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■ **Telecom Review's 2014 Leaders of Telecom' announced**

5

12

■ **Wireless mesh helps Hong Kong protesters**

■ **SEA-US:** diversity for Asia - US communications

24

8

■ **Internet of Everything:** it's The Thing in Asia Pacific

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How disruptive will the Internet of Things be

Research firm IDC has labelled its vision for the future of IT the 'Third Platform' - the first two being mainframes and client-server - comprising mobile, social, big data and cloud.

Conspicuous by its absence is the 'Internet of Things' (IoT). Nevertheless IoT appears to be high on CIOs' list of disruptive technologies. Respondents to a Microsoft Asia Pacific survey of 291 IT decision makers of medium to large enterprises across 10 markets in Asia Pacific ranked mobility (52 percent), IoT (44 percent), big data (41 percent) and social (38 percent) as the top four technology disruptors to the organization.

Microsoft said the results "showed that IT leaders in the region are leading the charge to harness disruptive technologies enabling their transformation to a mobile-first and cloud-first world."

However, in the next three years those same CIOs said they were prioritizing cloud (71 percent), mobility (65 percent) and big data (61 percent) as the most important technologies for them to harness to drive their business goals.

These figures are somewhat at odds with projections for growth in the IoT. As we report in this edition (Internet of Everything: it's The Thing in Asia Pacific). Research firm IDC is forecasting industrial IoT and non-wearable consumer IoT installed units to experience a CAGR of 23.3 percent through 2020.

And Frost & Sullivan expects IoT spending in the manufacturing industry to be one of the fastest growing markets in APAC, growing at a CAGR of 52.7 percent between 2014 and 2020.

In October 2013 IDC said: "IoT represents a new construct in the information and communications technology world that is occupying the minds of IT vendors, service providers, and systems integrators as it represents huge potential for new streams of revenue and new customers. IDC ... expects IoT technology and services spending to generate global revenues of $4.8 trillion in 2012 and $8.9 trillion by 2020."

(Curiously, by June this year IDC had downgraded its forecasts significantly, saying: "A transformation is underway that will see the worldwide market for IoT solutions grow from $1.9 trillion in 2013 to $7.1 trillion in 2020.")

Microsoft's announcement of the results of its survey offered no comment on what appears to be a disconnect between CIOs' ranking of major disruptors and their immediate strategic priorities.

Maybe they have a more realistic view of IoT than the forecasters, but perhaps all parties should heed Bill Gates' advice: "We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten. Don't let yourself be lulled into inaction."

Stuart Corner
Senior Editorial Manager
Telecom Review Asia Pacific

Qualcomm opens Vietnam office

Qualcomm has opened an office in Vietnam, in Ho Chi Minh City. Opening the office Jay Srage, president for Qualcomm in Middle East & Africa and Southeast Asia & Pacific, said that emerging Southeast Asian nations like Vietnam would be critical to determining the future shape of the mobile industry.

"Southeast Asia has, for many years, contributed significantly to the growth among emerging regions," Srage said. "According to GFK, in the first three months of 2014, sales of smartphones in Southeast Asia showed a year-on-year growth of 45 percent. Vietnam was the second largest market following Indonesia."

He added that Qualcomm would collaborate with the mobile ecosystem in Vietnam to bring an optimal mobile experience to people across the country. "From working with operators on enhancing their networks, to bringing the most relevant, compelling devices from our OEM customers. I am committed to ensuring that the mobile industry in Vietnam continues to thrive."

Thieu Phuong Nam, general director of Qualcomm Indochina, said that mobile communications was a catalyst to Vietnam's economic growth. "Vietnam plays a crucial role to the success of Southeast Asia's mobile market," he said. "The past decade has seen the emergence of our country as a driving economic force not only within ASEAN, but across the Asia Pacific community. GDP is growth is steadily increasing at roughly five percent according to official data.

"There are growing industries across the board, from agriculture to manufacturing to services. Multinational corporations are increasingly confident of our country's offerings; over the past few years we have seen the likes of Nokia, Samsung, LG setting up manufacturing facilities here. Mobile is a humble yet powerful catalyst to all of this."

SoftBank pumps almost $900m into Asia

SoftBank Internet and Media Inc (SIMI) is to invest $627m in Indian online marketplace, Snapdeal; $210m in Indian taxi booking service Ola Cabs and, with Sequoia Capital, $100 million in Indonesian online marketplace Tokopedia.

Softbank CEO and chairman, Masayoshi Son, said: "We believe India is at a turning point in its development and have confidence that India will grow strongly over the next decade. As part of this belief, we intend to deploy significant capital in India over the next few years to support development of the market."

Ola Cabs, founded in 2011, has grown to become the leading transportation aggregator in India, according to Softbank. "Ola leverages its technology platform to provide a marketplace connecting consumers and drivers via mobile apps, the web and call centers. Ola's app now hosts more than 33,000 vehicles across 19 major cities in India," Softbank said.

Snapdeal is India's largest online marketplace with more than 25 million registered users and more than 50,000 business sellers. Tokopedia launched on 17th August 2009 with the vision of shaping better Indonesia through Internet. It has received funding from PT Indonusa Dwitama (2009), East Ventures (2010), CyberAgent Ventures (2011), BEENOS (2012) and SB Pan Asia Fund (2013).

Alcatel-Lucent sells 7950 XRS core router to top Chinese telcos

Three of the biggest service providers in China - China Telecom, China Unicom and China Mobile - have chosen Alcatel-Lucent's 7950 XRS (Extensible Routing System) for the core of their fixed and mobile networks. These will be the first commercial deployments of the technology in China.

According to Alcatel-Lucent, China is anticipating massive growth of data and video in the coming years for residential and enterprise customers due to increasing demand for high-definition content, on-demand viewing, multi-screen delivery, the widespread use of smartphones and tablets and the rapid adoption of cloud applications.

In the China Telecom 2014 400G-enabled core router central bid, Alcatel-Lucent successfully secured Jiangsu province and Shanghai city, two areas with the highest demand for network traffic, out of the five bidding areas.

In the China Unicom 2014 all Ethernet core router central bid, Alcatel-Lucent was selected as the sole supplier. Alcatel-Lucent was also selected as the sole supplier for the China Mobile 2014 high-performance Ethernet router central bid.

SingTel to offer Microsoft's Cloud Operating System Network in APAC

SingTel and Microsoft have launched Microsoft's Cloud Operating System Network (COSN) in Asia Pacific to enables enterprise customers to move their data and workloads easily between public cloud, dedicated private cloud and SingTel's virtual private cloud.

SingTel is the first telecommunications service provider in Asia Pacific to partner with Microsoft to offer COSN in the region. Mr Lee Han Kheng, vice president, global products at SingTel Group Enterprise, said: "This collaboration benefits enterprises which use widely available Microsoft applications as they can now be assured of seamless interoperability between their Microsoft-based private clouds and SingTel Managed Cloud."

Ms Jessica Tan, managing director, Microsoft Singapore, said: "The Cloud OS Network is a worldwide programme for elite cloud service providers, partnering closely with Microsoft to offer technically validated, cloud-based infrastructures and application solutions. ... With SingTel and Microsoft's experts in cloud and applications, we can provide in-depth analysis of each enterprise's business goals and requirements. By identifying workloads that can most benefit from cloud, we help businesses expedite the journey to the cloud with tested, proven and streamlined migration processes."

COSN and SingTel Managed Cloud are hosted in SingTel's data centers in Singapore and Australia to serve the Asia Pacific region. According to SingTel, it complies with local data protection regulations and conforms to the ISO27001 standard that provides enterprises with greater assurance that their data is secure in the cloud.

Pacnet opens new China data center

Pacnet has opened a new data center in Tianjin, China to address growing demand for data center and managed services in the Beijing-Tianjin-Hebei region. The new facility provides software-defined networking (SDN) capability enabling customers to self-provision bandwidth on demand based on their business needs.

The facility is located in the Gaocun Science & Technology Innovation Park of the Tianjin Wuqing District. It has been built by Pacnet's equity joint venture in China, Pacnet Business Solutions (PBS), and the Tianjin Wuqing government. It covers an area of 21,000 square metres and is capable of hosting 2,000 racks.

The data center, designated TJCS1, is connected to the Beijing data center of China International Data System (CIDS) via Pacnet Enabled Network (PEN), which leverages SDN to deliver bandwidth configurable by customers.

According to Pacnet, the facility will help establish Wuqing's Gaocun Science & Technology Innovation Park as a leading technology hub in Northern China. "Its launch parallels the objectives of recent government plans to integrate the Beijing, Tianjin and Hebei provinces into a single megalopolis, promoting China's economic restructuring and its consumption-driven and sustainable growth," Pacnet said.

Huawei to help Cambodia on mobile network rollout

Huawei and the Government of Cambodia have revealed plans for Huawei to assist Cambodia on wireless communications networks.

The agreement was signed at a meeting between Cambodian Prime Minister, Hun Sen Met, and Huawei Rotating and Acting CEO, Ken Hu, during the Asia-Pacific Economic Cooperation (APEC) Economic Leaders' Meeting in Beijing.

Prime Minister Hun Sen said: "Cambodia has selected Huawei as a strategic partner for our ICT based development. We appreciate what Huawei has done for Cambodia and expect them to leverage their latest Communications technologies to enhance our ICT based construction. We also hope that Huawei can cultivate more talent from within Cambodia."

Ken Hu said: "[Cambodia has] selected the most advanced wireless communications technology – eLTE (4G) – to build [its] next-generation communications networks. Using this as a starting point, Huawei will strive to become a knowledge partner for the Cambodian government and help them identify and train local ICT professionals."

Huawei said that, over the past 15 years, it had developed extensive partnerships with local telecom carriers, the government, and supported many industries in Cambodia.

Huawei has developed over 1,000 technical professionals and now directly employs nearly 200 local staff. Also, Huawei said it had donated funds and equipment worth more than $5 million for poverty relief, rural education and ICT development in Cambodia.

Telecom Review's 2014

'Leaders of Telecom' announced

The annual Telecom Review Summit "It's All About Networking", held in Dubai on 26 November recognised the achievements of a broad spectrum of leading organisations and individuals.

CATEGORY	WINNER
Best North America Wholesale Service Operator	Verizon
Best African Wholesale Operator	PCCW Global
Best Asian Wholesale Operator	PCCW Global
Best Submarine Cable Operator	GBI
Best Application Developer Program	Qualcomm
Best Cloud Provider	du
Best OSS/BSS Provider	Redknee
Best Middle Eastern Operator	Viva Kuwait
Best African Telecom Operator	Ooredoo Algeria
Best Business Management Application	Telarix
Best VAS Provider	MT2 – Mobile Technology Tomorrow
Best Enterprise Solutions	Zain Jordan
Best Industry Vendor	Huawei
Best Customer Service Provider	Zain KSA
Best Corporate Social Responsibility Initiative	alfa
Best Satellite Operator	Thuraya
Best Vendor TV and Media Solutions	Ericsson
Best Middle Eastern Regulator	TRA Bahrain
Regulators' Telecom Leader of the Year	H.E. Mohamed Al Ghanim
Operators' Telecom Leader of the Year	Mr Ahmad Hanandeh (Zain Jordan)
Vendors' Telecom Leader of the Year	Igor Le Prince (Nokia)
Non Profit ICT Organization Leader of the Year	Nan Chen (MEF)

The telecom industry's premier VIP networking event of the year, The annual Telecom Review Summit was held at the Intercontinental Hotel in Dubai, UAE with the theme "It's All About Networking".

It was attended by dignitaries, government officials, industry titans and professionals from across the world.

