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More Than Just Spectrum

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Realizing the Potential
of Telco Big Data

Wholesale:
Cable Wars

CONTENTS

TELECOM Review ASIA PACIFIC

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Robert Anderson,
Editor

The summer months have traditionally been associated with beach holidays and a slowdown in business, but for Telecom Review August was surprisingly busy after hosting our Human Side of Telecom Summit in Beirut, Lebanon.

At the event we launched the Human to Human (H2H) initiative, a spin on Machine to Machine (M2M) technology, focusing on the human side of the industry by encouraging people to enjoy life and helping communities to make better use of telecommunications.

In our constantly connected lives we all too often focus on the technology we are using rather than the people it connects us with, and we at Telecom Review feel it is important to remember it is a person on the end of the line and not just a machine.

Telcos in the Asia Pacific region, too don't appear to have had much rest over the summer, with waves of acquisitions, partnerships and network deployments announced in the weeks leading up to Autumn.

Among the most active countries has been China, with China Unicom reporting impressive profit growth the first half of the year and China Mobile recently awarding huge vendor contracts to Huawei, ZTE and European vendors for its LTE rollout.

The Chinese government has also further detailed its roadmap for broadband development in the country. The Broadband China strategy could be set to be the largest initiative in the world to boost broadband access with average rural speeds to be boosted to 4Mbps and urban speeds to 20Mbps by 2020. Today less than 14% of China's estimated 1.35 trillion citizens have access to broadband and we can only imagine what impact even a 10% increase will have on the online world.

As we move into the Winter months, Telecom Review will be hosting the follow up to its highly successful 2012 Summit. The event, held on December 8 in Dubai, aims to bring together representatives from telcos across the world, with the theme "It's all about networking" once again reminding us of the importance of the human side of the business.

Our aim is to provide a friendly environment for executives to connect, just as networks connect devices. To support this goal we will be hosting a gala dinner in the evening alongside the Telecom Review Awards, which will recognize the achievements of operators, vendors and others associated with the telecoms sphere.

I hope you enjoy the second issue of Telecom Review Asia Pacific and if you would like more information about any of our events or want to share your news and comment, do not hesitate to contact us.

Reliance Confirms Globalcom Sale Talks in Progress

Reliance Communications has confirmed that it is in talks with potential partners for the sale of a stake in its international unit Reliance Globalcom.

Chairman Anil Ambani told shareholders that talks were underway at the end of August but did not name any potential suitors.

The company said in April that it was in talks with a private equity consortium, including Samena Capital, after discussions with Batelco fell through, according to Reuters. Globalcom's assets include 65,000km of subsea cable, connecting India, the Middle East, Asia, Europe and the US. The company offers enterprise services, capacity, managed services and retail products including global voice and internet and has a customer base of over 2,100 enterprises and 200 carriers worldwide.

Bharti Airtel and SoftBank Partner for 3G Satellite Connectivity Solution

India's Bharti Airtel has reportedly partnered with Japan's SoftBank Mobile to develop a cost efficient 3G solution.

The technology will enable Bharti to offer 3G services using a communications satellite as a transmission line, according to India's Business Standard, with the two companies having already carried out field trials in Kenya. The technology will be used in rural areas across Asia and Africa where building facilities for fixed line or mobile connectivity is difficult.

Satellite has been a long standing backhaul option for mobile connectivity, but expensive usage fees have held back the technology.

The solution developed by SoftBank and Airtel is claimed to be low cost and high speed and is based on technology Softbank utilized to provide communications following the earthquake and tsunami that hit Japan in March 2011.

In that instance 300 satellite base stations were deployed using spectrum from a communications satellite.

"This technology is critically important to the development of mobile phone networks in rural areas in Africa and other areas where commercialization of such operations is challenging," Bayan Monadjem, Chief Technical Officer of Bharti Airtel Africa, said in a statement, according to the publication.

Microsoft to Acquire Nokia's Mobile Unit

Microsoft has announced plans to acquire Nokia's mobile phone unit and patents for 5.44 billion euros in an all cash deal.

The transaction includes 3.79 billion euros for the phone unit and 1.65 billion euros for a 10 year license to Nokia's patents.

The move builds on a partnership between the two first announced in February 2011 and is seen as a bid by Microsoft to rival Apple and Samsung Electronics for dominance in the smartphone market.

"It's a bold step into the future, a win-win for employees, shareholders and consumers of both companies. Bringing these great teams together will accelerate Microsoft's share and profits in phones, and strengthen the overall opportunities for both Microsoft and our partners across our entire family of devices and services," said Steve Ballmer, Microsoft chief executive officer.

Stephen Elop, CEO of Nokia, will step down to become head of the mobile unit at Microsoft, his former employer. He has also been deemed one of the frontrunners for CEO of Microsoft following Steve Ballmer's announcement that he will retire next year.

Microsoft will acquire Nokia's Asha brand and license the Nokia brand for use with current Nokia mobile phone products.

South Korea to Ease Foreign Investment Restrictions on Smaller Telcos

South Korea has reportedly announced that it will ease regulations on foreign investment in small telecom operators as part of free trade agreements with the US and EU.

New regulation will allow foreign investors to own up to 100% in a telecom operator, but they must setup a South Korean based unit to hold the stake, according to the Wall Street Journal.

Previously foreign investment in South Korea's telecoms sector was capped at 49%.

However, restrictions still remain in place for the country's three main operator SK Telecom, KT Corp and LG Uplus, for what are deemed strategic and security reasons.

The new regulation is expected to apply to small companies providing fixed-line and mobile services, according to the publication.

StarHub launches SmartPipe Triple Play Solution for SMEs

Singapore's Starhub has launched a converged business fiber solution for SMEs offering internet, voice and IPTV over the municipalities Next Generation Nationwide Broadband Network (Next Gen NBN). The 'SmartPipe' offering provides dedicated bandwidth for each service, to prevent slowdown when internet, voice and IPTV are used at the same time.

It is delivered over a single end-user broadband connection. "At StarHub, we focus on providing effective integrated solutions but, with the complexity of the technology transparent to our customers. Our SmartPipe is one such solution that allows SMBs to enjoy the convenience of multiple info-communications services over a single connection with no compromise on the quality of each service," said Kevin Lim, StarHub's Chief Commercial Officer.

Fiber broadband packages will start from 12Mbps, with a single voice line allowing unlimited calls to local phone numbers. SMEs will then be able to upgrade to increase connection speed or the number of phone lines.

Telkom Indonesia Wins Myanmar International Network Management Contract

Telkom Indonesia has won a contract to manage Myanmar's international network running through Mumbai, India.

Telkom managing director, Arief Yahya, said that he was confident the company would be a reliable partner in Myanmar's ICT infrastructure development and that it would now show its ability to work in conjunction with international operators.

He added that winning the contract highlighted Telkom's commitment to growing its business in Myanmar, with the company having already opened a representative office in the country.

Telkom also said it was working on its businesses in Hong Kong, East Timor, Australia, Malaysia and Singapore and would soon go to other Asian country and the Middle East.

Verizon Agrees $130 Billion Deal to Acquire Vodafone's Verizon Wireless Stake

UK based Vodafone Group has agreed a deal to sell its 45% stake in US mobile operator Verizon Wireless to Verizon Communications for $130 billion. The transaction is the third largest in M&A history and includes $58.9 billion in cash, $60.2 billion in Verizon shares, $5 billion in Verizon loan notes, Verizon's 23% stake in Vodafone Italia valued at $3.5 billion and Verizon's assumption of $2.5 billion in Vodafone debt related to the US.

Lowell McAdam Verizon CEO said: "This transaction will enhance value across platforms and allow Verizon to operate more efficiently, so we can continue to focus on producing more seamless and integrated products and solutions for our customers. We believe full ownership will provide increased opportunities in the enterprise and consumer wireline markets."

Vodafone said it plans to return 71% of the proceeds to shareholders in a mix of Verizon shares and cash worth 112 pence per share, while the company also pledged to increase its 2014 dividend by 8% to 11 pence per share. "This transaction allows both Vodafone and Verizon to execute on their long-term strategic objectives. Our two companies have had a long and successful partnership and have grown Verizon Wireless into a market leader with great momentum. We wish Lowell and the Verizon team continuing success over the years ahead," said Vittorio Colao, Vodafone Group CEO.

Australia's iiNet steps in to buy Adam Internet

Following Telstra's decision to withdraw from the acquisition of South Australian ISP Adam Internet, the country's second largest DSL provider iiNet has stepped in.

The company said it has entered into a binding agreement to acquire Adam internet and associated companies for AUD60 million.

Through the acquisition iiNet said it will grow its total customer base to over 900,000 broadband subscribers, by adding Adam's 70,000 subscribers and South Australian business and government clients using data center, hosting and cloud services.

The company will also gain data center and DSLAM and fiber network infrastructure, as well as cost synergies from bandwidth and backhaul and the integration of systems and suppliers.

Adam Internet has expected FY14 revenue of AUD55 million and EBITDA of AUD11.5 million, with synergies expected from FY15 onwards.

Completion of the acquisition has already been cleared by the ACCC and procedural conditions are expected to be met by August 31.

China Outlines Broadband Strategy

The Chinese government has reportedly outlined a roadmap for broadband development in the country to boost information consumption and facilitate economic restructuring.

China Daily cites a statement released by the country's State Council, outlining a 'Broadband China' strategy which aims to expand broadband coverage in both rural and urban areas with speeds reaching 20Mbps and 4Mbps respectively by 2020.

The fastest broadband speeds available will be 100Mbps, according to the statement.

Today less than 14% of China's population has access to broadband and average broadband speeds stand at 1.8Mbps.

Under the Broadband China strategy, broadband networks are identified as strategic public infrastructure with investment set to be boosted especially in rural areas and the central and western Chinese regions.

The plans are aimed at boosting domestic demand and fuelling growth with recent guidelines suggesting internet-based consumption in the country should grow by at least 30% annually to $392 billion.

As a result the value of industries supported by information consumption is expected to increase by 1.2 trillion yuan by the end of 2015, with SMEs set to benefit from the strategy through government support for third party e-commerce platforms.

China Telecom Forms JV With NetEase for Instant Messaging App

China Telecom has formed a joint venture with Chinese online gaming and email provider NetEase to launch YiChat, an instant messaging application for smartphones.

The deal marks an increasing trend of cooperation between Over The Top (OTT) players and telcos looking to improve their customer offerings, with other recent examples including a partnership between Viber and Globe Telecom in the Philippines.

The two claim that YiChat differentiates from other social instant messaging applications by allowing users to send free text and voice messages to any mobile and free voice message to fixed lines without the need for the application to be installed on the receiving devices.

This will potentially give YiChat an advantage over other messaging services like WhatsApp, which require both parties to have the application installed and only work for contact between other smart devices.

Other Yichat features include environmental noise reduction technology and high quality photo messaging.

Jie Yang, President and COO of China Telecom, described the joint venture as a crucial step in the company's strategic transformation.

"It demonstrates China Telecom's commitment to mobile Internet development. Aiming to make YiChat one of the most popular social instant messaging applications for young people in China, China Telecom will work towards the success of the joint venture and YiChat with the most sincere determination," he added.

China Telecom plans to offer customers using YiChat free data promotional packages.

"Our strategic joint venture with China Telecom aims to provide a superior social instant messaging application for smart phone users," said William Ding, CEO and founder of NetEase.

"This partnership signals the start of NetEase's entry into the mobile instant messaging space, and is the one of the key components of our mobile Internet strategy."

"Going forward, YiChat will have our full support in its development, utilizing our cutting-edge technological capabilities to offer users a product with the highest quality experience."

SingTel Raises Bharti Airtel Stake

SingTel has increased its effective interest in India's Bharti Airtel from 30.76% to 32.34% at a cost of around $302.2 million.

The Singapore based company said it had agreed to acquire 788,538 shares or 3.62% of Bharti Telecom, which holds 43.57% of Bharti Airtel.

This will increase SingTel's stake in Bharti Telecom from 36.19% to 39.78%.

The move comes following an announcement by SingTel that it had accumulated S$2 billion for acquisitions and a 7% rise in net profit in its recent quarterly financial results.

"The acquisition would allow SingTel to increase its effective stake in BAL (Bharti Airtel), and is in line with SingTel's strategic focus on maximizing the value of its existing businesses, which includes reviewing opportunities to increase shareholdings in existing associates," SingTel said in a statement.

Dacom Crossing Taps Infinera for South Korean Transport Network

South Korean wholesale provider Dacom Crossing has deployed Infinera's networking platform for a network connecting Seoul, its terrestrial backhaul network and the EAC Korea landing station.

The Infinera Intelligent Transport Network solution will enable Dacom to offer 10, 40 and 100GbE services and Private Lease Circuit services up to 10Gbps.

The vendor claims this will enable Dacom to increase revenue with differentiated services, and reduced operating costs with scalable bandwidth for future demand.

"The DTN-X allows us to scale our network as needed based on customer demand, while providing unprecedented speed and reliability," said JH Kim, Dacom Crossing CEO.

"Coupled with the Instant Bandwidth feature, which allows us to deploy increments of 100G services, Infinera's solutions enable differentiation by shortening provisioning times, accelerating service delivery, and reducing time to revenue."

Dacom's customers include Tier One carriers, ISPs and content providers.

"Dacom Crossing is now providing South Korea with its first Intelligent Transport Network, featuring the industry's only solution designed with photonic integrated circuits," said Andrew Bond-Webster, vice president APAC Sales for Infinera.

"Our solution's ability to quickly and reliably provide network services on demand, with the ability to scale in the most efficient manner, really stood out against our competitors."

Real Future selects Ericsson for Thai Mobile Network Expansion

Real Future, a subsidiary of Thai telco True, has selected Ericsson as a supplier to expand its mobile network in the country.

The move comes in preparation for a growing number of smartphone users in the country, with Thailand's mobile penetration rate increasing to over 130%, and smartphone penetration doubling to 36% in 2013, according to Ericsson ConsumerLab.

Through the expansion True Mobile Group will be able to offer its 21.5 million subscribers HSPA and LTE services using Ericsson's multi-standard radio base station RBS 6000.

Real Future will also use Ericsson's project management, system integration, interoperability testing, network design and implementation, and competence and development personnel.

"This agreement will further strengthen our 3G and 4G leadership in the country and create more exciting opportunities for businesses, as well as new services for subscribers. We expect that greater connectivity will foster further development of Thai society as a whole," said Vichaow Rakphongphairoj, Managing Director & Chief Operating Officer of True Corporation.

"This is Ericsson's first project with True Mobile Group. We are pleased to be True's technology partner as they bring Real Future subscribers 3G and 4G connectivity. As a global HSPA and LTE leader, we are committed to work with True Mobile Group in meeting the growing demand for mobile broadband service in Thailand," said Arun Bansal, Ericsson Head of Region South East Asia & Oceania.

Telstra Global Awarded Telecoms Licence in Taiwan

Telstra Global has been awarded a licence to operate and sell telecoms services to multinationals and carriers in Taiwan.

The Type II Operation Licence for Telecommunications Business will enable the carrier to provide network services inside and outside of Taiwan, adding to its operations across 12 Asia Pacific countries.

"We have previously completed successful applications for operational licences in both Japan and Korea, and were keen to ensure the level of support and product offerings were available for our customers in Taiwan, or who are looking to grow and expand their business into the region," said Andrew Wildblood, Telstra Global Head of Asia Pacific.

Telstra Global now offers in country billing to customers and will be able to buy local loops from Taiwanese suppliers directly. This company claims this will enable it to offer improved and more cost effective hosting and virtualization solutions to customers in Taiwan, while also allowing the opportunity to expand its PoPs in the country and enhance its service level resiliency.

"We're committed to working closely with our Asian customers as well as expanding our footprint in the region. This approved licence allows us to offer the same reliable and high performance network as our other Asia Pacific markets, which opens up increased business opportunities for Telstra Global," said Wildblood.

Telstra said it would continue to add resources to support strategic market segments and drive sales in Taiwan and the rest of the region.

SAP Mobile Services:
Realizing the Potential of Telco Big Data

John Sims, *President, SAP Mobile Services*

On top of its interconnection business, SAP Mobile Services is looking to utilize the vast amounts of data produced by operators through its recently announced Consumer Insight 365 product. The company's President, John Sims, spoke to Telecom Review regarding the company's business in Asia Pac and next step in the big data and analytics space.

Can you give us a brief about SAP Mobile Services' business?

I run a group called SAP Mobile Services and in general we are focused on two areas. We provide what we call interconnection services for mobile operators and traditionally that has been SMS interconnect. We provide those SMS interconnect services for almost a thousand operators around the world. Today we also provide IP interconnect services as the networks move into 4G LTE. In fact in the region we turned on our first live LTE roaming deal last year with China Mobile Hong Kong and Globe in the Philippines.

