it will serve South and South East Asia, Africa, the Middle East and Russia. It is designed with 48 transponders and five dedicated high-powered Ku-band beams, and ABS says it is suitable for DTH services, VSAT operators, as well as maritime and mobility solutions.

Meanwhile, adverse weather conditions at Cape Canaveral delayed the launch of *SES-9*. The satellite was due to launch on board a SpaceX *Falcon 9* rocket on 24 February but upper-level winds meant this had to be scrubbed. It eventually went up on 5 March.

SES-9 will use a chemical bi-propellant thruster to complete major post-launch manoeuvres, and then electric propulsion to bring it to its position of 108.2°E from where it will be co-located with *SES-7*.

The Boeing-built satellite will be SES' largest to date for the Asia-Pacific region, and features a payload of 57 high-power Ku-band transponders (equivalent to 81 x 36MHz). When it begins commercial operations during the third quarter of this year, *SES-9* will provide expansion and replacement capacity to serve video, enterprise, mobility and government sectors across North East and South Asia, as well as Indonesia.

SES says the additional capacity on the satellite will enable DTH operators to increase their channel line-up to 22 million households across markets such as India, Indonesia, and the Philippines. *SES-9* will also deliver high-speed broadband and mobile backhaul services to remote regions, maritime connectivity with dedicated mobility beams, and in-flight connectivity for domestic Asian flights operating in countries such as Indonesia and the Philippines.

New satellite-based internet provider OneWeb reckons it will “fully bridge” the digital divide by 2019 with its innovative system of low Earth orbit satellites (see *News*, Q3 2015). It has now joined forces with Airbus Defence and Space to create a new company called OneWeb Satellites. The two partners will design and build 900 satellites for OneWeb as well as spacecraft for other future constellations marketed by ADS.

OneWeb Satellites will undertake all design activities for the entire OneWeb fleet. The manufacture of the first 10 prototypes will take place at a newly set-up production line at ADS' factory in Toulouse, France, with mass production of the operational satellites planned for North America.

Each satellite will weigh less than 150kg and operate at an altitude of somewhere between 99 to 1,200 miles. They will be launched by Arianespace and Virgin Galactic starting from 2018, and reach their orbital positions using electrical propulsion.

Other birds to watch for

While the Russian Satellite Communications Company (RSCC) has yet to announce any new satellites for South Asia, it did add three more orbiters to its fleet last year which included *Express-AM7*. From its orbital location of 40°E, RSCC says this satellite is now offering “state-of-the-art” communications and broadcasting services to users to South Asia, sub-Saharan Africa, the Middle East, Europe and Russia.

Described as “a heavy-class” telecoms satellite, *Express-AM7* was built at a cost of around EUR152.8m (USD170m) and features 80 powerful transponders and nine antennas in C-, Ku- and L-bands. RSCC says it gives both Russian and international users fresh opportunities to set up broadband internet access, build corporate networks including those based on VSAT, and provide broadcast and multimedia services. The company adds: “*Express-AM7* will make it possible for mobile operators to build networks to bind remote cellular base stations in order to expand penetration and communications product lines in hard-to-reach and remote areas.”

Another Russian operator is also planning to increase its presence in Asia. As part of a long-term development programme, Gazprom Space Systems (GSS) plans to develop two new communication satellites to add to its fleet of four that are currently in space. They will be built in-house by the Main Design Bureau of GSS, and include *Yamal-601*. While a build schedule

and launch date for this spacecraft has yet to be announced, Gazprom says its payload will feature 38 equivalent C-band transponders. It will have a semi-global service zone that will cover Russia, CIS countries, Europe, the Middle East and parts of South East Asia. *Yamal-601* will also offer Ka-band capacity covering Russia.

In a separate deal announced earlier this year in January, Singtel has teamed up with GSS to augment its satellite capacity over Asia and the Middle East. The two operators say the aim is to support the increased demand for backhaul for mobile operators and communications channels for enterprise industry across the region. “This collaboration has enabled Singtel to enhance service diversity, thereby further improving the quality of service to our customers,” said Lim Kian Soon, Singtel's head of satellite. “We definitely see more potential for future collaborations by both companies.”

Meanwhile, Thailand's Thaicom is planning to launch *THAICOM 8* from a SpaceX *Falcon 9* rocket later this year. It will be located at 78.5°E to provide services to Thailand and India via a Ku-band payload comprised of 24 transponders. It will also serve Africa. A successful launch will mean Thaicom will have five active spacecraft in its current fleet following the de-orbiting of its first three birds which each reached end of life.

On 10 November 2015, Arabsat launched *Arabsat-6B (BADR-7)*, the first of the sixth generation of satellites in its fleet. Orbiting at 26°E, *BADR-7* provides telecoms and DTH broadcast services for Central Asia, Africa and the Middle East. It is fitted with 27 Ku-band transponders and offers multiple Ka-band spot beams.



The payload fairing being positioned over *Intelsat 29e* which is integrated to the top of an *Ariane 5* launcher. It went on to a successful launch on 27 January 2016, and is the first of Intelsat's satellites to use the revolutionary *EpicNG* HTS platform.

Luxembourg-based satellite operator Fibersat has already signed up to use Ka-band capacity on Arabsat's next-generation satellites to provide extensive coverage using an innovative new system. The company is planning to launch its *Fibersat-1* HTS payload in 2018. This will use beams that are smaller than conventional geo satellites but are claimed to be capable of delivering up to 100 times more bandwidth. Fibersat claims its optimised payload design will enable satellite services to be offered at the cost of fibre.

What happened to AMOS-5?

Spacecom currently covers Asia and Russia via *AMOS-4* which was launched in 2013. Its next satellite, *AMOS-6*, is planned for launch during the first quarter of this year. While this HTS platform is aimed at the Middle East, Africa and Europe, what's notable about it is that its entire broadband payload will be used by Facebook and Eutelsat as part of a joint mission to connect more people in Africa (see *World News*, Q4 2015).

While it is certainly always good to hear about satellites going up in an effort to connect the unconnected, Spacecom has suffered tragedy in recent months with news of a satellite going down.