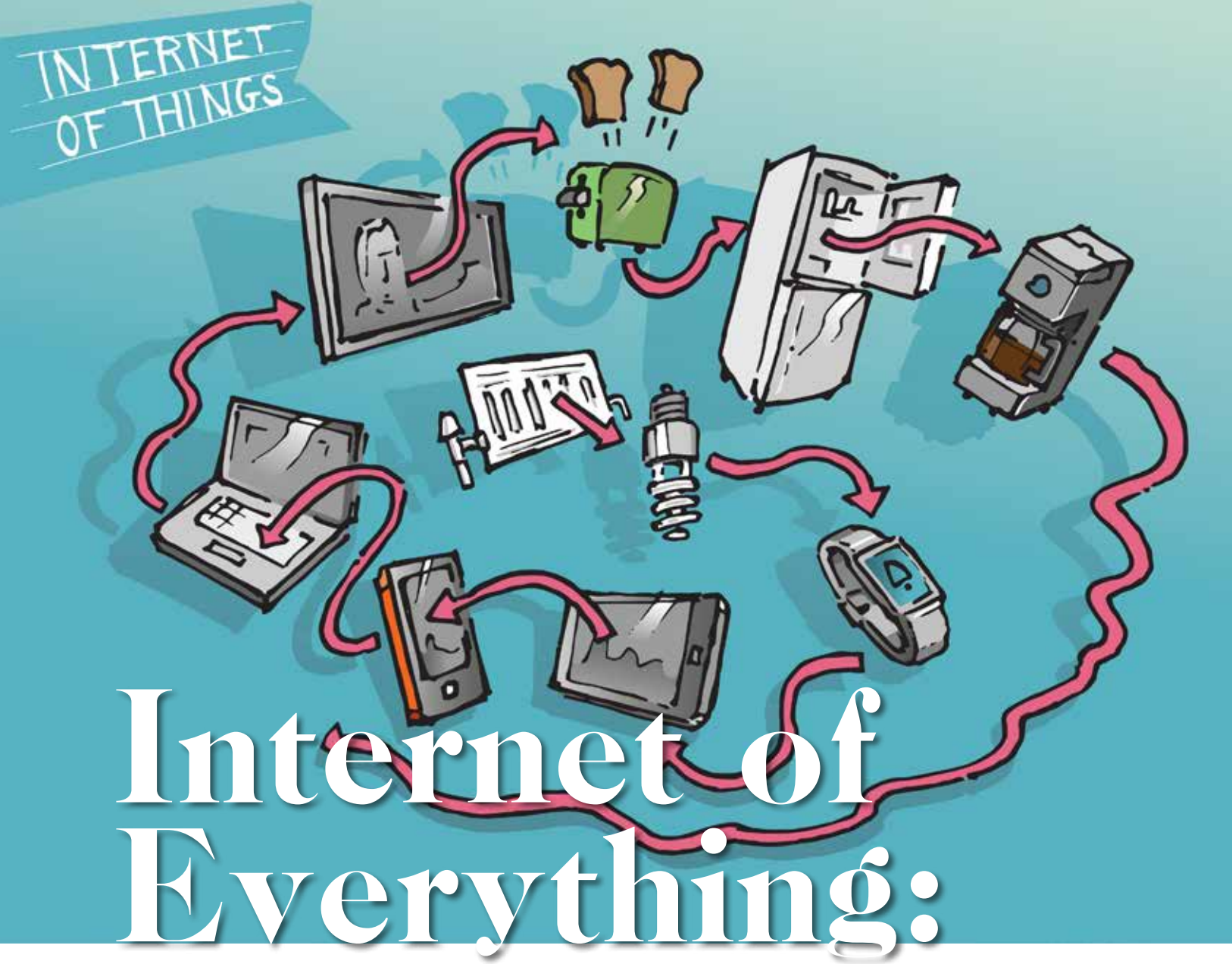
Editor in Chief and CEO of Telecom Review, Toni Eid, said: "By hosting telecom leaders, regulators and operators, and with some of the most knowledgeable moderators in the industry every year, the Summit discusses hot topics in data traffic and wholesale, changes taking place in the industry and what the next big thing will be. We are very proud that, year after year, Telecom Review's Summit is extending its footprint regionally and globally."

The event also included the Telecom Review Summit Awards, which celebrate leaders in the industry who have gone beyond the ordinary in leading telecom through an era of transformation.

The Awards received the highest number of entries in their history this year, with entries from over 30 countries in North America, Europe, the Middle East, Africa and Asia.

"This year's award winners represent the absolute best in our industry and we are very proud to honor these winners with such a distinguished award," said Jeff Seal, managing partner, Telecom Review North America.

The 2014 Telecom Review Summit Awards were judged by a distinguished panel, comprising members of the press, analysts and senior executives from the industry. They recognized excellence in 22 categories. TR



Internet of Everything:

it's The Thing in Asia Pacific

Everything, we are being told, will be connected: billions of devices. but the Internet of Everything is bigger than that. It's the data we get from all those things, the tools to analyse that data and the uses we make of the whole ecosystem. And on any measure Asia Pacific is at the forefront of the IoE movement.

The Internet of Things (IoT) will be big, $7.1 trillion big, globally by 2020 according to research firm IDC. And $2.4 trillion big in Asia Pacific (excluding Japan) in the same period. IDC puts global IoT related revenues at $2.3 trillion in 2014, $600m in APeJ and it estimates that the IoT installed base will grow from 11.4 billion devices in 2014 to 28.1 billion in 2020, with 8.8 billion of those devices being in APeJ.

"In APeJ, the industrial IoT and non-wearable consumer IoT installed units will experience a CAGR of 23.3 percent through 2020, while the consumer wearable installed units will grow at 32.9 percent over that period of time," IDC says. "The use of consumer wearables in enterprise solutions will contribute to the higher growth rate."

Frost & Sullivan puts a much smaller figure on the Asia Pacific IoT market: $57.96b by 2020, up from $9.96b in 2014, a CAGR of 34.1 percent. This discrepancy suggests more than just forecasting differences but a serious mismatch in market definitions. So what exactly is the Internet of Things,

and what, if any, are the aspects of IoT that distinguish the Asia Pacific market from others?

In search of an IoT/IoE definition

According to IDC, "IoT represents a new construct in an ICT world. It is this new market proposition that is occupying the collective minds of IT vendors, service providers and systems integrators as it represents huge potential for new streams of revenue and new customers."

IDC adds: "For vendors and customers alike, the opportunities are endless, however, in today's world, relatively few people or companies know how to identify and capitalize on the potential opportunities."

The Internet of Things is only a subset of the Internet of Everything (IoE), which Cisco succinctly defines as "the networked connection of people, process, data, and things." However it is, as the Huffington Post puts it, "not about these four dimensions in isolation. Each amplifies the capabilities of the other three. It is in the intersection of all of these elements that the true power of IoE is realized."

Or, as Cisco's John Grubb puts it: "The Internet of Everything gives people, businesses, communities, and countries the resources they need to collect and access data and turn it into valuable insight."

In other words, IoE starts with the 'things (or people, and animals) and ends with the insights and value that can be obtained from using, analysing and manipulating the data these 'things' deliver.

MachNation - which claims to be "the only dedicated insight services firm covering the future of the Internet of things (IoT), Internet of everything (IoE), connected device and machine-to-machine (M2M) ecosystems - defines IoE as "the evolution of technology, business strategies and human-to-technology engagement in ways that re-invent how organizations deliver value."

Even more definitionally constrained than the Internet of Things is the Industrial Internet of Things. According to MachNation, it's a huge area of growth worldwide, but especially in Asia, Germany, the Nordic countries and North America. MachNation explains: "There are a lot of electro-mechanical components that are waiting to speak and they have volumes of information to provide that can make manufacturing processes and products much more efficient."

> "The Internet of Everything gives people, businesses, communities, and countries the resources they need to collect and access data and turn it into valuable insight"

Signs of Asian IoE growth

There are certainly signs that IoE is taking off in Asia Pacific. After attending the Hong Kong ICT/Electronics Fair in October, Shane Murphy, vice president and general manager of KORE Wireless in Asia-Pacific, wrote: "It's really interesting to see how trends evolve so quickly in the fast moving world of the Internet of Things. ... Only a few months ago I dashed through much of the Hong Kong Spring Fair and thought, 'More of the same'. ... This time around I was overwhelmed by the sheer volume of wearables."

He bemoaned a lack of innovation, but concluded: "There was a more 'down to business' feel about this show since last year too. The big vision slides are being pared back and replaced with actual products and applications. The business of m2m technology and the Internet of Things is settling in and going mainstream in Hong Kong and Japan."

In addition to a strong IoT/IoE focus at general IT and electronics trade shows, more specialized events focused on IoT/IoE are springing up in the region. The first IoT Asia conference and exhibition was held in 2014 in Singapore. The second two day conference and exhibition will be held, also in Singapore, in April 2015. The organizers are promising 50 exhibitors and 2000 attendees.

Singapore aims for IoT leadership

Singapore, it seems, is making a serious play for a lead role in the IoT ecosystem. M2MNow reported on the 2014 IoT conference saying "Singapore is playing for nothing less than regional leadership in the Internet of Things (IoT)," and that its strategy had become clear at the event.

"There were several clues beforehand to how seriously Singapore viewed last week's IoT Asia event. The first came at the venue — with seating arranged for more than 800 this was not going to be your run-of-the-mill M2M or IoT conference," M2MNow's Jeremy Cowan reported.

"Nor is it every day that the host country's minister of state for Trade and Industry opens such events, but Teo Ser Luck arrived to do just that."

Steve Leonard, executive deputy chairman of the Infocomm Development Authority, was reported saying "We're setting up a body to ensure that Singapore's voice is heard in IoT standards discussions," and touting Singapore's IoT attributes as "we're the perfect microcosm; we're big enough to be a relevant test bed, and small enough to be able to make adjustments fairly easily."

Intel inside Asian IoT

Meanwhile Intel has been taking its own steps to promote IoT in Asia Pacific. At the end of September it staged an IoT Asia Day in Taiwan that attracted about 1,000 representatives from businesses across Asia. It focused on the application of IoT to retailing, manufacturing automation, smart cities, smart grids, building automation, smart transportation, smart homes and integration with big data solutions, according to Intel.

The event also showcased IoT products and solutions from partners and solution providers in Asia, including Chunghwa Telecom, and Taiwanese industrial computer supplier, Advantech.

> The improved communication infrastructure in the region, coupled with the ready availability of cost-effective compute and storage (cloud computing) will help drive development and adoption of Internet of Things

Rick Dwyer, Intel vice president and general manager of its Worldwide Embedded Sales Group, was reported listing the top three imperatives for realizing IoT in Asia as being innovation in vertical industries, integrated end-to-end vision and partnership with the ecosystem.

Intel has made significant investments in IoT in Asia. Earlier this year it established the $100 million Intel Capital China Smart Device Innovation Fund to invest in wearables and IoT companies. The fund has already invested in five companies: EyeSmart, which develops iris-recognition hardware for wearables and mobile devices; Guangdong Appscom, which makes wearables; and LeWa Technology Shanghai, which makes a version of Android for Chinese smartphones.

Taiwan, however is not leading the IoT/IoE charge in Asia, according to Frost & Sullivan. The research firm has identified early adopters of IoT in the region as Japan, Singapore, China, Australia and South Korea, but says: "Other countries in APAC like India, Malaysia, Thailand and Indonesia are expected to be some of the fastest growing Internet of Things markets in Asia Pacific between 2014 and 2017."

Andrew Milroy, vice president for Asia Pacific in Frost & Sullivan's ICT Practice, said there were several factors driving the adoption of IoT in the region such as regional governments' efforts to improve competitiveness in their economies and city planners' efforts to address social demographic challenges in their cities.

