

For communications professionals in the southern Asian region

SOUTHERN ASIAN WIRELESS COMMUNICATIONS

Q1 2019

Volume 12 Number 1

- The benefits of rapidly deployable Wi-Fi
- Boosting customer loyalty through network intelligence
- Industry View: do you need next-generation WiFi?

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SUBSCRIPTIONS:

South Asian Wireless Communications is a controlled circulation quarterly magazine. Register now for your free subscription at www.kadiumpublishing.com. Readers who do not qualify under the terms of control can purchase an annual subscription at the cost of £110. For more information and general enquiries please contact Suzanne Thomas at suzannet@kadiumpublishing.com or call +44 (0) 1932 886 537.

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Printed in England by The Magazine Printing Company

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Myanmar ready to deploy 5G technology in the next few years

Myanmar will be ready to deploy 5G technology in two-three years, according to the country's minister of the president's office.

Speaking at the 2019 *Mobile World Congress* in Barcelona in February, Soe Thein of the communications and information technology ministry said the new technology has the potential to be 20 times faster than 4G, which means the people of Myanmar could soon be able to download lots more content in far less time.

However, the minister added that a lot of work needed to be done

“because at the moment there are no handsets, insufficient spectrum and other technology requirements”.

The introduction of 5G technology is expected to facilitate the growth of fixed wireless access and the internet of things, replacing mobile broadband across the nation.

5G has a peak speed of 20 gigabytes per second; while 4G's top speed is considerably slower at 1gb/s.

The groundwork for 5G technology is being carried out under the Myanmar National Broadband White Paper 2019 and Spectrum Roadmap 2019.



Mobile World Congress (MWC) in Barcelona

Singtel goes after Singaporean millennials

Singtel launched its first solely contract-free, all-digital mobile plan targeted at millennials and digital natives in Singapore.

The plan, called Gomo (Get Out More Often) offers 20GB of mobile data and 200 minutes local talk-time for SGD20 a month.

Customers sign up via a Gomo app and can get their SIM cards on the same day. The app is also able to handle all customer

enquiries via a 24/7 live chat.

Furthermore, a Gomo travel SIM providing 3GB data over 10 days in countries like Australia, Malaysia and Thailand is also available at SGD20.

“Gomo is for the segment of our customers who want to get things done easily and only want to interact with us digitally,” said Yuen Kuan Moon, Singtel Consumer Singapore's chief

executive officer. “We already have our SIM-only plans which address the needs of people who only want data but not so much the needs of those who want an all-digital or lifestyle experience.”

The introduction of Gomo follows a move by rival telecom firm StarHub to streamline its mobile plans from 10 to three in December 2018. All three are SIM-only and contract-free, with the cheapest

plan offering 13GB of data and 100min of talk-time for SGD25.

Meanwhile, Singtel said it would offer its mobile and broadband bundle customers a one-year Amazon Prime membership, which will include free two-hour deliveries, free international shipping and streaming service Amazon Prime Video. The offer, priced at SGD2.99 per month, is valid from March 26th to June 30th.

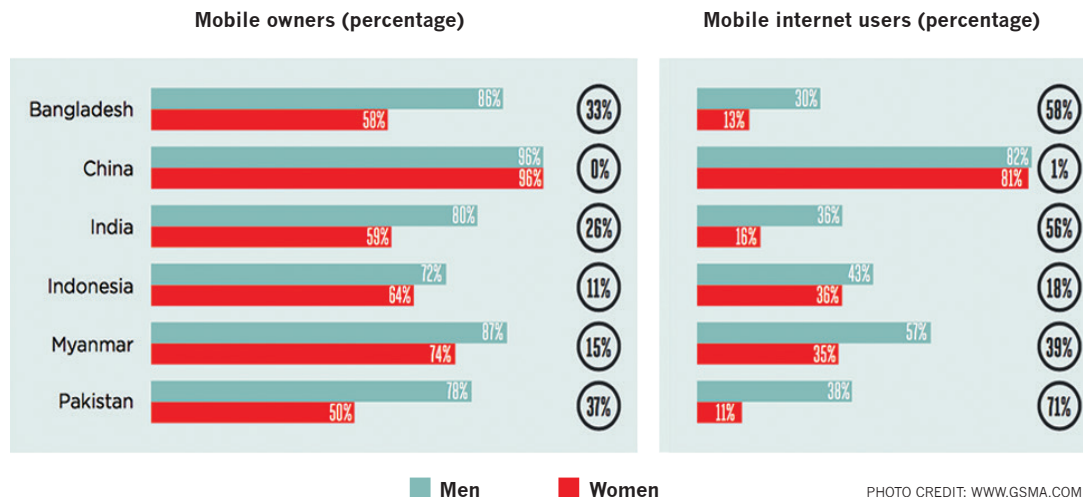
South Asia has largest mobile gender gap

South Asia is the worst global region when it comes to the mobile gender gap, according to the *Mobile Gender Gap 2019* from GSMA Connected Women.

It found that in the region, women are 28 per cent less likely than men to own a mobile phone, with 58 per cent less likely to use mobile Internet.

In low and middle-income countries (LMICs), the rates of mobile ownership use are highest in Latin America and more developed Asian markets such as China.

Pakistan reported the highest mobile ownership gender gap of 37 per cent, followed by Bangladesh at 33 per cent. However, the gap is three per cent lower than the previous year, driven largely by closure in the mobile internet gender gap in India (26 per cent).



“Mobile access and use has grown dramatically in LMICs in recent years, but not equally,”

the report said. “A gender gap in both mobile ownership and mobile internet use persists across these

markets, and is significantly wider in certain regions, particularly South Asia and sub-Saharan Africa.”

PHOTO CREDIT: WWW.GSMA.COM

BSNL and Hughes partner up

BSNL, the Indian state-owned telecom company, has partnered with Hughes Communications to enable satellite broadband connectivity in the Andaman and Nicobar Islands and Lakshadweep.

The telecom giant said it chose Hughes India as its system integrator to addresses growing bandwidth demand in the Andaman and Nicobar Islands in the Bay of Bengal and Lakshadweep in the Laccadive Sea, off the coast of Kerala.

BSNL said it would expand the satellite bandwidth in Andaman and Nicobar to 400 times the current capacity in the next two years. Installing fibre and cable would prove to be a difficult, so Hughes India will supply BSNL with satellite terminals and modems for voice, data, and video communications in addition to high-speed satellite backhaul capacity to extend network coverage.

BSNL has already augmented available bandwidth across the archipelago from 240mb/s to 1gb/s.

Hughes India enterprise business head, Shivaji Chatterjee said the deal was a testament to the company's success in implementing a wide range of system integration projects and large turnkey networks. "With our proven solutions, we are confident that this partnership will enable the residents, tourists, government and armed forces on the islands to enjoy unmatched connectivity and Internet experience while also serving India's strategic interest in the region,".

Indosat selects Nokia for major network upgrade

Indosat Ooredoo (Indosat) has partnered with Nokia to upgrade its IP/MPLS network, in a bid to meet fast-growing subscriber demand for fixed and mobile broadband services.

The provider currently offers advanced communications services to its customers across Indonesia, such as 4G/LTE mobile services, fixed telephone, video, internet and business data communications services.

Year one of the multi-year network upgrade will include Jakarta, Jabodetabek and the rest of Java.

The Finnish vendor will supply its IP Anyhaul for Indosat's mobile transport network, which will enhance its performance and make it 5G-ready.

Indosat's network expansion will see the pre-installed Nokia 7750 SR-12e platforms upgraded with the FP4 network processor, as well as the installation of the new generation

of FP4-equipped 7750 SRs.

Indosat said Nokia FP4's commitment to handle the substantial traffic increase, combined with the service router portfolio's ability to support the highest port densities of 10GE and 100GE links that are required in the densest metropolitan areas, were instrumental in its decision-making process.

"Indosat Ooredoo started an ambitious three-year program to transform our network to achieve the best customer experience, which will provide video-grade 4G coverage to more than 90 per cent of Indonesia's population," said Dejan Kastelic, chief technology & innovation officer at Indosat Ooredoo. "The IP/MPLS network upgrade that we are undertaking with Nokia is aimed at providing a solid foundation for the network transformation, particularly in the most densely-



Indosat Ooredoo chief technology & innovation officer, Dejan Kastelic

PHOTO CREDIT: WWW.INDOSAT.CREO-ACTIVE.ID

populated area of the country."

Kastelic said Indosat was especially pleased to be able to upgrade its existing Nokia routers with the latest FP4 network processor to strengthen its IP/MPLS infrastructure in Java. "This helps us to meet the growth in subscriber demand and keep costs down by extending the life of existing assets," he added.

Indonesia is the world's fourth most populous country, with around 270 million people.

Thai operators launch 5G testbeds

Thai operator Dtac has partnered with the kingdom's two state-owned operators, TOT and CAT Telecom, to launch 5G testbeds at two universities.

Designed to share resources and knowledge between the operators, the tests are slated to begin in July at Chulalongkorn University in Bangkok and Kasetsart University's Sriracha Campus in the province of Chonburi.

In the first phase of the tests, Dtac

said it used 5G capabilities to improve its "smart farmer" service, which uses IoT technology to enable farmers to access real-time information and adopt precision techniques using drones and satellites.

"Before considering any further auctions, operators need to see a comprehensive spectrum roadmap and the conditions under which it will be made available," said Dtac chief executive officer Alexandra Reich.

"Well-managed auctions must ensure

not only fairness but also a reasonable valuation of the spectrum."

CAT Telecom president Sanpachai Huvanandana added: "With the use of 5G networks, IoT can be upgraded to massive IoT and support a higher density of connected devices. In addition, all collected data from different areas can be processed and calibrated as big data on a cloud service."

Network equipment will be provided by Ericsson, Huawei and Nokia.

Southeast Asia overtakes China in mobile economy stakes

Southeast Asians have overtaken their Chinese neighbours when it comes to embracing the mobile economy, with higher percentages in some countries using their smartphones for banking, shopping and using cab-hailing services.

The annual *Global Digital Report 2019*, compiled by social media platform Hootsuite and digital marketing agency We Are Social, found Thailand to be way ahead in terms of mobile banking

penetration, while Singapore tops the cab-hailing section. China did not even make the top five in either category.

Among Thailand's internet users, 74 per cent said they access banking services via mobile, which puts the kingdom ahead of the global rate (39 per cent) and China (61 per cent).

Many Thai people tend to prefer banking by phone because a large section of the population does not

have access to credit cards.

Meanwhile, Indonesia topped the world table in mobile e-commerce usage. From mid-January to mid-February 2019, 76 per cent of internet users purchased something from a mobile device, compared the rest of the world (55 per cent) and China (74 per cent).

The report further found that 60 per cent of Indonesia's 260 million population are under 40, meaning the demographics favour e-commerce.

When it came to ride-hailing, southeast Asia dominated the list, as 52 per cent of its internet users hail a ride at least once a month. Indonesia (51 per cent), Malaysia (48 per cent) made up the top three and compared to globally (30 per cent) and 35 per cent in China.

Elsewhere, the report said Thais spent the most time visiting online hangouts, at five hours and 13 minutes a day, while Filipinos were second at four hours and 58 minutes.

Unitel launches eSIM technology

Laos Unitel, a subsidiary of Vietnamese military-owned operator Viettel, has become the first mobile operator in the market to launch eSIM technology and the seventh of the 10 ASEAN member states to do so.

The Unitel eSIM service was launched in early March and Unitel said it is aiming to encourage at least 10,000 customers to exchange their physical SIMs for eSIMs by the close of 2020.

It is also the fourth market in south-east Asia to which Viettel has introduced eSIMs. Viettel and its subsidiaries were the first mobile

operators to offer the technology in neighbouring Myanmar, Vietnam and Cambodia.

Meanwhile, Metfone (another Viettel mobile brand in Laos) has become the first operator in the market to launch mobile credit top-ups using QR code scanning instead of scratch cards.

Viettel deputy general director, Tao Duc Thang, said the introduction of eSIM technology marked the early stages of Viettel's goal to digitally transform the global telecommunications landscape and become a pioneer in IoT technologies.

"Viettel has well-prepared platforms and infrastructure and has made digital transformations in its fields such as telecommunications

and information technology," he said. "This includes application of the latest technologies in the world for a more convenient life."



Unitel is aiming to encourage at least 10,000 customers to exchange their physical SIMs for eSIMs by the close of 2020

Nor'wester takes out over 6,500 towers in Bangladesh

Over 6,500 mobile network towers were knocked out across Bangladesh when nor'wester ripped thorough Dhaka in early April.

Some 5,000 towers of operators Grameenphone and Robi went offline and nearly 50 per cent of all network sites of all mobile operators were without commercial power.

Banglalink's chief corporate and

regulatory officer, Taimur Rahman, said nearly 2,300 of their base transceiver station (BTS) towers were inoperative, as Southern Asian Wireless Communications went to press.

"Half of them are currently being run with the help of generators," he said. "Mobile phone users in Dhaka and adjacent areas are facing some network issues."

Cellcard is 'fastest' mobile network in Cambodia

Cellcard was named the fastest mobile network in Cambodia by Ookla, the company behind Speedtest, for the fourth time in a row.

Ian Watson, chief executive officer of Royal Group-owned Cellcard, said being recognised for the fourth period of testing from Ookla was proof of Cellcard's commitment to giving Cambodians

a world-class network.

"We are not just catering for our customer's current demand for data but planning for the future of pre-5G and 5G data services where speed will be the game changer," Watson said. "We are very focused on our plans for 5G with a full range of products, services, and vendors from across the globe."

Sri Lankan telecom giant powers up region's first pilot mobile 5G service

Sri Lanka's largest telecom firm Dialog Axiata successfully demonstrated a fully standards-based 5G mobile service pilot, integrating 5G network infrastructure with a mobile 5G device.

In what was a first for south Asia, Dialog leveraged its Huawei RAN and core network with the most current non-standalone

architecture (Rel. 15, NSA) to power up world's fastest 5G mobile phone on its trial 5G Transmission.

"The success of south Asia's first demonstration of a mobile 5G service is yet another milestone following our launch of a fully functional pre-commercial 5G network and builds on our significant investments into

high speed broadband network infrastructure in Sri Lanka," said Supun Weerasinghe, group chief executive of Dialog Axiata.

"Dialog will continue to deliver on its promise of delivering 'the future today', by leveraging the unique capabilities of 5G technology, to spearhead the country's transformation into a



Dialog Axiata group chief executive, Supun Weerasinghe

PHOTO CREDIT:
WWW.AXIATA.COM

regional technology hub."

Dialog launched its pre-commercial 5G network in late 2018, making it south Asia's first fully functional and standards compliant 5G transmission using commercial grade base stations.

Nepal begins telecom satellite project

Nepal took its first step to space entry with the launch of its maiden telecommunication satellite project in March.

The Nepal Telecommunications Authority (NTA) signed an agreement with French aerospace manufacturer Thales Alenia Space for the joint venture.

"The Nepal Telecommunications Authority and France-based Thales Alenia Space, a joint venture between Thales (67 per cent) and Leonardo (33 per cent), have signed today an agreement under which Thales Alenia Space will build the national satellite telecommunication system for

Nepal," NTA said in an official release.

The agreement was a response to the "Letter of Intent" signed between Nepal minister for communication and information technology Gokul Prasad Baskota and the secretary of state to the minister for Europe and foreign

affairs of France, Jean-Baptiste Lemoyne in early March.

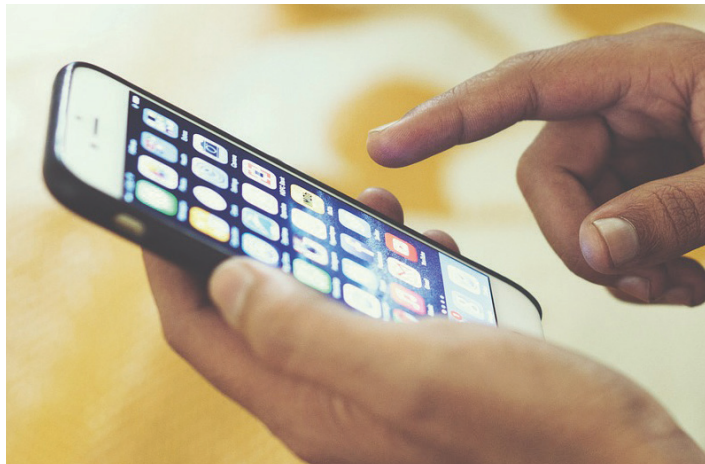
"Thales Alenia Space to support Nepal in its official entry into the space community," NTA said in a statement. Nepal is yet to name the high-performance C/Ku Band satellite that is expected to be launched by 2022.

Most of Pakistan still unconnected to a mobile network - GSMA Report

Most of Pakistan's population (59.7 per cent) is still unconnected to a mobile network, according to the latest data from trade body GSMA.