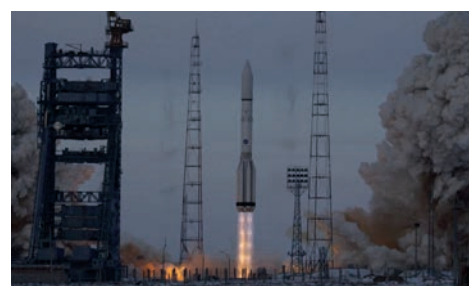
At around 06.00 GMT on 21 November 2015, the company lost all communications and signals from *AMOS-5* which covered Africa from 17°E. In the days that followed, Spacecom said it was working around the clock to re-establish links.

But in documents filed with the Tel-Aviv Stock Exchange earlier this year, Spacecom revealed that *AMOS-5* had suffered an "absolute failure" and was now a "total loss". It has submitted an insurance claim for around USD158m which it believes will be paid, hopefully during the coming months.

AMOS-5 was built around the *Express-1000H* platform by Russia's Information Satellite Systems (ISS)-Reshetnev Company. It was launched in 2011 and had an expected lifespan of 15 years. Last December, ISS-Reshetnev set up a commission, headed by its deputy general



PHOTO © ROSCOSMOS



Clockwise from top left: RSCC's *Express-AM7* was launched in March 2015 for "state-of-the-art services"; after leaving Earth in 2011, *AMOS-5* is now lost in space; Intelsat says its *EpicNG* platform will provide up to five times more capacity per satellite than its traditional fleet; SES has recently launched its biggest mission for APAC.

director for quality Yuriy Maximov, to search for possible causes of the failure. According to a press statement issued at the time, ISS-Reshetnev said the telemetry data that *AMOS-5* had been sending until the moment it failed indicated no signs of troubles and that all systems were running "nominally" (sic). It added that while the satellite remains at its assigned orbital position as seen from the ground, it has completely lost power and its further operation is therefore not possible.

The statement continued: "The most likely cause is the total failure of its onboard electric supply system or the 100V cable network bus. Or it is also possible that the satellite failed due to the external exposure of a critical element of the power supply system or the onboard 100V cable network bus to high-energy cosmic ray particles.

Among other possible causes are the problems in the satellite's tracking, telemetry and command system or its payload."

ISS-Reshetnev's commission continued its investigations into the root causes of the malfunction, and its assessments included data analysis received from Thales Alenia Space which built *AMOS-5*'s payload, tracking, telemetry and command system. The Russian manufacturer was due to submit a report to Spacecom at the end of last year but the details of this have not been made public, and are unlikely to be.

In the meantime, Spacecom told *AMOS-5* customers that it would work with them to restore their services and negotiate deals on their behalf to switch to other satellites operators. For instance, the company has extended an existing framework agreement it has with Eutelsat for the cross-commercialisation of Ku-band capacity on *EUTELSAT 16A* which is positioned at 16°E.

SpeedCast International said it was able to restore most of its customers' links within 48 hours after the loss of *AMOS-5*. It migrated users to MEASAT's *AFRICASAT-1a* and Intelsat's *10-02*. German operator CETel said it was also standing by to offer contingency services in Africa with available capacity on various satellites from Arabsat, Intelsat, SES or ABS.

According to local press reports, Spacecom said the total loss of *AMOS-5* will have a "negligible effect" on its equity. The company remains on track to launch *AMOS-6* this year although it is now expected to go up in May instead of around March as originally planned. *AMOS-6* has not been developed by ISS-Reshetnev. Instead, it has been built by Israel Aerospace Industries which was also responsible for the three remaining satellites Spacecom currently has in orbit. ■



A SpaceX *Falcon 9* rocket was used to launch *THAICOM 6* in 2014. SES also used the vehicle for its recent launch of *SES-9*. Later this year, Thaicom will use the rocket again for *THAICOM 8* as will ABS for *ABS-2A*.

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BroadcastAsia2016**CommunicAsia2016****EnterpriseIT2016**

2016 edition of CommunicAsia, EnterpriseIT and BroadcastAsia promises insights and solutions to enable digital transformation in Asia



World's major players making their mark at Asia's pinnacle ICT, broadcasting and digital multimedia industry event

Taking Asia Pacific by storm, IDC predicted that by the end of 2017, 60 per cent of APAC 1000 enterprises will have digital transformation at the center of their corporate strategy. Bringing together global leaders as well as emergent players providing the technology and innovations that are enabling digital transformation of businesses and cities all around Asia, CommunicAsia2016, EnterpriseIT2016 and BroadcastAsia2016 will be held from 31 May – 3 June 2016 at Marina Bay Sands Singapore.

Major tech trends that are the pillars of today, and tomorrow's smart cities and smart enterprises such as the Internet of Things (IoT), smart technologies, cybersecurity, big data analytics, mobility, TV Everywhere and many more are represented by more than 1,840 global companies at the events.

"Smart cities and enterprise development have moved from concept to application, with our everyday lives becoming smarter and more mobile. In line with the growing importance of IoT and smart cities building amongst businesses in the region, CommunicAsia2016, EnterpriseIT2016 and BroadcastAsia2016 have gathered the biggest names in technology and innovation that are driving rapid digital transformation in Asia, and around the world. At the latest installation of NXT cluster @CommunicAsia, participants will see a significant focus on IoT and smart cities, with exhibitors showcasing next generation intelligent and intuitive solutions that will enable businesses to become smarter, more connected, more equipped and future ready to harness the opportunities arising from Asia," says Victor Wong, Project Director of Communication Events from event organiser, Singapore Exhibition Services.



Transforming the Enterprise

Enterprises across Asia Pacific remain positive in the opportunities that digital transformation and technology bring. In Singapore, a recent survey by ISCA found better technology adoption to be a key focus area for businesses to enhance productivity and innovation. In addition, a recent PwC report found that 1 in 5 (22 per cent) think that the region will be transformed by the likes of robotics, connected sensors and more.