"The Asia Pacific region is characterized by a large presence of manufacturing economies and has one of the largest production networks in the world. This is expected to drive spending on Internet of Things applications in telematics and supply chain visibility. Internet of Things spending in the manufacturing industry is expected to be one of the fastest growing markets in APAC, growing at a rapid rate CAGR of 52.7 percent between 2014 and 2020."

He added: "The improved communication infrastructure in the region, coupled with the ready availability of cost-effective compute and storage (cloud computing) will help drive development and adoption of Internet of Things."

Milroy also said that whilst IoT spending in logistics and transportation currently contributes to the bulk of IoT spending (and is expected to remain the largest IoT segment in APAC for the foreseeable future), IoT spending in the consumer technology segment is expected to experience phenomenal growth between 2014 and 2017.

The challenges facing IoT/IoE

F&S also identified several factors that could prevent IoT from achieving rapid adoption. Most of these, such as security and information privacy and the lack of standards, are not unique to APAC. However it notes: "the challenge of providing sustainable and cost effective power supply to millions (and in the future billions) of connected devices is likely to affect the feasibility of IoT implementations in specific industries."

This could well be a bigger barrier in some APAC nations than in the developed world. Nonetheless, F&S concluded: "The market is expected to continue to grow strongly and develop on multiple fronts, as large industry specific enterprises continue to invest heavily in industrial IoT technologies in their respective industries, and nimble small enterprises leverage cloud and open source technology to develop innovative business solutions and services."

In the M2M market - a subset of IoT - Africa, the Middle East and Asia-Pacific are well ahead of the rest of the world, according to Vodafone's 2014 M2M Barometer. It estimates that 27 percent of organizations in these regions are making use of M2M, up from only 12 percent a year earlier. Europe has seen similar growth from 11 to 21 percent but uptake in the Americas has been much slower up from 13 to 17 percent.

The barometer commented that, generally speaking, Asian and Middle Eastern countries, particularly China, have strong public sector backing for M2M applications such as smart cities and smart metering.

Signs of significant growth

In another sign that the M2M and IoT markets in Asia Pacific are on the cusp of rapid growth, global advisory firm on M2M and IoT, Machina Research, in March this year opened an office in Hong Kong and appointed a head of Asia Pacific M2M and IoT research. Commenting on the move, the company's director, Jim Morrish, said that Asia would play a significant role in the global M2M and IOT ecosystem.

"Asian markets are incredibly disparate, but many are urbanizing quickly and many exhibit fast economic growth," he said. "At this early stage of M2M and IoT market development, where the focus is on identifying applications and business models that work well, those qualities turn Asia into something of an incubator for the Internet of Things.

"Ally this to application development environments that are generally less encumbered by legacy IT systems than equivalents in the West, plus often lighter touch regulation and a range of government initiatives particularly relating to smart cities, and, of course, with China being the largest market

worldwide for M2M and with South Korea and Japan being two of the most technologically advanced countries on the planet, we decided that it was essential for Machina Research to establish a presence in the region."

The GSMA - which represents the interests of mobile operators worldwide - has a rather more constrained definition of IoT; not surprisingly, one restricted to mobile networks. It too sees strong potential in Asia Pacific.

The GSMA's vision for the IoT is the 'Connected Life', a term that "refers to a world in which consumers and businesses use many different devices to experience compelling new services and ubiquitous Internet access delivered via mobile networks." These devices include "the next wave of smartphones, tablets and consumer electronics, as well as machines, vehicles, monitors and sensors equipped with machine-to-machine (M2M) communications."

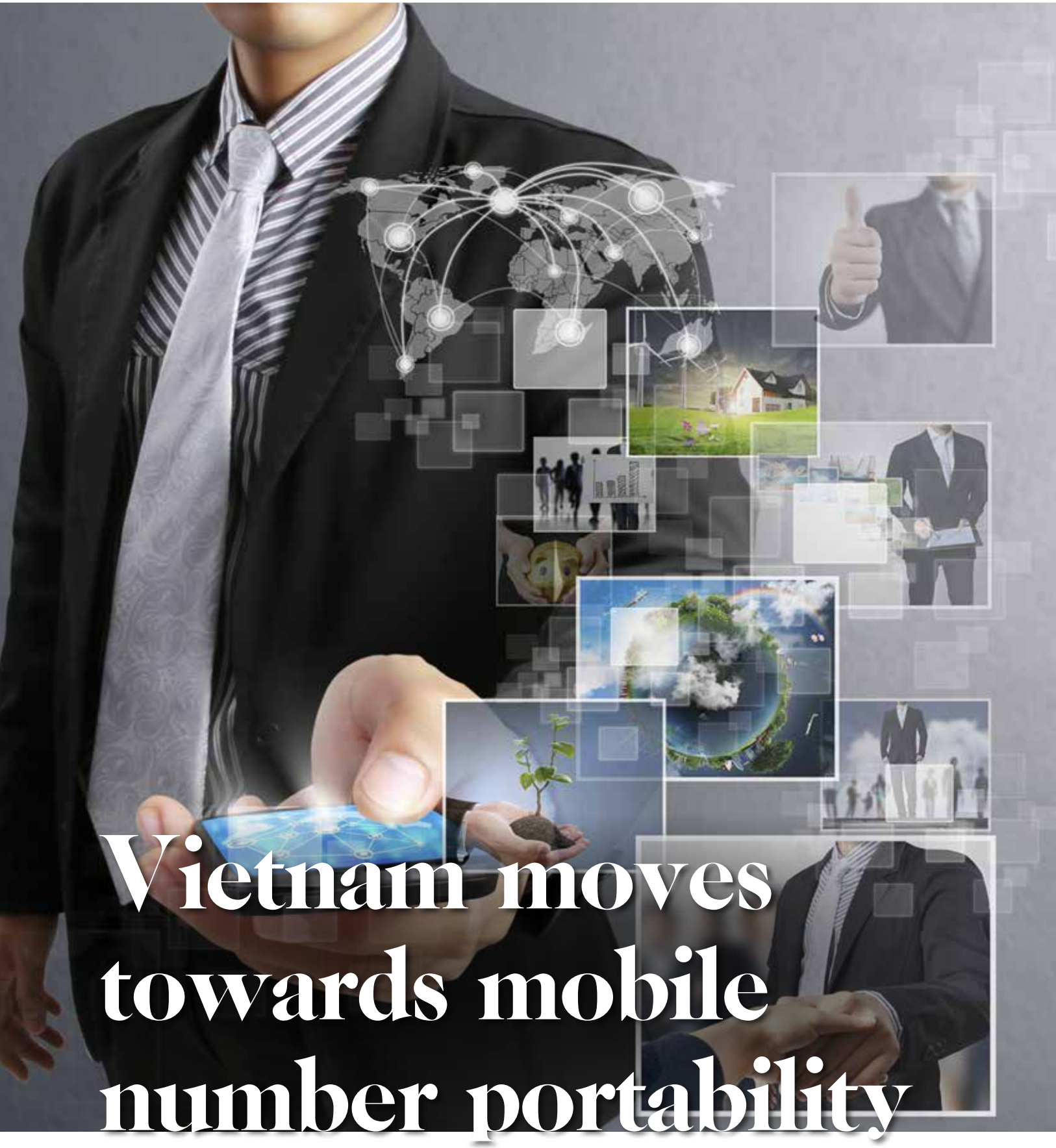
GSMA says that IoT will offer a range of innovative new services to consumers in Asia Pacific and help to address some of the broader challenges arising from trying to achieve sustainable growth in the face of high levels of population growth and rapid urbanization, with growth rates well above the global average.

"The [M2M] market is now moving from a period of 'hype' and market development to one with an increasing focus on real commercial deployments, with the Asia Pacific region providing a clear example of these trends" GSMA says. "Global M2M connections reached 188 million in 2013, growing at almost 40 percent per year between 2010 and 2013. Asia Pacific is the largest regional M2M market accounting for almost 40 percent of global M2M connections, and has recorded the largest gain since 2010, with 51 million net additions over the last three years."

According to GSMA, the region's share of global M2M connections increased from 26 percent to almost 40 percent between 2010 and 2013, although this was largely due to the rapid growth of the Chinese market.

"China alone added almost 39 million M2M connections over this period while a number of other Asian markets recorded a substantial net increase," it said. "By the end of 2013, China reached 50 million M2M connections and overtook the US (32.5 million) as the largest M2M country worldwide in terms of connections, while Japan remained the third-largest market with 9.3 million connections."

The GSMA has a 'Connected Living' program that aims to address key barriers and challenges to the development and growth of M2M/IoT connections and services across the world. In October 2013 it published a 'Call to Action', inviting mobile operators to engage as 'lead' operators to shape the program definition. It says that a number of operators in the Asia Pacific region have offered to take a lead role, including China Mobile, China Unicom and NTT Docomo."TR



Vietnam moves towards mobile number portability

Vietnam's booming mobile market is ready for mobile number portability and the government has mandated it, but operators are dragging their heels

Vietnam is one of the most vibrant mobile markets in Asia today. 3G services were launched in 2010 and the country is eagerly anticipating the launch of commercial 4G services, expected in 2015.

According to applift.com, Vietnam has more than 135 million telephone subscribers and 35 million mobile phone subscribers and is second only to Colombia in the rate of growth of its smartphone market. At the beginning 2014, the number of smartphone subscribers reached 18 million and is expected to reach 28 million at the end of the year. Mobile subscription penetration is about 145 percent. All of these numbers are likely to grow once 4G hits the market.

But aside from 4G, mobile number portability (MNP) has been the topic of most headlines in Vietnam. MNP rose to prominence in 2012 when the Telecommunication Department called on the Ministry of Information and Communications to implement MNP by 2014 to make it easier for customers to switch network providers and to boost competition between telecoms companies. It was expected that the move would force mobile network operators to raise the performance of their networks and to improve their customer service.

Vietnam ripe for MNP

Le Nam Thang, deputy minister of Information and Communications, revealed that, in a meeting with the Telecommunication Department, he had been told that the prerequisites for the introduction of MNP were all in place. These included: more than 1.5 subscribers per capita, six mobile providers and low calling charges. Thang said that once MNP had been implemented, all mobile phone numbers would be centrally managed by MIC's telecommunication department instead of being partially managed by each network provider.

The main advantage of MNP is that it enables mobile phone users to retain their mobile phone number when they switch from one mobile phone network to another. It also eliminates the need for mobile users to inform all their contacts that they have a new number if they change operators.

From a national perspective, MNP is a sign of a healthy and competitive telecommunication industry, because regulators play an active role in the implementation of number porting. MNP stimulates the market leading to better pricing and improvements in the quality of services operators provide. It also reduces the power of a dominant player.

The GSM Association (GSMA) reported last year that only a quarter of developing markets had introduced MNP - including India, Brazil, Nigeria, Turkey, Mexico and South Africa - and that a further fifteen percent planned to implement MNP in the near future. In the case of China, the world's largest mobile market. The South China Morning Post recently reported that it would be introduced in 2015.

Hurdles slowing MNP

But as this initiative progresses in Vietnam, it is expected to experience hurdles along the way. Though the MIC was adamant that MNP would be made available by 2014, according from VietnamNet, a lot of mobile network operators are still opposed to its introduction.

VietnamNet also quoted a senior executive with one of the operators claiming that it needed at least five years to prepare for MNP. He highlighted that the company still needed to consider thoroughly the economic aspects of the project, including the investment rate, the expected benefits and the cooperation of relevant enterprises. And, according to Tong Viet Trung, deputy general director of Viettel, regulations to govern MNP have not yet been finalized.

However, the Ministry of Information and Communication (MIC) has already set a final deadline of January 1, 2017 by which subscribers should be able to switch operators and keep their number. In addition, Le Thi Ngoc Mo, deputy director of the Telecom Department, has assured all operators that the legal documents necessary for the implementation of MNP will be issued soon, to ensure the smooth performance of the process.