Although the mobile market in Pakistan has demonstrated significant growth over the last decade, with the number of unique subscribers having increased by 37.4 million (85.1 per cent) between 2008 and 2018, some 120 million people remain unconnected to a mobile network.

"Unique subscriber mobile penetration in Pakistan stood at 40.3 per cent in third quarter 2018, which is the lowest level in South Asia", GSMA said.



According to the latest data from GSMA, 59.7 per cent of Pakistan's population is still unconnected to a mobile network

The report also found that total mobile sector revenues were USD3.4bn in 2017, equivalent to 1.1 per cent of the country's GDP, while the sector contributed around USD1.8bn of direct economic value to Pakistan in 2017 (0.6 per cent of GDP).

Furthermore, the situation may not improve in the near future. Affordability of handsets in Pakistan could be impacted courtesy of upcoming regulatory and tax changes. A proposed increase in taxation of handsets in the Supplementary Bill 2019 would increase the price of mobile phones in the country.

China opens Tibet 5G base

China Mobile has launched the first 5G base station in Lhasa, Tibet Autonomous Region and laid the foundations for launching large-scale network tests in the area.

The operator's Tibet arm said outdoor terminal tests showed the base station can offer an average internet speed of some 500mb/s and a 1GB file can be downloaded in just two seconds.

The Chinese firm also has two additional 5G base stations in Lhasa that are yet to be launched for tests, according to Nyima Dondrup, manager of the network department of China Mobile's branch in Lhasa. Dondrup added that the staff was conducting 5G application tests and will later apply the 5G technology to smart city construction and digital life.

China Mobile said it would accelerate network construction in Tibet, allowing people in remote areas the same access to information and communication services as those in the developed regions.

In 2018, mobile broadband (including 3G and 4G) users in Tibet amounted to 2.76 million households, with the local mobile broadband penetration rate at 83.35 per cent, according to the communication administration of Tibet.

Mobile ad spend in India set to take off as customers consume more content

The convergence of a number of factors will see mobile ad spend in India rocket in the next few years, as Indians consume more content on their devices.

That is according to *The Disrupting Mobile Ad Tech in India: Delivering User Experience* report, based on a survey of 70 key marketing and advertising decision makers by digital media company MoMAGIC.

It found that 84 per cent of

respondents claimed mobile ad spend had increased exponentially over the past two years, with even more growth forecast for 2020.

"Mobile advertising in India is all set to take a quantum jump in the next two years with more and more Indians moving to consuming content, especially videos, on their mobile phones," said Arun Gupta, chief executive officer and founder of MoMAGIC Technologies.

Although mobile advertising accounts for less than half of all digital advertising expenditure for a majority of marketers, for 23 per cent of respondents it was more than 50 per cent.

However, targeting was a major complaint from 31 per cent of respondents, ahead of not knowing their consumers' behaviour and what is driving purchase decisions (23 per cent) and fraud (21 per cent).

Telenor to expand 4G rollout

Telenor Myanmar said it will continue to expand its 4G rollout in response to the constraints of mobile data availability beyond the country's major cities.

Chief executive Sharad Mehrotra said the firm would focus on improving mobile connectivity through its already extensive 4G network and empower its employees ahead of the launch of 5G.

"5G will come for sure at some point of time," Mehrotra said. "We are now focusing on 4G, and at the same time we also keep an eye on how we can bring 5G to Myanmar."

Mehrotra, who spoke at the side

lines of the 6th Sustainable Business Briefing, said Telenor Myanmar had invested more than USD2.7bn in the country and would continue to invest in the growth of its employees.

The firm currently has over 800 employees across the nation, 40 per cent women with 30 per cent in leadership positions.

"Data consumption is very high, particularly in Yangon and the Mandalay regions," Mehrotra added. "It is at the same level as in European countries. It is also increasing in smaller cities. As we travel across Myanmar, we see a big demand for data services all over



Telenor Myanmar chief executive officer, Sharad Mehrotra

PHOTO CREDIT:
WWW.TELENOR.COM

the country, we make sure most of the areas are 4G-covered, and all the sites have 4G capacity."

For people travelling overseas, the firm has introduced its low-cost data roaming packs in Thailand, Malaysia and Singapore.

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Telenor Myanmar extends data roaming service

Telenor Myanmar has extended its unlimited international data roaming service to Malaysia and Singapore, just weeks after it launched the service in neighbouring Thailand.

The rolling data roaming pack offers unlimited data in the three countries for USD0.65 for three days of service, while speeds are uncapped for the first 1GB per day

and then cut to 512kb/s.

Prepaid and post-paid customers can activate the service on the MyTelenor app, sending a message or dialling a number.

Telenor Myanmar chief marketing officer Amaresh Kumar said the company was so “amazed” at the success of the latest roaming product for visitors to Thailand, it made sense to extend it to Malaysia,

the other two most frequently visited countries in south-east Asia.

“We have made international roaming affordable for everyone and we welcome our customers to experience the only worry-free data roaming packs that users can get in Myanmar,” Kumar said.

Telenor Myanmar is an arm of parent Norwegian parent company, Telenor.



Telenor Myanmar's head office in Yangon, Myanmar

Sri Lanka's zMessenger partners with Viber

zMessenger, the full spectrum digital solutions agency in Sri Lanka, has partnered with messaging app Viber to provide multimedia content messaging services locally.

The former can now promote Viber to local companies and brands, allowing them to engage with customer's by sending out promotional messages with multimedia content such as images, videos or a link, all of which go beyond the standard SMS messages traditionally offered by both services.

Recipients of the messages can view the content and initiate a direct communication channel with the brand in order to obtain further information, creating a one-to-one

connection between the customer and the brand on the Viber platform.

Jayomi Lokuliyana, co-founder and chief executive officer of zMessenger said innovation has played a key role in the growth of the company. “This tie-up with Viber, the global messaging giant, highlights our commitment to innovation and takes our products and services to a whole new level,” she added. “I am confident that our clients will find this to be a convenient platform for interactive communication with the use of multimedia content, making business communication strategies sharp, optimized for perfection and up-to-date with latest trends.”

Telenor Pakistan to distribute Alibaba Cloud products

Telenor Pakistan, has partnered with Alibaba Cloud, the cloud computing arm of Alibaba Group, to become the authorised distributor of Alibaba Cloud products and services in the country.

The deal will permit Telenor Pakistan to sell Alibaba Cloud's suite of business solutions to local enterprises across the nation. Organisations will be able to protect their business-critical applications and data with security as they migrate to Alibaba Cloud.

“Telenor Pakistan's partnership with Alibaba Cloud will provide a gateway to facilitate the cloud market in the country and in a fast-evolving landscape, enable

businesses to robustly manage their data management and digital transformation needs” said Sardar Mohammad Abubakr, chief digital and strategy officer at Telenor Pakistan.

Dr. Alex Li, general manager, south Asia of Alibaba Cloud, added: “We are happy to partner with one of Pakistan's top digital service providers for distribution of our suite of cloud products and services in the country. The partnership will further our vision of fostering the development of cloud market in Pakistan and help the country move faster towards its digital transformation goals.”

The deal was signed at Telenor Pakistan headquarters ‘345’.

UN points to Afghanistan's mobile money problems

The United Nations Conference on Trade and Development (UNCTAD) has highlighted the need for collaboration between rival operators, regulatory changes and initiatives to improve the pace of mobile money uptake in Afghanistan.

In a report into the country's prospects for digital trade, UNCTAD said since the launch of the country's first mobile money service by Roshan and Vodafone in 2008, uptake had been “slower than expected”.

It noted that by the end of 2017, less than one per cent of SIM cards had an associated mobile money

account, with the first-to-market venture M-Paisa commanding an 85 per cent market share. Services are also provided by Etisalat's mHawala and Afghan Wireless brand MyMoney.

“The main drivers for mobile money are the ease and security of non-cash payments and the positive reputations of the telecommunication firms in the country,” the report said. “Having said this, the mobile money penetration in Afghanistan is relatively low.”

The report further said that there were numerous difficulties in

persuading people to move away from using cash and physical banks, such as a mandated mobile



UNCTAD said mobile money uptake had been “slower than expected”

money account balance limit of AFN150,000 (USD1,972) per person, lack of interoperability between providers, low awareness outside of major cities and issues with agent contracts.

“Interoperability will be an important factor in spurring adoption, necessitating greater cooperation between MNOs,” UNCTAD added. “Given the high competition facing the voice sector and the fact that MNOs depend on mobile money services as a way of increasing client retention, MNOs may not be as willing to invest in cooperation that could dilute their client base.”

Telekom Malaysia launches pre-5G network

Telekom Malaysia Berhad (TM) said its pre-5G wireless technology, claimed to be the nation's first, has entered commercial phase.

Moharmustaqeem Mohammed, acting executive, vice president at TM's Unifi, said the pre-5G via time division duplex (TDD) technology – in the works since the fourth quarter of 2018 – had already entered its commercial phase at SetiaWalk Puchong, which is made up of residential blocks, malls and offices.

"We are happy to say the TDD pre-5G network can deliver larger capacity at about 500mb/s, which is two times more than the existing 4G technology," he said. "It gives

us a step forward in providing a better service and experience to our customers in the wireless segment."



Menara TM,
Telekom
Malaysia's head
office in Kuala
Lumpur, Malaysia

He added that the project would also address many ongoing infrastructure challenges in areas without fibre coverage, offering speed upgrades of up to 30mb/s via wireless broadband and peak throughput may go up to 80mb/s.

Meanwhile, TM has ringfenced RM60m to boost installation works for Unifi infrastructure at urban and rural areas in Sabah this year.

According to TM Sabah general manager Dato' Hj Mohd Sainal bin Mohd Amin, the company invested approximately RM320m to develop Unifi infrastructure in the state for the past four years. "TM Unifi service now covers 70 per cent of the areas in Sabah," he said.

Apple starts production in India



Apple has started manufacturing its iPhone 7 model in India, in addition to iPhone SE and iPhone 6s. At present, iPhone SE is made in India for Apple by contract manufacturer Wistron in Bengaluru, while at the same time, trial runs of locally-built iPhone 6s Plus handsets have also started. An Apple spokesperson said: "We are proud to be producing iPhone 7 in Bengaluru for our local customers, furthering our long term commitment in India."

Pakistan ranked top



Pakistan has been ranked number one for the provision of most affordable telecom services amongst 139 countries in the *World Economic Forum's Network Readiness Index Report*. It placed ahead of India (8th), Bangladesh (14th) and Sri Lanka (35th) in the south Asian region. Elsewhere, the *Competitiveness Index Report*, published by the World Economic Forum also ranked Pakistan above India, Bangladesh in terms of the availability of latest technologies and internet bandwidth.

'ASEAN can lead the way on 5G'

ASEAN countries need to strengthen co-operation and share their experiences to ensure they can lead the way on next-generation 5G wireless technology, said deputy prime minister Vu Duc Dam.

Speaking at the 5G and Development of Digital ASEAN in Hanoi, Dam said when facing the changes and advancement of technology, the most proactive and pioneering would reap the rewards.

"When the world implemented 2G, 3G and 4G, ASEAN countries were almost exclusively beneficiaries of the technology," Dam said. "At that time, the world's biggest telecommunications companies brought equipment and solutions to the region to sell, and we bought them."

Dam added that now was the perfect time for ASEAN members to work together.

"With technological changes, some countries in the region have focused more on hardware and software research," he said. "This time around, we need to co-operate, share and exchange our intellectual and technological advancements."

ASEAN is made up of 10 members, including Indonesia, Thailand, Singapore, Cambodia and Myanmar.

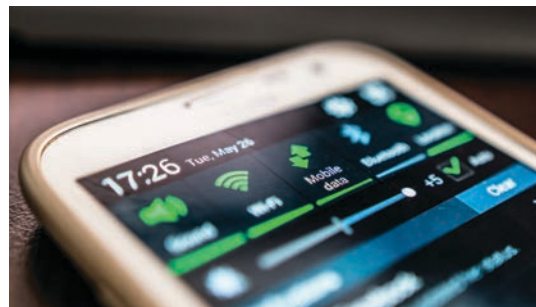
The Maldives by far the most expensive country for mobile data

The Maldives is the most expensive country in southern Asia to buy mobile data, where one gigabyte (1GB) will cost USD5.27.

That is according to research conducted by price comparison site Cable.co.uk, which also said Pakistan came in as the second most expensive country with a cost of USD1.85 for 1GB.

India, in stark contrast, not only offers the cheapest data package in the region, but in the whole world, with a cost of USD0.26 for 1GB.

Elsewhere, Sri Lanka offers 1GB at USD0.78, Bangladesh at



Mobile data in the Maldives can cost up to USD5.27 for one gigabyte (1GB)

USD0.99, Bhutan at USD1.25 and Afghanistan at USD1.60.

Despite the Maldives and Pakistan charging high prices for mobile data, Asian nations made

up half of the top 20 cheapest countries for mobile data, with India top and Sri Lanka, Mongolia at USD0.82 and Myanmar at USD0.87, all in the top 10.

Webe Digital announces agreement



Unifi Mobile customers will soon have wider 4G LTE coverage, as parent company Telekom Malaysia's subsidiary, Webe Digital, has announced a new network sharing agreement with Celcom. In addition to its existing domestic roaming arrangement, Celcom will provide the telecom firm with 4G domestic roaming and MOCN (multi-operator core network) services for three years.

PLDT net income up by 41 per cent in 2018

PLDT reported a 41 per cent jump in its net income in 2018 and said it was going to ringfence a “historic high” budget in 2019 to enhance its “network advantage”.

Headquartered in the Philippines, PLDT said it netted PHP18.9bn in 2018, while core net income stood at PHP25.9bn, down 7 per cent.

Total revenues registered a three per cent year-on-year increase to PHP157.4bn, of which service revenues spiked two percent to PHP146.9bn and non-service revenues rocketed 20 per cent to PHP10.5bn.

“2018 was a breakthrough

year for PLDT with all of its main revenue businesses – home, enterprise, and consumer wireless businesses – firing, each registering robust top line growth,” the company said in a statement.

In addition, PLDT said it would allocate a capital expenditure program of PHP78.4bn in 2019, PHP20bn more than the previous year.

“This aggressive roll-out is intended to further push the already significant network advantage of PLDT and Smart, and, to support our active campaign for more revenues,” the company said.



PLDT head office, Makati, Philippines

Singtel to buy USD525m worth of Bharti Airtel stock

Singapore Telecommunications (Singtel) said it will buy around USD525m worth of Bharti Airtel stock as part of the Indian telecom

firm's plan to raise USD4.6bn through new shares and bonds.

The strategy is designed to cut debt and shore up Bharti Airtel's balance sheet. The move comes as India's telecom sector faces the

impact of a price war following the arrival of so-called “disruptor” Reliance Jio Infocomm.

Bharti Airtel is looking to sell new shares worth INR250bn for INR220 each, nearly a 30 per cent discount

(on the stock price listed at the time of going to press) and raise INR70bn through foreign-currency denominated perpetual bonds.

After the rights offering, Singtel's interest in Airtel will be 35.2 per cent.

PEOPLE MOVES & CHANGES

Date	Name	New employer	New position	Previous employer	Previous position
11/1/19	Jens Thstrup	DAMM Cellular Systems	chief executive officer	Airbus	Head of PMR terminals business and indirect sales
15/1/19	Nicolas Hauswald	NA	chief executive officer, ETELM	NA	Sales and marketing director, ETELM
4/2/19	Ramy Moselhy	Market unit head for MENA	Comviva	eServGlobal	Head of global sales and growth strategy, MENA
1/3/19	Douglas Craigie Stevenson	Cell C	Interim group CEO	NA	Still chief operating officer
26/3/19	Babak Fouladi	KPN	Independent and non-executive director on NuRAN Wireless board	NA	Still chief technology and digital officer at KPN
28/3/19	Foster Plender	AfricaOnline (subsidiary of Gondwana International Networks (GIN))	Managing director	GIN	Consultant
4/4/19	Bi Yunfeng (Isaac)	Huawei	Chief executive officer, Huawei Technologies India	Oceanstor (part of Huawei)	Director and head of product development
1/6/19	Hauke Holm	DAMM Cellular Systems	Vice President R&D	Hytera Mobilfunk	Chief technology officer
31/8/19	Rafiah Ibrahim	Ericsson	Advisor to the CEO	NA	Head of market area Middle East and Africa

“Our participation in this rights offering... reflects our long-standing commitment to Airtel and the confidence in the future of the Indian market,” said Arthur Lang, chief executive officer of Singtel’s International Group.

Bharti Airtel’s two other major shareholders, Bharti Group and Bharti Telecom, intend to subscribe to their full entitlement, while Singapore’s state-backed GIC will commit approximately INR50bn, according to Bharti Airtel and Singtel.