Making their debut participation at CommunicAsia2016, Microsoft will be showcasing a host of solutions to aid in the transformation of smart enterprises. "We are excited to participate at CommunicAsia. With more than two billion devices connected to the cloud every day, it is estimated that our mobile-first, cloud-first world is producing at least 2.5 quintillion bytes of data every day," says Mr. Justin Spelhaug, General Manager, Marketing & Operations, Microsoft Asia Pacific.

"This incredible volume of data is the value currency in the digital economy. Forward thinking businesses realise that the ability to analyse data and garner real time insights is increasing their revenue streams and giving them a competitive advantage. With businesses now having the opportunity to collect and monitor data through the Internet of Things and powerful analytic tools, trusted, secure and hyper-scale cloud capabilities have become all the more necessary to bring greater advantage to data analytics. Leaders across businesses in Asia need to consider the security and compliance position of their cloud vendors to protect customer data and ensure they stay in control of their own data."

Spelhaug added, "The solutions we are showcasing at CommunicAsia empower organisations to focus on their digital transformation journey to stay competitive through expediting data analysis and ensuring trust in the cloud."





Transforming Our Cities

From Singapore's Smart Nation Initiative, Indonesia's Digital Economy development to Smart Cities mission in India, hyper-connectivity and digital transformation have fueled governments and enterprises in their take up of smart technologies around the region. With the Asia Pacific IoT market forecasted to reach US\$79.3 billion by 2020, nations and businesses are now aggressively tapping on this opportunity to be more productive.

Leaders in the global IoT space, Greenwave Systems will also be making their inaugural appearance at CommunicAsia2016. Mr. Jim Hunter, Chief Scientist & Technology Evangelist, Greenwave says, "The IoT industry is growing exponentially as the number of connected devices in the household, enterprise, and city multiplies, enabled by the ability to remotely control these devices using cloud-based applications and wireless technology. As IoT permeates every aspect of consumer's lives, the data that these IoT devices generate will

revolve around keeping people healthier, saving resources (money, materials and time), and improving the quality of life, and we are thrilled to showcase the connected future at CommunicAsia2016."

Transforming Media

Content is now on-demand and at consumers' finger tips with active Asia Pacific OTT video subscribers reaching 494 million last year. With entry of disruptive players like Netflix in Asia Pacific coupled with today's increasingly demanding consumers, the broadcasting industry now faces new challenges in OTT, digital media asset management, video delivery, TV monetisation strategies and more.

Imagine Communications, and veteran exhibitor at BroadcastAsia's growing TV Everywhere! Zone, will be showcasing the latest solutions in IP transformation. "BroadcastAsia is a pivotal part of our annual calendar and Imagine Communications has been attending this show for many years as it provides the ideal

platform to discuss the changing trends and technologies with the key industry leaders from across the region," says Joe Khodeir, senior vice president, Asia Pacific for Imagine Communications. "At this year's show we will be demonstrating some of our next-generation video infrastructure, advertising systems and workflow management solutions that will help media companies transition away from legacy, proprietary hardware to IP-enabled, software-defined and cloud-virtualised environments and provide the freedom to grow, change and adapt as and when they are ready."

Khodeir added, "We recognise that our customers have existing capital investments to be respected, and we are here to help them deliver compelling, commercially successful content today while developing a strategy to make the transition to an IP-enabled, software-defined future."

SHOWS AT A GLANCE:

CommunicAsia2016 / EnterpriseIT2016 Exhibition

Incorporating: SatComm2016
 Date: 31 May – 3 June 2016, Tuesday – Friday
 Venue: Marina Bay Sands, Singapore, B2, Level 1 & 3
 Opening Hours: 31 May – 2 June 2016: 10:30 am – 6:00 pm
 3 June 2016: 10:30 am – 4:00 pm
 Admission: Business and trade professionals only
 Website: www.communicasia.com
www.goto-enterpriseit.com