It is evident that there is a MNP tug of war in Vietnam between the government regulator and the operators. Most of the telecom operators know that MNP would require them up to the ante in terms of the service they provide as they begin to compete.

They also must take into consideration the reputation of Vietnam as a developing nation and its role as a member of the Trans Pacific Partnership (TPP), a group comprising the largest and fastest growing economies across the Asia-Pacific that is working on a comprehensive free trade agreement. Initiatives such as MNP that are geared towards fair trade, competition and benefiting are key priorities. TR

Wireless mesh helps Hong Kong protesters

Communications are vital to any group of people working towards a common goal and therefore likely to be disrupted by opponents. Hong Kong's pro-democracy protest movement has turned to wireless mesh technology so it does not have to rely on public cellular network and WiFi hotspots.

Wi-Fi.HK

Residents of Hong Kong are accustomed to Wi-Fi that is "always on". Free Wi-Fi services are widespread and there are many Wi-Fi hotspots around major sites whose presence is clearly indicated by the Wi-Fi.HK logo.

Residents have become accustomed to sending and receiving from their smartphones anywhere and everywhere. But in September that freedom was threatened when protesters took to the streets to show their disagreement with the Chinese Government's decision to block genuine democratic reforms for Hong Kong.

The protesters anticipated that the Government might attempt to thwart their initiatives by disabling Wi-Fi and cellular networks and so created a wireless mesh network to enable them to maintain communications.

Powered by Open Garden's app FireChat, it allows users to communicate with each other without a cellular or WiFi connection to the Internet by using the Bluetooth or WiFi capability built into every smartphone.

FireChat meshes mobiles

FireChat was launched in March 2014 and supports iOS and Android devices. Since the start of the Hong Kong protests it has been downloaded more than 100,000 times in Hong Kong. In an interview, Micha Benoliel, CEO and co-founder of Open Garden, claimed that the mesh network was secure and there is no way for intruders to use it to access data on the phone.

This is not the first time that wireless mesh technology has been used by protesters. Earlier this year, mesh networking was used in Taiwan's Sunflower Movement and also in Iraq where tens of thousands of people downloaded FireChat as the government limited connectivity in an effort to curb ISIS communications.

The technology can also serve as a secure means of communication in disaster situations when cellular networks are damaged.

Mesh networks wirelessly connect computers and devices directly to each other without control of oversight by any central authority, or any centralised technology. Mesh networks can reconfigure themselves automatically according to the availability and proximity of bandwidth, devices, etc. These features provide robustness that is particularly useful in disaster situations and that make it difficult to block their operation.

Dynamic connections between nodes enable packets to use multiple routes to travel through the network. This means each and every node must be taken down in order for a mesh network to be shut down completely.

Many uses of mesh

Mesh networking has been around for some time. The US military uses mesh technology to interconnect its computers during field operations. The One Laptop per Child Foundation uses mesh network to exchange files to enable multiple devices to communicate without an Internet connection.

Some satellite networks, such as Iridium, use mesh networking: communications are routed between multiple satellites so that every satellite does not have to 'see' a ground station in order for communication to be established.

The messages that passed through the airwaves of the mesh network during the Hong Kong protest were the lifeblood of the protest movement. These messages kept their ideals and beliefs alive and made the movement possible.

So perhaps it's time to revisit mesh networking, to see what benefits it can bring and how these can be extended to other applications. TR

Asia aims to lead the charge towards 5G

Today's dominant cellular technologies have their origins in Europe's first digital cellular technology, GSM (2G), on which work started in 1984. 5G will represent a significant departure from the technology evolution from GSM to LTE (4G): Asian telcos, vendors and governments are determined to take the lead.

> South Korea makes $1.5bn '5G' play" said the 23 January 2014 headline on news web site 'rethink wireless'.

"There have been several promises of in recent months, some little more than PR stunts that dragged a dusty piece of R&D out of the labs and gave it a label which no standards body has yet

defined," it said. "However, trust South Korea to put some real money where its mouth is - the small but broadband-obsessed country plans to invest a cool $1.5bn to build a next generation wireless network by the end of this decade."

> The Chinese Government was quick of the mark with a plan to co-ordinate and stimulate 5G research in China

That reference to 'PR stunts' might well have been to a press release from Samsung in May the previous year, when 5G had nowhere near the high profile and amount of news coverage it gets today. Samsung claimed to have developed a 'breakthrough' technology that it was calling '5G'. It operated in the 28GHz band and supposedly could deliver multigigabit per second speeds.

Little information of substance was provided to back up the claim, but as a PR stunt it was hugely successful. For quite some time afterwards the results of any Google search on '5G' and 'mobile' were dominated by press reports based on that announcement.

In the ensuing 18 months a great deal of very real progress has been made on 5G and Asian technology companies, mobile operators and government agencies have been at the forefront.

This is in stark contrast to the developments of 2G, 3G and 4G (aka LTE) cellular technologies that were very much led by Europe. This is entirely appropriate: the largest markets, by far, for cellular network technologies and devices are in Asia. So Telecom Review Asia Pacific is taking a look at some of the recent Asian initiatives on the 5G front.

China quick off the mark on 5G

The Chinese Government was quick of the mark with a plan to co-ordinate and stimulate 5G research in China. In February 2013 it set up an IMT-2020 (5G) Promotion Group to coordinate all 5G activities in Chinese industry and academia. Three ministries: the Ministry of Industry and Information Technology (MIIT), the National Development and Reform Commission (NDRC) and the Ministry of Science and Technology (MOST) participate in the group.

China also rather cheekily co-opted the terminology of the International Telecommunication Union (ITU), which had played a key role in earlier generations of digital cellular standards setting. Much work on 4G standards was undertaken under the banner of IMT-2000 and in early 2012, ITU-R embarked on a program to develop 'IMT for 2020 and beyond'. It noted: "The use of the term 'IMT-2020' is a placeholder terminology and the specific nomenclature to be adopted for the future development of IMT is expected to be finalized at the Radiocommunication Assembly 2015."

Business Korea reported South Korea's planned $1.5 5G investment by saying "There is intense global competition to take the initiative in 5G networking. ... Korea is competing against global contenders to be the one ahead in this field. ... The government is planning to lead the effort to set a global standard for 5G technology by commercializing 5G mobile communications by 2020. ... It presented a blueprint for an investment of 1.6 trillion won ($1.5b) in research and development, standardization, and infrastructure related to 5G technology over the next seven years, through public-private partnerships."

Europe taps Korea's 5G efforts

Six months later Europe secured a piece of that action. The European Union and South Korea announced that they would "collaborate to develop systems, set standards and ensure global interoperability through the harmonization of spectrum bands."

An industry MoU was also signed between the EU's 5G Infrastructure Association - whose members include Alcatel-Lucent, Ericsson and Nokia, Deutsche Telekom, Orange, Telecom Italia and Telefónica - and South Korea's 5G Forum.

Announcing the move, the EU said: "The move could help the EU leverage South Korea's expertise in next-generation mobile technology. The country is set to invest $1.5 billion in the deployment of a 5G mobile network, which is due to be operational in 2020."

South Korea and China are not the only Asian governments determined to secure a lead position in 5G. But all such attempts are comprised by the necessity to ensure there is one global standard. The best that any one party can hope for is to achieve a technological lead sufficiently convincing to have its innovation adopted as, or incorporated into, a global standard. There has been a steady stream of white papers, trials and research collaborations coming out of Asia in recent months towards these goals.

NTT Docomo teams with 5G vendors

Some have seen the benefits of partnering with European players that have a long track record in cellular technology. Likewise these European players see benefits in being part of Asian initiatives. Thus, in May this year NTT Docomo announced plans to conduct trials of 5G technologies with six leading mobile technology vendors: Alcatel-Lucent, Ericsson, Fujitsu, NEC, Nokia and Samsung.

NTT Docomo has been particularly aggressive on the 5G front. It has said it plans to launch commercial 5G services in 2020, in time for the Olympic and Paralympic Games that will be held in Tokyo.

NTT Docomo announced in September plans to set up two new 5G focused business units: the Innovation Management Department and the 5G Laboratory. The Innovation Management Department, a unit under the R&D Innovation Division, will "drive R&D activities and innovation targeted at smarter-living initiatives [and] develop new business and

manage both strategic investments and business tie-ups focused on technology innovation."

The 5G Laboratory "will accelerate R&D activities related to Docomo's development of a 5G next-generation mobile communications system, as well as international standardization of such technologies." NTT Docomo said the lab would employ about 30 people.

The 5G White paper chase

NTT Docomo has also released a white paper 5G Radio Access: Requirements, Concept and Technologies that sets out its views on "the technical requirements, evolution concept and candidate technologies for 5G radio access."

Chinese vendors Huawei and ZTE have also been airing their views on 5G technology. ZTE in July issued a white paper detailing a new 5G access network architecture based on dynamic mesh networking. ZTE said: "In 5G networks there could be many types of base station including UDN (user densification network), massive MIMO (multiple-input multiple-output), traditional macro, and D2D. These various base stations will coordinate with each other horizontally more often than they do in 4G networks, and so will require a dynamic and adaptive wireless mesh network.

"ZTE's approach to the improvement of 5G network architecture will make it possible for 5G networks to implement highly-effective SDMA (space-division multiple access), and ZTE hopes this approach will become the next telecoms industry hotspot for 5G technology research."

ZTE boasted that "As a major member of the IMT-2020 (5G) Promotion Group in China, ZTE leads over 30 percent of the current 5G research, such as IEEE-oriented 5G technologies, 5G network architectures, and breakthrough technologies for the physical layer of 5G networks."

In a white paper released in January 2014, Huawei set out its vision for 5G development and deployment. It defines key objectives including massive capacity and connectivity, support for an increasingly diverse set of services and efficient spectrum use.

SK Telecom has also staked its claim for thought leadership in 5G with the release in October 2014 of a white paper SK Telecom's views on 5G Vision, Architecture, Technology, Service and Spectrum. Park Jinhyo, head of the Network Technology R&D Center at SK Telecom, said the white paper would "present a future direction for 5G-related research and discussion," and that SK Telecom would "continue to take the lead in a range of R&D activities for the 5G technology and become the industry leader in the global market as well as in Korea."

Similar sentiments were echoed a day earlier when SK Telecom and Samsung announced a MoU to start joint research on 5G network technology and service development. Kyungwhoon Cheun, senior vice president and head of the communications research team at Samsung Electronics' DMC R&D Center said: "Through this opportunity of cooperation between the two companies ... I believe Korea will continue to lead mobile communications network in 5G as it does in 4G."

Multiple 5G MoUs

But SK Telecom appears to be hedging its bets. In July it signed a MoU with Ericsson "to cooperate in studying and developing core technologies that hold high potential to become standards of the next generation network with the aim of demonstrating 5G in 2018." (These multiple MoU with different vendors in such a high-stakes, highly competitive and highly innovative area as 5G must create some interesting confidentially and intellectual property challenges!)

Thomas Norén, vice president and head of product area radio at Ericsson said: "Korea ... and SK Telecom ... are early drivers of technology and we see them as an important partner in defining new opportunities, innovations and requirements for the continued evolution of LTE and towards 5G."

SK Telecom and Ericsson revealed some fruits of their collaboration saying they had successfully demonstrated Elastic Cell "expected to become a key enabler for 5G." They said it was a new technology that enabled multiple cells near the handset to cooperate for every transmission thereby creating a user-centric environment, compared to the current cell-centric one where each handset communicates with only one specific cell and "could improve data transfer rate by up to 50 percent at the cell boundary areas compared to the existing LTE network." They aim to commercialize Elastic Cell by 2016.

