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SAMENA TRENDS

EXCLUSIVELY FOR SAMENA TELECOMMUNICATIONS COUNCIL'S MEMBERS

BUILDING DIGITAL ECONOMIES
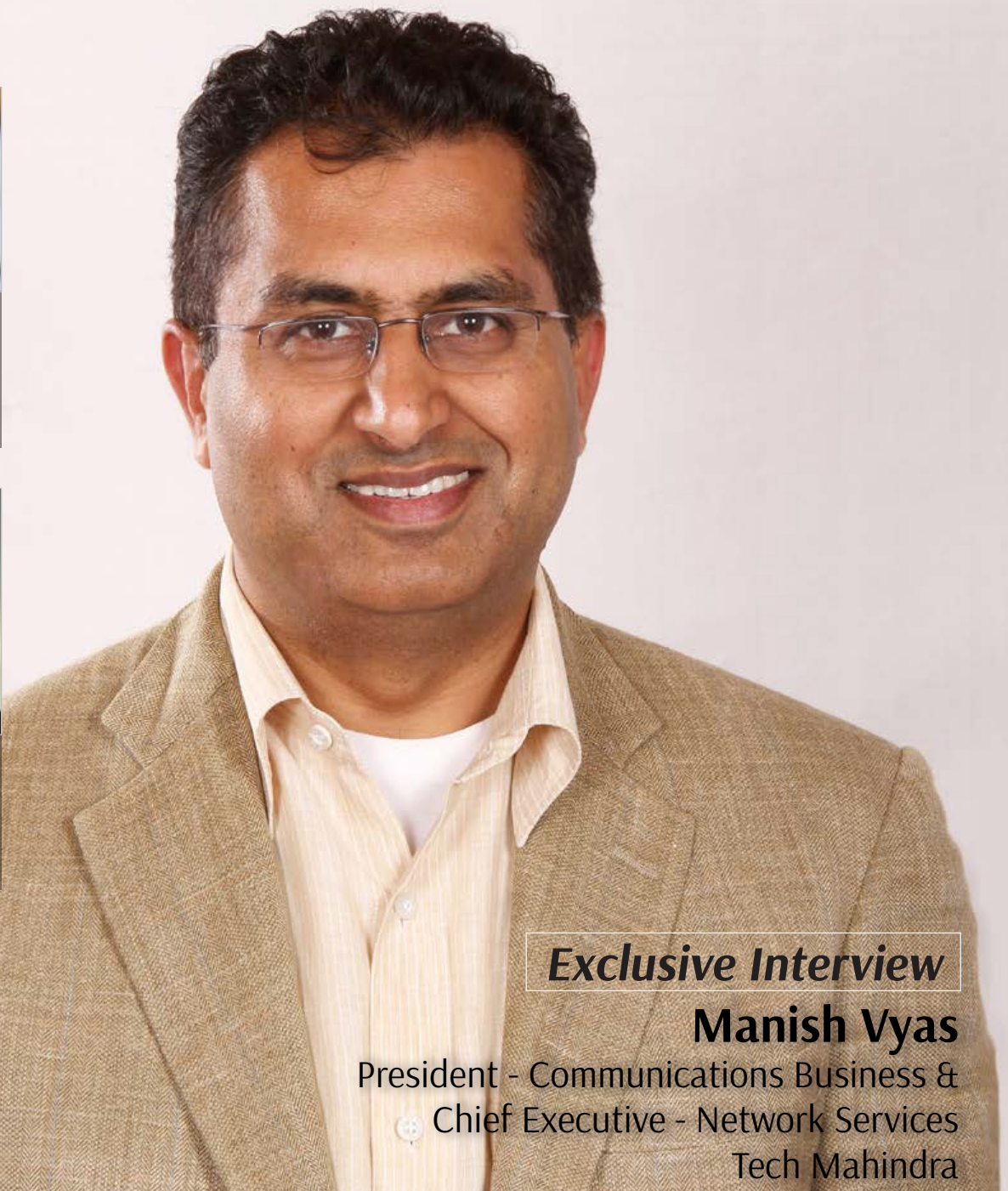
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Exclusive Interview
Manish Vyas
President - Communications Business &
Chief Executive - Network Services
Tech Mahindra

THIS MONTH
5G DEVELOPMENT EFFORTS IN THE REGION

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5G Development Efforts in the Region

The prevailing thought leadership among knowledge bodies indicates that 5G could be in our part of the world much sooner than it would emerge in many other regions. Findings by GSMA have already pointed to the emerging case for 5G to be in the Middle East - especially, GCC - much sooner than expected. Driven by multiple factors — which, on the private sector's side, include investments in broadband expansion, increasing smartphone use, and an overall focus on mobile; and, on the public sector's side, include government support to proliferating advanced mobile technologies and improving openness to working more closely with the private sector — commercial launch of 5G networks is imminent.

Notable recent 5G development efforts, including those by TRA-UAE, STC, Etisalat, Cisco, among others, are indicative of the speed at which 5G is gaining traction, and 2020 may very well be the year of commercial 5G launches in the region, followed by fast rise in 5G subscriptions over the following five years.

The TRA has already announced the initiation of IMT2020 technology (5G), as the licensees from mobile operators in the UAE will start the deployment of 5G networks in several phases starting this year. As a part of this regulatory effort, attention is being paid to spectrum, network aspects, and verticals and use cases of 5G; all of which are being addressed by the TRA's three committees. (One of these committees on 5G, SAMENA Council is also a part of.)

From the private sector, Saudi Telecom Company (STC) and Cisco are collaborating on the development of 5G communications systems and networks in Saudi Arabia; a country where transition to 5G is crucial for the national network, for national digital transformation as a part of Vision 2030, and for enabling advanced digital services. Earlier, Etisalat launched the first 5G Ultra-Mobile broadband experience in the region, promising continued focus on digital transformation, network agility and digital services, AI, cloud computing, network virtualization and automation, and IoT.

Notable it is also to mention that all region-wide 5G development efforts include the development of new 5G use cases as well as understanding and addressing security aspects of 5G communications, and building advanced frameworks for threat intelligence on the new networks.

Given what we are witnessing, we can expect that 5G will help transform our region's digital ecosystem (as well as adjacent industries and inter-connected ecosystems), our business models, regulatory approaches, and help fulfill national transformation plans. The latter are among major catalysts, which are the real reason why 5G development efforts are on the rise in the region.

Going forward, we do need to take well-thought out measures to prepare for and safeguard investments in 5G, which has the potential to help us all create a sustainable digital economy in the region.

SAMENA Council looks forward to making due contributions to regional efforts on developing 5G, and representing telecom operators' unified voices, including but not limited to furthering spectrum harmonization work in the region.

Bocar A. BA
Chief Executive Officer & Board Member
SAMENA Telecommunications Council

SAMENA COUNCIL ACTIVITY

SAMENA Council Delivered Operators' Perspectives at ITU's World Summit on the Information Society (WSIS 2018) in Geneva, Switzerland

SAMENA Telecommunications Council delivered telecom operators' perspectives on financing mechanisms to accelerate Digital Transformation during the WSIS Innovation Track held on 19 March 2018 and highlighted and delivered key priorities to bridge the Digital Divide in SAMENA Region in a Policy Statement submitted during the WSIS High-Level Policy Track on "Bridging Digital Divides", held on 20 March 2018. The Summit brought together more than 2,500 information and communication technology (ICT) experts and leaders from around the globe at ITU headquarters in Geneva, Switzerland to advance technological solutions to accelerate progress on the United Nations' Sustainable Development Goals (SDGs). In relation to financing mechanisms, SAMENA telecommunications Council, represented by its CEO, Bocar BA, focused the discussion on the regulatory barriers that prevent the effective investment into infrastructure upgrades and roll-out. To an audience of ministers and global leaders, the Council emphasized close alignment between government policy-setting and private sector priorities as key to enable targeted investment and accelerate digitization. Panelists, including from SAMENA Council, the World Bank, the World Economic Forum, WeRobotics and national development organizations discussed developments and presented examples of ICT funding in multiple contexts, including the key adoption barriers and how to overcome these to close the digital divide, as well as ways to achieve the shared vision of an interconnected society, where benefits of the Internet are realized for all members of society. Increased collaboration and dialogue between public and the private sectors as well as local capacity building was identified as key to achieving this goal. In relation to Bridging Digital Divides, Bocar BA highlighted to a global audience of ministers, government officials and private sector leaders, that

there are many factors that can narrow or widen the digital divide in a society, which include economic and infrastructure factors, political and regulatory factors, government support and individual readiness for ICT; and government-, business- and individual usage of ICT. Mr. BA emphasized that to ensure targeted investment into ICT infrastructure upgrades and roll-out, ICT capacity building, and affordable ICT equipment and devices, collaboration with regulators is needed alongside alignment of public- and private sector priorities and policies that stimulate demand and that set hard targets. Working together to enhance ICT skills, relevance, foster human capital, and strengthen efforts to making ICT access and services more affordable, while adapting economic regulation to reflect new relationships, are key to achieving the shared vision of an interconnected and fully inclusive human society.

InMobiles' Innovation-Driven Solutions a New Addition to SAMENA Council's Membership

SAMENA Council has announced that InMobiles, technology innovators who create and promote proven and mature Service Platforms while assisting mobile operators and governments in shaping their innovations, has joined its membership of telecom operators and technology companies. Mr. Bocar BA, CEO & Member of the Board of SAMENA Council, has stated that "InMobiles' decision to join SAMENA Council's membership and to seek new ways of working directly with telecom operators, is

an investment that forward-thinking companies like InMobiles make not only to meet their corporate visibility requirements but also to express their readiness to be a part of industry-wide stakeholders' activities that are central to how SAMENA Council operates as a non-profit, digitization-driving industry body in South Asia, the Middle East, and North Africa." Companies that share the vision and spirit of InMobiles join SAMENA Council for multiple reasons, including for its platforms that allow stakeholders and innovative players to generate new business opportunities as well as interact with regional Operator leadership, while working toward addressing digital development matters that will define the future of the industry.

SAMENA Council Emphasized on Industry Challenges during GSMA MENA Workshop

SAMENA Council participated in a GSMA MENA workshop on 5G spectrum and deployment issues at MWC Barcelona. The workshop was attended by ministers and senior regulators from MENA to look at the path to 5G and spectrum. SAMENA Council with its focus on broadband investment-friendly policies and addressing issues that drive efficient investment decisions, presented on some of the industry challenges:

· That a timetable for the availability of the 1200 MHz of spectrum already identified after discussion with local operators. This is so the opcos can plan their investments in an efficient way;

· That the key band for 5G capacity will be the C-band (3.4-3.8 GHz), but that ITU planning regulations mean that half of the band has less international protection from radio interference. This can lead to uncertainty for mobile and extra costs;

· That the overall cost of 5G deployment could be high (as shown in slide 3) and that current revenues make the case for 5G more challenging than for previous deployments such as 2,3,

and 4G. Whilst some extra revenues may be available from things such as IOT. Industry estimates suggest this extra revenue might be around 10-30% of current revenues (ARPU). Without sufficient cooperation and support from regulators, there could be a significant delay in the deployment of 5G in some markets. Trialing networks and business models before widescale

deployment could help (as is planned in countries such as UAE), as could reduction in spectrum fees;

· That the next WRC in November 19 (in Egypt) will be an important milestone for future spectrum availability in higher spectrum bands needed in the medium term.