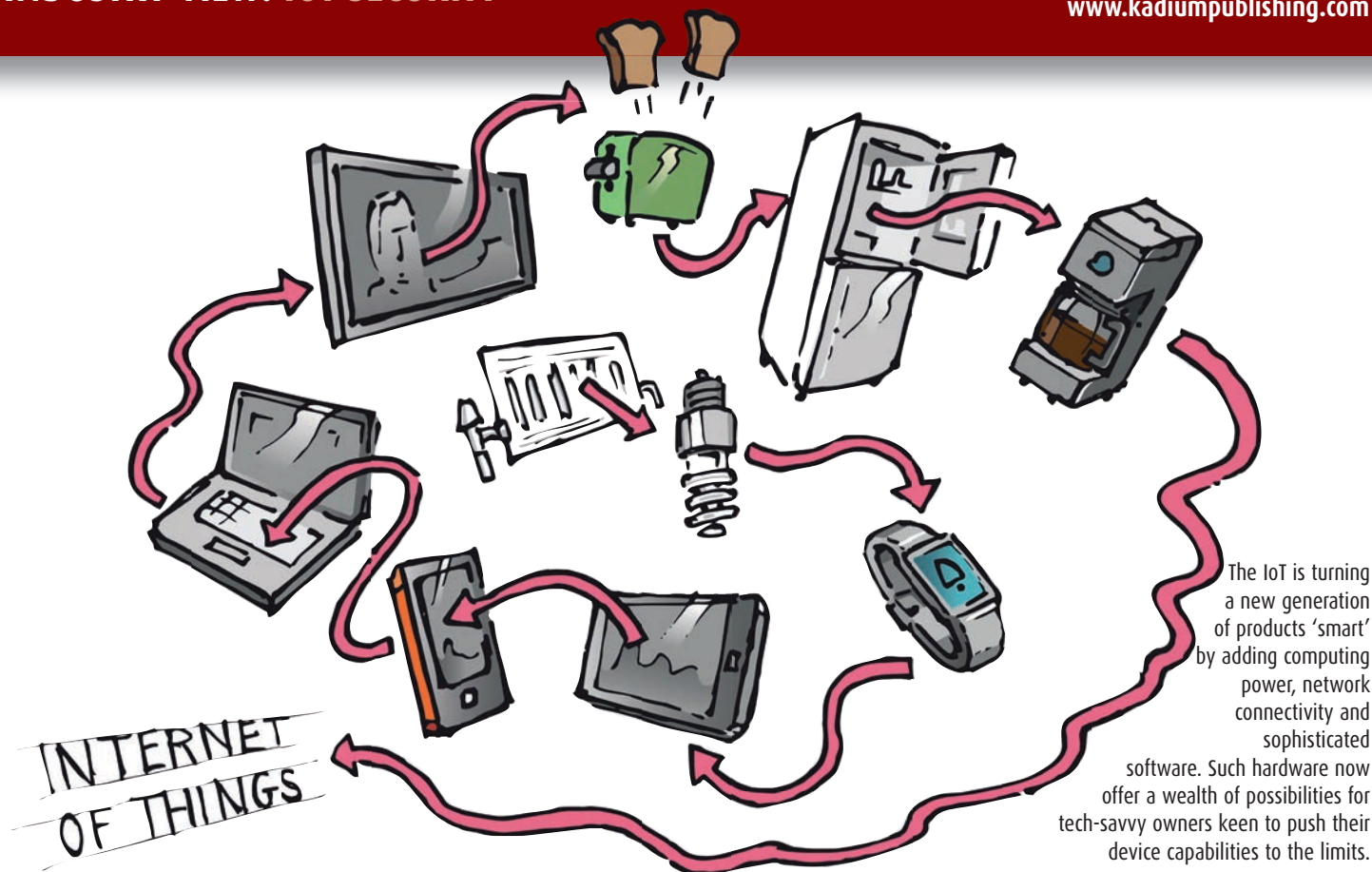
BroadcastAsia2016 Exhibition

Incorporating: ProfessionalAudioTechnology2016
 Venue: Marina Bay Sands, Singapore, Level 4 & 5
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 3 June 2016: 10:30 am – 4:00 pm
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CONFERENCES AT A GLANCE:

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 Website: <http://communicasia.com/conference/conference-highlights/> • <http://broadcast-asia.com/conference/conference-highlights/>



Making the machines safer for us all

CESARE GARLATI explains how to make Internet of Things security a win-win situation for both innovators and regulators.

As the Internet of Things (IoT) works its way into an ever more diverse range of devices and systems, regulators are finding it necessary to step in and create new rules for how these systems can be used. These rules effectively work to lock down the firmware on these devices so it can't be altered, sending the regulators on a collision course with consumers.

So far, there's been little in the way of technology innovation to address this conundrum. The IoT is rapidly turning a new generation of products 'smart' by adding computing power, network connectivity and sophisticated software. From cars to routers and drug infusion pumps to drones, they now offer a wealth of possibilities for technology-savvy owners keen to push their device capabilities to the limits.

But at the same time there are logical reasons why lawmakers and regulators need to lock down certain functionality – for the safety and well-

being of their citizens. We can see evidence of this when we look at smart cars. In fact, it's an industry further down the IoT road than many others.

Smart sensors control a range of functions inside automobiles from emissions to the in-vehicle entertainment system, brakes and even steering on some advanced models. It was just such a reliance on embedded technology that researchers Miller and Valasek demonstrated could be exploited by remote attackers to take control of a vehicle (see <http://illmatics.com/Remote%20Car%20Hacking.pdf>).

Tech-savvy drivers might want to tweak the software inside their car to play around with entertainment systems and the like, and shouldn't be prevented from doing so – after all they've probably paid a lot of money to own the vehicle.

But what happens when a regulator wants to control vehicle emissions? How can they lock down the firmware in a way which doesn't also

make the embedded systems in the automobile impossible to alter for the driver?

There doesn't have to be this divide. Regulators can get what they want to be able to control safety aspects, and equally consumers should be able to tweak and customise technology that they buy to get what they want. And it can be done securely. But the problem at the moment is that current IoT systems simply aren't architected in a way that will allow for this kind of granularity.

Security by obscurity

With open source development, secure boot based on a root of trust anchored in the silicon along with hardware virtualisation can keep both regulators and consumers happy. This new approach is founded on three main principals:

Open source: too many proprietary systems rely on 'security by obscurity'. But this concept

simply doesn't work any more. Firmware binary code can often be found online, or reverse engineered with debugging tools like JTAG and interactive disassemblers like IDA.

Given the increasing complexity of code, we need to get as many eyeballs on it as possible. The focus should be on creating a top quality, highly usable, secure and robust end product.

Secure boot: the method of updating firmware in embedded systems is fundamentally flawed because typically this software is not cryptographically signed.

This means an attacker could reverse engineer the code, modify it, re-flash the firmware and reboot to execute arbitrary code.

We must ensure IoT systems only boot up if the first piece of software to execute is cryptographically signed by a trusted entity. It needs to match on the other side with a public key or certificate which is hard-coded into the device. Anchoring the 'root of trust' into the silicon in this way will make it tamper-proof.

Hardware-assisted virtualisation: security by separation is one of the fundamental rules of IT security. Yet lateral movement within the hardware is possible on most IoT systems, opening up yet more vulnerabilities to exploit.

Hardware-level virtualisation will prevent this lateral movement and preserve security by separation. With the help of a secure hypervisor it can provide a foundation to containerise each software element, keeping critical components secure and isolated from the rest.

Secure inter-process communication allows instructions to travel across this secure separation in a strictly controlled mode.

The bot army cometh?

Building security into the hardware of embedded systems in this way will help regulators lock down specific harmful functions whilst allowing consumers free reign to play around with other parts of their product. It's a win-win for innovation and regulation. Let's look at the three examples.

Firstly in the US, the Federal Communications Commission (FCC) is currently looking to regulate the domestic router market in a bid to prevent users adapting their devices to interfere with their Wi-Fi capabilities. But its plans threaten to lock down the entire system.