In another tie-up Korean carrier, LG Uplus and Huawei announced plans to establish a joint Mobile Innovation Center for LTE-A and 5G research in Seoul. Mr Kim Sun Tae, LG Uplus, said he expected the partnership to contribute significantly to the development of the country's ICT industry, and deliver the most advanced LTE products and innovative 5G solutions to people in South Korea in the future.

Huawei's European 5G foray

Chinese vendor, Huawei, appears to be taking a particularly aggressive stance in its bid to be a key mover and shaker in the world of 5G. Not content with confining its initiatives to Asia and to expounding its own views of 5G technology it says it is "taking decisive action to make the 5th generation of wireless systems (5G) a reality for Europe."

The announcement went on to say: "At the 5G @ Europe Summit, which will bring together European policy makers, service providers and technology leaders in Munich, participants will discuss how best to join forces to speed up progress towards achieving this objective." However, Huawei did not elaborate on what 'decisive action' it was taking, other than to participate in the summit.

Huawei has called for global collaboration among ecosystem partners, international trade associations, universities, governments and private sector

companies to drive 4G and 5G technologies.

"Europe has an important role to play in this collaborative process – to the benefit of both sides: while 5G, as a global technology, is vital for Europe's global competitiveness, the success of European 5G is also critical to the global success of this new generation of wireless systems," it said.

Huawei has also been strengthening its ties to other European 5G initiatives. It announced in July that it had been elected to the board of the 5G Infrastructure Association and would "play an important advisory role for the 5G Infrastructure Association, contributing to shaping European Union (EU) priorities in 5G research and extending the dialogue to a wider group of stakeholders."

Samsung claims fastest 5G

Meanwhile, in October 2014, Samsung followed up its May 2013 announcement of a 5G 'breakthrough' at 28GHz with something more concrete. It said that, using 28GHz spectrum it had "clocked 7.5Gbps, the fastest-ever 5G data transmission rate while in a stationary environment," and was "the first to achieve an uninterrupted and stable connection at 1.2Gbps in a mobile environment from a vehicle travelling at over 100km/h."

Samsung said also that it had proposed a '5G Rainbow' to other industry members. It explained: "The 5G Rainbow identified seven core technical pillars of 5G technology that would truly ensure a differentiated 5G user experience. These pillars are maximum data rate, spectral efficiency, speed of mobility, and data transmission rate at the cell boundary, the number of simultaneous connections, communication delays, and cost." Telecom Review Asia Pacific was unable to find any other information on this initiative.

Spectrum will be key

Regardless of which technologies eventually earn the moniker of '5G' and which players make the greatest contribution of intellectual property, if 5G devices are going to usable worldwide not only telcos and technology vendors but, most importantly, governments, will have to agree on spectrum. And Asia's increasing dominance of the 5G evolution is causing concerns, especially in the US, which has to a large extent been missing in action on 5G.

In a recent blog post FCC commissioner Jessica Rosenworcel noted some of the developments described above, and concluded "The 5G race is on - and our future depends on it." Then she said: "There is no need for the US to stay stuck in the starting gate. We can build on our 4G success — if we get going right now."

She then outlined some of the possible spectrum choices being considered for 5G. "The good news is that this month the FCC adopted its first inquiry into high-band frequencies. It has the less-than-exciting title of 'Use of Spectrum Bands above 24 GHz for Mobile Radio Services'. No matter. This is critical, because it starts a technical conversation among wireless stakeholders."

The message is clear: no matter which companies play the lead in determining what '5G' will look like, every government in the world will need to accommodate the technologies in its spectrum planning. Better, as Rosenworcel says, to start now and not wait for others to make all the decisions.TR

LTE in the Philippines: how it rates

LTE services in the Philippines have been branded "poor and slow" but how do they really compare with services in other Asian countries?

Three years ago LTE (Long Term Evolution) mobile services were launched in the Philippines but only a handful of tech savvy individuals celebrated. Very few people understood what LTE (more commonly referred to as 4G) meant. They had no idea what impact it would have on communications in that country.

However, more than two years after its launch by both Globe Telecom and Smart Telecommunication, the nation's LTE has been described in an Open Signal report as "poor coverage and slow" in comparison to LTE in US, Europe and some of the Philippines' Asian neighbours.. Since then, end users have been keeping a watchful eye on the speed and performance of LTE services.

The Open Signal report added that Globe Telecom achieved an average downstream speed of about 6.3Mbps and Smart about 4.3 Mbps. Another report entitled Good LTE Hunting, from Rappler.com, found download speeds as high as 21Mps in some metro areas, such as the Mall of Asia, while in Maginhawa St in Quezon City download speeds exceeded 11Mbps.

But is the LTE in the Philippines really that bad? Perhaps it is worth taking a peek into the state of LTE in neighboring countries to understand how LTE in the Philippines is really performing.

Singapore & Korea the LTE leaders

The frontrunners in terms of LTE speed include Singapore and South Korea. According to Open Signal, Singapore telco SingTel has an average LTE downstream speed of about 11.2Mbps and 3.8Mbps upstream speed with a latency of about 50ms. Singtel is one of the five cellular networks in Singapore. Its LTE service is able to support high definition video streaming and crystal clear voice calls. The service went live in June 2013. For Singapore's M1, LTE services have an average speed of about 13.5Mbps downstream and 2.2Mbps upstream with an average latency of 34ms.

In South Korea SK Telecom has been offering LTE since October 2013 and the country has gained a reputation for high LTE speeds. It is achieving 9.3Mbps downstream speeds and 5Mbps upstream - sufficient for a highly tech savvy user base that streams endless K Pop videos on their mobiles. SK Telecom has 13.9 million LTE subscribers. Another LTE powerhouse in Korea is KT Telecom, which earlier this year claimed to have 8.2 million LTE subscribers. All providers including LG Uplus claim to have improved their LTE services. All are planning to soon introduce LTE-Advanced.

In Malaysia both Maxis and U Mobile are providing LTE. Maxis was first to launch, in February this year, and since then has managed to offer an average downstream speed of 8.9Mbps, upstream of 2.7Mbps and 42ms of latency. U Mobile has a faster downstream speed of 13.5Mbps and an upstream speed of 3.4Mbps and 31ms latency.

DTAC Thailand is one of the newest entrants in the LTE race in Asia. Its LTE services started in May this year and are now averaging about 5.4Mbps downstream and 2.5Mbps upstream with 57ms latency.

LTE-A coming to the Philippines

These figures clearly show that there are considerable variations in performance of LTE in the Asian region and that LTE performance in the Philippines is comparable to that of its neighbours. Over the past few months both Philippines networks have made significant improvements and they assure end users that performance and coverage will continue to improve.

Smart Communication launched LTE-Advanced services in Mandaluyong City in August. Smart did not say what downstream speeds would be delivered, instead referring to its trials a year earlier when it claimed to have achieved 100Mbps. Globe is expected to follow soon. The continued efforts by these two to be the number one player can only benefit Philippines mobile users. TR

SMS:

an important message in Asia

Mobile text messaging is facing tough competition from over-the-top text messaging services, but rumours of its death are greatly exaggerated.

Numerous articles have been written in recent years predicting that SMS (short messaging service, aka text messaging) will be killed off by over-the-top (OTT) messaging services like WeChat, WhatsApp, KakaoTalk, Line, Viber and many more.

The tide may be slowly turning in favor of those app-based messaging services, but for now SMS continues to a relevant and competitive service.

According to China's Ministry of Industry and Information Technology (MIIT) between January and May 2014 China's mobile users sent 314.62 billion text messages, an average of 39.8 per user per month, down 18.4 percent from the same period last year. MIIT also reported that China's mobile Internet traffic increased 52 percent in the same period and had tripled in volume since the end of 2011.

WeChat winning in China

China is Asia's largest mobile market and Tech in Asia reported that WeChat is the most widely used messaging app in the country. WeChat doubled its active user numbers from Q1 2013 to Q1 2014 and now has 396 million users. According to Tech in Asia, if growth continues at this rate text messaging will be nearly extinct in China by the same time next year.

Meanwhile, in the Philippines - once dubbed "Texting Capital of the World" - SMS has been in decline since 2010/2011 when Internet-based social networks started to make headway. However the country continues to generate the largest SMS volume in the world and SMS remains Filipino's preferred choice for quick messages because of a geographically fragmented market and because mobile operators have created price bundles that include a specific number of, or unlimited, text messages.

In Thailand OTT is slowly gaining ground but for now SMS remains dominant. The migration of 2G users to 3G was completed last year and many of these have transitioned to OTT messaging services. Thailand has the third largest Facebook population in world, with 26 million users about 16 million of whom access Facebook from a mobile device. Usage of OTT messaging app, Line exceeded 24million this year, a 30 percent increase on the same period last year.

These different countries have different technologies, different mobile pricing models and different messaging patterns. However they have one thing in common: while they are embracing app-based messaging, they continue to use SMS.

3G networks have contributed significantly to the growth of app based messaging. The price of SMS messaging continues to decline and users are starting to understand, and compare the cost of a minute of data connectivity for app-based messaging against the cost of sending a text message.

According to an report from Ericsson smartphone usage is growing at about 25 percent annually, with the majority of new users coming from the younger generations. A report from eMarketer.com concurred. It found that that the younger generation is making the most use of smartphones (watching movies, music, browsing, social media updates etc) as well as for more for basic functions like calling and sending SMS.

Banks backing SMS

Just recently, financial institutions like DBS in Singapore have added SMS banking, enabling transactions to be made outside the Internet banking environment. The bank explained the move by saying that many consumers are more familiar with the SMS functions and have used SMS to make service requests or to participate in marketing promotions.

Needless to say, SMS remains an integral part of the Asian communications scene. It remains true to its promise to deliver a simple message that is short, sweet and relevant. TR

Women in Telecom:
Lisa Tovar

Telecom Review recently posed several questions to Lisa in order to give our readers an insight into Lisa, and her career. Lisa Tovar is the current Director of Marketing for Telarix Inc. As a valued member of the management team she oversees marketing communications, PR and product marketing for Telarix. Below you will find some of those questions posed by Telecom Review, and Lisa's response to those questions.

Will you please tell Telecom Review readers more about yourself?
After earning a Bachelors in Economics from the University of Connecticut I started my career by sourcing candidates for technology companies in the metro DC area.

In 2007 I transitioned to Telarix and have worked my way up and through several departments. During my tenure at Telarix I attended American University part time while earning my MBA.

What brought you into the telecom world?
My career in telecom started with Telarix, the market leader in Interconnect Business Optimization, where I worked up through the ranks of HR and moved to Marketing after getting my MBA.

When I joined Telarix we were still very much in startup mode which required people to do everything from helping to set up agreements between carriers to setting up software services on the exchange all the way to hiring the right people for sales, technology and operations. This gave me a good foundation for understanding the complexities of telecom.

With multiple retail and wholesale services, millions of routing permutations, hundreds of wholesale partners and thousands of destinations the complexities are immense. I've been able to take my experience in Telarix and create marketing materials and communication plans around these complexities which has given me the foundation to be right in the center of the telecom nexus.

How can women empower their role in telecom?
Women are certainly the minority in the Telecom world; which means there is tremendous opportunity for improvement. The industry, like

any, can benefit from a more diverse workforce especially as it relates to women.

Women often have a different approach to problem solving which compliments and adds value to the business and industry. As an industry we need to be open to and embrace the diversity.

We as women need to have the confidence to know our value as a resource to an organization. We can't sit back and wait for someone else to empower women in Telecom, we need to be the driving force behind it.

Do you see a more powerful presence for women in ICT and telecom in the future?
Absolutely, and I would say this is the case for any industry. There are many studies out there that show the more diverse your workforce and specifically your top leadership, the better companies perform, yet still only 5.2 percent of the Fortune 500 CEO's are women.