We provide those interconnect services and everything we do for them is all cloud based, so we don't sell software in that case. We sell it as a cloud service and they consume it in that way. Through that connectivity to operators we then provide a series of, what we call, engagement services for enterprises to be able to connect with their subscribers and customers, or citizens in the case of governments, using mobile technology. This could be SMS, could be pushed notifications or it could just be doing opinion polls etc. More and more of these enterprises understand that their customers or subscribers are living their lives in the mobile world, especially in some of the developing markets. Their access to the internet is through a mobile device and not through a traditional PC.

The second part of our offering is also cloud based, and again we provide it as a service and not as software. The inspiration came when we were dealing with both mobile operators and enterprises. We were hearing through the operators that they had a lot of data in their networks on what mobile subscribers do with their devices, and on the enterprise side their customers are doing a lot of things in a mobile environment. But they feel they know very little about this consumer behavior.

So we conceived a new service on what we call Consumer Insight 365. It takes anonymous data out of the operators' networks, so we take away any individual identification but keep some demographic information, like user sex, age band etc. Then we provide analysis on that data and sell it on a subscription basis. We don't sell the data. We sell the insights and the analytics to the enterprises, so they can better tune their marketing programs and advertize their offerings. We try to bridge the gap in terms of the information that exists within the network and the desire for the enterprise to be more effective and more relevant to engage their subscribers; and understand their consumers.

We announced this as a pilot service and we are now in the process of finding operators to sign up. That is one of the primary reasons of my visit here in the region to meet with a number of operators from different countries to talk about their desire to join that initiative and become part of it.

How many operators have you spoken to in Asia?

We have a number of discussions going on with operators in Asia and through the region. In general we are

finding a strong interest in understanding the service and how they can become part of it. But at the same time I think operators are generally cautious, as this is consumer information, so they have got be very careful in terms of privacy.

They want to understand the business model as this data has existed for a long time, and one of the reasons why they haven't done very much about it is because the cost of putting systems in place is very significant. Previously the software that would be sold to do this would require a large investment which would be discarded. Whereas we are offering Consumer Insights as a cloud service, by taking the data into the cloud, operators get to better manage revenue potential with cost, so it is a better business model for them. So they are trying to understand the business model, and in terms of privacy how everything is protected. In the course of the next few months we will see operators announcing that they will be a part of the service.

What end user data is being used?

It is generally focused on web usage, as opposed to text or personal communication, so what people do to access various internet or application services. Every time we click on our mobile

devices to access a website or access an app, they write a record inside the network. It is that information that we are taking into a service and analyzing. Only the demographic information is being used, like general age group, sex and general home location, but not the specific address, the first few digits of a post code perhaps. We don't need to know their specific address but we'd like to understand what region they've come from.

Depending on granularity of location data, you can take a shopping district within a city for example and see what the demographic profile of people using mobile devices in that shopping district is, by age group, by sex, or what website they frequently visit as they shop. In that way different brands could come up with conclusions based on this data about what specific age groups do when they shop. Through this they would be able to have advertising geared towards them or a special offer they would be able to target to them specifically.

In terms of the value for operators, what's in it for them?

There are a few different values for them. On the one side they themselves can access these analyses, so they can better package their services. They can use the

insight internally to achieve better loyalty from their subscribers, reduce their churn etc.

In addition, when we sell the cloud subscription to the enterprises we share the revenue with the operator. So the operator will develop a new revenue stream using something that isn't generating revenue today. In a world where voice revenues and SMS revenues are slowing and declining in some countries this is something that they need to consider and develop.

What do you think about the existence of all this operator big data but not having the right tools to analyze it?

One of the challenges of big data is that conventional technologies are very challenged to analyze it. If you take a large Asian operator they could have 30TB of information being produced per day, and they don't want to accumulate this for a year. Not only because it is big but consumer behavior changes over time. Conventional disk based data bases are challenged but one of the advantages of our company is that we have technology that has an in memory computing platform. It is 12,000 times faster than conventional disk technology. For this kind of analysis work, it is the fastest technology in

the market and it is a unique advantage that SAP is able to provide these big data services. SAP is the largest analytics company in the world. Not just in traditional analytics but we also invest as a company on what we call predictive analytics, which is an important aspect of our service evolving over time.

Do you see these analytics boiling down to manpower?

We are implementing a service that is not labor intensive. It is more focused around the power of technology and reducing the amount of specialized skill required to be able to get to the insights or the important information that can help these companies. I don't see the labor as a hurdle or a roadblock per se, but having said that we do believe that on a global scale the software business needs to have more and more people coming in to the technology field and to continue to grow the access to engineers.

That is why SAP as a company has been investing in so many countries. We have substantial commitments in China and in India to have more access to technical talent here in Southeast Asia and other regions. We fully understand that we are not going to continue growth at the current rate purely because of our resources in the European and US markets. If you look at

SAP, we have been growing our software business in double digits for the last 13 quarters. Ever since the company positioned itself, its growth path associated on mobile, cloud and big data, we've been growing at a very substantial rate compared to our traditional competitors who are showing no growth at all. That has been driven by mobile, cloud and the SAP HANA platform. Based on our analysis it is the fastest growing software product in history. It has grown dramatically in the last two years since we introduced it and has helped find use cases to do things like Consumer Insight, which is something that could never be done before, because if it takes a month to do the insight and then the value of the data is lost.

In our demonstration using operator data we ran queries in an airport for example, like demographics of mobile devices, purely sophisticated queries and received a report in less than a second. Impressive considering it is a 51 billion raw data base. It is that kind of power that makes what we are doing with Consumer Insight quite unique.

How do you see the product developing, will uptake proceed quickly?

We have a number of operators very interested in moving forward, but haven't publicly announced any yet. We will announce them over the course of the next few months. We've been pursuing Consumer Insight on two paths. One

on signing operators up to join the service, and we are encouraged by the feedback we are getting from them. Then on the other hand we are talking to large consumer product companies, some of the global brands and a number of marketing agents, to get them committed to be consumers of the data once it is available. In both cases we are encouraged by the interest in the service, but we don't think we will get 100% market share in terms of operators.

What other products is SAP or SAP Mobile Services pushing?

The other product that we've been pushing in Asia is our IP interconnect services. Within Asia, operators are moving forward with their LTE deployments and most are initially focused domestically before slowly starting to

worry about roaming. In countries like Singapore, the Philippines and Hong Kong it has already become a big issue. We are providing that IPX service on a global scale and have over a hundred operators on our IPXchange, they are GRX which is our data roaming interconnect. We went live with China Mobile Hong Kong and Globe in the Philippines and we expect many more to follow.

We also recently announced that we are offering Rich Communication Suite (RCS) as a cloud based service. A lot of operators are interested in RCS but it requires a substantial investment on the network. Through SAP it is cloud based, so operators can easily launch RCS with minimal upfront investment. We are starting to see an interest in this as well and we are looking to offer RCS interoperability

between countries, much like we have done with SMS interoperability.

Outside of my area, SAP is focused more on the enterprise as a customer with the SAP mobile platform for application development, both for consumers as well as for employees. One active area is mobile security. A lot of these enterprises are worried about security aspects, not only for the physical device but the data as well. Like BYOD, but when the employee leaves the company they need to make sure that the data is off the device and proprietary applications are off the device. We are offering this as both software and a cloud service. SAP is active in the mobile space and it is one of the key drivers of the company overall. We've seen mobile revenues grow 100% over the last two years. **IR**

Thuraya: Providing Satellite Connectivity to the Mass Market and Industrial Verticals

Sanford Jewett , *Vice President of Marketing, Thuraya*

Sanford Jewett , Thuraya's Vice President of Marketing, spoke to Telecom Review regarding the mobile satellite operator's growing business in Asia Pacific and its new end user product, the iPhone Sat Sleeve.

Can you tell us more about Thuraya?

Thuraya is a mobile satellite service operator. We were conceived in the mid 90s by some big GCC telcos like Etisalat, Qatar Telecom, Zain, and Omantel. The decision was to build a satellite company that would supplement their terrestrial telecom facilities. It started out as a mobile satellite technology that would make handheld telephones and data devices that would work in remote places. Our first satellite covered Europe and Africa. After five years, our 2nd satellite was launched covering Asia.

Today our footprint covers from the north of the UK down to almost the tip of Africa. Then we have the Thuraya 3 satellite which covers the whole of Asia, from Siberia down to New Zealand. We effectively have coverage over half of the planet, within 140 countries or about 2.3 billion of the world's population and this is where most of the growth

is occurring in the mobile satellite space. Our two satellites will downlink the traffic to our gateway, which is in Sharjah, from there we connect to the Internet and then we connect to the other phone companies and public switch telephone networks. So we can connect to deliver phone calls anywhere.

We have our headquarters in Dubai and the gateway in Sharjah and sales offices in the United States. Two to three years ago we also opened up offices in Singapore, because with our Thuraya 3 satellite covering Asia we wanted to grow our presence in the region. We are still in the process of increasing awareness about Thuraya across Asia. There are four people manning our sales office in Singapore and they are responsible for various countries.

Can you tell us about some of your recent partnerships and growth opportunities you see in the region?

We've recently launched a partnership with SoftBank in Japan. SoftBank is very big in Japan with 35 million subscribers and they are growing dramatically. They have partnered with us because they they wanted to have a satellite offering after the natural disasters that struck Japan's eastern coast two years ago. Then there was the Tohoku earthquake and Fukoshima nuclear disaster and radiation problems. The

bottom line is that during those times about one million SoftBank customers were affected and their GSM service was down. For some only for a few weeks and others it was almost a year. The electricity grid, GSM towers and other infrastructure was wiped out, and because of this SoftBank decided that it was critical to have a product that they can give to their customers to communicate even if normal mobiles services are affected. They are currently marketing our basic satellite phone and soon they will be marketing our Sat Sleeve product.

Thuraya also has other agreements across Asia. We recently signed with a distributor in Thailand called Jasmin and a distributor in Australia called Pivotel. We have a couple in Indonesia which are increasing their activity and we've recently signed a partnership with Chunghwa Telecom in Taiwan. We also have distribution and full licensing in China so we are spreading out in the Asia territory.

There are great growth opportunities in different markets for different reasons, including maritime and oil and gas. There is mining in Australia, where GSM coverage is focused around the sides of the country but not in the middle, so they are interested for satellite to provide coverage on those remote places. The same is true in the western part of China and in Mongolia as well.

We provide service for various reasons, either as a backup for terrestrial infrastructure or enhancement of coverage. Our number one focus is to try to grow our Asian business and fill up our satellite's capacity.

Can you explain Thuraya's distributor business model?

Thuraya use an indirect distribution model, we don't sell directly. We have two different kinds of distributorship. We have what we call our service providers and about 45-50 of them are driving our business across this territory. Some of them focus on a single countries, like SoftBank in Japan. We also have international service providers in Dubai and Europe. More often they distribute in multiple countries and some of them have a sub dealer whom they are affiliated with. We also have customers in Cambodia and Laos but we don't have a full distribution capability there so that is something we will be focusing soon.

Myanmar is an interesting market. They have 5% GSM penetration so that means there is a huge un-served market. The economics level may be challenging but we will try to develop there, and in this show alone (CommunicAsia), we have had several meetings for potential distribution partnerships for Myanmar. The Philippines is another market that we want to show our distribution capability.

In some rural areas like the ones in Myanmar the question is the business model in terms

of who is going to pay for the service and what they can afford to pay. If there is any way that the government can subsidize and create a pay phone facility that would be ideal. Historically Thuraya did a lot of business in North Africa, Pakistan, and Afghanistan providing two different products; one is a payphone where people can walk up and make their call, the second is a PCO or public calling office, which serves as a payphone but is manned by someone.

Previously your products were more inclined towards enterprise or business users, but with your new products, like the iPhone Sat Sleeve, you are becoming more personal or customer centric, what has driven Thuraya into this market?

We were pulled to it by the situation in Japan, where they wanted to offer a backup to customers. SoftBank has a lot of iPhone customers in Japan, so it was a collaboration between us and SoftBank in coming up with this product. We previously had our own satellite phone and we have dual mode phones with both satellite radio and GSM. The GSM phone was popular but as we launched the dual mode products we were surprised that most people continued to buy the satellite only phone. What we've learned is that most customers already have their own phone and they don't want to give it up and change to these dual mode phones. So in short they carry two phones. Our idea with this product (iPhone Sat Sleeve) is that they can continue to carry their own

phone and leverage their contacts, address book and applications to a sat phone. In addition, we think by doing so it will up voice usage as well as data usage. It is a new form factor that we think will be more popular.

How does it work?

You take your own iPhone, and attach it to the right cradle for your model, either iPhone 4 or 5, it is not expensive. The Sat Sleeve works like an adaptor that enables you to have GSM as well as satellite connectivity. The best part is that you are using your phone with the address book, your contacts as well as your own apps. The learning curve will be easier because you have the same interface and technically the same phone. You can just download the Thuraya app from the Iphone App Store and this will enable you to pair it with the cradle.

What are the price points for the iPhone Sat Sleeve?

You have to remember that we don't sell directly, so our distributors may charge more. But our suggested retail price is roughly $500 on this product. This is less expensive than our other satellite phones.

Is it being bundled by your distributor in terms of pricing?

We charge our distributors and they in turn charge the end users. The initial distribution is through our current listing of service providers. One of the things that we are looking at in

terms of enhancing our distribution capability is to start marketing this through mobile operators. SoftBank is an example and Chunghwa. They are interested in selling this to their customers. We are in discussions with Etisalat as they have eighteen companies all over Africa and Sub-Saharan Africa and Southeast Asia. Etisalat has got a lot of iPhone customers. So we can have enhanced distribution through a broader horizontal market.

When are you going to do the same for Android and how do you decide which devices to support?

The product is currently under development and it is being made by the same manufacturer. We hope to have it available in a few months.

When we come out with an Android device, it will not accommodate all Android smartphones. It will accommodate the most popular ones as far of our judgment is concerned. Then we will try to develop additional adaptors. We believe in the current form factor and having it integrated so they can hold it up their ears is important to customers. We are also looking at physically unattached satellite module devices communicating via Bluetooth and WiFi that are system agnostic. At CommunicAsia we've found out that there is a strong interest in Blackberry. In Indonesia and parts of Africa and the Middle East it is still number one in terms of market share. So that is also on our drawing board.

What is Thuraya IP Plus and how does it differ from Thuraya IP?

Thuraya IP plus is our broadband modem. It is not so much for the broad consumer market because it is a $3000 piece of hardware, but it is the smallest most portable broadband system that you can get.

Thuraya IP Plus has got a better built in antenna, enabling it to achieve speeds of 444Kbps. For Thuraya IP you need to have an external antenna to get that speed. They are both made by Hughes. The IP Plus also has other benefits. It has a newer WiFi radio, can accommodate new WiFi extenders and has some M2M features built in.

What is the target market for Thuraya IP Plus?

The main market that we are targeting with this product is the news gathering and media companies, which want to live stream video back to their studios. It is very attractive for that as it is very small, battery powered and offers 444kbps to stream video.

What do you think is the big differentiator of Thuraya IP Plus compared to other products on the market?

The big difference for us is the size of it, especially compared to these VSAT operators, their set up is bigger and harder to carry, and in some cases you need a license to operate the VSAT. In our case we are fully licensed, the product is battery operated, portable and even the cameramen can set it up on his own. It is easy to

use with a compass attached and you just point it to the sky and it will beep if you are getting the signal. Then you can just set up your laptop with it and deliver video back to the studio. Everything can be put in a backpack if something happens, which is especially good for coverage in warzones.

How much interest has the product received so far, do you have any customers signed up?

We have actively engaged with CNN and they are interested in IP Plus. Fox News is using it. We have had a lot of meetings in the past few weeks with broadcasters here in Asia. We have a broadcaster in Hong Kong and China using IP Plus and MetroTV in Indonesia is using our product as well.

We've been talking to a lot of companies which historically haven't used mobile satellite

so I think there is a great opportunity for us to grow in Asia. Our big established media customers are Al Jazeera, Ahlan TV, CNN and BBC. That reflects the fact that we've started in Europe. So we have a little more history there.

How big is the market for niche products like the iPhone Sat Sleeve?

We don't really know the answer. A lot of it would depend on how much interest we can stir up with the mobile operators. If we stick with our distribution, our expectation would be tens of thousands or maybe hundreds of thousands.

There is significant interest in Africa and if we can sign up distribution agreements with the likes of Etisalat, MTN or Vodafone to stir up interest in the satellite phone as a backup there is a huge opportunity. The units sold

could be in the millions if we can get these mobile operators marketing for us and come up with business models that make it more affordable.