With Linux, RF parameters are controlled in drivers inside the kernel. So the only way to guarantee that a third party – or the router owner – can't modify these is to prevent modification or replacement of the driver. This effectively means restricting modifications to the OS as a whole. It's the equivalent of using a sledgehammer to crack a nut.

This is bad news for consumers and for open source operating systems like OpenWRT. These can provide home internet users with useful additional functionality like being able to add a print server or parental control application. But the FCC's plans would make installation of such an OS illegal.



Drones are being increasingly used in industry as well as by consumers. For example, Nokia has deployed them for network testing in the UAE (see *World News*, p33). But if remotely hacked, could thousands of such unmanned aerial vehicles be used like a physical bot army to carry out coordinated attacks?

Where will it end? Laptops, smartphones and tablets all have similar Wi-Fi functionality – are their operating systems to be regulated too?

However, containerising separate software components at a hardware level means the FCC could enforce control on the elements which manage RF parameters but allow consumers to play around with other parts of the router. And, crucially, it would allow the public to exercise their consumer rights by installing the OS of their choice.

The second example concerns connected cars. Here, there are some elements that the US climate change watchdog, the Environmental Protection Agency, may soon be looking to regulate.

More parts of our vehicles are now controlled by computers than aren't. So what happens if a smart car owner decides to re-programme the software related to fuel consumption and engine performance in a bid to ramp up the horsepower? The effect on emissions could be cause for concern.

But once again, how might the agency ban this kind of tampering without locking down the electronics of the entire vehicle? The answer again lies with the guidance outlined above for embedded computing security. Hardware virtualisation can allow regulators to ban harmful elements whilst allowing the owner to adapt other components as they see fit.

Thirdly, it's easy to see a time in the not-too-distant future when some governments decide to do something about the hordes of consumer-grade drones invading our skies. If remotely hacked, they could be controlled by a malicious third party to cause all sorts of chaos. They could even be manipulated in their hundreds or thousands like a physical bot army to carry out coordinated strikes.

This can be prevented through more robust and secure open source code, and via secure

boot capabilities. By enabling pervasive implementation of cryptographic signing and ensuring that the public key or digital certificate is anchored in the chip itself, the firmware update system is rendered tamper-proof. This means an attacker could not execute arbitrary code by re-flashing the firmware and rebooting.

This isn't just a case of preserving consumer rights and ensuring the regulators can do their job of protecting the populace properly. It's also about protecting innovation.

Without the freedom to tweak and adapt current technologies how can we expect to make the leaps required for future iterations? Technology advances only if innovation is allowed to thrive. And with a blueprint for an open, hardware-led approach to securing embedded computing, we can finally achieve it. ■

prpl (pronounced 'purple') is an open-source, community-driven, collaborative, non-profit foundation targeting and supporting the MIPS platform (and open to others). It has a focus on enabling next-generation data centre-to-device portable software and virtualised architectures. The foundation represents leaders in the technology industry investing in innovation in efficiency, portability and compatibility for the good of a broad community of developers, businesses and consumers.

Cesare Garlati,
Chief security
strategist,
prpl Foundation



Alliances unite to expand spectrum for unlicensed technologies



The Wireless Broadband Alliance (WBA) and the Dynamic Spectrum Alliance (DSA) will work together to promote and support the development of unlicensed wireless technologies, including TV white space.

The WBA focuses on driving next-generation Wi-Fi and its role in public services such as the IoT, Smart Cities, 5G, etc., while the DSA advocates laws and regulation that will lead to more efficient and effective spectrum utilisation. The organisations plan to combine their

efforts to drive forward, innovate, and promote the use of unlicensed wireless technologies at both the technical and regulatory level. They aim to expand the available spectrum as well as co-develop guidelines that ensure interoperability within the ecosystem.

WBA CEO Shrikant Shenwai said the growing appetite for data, both for consumer use and increasingly in voice and IoT deployments, means innovative solutions need to be explored to maximise the efficiency of wireless spectrum use.



“The combination of Wi-Fi and other unlicensed wireless technologies require effective spectrum utilisation to provide the oxygen of future innovation. The work undertaken by the WBA and the DSA will expedite the availability of a new generation of internet access.”

The alliances said radio technologies in unlicensed spectrum, such as Bluetooth, Wi-Fi and ZigBee, have been widely adopted over the last 20 years. The DSA added that the Wi-Fi ecosystem is “invaluable” to connecting the next four billion consumers in emerging markets. It believes the work it will do with the WBA will support governments with their economic growth, and enable a new wave of startups to bring innovations in the unlicensed wireless ecosystem to the top of the agenda.

DMR to sit alongside TETRA in Mongolia



Sepura has made its debut in Mongolia with the Municipality of Ulaanbaatar selecting its critical comms technology for public safety organisations.

The vendor's DMR system will replace the municipality's legacy analogue infrastructure, and is being deployed as part of a major initiative by the city authorities to address and improve risk prevention and disaster management in the capital.

The DMR solution will run alongside an existing TETRA system supplied in 2010 by Teltronic – the Spanish critical comms specialist acquired by Sepura last year.

Global Telecom, Sepura's channel partner in Mongolia, will oversee



With their “crystal-clear” audio, Sepura's radios are expected to perform well in Ulaanbaatar's noisy streets.

the migration from analogue to digital communications for the entire municipality. The specialised network integrator will be responsible for the complete installation and deployment of the new system, and will deliver

training to the public safety user teams operating in Ulaanbaatar.

Batgerel Chuluunnast, Global Telecom's GM, says: “Sepura radios will be beneficial to users operating in the city's noisy streets thanks to their crystal-clear audio, and will allow clear and uninterrupted communication which is a vital requirement in emergency situations.”

With a population of more than 1.3 million people, Ulaanbaatar is Mongolia's largest city. It is the centre of the nation's road network and is connected by rail to both the Trans-Siberian Railway and the Chinese railway system. The Municipality of Ulaanbaatar is independent and not part of any province.

Solarkiosk connects villages



Solarkiosk and SES Techcom Services have teamed-up to deliver high-quality connectivity to communities around the world.