The Telecom industry is no different. With all of the complexities in the industry it's even more important to have a diverse workforce. Women have the ability to have a direct impact on the future of telecom by bringing a different skill set or view point to the table.

As I travel across the world I am already encouraged by how much the industry has changed. We still have a long way to go but I see more and more women rising through the ranks of telecom companies.

What are your future plans and projects?
The telecom industry is at an interesting crossing point, new services and technologies have/are entering the market yet we still have a number of legacy systems all of which is adding to the complexity of the industry.

Decisions that are made now as it relates to this will have a lasting impact for generations to come,

it is my goal to ensure the market understands how Telarix fits into this equation and how we can really help be the partner a carrier needs navigate both the old and new services and technologies.

Can you tell us more about Telarix?
Telarix provides billing, settlement, trading, price list management, and routing solutions to carriers around the globe. Our products, iXTools and iXLink, are available in both licensed and SaaS models for voice, video, data, and SMS.

iXLink has a carrier community of over 3800 individual companies, and is the de-facto standard in electronic information exchange, allowing customers increased revenue, extended reach, access to the user community, and higher levels of efficiency.

Our products and services are flexible for carriers of any size. We have the technical expertise required to meet the specific business needs of your wholesale business and we can manage your back office administration with our Managed Interconnect Service offering.

What made you decide to start at Telarix?
When I joined Telarix it was still a startup and really only just kicking into growth mode allowing an individual to really make an impact on the organization. It's important to me to be with an organization that constantly challenges me and also one where I can see the direct impact of my work, Telarix provided me with that opportunity and continues to do so.

Where will Telarix be in 2015?
We are doing some pretty excited things at Telarix that have the opportunity to really change the industry and the way in which carriers interact with one another. Over the next year this will really come to the forefront and have a direct impact on the industry. We are also having a lot of discussions around IPX and constantly exploring the ways in which we can continue to automate a carrier's backend.

Our carrier community is constantly growing and as more and more carriers see the value in our products the more we are able to reinvest in the industry. TR

SEA-US: diversity for Asia - US communications

With most US-Asia cables concentrated on the North Pacific route between Japan and the USA, SEA-US will bring an additional 20Tbps of diverse-routed and low latency capacity to meet surging traffic demands.

Internet traffic is growing exponentially because of increased demand for video, applications and other online content from broadband and mobile subscribers. This demand and the growing availability of higher broadband speeds are producing explosive growth in bandwidth demand.

The Asia-Pacific region is a leading driver of Internet traffic growth, which will continue to push trans-Pacific connectivity demand beyond existing capacities. According to a recent global bandwidth forecast published by TeleGeography, trans-Pacific demand is expected to increase at a compound annual rate of 33 percent between now and 2020.

To cater for this exponential growth a consortium of seven global telecommunications companies has been formed to construct and operate a new submarine cable system that will directly link Southeast Asia and the United States. NEC Corporation will supply and install the system.

The Southeast Asia – United States (SEA-US) consortium consists of PT Telekomunikasi Indonesia International (Telin), Globe Telecom, RAM Telecom International (RTI), Hawaiian Telcom, Teleguam Holdings (GTA), GTI Corporation (a member of the Globe Telecom group of companies) and Telkom USA.

When completed in the fourth quarter of 2016 at an approximate cost of $250 million SEA-US will provide an additional 20Tbps of capacity between Indonesia, the Philippines to the United States.

First direct Indonesia-US link

The SEA-US system is strategically located along an underserved trans-Pacific route and will be the first submarine cable directly connecting Indonesia and the United States. With a high concentration of existing trans-Pacific fiber cables on the Japan-United States route, this system will provide route diversity from the North Pacific and avoid earthquake prone areas in East Asia allowing customers to reduce risk of link loss from typhoons, earthquakes and tsunamis.

The 15,000-kilometer sub-sea system will link Manado in Indonesia, Davao in the Philippines, Piti in Guam, Oahu in Hawaii and Los Angeles in California using 100Gbps per wavelength DWDM technology.

PT Telekomunikasi Indonesia (Telkom) said that, through its subsidiary

PT Telekomunikasi Indonesia International (Telin), it was embarking upon a mega project that would make Indonesia a global gateway for telecommunications traffic, connecting Europe and the west coast of the US.

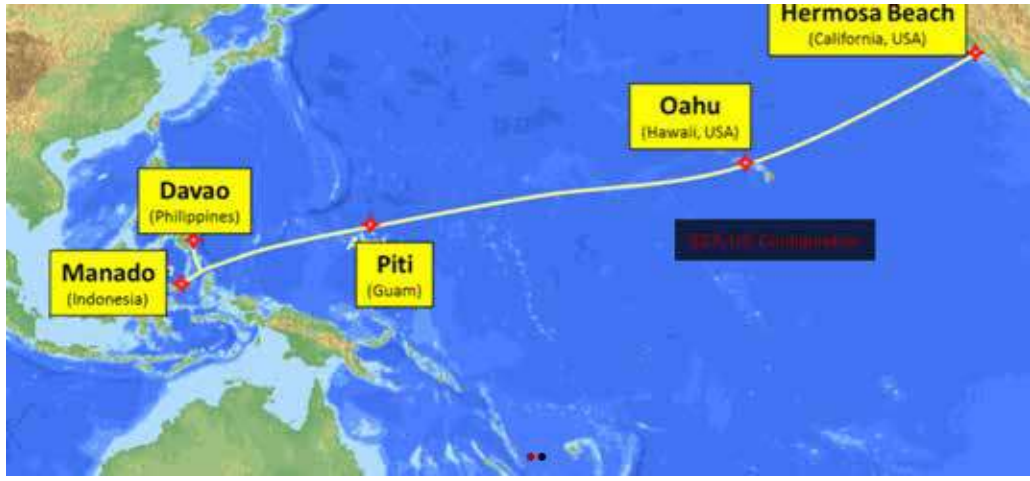
Telin specializes in international carrier services and strategic investment in international telecommunication business. It also serves as Telkom's business arm for managing and developing business abroad. In addition to its participation in SEA-US Telin has signed a memorandum of understanding with 12 Asian telecommunications companies and two European companies to form the Southeast Asia consortium - Middle East - Western Europe 5 (SEA-ME-WE) to develop an international submarine cable system linking Southeast Asia and Europe.

Key role for Indonesia Global Gateway

Lying at the heart of these two mega projects is the Indonesia Global Gateway, which will serve as the global hub linking the SEA-ME-WE and SEA-US networks.

The Indonesia Global Gateway (IGG) stretches from Dumai in Indonesia's western island of Sumatra to Manado in Indonesia's eastern island of Sulawesi. It is one of Telkom's proudest accomplishments and a proof of Telin's commitment to realizing its vision of becoming "the world's hub for telecommunication, information, media, edutainment and services (TIMES)".

Syarif Syarial Ahmad, president director of Telin, said: "The SEA-US project is connected seamlessly with Telkom's domestic backbone, and the cable will provide unmatched latency from Indonesia to the United States. The project will also support Indonesia's strong economic growth and its government's Master Plan for acceleration and expansion of Indonesia's Economic Development (MP3EI). We began pursuing SEA-US in 2013 and are very proud to be a part of this historic project that marks the first gateway from the east part of Indonesia to the world."



Serving Philippines call centers

Gil Genio, COO for international and business markets of Globe Telecom, said: "Our country has become the preferred destination for the outsourcing and offshoring industry, including major call centers, business process outsourcing providers, global financial institutions and a host of other multinationals that require very large bandwidth. We have also seen the explosion of the mobile Internet, enabling a new lifestyle for our mobile customers and businesses.

"The SEA-US project will enable Globe to meet tomorrow's bandwidth needs, and is part of our effort to provide a great customer experience on their mobile and other devices, as well as add even more diverse options for companies to connect to the US."

Globe Telecom, jointly owned by conglomerate Ayala Corp and Singapore Telecommunications (SingTel), is set to spend bulk of its $85 million investment in the SEA-US in 2016. Globe also invested in the 8,900-km Southeast Asia-Japan Cable (SJC) system that links Brunei, Mainland China, Hong Kong, Japan, Singapore and the Philippines, including the option to link with Thailand.

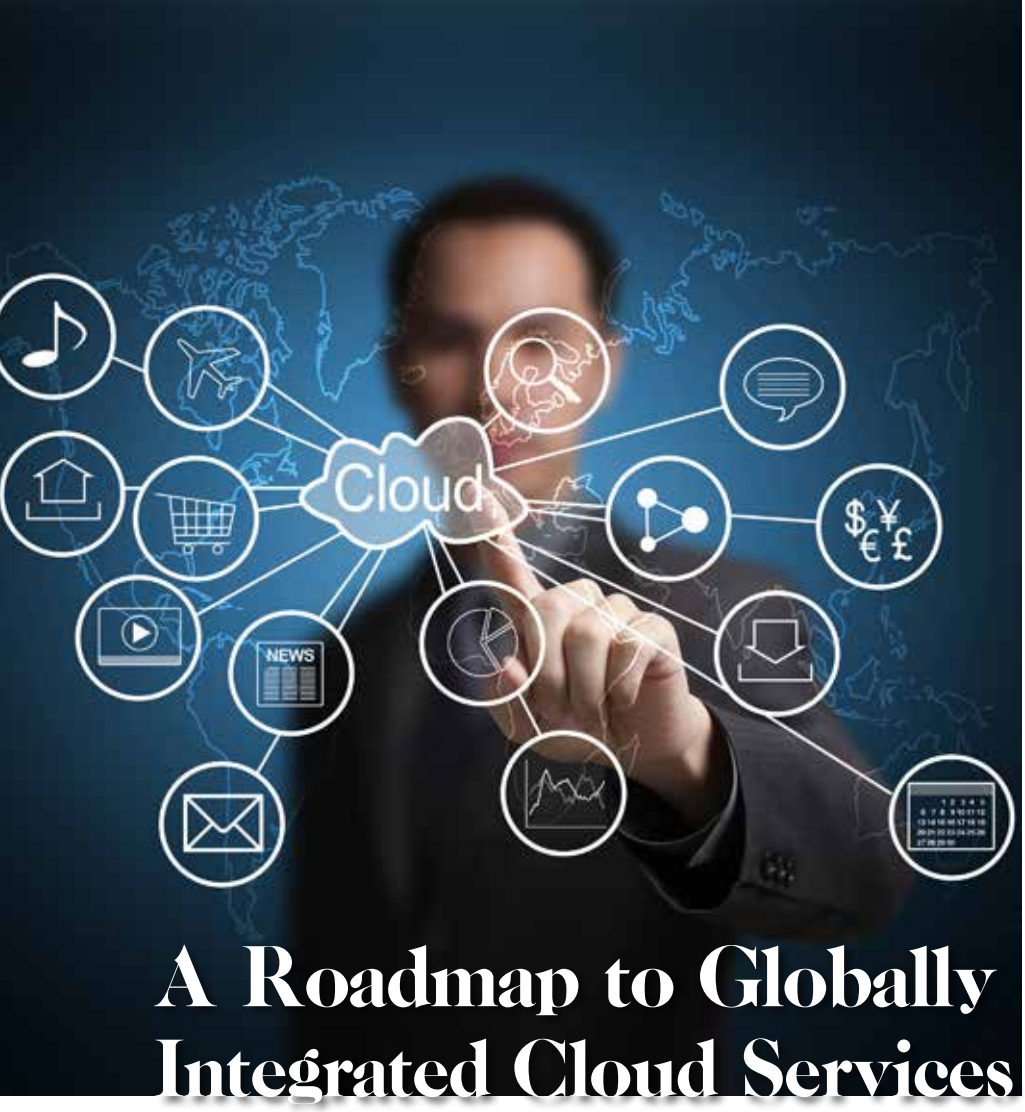
It is also part of the East Asia Cable system, Asia Pacific Cable Network-2, Tata Global Network-Intra Asia cable system, the city-to-city cable system and is interconnected with major Trans-Pacific Cable systems encompassing the Unity, Tata Global Network-Pacific, and the Japan-US Cable Network.