There is a thin line that separates satellite communications and terrestrial ones, where do you think you are heading?

We are heading in two different directions. One of them is the broader mass market on the handset side. The key driver for us in the vertical B2B side is data, so getting faster data solutions into the hands of our industrial customers like maritime, oil and gas, and defense companies. The humanitarian vertical has always been a big focus for us and the media business has great potential. We are also seeing a lot of interest from Chinese, Indian and Japanese customers as most of them haven't used these kinds of products before. **TR**

The Growing Threat to Mobile Devices

With the number of mobile devices growing exponentially, cyber criminals are increasingly targeting mobile devices with spam and malware. But how large is the threat?

Gartner says that the worldwide PC, tablet, and mobile phone shipment market will grow 5.9% by 2013, equating to about 2.35 billion units across the globe. Although the PC market has been in decline over the past few years, the uptake of tablets and mobile phones has been increasing. This is due to the fact that more and more consumers' want access to the internet anytime and anywhere, whether they are at home, at work, or in between. The smart phones enabling this internet connectivity have become more and more popular and now many end-users can't live without them. Consumers access their banks, airlines, personal and work emails, and online shopping on the mobile web. The convenience these services bring end-users is unquantifiable, and as a result mobile operators are continuously seeking to tap into the potential of this information driven market.

However, despite the transition from PC to handheld the same security threats still loom, with shady characters waiting for the right moment to strike. In fact, according to Juniper Networks Mobile Threat Report, the amount of malware sampled across all mobile platforms grew 614% in a single year up from a 155% increase in 2011. This amounted to 276,259 total malicious apps. Android has

been the apple in the eye of these attackers with 92% of total mobile malware directed at Google's OS compared to 47% in the previous year, but the report suggests other platform are not immune from being targeted as well.

Part of the attraction to Android is the bigger market potential due to its dominance across the world. Malware attackers are now inclined to calculate whether their 'threat business model' is likely to succeed or not and are now looking to maximize the gains from their attack, thereby producing a good return on their investment.

Naturally this means targeting areas where money is exchanged like mobile payments. Three percent of all malware exploits holes in mobile payment systems. These attacks are enabled by a simple fraudulent SMS Trojan, or fake installer malware, that can generate about $10 in immediate profit. This quick return makes such attacks popular, accounting for 73% of all threats investigated by Juniper's Mobile Threat Center (MTC). Outside of individual attacks, the threat also scales up because of enterprise or corporate victims, with botnets being utilized by attackers.

Research also shows that the accessibility of these threats to consumers has increased. The MTC identified 500 third party application stores hosting mobile malware, and because of the low level of accountability on these platforms the malicious threat

can be on the app store for some time before being removed. It was noted that three out of five third party app stores originated from China and Russia.

On top of mobile malware spam is also a growing threat. According to a recent report by mobile security company Adaptive Mobile, spam and the number of spammers is on the rise in the mobile space. Although the common belief is that spammers clog a system with unwanted messages, mobile spamming now utilizes personal data to launch invasive and targeted attacks.

Spammers have become more inclined to use a subscriber's name, post code, income level and ethnicity to make such an attack more personalized and thereby effective. According to the Global Mobile Security Insight report, conducted with major US mobile operators, one of the key drivers enabling spam to thrive is the availability of cheap databases of US cellphone subscriber data. This data is broken down by first name and post code enabling spammers to easily get the personal information they need to mount more effective attacks.

There is also a developing source of spam through Mobile Virtual Network Operators (MVNOs) that is more difficult to detect and stop. This kind of spam happens on low-level, long-running campaigns with a maximum of 150 texts per spammer vs. the fixed operator model, which

averages 2000 messages per sender. The low-level spam is usually illegal, consisting of malicious messages (including financial, other sensitive data or monitoring of activity on the phone). It is down to Operators to protect subscribers or end-users against these attacks, which bypass traditional detection methods and affect their data protection.

The security threat against mobile devices is relentless and it is expected to continuously evolve. According to McAfee Threat Report, significant changes from traditional spam and malware will occur and attacks are expected to incorporate other techniques and technology. Threats on the horizon include:

1. Mobile worms on victims' machines that buy malicious apps and steal money via tap-and-pay NFC.

2. Malware that blocks security updates to mobile phones.

3. Mobile phone 'ransomware kits' that allow criminals without programming skills to extort payments.

4. Covert and persistent attacks deep within and beneath Windows.

5. Rapid development of ways to attack Windows 8 and HTML5.

6. Large-scale attacks like Stuxnet that attempt to destroy infrastructure, rather than make money.

7. A further narrowing of Zeus-like targeted attacks using the Citadel Trojan, making it very difficult for security products to counter or block.

8. Malware that renews a connection even after a botnet has been taken down, allowing infections to grow again.

9. The 'snowshoe' spamming of legitimate products from many IP addresses, spreading out the sources and keeping the unwelcome messages flowing.

10. SMS spam from infected phones.

11. Hacking as a Service - Anonymous sellers and buyers in underground forums exchanging malware kits and development services for money.

12. The decline of online hacktivists - Anonymous, to be replaced by more politically committed or extremist groups.

13. Nation states and armies will be more frequent sources and victim of cyber threats.

With all these potential threats emerging the security of our personal and professional identity is always at risk of being compromised. Although, we are not alone in the war against cyber-criminals, the best way to minimize risk is to be vigilant, just like in the physical world, safety and protection always begins right at home. **TR**

By Genesis P. Maniquez

CommunicAsia Coverage

Telecom Review was in attendance at CommunicAsia 2013, one of Asia's largest integrated info communication technology events, held between the 18th and 21st of June at Marina Bay Sands, Singapore

The CommunicAsia event opened with a bang, as fireworks lit up the stage for the opening ceremony. This year CommunicAsia, EnterpriseIT and BroadcastAsia were held under the same roof for the first time, allowing attendees to experience the convergence of technologies across multiple industries.

The event attracted 35,000 international trade attendees, who were treated to some of the latest technological advancements by exhibitors. Among the technologies featured were augmented reality, APPs, cloud computing and security, infrastructure and network solutions and connected services.

Even the hazy climate could not hinder the energy and enthusiasm present at this year's gathering, with notable big names from the broadcast and telecoms industries actively present. Huawei, Thuraya, Inmarsat, SES, SAP, Dell and Tata Communications, all gathered to showcase their products and services during the event.

Day One

The opening ceremony was conducted by Dr Yaacob Ibrahim, Singapore's Minister for Communication and Information. In his comments he mentioned that Singapore had made good progress in implementing the Intelligent Nation 2015 initiative, a 10 year masterplan by the government of Singapore to realize the potential of information communications. He further noted that the new phase of the Wireless@SG program will be felt across the nation with Wi-Fi access speeds of 2Mbps in Singapore's public areas.

It was announced that by April next year, a SIM based authentication on wireless access login will be implemented within the country. In relation and in line with the government's thrust to have one stop access, Dr Ibrahim reiterated the availability of eCitizen portal not only via the web but also through downloading the mGov@SG mobile app for handheld devices.

He said this would enable its citizens to have a quick access to government offices, ministries and agencies. He also mentioned that the IDA or Infocomm Development Authority launched a call for proposal for Smart Work Centres, a community space for different work needs to further support the melding of telecom and other businesses in the country. Lastly, he reiterated that Singapore is always geared towards solidarity amongst its neighbors particularly in terms of technology. He mentioned that Singapore, Brunei, Indonesia and Malaysia have jointly agreed to harmonize the use of 700 MHz digital dividend radio frequencies. Noting that such a move is in line with Asia Pacific Telecommunity band plan and the same shift will allow countries, particularly in Asia, to meet the growing demand for mobile broadband. 700 MHz digital dividend frequencies will be made available by 2020, he said.

Deputy Prime Minister and Minister of Finance, Tharman Shanmugaratnam, was also present during the ceremony. He provided a keynote speech and outlined significant policies of the state, including the eGov Global Exchange, and highlited that the government will eventually adopt a more pervasive approach in terms of cross agency data sharing. He was keen to specify that Singapore always has an Open Data philosophy, and in so doing, it will share more data with the public and encourage feedback, research, and analysis on issues, allowing public awareness to increase.

Among the announcement highlights on day were from Broadpeak, which signed its first deal in Asia to provide its CDN and video solution to Singapore's StarHub. Elsewhere, 03B Networks announced the introduction of a new signal processing technology MEO booster. The booster aims to increase throughput by 50% when working in conjunction with standard O3B ground equipment. While Thuraya unveiled its latest satellite terminal IP+, which supports broad range of mission critical applications. Thuraya IP+ boasts a compact form factor that is easy to carry and useable in the most challenging environments.

No event can be successful without a compelling conference agenda and CommunicAsia provided just that. Day one covered several topics around mobile marketing with distinguished panelists, including; Colin Miles, VP for Corporate Marketing of InternetQ and Chairman MEF Asia, spearheading the discussion. Aliza Knox of Twitter – APAC, Craig Smith of Singtel, and Marcus Ho of Social Media Hub were also some of the high profile names at the event sharing their insights.

One of the most popular sessions was a discussion about broadband over next generation networks. Professionals from the communications industry listened to Stewart White of Akhet Consulting and Martijn Blanken, MD and President of Telstra Global, talking about redefining telco business models, while Peter Leonard from Gilbert + Tobin discussed various topics revolving around NGN regulation. Later Andy Haire, Chairman and Founder of AJH Communication, discussed some of the key findings and shared his experiences in rolling out next generation broadband networks.

Day two

On the second day of the event SES opened up the show by announcing several partnerships geared towards expanding its footprint in Asia. These included Cignal from the Philippines and Thailand's IPMTV.

Keymile announced that it had won a tender from an energy utility in Hong Kong to modernize 152 transformer stations in the city. According to Keymile, they are working with local integration partner Shun Hing System Integration for the project.

Conferences on the second day were more focused on national projects, with Singapore's Infocomm Development Authority (IDA) discussing the Intelligent Nation 2015 initiative. The discussion was headed by Steve Leonard, Executive Deputy Chairman of the IDA. It was seconded by Karim Temsamani, Head of Asia Pacific at Google, who discussed the state of the Internet in Asia. Other discussions covered a broad range of topics, including; Leveraging the Cloud, Future M2M Opportunities, Strategies for Communications Service Providers and TV White Space.

Day Three

Highlights on the third day included booth activities Among them Conax showcased their Complete OTT and Multiscreen Solution, Craze Digitals launched their latest Craze Box and Creative Hope proudly showed off their Mobile Entertainment solution. The biggest showcase came from Huawei when they unveiled the ultra thin, Ascend P6 smartphone, featuring a 4.7inch display 312PPI display and quad core 1.5GHz processor.

Products from across Asia drew crowds on the show floor with representatives from countries, including; China, Singapore, Taiwan, South Korea, and Philippines.

The combined CommunicAsia, Broadcast and Enterprise IT 2013 format proved effective in providing a platform to discuss the latest advancements, products and issues in the communications world. The event also proved significant for the companies attending with numerous deals signed and partnerships created, ensuring CommunicAsia remained not only a prominent gathering of industry executives and officials but also one of the most important in the Asian region.

With the culmination of several successful conferences, Singapore has once again cemented its place not only as a tourism hub but also as a country that is at the forefront of technology, swarmed in the midst of the swift changes in the telecoms, broadcast and enterprise IT sectors. **TR**

Mobile Asia Expo Coverage

Telecom Review attended the GSMA's flagship Mobile Asia event, featuring exhibitions and conferences focused on a Connecting the Future theme.

From the 26th to the 28th of June the second annual GSMA Mobile Asia Expo took place in Shanghai. Telecom Review was in attendance at an event the GSMA described the event as a "resounding success" and its largest ever mobile industry event in Asia.

Two packed exhibition floors featuring goods, games and services from over 200 companies gave more than 20,500 visitors an insight into new technologies, applications, back end solution and accessories.

Among them were China's leading telecoms companies, China Mobile, China Telecom and China Unicom, as well as leading international players and brands, including; AT&T, Alcatel-Lucent, Cisco, Coca-Cola, Ford Motor Company, Huawei, IBM, KT Corp, NTT DoCoMo and Samsung. Attendees were able to experience the latest technology such as Google's latest wearable augmented reality device, Google Glass, while the Ford Connected Car Experience, offered an up close view of connected car technology on an outdoor test track.

The Innovation Labs area of the show floor allowed attendees to experience the latest product demonstration, strategy and offered tips to ensure success in mobile ideas.

One of the busiest parts of the show floor was the GSMA Connected City where a look into the city of the future was offered to delegates, showcasing technology from China Mobile, Cisco, Ford, Huawei, KT Corp and SAP. Highlights included augmented reality dancing with K-Pop Stars, Connected Ambulance with Cisco and a BikeSafe demo from KT using GSP tracking for motorcycles.

Demonstrations of NFC technology were also taking place across the Connected City, showing how SIM based technology can facilitate purchases at vending machines, grocery stores and in public transportation areas.

Driving Economic Change

During the event the GSMA released a report highlighting the massive growth of the Asia Pacific telecoms market, with the number of unique subscribers in the region outpacing the rest of the world over the last decade to reach 1.5 billion at the end of 2012. The GSMA predicts that there will be 1.9 billion unique mobile subscribers in the region by 2017, accounting for almost half of the predicted 3.9 billion globally.

The report Mobile Economy: Asia Pacific 2013, claims that rapidly increasing penetration of mobile services and early roll-out of mobile broadband is driving economic change across the region.

At the end of 2013, the $80 billion invested in mobile infrastructure in the region was found to have generated $1 trillion in GDP for Asia Pacific economies and contributed $100 billion to public funding

The GSMA argues that as a result, with access to spectrum resources and regulatory policy focused on driving further investment, through to 2020 the industry could contribute an additional $2.3 trillion to GDP and a further $200 billion to public funding.

"We are now at the dawn of a far greater growth opportunity and we urge regional Governments and regulators to support mobile operators in meeting that full potential," said Anne Bouverot, Director General of the GSMA. "Making the right decisions around regulatory frameworks and spectrum availability will encourage the mobile industry to continue investing in expanding and upgrading services across the region."

Conference Agenda

The conference agenda for the event featured a dynamic lineup of speakers from mobile operators, consumers brands, investors and industries associated with the mobile market. The program drew more than 2,100 attendees with more than 50% holding C level positions.

Franco Bernabè, Chairman of the GSMA and CEO of Telecom Italia Group opened with a keynote alongside Shang Bing Vice Minister of the Ministry of Industry and Information Technology and Zhou Bo, Vice Mayor of Shanghai. The two-day Mobile Asia Expo conference programme featured keynotes from leaders of organisations including Alcatel-Lucent, China Mobile, Datang Telecom Technology & Industry Group, Huawei, Indosat, ITU, KT, Ruckus Wireless, SK Planet, SK
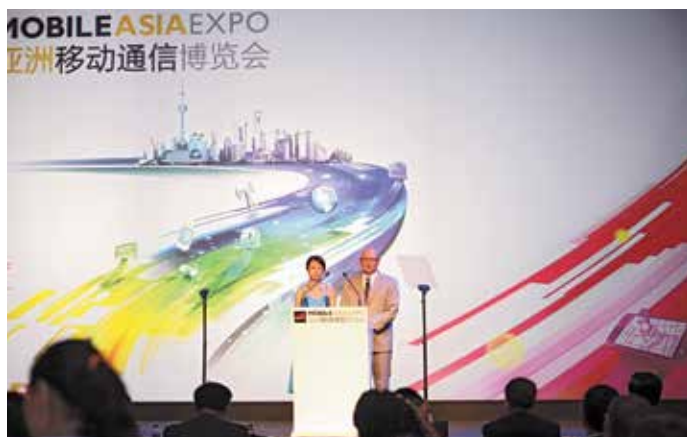
Telecom, Telenor, Telstra and Ubuntu.

At this year's event the GSMA included several other meetings as part of its program including the GTI Asia Conference which is focused on promoting the convergence of TD LTE and FD LTE, to accelerate the deployment of TD LTE in global markets. There was also the Connected Living Asia Summit, the Smart Cities Forum and the ETSI-GSMA Intellectual Property Rights Summit, giving attendees the opportunity to focus on specific industry initiatives or interests

The App Planet program focused on the mobile app developer community, with attendees given the opportunity to attend sessions by Acision, China Mobile and OneAPI. Those with an interest in gaming and entertainment sat in on the Mobile Gaming Forum and Mobile Entertainment Summit sessions, while SIM-based NFC advances were discussed at the Mobile Commerce Seminar. The second annual Public Policy Forum, bringing together representatives of government ministries, regulatory bodies and industry experts from around Asia to share perspectives on the deployment of mobile broadband.