Phonegroup Joins SAMENA Council's Membership

Innova, a new member of SAMENA Council, has brought new software development expertise to the SAMENA Council's membership. Areas of business in Innova include OSS/BSS Systems for Telecom Operators, Financial Transaction Applications, ERP, CRM and BI systems, portals, custom software development IT systems management and infrastructure, IT security and kiosk systems. With more than 1000 people serving its clients, Innova has delivered solutions and services to customers in 37 countries to date. Major customers of the company are fixed line and GSM operators in Turkey and abroad, banks, as well as other prominent organizations in the manufacturing, public and service industries. Bocar BA, CEO and Member of the Board, says "Powerful software expertise and tools are essential to digital transformational goals of the private sector as well as the public sector. Innova can greatly contribute to the region's digitization efforts, and we warmly

welcome the decision by Innova to join SAMENA Council and explore how potential collaboration opportunities with other SAMENA Council members can be unearthed to provide new digital experiences to both individual and enterprise customers of telecom operators." Like Innova, new members join SAMENA Council for multiple reasons, including for its platforms that allow stakeholders and innovative players to generate new business opportunities as well as interact with regional public and private-sector leadership, while working toward addressing digital development matters that will define the future of the industry. Innova IT Solutions A.S. is one of Turkey's leading IT solutions firms, with a team of 1211 professionals with experience of working with a wide range of technologies. Since 1999, Innova has been providing platform-free solutions to the public sector and private companies, particularly those operating in the telecommunications, finance, manufacturing and service sectors. It has exported its solutions to 37 countries in four continents, and adheres fully to the standards of the ISO 9001:2000 certification. Innova offers a full range of financial technologies, loyalty and customer experience solutions, aviation solutions, IOT solutions, smart store technologies, self-service and automation solutions.

Manish Vyas
President - Communications Business
& Chief Executive - Network Services
Tech Mahindra

Tech Mahindra

Q. How do you see the Future of Communications industry?

A. I believe the future of this industry will be driven primarily by the way people will Live, Work and Play, which will radically change by the next decade. And when we say, Live, Work and Play, we are technically covering everything that a human would do. For example, hologram calls, both business and personal might become commonplace. Possibly, digitization might not be limited to visual or audio senses as it is today but include the sense of smell or touch. Mission sensitive processes and applications could be operated and controlled remotely. Users might demand an on the go, live, AR-VR integrated gaming experience!

Which also brings me to where I believe there is a great industry convergence coming our way, especially between the telecom and the media companies. Globally, CSPs can see industry lines blurring, and are preparing to become media content providers to enable great experiences for their customers. What AT&T is doing is global news; SingTel is already a marquee media investor, and then we have Reliance Jio in India quietly picking up strategic stakes in entertainment companies.

All of this is being enabled with Software. The future of a communications is being constructed over Software, operating in a disaggregated mode, with aggressively optimized investments in physical infra.

Q. What are the key drivers of these changes?

A. I spoke about the customers demanding so much more, and we believe that the CSPs are today faced with 3 Mega trends viz. explosion of connected devices, the 5G network and video consumption on all devices.
Gartner has estimated that the number of IoT devices is growing exponentially, where we would have about 1 trillion devices by the next decade. Revenue potential from connected devices for CME would be about $200Bn by 2025.
The standards for 5G are being deliberated upon the world over, but we are definitely looking at a Hyper-connected network that has features like ultra-high speed, higher energy efficiency & lower latency, which would be an enabler for everywhere broadband, IoT & immersive experiences. Video on smart AR-VR devices has seen a huge spike in recent times. This puts tremendous strain on the existing infrastructure and the immediate need to address these upcoming trends.

Q. How is Tech Mahindra ready to address the industry concerns?

A. As part of our 3-4-3 business strategy that we take to all our customers globally, we focus on the four top bets that Tech Mahindra is investing -in to enable our customers transform in line with the future of the industry.

To successfully embrace the 3-mega trends that I spoke about, CSPs will
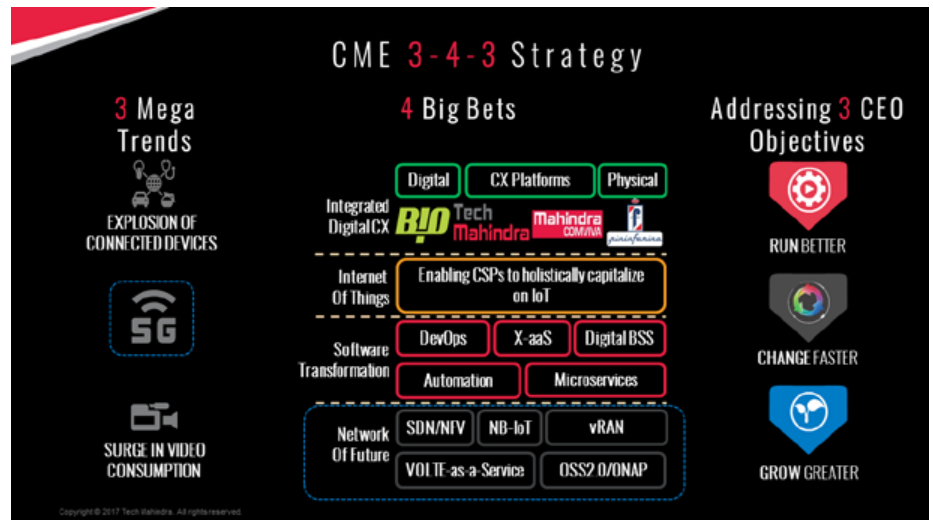
have to make the best use of software technologies like Automation, Cloud, Microservices, AI/ML, etc. to become intelligent, flexible, agile, and scalable, thus becoming highly responsive to the rapidly changing environment. A step in that direction is a harmonized AI library, called Acumos that AT&T, LINUX Foundation and Tech Mahindra have built that will unleash the capabilities of software transformation, along with digital BSS and containerized architecture.

We are investing significantly in helping CSPs realize the Networks of Future that will act as the nervous system of the connected world; networks that are fully virtualized and software defined. We continue to invest towards building networks of the future and have recently acquired a 17.5 per cent stake in Altiostar Networks, a virtual RAN company focused on building world-class software for 5G and network transformation. We are a Platinum and founding Member of the Open Network Automation Platform (ONAP). Tech Mahindra's early participation in the Telecom Infra Project (TIP), and our partnership with Intel to build a 5G networks lab in Bangalore, significantly enhances our positioning as a software-enabler for Future Networks.

We have developed a roadmap for Telcos as to how the IoT ecosystem will shape up and holistically capitalize on IOT, whether it be as a central platform for the inter-play between apps, devices, consumers and connectivity, or in enabling verticalized uses cases across industries as diverse as Healthcare, Logistics, or Transport.

Most importantly, it is the customer experience that matter and we are fully geared enable CSPs provide the best experiences to their customers, through our recent acquisitions of The Bio Agency, Pininfarina, Comviva, and our homegrown platforms

Our objective in essence is to help address three key CSP CEO Objectives: Run his operations better, help the CSP to digitally transform faster, and help grow greater revenues - which we collectively term as Run Better , Change Faster and Grow Greater.

Q. Tech Mahindra in association with SAMENA council is hosting the Beyond Connectivity (BYC 2018) –Tech Mahindra Annual Communications, Media and Entertainment (CME) Summit 2018, themed 'In The Future' on 5th April in Dubai. What can we expect from this event?

A. The Summit aims to provide a comprehensive view into the future of Telecom Industry and the impact that Software, Disaggregation, Opensource, AI and IoT will bring as the future unfolds. This is Tech Mahindra's premium Industry forum created exclusively for our Customers, where we collaborate with like-minded Technology Partners to discuss Trends, Technology Bets and Strategic Problems that CEOs of Telecom Service Providers are looking to solve.

I do look forward to meeting industry leaders at the Summit on 5th April 2018

MEMBERS NEWS

STC Developing Digital Payment Service

STC has confirmed that it is developing the digital payment service under the guidance of the Saudi Arabian Monetary Agency (SAMA) and the Ministry of Communications and Information Technology (MCIT), aligning with the company's strategy of growth and digitalization to achieve objectives of Kingdom's Vision 2030. "The circulated short film about digital payment is just a description of the service, wishing to provide it to customers among other packages once obtaining the official approval". STC explained in a press release.

King Salman Honors STC for Its Partnership with Saudi Equestrian

Custodian of the Two Holy Mosques King Salman bin Abdulaziz, and during the Grand Annual Festival for Horse Racing for King Abdulaziz bin Abdulrahman Al Saud Cup at King Abdulaziz Equestrian Square, honored STC for its strategic partnership with Saudi Equestrian. Dr. Khaled Biyari, STC then-GCEO, received the honorary shield and he handed his Majesty a gift on behalf of STC.

STC, Nokia to Deploy a 5G Network in 2018

Saudi Telecom Company (STC) and Nokia have announced that they are collaborating to launch a 5G network in 2018. Under the first stage of the project, hundreds of 5G base stations will be deployed in the western and southern regions of the Kingdom (Makkah, Madinah, Yanbuand Asir). This collaboration will allow Saudi Telecom to use Nokia equipment and solutions, such as the AirSilk 5G AirFilm platform and the AirFrame data center, and benefit from Nokia's Bell Labs expertise to optimize the use of fifth-generation applications.

STC Inks 4G/5G agreements with Trio of Vendors

Saudi Telecom Company (STC) has inked 5G agreements with Huawei and Cisco, while also signing a deal with Ericsson to extend the footprint of its 4G networks and deploy LTE-A and NB-IoT. Under its agreement with Huawei, STC will focus on innovation of 5G technologies and joint efforts to develop the 5G roadmap. The deal with Cisco will pave the way for collaboration for the development of 5G in Saudi Arabia. Cisco will work with STC to 'transform its network to unlock the commercial potential of ultra-modern 5G mobile networks.' Nasser Al-Nasser, chief operating officer of STC, said: 'Our new 5G network architecture will enable us to make the next leap forward by delivering inclusive broadband that transforms how people use technology in their daily lives. We look forward to working closely with Cisco to develop a future-ready network that delivers advanced capabilities to help us address increasing customer demands and new service trends.' For its part, Ericsson was selected by STC for a major nationwide 4G expansion program, including the deployment of LTE-A and NB-IoT. The LTE-A rollout, which got underway in December 2017, includes the deployment of Ericsson's 5G-ready baseband hardware in the 700MHz spectrum band. STC has already deployed multiple 4G layers across the 1800MHz, 2300MHz and 2100MHz bands.

Saudi Telecom Company (STC) Enters Into a New Chapter of Collaboration by Signing 5G MoU Agreement with Huawei

STC has signed Memorandum of Understanding (MoU) with its long-standing strategic ICT partner to collaborate on the innovation of 5G network technologies and services. This MoU will outline the road towards 5G for STC through leading 5G joint activities to achieve "Super High Speed", "Ultra Low Latency" and "highly reliable extreme capacity broadband network". This agreement aims to support Saudi Arabia's Vision 2030, and achieve the full national digitalization transformation. The two companies are committed to cooperate in the 5G network launch in 2018, thereby maintaining STC's pioneering position in the telecommunications industry. This MoU also prepares the ground for advanced joint innovations, leveraging latest 5G technologies and cultivating 5G services to fulfil ever-growing market expectations, in the new digital era. Eng. Nasser Al-Nasser, STC Group CEO, said: "Our mission is to enrich society by introducing innovative services to our deserving customers in the Kingdom of Saudi Arabia, and across the region. We are very proud to enter into 5G Agreements with our long-term partner to realize this mission. We are confident

that we collectively have the knowledge and innovation power that will enable us to move fast towards the 5G Era. While we celebrate this collaboration on shaping the future of 5G, we are very excited about the prospects and the promise that comes with the new 5G network." MR. ZHAO LIANG, President of STC Key Account Dept., Huawei, said: "STC and Huawei share common understanding

of industry trends and National vision. Nowadays ICT industry is undergoing digital transformation. 5G, Big Data, Cloud and IoT technology are the keys for leading industry development and digital transformation in next 10 to 15 years. As the biggest ICT provider, Huawei is confident to support STC to achieve the vision of 2030 through our partnership."

STC & Cisco Sign Strategic MoU to Bring the Benefits of 5G to Saudi Arabia

STC and Cisco announced they have signed a Memorandum of Understanding (MoU) to collaborate on the development of 5G communication systems and networks. The joint effort aims to facilitate STC's transformation into a digital service provider and supports the pivotal role it plays in enabling Saudi Arabia's 2030 Vision and National Transformation Plan. The MoU was signed at the Mobile World Congress by Nasser Al-Nasser, STC Group CEO, STC, and Ali Amer, Managing Director, Global Service Provider Sales, Cisco Middle East and Africa. Under the terms of the MoU, Cisco will work closely with STC on its architectural transformation to help unlock the commercial potential of 5G mobile networks. This will enable STC to provision advanced network services, such as low-latency, and differentiate its service delivery in the 5G era.