PLDT, Smart partner with Nokia for 5G school deployment

Philippines-based PLDT and mobile division Smart have inked a deal with Nokia to pilot the deployment of 5G technologies and services in the country’s schools.

PLDT, Smart and Nokia will work together to identify real-world 5G standalone solutions for use in schools, colleges and universities, including artificial intelligence, drones and advanced IoT applications.

The companies will use the PLDT-Smart Technolab in Makati and the Nokia Technology Center in Quezon City for the project.

Furthermore, the agreement will see the deployment of 5G standalone products and services, such as 5G handsets and applications across the Philippines.

“We are happy to partner with Nokia to help develop intelligent solutions and technologies for the benefit of the Philippine education sector,” said Manuel V. Pangilinan, the PLDT-Smart chairman and chief executive officer.

Bharti to reduce stake in telecom tower firm

Bharti Airtel is set to reduce its direct stake in telecom tower firm Bharti Infratel by more than half, to 18.3 per cent by selling some 32 per cent of shares to another subsidiary, Nettle Infrastructure Investments (Nettle).

In order to explore a potential monetisation of stake in Bharti Infratel in the future, the Bharti

Airtel board approved sale or transfer of up to 59.19 crore shares of Infratel to Nettle back on December 20th 2018.

The New Delhi-based business replied to a stock exchange query, which sought an explanation for the company’s stock price rising six per cent during the day.

Bharti Airtel currently owns 50.33 per cent and Nettle owns a 3.18 per cent stake in Bharti Infratel.

Pakistan’s Jazz chooses Nokia to expand 4G network

Pakistani mobile operator Jazz and Finnish giant Nokia have joined forces to support the former’s expansion of its 4G network nationwide.

Nokia radio solutions will be deployed in the central and southern Punjab province as well as the Sindh and Baluchistan provinces. The aim is to enhance delivery in densely populated cities, such as Faisalabad, Multan, Bhawalpur, Rahimyar Khan and Sukkur.

The network expansion and

upgrade of more than 4,000 sites will allow more subscribers to access 4G services.

In addition, Nokia AirScale radio stations will be deployed to expand 4G coverage across the whole country and Massive Multiple Input Multiple Output (MIMO) technology will enhance capacity and speed, while Nokia AirFrame-based cloud controllers will improve efficiency. Nokia NetAct will monitor the entire network, provide improved visibility and enable Jazz to proactively address problems.

Jazz has the highest number of subscribers in Pakistan.

Chaudhary Group subsidiary and Turkcell to launch 5G in Nepal

CG Telecom (CG), a subsidiary of Chaudhary Group, and Turkish Telecom giant Turkcell have agreed in principle to operate 5G services in Nepal.

CG Telecom has yet to announce the launch of its telecom services formally in Nepal but said it plans

INVESTMENTS, MERGERS, ACQUISITIONS

Date	Buyer	Seller	Item	Price	Notes
14/1/19	Bharti Airtel	Helios Investment Partners	Telkom Kenya	NA	MPs have raised concerns regarding the proposed deal so it may not go ahead
22/3/19	Maroc Telecom	Millicom	Tigo Chad	NA	The acquisition forms part of Maroc Telecom’s strategy to expand operations in north and central Africa, while Millicom focuses its efforts on Latin America

LATEST COMPANY RESULTS

Date	Company	Country	Period	Currency	Sales (m)	EBITDA (m)	EPS (units)	Notes
21/2/19	Orange	France	Annual	EUR	41,381	13,005	NA	A 1.5 per cent increase in revenues in Africa and the Middle East accounted for almost half of the group’s growth in 2018, driven by data and mobile financial services.
7/3/19	MTN Group	South Africa	Annual	ZAR	134.56 b	48.246 b	NA	MTN noted that service revenue also increased by 10.7 per cent year-on-year, supported by growth in MTN Nigeria (up 17.2 per cent), MTN Ghana (up 23.0 per cent), MTN South Africa (up 4.2 per cent) and MTN Uganda (up 8.9 per cent). However, MTN Cameroon and MTN Ivory Coast delivered a 7.3 per cent and 6.6 % decline in service revenue respectively.
3/4/19	PLDT	Philippines	2018	PHP	62.5 b	64.9 b	NA	Sales relates to individual service revenues for 2018
27/3/19	C-COM	Japan	Annual	USD	13.53 m	NA	NA	Sales figure is revenues. The company saw a 31.6 per cent increase year-on-year.
29/3/19	Huawei	China	Annual	USD	107 bn	NA	NA	NA

to inject NPR25bn to help set up advanced telecommunication networks. The aim is to operate state of the art advanced mobile telephony with the latest 5G technology, combined with cheap voice and data services all over the country.

It also plans to provide free voice calls like Jio Telecom in India and offer data services at up to 50 per cent lower rates than currently charged by the likes of Nepal Telecom, Ncell and Smart Cell.

The deal with Turkcell was signed at a function held in Soaltee Hotel at the closing day of Nepal Investment Summit 2019.

Turkcell, Turkey's biggest mobile phone operator with circa 70 million subscribers, also recently announced that it will partner with embattled Chinese tech giant Huawei to build a 5G-oriented all-cloud core network.

Safaricom signs new Chinese e-commerce deal

Safaricom has expanded its e-commerce reach in Kenya by providing mobile payment services on online store Aliexpress.com.

The company has partnered with the Chinese run web business under Alibaba Group, to use M-Pesa as a payment option.

It has been predicted that it could boost the telco's daily mobile money transactions, which currently stand at 17 million or 25,000 transactions per minute, as more Kenyans start to favour online shopping driven by increased internet access.

"This partnership seeks to connect Kenyans to even more business opportunities by enabling them to seamlessly source, purchase and import goods from the world's leading manufacturers," said Safaricom chief customer officer Sylvia Mulinge.

Under the terms of the deal, Ant Financial, which runs the portal's payment services, will offer M-Pesa as one of the payment options with transactions denominated in the Kenyan shilling.

Edotco signs deals with Pakistan's three largest mobile operators

Edotco Group, the tower division of Malaysia's Axiata Group Berhad, has penned site-sharing deals valued close to USD80m with Pakistan's three largest mobile operators: Jazz, Telenor Pakistan and Zong.

In a statement, the firm said it planned to make investments to

boost connectivity capabilities in the country via shared telecoms towers, as well as more efficient operations and energy management.

"Being asset-light frees up substantial capital investment and resources from mobile operators, which they can channel towards their core business, extending their network coverage and improving service offerings for customers," said chief executive officer Suresh Sidhu.

Jazz chief executive officer Aamir Ibrahim added: "Pakistan's telecommunication landscape is maturing as the country accelerates its push for digitalisation. This transformation will result in Jazz streamlining its network operations and meeting the demands for fast, reliable data, which is essential for a rapidly evolving digital landscape."

Edotco is the largest independent tower company in Pakistan with more than 950 towers to its name.

Maldives sees mobile subscribers drop

The Maldives saw its mobile subscriber base drop to 845,330 in January 2019 from 857,934 subscribers in December 2018, while mobile teledensity also fell to 232.16 in January 2019 from 235.62 in December 2018.

The figures were released by the Communications Authority of Maldives, which also said that of total mobile subscribers, 148,466 were post-paid subscribers while 696,864 were prepay customers.

Elsewhere, the number of fixed telephone lines (including payphones) declined to 18,623 in January 2019 from 18,754 in December 2018, while fixed-line teledensity also fell to 5.11 in January from 5.15 last December.

The Maldives' mobile broadband subscriber base declined to 279,923 users in January 2019 from 280,876 in December 2018, while the fixed broadband user base jumped to 49,250 in January this year from 47,065 in the previous month.

Samsung India recruits 37 students for internship

Samsung India has recruited 37 students from IIM-Bangalore, IIM-Lucknow, IIM-Calcutta, IIM-Ahmedabad, IIM-Kozhikode and XLRI-Jamshedpur, MDI-Gurgaon for its two-month summer internship program called IGNITE (Inspiring Growth & Nurturing Interns Towards Excellence).

The 37 interns will be mentored by top management leaders at Samsung India and will work on live projects across verticals within the company.

Ahead of starting in their respective teams, the new recruits will engage with senior officials at Samsung India.

During the induction program, the 37 interns will undergo on-project exercises. There will be Zumba, Human Bingo sessions, a biz quiz and strategy-making sessions.

Ethio Telecom opens Joint Innovation Center with Chinese tech firm

Ethio Telecom and Chinese international provider of telecommunications, enterprise and consumer technology solutions for the mobile internet, ZTE, have launched a Joint Innovation Center in Ethiopia.

The collaboration will help Ethio Telecom to undertake verification on new technologies as well as tests of products and services. It will also aid the business to organise seminars, workshops and conferences.

Located in the Telecom Excellence Academy, the Joint Innovation Center, complete with a lab exhibition hall, is equipped with mobile broadband, fixed broadband, core network NFV, IP, BSS/OSS, RCS and IPTV facilities. ZTE donated and deployed various cutting-edge technologies.

Following the opening ceremony in early March, the companies also signed a memorandum of understanding for future cooperation expecting to make full use of the Joint Innovation Center and optimise its operation. Ethio Telecom and ZTE have collaborated on various projects since 2000.

Openet gives Regan market development APAC role

Openet, a provider of digital business support systems (BSS), has named Tony Regan in the newly-created role of vice president of market development for APAC.

In his previous role at Openet, Regan ran the company's consulting division, advising operators on strategy development and execution.

Prior to joining Openet in 2016, he held various senior roles within the Telefónica group in Ireland, Spain and Latin America, including head of strategy and operations for Telefónica Latin America.

"The move to open, collaborative



Tony Regan,
newly appointed
vice president
of market
development for
APAC at Openet

approaches to telecoms software is driving more partnerships," Regan said. "In the last six months we've implemented Digital BSS stacks with existing partners such as MDS Global and 6D Technologies. The move towards openness and collaboration is only going to accelerate and I'll be leading our partnerships in APAC to ensure that we offer a range of delivery options and best of breed solutions to our customers and SI partners."

Regan will be based at the Openet APAC headquarters in Kuala Lumpur, Malaysia.

Nepal Telecom faces huge licence renewal fee

The Nepal Telecommunication Authority (NTA) said Nepal Telecom must fork out USD181m to renew its mobile licence.

Nepal Telecom's original licence had a 10-year term. The charge for the renewal was not clear so the company suggested a payment of four per cent of its annual revenue, which would come in 50 per cent lower than the government's demand.

Operators had requested the NTA to make the renewal fees reasonable and in line with international rates.

The NTA's acting chairman Purushottam Khanal said the USD181m renewal cost would be the same for all for operators.

Nepal Telecom is the largest operator in the market, with a 51 per cent market share by subscribers.

IN BRIEF...



Reliance Communications, the company led by Anil Ambani, said it had terminated a deal to sell its telecom assets to Reliance Jio Infocomm, the mobile telecoms firm controlled by Anil's elder brother and Asia's richest man, Mukesh Ambani. The companies put the kibosh on the after they failed to secure approval from the telecoms regulator, objections from RCom's lenders and its decision to approach the bankruptcy court to resolve its debt.

BMC Emergency Response Communications System

■ The system enjoys an extensive feature set including data management, real-time surveillance, personnel dispatching, multi-channel information transmission, emergency alarm, etc. Complying with military standard, the whole system infrastructure is built to perform in tough environments. Adopting B/S network structure and integrating high precision BDS as well as RFID management, Belfone BMC provides reliable connectivity, intuitive operation and robust functionality, enabling the user to respond to emergencies promptly and effectively. Moreover, the system has great compatibility, practicality, reliability. The network of the system covers the whole operating field and keeps everyone connected, making sure that both safety and efficiency are maximized.

3+3+3 Networking Designs

■ 3 Application Scenarios

Daily Operations & Emergency Response & Cross-region Cooperation

■ 3 Command Levels

Central Command & Field Command & Field Operation

■ 3 Networking Schemes

Command Center Network & Field Command Network & Field Operation Network

■ Command Center Network

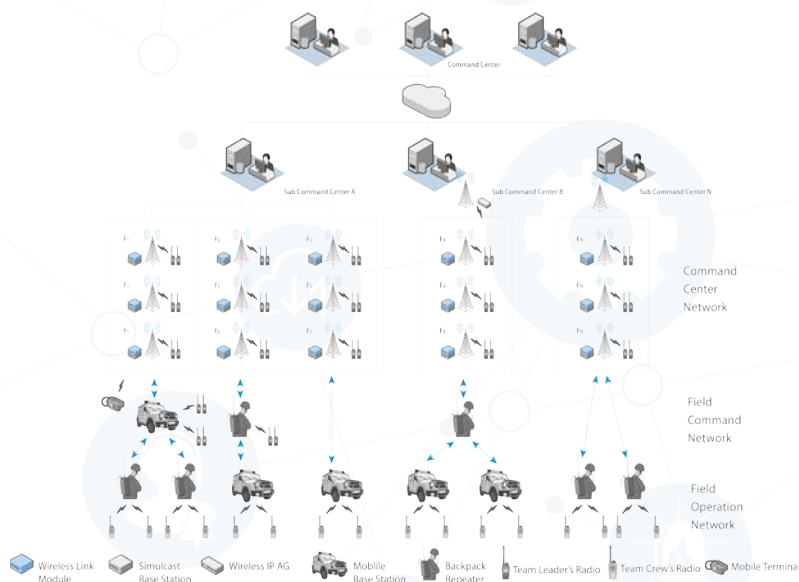
Deploy base stations and repeaters according to the geographical features of the field. Based on the simulcast networking, the link logic is simplified and spectrum efficiency is maximized, so that the system is stable and can handle the influx of any outside aid to achieve cross-region cooperation. The base stations are connected by multi IP connections (wired/wireless/private links) and are remote controlled by the command center.

■ Field Command Network

The deployed mobile base stations and backpack base stations are always on the move and will automatically connect any terminals, portables or mobiles, within their network coverage. Thus it is very flexible and resilient. If the network of the command& control center is upset, the field command network can still remain intact and keep going.

■ Field Operation Network

As some fields might have more complicated geographical features, the command center network alone might not be able to achieve 100% coverage. This is where the backpack base stations come in. Workers on the move can carry base stations on their backs and automatically connect any terminals within their coverage. Thus 100% network coverage is secured.



Belfone

Communications for Efficiency and Safety



Technical Solutions

■ Simulcast Features

The simulcast network is flexible, reliable and convenient. It enjoys the advantages of resources saving, seamless roaming, and can easily extend its network to cover any blind areas. Deploy several same frequency repeater base stations at the operating field, connect them by links, and the coverage problem is effectively solved. When carrying out a vital task, the command center can quickly connect all the base stations, bringing all the communications from different sub-areas onto the same page. Thus, everyone within the whole coverage is well connected and dispatching is facilitated.

■ Command Centre

Different levels of commanders can achieve real-time communications with field workers via PTT from the command& control center. Commanders can also command through data services such as TTS messages. The integrated GIS Map and BDS Positioning make the deployments of every terminal visible to the commander, which greatly facilitates commanding work.