The ETSI-GSMA IPR Summit gave attendees the opportunity to attend several sessions on digital spectrum and intellectual property rights. While for those looking for a summary of the latest developments in the M2M and Connected Experiences market there was the Connected Living Asia Summit, complimented by in depth sessions on mAutomotive, mEducation, mHealth and Smart Cities.

There were also several training programs on mobile strategy, offering learning opportunities from the likes of Awards Solutions, Ericsson, McCann Wordgroup and Simon-Kucher .

Announcements

The event saw several exciting announcements, including from Sony Mobile, which unveiled the Xperia Z Ultra 'phablet' smartphone, a premium Android 4.2 device with 6.4 inch HD display, Qualcomm Snapdragon 800 processor with 2.2GHz quad-core CPUs. The Ultra features 4GLTE connectivity and HD voice, in an ultra slim and lightweight waterproof design. "The Xperia Z Ultra is the most exciting revolution in large-screen smartphone entertainment devices with both the slimmest

and largest Full HD smartphone display* in the world that is second to none." said Calum MacDougall, Director of Xperia Marketing at Sony Mobile Communications. "We're already bringing the best of Sony technology and design across a range of premium smartphones and tablets, and now we are bringing this same premium offering to the large-screen smartphone segment, setting a new standard for others to follow."

To accompany the Ultra, Sony also introduced the Sony SmartWatch 2, a water resistant device with NFC connectivity, designed to be a second screen for Android smarthpones. The device enables users to take calls, take photos remotely, control presentations, check maps, read emails, control their music player and use lifestyle apps.

"The future of wearable devices is incredibly bright with analyst research predicting 41 million 'smart' watches will be sold by 2016," said Stefan K Persson, Head of Companion Products at Sony Mobile Communications.. "We have over 200 unique apps dedicated for Sony SmartWatch with over one million downloads to date and we are continuing to work with our strong developer network

to deliver ever more compelling smartwatch experiences."

Other announcements included the launch of SK Telecom's LTE-Advanced network several months ahead of schedule, offering download speeds of up to 150Mbps. While China Mobile took the opportunity to confirm that it would look to launch VoLTE technology next year, with President Li Yue reportedly describing the availability of a mature voice solution as critical to the development of the telco's huge TD LTE network.

Overall Mobile Asia Expo 2013 was hailed as a triumph by its organizers, the event closing having effectively conveyed its vision of the Connected Future. "We're extremely pleased with the turnout that we've seen this week. The strong level of attendance, particularly among the C-suite of the world's leading communications companies, underscores the importance of Asia in the global mobile landscape," commented John Hoffman, CEO, GSMA Ltd. "From the conference to the exhibition and the many meetings and events within Mobile Asia Expo, attendees were able to experience the vision of the 'Connected Future' today." **TR**

Dell OEM: Catering to the Telco Market

Franklin Flint, *Executive Director of Telco Strategy, OEM Solutions Group, and* **Erwin Meyer,** *General Manager of Dell OEM Telco Vertical*

Dell is looking to increase its presence in the telecoms market by targeting telco customers with its OEM offering. Franklin Flint, Executive Director of Telco Strategy, OEM Solutions Group, and Erwin Meyer, General Manager of Dell OEM Telco Vertical, spoke to Telecom Review about the company's telco business.

Franklin Flint: I started with Dell in 1995. I've been here for 18 years and I was with the networking sales group for the first 10 of those years, I got into OEM group in the early 2000. For some years I was a sales engineer, working with our customers helping them develop their solutions. In 2009, I moved into marketing and immediately recognized the opportunity for us in the telco space, we started building a business case and about 18 months ago we entered the market. I run the strategy and the marketing and business development for the global telco business, but we also have people under me and regional staff.

The OEM group at Dell started about 15 years ago as a very simple premise, that there were companies building solutions that require some kind of computer or hardware that Dell already offered. Hardware that they are not an expert in building but have software services or other devices that need a computer. Companies wanted a computer supplier and they wanted a high quality affordable type of computer.

As a result they came to us, we didn't go to them, and said I want to buy a workstation or server from you, and put it into my product. So the OEM group was born out of that. It started as a handful of

accounts until it grew and became a very large North American business. Then in 2008 we went into Europe and built a large OEM group there, and now we have a large OEM group in Asia that started in 2009 with headquarters in Hong Kong. We have 2000 customers and over 400 employees in our organization, including; sales marketing and sales operations, engineering, and tech support services.

We basically take everything Dell does and allow companies to use it and build their products and sell it to their customers. Some of the most common hardware that we offer is servers. It is a large portion of our business. Single rack in Black Box, plug it in and configure it. Very often they ask us to put their own branding on it. They will take our server and we will help them re-brand the entire box to make it look like their own product, and sell

it as their product. We even provide them with tech support, so if it is their product and their customer, we can still come out and attend to their needs in terms of repair. So it really is an interesting business model.

In the last five or six years we've gone to developing a unique solution just for OEM. We now have a generic version of most of our servers, so it is purchase that already has all the Dell logos removed. Then we have customers who need better stability like firmware, so we created a program where we assure customers that there are a few changes on the product, so they can see there is going to be a new process or a new firmware. They can notify us at least six months in advance so they prepare their resources and they have an extra twelve months of life of overlap.

In the same program we created a more telco centric solution. We did some research when we decided to go into the telco market, using the same resources creating these unbranded boxes with high and stable processors. We created telco certified versions of some of our products to better aim for the telecom market. They are compatible with other solutions and the features are similar.

Are there any particular Asia Pac countries where demand for you product is higher?

We are doing well considering the size of the market with a fair share of just about everywhere. We are doing well in China and in Korea. Japan is doing fairly well. I'm saying that based on how large our sales organization is.

Erwin Meyer: We are successful where our customers are successful.

We are embedded in their solution. We have global accounts so wherever they are growing we are growing. We make our customers more successful by being a part of their solutions.

What is Dell OEM's differentiator?

Meyer: Our OEM offering is unique. We bring the Dell name to our customers and even if you compare Dell to other companies we are one of the most global companies when it comes to servicing our equipment. So in most cases in the world we will be able to service the solution that we are selling. So the supply chain and the way we service our equipment is unique but also the dedicated engineering that we are offering to our customer. I don't see our competitors doing that. We will sit down with our customers and tell them if we have light modification to our system that can serve them better, then we will re-engineer our focus. If you combine those things then we are a unique player in the market.

Flint: Our sales force, we have a dedicated team of over 300 sales people and because they are doing OEM all the time they can anticipate the kinds of issues that our customers are going to have. So when we start to visit our customers and they say they have another interest in another country we already understand the implication of regulatory imports and exports. We deal with that every day with all our customers. So we can help them find the best solution meaning that don't make a mistake then have to rush around trying to solve problems after they happen. We can predict those issues beforehand.

Meyer: The way I like to position it is that Dell is not new to the OEM industry, we are well entrenched in many OEM verticals, like medical or industrial automation. Dell is a very large force in that area. Just look

around in the show and you will find many hidden Dell products. But what we are doing is that we are taking that experience from the OEM environment by offering a longer life cycle on their products.

We are taking all that OEM experience and bringing it to the telco market, so it is a transformation. We've been acquiring companies for the past few years, network, storage and software companies that can help move into the cloud or help them move from private to hybrid cloud. We can bundle those solutions and bring them to telcos. Dell is a leader in cloud infrastructure and if there is anything that is well entrenched in Dell it is the cloud. If you consider that Dell is right now, by terms of infrastructure, the fourth to fifth largest cloud in the world, the experience we gain from those hyper clouds, we take it along with our engineering resources to the telcos. We are having many discussions in different countries in terms of our cloud solutions.

What is the common hesitation from customers in buying your product?

Flint: People don't change just because they want to. We have had conversations with them. We highlight to them the different relationships. We tell them that we take a lot of different responsibilities for them and offer our capabilities, just like we offer the ability to offload some of the tedious manufacturing, supply chain and change management, life cycle management and integration. We can't do everything necessarily for every solution but we can offload a large percentage of it. Then they can shift their focus on to what makes them different rather than being a manufacturer, assembler or integrator.

Meyer: Our customer is not seeing this as change, there is a recognition that change is constant.

If you look at the telco industry, in current technology, where Dell Is not embedded, most likely they will not change it because they have to go through R&D and certifications and it is tedious. But if you look at change from a perspective of design innovation all the time, then we will talk to our customers about new designs then for those new designs they will have to do the certification and validation. Dell is being considered by many customers right now. It is a new solution that we bring to the market instead of fighting and trying to replace the incumbency of the old solutions.

How successful has your solution been so far?

Meyer: In terms of the telco space Dell is quickly gaining market share. In terms of the hyper data center and the hyper clouds, that is where cloud breaking interfaces are taking place. What we are doing is, for example, working with Yahoo and eBay to design specific servers for the cloud. The lessons we are learning in those hyper data centres we are bringing to our customers. We are commoditizing our servers. What this tells you is that in the data centre space, from a profitability perspective 50% of our profits margins are coming from our enterprise business. That is the transformation we are doing right now and will continue to be doing.

In Asia, particularly in China, you have a lot of local competitors or manufacturers, how are you addressing this challenge?

Flint: Surprisingly, we do well in China, because we have large team of local employees. We have people doing business with fellow Chinese people. We are part of their community. We offer a level of quality of service that tends to be considerably higher than the hardware providers. It is easy to design a box test it and deliver it, it is a whole different story to

design a box, deliver it, and create a whole supply chain around it that is always available for it. The Dell culture is about the relationship with the customers and we are good at it, a lot of our competitors don't have that relationship.

Meyer: Let us say that you are a Chinese company and you are looking to export your products, in Europe, the Middle East or even in the US. Then it definitely helps in those markets, whether you are a big or small Chinese company, to have support in place, brand recognition in place. It helps if Dell is part of your solution and it is embedded. Dell is the largest X86 vendor in the US, so embedding with Dell makes a lot of difference. In the OEM market, price is not the only thing that is important. If you look at the medical space the real cost is on certification and servicing that is actually more important than purchasing the product.

Is there anything else that you would like to promote as Dell OEM?

Flint: We talked about the hardware because that tends to get the people's attention but that is just a part of our offering. All Dells services are available to the OEM group. We offer custom version to our customers. For instance we have customer that we've created 1800 numbers for and answer them with their name and then their agent takes care of their product.

Meyer: Imagine what it means if you are a small company and serving your local market. But you are asking how you are going to grow? At Dell we offer you a global supply chain and a global service. We can do that under your own name it doesn't have to be Dell. So what we are saying is on the back of Dell capabilities you can start to globalize with very minor investments, that is a value proposition that is unique in the market. **TR**

Huawei on Track For 10% Revenue Growth in 2013

Huawei said it is on track to achieve 10% revenue growth in 2013, following a 10.8%

increase in sales for the first half of the year.

The company also revealed it is set to generate a net profit of 7 to 8% in 2013 compared to approximately 7% in 2012 "Our success in H1 2013 was mainly driven by the steady growth of the Carrier Network business, the expansion of the Enterprise business, and the fast growth of the

Consumer business, as well as the continuous enhancement of our overall operational efficiency. Revenues and profit are in line with our expectations," said Cathy Meng, CFO, Huawei.

"From these positive indicators, we believe Huawei will generate strong performance and profit margins in the second half of

this year and are confident that we will achieve our goal to increase revenue by 10%."

The company said it would continue to focus on its strategy of increasing investment in core growth areas for the business, and boost efficiency through a series of operational and management reviews and improvements.

Huawei and Qualcomm Complete TD LTE to CDMA Voice Testing

Huawei has completed voice interoperability testing for TD LTE to CDMA using Qualcomm's snapdragon 400 processor and solutions

for Circuit switched Fallback (CSFB) and Enhanced CSFB (ECSFB).

The success is deemed important for the commercialization of LTE voice and giving CDMA operators more choice in integrating an LTE system.

CFSB and eCSFB are considered significant during the initial

deployment of LTE, allowing users to enjoy high speed data services in conjunction with high quality CDMA voice. Both are part of Huawei's SoftMobile solution suite.

Kevin Wu, President for CDMA/LTE Wireless Networks at Huawei, said, "This successful test is a milestone for the commercialization of LTE voice technologies. It gives CDMA

operators more choices for smoothly evolving to a wholly integrated LTE system, and reaffirms Huawei's commitment to protect existing investments and improving the operational efficiency of multi-mode and multi-frequency networks."

Huawei and Qualcomm jointly completed join interoperability testing for FD LTE to CDMA in early 2012.

Alcatel-Lucent and Qualcomm Technologies Enter Small Cell Partnership

Alcatel-Lucent and Qualcomm subsidiary Qualcomm Technologies have set out plans to collaborate on the development of small cell base stations to improve wireless connectivity in residential and enterprise environments.

The collaboration will combine Alcatel's small cell solutions knowledge will Qualcomm's mobile and networking technologies to enhance 3G, 4G and WiFi networks in urban areas, shopping malls and enterprise venues.

Alcatel and Qualcomm plan to jointly invest in a R&D program to develop the next generation of Alcatel's lightRadio small cell products, featuring Qualcomm's FSM9900 family of chipsets.

"This initiative perfectly illustrates The Shift Plan we announced last month, which will see Alcatel-Lucent focus on growth technologies, including those facilitating ultra-broadband access. We also said we would actively seek collaboration with key industry

players. In working together with Qualcomm Technologies - a world leader in advanced wireless platform solutions such as its small cell chipsets - Alcatel-Lucent will continue to be positioned at the forefront of innovation in the small cells market," said Michel Combes, CEO, Alcatel-Lucent.

The partnership is driven by the growing popularity of smartphones, tablets and other mobile devices using high bandwidth video and gaming applications. By working together the two companies aim to accelerate adoption of smalls cells and 'alleviate the impact of mobile data on wireless networks'.

"Small cells greatly increase capacity by bringing the network closer to the user, thus enabling operators to serve the anticipated 1000x growth in mobile data traffic and dramatically improving the experience for wireless subscribers," said Paul Jacobs, chairman and CEO of Qualcomm Incorporated.

"Working together with industry leaders like Alcatel-Lucent, we can accelerate the dense deployment of small cells globally, driving another significant leap in advanced wireless broadband technology and services."

Ericsson acquires TeleOSS Consulting to strengthen OSS capabilities in South East Asia

Ericsson is looking to strengthen its systems integration capabilities for OSS by acquiring Thailand's TeleOSS Consulting.

The company, based in Bangkok, delivers OSS related solutions to telcos, particularly in the areas of inventory and traffic management and software development.

Ercisson said the deal will complements its existing consulting systems integration expertise in these fields and strengthen its customer relations and OSS capabilities in South-East Asia and Oceania.

"The acquisition of the entire business of TeleOSS Consulting Ltd. will complement our capabilities in systems integration for OSS in South East Asia and Oceania, particularly in the areas of traffic and inventory management areas to offer a wide-range of solutions to our customers," said Paolo Colella, Head of Consulting and Systems Integration at Ericsson. "This strategic investment is in line with our long term ambition and commitment to strengthen our capabilities in the IT transformation area."

The deal will see around 50 skilled, Thailand-based OSS system integration professionals join Ericsson.

"I am convinced that this acquisition will provide a valuable addition to Ericsson's world class capabilities in systems integration in the OSS field. Together we can help to ensure high quality service delivery to customers and their subscribers through the combined comprehensive range of OSS solutions. The service professionals that join Ericsson will also benefit from its global presence," said Tosaporn Wongweeratorn, Managing Director, TeleOSS Consulting .

The deal is subject to consultation and customer closing conditions. It is expected to close by the end of Q3 2013.

Nokia Completes NSN Takeover, Renames to Nokia Solutions Networks

Nokia has renamed Nokia Siemens Networks to Nokia Solutions Networks following the completion of its buyout of Siemens half of the venture.

The company will continue to use the NSN abbreviation with CEO Rajeev Suri continuing as CEO and the NSN executive board remaining unchanged. "While our name and brand have changed, I would like to emphasize that our overall strategy and our focus on mobile broadband remain the same," said Rajeev Suri, CEO of NSN.

"Our customers will not notice any difference in our unstinting commitment to delivering superior technology and services across the world. Today's announcement is, however, an exciting new chapter in our transformation story."

Nokia has stated it intends to continue to strengthen the company as a more independent entity and claimed NSN's strong profitability in its Q2 results is testament to the success of that strategy.

NSN reported second quarter net sales of EUR2,758 million, a decline of 14.7% YoY but a 1.% increase sequentially.