Cloud Services Agreement Signed Between STCS and Microsoft

STC Solutions signed an agreement with Microsoft Corporation, where STC Solutions became an official provider of Microsoft solutions and license. The agreement aims to enhance the cloud services provided by STC solutions to government and privates entities.

Batelco Demonstrates its Global Capabilities at Capacity Middle East 2018

Batelco, in line with its efforts to expand its global reach, was very pleased to participate at Capacity Middle East 2018 as a platinum sponsor. As part of the Company's increasing focus on the global business market, a number of Batelco's senior management attended the event, which took place in Dubai from March 6 to 8. As a Platinum Sponsor, Batelco had a stand at the event displaying the Company's latest portfolio of innovative products and services including the newly launched cable system, Batelco Gulf Network (BGN), Cloud Connect, Regional and Global Centers among other products and services. Batelco also demonstrated its global infrastructure and network which has more than 25 Point of Presence (PoPs) around the globe, with a focus on

the MENA region. A number of Batelco's management, including Batelco Chief Global Business Officer Adel Al-Daylami, represented the Company at the 3-day event, helping to reinforce Batelco's global footprint and capabilities and meet with exhibitors and potential partners and customers. "With Batelco's ongoing global expansion projects making good progress, we are placing more emphasis on our global partnerships with world-renowned providers to offer end-users an excellent service experience," said Mr. Al-Daylami. "As a major player in the telecommunications industry, Batelco continues to grow its global presence and reach through supporting the requirements of businesses in Bahrain and the Middle East region and enabling

them to extend their international reach while simultaneously meeting the communication needs of overseas organizations seeking communications avenues with their offices and customers in Bahrain, the Middle East region and beyond," he added. Capacity Middle East is an annual event which attracts senior executives from carriers, service providers, ICT providers, data centers, VOIP providers, vendors, and enterprises from the Middle East, Europe, Africa, Asia and North America. The event offers a platform to meet and discuss subjects related to wholesale and enterprise businesses, including voice, data, cloud, peering, data centers and content services.

Alfa and Nokia Partner to Deploy Nokia AirScale solution, Sign MoU for Network Evolution Toward 5G

Alfa, Lebanon's first mobile operator managed by Orascom Telecom, Media and Technology, will partner with Nokia on deploying a 3G and LTE-Advanced Pro network using Nokia AirScale equipment which shall provide an enhanced voice and mobile broadband experience to Alfa's subscribers in Lebanon. This is the first deployment of Nokia's 5G-ready AirScale base station in Lebanon. In addition, the two companies signed a Memorandum of Understanding (MoU) at Mobile World Congress (MWC) to further evolve Alfa's network by applying the Nokia AirScale system across 3G, 4G and 5G radio technologies, including CAT16 use cases. The MoU also aims to leverage Internet of Things (IoT), small cells and automation solutions, as well as Nokia's latest network optimization services, innovations and analytical tools to pave the way for next-generation mobile broadband services which Alfa will pioneer in Lebanon. Under the AirScale deployment agreement, Alfa will use Nokia's AirScale equipment to deploy a 3G and LTE-Advanced Pro network, which will enable it to introduce new services later in 2018, including Voice over LTE (VoLTE) and LTE-Advanced Pro. It also marks the first time that Nokia's energy-efficient AirScale

technology will be used in Alfa's networks. Nokia's AirScale Single Radio Access Network (SRAN) solution will be used to

deploy 3G and LTE-A Pro. The 4G LTE-A utilizes carrier aggregation technology, which brings together spectrum from two frequency bands for improved speed and spectral efficiency. Nokia will combine spectrum from 800 MHz and 1800 MHz frequency bands for the implementation of LTE-A for Alfa. The deployment will ensure seamless availability of voice services and align with Alfa's plan to gradually shut down its 2G network and re-farm the spectrum for LTE services. A host of Nokia services will ensure a smooth deployment, including project

management, Network Planning and Optimization, Care and training services. Marwan Hayek, Chairman and CEO at Alfa Lebanon, said: "We are delighted to work with Nokia on this major deployment as part of our aggressive roadmap to install 500 new 3G, LTE and LTE-A sites before end of next year and our digital transformation strategy through which we are eyeing to be among the first operators to commercially launch 5G. We are confident that Nokia's proven expertise will help us maintain our leadership position and enable IoT, as

well as continue to provide world-class quality of services to our subscribers." Roger Ghorayeb, customer team head for growth in West MEA at Nokia, said: "We are committed to helping Alfa and other service providers transform their networks to meet surging demand for mobile data. The introduction of Nokia's 5G-ready AirScale offering will enable Alfa to prepare for the launch of next-generation services. It will also help them to launch services faster, while simultaneously reducing operational expenditure."

du Announces It Has Joined Amazon Partner Network (APN) as a Consulting Partner

du, from Emirates Integrated Telecommunications Company (EITC), announced at Capacity Middle East conference that it has joined the Amazon Partner Network (APN) as an APN Consulting Partner. As such, du will be able to design, architect, build, migrate, and manage customer workloads and applications on the Amazon Web Services

(AWS) Cloud enhancing its offerings for customers across the region. "Becoming an APN Consulting Partner is a major step forward for du as we expand our service offerings and product portfolio in the coming months and years," said Fahad Al Hassawi, Deputy CEO, Telco Solutions, Emirates Integrated Telecommunications Company. "We are proud to be an APN

Consulting Partner, and we look forward to the opportunities this will provide for our regional enterprise customers across the board." AWS offers secure cloud services including compute, database, storage, analytics, content delivery and many other functionalities that help businesses scale and grow.

du and Epsilon Launch Seamless Connectivity From the UAE to Data Centers Across the Globe

UAE telco du, from Emirates Integrated Telecommunications Company (EITC), announced that it has extended its existing partnership with Epsilon, a privately owned global communications service provider, to offer end-to-end connectivity between the UAE and major data centers in the US, Europe and Asia. This was announced on the sidelines of Capacity Middle East 2018, being held 6-8 March in Dubai. Combining the strengths of du and Epsilon will create a simple, effective and seamless 'one stop shop' for capacity and backhaul services, allowing cost-effective access to datamena - an EITC entity, and the UAE Internet Exchange (UAE-IX) from global data centers. Carriers, Enterprises, Content and Cloud Providers will be able to take advantage of the Infiny by Epsilon on-demand connectivity platform, which allows click-to-connect provisioning of Ethernet speeds from 100M up to 5G. In addition, Epsilon will also provide STM1,

STM4 & STM16 capacity. As part of the agreement, Epsilon will act as the global sales channel for the partnership. Epsilon has had a long and successful relationship with du. In early 2016, Epsilon deployed its infrastructure in EITC's datamena colocation facility enabling it to bring its services closer to its partners in the Middle East. In 2017, du partnered with Epsilon to deploy the "Infiny by Epsilon" on-demand connectivity platform to connect its enterprise customers to world-leading Cloud service providers via its online portal and APIs. "This commercial partnership seamlessly connects datamena in the UAE to all major data centers in the USA, Europe and Asia. Epsilon has over 500 Carriers connected to its network who can now manage their connectivity requirements to datamena via Epsilon's online provisioning portal. This will significantly reduce the current lead time to provision capacities and further enhance the customer experience

in datamena," said Ananda Bose, Chief Wholesale & Corporate Affairs Officer, Emirates Integrated Telecommunications Company. "We look forward to continuing to develop our relationship with Epsilon to jointly serve our customers and grow together locally, regionally and around the world," he added. "du's colocation facility, subsea and terrestrial capacities together with Epsilon's Infiny platform and network reach, will allow us to offer Enterprises, Carriers, Cloud & Content providers the simplest and most efficient way to connect sub 10G network services to the Middle East," said Jerzy Szlosarek, CEO at Epsilon. "Through a single relationship with us, and in partnership with du, customers are able to leverage our extensive network reach, local expertise, experience and relationships to gain fast and efficient connection between the USA, Europe, Asia and the Middle East.

Etisalat Awarded 'Most Valuable Telecoms Brand' in MENA Region at Mobile World Congress

Etisalat has received 'The Most Valuable Telecoms Brand' in Middle East and North Africa Region by Brand Finance as a recognition for the company's increase in brand value by 40 percent to $7.7bn-higher than any other telecom brand in the region and only telecom provider to break the $7bn brand value mark in the region. Etisalat is the only telecom provider from the region to feature in the top 15 most powerful telecom brands globally and boast of an impressive AAA brand rating. On a portfolio basis, the brand value inclusive of non-branded subsidiaries (Mobily in KSA, Maroc Telecom Operations, Ufone/PTCL in Pakistan) has jumped by 25 percent to $9.6bn. Saleh Abdullah Al Abdooli, CEO, Etisalat Group received the awards today from David Haigh, Founder and CEO, Brand Finance, leading London-based branded business valuation firm at the ongoing Mobile World Congress, world's largest telecom gathering being held in, Barcelona, Spain from 26thFebruary-1stMarch, 2018. "We are proud to be recognized as the most valuable brand in the MENA region, a significant milestone as we have transcended from the 3rdrank to the first in only one year by surpassing some of the renowned regional brands. This can be attributed to our efforts in digital transformation whereby we have amplified our reach and presence in a highly competitive marketplace by investing in new digital platforms and global brand building initiatives. Etisalat's success as a brand was also reinforced by the synergy of our family

across our footprint, creating brand loyalty and enhanced engagement with our customers," said Saleh Abdullah Al Abdooli, CEO, Etisalat Group. Etisalat's brand value has grown over the year due to innovative customer service driven strategy, adapting well to digital savvy marketplace, leadership position on the 5G revolution and successful launch of global brand building initiatives. Etisalat has been in the forefront of enabling UAE's focus on digital innovation with its overall strategy focused on 'Driving the Digital Future'. Etisalat is working on several digital initiatives in the space of digital infrastructure, entertainment and smart cities. The brand has smartly leveraged today's scale for tomorrow's agile society. As the premier digital and telecommunications partner of Dubai Expo2020, Etisalat is set to deliver one of the fastest, smartest and best-connected places on earth during the global mega event. Through its digital infrastructure expertise, Etisalat is poised to enable Expo 2020 Dubai visitors and participants with a cutting edge, immersive digital experience that brings the Expo themes to life for the 25 million expected visitors. The brand is behind the infrastructure digitization of first of its kind Dubai Parks and Resorts project. This included digital channels, different smart services (such as smart parking, smart ticketing, connected transportation and connected food and beverage), in addition to other smart solutions around the park such Etisalat has received 'The Most Valuable Telecoms Brand' in Middle East and

North Africa Region by Brand Finance as a recognition for the company's increase in brand value by 40 percent to $7.7bn-higher than any other telecom brand in the region and only telecom provider to break the $7bn brand value mark in the region. Etisalat is the only telecom provider from the region to feature in the top 15 most powerful telecom brands globally and boast of an impressive AAA brand rating. On a portfolio basis, the brand value inclusive of non-branded subsidiaries (Mobily in KSA, Maroc Telecom Operations, Ufone/PTCL in Pakistan) has jumped by 25 percent to $9.6bn. Saleh Abdullah Al Abdooli, CEO, Etisalat Group received the awards today from David Haigh, Founder and CEO, Brand Finance, leading London-based branded business valuation firm at the ongoing Mobile World Congress, world's largest telecom gathering being held in, Barcelona, Spain from 26thFebruary-1stMarch, 2018. "We are proud to be recognized as the most valuable brand in the MENA region, a significant milestone as we have transcended from the 3rdrank to the first in only one year by surpassing some of the renowned regional brands. This can be attributed to our efforts in digital transformation whereby we have amplified our reach and presence in a highly competitive marketplace by investing in new digital platforms and global brand building initiatives. Etisalat's success as a brand was also reinforced by the synergy of our family across our footprint, creating brand loyalty and enhanced engagement with our customers," said Saleh Abdullah Al Abdooli, CEO, Etisalat Group. Etisalat's brand value has grown over the year due to innovative customer service driven strategy, adapting well to digital savvy marketplace, leadership position on the 5G revolution and successful launch of global brand building initiatives. Etisalat has been in the forefront of enabling UAE's focus on digital innovation with its overall strategy focused on 'Driving the Digital Future'. Etisalat is working on several digital initiatives in the space of digital infrastructure, entertainment and smart cities. The brand has smartly leveraged today's scale for tomorrow's
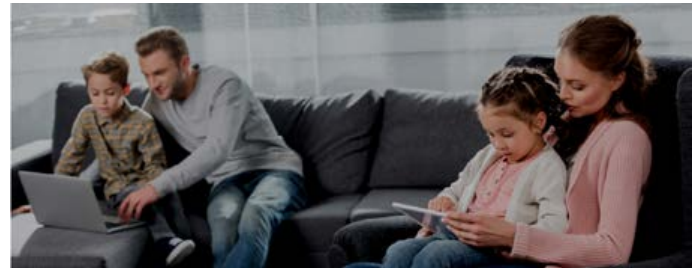
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Etisalat First Telco to Deliver Whole-Home Wi-Fi Service in UAE