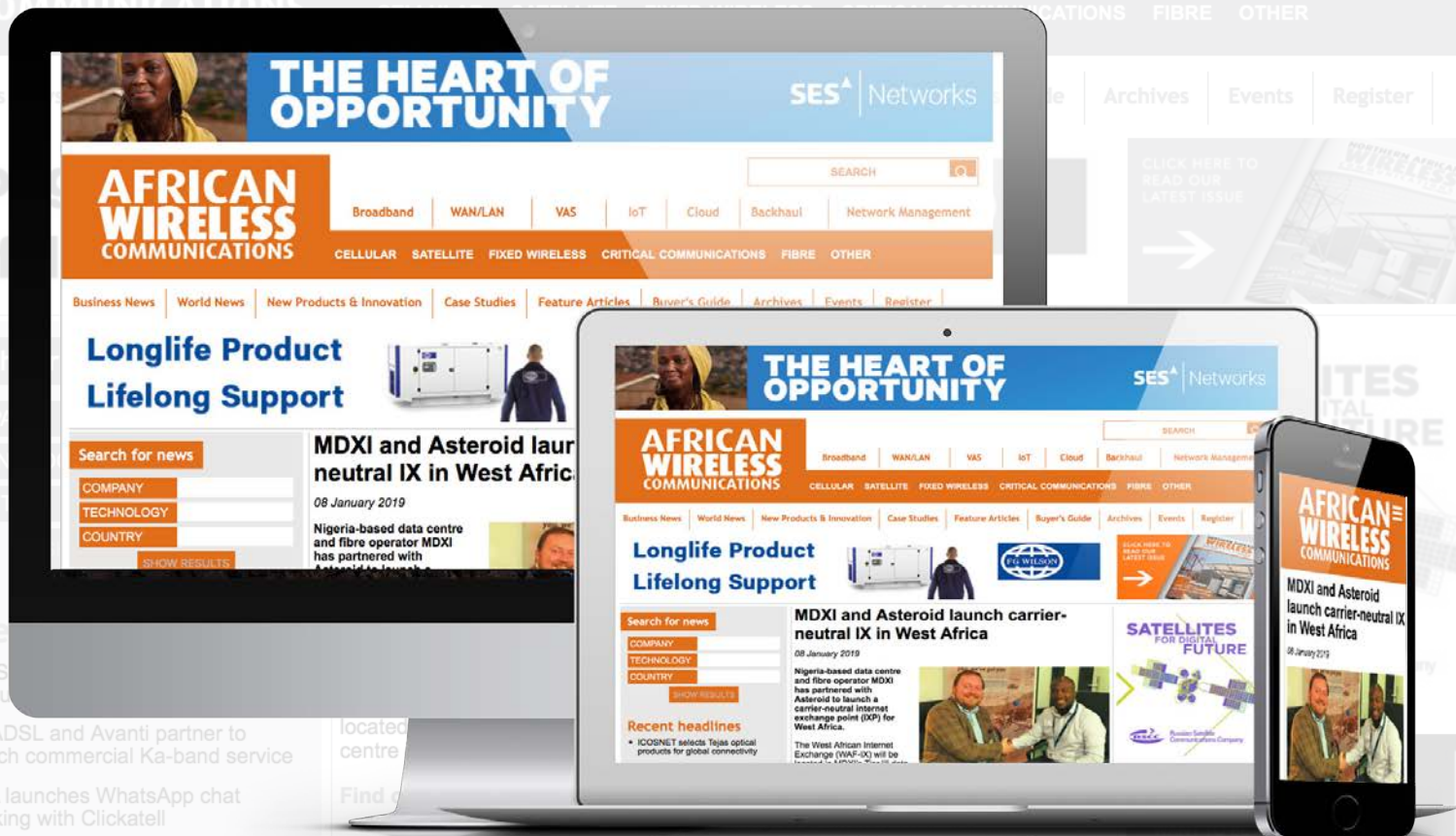
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Kenyan regulator reports positive outlook for ICT

by 8.5 per cent to KES252.3bn (USD2.47bn) in the twelve months to June 2018, according to the country's Communications Authority (CA).

In its ICT sector statistics report, the regulator says the sector is still the dominant revenue



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Quantenna expands .11ax portfolio with 'unique' architecture

Wi-Fi specialist Quantenna Communications says its new *QSR5GU-AX PLUS* is the world's only dual-band, nine-stream 802.11ax chipset.

Designed for use with mainstream APs, home gateways and mesh repeaters, the device is said to provide consumers with "much clearer Wi-Fi channels, higher airtime efficiency and soaring speeds".

According to Quantenna, the *QSR5GU-AX PLUS* 5x5 5GHz + 4x4 2.4GHz architecture includes advanced technologies that "out-

distance" existing similar products. These include integrated dual-band, dual-concurrent 2.4GHz and 5GHz functionality in a single chipset optimised for the best overall Wi-Fi performance. There's also an embedded CPU which, says Quantenna, allows full AP and repeater functions to be supported without need for an external processor. It says this means lowers overall cost and power.

Other innovations include 5x5 MIMO capability in the 5GHz band.

The company says that addition of a fifth chain allows up to 50 per cent more speed, especially in MU-MIMO operation. The *QSR5GU-AX PLUS* architecture also allows background 5GHz scanning by not interrupting existing data transmissions. This is said to enable "superior" 5GHz spectrum utilisation for improved network capacity.

Furthermore, a so-called "advanced" algorithm intelligently selects and operates in the cleanest DFS channel including the weather



radar channels, which are seldom occupied. Quantenna says this allows *QSR5GU-AX PLUS* networks to have the maximum performance in dense environments.

www.quantenna.com

Compact TETRA radio remains big on the features

Motorola Solutions says its recently launched *ST7500* TETRA radio provides "uncompromising" coverage with an integrated internal and external hybrid antenna system, all in a compact and robust design.

With a 25mm antenna, the radio measures 139 x 63 x 22mm size and weighs in at 197g. Motorola says 1.8W transmission power, an open speaker port, automatic gain control and multi-band compression deliver "loud and clear" audio with low distortion.

The vendor adds that the *ST7500* was designed for simplicity so users can focus on the mission. It features an easy-to-use keypad that is said to have "well-defined", fully



protected keys with haptic feedback that can be operated even while wearing gloves. Tactile buttons available for PTT, volume control and emergency calls, and there's also a talk group rocker switch. A bright, high contrast OLED is said to be easy to read even in bright sunlight.

The radio offers up to 22 hours battery life and a rugged design that is certified to withstand dust, rain, shock and drops, with an IP65, IP67 and MIL-STD 810 D/E/F/G rating.

Motorola adds that the Wi-Fi-ready *ST7500* is also equipped with a MAC13 GCAL connector and integrated Bluetooth 4.1 wireless technology, facilitating the use of a wide range of wireless accessories, such as audio headsets, PTT buttons and smart devices.
www.motorolasolutions.com

Streamlining next-gen in-building network planning

PCTEL and Ranplan are promising to streamline in-building wireless network design, planning and optimisation with the integration of their software.

The companies say next-generation wireless networks will incorporate new technologies such as 5G alongside existing cellular, Wi-Fi, and public safety networks. By integrating PCTEL's *SeeHawk Touch* data collection software with Ranplan's *Professional* solution for planning, designing and optimising in-building and outdoor wireless networks in coordination, it's claimed onsite engineers will be able to measure, model and visualise the complex interactions between these technologies.

US-based PCTEL (Performance Critical TELEcom) is global supplier of antennas and wireless network



testing solutions. It says: *SeeHawk Touch* and *Ranplan Professional* will enable network operators and building owners to prepare for a wide variety of uses, including emergency response, industrial IoT deployments, smart building automation and even virtual reality.

The companies add that the combined system will support network design and planning for a wide range of wireless technologies, including 3G, 4G LTE, LTE-A, CBRS, LAA, NB-IoT, Wi-Fi, P25, and 5G New Radio.
www.pctel.com
www.ranplanwireless.com

New spec a "significant move forward" for deploying IoT

oneM2M, the global standards initiative that covers machine-to-machine and IoT technologies, has published its third set of specifications. It claims *Release 3* "dramatically" enhances 3GPP interworking, particularly cellular IoT, and includes new capabilities to unlock value in industrial and smart home applications.

3GPP has been adding IoT-centric features, including capabilities to avoid network congestion and using

them more effectively, enhancing security, and enabling IoT devices to manage power resources efficiently.

oneM2M says *Release 3* allows "seamless" interworking with these underlying 3GPP network services, particularly NB-IoT and LTE-M, via the 3GPP Service Capability Exposure Function. It's claimed the combination of oneM2M's service layer and 3GPP's underlying network represent a "significant move forward" for operators in

deploying IoT capabilities.

According to oneM2M, growing momentum behind LPWAN solutions is expected to fuel large volumes of low price-point connected devices. Their commercial success will depend on efficient approaches for gathering and sharing IoT data, both at scale and across heterogeneous device populations. By enabling interworking with LPWAN technologies from 3GPP, oneM2M says *Release 3* further supports

operators in deploying cellular IoT services and tapping into new revenue opportunities higher up the value chain.

The organisation adds that its ultimate goal is to open up the IoT ecosystem and improve the business case for players looking to launch services. It reckons *Release 3* does this by creating an abstraction layer that simplifies the exchange of cross-silo data.
www.oneM2M.org

Radio offers the 'longest reach and "highest gain'

Siklu claims its *EH-8010FX* radio delivers 10Gbps full duplex point-to-point wireless Ethernet connectivity with the longest mmWave reach by means of the highest system gain in the market.

According to the vendor, the device has a reach of 1.7/2.3 miles with 99.95 per cent availability (rain zone K/E and with a two foot antenna).

The *EH-8010FX* operates over interference-free 71 to 76/81 to 86GHz E-band spectrum, with a total of 10GHz of bandwidth for use worldwide. Siklu says it uses a high-gain pencil-beam antenna which helps guarantee spectrum will be available everywhere and maximises spectrum re-use. Additionally, E-band systems are



governed by low licensing fees and a quick licensing processes.

The *EH-8010FX* is said to incorporate adaptive bandwidth coding and modulation for high availability and easy integration with Ethernet switches or MPLS routers in highly resilient topologies. It is designed to connect into and extend existing

networks with its support for both copper and fibre 10G interfaces.

The all-outdoor radio is IP67 rated and comes pre-configured out of the box with no license to download. Siklu adds that the "intuitive" web GUI manages local and remote units to enable fast commissioning and configuration. www.siklu.com

ACCESSNET-T promises "unlimited" TETRA functionality

Hytera reckons its new *ACCESSNET-T* IP for partners is an "infinitely scalable" IP TETRA radio system that offers high performance and versatility, along with an "intuitive and user-friendly" web-based network management system (NMS).

The system fully links TETRA radios from Hytera and Sepura to ensure what's claimed to be smooth voice communication, high availability, and efficient data transmission. It also integrates PTT over Cellular(PoC), LTE and Wi-Fi.

Available in both indoor and outdoor versions, Hytera says the *ACCESSNET-T* offers "unlimited" TETRA functionality and "virtually limitless" connection possibilities for external applications.

The firm says it can be used for all scenarios thanks to its diverse configuration options and modular



hardware design which means components can be easily exchanged or added to during ongoing operation. Whether it is fitted outdoors on masts or walls (including in harsh environmental conditions as it is IP65 rated) or underground, Hytera reckons its system always provides "reliable radio coverage thanks to the unique dimensioning of the transmission/receiving components on the base stations"

www.hytera-mobilfunk.com

OTDR test solution detects and reports fibre faults

Optical transceiver specialist ProLabs has showcased its latest testing solution which promises to ultimately save time and money for service providers.

The *EON-NSV-OTDR* (optical time-domain reflectometer) is designed to quickly detect, locate and report any breaks or faults in optical fibre cables. ProLabs says this means the right team can be dispatched for the related problem quicker than before.

The *EON-NSV-OTDR* locates, stores and reports the number of faults and reflections detected, calculates distances to the faults, and reports the distance to the farthest fault. It works by transmitting a series of optical pulses into the fibre under test and extracts. From the same end of the fibre, light is scattered or reflected back from points along the fibre. The scattered or reflected light is measured and then analysed



to locate the end of the fibre, the location and overall loss. ProLabs says this process allows engineers to detect if fibres are intact and to then deploy teams to fix the issues as and when they are found.

The company adds that its solution is specifically designed to allow for not just OTDR testing of the underlying optical circuit but also the Layer 2 and Layer 3 services that may be running over it. The solution also contains custom hardware for the generation of test traffic, loop-back and analysis, and can be configured to provide real-time monitoring of jitter and latency between the desired end-points in the network. www.prolabs.com

Stretching fibre networks with wireless hybrid system

XKL LLC has developed a new Wi-Fi infrastructure solution to provide a point-to-multi-point topology solution for fibre-to-wireless hybrid networks.

The fibre optic networking systems specialist says its solution enables

educational organisations, municipalities and enterprises that deploy Wi-Fi networks to extend their reach up to 80km with up to 36 wireless access points per 1RU system, enabling growth and enhanced flexibility.

The new Wi-Fi fibre-to-wireless hybrid system is a special application of XKL's *DQT10* series which is part of the company's *DarkStar Transponder* family of products.

As a Layer 1 device, the *DQT10* is based on XKL's *FlexArc* architecture. It's claimed this enables it to act as a distribution hub for wireless applications, with MIMO access

points supporting 2.4GHz and 5GHz wireless networks. XKL says this increases distance from a traditional 10km-reach Ethernet implementation to an 80km-reach, providing 10GbE (or soft-configurable 1GbE) at each wireless AP, as well as increased flexibility and efficiencies across metro and regional wireless networks. www.xkl.com



Doodle's Smart Radio optimised for 'SWaP'

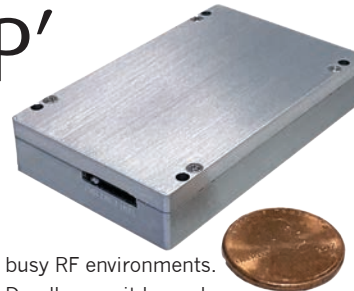
Singapore-based Doodle Labs claims its *Smart Radio* is the world's first high-speed, long-range radio that has been optimised for 'SWaP' (space, weight and power). The device measures 37 x 57 x 11mm, weighs 40g, and is said to consume a maximum of just 6W (1W in sleep mode).

Doodle developed the *Smart Radio* to simplify integration into IIoT applications, such as drones, mines and construction site machines, public safety/video surveillance, private networks in oil and gas fields, wireless Ethernet extension, etc. The radio uses 2x2 MIMO and 1W of transmit power to enable what's claimed to be distances exceeding 10 miles and data throughput exceeding 100Mbps.

Doodle says the *Smart Radio* is a complete wireless modem. It removes the need to connect to a separate CPU board and uses an Ethernet interface. A USB interface is also available. The radios come pre-loaded with a customised version of Linux's open source OS, *OpenWrt*.

The full *Smart Radio* portfolio includes a variety of models that cumulatively cover the 100MHz to 4GHz range. They are interchangeable, allowing customers to switch the operating bands by simply swapping the radio.

Among some of the key features, the radios are said to include interference-resistant COFDM (coded orthogonal frequency division multiplexing) for improved link quality in



busy RF environments. Doodle says it has adaptive radio modulations from DSSS up to 64QAM, as well as continuous per packet optimisation to maximise link performance in dynamic environments.

Other feature highlights include TDD for bi-directional traffic, end-to-end IP architecture for distributing unicast and multicast traffic, the ability to create self-healing/self-forming mobile mesh networks, and support for all network topologies. www.doodlelabs.com

Also look out for...

First 5G NR call on mobile device

In a demonstration described as marking the next critical milestone for 5G development, Ericsson and Qualcomm have successfully completed a 3GPP Rel-15 spec compliant 5G NR call on a mobile test device.

The over-the-air call was performed using millimetre wave (mmWave) frequencies in the 39GHz band in non-standalone mode. It utilised Ericsson's *AIR 5331* commercial 5G NR radio and baseband products, together with a mobile test device integrated with a Qualcomm *Snapdragon X50* 5G modem and RF subsystem. The tests took place in Ericsson's lab in Kista, Sweden.

The demonstration call is a continuation of the interoperability development testing that was announced in 2017 which used Ericsson's 5G NR pre-commercial base stations and Qualcomm Technologies' 5G NR UE prototypes. The companies say it further shows their commitment and ability to achieve milestones that pave the way for commercial launches of 5G NR standard-compliant infrastructure, smartphones and other mobile devices.

In addition, it's claimed these early trials and milestones will enable global operators and OEMs to conduct tests in the field using their own networks and devices.

According to Qualcomm, mobilising mmWave for a smartphone has been regarded by many as an "impossible challenge". The company reckons this latest demonstration in collaboration with Ericsson proves that they are on track as the industry progresses to the commercialisation of 5G networks and devices in early 2019.

Mesh system simplifies Wi-Fi networks

Zyxel Communications claims to have developed a mesh-WiFi solution that delivers business-grade mesh Wi-Fi at a more affordable price point and with easier, plug-and-play usability.

According to the firm, small businesses have long relied on commercial access points to provide wireless internet to guests. It believes this is a "far from optimal solution" as wiring these APs takes a great deal of time and money. Zyxel adds that managing them is also "equally difficult given their complex interfaces".

The company says its *Multy Plus* mesh solution only requires placing two or more APs anywhere around the premises without the need for any wired connections, and that its interface is so straightforward that even non-IT staff can use it. The devices offer tri-band Wi-Fi and 5GHz dedicated backhaul for speeds of up to 1,733Mbps across 5,000ft² via nine internal antennas.

Zyxel also claims *Multy Plus* raises the bar for cyber security with *AiShield*, a dedicated app that takes numerous GUI functions and

packages them for what's said to be convenient mobile use. Its features include access control, which enables network administrators to restrict access to tens of thousands of categories of inappropriate websites and up to 500 apps. www.zyxel.com



L-band to 720MHz frequency converters

Advantech Wireless Technologies' new satcoms up/down converters are designed to translate L-band frequencies (720MHz, +/- 200MHz) to 800 to 1550 MHz with 100KHz step size.

The company reckons this frequency translation provides a "low cost" alternative to using off-the-shelf, satellite-based, block-up or block-down converters that usually include an L-band I/O within 800 to 1550MHz. It adds that the new converters provide a bridge between high data rate 720MHz modems and conventional X-band hardware.

Advantech says products have been specifically developed to reduce

the high level of customisation and the overall cost of the new generation of medium Earth orbit (MEO) and low Earth orbit (LEO) satellite constellations, especially those used for imaging the planet and weather forecasting. Combined with its range of solid state power amplifiers, the vendor claims the converters offer an "advanced" solution for any new applications in which very high data rate modems need to process large amounts of data over large bandwidth, such

as the high definition video links required by geo-imaging.