Gross margins before specific items were up 38.4% a 12.2% improvement YoY and 4.6% increase sequentially. This was attributed to higher gross margins in NSN's mobile broadband and global services businesses.

The company intends to use increased savings in H1 2013 to increase its annualized operating expenses target to more than EUR1.5 billion by the end of 2013, compared to the end of 2011.

ZTE Awarded Most New Contracts in China Telecom CDMA Procurement Program

ZTE has announced that is has been awarded the most new contracts in phase 1 of China Telecom's 2013 CDMA network procurement program.

The vendor said this was the sixth successive year in which ZTE was the leading CDMA vendor in China.

"We are fully committed to offering China Telecom the most advanced products and solutions," said Fan Xiaobing, vice president of ZTE. "ZTE always strives to deliver the best technology, and the most customized services."

ZTE claims to be the first company to launch SDR based distributed base stations in the Chinese market, enabling operators to migrate from a network architecture based on macro base stations in metro areas to a distributed architecture, enhancing indoor and rural coverage.

The company has previously introduced more compact and lower power radio units to China Telecom, as well as a signaling storm solution.

Huawei: Realizing the Potential of the Cloud

Victor Chow, *Global Head of Operations /COO Cloud Business & Hosting Services, Huawei*

Huawei is moving aggressively in the enterprise space with a particular focus on cloud computing. Victor Chow, Global Head of Operations /COO Cloud Business & Hosting Services, spoke to Telecom Review regarding the company's recent business moves and plans for the cloud space.

Can you give us a brief on Huawei as a company and an update on your current activities?

I think you are aware in the past Huawei has been seen

as traditionally serving telco based companies, but in recent years we have been moving into the enterprise space and we are proceeding very aggressively.

We know for a fact that we've been making good progress in the telecom space, but now we are looking into other areas of growth as well. Having seen the convergence of both telco and IT, we've decided to add to it as our service.

Huawei has learned from our past ventures and performed well through the years, and now we are applying this knowledge in the data center space. I believe that we've carved our place in terms of cloud computing products and we really do offer an end to end solution when it comes to data-centers. Perhaps in the past we were outsourcing bits and pieces but now we can do everything. That is Huawei's strategy, we try to keep everything in our control, so that we can offer customers a single point of contact.

In terms of cloud computing, we know that we have competitors who have been in the business for quite some time, companies like HP and Dell. We may not

be as competitive as those PC companies in terms of pricing, but the reason is simple. It is different for Huawei to commit in bulk compared to them; because we are still young and small. We have not reached the same critical mass or huge volume, but we are getting there.

We are trying to make our servers and switches as competitive as possible. Although there is a common notion that anything from China is cheap, in this business right now it is not the case. We have not reached the customer base of it yet and we cannot get the volume that we need to get it to that price point. In this sense, we do apologize to our customers.

In terms of cloud computing technology and virtualization technology VMware has been around much longer than us. Their products are very mature and feature packed so through the years their licensing fees have gone up as well. Huawei just started its cloud computing journey and in doing so the products we have are based on open sourced technology, OpenStack, and we are trying to keep them very simple. We are a new kid on the block, in terms of cloud computing and the IT space, but we are learning and are very open and innovative.

If you think of it this way, when you have product that is very feature packed but very difficult to use then the user-experience is not there. Everybody has to learn through a very steep learning curve. Just like with VMware, you have to be a VMware certified professional to use it. But for Huawei it is entirely different. We always want it to make it simple, so it is easy to use, thus the user experience is there. So that is how we create our solutions and why we were able to launch our product so quickly.

Huawei has been making phones as an OEM, for Vodafone and other US telcos. So similarly to what we are doing as an OEM, we offer customization. Unlike our competitors that would tell you what you can and cannot do, for us it is the other way around, you tell us what you want and we will do it for you. We customize things for them and we improve the look and feel as well. That is our strategy and how we compete.

How long have you been in the cloud computing space?

We have been here for about three years and our growth is roughly doubling every year. Our server technology is improving a lot. So it is about 50% increase every year.

In the cloud based space, in terms of SDN and being on a cloud based solution, do you see that as a

competitive advantage of Huawei?

I will not release too much information about SDN. But we are very keen, because we are involved in some regulatory bodies. I think when you talk about SDN you are also talking about common standard, from which there should be interoperability. And definitely Huawei is involved in all these different forums in achieving that.

What about the security issues that have received international attention?

Everybody knows that countries are just trying to protect their own enterprise. We tried to be as transparent as possible and to comply with government requirements and regulatory issues. We are always misunderstood. The customers do understand that we are a company that is just evolving and is a bit more hungry in terms of capturing different markets particularly in the IT space.

We are the number two player in the telco space. We are near the top and that is why we are getting these sorts of stories. Despite this, we don't dwell on it, but rather our founder decided to venture to different spaces, like the IT space. Huawei works well with competition. We are more aggressive. We don't relax. We focus on our R&D, in terms of products and services. Although the US

doesn't buy our products, we have a presence in the Silicon Valley and we do employ people.

Geographically, where do you think the biggest growth lies?

Our biggest market is always in China. We are looking in the Middle East and Africa as well. Myanmar is another country that is doing well. Asia-Pacific is quite mature and we are focusing on it as well. Elsewhere Mexico City, Brazil, and Venezuela in Latin America are big markets.

Are you focusing on enterprise cloud and hybrid cloud?

At the moment we are in the SME space, we just started in this area for cloud computing. In particular we are looking for startup companies, the ones who want to experience cloud. We are also starting to create our virtual private cloud which is more for enterprise. We are focusing our SME offering more on the hospitality sector as a cloud customer.

Which Asian countries are you targeting your rollout?

Most of our cloud is in China. Singapore was the first commercial cloud. After the success of Singapore we started to build new cloud infrastructure. We have cloud infrastructure in Africa and we also have it in Hong Kong with PCCW. **TR**

Tata Communications Media Services:
Reaching Pole Position

Sameer Kanse, *Business Head,*
Tata Communications Media Services

> **"** When customers are looking for an end to end solution we go to technology partners and combine their technology with our fiber and data center capabilities to create a new service **"**

Tata's Media Services division was formed as part of the carrier's strategy to address specific industry verticals with end to end solutions, beyond MPLS or Ethernet connectivity. Today the company helps broadcast large sporting events including Formula One racing. Sameer Kanse, Business Head, Tata Communications Media Services, spoke to Telecom Review regarding the company's media business.

Can you give us a brief about Tata Communication Media Services?

Tata Communications Media Services is a division within Tata that focuses on media as a vertical, to offer solutions and a business offering to them. This is the network map beyond IP connectivity that we have, it is not telepresence, but a dedicated video network. On this network we are carrying big sporting events, including Formula 1 and Wimbledon, and it can broadcast video all over the world. F1 is also one of the customers, for which we do distribution and contribution. We host the formulaone.com website.

At Tata there has been a concerted effort over the past few years to create vertical solutions. Banking was the first vertical we targeted and media is the second one. In banking we offer solutions, not just selling MPLS or Ethernet, but actually providing an end to end service. For example, we manage the entire ATM network for a lot of banks in India, including space, the machine, the cash refill and security as one bundled solution. This is all done on a per transaction basis, so costs become linked to the bank's business rather than a set amount.

What solutions does Tata Media Services offer?

Within media services we have two main solutions, one is media movement and the other is media management.

Media movement focuses in moving live or file based content from A to B or multiple point Bs. These are divided into three areas, conventional TV screens, alternate screens and the feed from the live event location. To serve these verticals we have teleports in India; and are connected to multiple teleports elsewhere. For example in Asia we are also connected to teleports in Hong Kong and Singapore. We can provide a one stop shop uplink service globally, irrespective of where the channel origin is or where it needs to go.

Tata also has a video connect offering, which is a dedicated media network. This enables sport events like F1 to be picked up from the race track and then taken to the broadcaster, like Sky or Fox, for onward delivery. What is the difference between doing this on fiber or conventional satellite? It is much higher bandwidth for a much cheaper price, but more importantly beyond that it enables multiple screens. There can be feeds coming from each driver, which are then sent to broadcasters for them choose what

> " At Tata there has been a concerted effort over the past few years to create vertical solutions "

combination they will show on screen. This is not really commercially viable on satellite. We are also doing the same for Women's Tennis, picking up the feed from tennis stadiums across the world then bringing it to the IC and then to the primary screen. It can then be adapted to complimentary screens like the iPads and iPhones before being processed onwards to the right holding broadcasters.

Then there is our Content Delivery Network (CDN) which enables activation based content on a second screen, depending on the phone network or apps. We also have an offering called content flow which enables activation of content. In the cloud you don't need a server here and there, you can simply use the cloud to push content in a PASS manner. At a protocol level it is User Datagram Protocol (UDP) instead of TCP/IP enabling security and the ability to give certain companies content rights.

What are you media management products?

For media management we have two product offerings; content transform and content layout. Content transform is a partnership with Harmonic where we

offer the ability to transport content to multiple devices via multiple codecs. It allows content to be pushed into the cloud and to be transported to multiple commands. Once it is transported, content flow or CDN is used to move content to the right place, like uploading it to YouTube. From there it becomes a single service in the cloud as a pay as you go model. This means it is scalable, with no upfront investment for those who want to digitize big archives etc. We take the content, digitize it and then transport it and help monetize it.

The second service that we have is content layout, a layout management service in the cloud in partnership with Thompson Grass Valley to provide play out service in the cloud. Content comes in you create your play list and graphics and transmit it out.

How does this partnership strategy work?

If you look at it at Tata's media business it is built around ladderized service, which we offer on the telco, fiber and data center level. But most importantly we have the ability to offer enterprise based services in partnership with technology service providers. We are not inventing new technology but we are coming up with new services. When customers are looking for an end to end solution we go to technology partners and combine their technology

with our fiber and data center capabilities to create a new service. Customers could do it themselves, but it would be costly and they would struggle with some parts.

Traditionally this has been done on pipes, but we launched services together with Net Insight for managed and unmanaged IP networks. The technology enables us to take care of the fact that in an IP world you cannot determine the path taken, it can take any path which can lead to different level of jitter or latency. The technology takes care of this to ensure that a change in jitter or latency does not cause any pixilation to the screen. This is something new we are offering to customers.

Is Tata involved in Software Defined Networking?

We are but not in the media services domain, more is being done by the IP team. SDN is a class of service for an IP network and in the verticals markets it allows some applications to be given higher priority than others.

There are two areas to tackle SDN in the media vertical. When customers are producing content and collaborating during

production it is very important because from an editing stand point the 300 to 600 millisecond difference in latency is noticeable. However, if we are talking about contributing content it is not as important because the human eye can only detect a switch of 1.5 seconds or more, and no network irrespective of switch or path will have over one second latency.

What is more important for broadcasters is jittering, we ensure that there is no jitter when they switch network from one service provider to another. This is taken care of at the network level itself.

The price of internet bandwidth is going down and ports are getting bigger at both ends, including on the broadcast network; meaning more people have access to higher bandwidth connections than ever before.

As a result congestion is also increasing because so many people are trying to access content at the same time, but if there is free flow of channels everywhere then there is no issue of buffering. So while SDN is a good concept, SDN applies more on the banking side, or mission critical applications than for the media vertical. **TR**

700MHz: More Than Just Spectrum

Radio Frequencies or spectrum is one of a telecom operator's most valuable assets. It is the lifeblood as well as the main enabler for an operator to be able to offer services to end-users. However, it is a finite asset that is coming under such heavy demand in today's mobile communications that operators, governments, and other sectors have begun evaluating the efficacies of its usage. The reevaluation of spectrum is a move towards the streamlining and realigning of not only its core usage and functions through different industries. But also to create proactive measures that would encourage the possibility of interoperability over one common spectrum not only as a nation, but a global community.

Needless to say, if there is one event that leading the way, on the evaluation of spectrum, there is none more significant than the fact that the world is moving towards 4G. The 4th Generation of mobile communication, more popularly known as 4G LTE (Long Term Evolution) is synonymous to bigger and faster mobile data connectivity, and when we talk about data connectivity it is always congruent with spectrum.

However, the examination of the spectrum assets didn't just come at the spur of the moment, particularly within 700MHz. This spectrum is or was, depending on the country, originally owned by broadcasters. The 700 MHz band is divided into two categories – the lower 700 MHz band and the upper 700

MHz band. The lower band is 48 MHz while the upper band is 60 MHz.

In the US, the call to reallocate this spectrum was instigated prior to 2002 to pave the way for digital TV. The FCC reallocated the 698-746 MHz band (Lower 700 MHz band) that was originally used by TV Channels 52-59, while the upper band was for TV Channels 60-69. In relation to this, it was in 2006 that the U.S. House of Representatives approved a budget package that would require analog television broadcasters to clear the 700 MHz airwaves, and three years later in 2009 the transition was signed into law. Some $1.2 billion was allocated in funding to be included in public safety communications where the spectrum is being utilized.

Today the 700MHz band is being laid out as the core spectrum in numerous 4G initiatives in the US. Earlier this year, AT&T announced that it struck a deal with Verizon Wireless to acquire 700MHz spectrum covering 18 states and a total of about 42million people. On the same note, Verizon announced that it would start building its 5000 LTE cell sites in the Advance Wireless Services (AWS) band.

In Asia, the GSM Association has spearheaded the call for spectrum harmonization particularly in the 700MHz band. The Asia Pacific Telecommunity 700MHz band plan was formalized in 2008 and has been standardized by both the 3GPP and ITU. Although the thrust is aimed at Asian countries, the

APT 700 initiative is for all countries. In fact, the South Asian Telecom Regulatory Council (SATRC) has jumped on the bandwagon towards APT700. There are also regulatory bodies from Afghanistan, Bangladesh, Bhutan, India, Iran, Maldives, Nepal, Pakistan, and Sri Lanka that have begun the adoption plan, with some of these countries having announced that they will start freeing up their spectrum to pave the way for mobile broadband usage. Other Asian countries that have followed suit include Malaysia, Singapore, Japan, Taiwan, Brunei, Papua New Guinea, and Tonga.

While Australia has recently concluded auctioning off its 700 MHz spectrum to both Optus and Telstra, and New Zealand is expected to follow in the next quarter. Outside Asia, the African Telecommunication Union has shown interest in adopting the initiative and Latin American countries like Brazil, Mexico, Colombia, Ecuador, Chile, Costa Rica, Panama, and Uruguay are also expected to join.

This community of 700MHz is beginning to grow, and according to a report by GSMA Intelligence, numerous regulatory bodies in Asia are utilizing digital dividend spectrum to boost 4G LTE adoption. Wireless Intelligence reports that 4G LTE connections will increase almost ten-fold between 2013 and 2017 equating to about half a billion in total. Around half of global LTE connections will come from Asia in the next five years. However, it

was also reported that most current 4G LTE connections are not using the 700MHz band, with about 90% of these commercial 4G LTE roll outs currently utilizing frequencies ranging from 1700MHz to 2600MHz. The benefits of 700MHz are being carefully examined as the frequency allows operators to deliver cost efficient urban coverage and extend their reach to rural areas.

One of the most attractive components of 700MHz is its ability to penetrate walls and its extended reach compared to other capacity bands, which would further propagate broadband usage. In addition, mobile operators can improve indoor availability and indoor quality of mobile broadband services in urban areas. These unique propagation characteristics mean cost-efficient in-building penetration in comparison to other services like HSPA+ using the 2100 MHz band.

The assurance of seamless coverage is considered vital for mobile services. According to a study by the GSMA and BCG, the 700 MHz band offers a sweet spot for mobile services, with an ideal combination of range and data capacity. At 700 MHz, the signal covers a reception radius of 10km, compared to 6km for 2100 MHz based signals. Costs are therefore lower, with the 700 MHz band requiring only one third of the infrastructure expenditure needed for deployments in the 2100 MHz band. Halving capital costs is conservatively expected

to take at least 5% to 10% off service costs, benefiting low income groups. Verizon has stated that its 4G LTE network, operating in the 700MHz band, is five times more efficient than its 3G network.

It was also noted in the report that this extended reach would significantly benefit people in rural areas, while entrepreneurs and small companies would be empowered to reach customers as well. Thus, a substantial economic increment would come from increased productivity in all sectors. Social benefits in rural areas would be expected, due to the capability to provide better education and healthcare.

While in the long run it could enable development and improve access to information, financial services and entertainment in rural communities. The GSMA/BCG report concluded that 700MHz mobile broadband would add an estimated $729 billion to the GDP of Asia Pacific nations by 2020, generating about 2.2millions job and adding about 4.7 times in tax revenues to nations.