Strategic role for Guam

Robert Haulbrook, CEO and president of GTA, said: "Guam is a strategic location in the Pacific which allows GTA to successfully connect the Asia Pacific region to the United States. GTA's expansive and redundant network enables secure interconnectivity to other cables, increasing Guam's importance to future cable builds."

Eric Yeaman, president and CEO of Hawaiian Telcom said: "Hawaiian Telcom's participation in the SEA-US project strengthens Hawaii's role as a key strategic hub for traffic diversity and redundancy between the US and Asia. Additionally, investing in the SEA-US system will allow Hawaiian Telcom to efficiently meet its internal long-term Trans-Pacific capacity needs, as our customers increasing demand for bandwidth continues to grow."

He added: "SEA-US enables us to cost-effectively meet our future bandwidth growth requirements and substantially lower our incremental cost of trans-Pacific IP transit capacity by participating as an owner and operator, rather than just a capacity purchaser. Our investment in this cable will provide the dual benefit of making valuable capacity available to our carriers and enterprise customers and supports our internal growth with faster and more technologically advanced connectivity." TR



A Roadmap to Globally Integrated Cloud Services

The Cloud Ethernet Forum is dedicated to fostering the interoperability of different cloud environments. It is taking the pioneering step of integrating testing into the standards development process right from the start.

The OpenCloud Project is a program of the Cloud Ethernet Forum (CEF), a close affiliate of the Metro Ethernet Forum (MEF) with a combined 240+ members. Its members include Alcatel-Lucent, Avaya, Comcast, Ciena, Cisco, Citrix, CoreSite, Ericsson, Equinix, Juniper, HP, Huawei, Interexion, PCCW Global, Spirent Communications, Tata Communications, Telx, Verizon and many others.

The CEF is focused on shaping open standards, cloud interoperability and uniform application programming interfaces (APIs) for service providers and enterprises. It is developing standards for an open cloud environment. Informed by the experience and learning gained from its close association with the MEF and seeing the benefits that rapid, iterative development has brought to the cloud industry, the CEF is taking the pioneering step of integrating testing into the standards development process right from the start.

The Cloud Ethernet Forum's OpenCloud project includes a dedicated proof of concept test laboratory based in Silicon Valley set up to provide ongoing testing and support for the iterative development of the Forum's CloudE 1.0 open cloud environment.

The project's open test program will lay the groundwork for a fully interworking cloud environment, and the advancement of best practices to manage over the top (OTT) and cloud services. Initial work will be focused on three areas: application performance management, cloud security and traffic load balancing.

According to James Walker, CEF president and vice president of Managed Network Services at Tata Communications, this is vitally important work if fragmentation of the cloud is to be avoided.

"Unless we can define industry best practices and global standards to establish an open cloud environment, cloud services run the risk of becoming more and more fragmented and difficult to integrate," he said.

"Cloud services rely on the end-to-end interoperability of so many players – enterprises, network and data center equipment vendors, data center operators, orchestration layers, management and reporting platforms, security devices, network service providers – the list goes on.

"The MEF has shown a successful model of defining service types and attributes that everyone can agree to and align with, which through this test bed we can adapt and bring to the cloud industry."

MEF president, Nan Chen, added: "Network security and application performance management are two critical areas for future work. The OpenCloud Project is intended to create an open test process for NFV, SDN and Carrier Ethernet applications.

"We also plan to work in conjunction with other relevant influential industry forums to maximize efficiencies and avoid any duplication of work."

According to CEF chairman and executive vice president of Spirent Communications, Jeff Schmitz, the industry faces a real challenge: simultaneously integrating three relatively new concepts – NFV, SDN and Carrier Ethernet – to create an open cloud environment.

"Here's a chance to test and standardize your cloud services with an initial focus on application performance management, cloud security and traffic

load balancing," he said. "If you want to be involved in the future of cloud, the CEF is your chance to put your ideas to the test."

Validation of end-to-end interoperability

There are many challenges for today's enterprise cloud customers. Those that enterprises frequently mention to CEF members include:

• It is very difficult to get end-to-end service level agreements (SLAs) that cover the entire network, compute, storage and data center environments. Without these, customers are left with a patchwork quilt of SLAs that may not cover the whole solution or properly reflect the impact on the system of a small component failure.

• While cloud resources can be turned up in a few minutes, network services can take weeks or months to provision. Cloud services and network services often are provided by different organizations and then linked into the enterprise's own hosted application environment. Customers are asking for a direct link between provisioning of network and provisioning of virtual resources and vice versa.

• Compliance, regulation and privacy laws require enterprises to have unified risk management, auditable processes and a properly enforced security policy. This is close to impossible in an environment where the different components and suppliers have varying attributes that can be controlled and reported on.

• Different suppliers report on various attributes for their services, making it very challenging to have a single view of performance and the ability to respond quickly to traffic spikes and moving workloads – the biggest drivers of cloud take-up.

• With most enterprises relying on multiple clouds for different services, it becomes attractive for one cloud service to talk directly to another in a standardized and secure way. For example, a customer using a cloud-based CRM application could poll their financial system in another cloud to directly match customer spend and billing status, or project future revenue potential.

> "Global cloud connectivity is vital, there is concern that the industry is fragmented, with proprietary APIs and no consistency of the attributes that can be controlled and automated"

Growth of cloud under threat

These issues and many others are in danger of severely curtailing growth of the burgeoning cloud services' market. The root cause is that network service providers, cloud service providers, data center operators and enterprises all use different APIs and interfaces to communicate, as Walker explains.

"This is where our open test and iterative standards development program begins. Where other standards bodies had the space to shape standards in advance of market penetration, cloud computing is already surging ahead in every direction, powered by NFV, SDN, virtualization technologies and networking, technologies that are themselves still evolving quickly.

"Our response is to iteratively develop the reference architecture, the test bed and the standards simultaneously to keep ahead of business needs. The aim is to evolve a fully interworking cloud environment and the advance best practices to manage OTT and cloud services."

Iometrix president, Bob Mandeville – who heads up the OpenCloud Project lab - explained how co-operation among cloud service players generates standard practices for the delivery of cloud services.

"Cloud services draw on multiple new technologies, all of which are in a constant state of development, he said. "OpenCloud is about testing new implementations in a real interconnected environment, exploring and accelerating solutions to problems that directly impact the business of buying and selling cloud services."

More than 20 new companies with a strong interest in shaping cloud services to serve their future business needs were briefed by CEF leadership on the OpenCloud Project and the role of the CEF in Santa Clara in September.

Participation in the CEF also provides them an opportunity to work in close collaboration with leading service providers, cloud operators, equipment vendors, software developers and large enterprise customers.

Use cases being tested

Schmitz said: "The OpenCloud Project is now in the design stage. We are putting a range of use cases to the test, starting with remote relocation and multiplication of virtual machines across the cloud. The published results will reveal what does and does not work and we will invite participation in addressing these challenges. Those who commit to the project now will help shape tomorrow and the $200b cloud services market."

One of the newest recruits to the CEF, Bill Burns, president and CEO of Embrane, said: "Global cloud connectivity is vital. There is concern that the industry is fragmented, with proprietary APIs and no consistency of the attributes that can be controlled and automated.

"Today has shown us there is a way forward with real industry backing and we are excited to participate in the CEF's OpenCloud Project. It's also a great opportunity to work with other industry leaders, not just to see, but to influence what's happening at the leading edge of cloud development."TR

APTelecom 'State of Subsea' makes Asia debut in Bangkok

APTelecom held the latest in its series of 'State of Subsea' submarine fiber optic expert events on October 2nd at the ToT Academy in Bangkok.

APTelecom's 'State of Subsea' event co-hosted by Telecom Review North America, The Pacific Telecommunications Council (PTC) and the SubTel Forum, was the third in the 'State of Subsea' series, and the first to be outside of the United States. It drew hundreds of delegates from over 30 countries who attended either in-person or via streaming video at the official 'State of Subsea' website.

The event brought together a mix of executives, influencers and leaders from all parts of the submarine cable and telecom industry to address the latest trends, and share expert insights and knowledge on the future of the industry.

'State of Subsea' with Telecom Review North America managing partner/editor-in-chief Jeff Seal as master of ceremonies, featured breakout panels with industry experts, moderated Q&A sessions, informational exchanges, roundtable discussions on emerging global economic market trends, and more.

Special guests included: Fabrizio Civitarese, president Asia Pacific, Global Cloud Xchange; Andy McLean, CEO, TransIndonesia Network; John Hibbard, CEO, Hibbard Consulting; Paul Blanche-Horgan, CEO, Ezecom; Artur Mendes, commercial director, Angola Cables; Sam Johnston, director of cloud and IT services, Equinix; Dominic Arena, AEC Advisory.

"We were thrilled to participate in the first 'State of Subsea' event in Asia," said guest speaker Andy McLean. "The insights, knowledge and connections that we were able to gain as a result of the event have given us an inside track into the submarine cable community on a global scale that simply only the 'State of Subsea' can provide."

A $2,500 USD check was presented on behalf of APTelecom and 'State of Subsea' to Friends International, whose mission is to build lives and save futures of the most marginalized children and youth across Southeast Asia.

"On behalf of Friends International we'd like to thank APTelecom, their partners, and all of those who participated in 'State of Subsea' Bangkok for their generosity," said Tim Tempany, technical advisor at Friends International.

"It is because of their generosity and thoughtfulness that dozens of underprivileged children in Southeast Asia will be able to benefit from a level of resources that they previously didn't have."

Those who were not able to join in person are invited to view an archived video broadcast of the event at www.stateofsubsea.com.

The next 'State of Subsea' event will be held on 20 January 2015 at the Pacific Telecommunications Council conference in Hawaii. TR

UAE voted onto ITU council for 3rd time

The United Arab Emirates has been elected to the International Telecommunication Union Council for the third time in a row at the ITU's three-week Plenipotentiary Conference taking place in Busan, South Korea. It was one of 18 countries vying for 13 of the 48 memberships reserved for the Asia region.

Also, Eng Nasser Bin Hammad, senior manager international affairs at the UAE's Telecommunications Regulatory Authority (TRA) was elected to the ITU Radio Regulations Board. He secured 108 votes out of 167, the second highest number after the Japanese candidate.

TRA said the result "reflects the trust and confidence given by Asian states for the UAE candidates ...[and] is also a great testament to the great efforts of the TRA team and management in establishing and strengthening relationships with ICT ministries and authorities in the Asian countries."

TRA chairman, HE Mohamad Ahmad Al-Qamzi, said: "We at the TRA will continue working and intensifying efforts to consolidate the UAE's prominent stature within the ICT and mobile government international scene.

"These two achievements are very significant since the International Telecommunication Union is one of the most prestigious international organizations in charge of developing the ICT sector, which is the most dynamic sector in today's knowledge-based economy, relying heavily on digital data and smart cities."

Tata Comms launches global cloud platform

Tata Communications has launched IZO, a global network platform for enhanced hybrid cloud enablement, claiming it "brings a new way of tackling the complications and challenges that businesses face in realising the potential of the cloud."

Tata claims that, "for the first time, a single provider offers access to a full ecosystem of network, cloud and data center connectivity making it simple for a business to connect and build its cloud, their way – be it private, hybrid or public."