Advantech says MEO and LEO satellites are both intended to provide a lower cost alternative to traditional geostationary (GEO) satellite services and provide coverage where a GEO footprint is absent. It believes operators can re-use many components of traditional satellite technology and advancements, thereby avoiding additional high costs and risks of R&D.

<https://advantechwireless.com>



Qualcomm unveiled its prototype system for use in 3GPP-based millimetre 5G NR trials last year

Getting smarter with subscribers



Openet claims its Data Fabric provides a unified intelligence platform to enable the integration of all data sources into a single system. The company says it's designed to only source the relevant data required to realise value outcomes for the operator

Using 'Big Data' to gain insights into customer behaviour is now vital for all mobile operators. But why is it so important and how should they go about it? RAHIEL NASIR finds out.

The idea of analysing 'Big Data' to see how subscribers use network services is certainly not new in the industry. But there does seem to be mounting evidence that the need to do this is no longer a 'nice to have' but a 'must have' for mobile operators in their ongoing battles to reduce churn and boost customer loyalty.

For instance earlier this year in March, roaming specialist Mobileum (formerly Roamware) and Juniper Research published a report about how predictive analytics can quickly unlock revenue streams whilst improving the experience of roaming subscribers.

In *The New Rules of Roaming and How Mobile Operators Should Play to Win*, Mobileum said: "In the context of falling ARPU, operators need to take action to reduce their costs by introducing operational efficiencies and increasing revenue streams..."

Big Data and predictive analytics are one hugely promising way to reverse the trend of diminishing ARPU, which is why operators are moving to it."

The report particularly looked at the so-called 'silent roamers' – those who used any mobile services when travelling outside their home network for fear of high charges and 'bill shock'. Here, Mobileum said that there is a need to understand the customer's experience whilst roaming, and to understand their requirements, needs and purchase history.

"As many travellers do not utilise roaming services, there is a significant opportunity in this untapped non-user market," stated the report. "Globally, Juniper estimates around 60 per cent of mobile roamers to be silent data roamers in 2022; in comparison silent voice roamers will be just 22 per cent."

It continued by saying after identifying who the silent roamers are, MNOs can then target those customers with bundles to tempt them into using roaming services.

Mobileum said that while calculating the most effective price point for roaming solutions can be difficult, using analytics to determine the optimum price point should increase revenues. Tim Moran, the company's SVP for product and offering, added: "With the increasing amounts of both network and traveller data available for interpretation and analysis, operators who ignore trends face customer dissatisfaction or customers simply turning off data altogether."

Meanwhile in a separate study published in May, IHS Markit said that as subscriber growth "hits the brakes", service providers are increasingly turning their attention to providing the best customer experience to minimise churn.

For its 2018 *Digital Transformation Strategies Service Provider Survey*, IHS said it polled service providers that account for one-third of the world's telecom revenue and capex. It found that enhancing customer experience is the top digital transformation project for 75 per cent of them, followed by automation (44 per cent) and 'cloudification' (38 per cent).

"In this saturated world, subscriber growth is non-existent – and without customers, service providers have no business," said Stéphane Téral, executive director for mobile infrastructure and carrier economics research at IHS Markit. "With nowhere to go to find new 'human customers', providers need to pay serious attention to their existing customer base."

The data "gold mine"

So how exactly can service providers gain insights into what their customers are doing whilst using the network? In its report referred to above, Mobileum pointed out that the task of understanding

customer analytics is "too great" for any team of professionals to perform without technological assistance from expert vendors.

One such company is France-based data analytics specialist Intersec Group. Its CEO Yann Chevalier points out that MNOs sit on a "gold mine" of data, be it technical information from their network or customer data from their CRM and billing systems. He believes operators should cross these data to enhance customer experience (CX), smoothen business processes, and anticipate user issues.

"Having a 360 degree customer view in real-time is now mandatory to deliver great customer interactions. CX is both about ensuring high quality of service/quality of experience, and smartly proposing tailored offers at the right time and place."

Chevalier adds that the same data sources are of great value to build and develop new B2B revenues streams for operators. "From LBA (location-based advertising) to geo-statistics, IoT and safety, business opportunities are endless. They allow MNOs to address a wide range of enterprise customers with high value propositions in the fields of smart cities, urban planning, advertising, tourism and hospitality, logistics, industry, banking and finance, governments."

Ireland-headquartered mobile software provider Openet warns that without actionable data insights to truly understand how their network is performing, cellcos will be unable to fully realise ROI for their digital transformation efforts that have been brought about by the accelerated move to 5G and evolution towards NFV and SDN.

"MNOs are undergoing a great deal of change to evolve their networks towards a far more complex and dynamic service delivery environment," says marketing manager Julia Hogarty. "All of this has

been driven by the need for MNOs to now compete in a very different competitive arena than before – one that pits traditional operators in direct competition with far more nimble internet-type business models.”

According to Hogarty, these players have been able to gain advantage in service innovation and customer engagement practices due to the fact that they do not have to resolve how the service itself is delivered. Despite this, she says the significant transformations to network architectures and service delivery mechanisms present a “huge” opportunity for mobile operators to be far more insightful as to how to deliver a better service at a lower operating cost going forward.

Magnus Moller Petersen, EVP of sales and marketing at Swiss company Sicap, also believes network insight is “crucial” for a mobile operator business, adding that the ability to automate processes to react in real-time upon the data provides countless benefits.

He gives a number of examples here, such as enabling operators to grow sales through better market segmentation, as well as automated, targeted and personalised offers and promotions.

Another example is helping operators to deal with fake phones. For example, Petersen says 10 to 30 per cent of mobile devices in developing regions such as Africa are counterfeits. “They cause significant revenue losses for operators and regulatory bodies, and reduce tax incomes. Network intelligence can be used to identify and handle those handsets appropriately to avoid economic losses, for instance, by ensuring that the devices have been imported to the country using the correct channels.”

Petersen says MNOs will also be able to provide better customer support at lower opex by utilising real-time network intelligence for delivering proactive care precisely when subscribers typically encounter problems.

For example, he says Sicap has found that because of the low penetration of mobiles with over-the-air configuration capability – which can typically be as low as 50-60 per cent of handsets in some networks – device configuration is a common root cause for connectivity problems, call centre contacts, and customer complaints. He goes on to describe two instances of how network intelligence could be applied to reduce this problem:

“A user switching from a feature phone to a smartphone often encounters difficulties in setting up or using the new smartphone. To prevent the user contacting an operator’s call centre, IMEI code switches could be monitored on the network. Based on that insight, operators can automatically deliver such users correct online self-care help for the new handset model.”

In another instance, Petersen says switching SIMs between devices is not only a common practice in many markets, it is also a common root cause for connectivity problems. “Again, identifying such problem situations is easy by monitoring SIM and IMEI combinations on the network. An automatic device configuration guide can be automatically sent over SMS upon each switchover event detected.”

Operator challenges

So far, all of that certainly sounds plausible and convincing. But do mobile operators truly understand the significance of investing in the platforms needed to extract network and subscriber intelligence?

Petersen says that, in general, operators do see the potential benefits but do not value the gains high enough to warrant an investment.

Chevalier also points out when it comes to monetising the intelligence gleaned from analysing Big Data, many operators come up against internal challenges before they can start. He reckons their “siloe” organisations act as an “impediment” to the design of offers that are not purely telco in their nature in order to make the most of the data monetisation.

“Seeing what to do with their huge amount of existing data is very tricky,” says Chevalier. “Even with a concrete idea, managing heterogeneous sources of data and cross-analysing them to get the right insight is a major challenge.”

As a result, he says MNOs need solutions to collect and filter data, compute and cross-analyse them, and deliver actionable insights. “They are torn between solutions from small, niche [providers] and IT giants. The first one doesn’t scale and only addresses a single use case. The second leads to a very long [time to market] and high costs for development and customisation – that take ages.”

Chevalier says another challenge for developing markets, many of which are predominantly pre-paid, is the need for real-time interaction where rapid execution of a promo campaign that is based on data analysis is paramount. “The insights you get from Big Data can be invalidated in a short time (e.g. a top-up, data bundle purchase, etc.). Moreover, [many] MNOs tend to have less CRM and BI data, which are well-known aspects of pre-paid markets.”

Petersen also picks up on this latter point: “Operators lack availability of valuable and up-to-date data. Sourcing of data from multiple locations including the CRM, billing, CEM and the standard mobile network elements in an automated and real-time manner requires a lot of resources and skills in integration of databases, network components and IT systems.”

Hogarty supports this view when she says that the “most critical” challenge is in resolving the effective management and interrogation of data on the network. She says: “Due to the myriad data sources and data format types propagated across today’s often converged networks, it is becoming increasingly complicated to not only ingest all network and usage data but also to aggregate and correlate disparate data into actionable data sets.

“These data sets, or data insights, must be driven by applicable value outcomes to the business in order to deliver actionable insights to downstream applications and consumption channels. Appropriating data in this way to realise business relevant insights is no easy feat.”

Given the complexity of the entire process, do cellcos have the personnel needed to analyse the Big Data created by their networks’ usage – indeed, given that data scientists are in short supply even in developed markets, does any MNO have the talent needed to be successful in all this?

“Lack of sufficient numbers of skilled resources is a bottleneck for [developing market] operators, and they need to enlist either direct resources or establish partnerships with experienced vendors,” says Petersen. “The ability to process and analyse Big Data is essential now and will become crucial during the coming years with the advance of AI and machine learning.”

Hogarty echoes this and reckons a shortfall in dedicated personnel does not have to be an obstruction to effective data analysis, particularly when you consider the role of automation in data processing and analytics today.

She adds: “As evidenced by the pronounced role of the chief data officer, it is clear that the centralised governance of data management and analytics is becoming increasingly critical to competitive success. Having said that, it is true that some MNOs are perhaps less mature than others in the resourcing of this function.”

Overcoming the challenges

Sicap was founded as a spin-off from Swisscom in the late 1990s and now specialises in four areas: customer insights and engagement; device and SIM management; device knowledge; and mobile security.

Petersen says that to help operators overcome the problems in automated data sourcing, integration and processing, the company’s solutions provide a range of ready-made interface connectors to many commonly used databases and network elements used in telecoms. “Additionally, Sicap’s solutions provide the automation logic needed to collect, process and mash-up data from different sources. To overcome the lack of data intelligence resources, [the company] offers its data analyst team for operators.”

Hogarty believes that a “data fabric” approach helps overcome many of the challenges MNOs face when it comes to gathering network and subscriber intelligence. She says this represents a “significant evolution” towards a truly strategic approach to comprehensive data management, data processing and data governance.

Yann Chevalier,
CEO,
Intersec



“Having a 360 degree customer view in real-time is now mandatory to deliver great customer interactions.”

"As described by IDG, the concept of a 'data fabric' is an approach to help MNOs better deal with fast-growing data, ever changing application requirements and distributed processing needs," says Hogarty. "The term references technology that creates a converged platform which supports the storage, processing, analysis and management of disparate data. In short, a one-stop-shop to resolve the data challenges of today's networks."

So when it comes to network and subscriber intelligence, what actually needs to be monitored? "The type of data to be monitored is mainly determined by each operator's needs and goals, whether it is about mobile marketing, proactive customer care, or perhaps handling of counterfeit devices", explains Petersen. "For example, when an operator wants to increase revenues through higher top-up frequency, by selling bigger bundles or faster 4G subscriptions, data points such as minutes of usage, location of residence, ARPU, data consumption, handset type (4G or non-4G) become crucial for market segmentation and more targeted promotions."

According to Sicap, 4G penetration across some developing markets is still extremely low, with between three to 20 per cent of all devices on a typical network supporting LTE. Petersen says: "Gaining detailed device type data in real-time from the network would allow operators to automatically send customers more relevant and targeted offers – to first increase 4G device adoption, then ramp up 4G subscriptions, and finally grow the appetite for bandwidth-intense applications and services."

Hogarty reckons there are a myriad of metrics that can be monitored using the data fabric approach that she mentioned earlier. "[Metrics] which are called upon and proactively monitored depend greatly on each network ecosystem. While this can be informed by the downstream applications in place, the hyper interoperability of a data fabric allows for a complex and highly dynamic operational environment to be managed and monitored to deliver on the strategic objectives of the MNO business at a given time. Such applications may include congestion control, revenue assurance and audience measurement, to name but a few."

Intersec, highlights three areas that need to be analysed in order to gain intelligence about subscriber behaviour. Chevalier says these include: customer consumption (calls, messaging, data, mobile money and additional services); customer experience (QoS, network KPIs, calls to customer service, past customer journey); and customer profile and history (contract, tariff plans, recharges, services subscriptions, interests). He adds that all these are enriched by data about subscriber locations, demographics and CRM.

When asked what MNOs need to watch out for when it comes to choosing a platform that enables all this, Chevalier advises them to avoid "hard-coded" solutions. "MNOs should be looking for solutions that enable multiple use cases within a single platform and yet remain open to new needs and use cases. They should offer the ability to scale in terms of dimensions (i.e. number of

subscribers, devices, events, data fields, etc.)." He also recommends going for proven products that can be delivered in the timeframe needed rather than selecting platforms for *ad hoc* projects, and highlights the importance of seeking references.

According to Chevalier, Intersec offers a whole suite of applications specifically designed for MNOs to make the best out of their data. "Our *GeoIntelligence* suite proposes a rich set of products based on mobile subscribers or devices geolocation, both real-time and history-based. It includes: *GeoInsights* (vertical studies based on anonymous location data); *GeoReach* (location-based advertising campaign manager with brands and budget management); *GeoSafe* (public safety and warning); and *GeoTrack* (business care for mobile and IoT/M2M asset tracking).

"Our *Contextual Marketing* suite focuses on developing customer engagement. It includes *Iris Contextual Marketing*: that features triggered actions for customer engagement; *GeoTravel* for welcome SMS/push roaming pass; loyalty and community management; and inbound marketing for the next best action."

Like Chevalier, Sicap's Petersen also advises operators to avoid systems that require fully customised and hard-coded data connectors, interface plug-ins and data processes. He says they should select a product that is essentially fast to deploy, easy to integrate and easily solves the operator's issues.

Meanwhile, Hogarty highlights two important aspects to consider when evaluating such solutions. Firstly, she says operators should look for a platform that has a modular design in order to fulfil the interoperability requirements needed to interwork and optimise existing network assets and cloud infrastructures.

A second, and perhaps "more critical" evaluation criterion according to Hogarty, is to see if such a platform delivers on integration through an open API approach. "The hyper dynamic nature of today's networks necessitates a move away from monolithic solutions and vendor lock-in. Interoperability is key, along with the need to embrace open source architectures. Those who are

successful will avoid a platform which demonstrates a restrictive design as the very definition of a data fabric requires an open approach both to upstream data ingestion and downstream consumption channels, whether these be MNO or third party."

Hogarty claims that the *Openet Data Fabric* provides a unified intelligence platform to enable the integration of all data sources into a single system. She says it features the intelligence to only source the relevant data required to realise value outcomes for the business.

"The platform incorporates Openet's *Digital API Gateway* to provide extensive interface intelligence to allow for integration across all data source types and formats. [It] accelerates the delivery of insights by automating key processes for increased agility, while giving business users more autonomy in the data preparation process.

"All data consumers, whether MNO or third-party applications, are optimised as a result of the data quality achieved through this 360 degree approach to data management."

Is future intelligence all artificial?

Artificial Intelligence is one of the big buzzphrases of the moment and Chevalier says Intersec is currently working on introducing the technology into its products to amplify the scope and power of the company's algorithms.

In the meantime, Petersen says Sicap has already developed an AI/machine learning enabler solution called *AI Engine*. "This is a generic software framework that enhances the capabilities of Sicap's solutions such as *TargetMe*, *Device Management Centre* and *Online Smartphone Support*."

Sicap launched its *AI Engine* in 2017 with a *Churn Prediction and Prevention* solution as its first application. More recently in August 2018, the vendor announced a new product in its *Device Knowledge* solution line to give operators access to the data needed for self-care, chatbots and AI-powered customer services.

"At Sicap, future R&D spending continues to be allocated to building the ability to utilise the captured network and subscriber data in a more valuable way," says Petersen. "Whereas today the data is mainly used for gaining a better business insight and for simple reactive actions based on the data, in the future more advanced data-driven process automation will deliver operators higher business value.

"As an example, by combining Sicap's device knowledge data and self-care help content with chatbot technology and the Big Data that identifies commonly encountered device problems, we believe that most of call centre and customer centre work could be fully automated."

For operators and service providers, it is ultimately all about developing a long-term relationship with the customer. As Chevalier concludes: "MNOs are a trusted third party for their subscriber and they need to build upon this to monetise even more the tremendous amount of data they have without compromising their subscribers' trust in keeping their personal data safe." ■



"The ability to process and analyse Big Data is essential now and will become crucial during the coming years with the advance of AI and machine learning."