Although the APT 700MHz plan and the thrust towards 700MHz harmonization is at its early stages, the economic benefits are huge. However, beyond these numbers there would be a wider benefit to the global mobile community, communicating through one channel, the 700MHz frequency high way. **TR**

Myanmar: The winners and losers

After a lengthy auction process the two winners of Myanmar's telecoms licence auction have been selected. Telecom Review looks into the initial strategies outlined by the two companies, and the opportunities and challenges they will face.

Myanmar has selected Nordic carrier Telenor and Qatar's Ooredoo as license winners following a competitive tender process which received over 90 applications from telecoms companies and consortia across the world.

The 15 year licences will be issued by September and require the two operators to launch services within nine months. Both operators will be subject to coverage requirements aimed at reaching the Myanmar's large rural population.

The winners will compete against Myanmar's two existing operators and be tasked with increasing penetration in the country, currently believed to stand at around 11%.

Should either winner fail to complete the licensing process a consortium of France Telecom and Japan's Marubeni has been named as the backup candidate. Other unsuccessful bidders were India's Bharti Airtel, Malaysia's Axiata, Digicel, Millicom, Vietnam's Viettel, Singtel/M-Tel consortium, MTN, and KDDI/Sumitomo consortium. A bid for Vodafone and China Mobile was withdrawn after further evaluation of the investment required.

"We are delighted that Telenor is a winning bidder in what was a highly competitive telecommunications licence tender in Myanmar. said Jon Fredrik Baksaas, President and CEO of Telenor Group. "We thank the government for giving Telenor

the opportunity to support the country in achieving its goals, and for the open and efficient bidding process."

"Myanmar will be an important pillar in our growth strategy and we are fully committed to responsibly leverage our group competencies to provide access to mobile communications services for the people of Myanmar. We now look forward to working with the authorities in Myanmar on the final steps in the licence process," he added.

Telenor has already appointed an executive team to lead its Myanmar operation with Petter Furberg, CFO of Thailand's dtac, set to take up the role of CEO at Telenor Myanmar.

Ooredoo said it would apply its global and regional knowledge in Myanmar to deliver a next generation mobile network and a range of mobile services.

The company stated that its investment, reportedly set at around $15 billion over the 15 year licence period, would generate significant number of jobs directly and indirectly.

The group highlighted its experience in developing, delivering and investing in communication services in the ASEAN region, with its regional assets, including; Indonesian, fixed and mobile service provider Indosat, and investment in Singapore's integrated communications provider Starhub and Laos fixed and mobile provider LTC.

Sheikh Abdullah Bin Mohammed Bin Saud Al-Thani, Chairman of Ooredoo, said: "We're very excited about winning a licence in Myanmar and we look forward to working in partnership with the government of Myanmar to develop a world class next generation network. Ooredoo will bring all of its experience of developing and delivering networks in the ASEAN region to Myanmar. Ooredoo has been one of the fastest growing telecommunications companies over the past five years and our ASEAN operations have driven a significant part of that growth. Myanmar will undoubtedly become a key market for Ooredoo as we build out our network and deliver easy-to-use, customer friendly and life-enhancing services to the people of Myanmar."

Jeremy Sell, Ooredoo Chief Strategy Officer, told Reuters that he considered Myanmar's relative lack of mobile infrastructure as advantageous because it would mean the company would not need to upgrade age old networks, but could create a 'purpose built data network with

voice capabilities'. He added that he expected the Myanmar operation to break even after four years.

Telenor has said it will build a state of the art mobile network in the country using HSPA and LTE ready technologies and plans to achieve nationwide coverage within five years. As part of an initial offering anticipated for 2014 the company will launch a full range of voice and data mobile services. The carrier's strategy in the country will consist of four basic pillars:

• Building a technically-advanced and extensive mobile network.
• Driving significant growth in mobile penetration through a rapid network roll-out and providing affordable services through an extensive distribution network across the country.
• Becoming the market leader in Myanmar by offering the most comprehensive portfolio, of relevant mobile services of high quality to everyone.
• Offering good quality service and an excellent customer experience we aim at creating loyalty and trust with our future customers in Myanmar.

"This strategy reflects Telenor's vision to help customers get the full benefit of communications services in their daily lives. We are also fully committed to ensuring that the strategy will be executed with high levels of corporate governance and transparency, as we establish world-class operations in Myanmar," said Sigve Brekke, EVP and Head of Telenor Asia.

So having gone through a lengthy auction selection process to win the right to offer telecoms services what can the two operators expect from Myanmar?

A recent survey of residential and business users in Myanmar's major cities suggests the country hosts a rapidly growing telecoms market with a strong demand for services.

Analysys Mason recorded a penetration rate of about 50% among adults in the country's urban areas, much higher than the 3% to 10% estimated during the past few years.

However, through further analysis the research firm highlighted both the 'phenomenal' opportunity and the challenge awaiting operators in the soon to be liberalized market.

The survey base consisted of 1000 residential consumers aged between 18 and 65 and 200 businesses in Myanmar's major cities, asking about adoption, usage, and attitudes towards mobile services.

Among the findings were that mobile penetration is high and set to grow in major cities, but a lack of rural coverage may undermine government targets. Rural coverage is considered crucial because around 65% of the country's population live in rural areas.

Analysys said its survey data suggested a countrywide penetration rate of 11% localized entirely in major cities. While the country's estimated 1200 to 1600 base stations, imply little or no rural coverage.

Of those surveyed more than half had been using a phone for less than 12 months suggesting enormous year on year growth in the market. However, Analysys was not convinced that the government would achieve its targets for mobile penetration by 2015, expecting overall mobile penetration to exceed 50% by 2017.

"We believe strongly in the market's potential, and expect it to outperform many of its nearest neighbours over a comparable timeframe. However, it seems unlikely that the government's stated target of 50% mobile penetration by 2015 is achievable because of the lack of infrastructure outside the cities," said the research firm.

Uptake in urban areas of Myanmar is expected to continue to grow rapidly, with almost 40% of non-subscribers surveyed saying that they intend to own and use a phone in the next 12 months. This uptake is expected to be helped by the recent discounting of SIM cards via a lottery system, which has increased access to low-income groups. But the average price paid for a SIM card by those surveyed, at $450, does question the effectiveness of these schemes, while also highlighting a strong willingness among consumers to pay for access to services.

Analysys' forecast assumes a rapid network build out, including deployments in rural areas and capacity increases to serve the remaining 50% of the urban population. But it was suggested several factors could undermine this outlook, including a lack of interest in services from some groups in urban areas and an untested market for paying for services in rural areas.

The research firm also highlighted an issue for those operating close to the country's borders to Thailand and China. Networks within these countries are reportedly popular among Myanmar's early adopters and likely to be superior to Myanmar's own networks for the foreseeable future.

For Ooredoo another problem has emerged relating to ethnic tensions that have surfaced in recent months.

Sectarian violence, beginning in Rakhine state last year claimed 167 dead, the majority of which were Muslim and three anti-Muslim riots in central and Northern Myanmar left about 50 Muslims dead, according to Gulf Times.

The awarding of one of the licences to Ooredoo sparked religious hatred among Myanmar's radical Buddhists because the company is based in Qatar, a Muslim country. In the hours after the announcement one of the leaders of a radical national Buddhist movement called for a boycott of Ooredoo.

Considering around 90% of Myanmar's population is Buddhist a widespread boycott could cause problems for Ooredoo as it begins operations.

The government has stood by its decision to award the licence to the company with U Ye Htut, a government spokesman, telling the New York Times that Ooredoo was selected on the basis of its services, particularly the good telecom service it provides in Singapore as an investor in Starhub.

Myanmar's telecoms auction is considered a test case for the economic and political change promised by the government since coming to power in 2011 and with a telecoms bill still making its way through parliament all eyes are expected to remain fixed on the market.

Will the price of operating in the country prove to be worth the effort for the winners? We expect to find out more in the next few months. **TR**

Inmarsat: From Mobile Satellite to Satellite Communications

Drew Brandy, *Vice President, Enterprise Industry at Inmarsat*

Telecom Review recently spoke to Drew Brandy, Vice President, Enterprise Industry at Inmarsat, to gain an insight into the company's presence and business in Asia.

How is Inmarsat's presence in Asia developing?

We are really seeing the benefits of interaction with the customer and I think we have a better understanding of the market requirements. Inmarsat has been busy recently, with two satellite launches this year and the introduction of our new service, HDR. It is a very exciting time ahead. Global Xpress, our Ka band broadband service, is also around the corner and we are in the midst of a transformation from a mobile satellite company to a satellite communications company.

Where is the fastest growing segment of your business right now?

It all depends on what part of the business you are looking at. Our maritime segment still represents fifty percent of the business, and it is performing well with conservative and healthy growth. Our enterprise business is growing largely because we are expanding into so many new areas compared to previous years. We are finding satellite is more relevant for M2M in the energy, oil and gas sector for example. In our traditional markets such as media, we have move beyond the satellite news gathering vertical to pure connectivity. With the introduction of HDR later this year news gathering won't just be about remote regions in the world, we can also deliver a compelling proposition to news gathering that can be taken locally. So even in areas where terrestrial networks are available, broadcasters can utilize a satellite connection for those types of services. We have found ways to re-position our portfolio to be more relevant to our existing customers but also increased its relevance to new customers.

The nature of the media business in areas like breaking news means that they need services that can go anywhere so they don't have to rely on a terrestrial connection. We've coined the phrase 'from backpack to broadcast in five minutes' and it is quite a compelling proposition for the media. The media segment has a voracious appetite of our service because of the streaming capability.

Last year we significantly enhanced our M2M capabilities which are geared towards industries with different requirements. It is not as much data but it is about transacting data on a regular basis. We cover a wide array of market sectors, including; construction, mining, oil and gas, utilities, transportation, logistics, education, health care, and the aid industry and those are all land base areas. For the maritime and aviation businesses, we have increased the ability to distribute content over our network. Whether it is a maritime vessel, a plane, or train, for us it becomes a proposition that we can deliver on behalf of these organizations with a focus on benefitting their customers.

Are you seeing satellite communications as a potential enabler for WiFi on commercial flights?

We see being able to connect to WiFi on these aircraft with passengers using their own devices to connect to a single satellite dish as the direction the industry is heading. Like BYOD people want access to their own content while they travel, be it to download a movie or a file to work during the journey.

How much do your services cost in comparison to a terrestrial network?

That will always be the barrier for the take up of a new service, it is about cost. But if you look at the cost during the first call on mobile, it was $10 a minute, that is exorbitant pricing. We are seeing pricing come down much

more attractive level. It is a fact, for now, that we won't achieve the pricing of the terrestrial networks. But it is important to recognize the environment that these technologies are being used and to price the service accordingly, so that people can use it and benefit from it.

What are the key markets for Inmarsat in Asia Pacific?

Maritime is a key market within this region. Media is also very important for us. The feedback we had when we introduced our new streaming service in this region is a reflection of the aggressive appetite when it comes to bandwidth. When I look at the introduction of our high end Extreme service in 2009, I use that as a representation of what could happen when we launch our HDR service. This is a region of the world where people are looking at bonding terminals together to achieve much greater throughput than even we offer.

The Chinese and Japanese broadcasters have a huge appetite for improved quality in order to provide better footage of events around the world back to their studio and to their end-users. Therefore I see it as absolutely key in 2013 to get the HDR service launched and to trial it with customers in this region. We launch the HDR service in the fourth quarter of this year, with the 710 terminal, and it is a very exciting time because HDR has the ability to revolutionize the capabilities of satellite news gathering.

What are the main benefits of the new 710 terminal compared

to your previous terminals, aside from mobility?

The differentiator of this terminal is that it supports higher streaming capability and also has built-in terminal bonding. You can take two 710 terminals and attach them together with an Ethernet cable to do simultaneous streams that broadcast back over 1Mbps. To have that capability today requires some sort of third party device to connect through the terminals, this means additional costs and additional set up time. The 710 can connect multiple terminals, you can combine four to get close to 2Mbps streaming. The idea behind it is to create the versatility and flexibility for customers.

Can you tell us more about Global Xpress?

Global Xpress is based on the Ka band frequency, so it is very different in terms of performance attributes. The service allows us the ability to deliver a portable or fixed type of solution. So we are now very much moving into the VSAT space, being able to offer larger dishes with much greater throughput. Global Xpress offers speeds of between 5 to 15 Mbps, which is a dramatic leap forward in terms of throughput. As a result it has a very different consumption model and we've created an opportunity for our partners to buy bandwidth and repackage services as they see fit. It offers business flexibility to make it more customizable to the way the end-users are utilizing the service.

In terms, of country or market, where specifically are you targeting these products?

Global Xpress will focus around our maritime proposition and ensuring that we adjust requirements to our maritime business. When we started developing the Global Xpress concept there were a number of key markets that we identified, aside from the government business and aviation industry, that we would tap into. But they are priority areas. We also see tremendous opportunity in the enterprise space and we are currently working on developing an enterprise proposition both for the energy sector and the media.

Do you see Global Xpress as an alternative solution compared to terrestrial networks in rural areas?

Perhaps and I don't see why it couldn't but the decision always come down to the price issue, and it is still cheaper to have a terrestrial connection. Security is also an issue as many of our customers want security in their satellite connection. For the most part, we have delivered our services where terrestrial connectivity and mobility, 3G mobile networks, have not been available or unreliable.

Is there any consolidation in the satellite businesses?

We've seen this happening in the past few decades. We acquire organizations that we think will strengthen our value proposition and I expect that to continue. **TR**

SES Extends Asian Footprint Through Mediascape and IPMTV Partnerships

Satellite operator SES has extended its Asian footprint through partnerships with MediaScape of the Philippines and IPMTV of Thailand.

Annie Naval, COO and MD of MediaScape highlighted the success of the company's direct-to-home satellite TV offering, Cignal, nationwide, with the services surpassing half a million subscribers and

expected to hit 600,000 by the end of 2013.

"We have seen tremendous growth in subscriber numbers and demand for quality HD content. We are confident that extending our partnership with SES will allow us to maintain our position as the leader in DTH satellite TV in the Philippines by expanding our HD lineup to include a wider variety of premium

Under a multi-transponder, multi-year deal with SES, Cignal aims to expand its services with DTH offerings and will particularly utilize the SES 7 satellite at 108.2 degrees East.

Deepak Mathur, SVP Commercial, Asia-Pacific and

the Middle East at SES, said: "SES-7 is a powerful satellite for the Philippines, providing comprehensive coverage and high throughput across the Philippine islands. We are happy to be able to provide MediaScape with the additional capacity they need to help them meet the needs of their growing audiences and maintain their leading position in DTH satellite TV in the country."

SES' partnership with Thailand's IPMTV will provide the broadcaster with additional capacity on the SES 8 satellite and has renewed a multi-capacity deal on the NSS 6 satellite. The deal will allow IPMTV to double its reach to four million households in Thailand by the end of 2013.

"In addition to reaching more homes, the additional capacity will enable us to broadcast local content, allowing us to fill a gap in the broadcasting landscape which cannot be met easily by international players. We are delighted that we now have the flexibility to cover the news and events that resonate best with local audiences. We have a strong partnership with SES and look forward to exploring the development of HD content in Thailand in the future," said Manop Tokarnka, CEO, IPMTV.

SES 8 will be launched later this year and will be co—located with NSS-6 at the prime orbital location of 95 degrees east.

SES Signs Capacity Deal with MNC SKY Vision

SES has signed a deal with Indonesian satellite Pay-TV

provider MNC Sky to provide capacity on the SES-7 satellite.

The deal will support the expansion of Indovision, MNC's TV brand, as it looks to offer a Chinese-language Direct-to-Home package with more than a dozen Chinese language channels.

Rudy Tanoesoedibjo, CEO of MNC Sky Vision, said, "We see continued growth in the pay-DTH market in Indonesia and are delighted to be able to leverage SES' global network and deep industry expertise to broadcast more content to meet the diverse needs of our subscribers in Indonesia."

The multi-transponder and multi-year deal provides Indovision with access to Ku-band capacity aboard SES-7 located at 108.2 degrees East.

Use of the capacity by Indovision is subject to regulatory approval.

SES Signs GSM Backhaul Deal with Supernet

SES has signed a multi-million dollar contract renewal with Pakistani satellite network provider Supernet.

The multiyear deal will supply Supernet with C-band capacity

on the SES NSS-12 satellite at 57 degrees East.

SES said the capacity along with Supernet's system integration capabilities provides high quality GSM backhaul to Pakistan's mobile operators. It is expected to further improve network coverage in the country, providing voice and data service in remote mountainous region in the north and hard to reach areas in the South.