Etisalat announced the launch of the UAE's first home Wi-Fi designed to deliver super-fast, reliable, and non-stop connectivity when deployed in every room. Etisalat's new Wi-Fi service called 'HomeZone' creates a strong, reliable signal to help eliminate dead spots. For AED29 a month, users will receive new access points to boost their Wi-Fi coverage in up to 3 extra zones. Users can now seamlessly browse the internet, work remotely, shop online, stream videos in HD or 4K, or listen to music in more places than ever before. Jonathan Haysom, VP of Home Services, Etisalat said: "Today's announcement demonstrates our push to break new ground with supreme user experiences. HomeZone will deliver even more blazing fast eLife Wi-Fi connectivity in the places that matter most to our customers. With the ever-increasing number of smart and connected devices in our customers' homes, we want to ensure a hassle-free and professional connectivity experience is available to them. Every HomeZone is professionally installed and directly cabled to our eLife router by our installation team, ensuring connectivity without compromise." It is a complete package – high-end Wi-Fi hardware, Ethernet cabling to the access point as well as all labor are included in the monthly rental. The service is for a two-year period with no upfront payments. Customers have the flexibility of adding extra rooms, at any time, for a monthly charge of AED29 per room. Etisalat's field engineers will carry out a comprehensive Home Wi-Fi survey with the customer to ensure any extra Wi-Fi coverage can be delivered. The Wi-Fi survey is free during all new eLife installations and for those shifting their existing eLife connection to a new home. Survey visits typically cost AED150. However, this is waived if customers proceed with the HomeZone installation.

'Imagine With Orange' Crowdsourcing Platform Opens in Tunisia

Orange Tunisia has announced the launch of its first initiatives on the crowdsourcing platform of the Orange group, 'Imagine with Orange'. The operator has already awarded a prize to KarhabtiCare, a mobile app for car owners, as part of an innovation challenge in partnership with car dealer Italcar. After this pilot, it has now officially opened its first contest on the topic of 'smart agriculture' in collaboration with local start-up Iris Technologies. Among all the ideas posted on 'Imagine with Orange', the project receiving the most votes will be given expert advice from the Orange Developer center for a period of three to six months.

Omantel Partners with Huawei to Roll Out Smart City Solutions

Omantel is ushering a new era with Huawei on the sidelines of Mobile World Congress (MWC) in Barcelona, Spain to drive its smart city strategy forward in Oman, with the first integrated tourism complex, Al Mouj Muscat, as a lighthouse example of a premium lifestyle destination. The launch of this smart city initiative is in line with the 'Omantel 3.0' strategy, which aims to revolutionize smart living and working digital services, by enhancing the security and improving business efficiencies as well as revamping end user experiences across the many facets of the community. The strategy reinforces Omantel's position as the digital partner of choice for the public and private sectors, enabling digital societies to flourish and grow across all industries and corners of Oman. As part of a complete smart services roadmap, the opening phase commences with state-of-the-art security solutions. This includes fully-fledged advanced analytics and integrated camera capabilities connected via a unified control system and a smart software platform with complex algorithms to enable a wide range of threat and pattern triggers and detection alerts, such as license plates and facial features. Future phases include smart energy and utility management

along with community portal informatics and smart parking to list a few services. In a press release, Talal al Mamari, Omantel CEO said, 'We are delighted to partner with Huawei Enterprise to roll our smart solutions in Al Mouj Muscat, Oman's lifestyle destination. Omantel is committed to delivering a more enriching lifestyle for the public through smart solutions, and we will continue to partner with like-minded entities to further this vision in new locations across the sultanate. With Omantel ICT, we are focused on enhancing digital experiences by deploying state-of-the-art Big Data analytics platforms, Internet-of-Things enabled solutions and pervasive software

and hardware IT platforms to provide the best value for our customers and the public.' Leo Hong, Huawei Oman CEO said, 'Technology is revolutionizing the way we live and operate – whether at the workplace or at home. We are excited to partner with the leading telecom operator in the sultanate to provide smart technology and solutions that will simplify life and offer people a greater amount of safety and security. Our strategic alliance with Omantel will help communities in the sultanate develop into efficient urban living spaces with all the modern amenities and conveniences, powered by cutting-edge smart solutions.

Liquid Telecom, Sudatel Partner for FTTH Rollout in Sudan

Pan-African telecoms company Liquid Telecom has signed a memorandum of understanding (MoU) with Sudatel Telecom Group for the deployment of new fiber-to-the-home (FTTH) networks across Sudan. Comparable to similar networks deployed in Zimbabwe, Zambia, Kenya and Rwanda by Liquid Telecom, the new FTTH networks will deliver speeds initially up to 100Mbps for business and residential customers. 'Liquid Telecom has a proven track record of bringing world-class fiber networks to previously underserved regions of Africa,' commented Nic Rudnick, Group CEO of Liquid Telecom, adding: 'We are delighted to support Sudatel with its efforts to deliver leading FTTH services to more businesses and consumers in Sudan, which will help grow the country's digital economy.' Liquid Telecom, a subsidiary of Econet Global, has deployed a fiber network spanning over 50,000km in Eastern, Southern and Central Africa.

Currency Movements Help Telecom Egypt Increase Full-Year Turnover by 33%

Telecom Egypt (TE) has posted a 33% year-on-year increase in consolidated revenues in the year to 31 December 2017, attributed to significantly higher turnover from its wholesale services, which was bolstered by the devaluation of the Egyptian pound against the US dollar. With the telco reporting a total turnover of EGP18.6 billion (USD1.1 billion) for FY 2017, it noted that even when normalizing for the foreign exchange impact, it still

recorded revenue growth of 13% y-o-y. EBITDA in the twelve-month period under review was up 36% at EGP5.2 billion, with an EBITDA margin of 28% (FY 2016: 27%). Meanwhile, net profit for FY 2017 totaled EGP3.2 billion, representing annualized growth of 18% from the EGP2.7 billion reported a year earlier. In operational terms, at the end of December 2017 TE had 4.07 million broadband subscribers on its books, up from 3.38 million a year

earlier, while fixed voice accesses reached 7.15 million, up from 6.46 million. More significantly, the company has made a strong start in the mobile arena; having launched its 'WE'-branded services in September 2017, TE confirmed that by end-2017 it had signed up 2.30 million wireless subscribers, up from 352,000 at the end of 3Q17.

VIVA Bahrain Achieves Compliance with International Financial Reporting Standards

Fostering the development of Bahrain's telecom industry and ensuring adherence to the best global business codes of practice, VIVA Bahrain announced its full compliance with the International Financial Reporting Standards 15 (IFRS 15) issued by the IFRS Foundation. Through this, VIVA Bahrain has also become the first telecom company in the world to successfully deploy the IFRS 15 on Cloud Service accredited by key partner, ORACLE. The standard promulgated the principles adopted by VIVA when reporting information about revenue and cash flows from a contract,

aimed at ensuring the accurate financial reporting to its stakeholders. IFRS 15 is also known to provide a common global language for businesses, making company accounts understandable and comparable across international boundaries. Mr. Ulaiyan Al Wetaid, CEO VIVA Bahrain congratulated the Executive Management and leadership of VIVA Bahrain and associated partners for successful deployment of IFRS 15 on Oracle Cloud. He said, "This achievement was only made possible with the tireless efforts from the teams involved and our supporting partners." He continued, "We

are the first telecom company in the world to be fully compliant with IFRS 15 on Oracle Cloud, which is required for our statutory financial regulations. Choosing Oracle Revenue Management Cloud Service and Oracle Accounting Hub Reporting Cloud Service, along with Wipro as an integrator, turned out to be a great decision for us." IFRS 15 has been developed to harmonies the accounting treatment across various industries in the world. It also serves the public interest by building trust, growth and long-term financial stability in the economy, a significant driving force at VIVA Bahrain.

Viva Bahrain Unveils New Connectivity Technology

Viva Bahrain, a top telecom provider, has announced the launch of Viva Skyfi, the latest technology introduced in Bahrain, offering high speed data and connectivity services for enterprises. The new technology offers wide area coverage across Bahrain and relies on Point-to-Multi-Point wireless solution that is on par with fiber-optics technology solution, making it a first of its kind in Bahrain. Ulaiyan Al Wetaid, Viva Bahrain CEO said: "We're constantly monitoring the evolution of new technologies and industry trends to ensure that we maintain our technology lead in Bahrain and cater to the varying needs of enterprises. This technology in particular is designed to deliver seamless connectivity and promises fast installation that's meant to make it easier for enterprises to take their business to the next level." Viva Skyfi technology is using a licensed spectrum and works by connecting various points and locations from a single access point, thus improves the service delivery time by using less hardware, stable communication service, as well as high-speed data transfer and reliability equivalent to fiber-optics. Viva Skyfi is a first of its kind technology launched in Bahrain; it will be used to deliver various Voice and Data services such as Dedicated Internet, Local MPLS and Fixed voice services which can connected to business customers' PBX systems.

Zain Group Partners with Axiata Digital's Apigate to Streamline API Hub Offerings

Zain Group, the leading mobile telecom innovator in eight markets across the Middle East and Africa, announced a strategic partnership with Apigate, a subsidiary of Axiata Digital, to procure and provide API services via Zain's API Hub for its operating companies and end users. This newly formed partnership allows Apigate to deliver a Digital Enablement Hub in support of Zain's API Hub, as well as a hub-to-hub connection for Zain's API platforms to facilitate a single technical, commercial, and financial integration. This will enable faster deployment for businesses to distribute and monetize their services. The integrated platform will address multiple operating companies across Zain's footprint. Under the agreement, Zain and Apigate will also look to explore further business opportunities of mutual interests and leverage and develop go-to-market collaboration. Established to support the increasingly digital lifestyles of mobile users across the globe, Apigate's portfolio currently consists of 26 digital brands focused on digital financial services (e-wallets, remittance, micro-insurance and micro-lending), digital advertising and platform services focused on API's. Recently at the MWC Barcelona, Zain announced the launch of its Group-wide Application Program Interface (API) Platform with the aim of connecting its operating companies across the region onto a single enablement platform, taping Google's Apigee Edge API Platform. By exposing its APIs, Zain is removing a significant barrier to developing new digital partnerships from across the globe. Zain will initially launch the API platform with a pilot phase in Kuwait and Saudi Arabia, and will be thereafter gradually extended to all Zain operations. Commenting on the partnership with Apigate, Scott Gegenheimer, Zain Group CEO-Operations said, "Technology is a key enabler for service differentiation and digital advancement, driving our ambition to ensure a superior customer experience. We believe opening up our APIs and partnering with globally renowned entities like Apigate will help us to drive continuous delivery of the best user experience while also expanding our contribution to the development of digital services to a whole new universe of contributors." Gegenheimer added, "This strategic API initiative is set to bring about greater agility to Zain as it considers new market opportunities, accelerating innovation and expanding revenue streams, bolstering our digital lifestyle provider aspirations." Chief Executive of Axiata Digital, Mohd Khairil Abdullah said," We are thrilled to partner with a valued partner like Zain Group. This marks another important milestone for API businesses to bring longer term value to customers through partnerships such as this in the digital ecosystem and in our partner regions across Apigate's hubs." Zain's API program is set to give opportunities for large digital players and individual developers alike to be able to launch services to Zain customers in a reduced amount of time. In due course, with the new open source digital enablement platform available at each of its operations, Zain will be able to offer internet service providers, other mobile network operators, and its own customers a host of features. These group-wide agreements with Axiata Digital's Apigate and Google's Apigee will bolster Zain's efforts to further leverage the capable operations of FOO, a leading mobile digital solutions developer in which Zain holds a strategic stake. FOO's expertise in implementing and managing this platform played a critical part of the development of the API and FOO will further support the rollout of the API platform and digital services across all Zain markets.