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Seeing Wi-Fi in a new light



With the new 802.11ax Wi-Fi standard on the horizon, KEVIN WEN wonders if it offers any real advantages over Wave 2.

802.11ac Wave 2 is the latest Wi-Fi standard. When its predecessor, the now widely adopted 802.11ac Wave 1, first launched in 2011, it brought a host of advantages for businesses and consumers alike. Improved power management, higher capacity and lower latency provided a higher performance network and made Wave 1 the gold standard it is today.

In many respects Wave 2 builds upon the success of its predecessor, whilst also bringing additional feature benefits for business networks, particularly for enterprises that transfer large volumes of data.

That said, Wave 2's performance boost looks less significant when compared to those of the next generational leap, 802.11ax (ax). Due in 2019, demos show a five to 10 times performance improvement over Wave 1 and four times over Wave 2. So is the upgrade to Wave 2

worthwhile or should you hold out for ax?

Most business owners aren't networking experts and it would be easy for them to assume that the extra MHz of bandwidth and Gbps of throughput that ax will offer over Wave 2 as essential for their companies. However, to write-off Wave 2 in favour of the promises of ax could, in many situations, prove a lost opportunity.

Wave 2 versus ax – the numbers game

While Wave 2 is not as huge a leap forward as 802.11ax aims to be in a couple of years' time, that doesn't mean it's not worthwhile. Chief amongst the significant additions is support for MU-MIMO. This enables Wave 2 access points to send and receive data to and from multiple devices simultaneously, providing a significant boost in efficiency. As such, MU-MIMO improves the

overall connectivity experience by distributing data more efficiently. Simultaneous smartphone, tablet and laptop use is already prevalent in the modern workplace, so this extra capacity is a real bonus.

802.11ax will significantly up the ante with OFDMA (orthogonal frequency division multiple access), an ugly acronym that means that rather than having multiple channels, each one is chopped up into hundreds of smaller sub-channels with different frequencies. What this boils down to is that up to 30 clients can share a channel rather than having to take turns broadcasting and listening on each.

Although Wave 2 accommodates channel widths up to 160MHz (a dramatic increase over Wave 1 which topped out at 80MHz) ax's wider and multiple channels significantly boost throughput. For example, if we assume the throughput is increased by 4x with 160MHz channels (a conservative estimate), the speed of a single 802.11ax stream will be 3.5Gbps. This compares with 866Mbps for a single 802.11ac connection. That's a significant boost, and one that's hard to ignore.

To ax or not to ax?

It's difficult to not get excited by the advances that 802.11ax promises over the existing Wave 2 standard. However, before you plan for an ax deployment upon its release, it's best to consider why these features have been developed – and whether they're necessary for your business.

Ax has been designed to deal with incredibly high-density networks. Its super high data rate and bi-directional MU-MIMO capabilities make it ideal for very dense indoor and outdoor environments, such as conferences, apartment blocks and hotspots. Unless your enterprise network fits the mould of one of these use cases, it is unlikely that

A BRIEF HISTORY OF 802.11AX

October 2016: Quantenna Communications announced the first 802.11ax chipset. It supports eight 5GHz streams and four 2.4 GHz streams.

January 2017: Quantenna adds a second chipset with four streams in each band.

March 2017: Qualcomm unveils 802.11ax debut chipset.

June 2017: Broadcom and Marvell follow.

August 2017: Asus introduces first 802.11ax router with 4x4 MIMO in both bands and throughput of 1.1Gbps on 2.4GHz and 4.8Gbps on 5GHz.

Huawei announces an 802.11ax access point that uses 8x8 MIMO and is based on Qualcomm hardware.

January 2018: Aerohive Networks debuts family of 802.11ax access points based on Broadcom chipsets to start shipping mid-2018.

March 2018: Draft 802.11ax standard published

March 2019: Final standard for 802.11ax expected

July 2018: First pilot projects due to begin.

July 2020: Mass adoption expected (terms and conditions apply)

Wave 2 versus ax

Wi-Fi standard	Frequency operating range	MU-MIMO	Number of simultaneous MU-MIMO transmissions	OFDMA	Energy usage
802.11ac (Wave 2)	5GHz only	Downlink transmissions only	4	No support	Power intensive
802.11ax (ax)	2.4GHz & 5GHz with 12 possible channels	Full duplex from multiple sources	8	Uses multiplexing with OFDMA, giving it random access, dynamic fragmentation & spatial frequency re-use. Results in greater efficiency	Uses 'target wake time'

you will see significant benefits from ax.

Wave 2 is available now and, since its initial launch in 2016, we have seen the pricing of supporting chipsets dropping to a point where they are actually more cost effective than their predecessors.

For smaller businesses still using a/b/g/n gear and in need of an upgrade, my advice is don't hold out for ax. The speed boost provided by Wave 2 will almost certainly be significant enough to see you through the foreseeable future.

Six surges to expect from 802.11ac Wave 2:

It's a gateway to gigabit: the GbE offerings from Google Fiber, AT&T GigaPower, and Verizon Fios all run on cable. Wave 1 for wireless never quite got to Gigabit speed. Wave 2 will open the door for gigabit Wi-Fi because its physical rate (PHY) is much higher, and that affects the ultimate data transfer rate. To put that in context, the PHY rate of Wave 1 peaks at 1.3Gbps. Wave 2 reaches the heights of 2.34Gbps. Even if it reaches half of that potential, it's still going to beat 1 Gbps.

MU-MIMO: Wave 2 can multitask so it supports more channels. This means that the spectrum is used more efficiently for multiple connected devices, and devices can more easily get on and off of the network. It's similar to the difference between a single bank teller who can only see one person at a time as long as they pay by cheque, and four multi-tasking bank tellers who offer a range of easy transaction methods.

Support for MU-MIMO is crucial since all businesses and homes have multiple connected devices and this resolves most of the headaches for network admins.

Strong performer: in addition to a faster PHY rates, Wave 2 widens the channel to 160MHz, a considerable improvement on Wave 1's options of 20MHz, 40MHz and 80MHz. This makes it easier to handle large files.

Wave 2 also has an extra spatial stream, up from Wave 1's three. According to the Wi-Fi Alliance, device speeds rise in proportion to the number of spatial streams.

More flexibility and more wiggle room: Wave 2's support of additional 5GHz channels is one of its most powerful boosts. If designated for Wi-Fi use, these channels could cater for more users and devices on the network. Around 65 per cent of devices are dual band (source: Wi-Fi Alliance) so they can use both the 2.4GHz and 5GHz frequencies.

It's already compatible with leading devices: The Wi-Fi Alliance has already certified five products for Wave 2 interoperability – they

include devices from Broadcom, Marvell Avastar, MediaTek, Qualcomm and Quantenna.

The second wave: while wi-fi.org lists 24 products with 802.11ac Wave 2 feature compatibility, few are hardware-related. Adoption is likely to ramp up, and supporting products will follow with more Wave 2-enabled hardware which is expected to hit the market by the end of the year.

The case for 802.11ax

Whether you're in a conference, sports arena or other public space, complete strangers will all ask each other one thing: *is the Wi-Fi down or just very slow?* That's not great for the branding of a commercial venue such as a hotel. These days, customers expect good Wi-Fi, and hotels are often judged by the quality of their wireless network.

As stated above, 802.11ax (or High-Efficiency Wireless) promises a four-fold increase in average throughput per user. As well as being designed specifically for high-density public environments, like trains, stadiums and airports, the forthcoming standard will also help the IoT.

Ax is good for mobile data off-loading too. So CSPs can off-load wireless traffic to a complementary Wi-Fi network when the local cell reception is poor or if there is a massive influx of mobile phone users in any given cell – such as the presence of delegates at a conference centre attached to a hotel.

802.11ax could be finalised as early as June 2019 because vendors are very excited by the prospect of a high-value upgrade product. Non standard chipsets have been shipping since last year and the first 802.11ax routers are on sale at reassuringly expensive prices. Some early adopters will use these non-standardised products in the hope they can perform a firmware upgrade at a later date that keep them compliant when the standard is ratified.

The problem experienced by many of these Wi-Fi 'power users' (such as the aforementioned conference centres and crowd pullers) is that bandwidth is shared among endpoint devices. Often, APs can have overlapping coverage areas. This causes complications with end users as they move between APs which is frequent with crowd behaviour.

The current system is based on the old shared Ethernet model of Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA). This requires endpoints to listen for an all-clear signal before transmitting. In the event of interference, congestion or collision, the endpoint goes into a back-off procedure, waits for the all-clear, then transmits. But

in a crowded stadium, a busy airport or a packed train with hundreds or even thousands of end users attempting to stream video at the same time, the system loses efficiency and performance suffers.

Ironically, this was dismissed as primitive more than 20 years ago, and advanced systems such as desktop ATM and Token Ring promised to overcome the issues. But Ethernet fulfilled an immediate requirement and was the cheap option, so people bought it rather than the expensive specialist offerings such as ATM and Token Ring. Ethernet, won the mass market because it gave immediate payback before Token Ring could gain momentum – an allegory that is worth bearing in mind when comparing Wave 2 with ax. It's a moot point, as we shall see, whether this is a like-for-like comparison.

For example, 802.11ax offers potentially greater performance, of a magnitude out of proportion with the benefits of Token Ring over Ethernet. In addition, it greatly extends the network coverage and, being more energy efficient, extends the battery life of each device using it.

Performance is the headline selling point. It can deliver a single stream at 3.5Gbps but, crucially, it has also adopted OFDMA multiplexing technology which it took from LTE. This allows it to send four simultaneous streams to a single endpoint. In theory, this creates a potential bandwidth of up to 14Gbps.



Kevin Wen,
European
president,
D-Link

Modus operandi

The ax standard takes a variety of well-understood wireless techniques and combines them to make big boosts to existing models. As well as multiplexing from LTE mentioned above, it also uses beamforming techniques that ensure that streams are aimed more accurately at their target antenna. These incremental improvements mean that 802.11ax is back-compatible with 802.11ac and 802.11n.

Another technique ax adopts is QAM. This creates a 40 per cent increase in throughput because it enables more data to be transmitted per packet. It also makes for more efficient use of the available spectrum resources. This is how ax creates broader channels and splits those channels into narrower sub-channels. The result is the endpoints have more channels to use, making it easier for them to get a clear channel without collisions or interference.

Downloads from the AP to the end user have improved too. Early Wi-Fi standards only allowed one transmission at a time per access point. When Wave 2 adopted MU-MIMO techniques, that allowed those same access points to send up to four streams simultaneously. However, 802.11ax can offer eight simultaneous streams, each of which uses beamforming technology to sharpen its aim. ■

Operation Thai cave rescue

The rescue of 12 young boys and their football coach from a perilous situation demonstrates the benefits of rapidly deployable Wi-Fi

The boys were trapped in the Tham Luang cave complex, Thailand for 18 days before being rescued

The world was glued to TV sets in July 2018 when news spread that 12 young Thai boys from the “Wild Boars” football team and their coach were trapped in Thailand’s Tham Luang cave complex.

It drew comparisons to an incident eight years previous, when 33 miners were trapped in a Chilean mine. That too was a massive story, but when children are concerned, the situation is magnified.

The Chiang Rai province in northern Thailand, where the cave is located, borders Myanmar and Laos. Anyone who has visited the area will say that while it is beautiful, some of the terrain and landscape is very unforgiving and inhospitable.

Throw a snaking system of caverns and crevices into the mix and it looked like the situation could only end badly.

Needless to say, Cambium Networks was faced with an unenviable task.

Cambium says, “disaster preparedness and response have entered a new era, where providing first responders and emergency workers, as well as the public, with internet connectivity has become a critical factor in effective operations”. The Tham Luang cave complex operation was a case in point.

In situations where circumstances can change rapidly – in this case flooding of the cave – the pressure is on emergency teams to establish operations very rapidly. For Cambium, that

means creating wireless networks that can transmit voice and data information in remote, rugged and dangerous places such as where the children were being held hostage by nature.

Wireless network connectivity makes a difference in first responders’ ability to coordinate response teams and provide aid to people in need. With deployment of industry-standard Wi-Fi connectivity, emergency personnel can get online quickly, relay vital information to other rescuers, access information from on-line resources that support the response efforts and keep families and the public connected and informed.

At the on-site rescue command post, local telecom solutions provider KING IT worked with regional telecom firm 3BB to create a hotspot at the cave entrance with Wi-Fi connectivity provided by Cambium’s cnPilot e500 outdoor access points. One was placed facing the entrance of the cave, while the other access point was placed at the “information tent”. The latter had approximately 200 users, including the immediate family members of the lost boys, as well as media and administrative personnel.

“Cambium Networks equipment helped provide Wi-Fi coverage at the cave entrance site during the rescue exercise, and we are very grateful to have contributed connectivity technology to this amazing effort,” recalls Atul Bhatnagar, president and chief executive officer at Cambium Networks.

This was not a typical rescue operation. To give you an idea of the gravity of the situation, the network users were made up of Thai Navy Seals, plus search and rescue teams, as well as a variety of government agencies totalling approximately 50 users at the cave’s entrance.

“Connectivity is vitally important to first responders, aid agencies, medical services and families as and when unforeseen events happen,” says Rohit Mehra, vice president, network infrastructure, of the International Data Corporation. “Wireless connectivity is a proven solution for disaster recovery when it is rapidly deployed and reliable, provides high performance and is immediately interoperable with a diverse set of user devices. The incredible efforts of first responders and emergency workers in Thailand were supported by having access to reliable connectivity and internet access that enabled them to communicate with each other and to get critical information about the boys who were being rescued.”

Similar to other disaster response applications, the Cambium-powered network at Tham Luang provided emergency workers with communications tools that enabled them to work more quickly and effectively while allowing friends, family and the media to stay informed.

“Our company is all about connecting people, even in the most extreme circumstances and

locations. And reliable wireless connectivity – including deployment in hours, not days or weeks – is part of bringing people together to respond and ultimately make challenging situations better,” says Bhatnagar. “We are thrilled that the soccer team in Thailand is safe and commend the rescuers for their efforts. We are honoured to have played a part in the technical solution that assisted the rescue teams by facilitating wireless communications.”

Having already been trapped for nine days, the boys and their coach were rescued by divers six days later. What’s more, the world breathed a collective sigh of relief. ■



DoD (Department of Defence) personnel were also called in to assist with the rescue



Shell's Pulau Bukom manufacturing site, southwest of Singapore

Delivering communications for petrochemical plants

Shell's Pulau Bukom manufacturing site is situated on a 243-hectare island a few kilometres southwest of Singapore. It forms part of a group of southern islands that have been identified by the Singaporean government for petrochemical and other industrial manufacturing.

The oil giant's largest wholly-owned refinery globally with a crude distillation capacity of around 500,000 barrels per day, Bukom is Shell's largest petrochemical production and export centre in the Asia Pacific region.

Shell decided it was time to replace its existing analogue network to improve security, coverage and connectivity.

The solution had to provide a new network with improved coverage and capacity, improved audio quality, a secure mode of communication for the user, intrinsically safe hand portables for the site workers, up to 2000 devices/terminals for use across the network, maintenance management and service support of the network for 10 years and integration to critical applications.

Being located to the south of Sentosa, the project required military precision, including regular visits to the site to ensure any challenges were quickly solved.

With a land mass of 243 hectares and a major oil and petrochemical site to contend with, the challenges were clear from the outset.

As with any petrochemical site, the island consists of many metal structures, which was one of the key challenges to face the implementation of a new network. Metal is often a barrier to radio communication, frequently blocking or interfering with signals, so this challenge needed careful planning to overcome. The flammable materials present on site are plentiful, namely crude oil/fuel, offering a number of health and safety hazards to overcome during implementation. As an island with such importance to the oil and petrochemical industry, access to the site is heavily restricted; meaning site visits, planning and construction of the new network also needed careful consideration.

Sepura was hired to carry out the work. It implemented a TETRA based solution for the site, covering the entire island as well as the ferry terminal and remote docking buoy.

Its intrinsically safe hand portable radios were implemented to ensure worker safety with the chosen model being the reduced keypad STP8X100. Vehicles and offices on site were setup with SRG3900 mobile and desktop radios.

To further enhance worker safety, Sepura's STP8X100 provided a dedicated emergency button for quick responses in an emergency.

In order to better support the movement control room (MCR) which manages the loading and unloading of products from ships, the Sepura radios are integrated to the

instrumentation system to provide quick pump trip function so that those on the in control of loading the large ships could trigger a pump trip using their radio in case of emergency.

Since communication is a critical component in Bukom, Sepura has a dedicated team of local engineers to provide 24/7 all year round to support the TETRA radio system.

Preventive maintenance is carried out quarterly to ensure that system health is maintained by pre-emptively arresting issues before they happen.