Germany-based Solarkiosk is a global energy and business gateway provider to underserved communities. Under the agreement with SES Techcom, the company will use satellite connectivity to provide internet access to underserved areas, initially in Africa.

This will be done via Solarkiosk's *E-HUBB* structures which use solar technology to provide electricity to all systems, including the satellite dish. The company says *E-HUBB* can then enable a wide range of connectivity services to the local community.

The two partners say this the first of many steps to deliver off-grid connected solar infrastructure solutions for communities worldwide, targeting individual users, businesses, schools, medical centres and farms.

Prior to its agreement with SES, Solarkiosk had already deployed two of its kiosks in the villages of Belela and Mero Qebado which are in the country's southern Awassa region. The *E-HUBBs* were manufactured locally in Addis Ababa and are run by local women who were trained by Solarkiosk.

LTE to replace TETRA for UK critical comms



The UK emergency services TETRA network will be replaced by LTE. Mobile operator EE has been selected to provide a resilient national network, giving 300,000 critical emergency workers access to 4G voice and data services for the first time.

Under its GBP1bn Emergency Services Mobile Communications Programme (ESMCP), the British Government wants to ensure that the UK is a 4G pioneer and a world leader in emergency services communications.

EE claims its 4G network will “significantly improve” the efficiency of the emergency services. It says users will gain access to the type of data and applications that have benefited private

businesses in recent years, and which have not all been possible using TETRA.

EE's new 4G Emergency Services Network (ESN) will replace the existing TETRA system from mid-2017 as current contracts expire. The company says it has already committed to spend GBP1.5bn on its network up to 2017, and will increase that investment in order to deliver the ESN.

EE plans to build a new, highly resilient dedicated core network for the emergency services, as well as more than 500 new sites, expanding coverage in rural areas. It will also switch on low frequency 800MHz spectrum on more than 3,800 sites to enhance rural and indoor coverage.

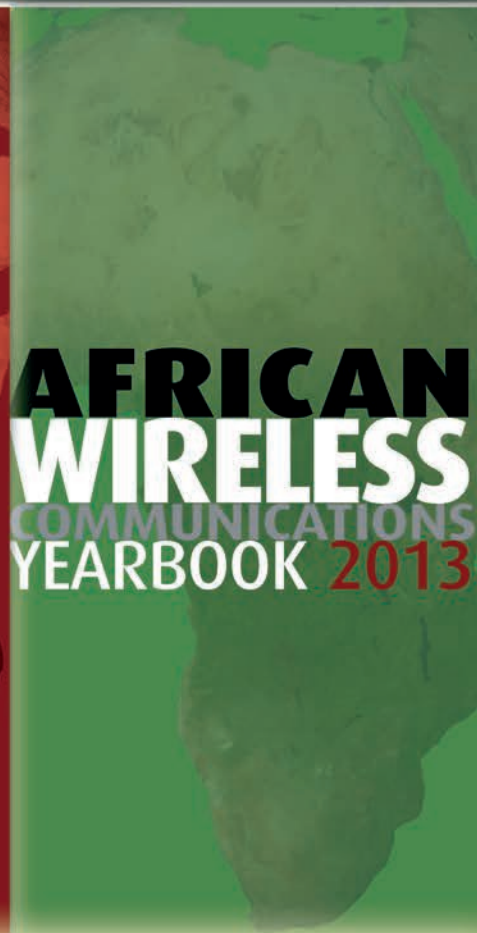
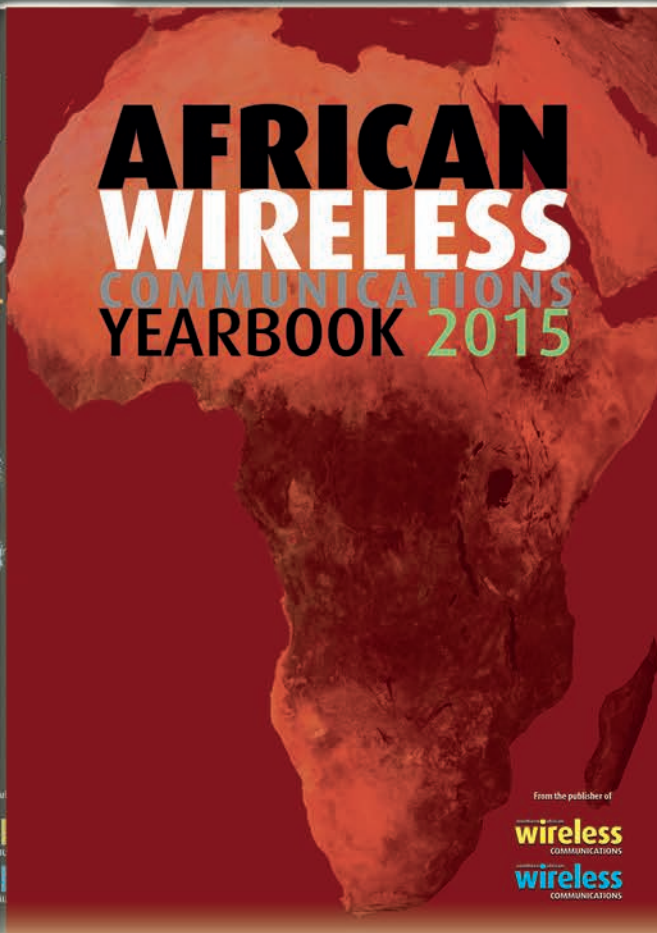
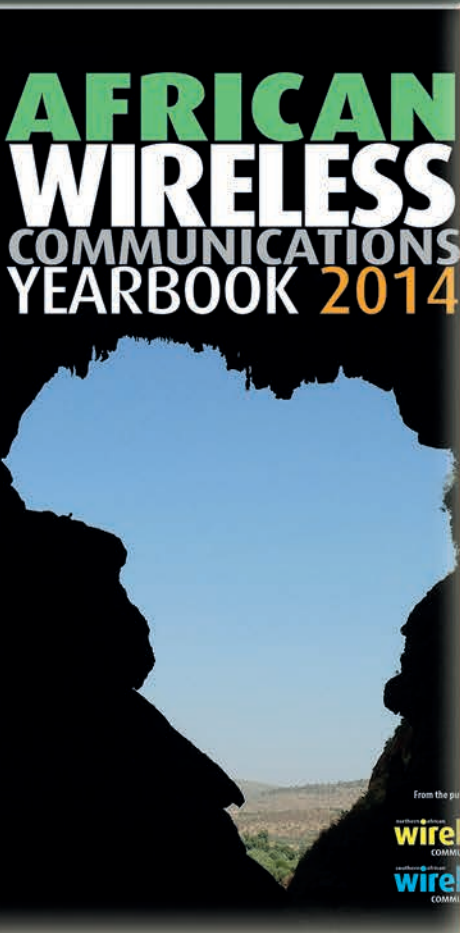
As part of the ESN, the operator says it will implement the capability to support network access priority to the emergency services when required, introduce VoLTE and new LTE voice capabilities including push-to-talk, deploy a fleet of rapid response vehicles to ensure maximum service availability, and use satellite backhaul for the most hard-to-reach areas.