Zain to Continue Investing in Key Areas of Talent Development and Digital Transformation

Zain, a leading telecommunications provider in the Middle East and Africa, vowed to further expand focus on digital transformation and talent development, through signing a memorandum of understanding (MoU) with Huawei Technologies. The signing took place during MWC 2018 in Barcelona in the presence of Zain Vice Chairman and Group CEO, Bader Nasser Al-Kharafi and Guo Ping, rotating CEO of Huawei. Under the terms of the agreement, Huawei and Zain will establish a Joint Innovation Team to explore collaboration opportunities in digital transformation. Both companies are committed to combine their expertise to advance in the field of testing and deploying 5G technologies. In addition, Zain will work closely with Huawei to rollout exciting and compelling innovative solutions to enrich the enterprise market, e.g. Smart Cities and digital services. Also, the cooperation will see both entities focus on exploiting the vast opportunities in cloud services and gaming, both key growth areas for Zain. The MoU also has an element of corporate social responsibility; Zain and Huawei will collaborate to achieve a plan for the development of youth talented workforce, a key focus area as new technologies continue to develop across the Middle East. Bader Al Kharafi commented, "Our goal at Zain Group is to ensure that our clients enjoy a world-class user experience and benefit from the most cutting-edge products and solutions. We believe that our strategic partnership with Huawei will help us continue to deliver outstanding services to our customers and further bolster our transformation to be a leading digital lifestyle operator." Guo Ping added, "Once again, we are proud of our strategic partnership with Zain Group. It is vital for people and organization to have access to intelligent and agile telecommunication infrastructure in order to stay competitive in an increasingly digital world. By partnering with Zain, we hope to deliver the most technologically innovative infrastructure to the Middle East as well as develop the digital skillsets of the region's future leaders." This is not the first instance of collaboration between Huawei and Zain. Throughout the Middle East, Huawei and Zain have been strengthening their strategic partnership across various technology initiatives. In 2016, the two companies signed a strategic agreement to enhance the efficiency of the telco networks through NFV/SDN solutions by the year 2020. In May 2017, Zain and Huawei held the fourth annual Zain-Huawei MBB Summit under the theme of "4G Evolution Towards 5G. The summit resulted in another strategic MoU between Zain and Huawei promising further collaboration in the field of 5G.

Zain Jordan Signs Partnership Agreement with EQUIIS

Zain Jordan, the leading digital carrier in the Middle East and EQUIIS Technologies, a leader in secure mobile communications for the enterprise have finalized their partnership agreement. The partnership allows Zain Jordan to offer its enterprise clients access to the EQUIIS Secure Enterprise Communications platform. Zain Jordan is now able to provide its enterprise clients the most advanced securely encrypted and compliant communications technology. This agreement also enables Zain Jordan to use the EQUIIS technology to manage its own enterprise employees, as well as the ability to more effectively control how its internal communications data is stored, accessed and monitored.

Zain Saudi Arabia and Nokia Collaborate to Unlock Potential of Local Talent with Cloud and Edge Computing for the Digital Transformation Era

Nokia and Zain Saudi Arabia have signed a Memorandum of Understanding (MoU) to work with the country's young talent to enable them to innovate and develop applications and services to serve local needs. The collaboration is in line with the Vision 2030 of the Kingdom of Saudi Arabia, which aims to develop the country's talent to diversify economic capabilities as well as improve services as per local requirements. The creation of new services and products will allow Zain to reiterate its position as an innovative service provider in the region. As part of

the program, Nokia will provide a cloud computing and IT service platforms with an open Application Programming Interface (API) to allow Saudi Arabia's engineers to create new products for the domestic market. The local talent will gain a global perspective by collaborating with a leading technology firm of Nokia's repute. Zain will play a paramount role in incubating the creativity of young Saudi generation. Along with Nokia, Zain shall nurture a multitude of local opportunities and evolve them from early conception phases till commercial implementation.

This initiative is an integral part of Zain's advanced data center strategy, and the virtualization and cloudification efforts to build tomorrow's networks now with young Saudi engineers and software developers. Eng. Sultan Abdulaziz AlDeghaither, Chief Operations Officer, Zain Saudi Arabia, said: "The nurturing of human capital is a key aspect of Vision 2030, and we believe that this collaboration with our strategic partner Nokia will allow us to provide more and better job opportunities for the Kingdom's youth. Nokia is a well-recognized global technology leader, especially in the IT and cloud domain, and partnering with them will provide a crucial opportunity for the country's youth to add to their skill sets in keeping with the latest global trends." Ali Al Jitawi, head of the Zain Saudi Arabia customer team at Nokia, said: "We are honored and pleased to work with Zain in empowering the youth of the country to create products more relevant to subscribers. While we have already deployed our Multi-access Edge Computing to improve the Hajj pilgrimage experience and are working with Zain to deploy Internet of Things (IoT) use cases toward digital transformation, this special program marks the beginning of a new chapter in Zain's digital transformation journey."

Zain Develops New Network Strategy

Huawei and Zain Group have signed a Memorandum of Understanding (MoU) to develop a new network strategy in Saudi Arabia. Under the agreement, the vendor will help Zain accelerate the realisation of 5G networks in the Kingdom, and the duo will work together on the deployment of 4.5G to 5G networks, while also seeking to make further advances towards full cloudification, and producing additional strategy and planning in the field of ICTSynergy Cloud. Mr. Sultan Abdulaziz AlDeghaither, Chief Operations Officer at Zain Saudi Arabia commented: 'Zain Saudi Arabia is pleased to strengthen our existing relationship with Huawei, a powerful partner in the region. Our goal is to always ensure that our customers have access to the latest technology in order to

serve them in the best possible way, and we believe that this collaboration will be beneficial to that aim. We are also excited to make further inroads in the cutting-

edge field of 5G, an exciting technology with the potential to be a driving force in the digitalization of the Kingdom.'

Accenture Rolls Out Analytics Solution for Expo 2020

Professional services company Accenture, in collaboration with SAP, has implemented SAP S/4HANA for Expo 2020 Dubai to provide the event with a foundation for data-driven insights, from visitor preferences to sustainability. The new digital platform transforms back-office and visitor-facing capabilities for the global mega event, which is expected to host 25 million visits over 6 months from October 2020. Expo 2020 Dubai went live with SAP S/4HANA in only seven months. SAP S/4HANA is a real-time enterprise resource planning suite for digital business, built on an advanced in-memory platform, SAP HANA, and offers a personalized, consumer-grade user experience with SAP Fiori. The new platform will allow Expo 2020 Dubai to better source its needs, manage financials, and enlist talent instantly and seamlessly. The platform will later support visitor-facing capabilities that can transform the experience for millions of visitors from around the world. "Expo 2020 Dubai will provide a platform where people from around the world can come to experience innovative and exciting technology," said Mohammed Al Hashimi, senior vice president ICT at Expo 2020 Dubai. "This digital platform will provide Expo 2020 Dubai with a fully integrated real-time business solution to optimize Expo's processes, increase productivity and reduce turnaround time." Gerardo Canta, Accenture's Communications, Media & Technology lead for the Middle East and Turkey, said: "Data has the power to disrupt by shining a light on new insights that can improve the visitor experience for Expo 2020 Dubai. Our work with Expo 2020 Dubai and SAP is built on innovative ideas and solutions that will not only help make internal processes more effective, but also uncover new opportunities to attract visitors and amplify their experiences on-site." "Expo 2020 Dubai will have a real-time digital core, with the streamlined

SAP with Accenture Roll Out **SAP S /4HANA** as a foundation for Read-Time Analysis from Visitor Preferences to Sustainability

Finance | Human Resources | Procurement
Operational Productivity | Visitor Experience | Sustainability

SAP's collaboration with Accenture is fast-tracking Expo 2020 Dubai to deliver innovations that help enable a world-class experience and support growing customer demands

technology infrastructure that can drive innovation and deliver unique participant and visitor experiences," said Hoda Mansour, executive sponsor of Expo 2020 Dubai at SAP, the event's Premier Innovative Enterprise Software Partner. "SAP S/4HANA can connect to big data, the Internet of Things and business networks – enabling innovations such as autonomous vehicles, smart mobile networks, and digital payments across the Expo 2020 Dubai site." Accenture's collaboration with SAP is fast-tracking Expo 2020 Dubai to deliver innovations that help enable a world-class experience and support growing customer demands. For example, the finance, procurement and human resources processes across the Expo 2020 Dubai organization have been modernized and integrated on to a single platform, bringing increased speed and agility to operational productivity. In addition, the newly integrated environment will link the finance and procurement departments with various external entities, such as banks and government agencies, ensuring a smooth flow of data.

Company Culture is Key to Unlocking Gender Equality, New Accenture Research Finds

New research from Accenture has identified 40 workplace factors that create a culture of equality — including 14 factors that matter the most. The research, published today in the company's "Getting to Equal 2018" report, details the most-effective actions that business leaders can take to accelerate advancement and help close the gender pay gap. The research is based on a survey of more than 22,000 working men and women in 34 countries — including 717 male and female employees in the United Arab Emirates— to measure their perception of factors that contribute to their workplace cultures. The survey was supplemented with in-depth interviews and a detailed analysis of published data on a range of workforce issues.

"Our research has found that companies that exhibit positive workplace cultures, policies and programs support talented employees across the gender spectrum. Helping women, essentially, helps men too," said Omar Boulos, regional managing director of Accenture in the Middle East and Turkey. "And in a country that has ambitious development plans, supporting talented employees in an inclusive environment will be a critical enabler for the UAE's sustained success." Companies that exhibit the 40 factors are most likely to nurture talent, both male and female. In the UAE, about 78 percent of employees in these organizations have training available on demand — higher than the global average of 77 percent— and most of them (90 percent), indicate

that these programs keep skills relevant. Accenture's research found that in UAE-based companies where the 40 factors are most common have:

- 94 percent of employees are satisfied with their career progression
- 92 percent of employees aspire to get promoted
- 93 percent aspire to become senior leaders in their organizations

While both women and men advance in companies in which the 40 factors are common, women have the most to gain. For the UAE, Accenture research found that:

- Fast-track women, a group that progresses to manager level within five years of employment, are more likely

Accelerating advancement and pay equality.

If all women worked in environments in which the 40 factors are most common.

65 female managers → rising to 87

| 65 | 87 |

Compared to 100 male managers

| 100 |

- ■ Current female managers
- ■ Potential female managers
- ■ Male managers
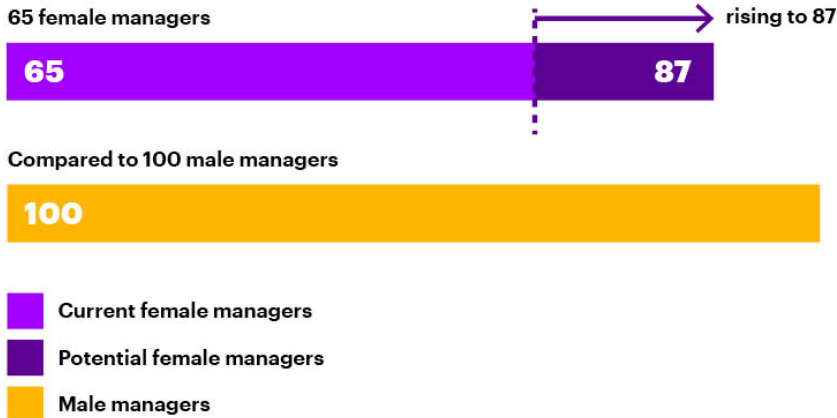
Source: Getting to Equal 2018, Accenture.

to progress in their careers in organizations with at least one female senior leader
- Diversity targets help women, with 80 percent of the survey respondents indicating that policies driven by leaders when they are held accountable for improving gender diversity have led to an increase in female leadership within the last 5 years

Setting clear diversity targets, the research found, is a crucial step for leaders who want to strengthen their cultures. The report, which builds on Accenture's 2017 research on how digital fluency and technology can close the gender gap in the workplace, grouped the 14 core factors proven to influence advancement into three categories of bold leadership, comprehensive action and an empowering environment.