According to Tata Comms, "The IZO network platform takes the public Internet and uniquely engineers it for predictable routing, together with enterprise cloud connectivity and interconnected data centers. [It brings] together a growing ecosystem of over 20 service providers reaching 85 percent of the world's GDP, two of the largest cloud platforms - Amazon Web Services (AWS) and Microsoft Azure - and over 50 data centers across the globe."

Tata Comms says that, through partnerships with 20 service providers around the world, IZO Internet WAN provides multi-national organisations with deterministic routing of traffic with guaranteed end-to-end SLAs and business standard reporting.

IZO Private connects businesses to cloud service providers via private network connectivity. "Through a global partnered interconnect arrangement under the AWS Direct Connect program with Amazon Web Services and Azure ExpressRoute program with Microsoft, companies now have access to a one-stop-shop for end-to-end management to ensure network performance and end-user experience," Tata Comms says.

The third element of the platform is IZO Public which tags and prioritizes content with guaranteed performance for Tata Communications enterprise customers. "For businesses looking to deliver large volumes of content over the Internet, this service provides unparalleled performance, reach, and capacity ensuring a consistently good user experience," Tata Comms says.

PCCW Global acquires Crypteia Networks

PCCW Global, the international operating division of HKT, has acquired Crypteia Networks, a Greek company that uses patent-pending technology and a non-intrusive approach to help organisations detect and respond to the new breed of cyber threats.

PCCW said that Crypteia Networks would continue to operate as a separate brand while benefiting from PCCW Global's international presence and extended customer base to accelerate its global expansion. Also, PCCW Global will offer Crypteia solutions as part of its managed network services portfolio to its customers worldwide.

Crypteia Networks currently has more than 150 customer installations in various countries, including the UK, Germany, and Greece. Its customers range from professional services firms and retailers to financial institutions, public sector and critical infrastructure providers.

Crypteia's patent-pending MOREAL reporting and alerting platform can be cloud-based, and can be used with any operating environment. MOREAL "correlates and analyses customer network data, global network data, and aggregated threat intelligence, thereby identifying potential advanced threats." The service is backed up by Crypteia's global security operation center.

KT forms IoT group of Asian mobile operators

Korea's national telco, KT, has formed a collaboration with mobile carriers in Asia on the Internet of Things (IoT).

It has signed - at the Conexus general meeting in Vietnam - a MoU for IoT with eight member companies of Conexus, the Asian alliance of mobile carriers, to jointly develop technologies and provide services. Participants are KT, NTT DoCoMo of Japan, Smart of the Philippines, StarHub of Singapore, Hutchison of Hong Kong and four other companies that have not been named.

KT said the IoT Project Group would consist of experts from each company who would jointly develop IoT technology, products and services and business models. "Toward that end, the group aims to take advantage of the member companies' technological prowess and local networks to go beyond boundaries to provide IoT services to the entire Asia region," KT said.

Conexus is Asia's largest telecommunications alliance. It has nine members. It was formed in 2006, primarily to develop and enhance international roaming and corporate mobile services. Members, in addition to those that have been named as partners in the IoT project, are Indosat, FarEasTone of Taiwan, True of Thailand and VinaPhone of Vietnam.

Conexus forms M2M integration task force

Shortly before KT announced the IoT project, Conexus announced, on 8 October the formation of a task force for integrated M2M business across member-countries, "aimed at addressing the increasing demand for M2M services by multinational companies, the M2M task force shall engage in feasibility studies on cost optimization, local customer support, better usability and borderless solutions with emerging technologies."

SK and Samsung team for 5G development

SK Telecom and Samsung have formed a partnership to undertake 5G network research in South Korea. They say they will co-operate mainly on sharing 5G vision and running standardization groups and technology forums. They will also define and select frequency bands suitable for implementation of 5G technology, conduct R&D on enabling technologies including the next-generation small cell capabilities to develop 5G and IoT services.

Kyungwhoon Cheun, SVP and head of communications research, R&D center at Samsung, said: "The 5G communications system needs an ecosystem where operators and manufacturers co-operate in areas of related standards, devices, network equipment and new services. "Through this opportunity of co-operation between the two companies, therefore, I believe Korea will continue to lead mobile communications network in 5G as it does in 4G."

Alex Jinsung Choi, EVP and head of SK Telecom's ICT R&D division, added: "We expect the two companies - mobile carrier and mobile network manufacturer - will share vision for 5G through the joint research, thereby generate synergy effect in the development of the next generation telecommunications technology."

ISOC builds Bangkok Internet Exchange with help from Alcatel-Lucent

The Internet Society (ISOC) has signed a memorandum of understanding with Alcatel-Lucent under which Alcatel-Lucent will provide equipment to support the development of the Bangkok Internet Exchange Point (BKNIX) through the Internet Society's Interconnection and Traffic Exchange (ITE) Program.

The BKNIX, which will be operational in December 2014, is expected to dramatically increase Internet capacity, encourage greater efficiency in local Internet traffic routing, create a more robust Internet infrastructure, and improve quality of service for the Southeast Asia region, according to ISOC.

According to Alcatel-Lucent, "The new Bangkok Internet Exchange Point will drive significant social and economic value to Southeast Asia by providing a neutral community IXP. ... Internet service providers (ISPs) and content providers will be able to diversify local and regional peering and data exchange by offering services through BKNIX, allowing wider access and more services to the general public."

Keith Johnson joins SpeedCast to serve energy sector

Keith Johnson has joined satellite services provider, SpeedCast International as senior vice president and general manager in charge of energy services globally. He will oversee all of SpeedCast's business activities for the energy sector (oil and gas in particular), including strategic planning, program management, business development and global sales for SpeedCast's worldwide operations. He has more than 30 years experience in the satellite telecommunication and energy industries. Prior to joining SpeedCast he was president of Harris CapRock's Global Energy Services division. He is a member of the Satellite Industry Association, NOIA and ENTELEC, and author of many published papers on telecommunication, satellite, wireless and IT.

Megaport names APAC & AMEA VP

Australian based network services provider, Megaport, has announced plans to expand into global markets throughout Asia, Europe, and North America and has appointed Belinda Flanders as executive vice president, APAC and MEA. She joined Megaport in January 2014 as Asia channel and partner manager and has previously worked in sales, marketing and channel management with NextDC and PIPE Networks, both companies founded by Megaport founder Bevan Slattery. Other new appointments are Brynn Maddux as executive vice president and Denver Maddux as CEO.
Megaport provides on-demand, elastic connectivity to over 100 network and cloud services providers. It says the Megaport Platform will service over 25 major markets by the end of 2015.

Manu Bonnassie named APAC VP of sales for F5 Networks

F5 Networks has named Emmanuel (Manu) Bonnassie as senior vice president, sales for 14 countries in the Asia Pacific region. He will be based in Singapore. He joined F5 in 2012 and was vice president of sales for Northern and Eastern Europe. Before joining F5 he was regional director and general manager of emerging markets for Europe, Middle East and Africa at Brocade. He has also held positions with QLogic and Dell in the United States.

Emerson strengthens data center infrastructure team

Data center infrastructure provider, Emerson Network Power, has promoted Wesley Lim to be director of its Data Center Infrastructure Management (DCIM) business in Asia. He will be responsible for sales development, pre-sales support and professional services across Australia and New Zealand, Southeast Asia, North Asia and Pakistan. He was previously director of sales for DCIM APAC and will continue to be based in Singapore and will continue to report to Gene Hayden, vice president and general manager for sales and marketing, Also, Kenny Khow has been named director of the newly created DCIM professional services team in Asia.

Seagate names Rex Dong to head sales & marketing

Storage system manufacturer Seagate Technology has appointed Rex Dong as the managing director of its sales and marketing organisation for Asia, excluding China and Japan. This will add to his existing responsibilities as country manager for Seagate Technology, Taiwan. BanSeng Teh, senior vice president of global sales for Seagate, said: "Rex has acute business acumen and the ability to identify new business opportunities. We are confident that he will take Seagate's business in Asia to a higher level."

Zuora - appoints customer success manager for Asia

Zuora - a provider of systems to manage subscriptions ecommerce and billing - has appointed Lane Russell as senior customer success manager, Asia Pacific. He will be based in Sydney and will be responsible for assisting customers to maximise the benefits of their Zuora deployment.'

Telecom Review Summit 'Its all about Networking' 2015
Dubai, UAE
8 December 2015

March 2015

Mobile World Congress

The GSMA Mobile World Congress is the place for mobile leaders to gather, collaborate and conduct business. The annual event provides the planet's best venue for mobile industry networking, new business opportunities and deal-making.

Date: 2-5 March, 2015
Place: Barcelona, Spain

July 2015

MOBILE ASIA EXPO

Now in its fourth year, the 2015 Mobile Asia Expo will provide a mid-year update on the state of the mobile industry.

Mobile Asia Expo will include:
• An exhibition displaying cutting-edge products and technology that will define the mobile future;
• A world-class thought leadership conference featuring visionary keynotes and action-provoking panel discussions;
• App Planet, the Centre of the Apps Universe;
• The GSMA Connected City, showcasing a real, connected city street in the heart of the exhibition;
• A diverse audience of senior-level thought leaders and mobile enthusiasts/consumers, showcasing all participants in the mobile ecosystem.

Date: 15-17th July 2015
Place: Shanghai, China

Latest updates on: www.telecomreviewasia.com

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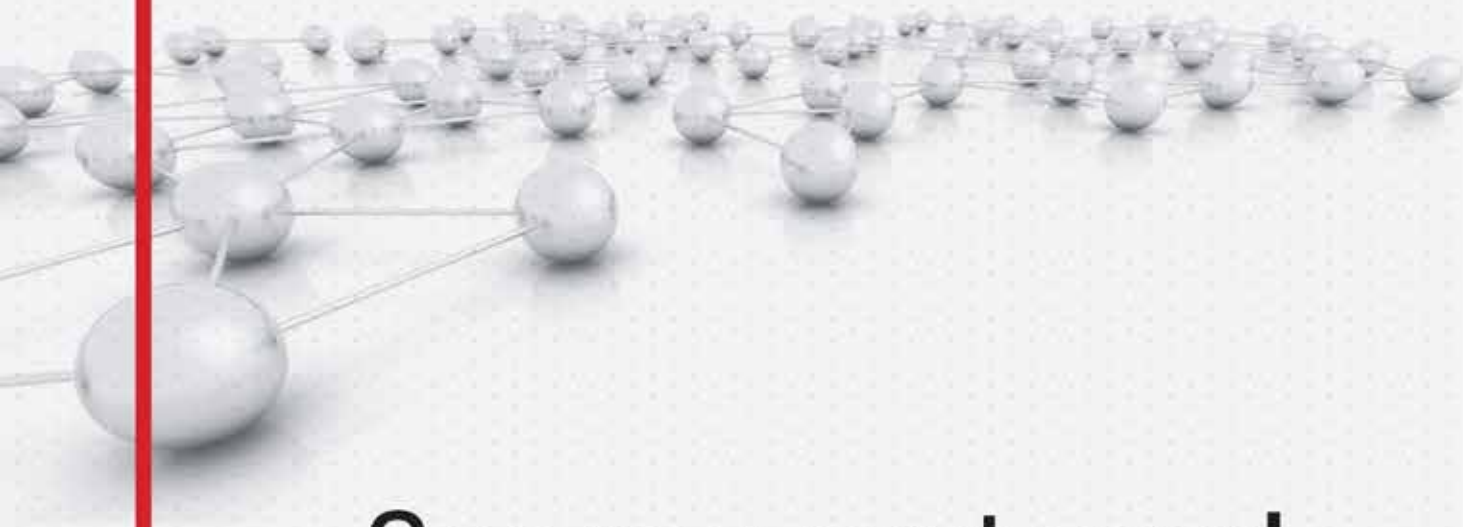

See you next year!

December 8th, 2015

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