EE is the UK's largest mobile operator and claims to be Europe's first to surpass 10 million 4G customers with LTE coverage that reaches 94 per cent of the UK population. It is currently in the process of being acquired by BT in a deal worth £12.5bn which is expected to close during the first quarter of this year.

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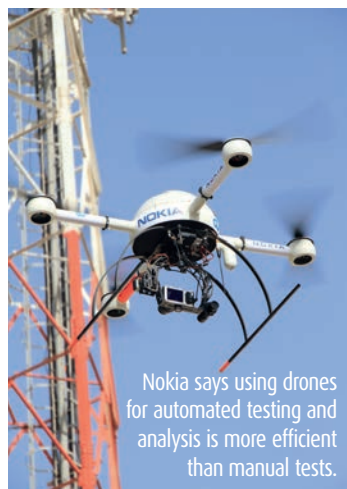
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Drones used for network planning



 Nokia Networks has used drones to analyse du's network in Dubai. In a proof of concept conducted at the city's International Stadium, remotely piloted aircraft (RPA) carried smartphones loaded with Ascom's TEMS network testing applications to gather data and provide KPIs.

According to Nokia, using drones for automated testing and analysis is more efficient than traditional manual walk tests as they can cover a desired area more quickly. The company adds that the test data is automatically sent to a central server so that it can be instantly processed

for immediate reporting and any necessary actions to improve network performance.


The RPAs were also used for tower inspections where Nokia says they provided unique and detailed panoramic and top-down views of the lattice tower captured in one pass.

Other applications included radio planning and line of sight testing. Here, engineers were quickly able to find out if a frequency used was impacted by trees, if there was sufficient power to cover the distance, what the simulated latency would look like, and what performance over such a connection could be expected.

Nokia points out that the use of RPAs also reduces climb times for technicians, which is especially important when weather conditions make scaling a tower too dangerous. Furthermore, it says drones can help supervise the quality of an installation with remote monitoring via wireless video streaming.

Although Nokia's trial was a proof of concept, this is not the first time drones have been used to test wireless networks. Earlier last year, Nambia's regulator carried out audits of 25 broadcast transmission towers with the help of RPAs and German-based RF specialist LS Telcom.

TI Sparkle expands IP backbone with new POP

 TI Sparkle, the international services arm of the Telecom Italia Group, has expanded its worldwide IP backbone with a new point of presence in Sweden.


The POP is located in Bromma, western Stockholm, at Telecity's data centre which is claimed to be Sweden's first independent carrier neutral facility. The data centre aims to address the increasing demand for IP transit services coming from the Nordic countries which are said to be experiencing double digit growth in internet traffic.

TI Sparkle says its POP will support major ISPs, OTT players and global content providers that have already

established their presence in the area. The company will also provide IP connectivity to Russian service providers who consider Stockholm as one of their main European hubs.

With a global fibre network of around 570,000km, TI Sparkle says it offers a "full range" of connectivity solutions to CSPs and telcos. It says the Stockholm POP will increase its global IP backbone network in Northern Europe, as well as further improve the performance of *Seabone*, its Tier1 IP transit network. According to the operator, *Seabone* is strengthening its regional positioning globally, especially in Africa and Asia where it now leads.

'Wringing every last drop' of Wi-Fi access at hotels

 OneAccess Networks will use Passman's application performance management (APM) software in its routers to optimise the delivery of Wi-Fi guest access services for hotel customers across Europe.

Established in 1995, Passman specialises in IP-based services and Wi-Fi guest access in the French hospitality sector. The firm has equipped more than 3,200 hotels, and says its partnership with OneAccess will offer a new level of network visibility and control to hotel guests.

Its software can act upon insights generated by *OneAPM*, OneAccess' proprietary APM software, which operates from inside the router and

monitors traffic flows generated by the hotel's customer-facing and administrative applications.

OneAPM's intelligent load balancing and traffic routing capabilities are designed to enable dedicated bandwidth to be assigned to high-priority applications such as customer web-surfing. It's claimed this optimises the available bandwidth and, as a consequence, the user experience.

"The need to apply innovative network management solutions that contain costs and wring every last drop of performance from their connectivity has never been more apparent," says Bertrand Meis, CEO, OneAccess Networks.

First West African nation to use cloud networking

 Burkina Faso will use the cloud to enable connectivity between public departments and municipalities via an e-government platform.

The project is part of an ambitious ICT strategy being administered by the country's Ministry of Development of the Digital Economy and Posts (MDDEP), and forms an integral element of Burkina Faso's Economic and Social Development Strategy.

Financing for the project is being facilitated by the Danish government through the Danida Business Finance agency which is contributing EUR30m.

Under an agreement with the ministry, Alcatel-Lucent will support network and infrastructure operations to be installed by 2017.

The vendor will supply its NFV (Network Function Virtualisation), *Cloudband* and IP platforms which will be integrated into the government's 'G-Cloud' infrastructure. This is being built around virtualised network resources from cloud nodes in the capital Ouagadougou and five provinces.