Industry Consortium Successfully Tests Blockchain Solution Developed by Accenture

A consortium comprising AB InBev, Accenture, APL, Kuehne + Nagel and a European customs organization has successfully tested a blockchain solution that can eliminate the need for printed shipping documents and save the freight and logistics industry hundreds of millions of dollars annually. The consortium tested a solution where documents are no longer exchanged physically or digitally but instead, the relevant data is shared and distributed using blockchain technology under single ownership principles determined by the type of information. Through a detailed review of the current documentation processes, the group examined a re-allocation of information ownership, accountability and risk enabled by the trust and security blockchain technology offers. An international shipment of goods for companies in areas such as the automotive, retail or consumer goods industries typically requires more than 20 different documents, many of which are often paper-based, to enable the goods to move from exporter to importer. Across these documents, up to 70 percent of the data can be replicated. The document heavy approach limits data quality and real-time visibility to all parties involved in the trade and this can also delay the financial settlement on goods. The solution can speed up the entire flow of transport documents, reduce the requirement for data entry by up to 80 percent, simplify data amendments across the shipping process, streamline the checks required for cargo and reduce the burden and risk of penalties for customs compliance levied on customers. Blockchain is a new type of distributed database system that maintains and records data in a way that allows multiple stakeholders to confidently and securely share access to the same information. The technology is poised to revolutionize operations across a multitude of sectors, such as financial services, government, healthcare, entertainment and freight and logistics. "Our trials have proven the viability of a shipping process in which many documents can be replaced by secure and distributed data sharing with clear and defined ownership," said Adriana Diener-Veinott, who leads Accenture's Freight & Logistics industry practice. "This gives companies a significant opportunity to save time and money while improving their service to customers."

accenture

SEABURY CONSULTING
now part of accenture

GLOBAL CONTAINER TRADE SUMMARY BY INDUSTRY, 2017

Value of trade (billion usd), 6-year growth rate (%)

RAW MATERIALS ∧ 2% 1,262 bn

HIGH TECH ∧ 3% 589 bn

MACHINERY PARTS ∧ 2% 542 bn

CONSUMER GOODS ∧ 3% 480 bn

AUTOMOTIVE ∧ 2% 402 bn

CHEMICALS ∧ 3% 397 bn

CAP. EQUIPMENT ∧ 2% 360 bn

FASHION ∧ 3% 313 bn

PERISHABLES ∧ 5% 174 bn
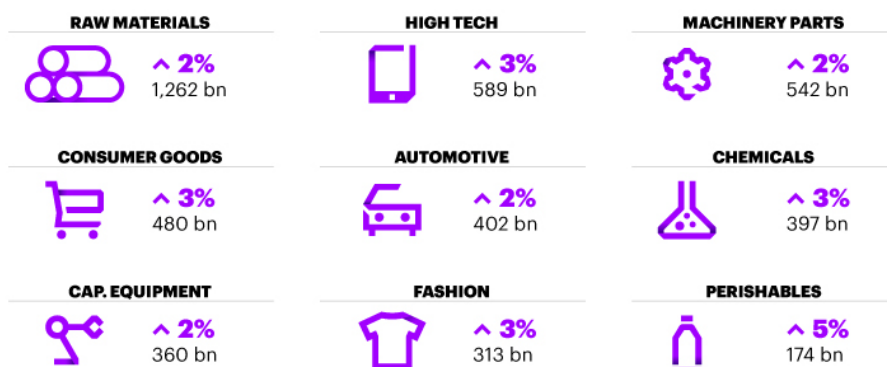
Airspan Small Cells Unlimited Mobile Broadband through Massive Network Densification

With hundreds of thousands of cells installed worldwide, Airspan is delivering on the promise of small cells to improve wireless network capacity and coverage, increase macro network efficiency and revolutionize TCO. Airspan is helping operators densify their networks and lay the foundation for 5G, delivering enhanced mobile broadband Gigabit speeds today on ultra-dense 4G small cell architectures by leveraging features and platforms such as LAA and cloud-based V-RAN. Airspan boasts best of breed strategic partnerships with manufacturer Foxconn and chipset vendor Qualcomm, giving it the ability to rapidly scale production to deploy millions of small cells with macro performance, as proven with some of the world's most innovative operators including, Reliance Jio in India and Sprint in the US. This has been achieved by forcing paradigm shifts in the way that cell site economics work today. Instead of wasting countless days, hours and dollars in site acquisition and installation, Airspan's ground-breaking plug and play and SON technology has

made small cells once and for all truly scalable. As of January 2018, Sprint has been able to deploy more than 80,000 Magic Boxes since their launch in Q2 2017, and Airspan's small cells have been a contributor to Sprint's national average download speeds which have increased 60% year-over-year.[1] The benefits are not only for consumers as Sprint reports about a third of our Sprint Magic Box customers are businesses including big-box retail stores, hotels, restaurants, commercial office buildings, and schools. Small cells are finally gaining significant traction in wireless networks and operators are just beginning to scratch the surface of the potential game-changing benefits that network densification can provide them. Airspan's toolkit already delivers massive incremental benefits to existing operator networks, all while providing much needed coverage and capacity at cell edge. 5G and the Internet-of-Things (IoT) will bring about billions of connected devices that will shape the networks of tomorrow. From high-speed enhanced mobile broadband and ultra-reliable, low-

latency mission-critical communications that will allow drones to soar higher than ever, to analyzing consumer Big Data in real time at the far edge of the Network. Airspan delivers a technology value chain that will enable operators and spectrum holders to monetize the boundless possibilities of 5G. Airspan's history and understanding of the IoT is second to none. As pioneers in delivering smart grid/city communication networks and developing cutting-edge backhaul telemetry solutions for the McLaren F1 team or delivering broadband connectivity to high speed moving jets, trains or buses, Airspan brings unique perspectives on how to monetize the boundless possibilities of 5G applications. Airspan has truly brought the small cell game to the next level with its proven track record of delivering award-winning technology at scale, while packing macro feature sets into compact form-factors that thanks to Het-Net and SON capabilities can be deployed within minutes.

Airspan and Sprint Selected as the Winner of "Best Mobile Technology Breakthrough" at GLOMO 2018 Awards

Airspan and Sprint are proud to have been selected as the winner of the Best Mobile Technology Breakthrough award in recognition of the ground breaking and successful mass deployment of the first all-wireless indoor small cell, the Magic Box, specifically designed to improve network efficiency, increase data speeds and enhance user experience. "We are delighted to have our innovative Magic Box recognized by the GSMA and judges in a highly competitive category with some of the largest companies in the world," said Robert Kingsley, Director of Small Cell and WiFi Development at Sprint. "The simplicity of installation and built-in intelligence of the Magic Box is making our customers' network experience better every day." Airspan quote: "Our partnership with Sprint makes real the long-promised abilities of small cells to improve network efficiency and cost-effectively expand network coverage and capacity." said Eric Stonestrom, CEO Airspan Networks. The Magic Box finally answers the call for a self-installed, low cost, high-performance solution to network coverage issues. The Best Mobile Technology Breakthrough award highlights the contribution that Mobile Operators, manufacturers, and suppliers make to increase mobile usage, expand the user experience, and help expand business opportunities. This very

wide-ranging category includes components, microprocessors, memory, chipsets, screens, audio, batteries, operating systems, APIs to name but a few and even looks at design innovation and form-factors. It recognizes the tremendous diversity of the global mobile ecosystem as it continues to innovate and add new dimensions to the customer experience and Sprint and Airspan are honored to be 2018 GLOMO award recipients.

Airspan Gears Up for 5G Small Cells in Aftermath of GLOMO Win with Sprint

Airspan Networks is on a tear. The former WiMax vendor is taking a lead role in the "AutoAir" consortium, integrating its small cells into the Reliance Jio Infocomm LTE network in India and preparing for the 3.5 GHz Citizens Broadband Radio Services (CBRS) small cell bonanza in the U.S., to name a few activities of late. It's also coming off a win at Mobile World Congress 2018, where it took home a GLOMO award for Best Mobile Technology Breakthrough for its Magic Box with Sprint—a product that was so in demand that Sprint had a hard time keeping units on the shelves. GLOMOs are the GSMA's Global Mobile Awards, which some say are akin to the Oscars for the mobile industry. "We're busy," quipped Damiano Coletti, vice president of strategy and marketing at Airspan. "We're very much moving on all fronts." Early this year, Sprint reported that Airspan had stepped up production to keep the Magic Box pipeline moving; Sprint by then had deployed more than 80,000 Magic Boxes across the country, and it soon thereafter hit the 100,000 mark. Expectations call for Sprint to deploy more than 1 million Magic Boxes as part of a multiyear roadmap. The Sprint Magic Box provides average indoor coverage of up to 30,000 square feet, but its signal also extends data coverage to Sprint customers nearby in homes and other businesses. It's not a simple repeater; it uses dedicated channels and self-organizing network (SON) technology to reduce noise and increase capacity. "We're keeping pace," Coletti confirmed, noting that its partners include chipset provider Qualcomm and iPhone manufacturer Foxconn, allowing it to scale. Aside from the Sprint deal, Airspan is working with Tier 1 operators around the world to densify their networks and lay the foundation for 5G. It's helping them deliver enhanced mobile broadband Gigabit speeds on 4G small cell architectures by leveraging features and platforms like LAA and cloud-based V-RAN—and, Coletti notes, it's doing so without creating the "rat's nest" that so many are trying to avoid in small cell deployments. According to Coletti, Airspan is very much ready for the 5G New Radio (5G NR) world, even before 5G officially arrives on the scene. "5G use cases can be delivered today using 4G if done in an intelligent way," he told FierceWirelessTech. "Operators don't really have to wait to deliver 5G functionality and user experiences for the 5G NR ecosystem to become available. They can start now with 4G. It's an ecosystem thing. Once the ecosystem is ready, it's just a question of swapping that out." The added benefit of doing it on 4G is operators can test the business models and how to monetize them, and they can go through the learning curve in terms of how best to deploy, he said. Of course, carriers like Sprint are all about Massive MIMO, and Coletti said all of Airspan's small cells are aimed at being complementary to macro networks; Massive MIMO support is on the road map. Airspan is also prepared to support the 3.5 GHz CBRS band in the U.S. when that's open for business. Right now, the FCC is considering rule changes for the band, but Coletti said the company has been supplying 3.5 GHz small cells for quite some time to customers outside the U.S. that are using 3.5 GHz, so it will be ready.

Arabsat Hosts 10th Edition of Telecom Forum in Marrakesh

Arabsat is hosting its 10th Telecom Forum in Marrakesh from March 566, 2018 under the patronage of the Ministry of Industry, Investment, Trade and Digital Economy, Kingdom of Morocco. Arabsat's annual telecom forum is aimed at strengthening its professional and operational association with its customers. This event provides the satellite operator's customers, industry experts, technology and service providers a platform to share their views on the latest trends in technology. Eng. Khaled bin Ahmed Balkhyour, CEO of Arabsat, thanked the Government of His Majesty King Mohammed VI, represented by the Ministry of Industry, Investment, Trade and Digital Economy, for the support received from the Kingdom of Morocco. Speaking about the event, Eng. Mueid Al-Zahrani, Arabsat's CTO & Chairman of the Telecom Forum said: "This occasion offers a great opportunity to present our reliable high-powered capacity on BADR-7 based on flexible payload to deliver connectivity services to different verticals over extensive coverage in Middle East North Africa, North West Africa, Central Asia and South Africa. Our Future High Throughput Satellites (HTS) that are scheduled for launch end 2018/early-2019 will complement existing capacities and supply adequate bandwidth and coverage."