"SES is a trusted partner and an industry leader. We and our customers are extremely satisfied with the performance of the NSS-12 satellite throughout our networks. We are happy to enhance our relationship with SES as we continue to provide world class cellular backhaul solutions in Pakistan and in the region," said Hamid Nawaz, COO Supernet Limited, stated: Deepak Mathur, Senior Vice President

Commercial, Asia-Pacific and the Middle East at SES, said: "We have been working with Supernet since 2010 and are delighted to be able to support their growth, as the cellular industry continues to enjoy tremendous growth across Pakistan. Supernet will be able to benefit from the great location of NSS-12 to enable the delivery of voice and data to underserved markets and rural areas in the country."

Intelsat Announces Two Agreements with Asia Pac Media Companies

Satellite provider Intelsat has announced two agreements with media and telecoms companies in Asia Pacific.

Hong Kong based TVBI Company Limited, the worldwide operating arm of Chinese language programming product and distributor Television Broadcasts Limited, recently renewed a multi-year agreement on the Intelsat 19 satellite. The company will use the capacity to deliver premium content to customers in Asia Pacific.

Intelsat also recently signed an agreement with Japanese telco KDDI to deliver managed media services via the IntelsatOne network. An IntelsatOne edge node at the company's New York City location will enable KDDI to connect its customer's four US bureaus, as well as a European bureau, with its Tokyo headquarters over KDDI's fiber network, providing multiple video, file transfer and voice services.

Intelsat claims to offer the premier video neighborhoods in Asia Pacific with excellent penetration throughout the region.

"These agreements exemplify the aggressive growth in media distribution services across Asia-Pacific," said Intelsat RVP of Asia-Pacific Sales Terry Bleakley.

"Major programmers in the region continue to turn to Intelsat's premier video neighborhoods for the flexible delivery of unique content on multiple platforms, reinforcing our critical role in the global infrastructure."

O3b signs rural 3G backhaul deal with Malaysia's Maju Nusa

Satellite operator O3b has announced a multi-million dollar long term capacity deal with Malaysian telecoms provider Maju Nusa.

Under the deal, O3b's satellite backhaul will be combined with Maju Nusa's RAN sharing strategy, enabling voice and data services to be profitable for mobile operators substantially further into the network. The extra capacity will enable Maju Nusa to deploy mobile data services significantly further into mobile operator's networks than previously, reaching rural communities in Malaysia with little or no access to broadband. Maju will be able to deliver 3G services to customers over satellite from 2014.

Maju Nusa offers a range of broadband and networking technology, solutions and services across multiple verticals, including; SMEs, businesses, consumers and telcos. The contract with O3b will help the company achieve its aim of closing the digital divide between rural and urban Malaysia.

"We are looking forward to growing our business with the help of O3b. Maju Nusa will employ O3b's capacity to extend our reach to remote areas by offering high bandwidth, superior quality of service and still be more cost effective when compared to traditional GEO satellites. This announcement is an important step forward as we look to play our part in the 1Malaysia initiative, closing the digital divide between rural and urban areas," said Shahruddin Salehuddin, Managing Director, Maju Nusa.

O3b claims the contract makes it the first satellite operator to enable a major 3G network deployment over satellite, providing "fiber equivalent capacity".

"We are delighted to be announcing our first mobile backhaul deal ahead of our service launch. This will bring 3G services to hundreds of thousands of people who until now have been without broadband connectivity. O3b's speed and affordability is a perfect complement to Maju Nusa's innovative 3G network in delivering value to Malaysia's mobile operators," said Steve Collar, CEO, O3b Networks.

Thuraya Strengthens Partnership with Astrium Services

Mobile satellite operator Thuraya has announced a strengthened alliance with its global service partner, Astrium Services. The two have been close partners for over 13 years, with Astrium helping Thuraya to deliver end-to-end services and value to its customers.

Astrium is connected to Thuraya's network infrastructure and provides a range of value added services, including; messaging, prepaid cards and interconnection to corporate networks via Thuraya satellite services.

"Our partnership with Astrium Services has grown from strength to strength over the years. Astrium Services has demonstrated strong commitment and tremendous support towards driving distribution of Thuraya's extensive product portfolio to their global customers. We are very excited to embark on a new journey with them to drive distribution of the Thuraya's voice, land and maritime products and services to an even wider spectrum of global customers and service partners," said Bilal El Hamoui, Vice President of Distribution at Thuraya.

Thuraya claims that the recent launch of its IP+, SatSleeve and Maritime Broadband offerings will further widen Astrium's commercial footprint and reach.

"Thuraya's latest range of products is highly anticipated by our customers. We see strong potential in Thuraya's SatSleeve which dramatically reduces the entry barrier to mobile satellite communications. We see potential growth coming from Thuraya IP+ in the broadcast media and government sectors, where there is a need for a portable, lightweight terminal as well as additional security for the people who are working in these demanding locations," said Danny Côté, head of Business Communications Enterprise for Astrium Services.

Alcatel-Lucent: The WebRTC Opportunity

Sue White, *Senior Director, Advanced Communications and Cloud Solution Marketing, Alcatel-Lucent*

WebRTC is tipped as the next generation of voice, video and instant messaging communications with huge potential for service providers. Alcatel-Lucent's Senior Director, Advanced Communications and Cloud Solution Marketing, Sue White, spoke to Telecom Review on why the technology is not an opportunity to be missed.

How much of an opportunity is WebRTC for service providers?

I think there is a huge opportunity and the reason is because a lot of service provider communications services are today centered around mostly mobile. WebRTC helps them expand their communications services to many devices because the real time communications are right there in the browser. Any device with a browser, be it a tablet, PC, mobile phone, TV, or car is capable of real time communications
This means service providers can have one communications strategy that goes from not just traditional telecoms services but also to web services, enabling up and coming platforms like RCS to be expanded onto many different devices

The other key advantage of WebRTC is that it's delivering communications as a web experience. Today we're used to making the call or having an instant message but going forward we see the ability to have voice, video and messaging integrated into any web application. Anything we do on the web, whether it is surfing a web page or a web application, we can now have communications as a natural path of that application. This brings with it a whole new area of opportunities, enabling service providers to go beyond their traditional markets and into new areas.

There is a huge opportunity that service providers can embrace with WebRTC particularly basing it on a one communications strategy that's their leveraging with IP Multimedia Subsystem (IMS) right now. TO be able to talk browser to browser or browser to phone a communications back end is still required and IMS is ideal for this purpose. Meaing service providers can really utilize what they're deploying now for IMS and VoLTE and RCS and extend that to web based services.

Do you think there is also a risk with WebRTC if service providers don't embrace the technology, could they lose revenue in the same way they have to OTTs in the past?

It is definitely a strategy to adopt and not a strategy to let pass by because we're in a different era of communications now, we don't want communications just on our mobiles. Users now want to plugin and get communications from their tablet or have click to talk when they are at work. They want communications in a different way and service providers have got the opportunity to do that. If they don't embrace WebRTC then certainly it's a missed opportunity in the market that others will take advantage of.

Are you noticing much movement so far from operators in providing WebRTC services?

It is starting, we're talking to operators from every region, and I think definitely some are more advanced in their thinking than others. Some early use cases will be, for example, launching video communications, getting it to the web and being able to share video communications with users that might not be subscribed to their IMS network, so to extend the reach. We see WebRTC in the early use cases also serving to extend current services to different devices and this trend is expected to continue.

Alcatel-Lucent is working with third party application providers including a company called Vobee. This particular one leverages WebRTC and IMS APIs we have in our solution and together it allows users to collaborate between two parties but using context information. So it records the types of conversations and shared media that have taken place between parties and presents them to you in such a way that you can drag and drop them into a collaboration window. Things like this make communications more interesting and more relevant and useful rather than just making a voice or video call.

WebRTC will impact service provider business models but equally it can impact OTTs, is there an opportunity for operators to regain the momentum?

Absolutely, with WebRTC they've now got a chance together with building the next generation IP networks on mobile, including; VoLTE and next generation messaging networks with Joyn, to leverage WebRTc to get that experience to the web. Service providers clearly have a huge opportunity to create a lot of new exciting services for consumers and also the enterprise and vertical markets.

How is Alcatel-Lucent helping service providers roll out their WebRTC offerings?

Our solution comprises of five key elements:

The first key element is on the client itself. The WebRTC standard embedded in the browser has certain capabilities but we want to enable developers to access from

that client, for example IMS. So we have created a client library using the developer language JAVA script and published this library for anyone to use. This really helps web developers be able to create new features leveraging the client.

The second piece is the actual WebRTC gateway. You need a gateway that interfaces with the information signaling network which in our case this is IMS, so our WebRTC is part of our session border controller and that's tuned to support voice, video and many different types of sessions, and it scales independently. It's a very powerful device for next generation communications. The client libraries talk to the WebRTC gateway and this is part of our product solution.

The third element is also very unique and what we call the new conversation APIs. This is a set of APIs we launched last year and is open access to the IMS network. So developers can gain easy access allowing all the functions of IMS like conferencing and single number identity. WebRTC itself has some features, but it doesn't allow you to do conferencing and it doesn't allow you to share identity across many different devices. So by leveraging the capabilities of IMS with features like chat and file transfer we enable the ability to build new applications that combine the best of RTC in the client with the best of network communications.

The fourth key piece is making sure that the IMS network is tuned for WebRTC. For example, one thing we built in was anonymous identity because as you can imagine if you go to a web page and want to click to talk to someone you don't

want to have to put your phone number or anything personal on the webpage. You might want someone to call you back but you don't want to actually give up your phone number because that's something precious and personal to you. We've built into our IMS the ability to do anonymous calling. Leveraging WebRTC on the website you can click to talk and the network will contact you but the actual person who is contacting you will never know your number, it will be hidden by the service provider. This is an important feature as we move communications to the web but want to maintain privacy and security.

Then the last piece is how to get started, because we've made all of these APIs including the client APIs and the network APIs a sandbox where developers can create their application and then test it. We've made all of these available in a portal to anybody that we launched some time ago, and now developers and customers can come in and use it to create service concepts and then try them out on our IMS network. It's a great way of getting started and completely for free, we've got all the tool kits in there, all the forums and all the API documentation allowing developers to get to work. We have also listed lots of service concepts in there as well, so third parties which have created their service concepts can see them list in the portal as well.

How important is it to make the platform available to developers and have a generally open system in place?

Massively, I think it has got to be completely open and that is a key

part of our solution, we're not making anything proprietary so the IMS APIs that we have are based on open standards. We've built a few extra bells and whistles in there but they are all based on open standards. The client APIs are all based on the standards from WebRTC and soon will be published on ORCA as well, keeping everything open, allowing developers to create applications that work on anyone's network, IMS, and device. The OS doesn't even matter because it's on the browser side. We're now working multi platform and that is really key.

How far do you think we are from WebRTC becoming a real mainstream provider product?

Right now WebRTC is available in PC browsers and the mobile piece is coming for tablets and other devices probably in six to twelve months. Obviously that depends on the timeframes of Google and Firefox which are the two companies that are really driving the WebRTC client piece right now. We're working with operators to look at how they can extend their VoLTE and RCS solutions to the web, extending the reach of those customers to web based users who don't register for their service, and also extending the reach to different devices. These two use cases we will probably start to see within a year, but it is hard to say.

We consider WebRTC a huge opportunity for service providers to embrace and leveraging it together with the next steps they are taking with VoLTE sand RCS is going to make it a very exciting time for communications. **TR**

TAGIT: Providing Mobile Banking Solutions

You have a big business in Singapore, can you tell us about some of the other key markets that you are focusing on?

From a mobile perspective in Singapore we provide services for all the major banks. We also have some business in Malaysia. Philippines, Indonesia and Thailand are the key countries we are focusing on, because if you look at mobile in these markets, particularly the Philippines and Indonesia, they have a large population and smartphone penetration is rising very quickly. This means that there is a greater opportunity to provide financial services through mobile.

Can you name any specific banks that already utilize your services in these countries?

At the moment we are talking with few banks in these countries, and I've been to the Philippines recently to talk to banks there. But we are at the discussion stage right now. We are talking to the top few banks, because most of our customers are the larger banks. These banks will typically lead the market in terms of a new service or a new initiative.

From your perspective what is Mobile Banking?

The easiest way to explain it, especially in the telco space, is there are a lot of noises in the market; NFC is a sector, mobile banking is one part, mobile

Telecom Review Asia recently spoke to Sandeep Bagaria, CEO of Tagit; a Singapore based leading mobile banking solutions provider whose international presence includes Dubai, Canada, Indonesia and Vietnam.

What is Tagit's backbround?

Tagit is about eight or nine years old. We have a total manpower of about 180 people. Our business is about mobility and mobile banking. We are providing services to institutions like, Maybank, DBS, UOB here in Singapore, and Citibank India.

In the Middle East and North America we also have a presence with customers including, Commercial Bank of Dubai and Royal Bank of Canada.

commerce is another, as well as mobile payment and so on. These are all parts under the umbrella of mobile banking.

So when talk to banks we explain it in a very simple manner, and if you think about it there are 3 types of mobile banking models.

1. Additive mobile banking – This is just like internet banking, a self service channel for you to consume service from the bank, like balance inquiries, fund transfers and bill payments. All of these services from the internet can be used on mobile. It is a self service channel.

2. Mobile workforce - Is a service channel, effectively like having your iPad service you in the same way that a representative from the bank coming to your home and assisting you with a particular transaction. This service is particularly useful for people from rural areas who don't have access to banking facilities like mobile ATMs, for example those in the Philippines, Indonesia or India. It enables them to be served through devices and be connected to their bank.

3. Transformational Mobile Banking - This includes the Mpayment space and is geared towards people who are unbanked or underbanked, to provide them with financial services, mostly in the area of payments. For example, if I'm in a village in India and I don't have a

bank account how can I use my mobile device to make payments? This is where we focusing on in a big way and we have found that it is a tug of war between telcos and banks as to who can provide better services.

How do you see the transition progressing from SMS mobile banking to the smartphone era?

I see this as a very easy transition. Most of us are accustomed to SMS as well as instant messaging, so I don't think that there will be a big adjustment going to mobile applications. On top of this mobile applications are easier to use in comparison to the SMS type of mobile banking that we had before.

When talking to banks, what are their major concerns or inhibitions going to mobile banking?

It is not that they don't want to have it or don't want to do it, but at an initial stage, their deliberation revolves around developing and creating a mobile banking strategy. They know that eventually they need to be in the mobile banking space, and they acknowledge the potential of it as well. So it is just a matter of who is going to adapt first.

Does your product strategy involve NFC?

We can support NFC, NFC is just a technology through a payment mechanism. The main thing that our software

solution enables is it can take any backend system and make any service available to any mobile device. All banking transactions can be performed via mobile. NFC is a payment technology that can be integrated to our solution but it is still at an initial stage now rather than a core strategy. There are many NFC initiatives around the world but there is not widespread demand or mass usage, particularly in the transport industry wherein it is most useful.

What about security concerns with mobile banking?

It is a perception. What you do on internet banking, like user ID and passwords, is also being done on mobile banking. The presence of authentication is always there, so it means that all security measures are available. In addition, in mobile banking you can add more security mechanisms, like the access being tied to a particular device, or perhaps program it to wipe out the application once you have lost your device. So it is not about security, perhaps we should be more vigilant to fraud or physical fraud activity.

How do you address countries where technologies are at opposite ends. For example on one hand they have SMS, and on the other hand a high end application for smartphones?

We have solutions available because we have software that can cater to all services and with all devices. So we support all communication means, just like the ones in India, you can imagine the variation in terms of technology and devices.

Aside from the banks, do you see other channels that might be interested in your business?

In Tagit we define ourselves in two businesses. The first one is the software business, enabling the back end solution to any mobile device. The second one is the service in between building the mobile application. So in building the mobile application we are only focusing on banking and that is an area we've decided that we should specialize in. We know a lot about banking, but we are working with partners in other industries like insurance and healthcare because there is also a need for mobility. As I've mentioned we are not from that domain and that is why we are working with partners in these industries.

Do you have any plans for China, Vietnam or other potential markets?