Alcatel-Lucent said around 400 buildings in 13 regional urban centres will be connected via a 513km fibre optic IP/MPLS WAN.

Backhaul will be provided by an 800km fibre transmission system that will become part of Burkina Faso's National Fibre Optics Backbone.

The company added that it will also provide a training and development programme for more than 100 government employees.

MDDEP minister Nébila Amadou Yaro said: "The G-Cloud network will allow the distribution of applications and resources at all times, wherever necessary, while providing consolidated cloud and network management. This will allow the system to be operated as a unique virtual environment."



MDDEP minister Nébila Amadou Yaro (pictured second from right) said the G-Cloud project will lead to micro and macro economic growth in Burkina Faso.

ABS-3A now in Brazil



ABS has been granted landing rights to operate its first satellite in Brazil. The revolutionary *ABS-3A* is now available to serve a wide range of verticals in the country, including mobile backhaul, rural broadband, video, oil and gas, and mobility applications. Launched last year, *ABS-3A* is the first commercial all-electrical propulsion satellite, and features an innovative design and wide beam coverage that enables it to support applications on both sides of the Atlantic Ocean. It provides 720MHz in C-band and 21MHz in Ku-band over Latin America, Europe, the Middle East and Africa.

TETRA thin in Germany



German Federal security forces will be equipped with what's claimed to be the world's smallest TETRA radio. Measuring 116 x 55 x 19mm and weighing 160g, Airbus Defence and Space says its *TH1n* is easy to carry in a jacket pocket or on a belt, and is particularly suitable for covert operations. Under a framework agreement signed with Germany's Federal Ministry of the Interior, the vendor will provide an undisclosed number of handsets, along with software and maintenance until the end of 2017.

NS upgrades train Wi-Fi



Dutch train operator Nederlandse Spoorwegen (NS) is upgrading its on-board Wi-Fi and passenger information services systems. The company has recently extended its contract with Nomad Digital, the specialist provider of wireless connectivity and ICT solutions to the rail sector. Under a new five-year framework agreement, NS will upgrade its on-board technology platform on intercity trains already using Nomad Digital's systems. This will deliver a common on-board technology platform across NS' fleet.

"LTE bubbles" connecting US military in the field



SES Government Solutions (SES GS) has demonstrated a cloud-based solution that delivers real-time data using 4G mobile devices and O3b satellites.

During a trial last year for US Government customers, SES combined O3b's satellite broadband connectivity and the field deployable 4G *nanoLTE* system from RIVA Network. It's claimed the setup delivered real-time HD video feeds and image files stored in the cloud to individual remote field team members. The same link also allowed the teams to collect and send

raw sensor and video data back to command centres for offsite analysis.

During the demonstration, SES says mobile phones and tablets outside of Wi-Fi range could be used to transport real-time video through the "LTE bubble", and stream the footage without delay over O3b satellites back to a cloud server located in Ashburn, Virginia.

The company says the mission-critical technology is compatible with any smartphone and paves the way for an increased use of mobile devices for military operations. "In essence, each soldier, sailor, airman

and marine can be a sensor providing vital information to deployed units through the O3b system," says SES.

It adds that the system can be scaled by adding multiple *nanoLTE* nodes, with ranges up to 22 miles possible depending on the exact network configuration.

SES GS president Pete Hoene says: "The US Government can now integrate smartphones into remote field operations and create a mobile workforce without facing any delays in communication, and with full connectivity all the way back to US-based analysts and decision makers."

Channel layering boosts connectivity at centre



The Convention Centre Dublin (CCD) is now using a 802.11ac Wi-Fi network from Meru to support the high density of mobile devices used in its facilities.

The CCD includes 22 purpose-built meeting rooms, a 2,000-seat auditorium with full theatrical stage and fly tower, and 4,500m² of exhibition space. Since opening in 2010, it has hosted more than 1,000 events that have attracted visitors from around the world. Meru says they make extensive use of the internet, email, VoIP and other

voice and video applications during concerts, exhibitions, shows, etc.

All this presented a challenge when delivering ultra-high density, high-speed and reliable connections in difficult areas with large numbers of simultaneous users.

Working with its local partner, IT Group, Meru replaced the CCD's existing Cisco WLAN using *AP822* access points and its *Network Manager*. As part of an initial trial, the vendor introduced the centre to its virtual cell technology and unique concept of "channel layering". Meru



The CCD's unique glass-fronted atrium runs the full height of the building and houses a variety of zones that presented a challenge for the Wi-Fi network.

says that by using only a single channel for coverage, the other channels can be layered to provide capacity for high-density areas.

Port takes the smartROAD to success



The Port of Hamburg in Germany is aiming to become smarter with the implementation of Europe's first *smartROAD* initiative from Cisco.

smartROAD uses an Internet of Everything (IoE) approach with real-time data and analytics to improve resource management, traffic flow, infrastructure condition and environmental management. The port authority is piloting an integrated concept of the IoE for the first time, with various relevant use cases running on a real infrastructure.

For example, structural sensors provide real-time data on the condition of movable infrastructures



Hamburg's *smartROAD* proof of concept is a result of a deal signed in 2014.

such as the Kattwyk Lifting Bridge, enabling the technical maintenance department to precisely and predictively plan maintenance and repairs. Sensors

are also used to deliver data to improve analysis of the port area's environmental situation.

Other solutions deployed as part of the *smartRoad* proof of concept include smart lighting, and the management and monitoring of all road traffic. All data is processed by analytics software, and findings are made available via a centralised, integrated dashboard.

Cisco says all sensors and systems are connected by a highly secure network infrastructure. The firm says it has also put in place a "comprehensive" security framework for the whole installation that gives visibility into safety and security, and enables the port's management to take actions in real-time.

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For Exhibition & Conference, please contact:

Mr. Yash Menghani, Senior Manager, yashm@eigroup.in
217-B, Okhla Industrial Estate, Phase III, New Delhi 110 020
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