Cisco Releases 2018 Annual Cybersecurity Report

Malware sophistication is increasing as adversaries begin to weaponries cloud services and evade detection through encryption, used as a tool to conceal command-and-control activity. To reduce adversaries' time to operate, security professionals said they will increasingly leverage and spend more on tools that use AI and machine learning, reported in the 11th Cisco® 2018 Annual Cybersecurity Report (ACR). While encryption is meant to enhance security, the expanded volume of encrypted web traffic (50 percent as of October 2017) — both legitimate and malicious — has created more challenges for defenders trying to identify and monitor potential threats. Cisco threat researchers observed more than a threefold increase in encrypted network communication used by inspected malware samples over a 12-month period. Applying machine learning can help enhance network security defenses and, over time, "learn" how to automatically detect unusual patterns in encrypted web traffic, cloud, and IoT environments. Some of the 3,600 chief information security officers (CISOs) interviewed for the Cisco 2018 Security Capabilities Benchmark Study report, stated they were reliant and eager to add tools like machine learning and AI, but were frustrated by the number of false positives such systems generate. While still in its infancy, machine learning and AI technologies over time will mature and learn what is "normal" activity in the network environments they are monitoring. "Last year's evolution of malware demonstrates that our adversaries continue to learn," said Scott Manson, Cybersecurity Lead - Middle East and Africa, Cisco. "We have to raise the bar now – top down leadership, business led, technology investments, and practice effective security – there is too much risk, and it is up to us to reduce it."

Cisco 2018 Annual Cybersecurity Report Additional Highlights
- The financial cost of attacks is no longer a hypothetical number:
- According to study respondents, more than half of all attacks resulted in financial damages of more than US$500,000, including, but not limited to, lost revenue, customers, opportunities, and out-of-pocket costs
- Supply chain attacks are increasing in velocity, complexity

These attacks can impact computers on a massive scale and can persist for months or even years. Defenders should be aware of the potential risk of using software or hardware from organizations that do not appear to have a responsible security posture.
- Two such attacks in 2017, Nyetya and Ccleaner, infected users by attacking trusted software.
- Defenders should review third-party efficacy testing of security technologies to help reduce the risk of supply chain attacks.
- Security is getting more complex, scope of breaches is expanding

Defenders are implementing a complex mix of products from a cross-section of vendors to protect against breaches. This complexity and growth in breaches has many downstream effects on an organization's ability to defend against attacks, such as increased risk of losses.
- In 2017, 25 percent of security professionals said they used products from 11 to 20 vendors, compared with 18 percent of security professionals in 2016.
- Security professionals said 32 percent of breaches affected more than half of their systems, compared with 15 percent in 2016.
- Security professionals see value in behavioral analytics tools in locating malicious actors in networks
- 92 percent of security professionals said behavior analytics tools work well. Two-thirds of the healthcare sector, followed by financial services, found behavior analytics to work extremely well to identify malicious actors.
- Use of cloud is growing; attackers taking advantage of the lack of advanced security
- In this year's study, 27 percent of security professionals said they are using off-premises private clouds, compared with 20 percent in 2016

- Among them, 57 percent said they host networks in the cloud because of better data security; 48 percent, because of scalability; and 46 percent, because of ease of use.
- While cloud offers better data security, attackers are taking advantage of the fact that security teams are having difficulty defending evolving and expanding cloud environments. The combination of best practices, advanced security technologies like machine learning, and first-line-of-defense tools like cloud security platforms can help protect this environment.
- Trends in malware volume have an impact on defenders' time to detection (TTD)
- The Cisco median TTD of about 4.6 hours for the period from November 2016 to October 2017 — well below the 39-hour median TTD reported in November 2015, and the 14-hour median reported in the Cisco 2017 Annual Cybersecurity Report for the period from November 2015 to October 2016.
- The use of cloud-based security technology has been a key factor in helping Cisco to drive and keep its median TTD to a low level. Faster TTD helps defenders move sooner to resolving breaches.

Additional Recommendations for Defenders:
- Confirm that they adhere to corporate policies and practices for application, system, and appliance patching.
- Access timely, accurate threat intelligence data and processes that allow for that data to be incorporated into security monitoring.
- Perform deeper and more advanced analytics.
- Back up data often and test restoration procedures, processes that are critical in a world of fast-moving, network-based ransomware worms and destructive cyber weapons.
- Conduct security scanning of microservice, cloud service, and application administration systems.

Cisco Brings Visibility and Insights to IT's Biggest Blind Spot

Cisco announced new innovations built to bring visibility to IT's biggest blind spot: the wide-area network (WAN). Made up of disparate networks outside of the control of IT, the WAN connects employees to applications, no matter where those employees might be. The fragmented nature of the WAN means that IT often has limited ability to specifically determine problems and get real-time information. Now, Cisco is helping IT by providing the capability to forecast WAN problems before they happen, while quickly isolating and fixing issues when they do occur. Over the past few years, the rise of multicloud IT environments has exacerbated the traditional complexity of the WAN and magnified its challenges. IDC's 2017 Worldwide SD-WAN Survey discovered that almost 3 out of 10 organizations considered network outages to be a top WAN concern, with the same number stating they need better visibility and analytics to manage application and WAN performance. Building on the company's recent push toward intent-based networking, Cisco is driving this network revolution to the WAN. Today, Cisco is introducing innovations to provide IT with the vital visibility and insight into the WAN that will help keep businesses up and running: Cisco® SD-WAN vAnalytics provide IT with visibility, forecasting for applications and bandwidth planning,

"what-if" scenarios, and actionable recommendations. Cisco Meraki™ Insight helps IT administrators optimize the end user experience by providing valuable understanding into WAN and SaaS application performance, significantly reducing the time it takes to isolate and resolve issues. "We have set an ambitious goal for ourselves of transforming the entire network, from campus to branch, data center to edge," said Scott Harrell, senior vice president and general manager, Enterprise Networking at Cisco. "The WAN is a vital part of the network and is one of the toughest to manage. As we bring insight into the WAN with these new innovations, we get closer to delivering end-to-end intent-based networking to help our customers eliminate downtime and save money." Cisco provides a full portfolio of services to help accelerate a customer's journey to intent-based networking for the WAN. Services experts help customers create a customized roadmap for success, speed deployment, and maximize network performance.

Cisco SD-WAN vAnalytics

Today, Cisco is introducing Cisco SD-WAN vAnalytics (based on Viptela® technology). Built as a cloud-based SaaS solution, the technology provides comprehensive data, analysis, and corrective actions across the WAN,

including branch offices, multicloud endpoints, and multiple service providers. Using vAnalytics, customers can forecast how potential policy changes to the WAN could affect application performance. It can also provide intelligent recommendations about how to deliver optimal application experiences. For example, with vAnalytics, organizations can now better understand how a rollout of IP-enabled security cameras or a cloud-based application across multiple branch offices could affect WAN infrastructure. vAnalytics can help enterprises identify the stress points and necessary policy changes, helping customers avoid technology growing pains.

Cisco Meraki Insight

Today, Cisco Meraki is also announcing Meraki Insight, a new tool integrated into the Meraki dashboard to help IT maintain a better end-user experience. The solution provides end-to-end visibility with application and WAN performance analytics. With Meraki Insight, customers can understand and troubleshoot both internal and external issues that can contribute to poor user experience for applications hosted in a remote data center or in the cloud. Meraki Insight helps IT achieve faster time to resolution for performance issues by more accurately pinpointing the source of the problem.

Teradata Unlocks IoT Value for Smart Cities with Cisco integration

Teradata announced that it is working with Cisco on a digital transformation solution with a focus on smart cities and communities. Combining the merits of Cisco's IoT platform, Cisco Kinetic for Cities, with the Teradata Analytics Platform, the solution will help cities become smarter and more connected by providing a powerful solution for integrated data exchange. The Cisco Kinetic for Cities platform excels at collecting, aggregating and normalizing real-time data securely across city networks. Teradata is among the first enterprise data analytics companies to integrate with this platform to provide smart data management, such as analytics, persistent data lifecycle management and data enrichment that delivers business insights to cities

and communities. Together, the two leaders in their respective fields provide powerful tools that cities need to improve efficiency, enhance public safety, deliver better citizen services and create new revenue streams. Data collection and management within a city is often decentralized and stored in departmental silos, where each city manager creates a "cockpit" of data and a set of tools for managing specific city facilities. This approach makes it difficult, if not impossible, to generate a city-wide view of the data. Disparate data silos must be integrated to reveal insights about the city as a whole. Only then can the data be used effectively to drive predictive and prescriptive decision-making for a variety of urban services, including lighting, parking, traffic and waste management,

citizen engagement, safety and security. "Far too many cities do not fully recognize the value of their data," said Anil Menon, Global President for Smart+Connected Communities at Cisco. "With the Cisco Kinetic for Cities platform, we aim to help cities think holistically about their city infrastructure investments and the value of the data captured by their connected assets, such as traffic cameras, parking meters and environmental sensors. Once data is aggregated, customers using Teradata's analytics can leverage the resulting contextualized information to guide planning, monetization and broader economic development efforts that keep cities livable, sustainable and resilient." Using Cisco Kinetic for Cities, cities can gather, aggregate and normalize information from disparate

and siloed city applications, including but not limited to traffic, lighting and parking. Combining this real-time sensor data with other city information, such as data from payment systems, citizen sentiment and analytic applications, Teradata is able to deliver prescriptive and predictive analytics, as well as easy-to-comprehend visualizations, that help city leaders make smarter, more informed decisions. Such a combined solution could, for example, automatically detect security incidents and generate alerts, locate traffic bottlenecks and optimize signals to ease congestion or evaluate route options to shorten emergency vehicle response time. "Data is the foundation of value creation in today's digitally enabled society," said Stephen Brobst, Chief Technology Officer at Teradata. "Cities are currently undergoing a seismic shift in thinking to recognize that their data has real value that can enable new services and capabilities to better serve their citizens and visitors. Accomplishing this requires that smart cities tap into a comprehensive and robust analytics ecosystem. Cisco and Teradata platforms are cornerstones of such an ecosystem, which can empower city managers to make better, data-driven decisions."

Mumbai-IX, Powered by DE-CIX, to Bring World's Leading Internet Exchange to Mumbai's Leading Carrier Hotel

Mumbai-IX, powered by DE-CIX, the leading Internet Exchange (IX) in the Indian market, will make services available at STT's carrier hotel in Mumbai (formerly known as TATA LVSB) facility, starting in March 2018. The building is one of the key hubs that provide India with international connectivity. This is the third point-of-presence of Mumbai-IX in the metro market. The carrier and data center-neutral IX serves around 90 providers and has recently passed the 100Gbps Peak Traffic threshold. Mumbai-IX, the first DE-CIX Exchange on the Indian sub-continent, connects all kinds of Internet providers, including broadband providers, content delivery networks, and cloud companies. The company facilitates the direct and settlement-free exchange of Internet traffic between all participants and it is the first IXP fully-licensed by the Department of Telecommunications, as well as being the only Indian IXP that has been awarded the prestigious Open-IX certification. "We are excited to be able to expand into the STT carrier hotel, allowing all networks in the building to benefit from the Mumbai-IX offering. We will install our award winning DE-CIX Internet Exchange infrastructure to allow maximum scalability and robustness for Mumbai-IX", says Ivo Ivanov, Board Member of the Mumbai-IX operating company, DE-CIX Interwire India. This core node of Mumbai-IX will provide premium IXP services, backed by industry-leading Service Level Agreements. The IXP is soon to launch in additional key markets in India.

Eutelsat and Globecast Set to Launch New Media Platform Over the Americas

Eutelsat Communications (NYSE Euronext Paris: ETL) and Globecast, the global solutions provider for media, announce they are partnering on a new media platform over the Americas. The new platform launched by both companies will allow broadcasters across the Americas to gain access to Globecast's advanced media management solution designed for both linear television distribution and new media technologies, including streaming, local ad insertion, IoT services, HEVC encoding and regionalization services. This distinctive capability will be provided from Globecast's Culver City, CA teleport to Eutelsat's EUTELSAT 117 West A satellite at 117° West, a prime mid-arc video neighborhood serving the Americas from Alaska to Argentina. A unique feature of the platform will be the ability to provide fleet protection and redundancy via the EUTELSAT 113 West A satellite. Located just four degrees away with the same transponder plan and polarization, and combined with Eutelsat's dual-feed CATV upgrade program for cable operators throughout the Americas, this two-satellite solution will offer enhanced protection and restoration capabilities for programmers. "Eutelsat's ambition is to craft unique and differentiated satellite service solutions, in concert with the industry's best ground segment partners," stated Mike Antonovich, CEO of Eutelsat Americas. "Our goal with Globecast is to build a new media distribution ecosystem that combines exceptional market coverage with advanced live linear TV services in SD, HD and UHD formats, IP streaming and file-based television distribution capabilities to meet both today's needs and anticipate tomorrow's opportunities. By combining best-of-breed technologies, the exceptional quality and coverage of Eutelsat's satellites, and the local market knowledge and technical expertise of partners like Globecast, we can build a rich platform of integrated, customized services to serve media companies everywhere over the Americas". Eddie Ferraro, Managing Director of Globecast in Americas stated, "Eutelsat is a perfect partner for Globecast in expanding our service offerings to media customers throughout the Americas. Our managed service capabilities, Eutelsat's entrepreneurial spirit and our combined ability to attract blue chip customers will ensure the next generation of growth in the media space in this ever-changing technology environment. We embrace working with content owners who have a view to the future."