We have presence in Vietnam, in fact we are launching the second bank in the next few months. We are doing a project in China but, for a Singaporean bank and we are also launching for two other banks in India this year. **TR**

Cable Wars
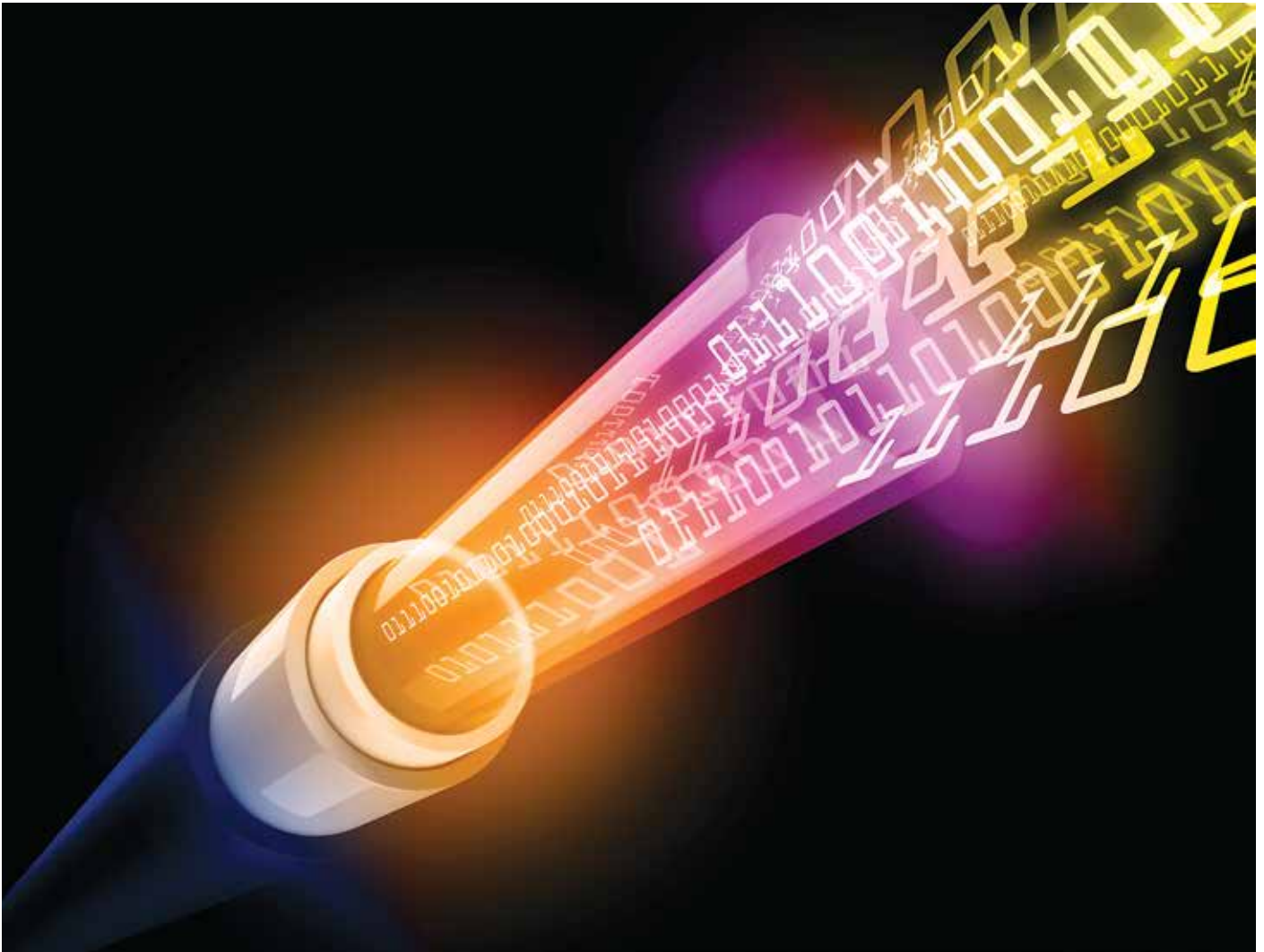
If you've been around the telecoms industry for a couple of decades you might remember Sunil Tagare, or Neil Tagare as he was then known. As a consultant with US optic fiber market research company KMI in the late 80s he came up with the idea for the FLAG (Fiberoptic Link Around the Globe) global submarine cable system and went on to oversee its construction as senior executive of the consortium set up to build it.

Not one to rest on his laurels, he came up with the even more ambitious Project Oxygen - a $14 billion system that would have given most of the countries in the world 100Gbps of capacity. It was never built. The dot.com crash decimated the industry: many submarine cable systems, Flag included, got into financials strife and were sold for a song.

Now, Tagare is back in the game with his planned Freedom Cable that will connect most countries in South East Asia to the Middle East and the US. Writing on his blog, http://blog.buysellbandwidth.com in March he revealed plans for Freedom to have a direct connection to the west coast of Australia and he painted a pretty depressing picture of the situation facing Australian telcos seeking global connectivity.

"The biggest problem Australia has always faced is that it is just too far away from the rest of the world," he argued. "On top of that, the population of Australia is only 22 million so there is not enough demand for bandwidth. This is a perfect combination for disaster — in terms of high bandwidth costs and even higher IP transit prices."

He continued: "I don't envy the Australian carriers… Trying to build US cables and at the same time trying to satisfy their Asian and European requirements is expensive. And because there is not much traffic they bring to the table, they don't get any respect."

However Tagare's plan to alleviate Australia's problems was short-lived. In May he cancelled the Australian link, laid blame on the submarine cable group within Telstra and branded the company "the stupidest carrier in the world."

Nor do Australian telcos get much choice when it comes to connecting to the USA. At present Australia's only direct connection to the US is via the Southern Cross Cable that links Australia, New Zealand, Hawaii and the US West Coast with a figure of eight loop. It is owned by Telecom New Zealand (50%), SingTel Optus (40%) and Verizon Business (10%). The Australia Japan Cable connects the east coast to Japan via Guam. It is owned by Telstra (46.9%), BT, Verizon Business and Softbank. In addition, there is the Telstra-owned Endeavour Cable that connects the east coast of Australia to Hawaii.

These three cable systems handle the bulk of Australia's international traffic. The older SeaMeWe-3 Cable out of Perth connects much of Asia, the Middle East and Europe, but its total capacity is only 0.48Tbps.

Tagare is not the first to highlight the international connectivity woes of Australian telcos, or the first to promise a solution. In December 2006

Pipe Networks, a small and relatively new Australian telco, announced plans to build a submarine cable from Sydney to Guam, a move that it said would provide much needed competition to the high prices charged by the 'Gang of Four' - Telstra, Optus, Telecom New Zealand and Verizon, that are seen as controlling the three major east coast cable systems.

Pipe claimed it would be able to offer services at half the price of the incumbents. It was successful in raising the finance for the system, PPC-1, and it came into service in October 2009.

However PPC-1 did nothing to help New Zealand and in March 2010 a New Zealand consortium, Pacific Fiber, emerged with plans for a $400m system to connect Australia, New Zealand and the US West Coast.

Its backers echoed the complaints made by Pipe Networks. "We desperately need a cable that is not purely based on profit maximization, but on delivering unconstrained international bandwidth to everybody," they said. (In September 2011 Australian research firm, Market Clarity reported that the cost of bandwidth to the US from New Zealand was 5.8 times greater than the price paid by Australians.)

Unfortunately for Pacific Fiber it was unable to raise financing. Technology favours the incumbents. Southern Cross Cable was built operating at 2.5Gbps per wavelength but has been able to upgrade first to 10,

then 40 and soon 100Gbps at costs that are a fraction of those of a new system.

However there will certainly be one new trans-Tasman cable very soon. In February Telstra, Telecom NZ and Vodafone NZ announced plans for the 'Tasman Global Access Cable' between Auckland and Sydney, to be completed by mid to late 2014, with three fiber pairs and an initial capacity of 30Tbps. They said it would "meet growing customer need and provide long-term and reliable connectivity." Tenders for its construction were called in mid June.

Over on the West Coast, Australia looks set to get a total of three new cables. In May 2011 Australian construction company, Leighton Contractors unveiled a new company, Australia-Singapore Cable (International) Limited (ASC) and announced that it had signed a contract with Alcatel-Lucent to build, own and operate a 4,800km link from Perth to Singapore.

The Ontario Teachers' Pension Plan in July acquired a 70 percent stake in Leighton, fuelling speculation that the project would not go ahead. However, the CEO of Leighton's telecommunications business, Peter McGrath, has been reported saying the company finalising commitments from prospective customers "with a view to move forward in approximately three months."

In January 2012 another new company, ASSC-1 Communications Group, (ASSC-1) announced plans for a new

Perth Singapore cable. It said that Huawei Marine Networks, a joint venture combining the telecommunications systems expertise of Huawei Technologies and the marine segment experience of Global Marine Systems, would supply and install the system. Telstra said it would take one fiber pair from Perth to Singapore and would operate the Perth cable landing station.

Construction was scheduled to begin in Q1 2012 and to be completed during 2013. However ASSC-1 has made no announcements since January 2012 and Telstra has signed up for capacity on another planned system, which would suggest that the project is dead.

In August 2012, Bevan Slattery, co-founder of Pipe Networks, the company behind PPC-1, revealed plans for an Australia Indonesia Singapore Cable in association with TE SubCom, the company that built PPC-1. Slattery said he expected the system to be in operation by June 2014. In March Telstra signed a non-binding MoU for capacity.

That company has now been named SubPartners and its ambitions have expanded considerable. It now plans a second cable, APX-East, linking Australia, New Zealand, Hawaii and the US West Coast.

Apart from the Tasman Global Access Cable, none of the planned new systems are certain to go ahead. SubPartners, despite being the newest entrant, has made rapid progress. Time will tell. **TR**

Telecom Events' Calendar 2013

Telecommunications Exhibitions And Conferences Where Telecom Review Is A Media Partner

September 2013

Asian Carriers Conference

The Asian Carriers' Conference (ACC) is the annual telecom event organized by Philippine Long Distance Company (PLDT). The ACC is the most sought-after telecom conference in Asia, the world's growth area on telecoms and IT. The ACC is where industry leaders from wholesale fixed and mobile carriers, network and infrastructure providers, applications and service developers and other related fields join together to discuss and share about the latest in technology, breakthroughs and innovation in the world of telecommunications and ICT.

Date: 3-6 September 2013
Place: CEBU, Philippines

LTE Asia 2013

With Asia-Pacific expected to grow over the next few years to become the largest LTE market in the world, with LTE rollouts now progressing faster than ever in the APAC region and set to surpass 120 million connections by 2015, 2013's LTE Asia is set to be our biggest and best yet! Moving on to its 8th successive year, the event is now firmly established as the central meeting place for the entire Asia-Pacific LTE ecosystem.

Date: 18-19 September 2013
Place: Suntec, Singapore

COMPTEL PLUS Convention & EXPO
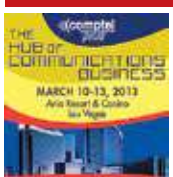
The COMPTEL PLUS Convention & EXPO is the preeminent networking event for innovative communications companies and their supplier partners. Held twice a year, COMPTEL PLUS attracted almost 202 exhibitors and more than 4,137attendees to our 2012 events.
COMPTEL PLUS provides you with the opportunity to learn about new products, services and industry trends; meet potential customers and do business. During the Spring and Fall 2012 conventions, we welcomed 42 new companies to the EXPO hall, giving you great opportunities to meet with a growing universe of vendors and suppliers.

Date: 23-26 September 2013
Place: Gaylord Palms, Orlando

NetEvents EMEA Press Spotlight on 'the Cloud'

NetEvents provides several of the key communication channels linking press, analysts, vendors and other stakeholders in the IT networking and communications marketplace. NetEvents' exclusive regional and global events bring high-level players face-to-face in an informal yet highly focused environment - ideal for making contacts, building relationships and the exchange of ideas.

Date: 25-26 September 2013
Place: Cote D'Azur, France

October 2013

LTE Voice Summit

The inaugural LTE Voice Summit will be addressing the most asked questions in this space. Benefit from presentations from key individuals, representing the full value chain including all the top operators and disruptive players, who will be providing the audience with a range of interesting perspectives. Vendor presentations from Samsung, Acme Packet, Mavenir, Metaswitch & ST-Ericsson were very well-received by conference delegates at last year's event.

Date: 1-2 October 2013
Place: Hilton Paddington, London

TIA 2013: The Future of the Network

TIA 2013 is a 3-day conference offering intensive learning, insightful discussions and related technology demonstrations. Attendees can expect to gain new ideas, understanding and directions for adapting their product launches, technology innovations and business models in order to thrive in the rapidly-changing ICT environment.

Date: October 8-10, 2013
Place: Gaylord National in Washington, DC.

GITEX Technology Week 2013

GITEX is the ICT business gateway to the Middle East, North Africa and South Asia Region. Focused on providing exhibitors with high ROI through direct business opportunities with decision makers, GITEX has maintained its position as the industry's trend setting authority. GITEX continually identifies the hottest global IT trends and incubates these into the event either as new sectors or conference programs.

Date: 20-24 October 2013
Place: Dubai World Trade Centre, Dubai, UAE

December 2013

Telecom Review Summit - Its all about Networking!

After the tremendous success of the first edition, Telecom Review Summit will be back this year to Dubai for a dedicated full day conference aiming to bring together telecommunications and ICT industry leaders across the region in a friendly environment. Telecom Review Summit will continue to provide an important platform for experts from the telecommunications, content & ICT industry in the Middle East.

Date: 8 December 2013
Place: Intercontinental Hotel, Festival City, Dubai, United Arab Emirates

Latest updates on:
www.telecomreviewasia.com

GLOSSARY

-B-

BDCS: Broadband Digital Cross-Connect System | Bell Customer Code | BER: Bit Error Rate | BERT: Bit Error Rate Tester | Bent Pipe Technology | BHCA: Busy Hour Call Attempt | BIB: Backward Indicator Bit | Bidirectional Switch | Bifurcated | Billboard Antenna | Bill-To-Room | Binary Golay Code | Binary Signal | Binary Switch | BCC: Block Check Character | BCD: Binary Coded Decimal | B-Channel Bundling

BDCS: Broadband Digital Cross-Connect System
Broadband Digital Cross-Connect System (BDCS) is a SONET DCS capable of cross-connecting DS-3, STS-1 and STS-3c signals.

Bell Customer Code
Bell Customer Code is a three-digit numeric code, appended to the end of the Main Billing Telephone Number that is used by Local Exchange Carriers to provide unique identification of customers.

BER: Bit Error Rate
Bit Error Rate (BER) is the ratio of received bits that contain errors. BER is usually expressed as ten to a negative power. For example, a transmission might have a BER of 10 to the minus 9, which indicates that out of a billion bits transmitted, one bit was in error. Typically, the bits in error need to be re-transmitted, which may slow down communications.

BERT: Bit Error Rate Tester
Bit Error Rate Tester (BERT) is the device that determines the Bit Error Rate (BER) on a given communications channel.

Bent Pipe Technology
Bent Pipe Technology refers to satellite technology to transmit calls from one point on Earth to a satellite and back down to another point on Earth.

BHCA: Busy Hour Call Attempt
Busy Hour call Attempt (BHCA) is the number of times a telephone call is attempted during the busiest hour of the day.

BIB: Backward Indicator Bit
Backward Indicator Bit (BIB), a one-bit field in the SS7 Message Signaling Unit (MSU), indicates a negative acknowledgment by the remote signaling point when toggled.

Bidirectional Switch
Bidirectional Switch is a switch in which a moving contact level travels in two directions to connect to a desired fixed contact. While the most common combination is a vertical motion followed by an angular motion, other combinations are possible.

Bifurcated
Bifurcated, in a telecommunication network, refers to a two-pronged connector. A "bifurcated wire wrap" terminal block is one that has an "H" shape, which forms one electrical connection pair with two connection terminals.

Billboard Antenna
Billboard Antenna is an array of parallel dipole antennas with flat reflectors, usually positioned in a line or plane. The spacing and dimensions of the dipoles depend on the wavelength. The main lobe of a fixed billboard antenna may, within limits, be steered by appropriate phasing of the respective signals to individual elements of the array.

Bill-To-Room
Bill-To-Room is a billing option associated with Operator Assisted calls that allows the calling party to bill a call to their hotel room. With this option, the carrier is required to notify the hotel, upon completion of the call, of the time and charges.

Binary Golay Code
Binary Golay Code refers to two so-called closely related error-correcting codes. One is called extended binary Golay code which is an error-correcting code that encodes 12 bits of data in a 24-bit word in such a way that any triple-bit error can be corrected and any quadruple-bit error can be detected. The other is called perfect binary Golay Code which has codewords of length 23 and is obtained from the extended binary Golay code by deleting one coordinate position. Conversely, the extended binary Golay code can be obtained from the perfect binary Golay Code by adding a parity bit.

Binary Signal
Binary Signal is a signal that may assume either of two polarities, neither of which is zero. A bipolar signal may have a two-state non-return-to-zero (NRZ) or a three-state return-to-zero (RZ) binary coding scheme. A bipolar signal is usually symmetrical with respect to zero amplitude, i.e., the absolute values of the positive and negative signal states are nominally equal.

Binary Switch
Binary Switch is a switch that must exist in one of only two states: on/off, zero/one, etc. 𝕋ℝ