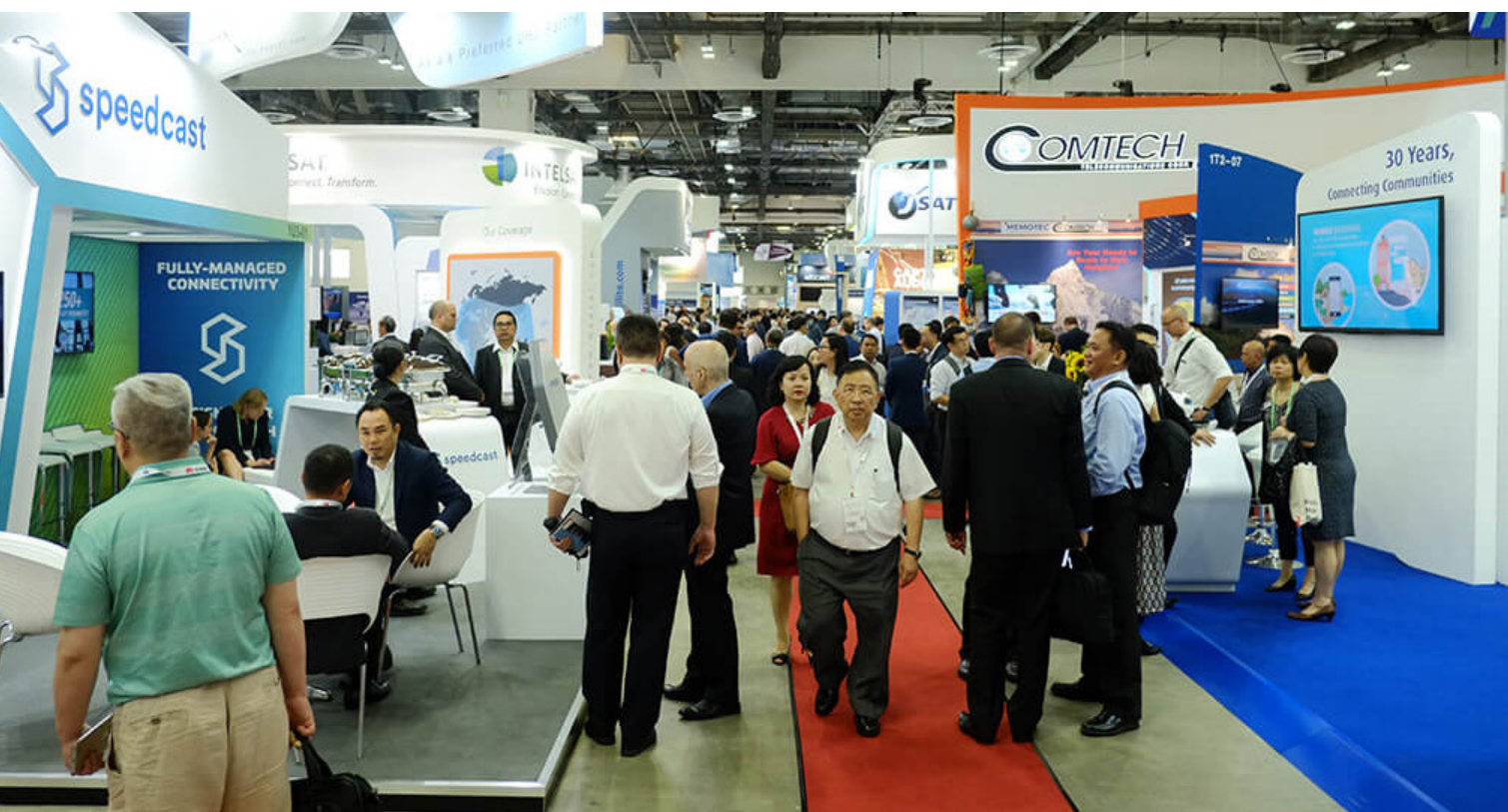
Shell has contracted Sepura to deliver a multi-year managed service to ensure the safety and efficiency of the site and associated operations.

Peter Tan, project manager at Sepura, says working closely with Shell stakeholders and building rapport with the user's focal points was the key success factor to ensure that the delivery could proceed. “In the maintenance phase, these relationships help provide a smooth transition process from the old to the new system, helping to ensure that issues and concerns are raised to the maintenance team for remediation as soon as possible,” says Tan.

Today, Bukom has a successfully implemented TETRA system on the island, with an employee based permanently on the site for maintenance and repairs. ■



Hand portable radios were implemented to ensure worker safety with the chosen model being the reduced keypad STP8X100



ConnectTechAsia – the region's TMT platform for networking and business intelligence under one roof

Asia's mega infocomm, media and technology event presents the latest innovations and thought leadership to help Asia thrive in the digital age

Singapore, xx April 2019
 - With transformation at the top of their agenda, business leaders are meeting at ConnectTechAsia, held in Singapore from 18 – 20 June 2019, to showcase and discover the latest technologies that promise to ready businesses for the future.

Among a congregation of 1,800 exhibitors and 200 thought leaders at the Summit, an estimated 40,000 attendees will be looking to truly transformative technologies and solutions to get an edge up in automating business processes and exploring fresh revenue streams in this digital era.

ConnectTechAsia comes out

the gate in 2019 as the region's newly minted telecom, media and technology (TMT) knowledge powerhouse, leveraging new partnerships with leading business intelligence and research affiliates such as Accenture, Deloitte, KPMG, Light Reading, McKinsey, Ovum and Tractica, to provide expert insights to all event stakeholders, not just during three event days, but throughout the year.

Top brands including Amazon, Axiata, Ericsson, Google, Grab, Huawei, IBM, iflix, Intel, Microsoft, Netflix, NHK, NTT DoCoMo, RedHat, Singtel, Verizon and VMware among many others will bring with them the latest

innovations, new business opportunities and networks, and thought leadership to the show floor and Summit.

"Knowledge has always been the most powerful asset to have, and today's enterprises need additional clarity to optimise business decisions and harness opportunities. ConnectTechAsia will bring the combined value of its new knowledge partnerships providing TMT intelligence to our stakeholders throughout the year, culminating over three event days in June when the industry comes together to share, make deals and network. This new iteration of ConnectTechAsia is testament to our ever-growing

commitment to support the TMT industry and facilitate its path towards successful growth in the region," says Ivan Ferrari, Event Director for ConnectTechAsia.

In 5G, Artificial Intelligence (AI), cybersecurity, multi and hybrid-clouds, Internet of Things (IoT), smart cities and more, ConnectTechAsia, comprising three pillars catering to each sector of the TMT space, will bring together the diverse yet hyperconnected businesses that will form a big part of tomorrow's digital life.

CommunicAsia brings together next-gen technologies for the telecom and related industries. BroadcastAsia is where broadcasting media

companies and equipment makers showcase their latest products and services, and NXTAsia will feature emerging technologies and enterprise solutions. There will also be power-packed activities, free workshops and seminars, speciality zones, partner programmes and networking receptions to keep attendees fully immersed and engaged.

“One of the best exhibitions in Asia. A place to touch base with people in the industry to know the trends and extend our connections.” – Mr Bharat Lekhray Harwani- Chairman, Win Trendz Exim Pvt Ltd (India)

ConneCTechAsia Exhibition Highlights

2019 will see the emergence of the new Apex Pavilion, housing leading telecom operators and vendors to present a comprehensive showcase of enterprise solutions vital to the digital transformation of businesses.

Led by the chairman of the ASEAN Smart City Network (SCN), in cooperation with country partners such as China, South Korea, Japan and Singapore, and the ASEAN Smart Cities Communities (SCC), 2019 will see a new Smart Cities Arena at ConneCTechAsia. With connectivity and digital solutions for city planning, smart buildings and smart homes, this will be where government delegations, investors, technology suppliers, disruptors and infocomm operators gather to do business to develop the cities of the future.

Also making a debut at this year's event is the 5G Experience - a dedicated platform with multiple live demo zones on how 5G will translate to new opportunities and possibilities for enterprises, especially in healthcare, energy, manufacturing and transportation. Attendees can learn how 5G-connected drones, for example, will make a difference for businesses, how 5G improves mapping and transportation, as well as its impact on a digital-ready manufacturing company.

ConneCTechAsia Summit

The ConneCTechAsia Summit, themed Shaping Future Societies, will bring together thought leaders from infocomm, technology, media and enterprises to discuss what is driving digital transformation in the region and how the latest tech trends and innovations are



changing the landscapes of Cities, Economies, Business and Media.

The keynote by Harriet Green, CEO and Chairman of IBM Asia Pacific, will explore how the shift from digital experimentation to scale adoption of new technologies will fundamentally alter the value chains of entire industries and change the way we work and live.

Key industry leaders at ConneCTechAsia2019 Summit will also include:

- Dr Min Sun, Chief Artificial Intelligence (AI) Scientist, Apptier
- Muhamed Zilkhairilishamuddin, Assistant Vice President, OTT Principal Engineer, Astro
- Dr Keeratpal Singh, Chief Data Scientist, Axiata

- Ong Geok Chwee, CEO, Bridge Alliance
- Cheryl Goh, Group Vice President of Marketing, Grab
- Dr David Soldani, CTO, Huawei Australia
- Jason Little, Chief Information Officer - SEA, Manulife
- Ian Yip, Chief Technology Officer, McAfee Asia Pacific
- Gustavo Fuchs, General Manager - Cloud & Solutions (Asia), Microsoft
- Krishnan Rajagopalan, Director of Payments APAC, Netflix
- Seizo Onoe, President of DOCOMO Technology and Chief Technology Architect, NTT DoCoMo
- Andreas Spanner, Chief Architect (ANZ), Red Hat



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Helios Towers announces DRC mobile infrastructure upgrade

 Helios Towers has been upgrading and building backbone sites covering 1,800km in the DRC. In an announcement made in August 2018, the towerco said its investment in the project was in the “double-digit millions” and will improve mobile infrastructure and connectivity to around six million citizens.

The backbone network runs through multiple areas of DRC, including the equatorial rainforest and Kasai-Central province. Helios said that the project was due for completion by December 2018, and provides the infrastructure to connect major towns and cities, transmitting signals via microwave from towers up to 40km apart.

Earlier last year, the DRC government awarded inaugural 4G licenses to the country’s major



The new backbone network was due to be completed by December 2018 and replaces satellite-based backhaul connectivity in the area

cellcos, such as Vodacom, Orange and Africell. Helios said the new backbone network will support operators in their continued network improvements and

expansions. It claimed the network adds “significant” capacity to replace existing satellite connectivity in the area, and provides the infrastructure


needed for increased 3G capacity and the launch of 3G in Northern Kasai, as well as the launch of 4G in Kisangani, the DRC’s third-largest city.

Helios Towers entered the DRC in 2011 with a 521 tower portfolio acquisition from Millicom. Since then, the company said it has become the country’s market leader with 1,819 towers and a share of 63 per cent.

According to CEO Kash Pandya, DRC has one of the lowest mobile penetration rates in the world, with only around 25 per cent of its 85 million population having a phone today.

He added: “Following the upgrade and construction of our backbone towers through some of the most remote areas in the country, last mile communications can eventually be created to connect towns and cities with increased reliability and speed, fit for the growing Congolese economy.”

LTE Emergency Services Network to be launched in phases

 The UK Government has decided on what it described as a “new strategic direction” for an LTE-based Emergency Services Network (ESN) that should have begun to be deployed last year.

In 2015, it was announced that the TETRA communications system used by the UK’s emergency

services and supplied by Motorola Solutions and Airwave would be replaced with a mobile-based communications network that uses LTE (see *World News*, Jan-Feb 2016).

Rollouts were expected to begin in mid-2017, but in September, the UK’s Home Office announced that the project will now be launched in

phases starting in the New Year.

The government said its new incremental approach means police, fire and rescue, ambulance crews and other users will be able to use data services over the network from early 2019, with voice capabilities following soon after. It added that it will also leave the emergency

services free to test and choose which ESN products they want as and when they become available, rather than having to wait for the network to be fully implemented.

The Home Office is engaging with its commercial partners, mobile operator EE and Motorola Solutions, regarding future changes to their contracts.

Telecom Egypt doubles backbone network capacity with new high-speed service

 Telecom Egypt is claimed to have doubled the capacity on its Delta Region DWDM backbone network. Commercial deployment of its new high-speed service started earlier last year and is said to represent the first 200G long distance, single carrier transmission service in Africa.

MD and CEO of Telecom Egypt, Ahmed El-Beheiry says: “Doubling capacity on our existing backbone allows us to offer high-speed broadband and LTE services in addition to 100GE services for mobile operators, while reducing costs.”

With growth in demand for mobile

video and ultra broadband services, Telecom Egypt worked closely with Nokia to enhance its current backbone network. It’s claimed that by upgrading its existing Nokia *Photonic Service Switch (PSS) 1830* switches with the vendor’s *Photonic Service Engine (PSE)* technology, the operator has not only doubled its capacity but has also reduced its operating costs.

The deployment includes Nokia’s 500G DWDM muxponder, a programmable card that is said to provide wavelength capacities from 50G to 250G per line port. Based on Nokia’s PSE coherent

digital signal processor, this programmability is designed to allow Telecom Egypt to provision and tune wavelength capacity per optical route to ensure that its network is operated at peak performance, capacity and lowest cost-per-gigabit.

“This is exactly what we had in mind when we designed the 1830 PSS platform,” says Nokia’s MEA head Amr El-Leithy. “Its flexibility and easy upgradability will allow [Telecom Egypt] to proactively manage the data explosion and develop new revenue streams – all the while improving the experience for their customers.”



Nokia 1830 PSS (photonic service switch)

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First network-connected device for prosthetic limbs



AT&T has worked with orthotic specialist Hanger to develop a proof of concept for the industry's first standalone, network-connected device for prosthetic limbs.

The prototype, designed to attach to below-the-knee prostheses, syncs directly to the cloud via AT&T's network without relying on Wi-Fi, Bluetooth, or a separate mobile device. It collects data on prosthetic usage and mobility in

near-real time. Equipped with these insights, clinicians can proactively contact patients to address potential issues impacting usage, such as fit and comfort, and then increase their mobility.

The device itself combines an accelerometer, gyroscope, magnetometer and a modem that uses low power WAN technology, LTE-M. It is connected via AT&T's IoT network, and also has an accompanying

interactive iOS app equipped with patient and clinician portals.

The app will allow patients to view their day-to-day progress, such as number of steps taken. It also includes a video calling feature so patients can talk with clinicians about potential issues with their device. Clinicians can also use the app to view their patients' activity levels and contact those whose user data shows low activity or irregularities.



Hanger clinicians test the prototype IoT device which is designed to attach to below-the-knee prostheses

Hanger is currently trialling five devices with existing patients. In the coming months, it will continue to work with AT&T to create a fully functional product for the next phase of the project.

Sigfox and Total improve trailer fleet management



Oil and gas company Total has teamed up with Sigfox on an IoT service designed to optimise rolling stock and help manage trailer fleets.

Where's my Trailer? was developed by Total Marketing France through its subsidiary Stela and has been in test phase for a year with the company's transporter customers. According to the partners, it represents an "innovative" new way to improve how trailer fleets are used and kept secure.

The subscription-based service works using a box installed on the trailer which identifies any equipment that is underused or has been lost or stolen. The boxes are self-powered and communicate using Sigfox's IoT technology which, it's claimed, is able to provide a low bandwidth



Where's my Trailer? features maps and dashboards that can provide information on the status of trailers and any unauthorised movements

connection network at a very low cost.

Where's my Trailer? localises any stationary trailers and allows users to set up notifications about unauthorised movement during time periods. Messages are displayed on the secure customer portal which can be accessed from the stela.fr and as24.com websites.

Vodafone tackles missed international call fraud



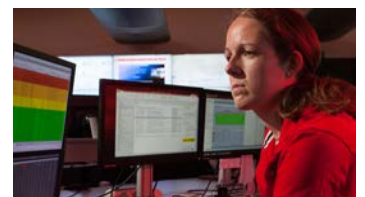
Vodafone UK says it is now protecting its customers from international *Wangiri* scam calls by blocking them even before they reach users.

The scam is a worldwide problem, plaguing phone users and the telecoms industry at large. It involves fraudsters generating missed calls in a bid to get victims on the receiving end to call back their expensive international number (also see *'Attacking the hackers' feature, Aug-Sep 2018 issue*).

Vodafone says it already blocks customers from unwittingly calling back *Wangiri* numbers where possible and reimburses any victim who has incurred a charge. It has now deployed new technology to prevent all identified *Wangiri* numbers from

reaching customers in the first place.

"The message we're sending to criminal gangs behind the scam is don't call our customers," says Vodafone UK chief executive Nick Jeffery. "We are determined to do what we can to stamp out fraudulent practices... We will also continue to share our intelligence with other mobile companies so we can act as one."



Fraud manager Katharine Daubney helps protect customers from scam calls at Vodafone's NOC in the English county of Berkshire

Iridium and Amazon launch satellite-based IoT platform



Iridium Communications has joined the Amazon Web Services (AWS) partner network to develop what's claimed to be the first and only satellite cloud-based solution that offers truly global coverage for IoT applications.

Enabled by Iridium's network of 66 cross-linked low Earth orbit (LEO) satellites that will be fully launched in 2019, the new *CloudConnect* platform will be available with AWS IoT, extending the reach of Amazon's suite of services to the more than 80 per cent of the Earth that currently

lacks cellular coverage.

Iridium says its customers will be able to take advantage of AWS IoT, while existing AWS customers will have a cost-effective way to expand their geographic IoT footprint to anywhere on the globe. It claims users will be able to reduce engineering efforts, lower fixed operating costs, and reduce time to develop new products and services.

Iridium CEO Matt Desch says: "*CloudConnect* will completely change the speed at which a satellite IoT solution can be deployed and will

allow existing AWS customers to keep everything the same on the back end, while opening up the opportunity to quickly expand their coverage.

"This is a major disruption for satellite IoT. Costs will drop, time to market will speed up, risk will be reduced, and AWS IoT customers that choose *CloudConnect* can now enjoy true global connectivity for their solutions."

With around 630,000 active devices as of 30 June 2018, Iridium says its IoT subscribers have grown at a CAGR of approximately 19 per cent over the last three years.

Iridium is currently in the final stages of its USD3bn mission to replace its entire original satellite constellation with new spacecraft. Seven launches have so far already taken place as part of the operator's *NEXT* programme, with launch provider SpaceX delivering 65 new LEO birds and the final launch of 10 satellites planned for later in 2018.

Upon completion, a total of 75 Iridium *NEXT* satellites will have been delivered to space, with 66 in the active constellation and nine serving as on-orbit spares.

Mobile money worth trillions in Kenya



The value of mobile money transactions hit the KES2 trillion milestone for the first time, according to figures released by the Communications Authority (CA) of Kenya in mid-December 2018.

In its latest industry sector statistics report, the CA said that 730.2 million transactions valued at KES2.027 trillion were recorded during the July-September 2018 period – that's up from 611.3 million transactions valued at KES1.9bn for the previous quarter.

At the same time, mobile commerce transactions went up by 8.8 per cent to reach 526.9 million valued at KES1.5 trillion, while person-to-person transfers were valued at KES718.2bn.

Additionally, the CA said there was a 5.6 per cent increase in the number of mobile money transfer agents operating throughout Kenya. This now stands at 218, 495, a

rise from 206, 940, while actively registered mobile money transfer subscriptions are at 29.7 million.

The report also shows that mobile penetration rose by 2.3 percentage points to hit 100.1 per cent from 97.8 per cent in the previous quarter. The CA said this increase is mainly attributed to most users owning more than one SIM card, either from the same or different service providers. According to the authority, this fact is also supported by the Kenya Integrated Household Budget Survey report released by the National Bureau of Statistics in April 2018. This indicated that at least 30 per cent of mobile users in Kenya own more than one SIM, translating to an average of 1.3 cards per subscriber.

The number of active mobile subscriptions increased to 46.6 million from 45.5 million in the preceding quarter, marking a 2.4 per

cent increase. In terms of market share, the report said Safaricom's was down 1.2 percentage points and comes in at 64.2 per cent, whereas Airtel gained 0.9 points to post a share of 22.3 per cent. Telkom Kenya, Finserve Africa and Mobile Pay recorded shares of 9.0, 4.2 and 0.2 per cent, respectively. Sema Mobile Services exited the market during the quarter.

The total number of active internet/data subscriptions grew 2.7 per cent from 41.1 million reported in the previous quarter to 42.2 million in the period under review. The number of mobile data/internet subscriptions also grew 2.7 per cent, from 40.7 million registered users during the previous quarter to 41.8 million in the period under review.

However, terrestrial wireless data subscriptions declined substantially by 51.3 per cent to stand at 59,380

from 122, 037 in the preceding quarter. The CA attributed this drop to the regulatory guidance it issued to Mawingu Networks to review its data on the number of data/internet subscriptions.

The report also noted a significant quarterly rise in international internet bandwidth available to Kenya. This is up from 3,277.72Gbps to 4,623.30Gbps. The CA said this is because EASSy (Eastern Africa Submarine Cable Systems) increased its capacity from 161.3Gbps to 828.144Gbps during the period.

Given the rapid growth in mobile internet related services and applications, together with increased 4G roll outs, the authority anticipates that Kenya's data/internet market will expand significantly. The development and growth of the country's e-commerce industry is also expected to drive demand for internet services.

Bharti Airtel and Telekom Kenya join forces



Bharti Airtel and Telekom Kenya, two of the largest mobile phone operators that service the east African nation, are merging to create a stronger challenger to the market leader, Safaricom.

The two companies will operate under a joint venture company that will be named Airtel-Telkom. According to the two carriers, the deal comprises their corresponding mobile, carrier, and enterprises services but will not include Telkom Kenya's real estate

portfolio and specific government services. Telkom Kenya is 60 per cent owned by London-based private equity firm Helios and 40 per cent owned by the Kenyan government.

Both companies will continue to run independently but will combine efforts to enhance their range of products, marketing services, and offerings to customers. No financial details have been made and finalisation of the deal is subject to regulatory approval.

Europe needs security testing for 5G equipment



Europe needs a security testing scheme to check the safety of 5G equipment before it is deployed, according to the mobile network industry.

A number of countries have already blocked individual companies from supplying equipment for their next-generation networks, because of security concerns. Chinese giants Huawei and ZTE have both faced major scrutiny recently. The US, Australia and New Zealand have

already barred the former from supplying equipment for their future 5G networks.

The GSMA, which represents 800 network operators, said a testing scheme would reduce the need to ban suppliers. Meanwhile, Canada is conducting a security review of Huawei's products and UK service provider BT is in the process of removing Huawei equipment from the core of its 5G network.

SES 'revolutionises' mining activity in Mali



Australian gold miner Resolute Mining has ramped up its operations in Mali by building what is claimed to be the world's first, purpose-built, fully automated, sub-level cave gold mine at Syama.

It is also adopting high-speed connectivity that enables the use of high-tech applications and equipment, among other capabilities.

The full-managed SES Networks satellite data connectivity platform enables enterprise cloud applications and improves the levels of safety and productivity. The fibre-like service

delivered via its O3b Medium Earth Orbit satellite constellation extends the high-capacity fibre-optic network that Resolute Mining is installing throughout the mine.

Jodie Hatch, chief technology officer at Resolute Mining said the SES Networks solution is a "game-changer" in that it allows for an unprecedented level of digitalisation of the remote mining site in Syama, delivering the same high speeds associated with fibre.

"With this transformational capability, we can increase our

technology adoption and as a result increase our safety and productivity performance," he said.

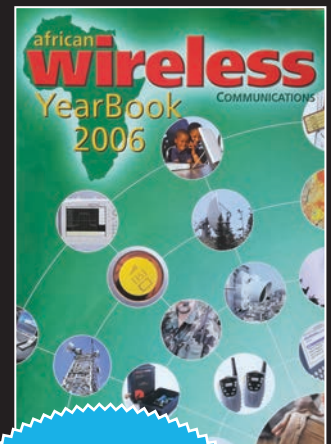
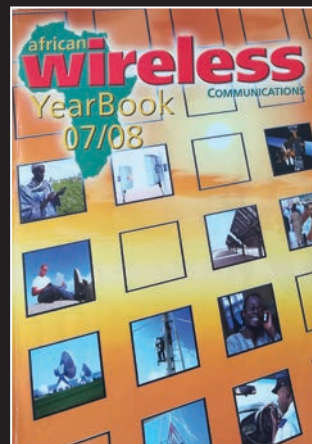
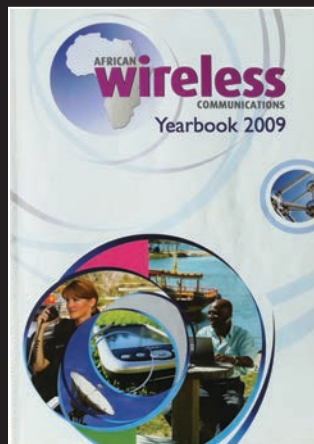
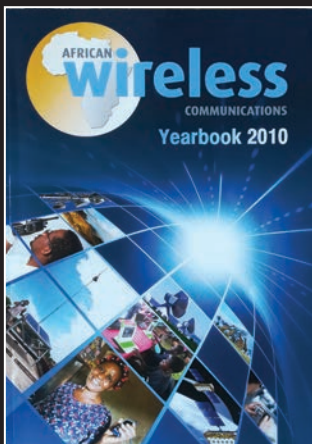
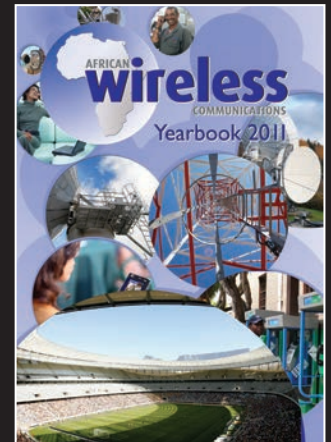
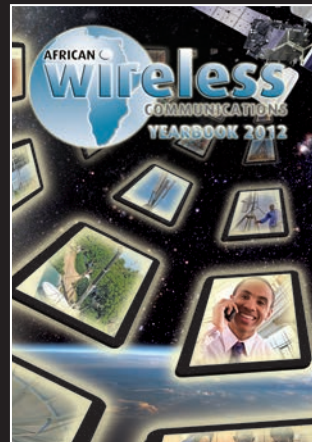
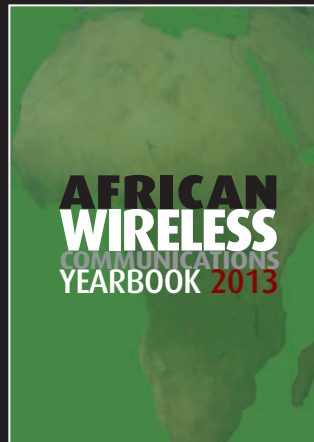
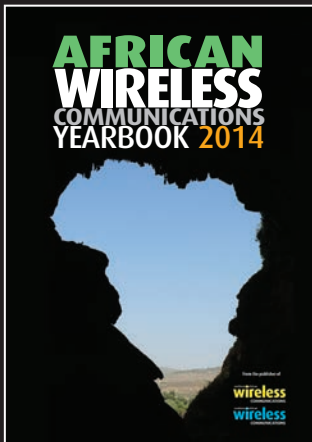
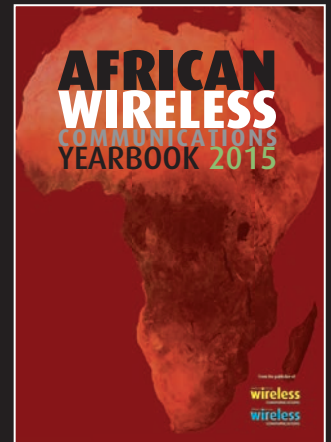
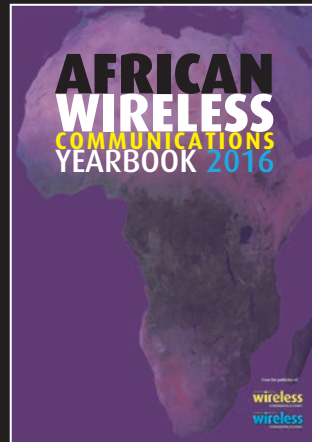
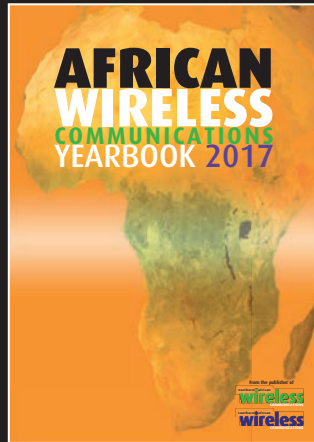
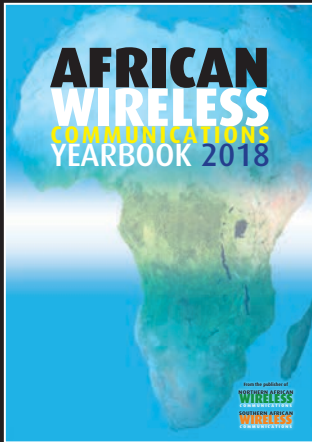
Carole Kamaitha, vice president of fixed data sales at SES Networks, said the remote mine at Syama had made a technological leap by adopting such advanced solutions and applications.

"In addition, the fully-managed solution means that Resolute Mining can focus on its business and the applications it requires to increase productivity, instead of network management," she added.



Carole Kamaitha, VP of fixed data sales at SES Networks, said the mine at Syama had made a 'technological leap' by adopting the solutions

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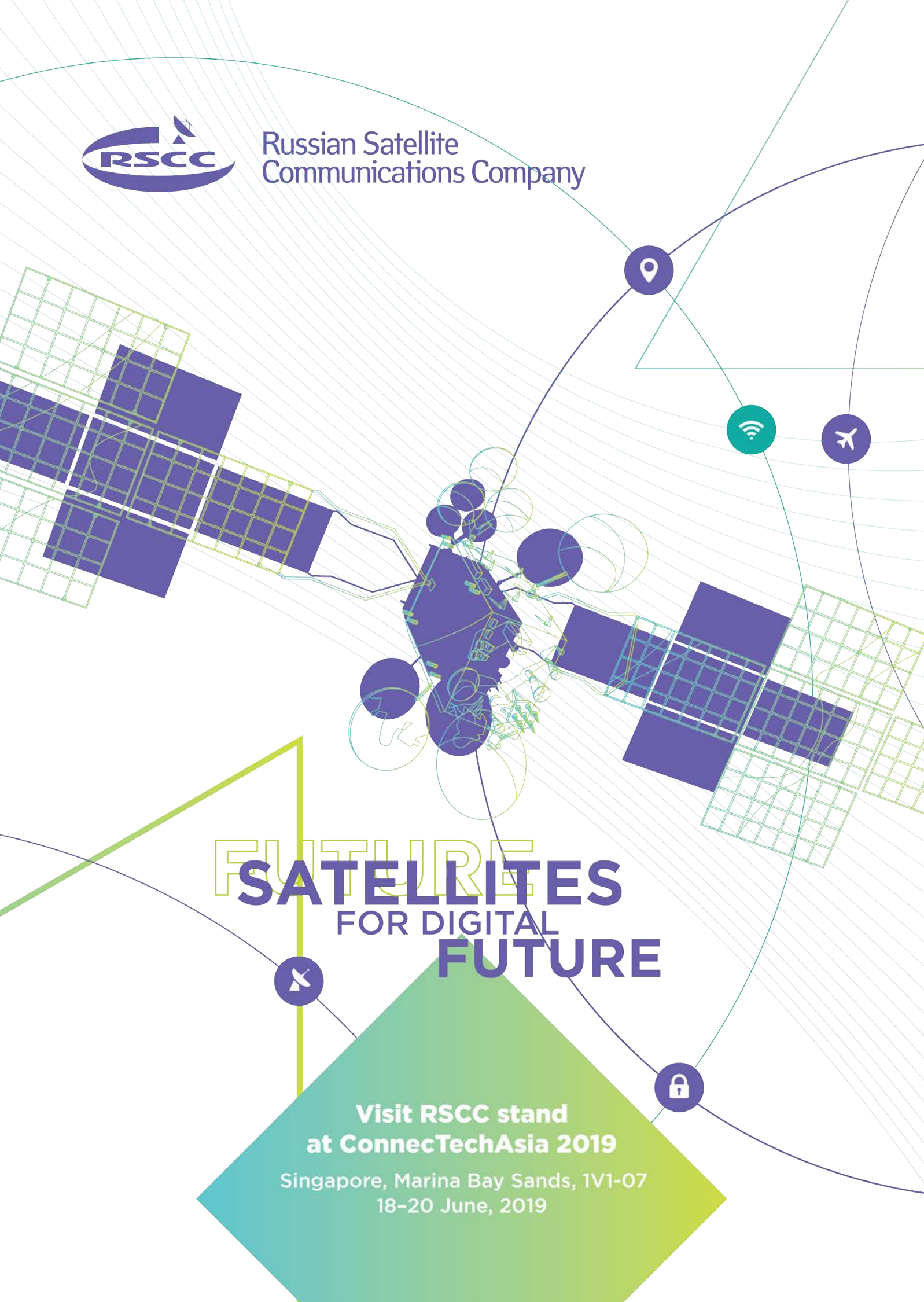
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