Facebook Overtakes YouTube on Mobile Video Front

Openwave Mobility's Mobile Video Index (MVI), which analyses traffic data aggregated from live deployments in more than 30 mobile operators, found that in most developed markets, Facebook video is now trending upward relative to YouTube – while in a number of emerging markets, Facebook video has already overtaken YouTube. Alongside the data from live operator deployments, this edition of the MVI incorporates an independent consumer survey of mobile video user habits covering 3,000 subscribers in Western Europe. Despite larger mobile screens with higher

resolutions, consumers revealed that they prefer to watch videos on standard definition (SD) rather than high definition (HD), which can suffer from buffering. The report also found that while video playback times on mobile are increasing, average playback buffer time remains stubbornly high at 7.2 seconds. However, subscribers will only put up with six seconds of buffering before abandoning a video in frustration. "Subscribers are willing to pay for good QoE," said Indranil Chatterjee, SVP, products, sales and marketing at Openwave. "Our study in Europe found that consumers are

happy to pay an extra €7.50 per month for videos with less than two seconds of buffering. Operators can ill-afford to ignore the monetization opportunities staring them in the face." Gorkem Yigit, lead analyst at Analysys Mason, added: "Inspired by operators such as T-Mobile in the US, research shows that zero-rating and unlimited data plans significantly increase video engagement time. With the right traffic management techniques, operators can contain network costs and launch viable pricing models and deliver a differentiated QoE."

Airtel Acquires the India Leg of GBI's India–Middle East–Europe Submarine Cable

Bharti Airtel ("Airtel"), India's largest telecommunications service provider, and Gulf Bridge International ("GBI"), a global cloud provider for the Middle-East and Europe, announced a strategic agreement to unlock the capacity on GBI's India-Middle East-Europe submarine cable system. Under the agreement, Airtel will acquire the ownership of the India leg of GBI's India-Middle East-Europe submarine cable. Airtel will also pick up a significant capacity on Middle East-Europe leg of GBI's cable system. Airtel and GBI have also agreed to formulate joint Go to Market strategies and leverage the footprint of their respective global networks to serve global customers. With this new investment Airtel has further consolidated its leading position as a global capacity provider. It now has large capacities – owned and leased - on multiple international submarine cable systems and offers the maximum number of routes between India and Europe. GBI's submarine cable asset will complement Airtel's

existing global cable network viz. IMEWE, EIG, SMW4 and MENA and add significant long term bandwidth capacity, enabling it to serve the booming data demand across emerging markets like India and Africa. GBI is a multilayer terrestrial and subsea cable meshed network bridges the East to the West through the Middle East, empowers businesses, connects societies and contributes to the region's transformation towards knowledge-based economies. Its agility, business innovation and diverse portfolio of services make it a partner of choice for carriers, ISPs, governments, and the smart living ecosystem. It is a carrier's carrier and an enterprise global managed services provider dedicated to turning the region into a global connectivity hub. Ajay Chitkara, Director and CEO for Global Voice and Data Business, Bharti Airtel said, "We are delighted to announce this agreement with GBI. With this, we are adding a large capacity to meet the growing data, content demand in markets like India as well as serve the connectivity needs of global carriers and enterprise customers. The agreement offers great synergies to Airtel and GBI as both partners will able to build on each other's strengths in their respective markets. This will also complement Airtel's existing global network spanning 250,000 Rkms with presence in 50 countries and contribute to our vision of serving customers with a future ready network that is built on cutting-edge technology." Abdulla Al Rwaili, Executive Vice Chairman and Managing Director, GBI said, "We are committed to build a sustainable network in partnership with global leaders, with an ultimate goal to offer the best user experience to our partners and end-users. In line with this objective, today, we are excited to onboard Airtel and together deliver greater value to customers."

Huawei Launches the "Slice Mall" Innovation Project to Accelerate 5G Slicing Commercialization

Huawei announced the initiation of their "Slice Mall" innovation project, based on the concept of "slicing as a service and as a commodity." This global project aims at accelerating the commercialization of 5G slicing and helping carriers achieve business success in a range of vertical industries. The recent years have witnessed the rapid development of telecom networks providing unprecedentedly diverse services. Communications today is not limited to just people. It also connects machines in fields such as unmanned driving, industrial control, smart grid, and AR/VR media. 5G network slicing technology is a premium option for carriers who intend to extend their businesses into vertical industries. The "Slice Mall" project initiated by Huawei enables the commercialization of 5G slicing by selling network slices. Carriers can utilize this project to incorporate network slices into vertical industries. By building a service platform for selling network slices, the "Slice Mall" project of Huawei will assist carriers in incubating more 5G industry applications. Huawei has been working closely with partners in vertical industries such as industrial control, electricity and energy, AR/VR application, online gaming, telemedicine, and Internet of Vehicles (IoV) on technical research, testing, and verification. Huawei, together with China Telecom and State Grid, has released the industry's first 5G slicing report on the electricity industry. It is undeniable that the "Slice Mall" project will help additional cooperation achievements be implemented in a multitude of other industries. 5G networks are renowned for their diverse, differentiated telecom services, and the core network is the basis for them all. Huawei's 5G Core has received wide recognition throughout the industry and has been rewarded with "Best 5G Core Development", "Best Vertical Application", and other industry awards. The newly established "Slice Mall" innovation project is bound to serve as a supportive platform for Huawei to conduct in-depth industry collaboration and application exploration with carriers and industry partners in the future.

Huawei Eyes 5G Network Dominance

The countdown has begun for large scale commercialization of 5G networks worldwide. Despite tough competition, China-based Huawei Technologies Co Ltd has strategically positioned itself for 5G networks dominance by making comprehensive preparations. The global powerhouse in integrated communications, wireless infrastructure, smartphones and enterprise networking has envisaged that many leading global telecommunication operators in 2018 will be announcing the commercial deployment of the 5G – a powerful new technology which means new growth for the mobile industry. Huawei has also forecast that the number of mobile connections will rise to 20 billion by 2025 from eight billion currently, thus bringing digital to every person, home and organization for a fully connected, intelligent world. In recent years, Huawei has established a close working relationship with major telco operators particularly in Europe and Asia, of which over 30 memorandums of understanding (MoUs) were reported to have been signed so far. Some of these MoUs have led to trial 5G equipment by the telcos and could later could translate into full commercial deals for Huawei in the long run, including agreements with Britain's BT, Bell Canada (BCE), France's Orange,
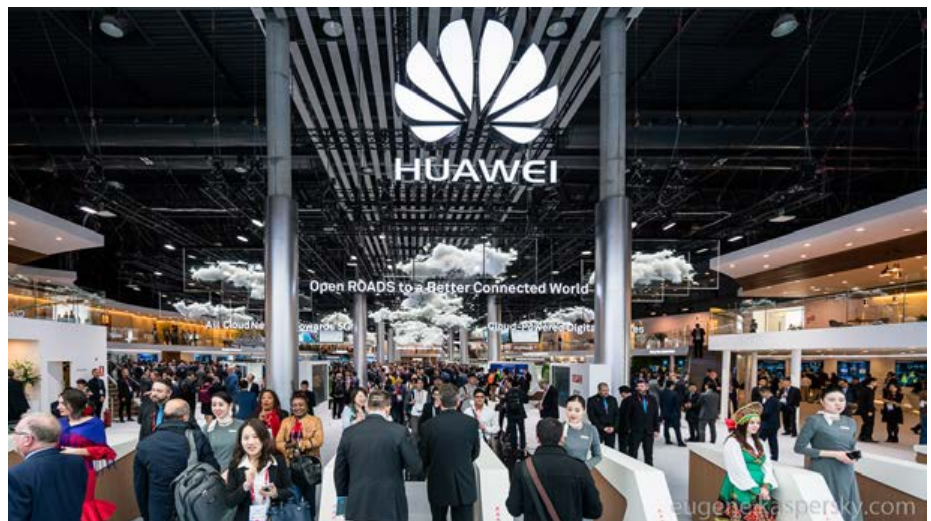
Germany's Deutsche Telekom and global player Vodafone.

5G trials
The 5G networks, now in the testing stage, will rely on denser arrays of small antennas and the cloud to offer data speeds of up to 50 or 100 times faster than current 4G networks and serve as critical infrastructure for a range of industries. By 2025, some 1.2 billion people worldwide are set to have access to 5G networks – a third of them in China, according to the GSMA, a global trade group of nearly 800 mobile operators. According to Huawei rotating CEO Ken Hu, Huawei has been conducting pre-commercial 5G trials with more than 30 telcos in world's biggest cities, including Seoul, Tokyo, London, Milan and Vancouver. Huawei to date has signed 5G field trial agreements with 45 operators, he said at MCW 2018 recently. Hu also concurs that 2018 will mark the first year of commercialization for 5G as "we have been seeing the emergence of real demand for 5G technologies." He points out that the 5G standards and technologies were maturing. As market demand continues to grow, Hu says Huawei plans to launch a full range of end-to-end 5G products including customer premise equipment to help

carriers get a head start on 5G. "Huawei will also continue to develop new technologies and work with the industry partners to develop a 5G ecosystem. "The ultimate goal is to build a fully connected, intelligent world," Hu adds. Huawei 5G Product Line president Yang Chaobin at the launching of Huawei's full range end-to-end (E2E) 3GPP-compliant 5G product solutions said 2018 will be remembered as the first year that marks the beginning of the 5G era. By using a full range of leading and mature 5G E2E full scenario products

solutions, Hu notes that Huawei has realized the continuous deployment of 5G sites in more than 10 countries namely China, South Korea, Canada, Germany, UK and Italy. "In typically densely-populated urban areas, these products solutions have provided ubiquitou Gbps-level access rate, hundreds of Mbps of indoor access experience and over 20 Gbps cell capacity," he points out. The newly launch 5G E2E products solutions include the core network, the bearer network, base station and

terminals. In another major event at MWC 2018, Huawei and China Telecom have established a Business Joint Innovation Center (BJIC) to jointly develop innovative products and solutions that will offer users information and communication services. Both companies will invest in joint development, verification and go-to-market of products and solutions to accelerate provisioning of new products and achieve shared success.

Huawei Outlines a Vision for a 5G Future as it Unveils its Latest Innovative Products and Solutions at Mobile World Congress 2018

At the Mobile World Congress 2018 (MWC) in Barcelona, Spain, Huawei, the leading global ICT solutions provider, shared its vision for a collaborative ecosystem that could stimulate innovation and the development of 5G, All-Cloud network, video, and IoT technologies. Huawei engaged with industry leaders, fostered important discussions on the three key issues of better connections, better business growth, and better experience, and showcased leading products and scenario-specific solutions. With its carrier customers and partners, Huawei used MWC as a platform to demonstrate how it is helping to build a fully connected, intelligent world. In preparation for MWC, Huawei successfully held the Global Digital Transformation Forum. The forum focused on 5G, new economic value, business-to-business (B2B) services, big video, and operation transformation, and discussed how to accelerate operators' digital transformation in the age of All Cloud, gathering more partners to forge a favorable digital ecosystem, and enhancing digital infrastructure. Following the forum, Huawei unveiled a full range of end-to-end (E2E) 3GPP-compliant 5G product solutions. This world-first release covers the core network, the bearer network, base station, and terminals. Huawei's 5G product solutions are entirely based on 3GPP standards, with full range, full scenario, and all-cloud being the defining

characteristics. The featured products are also the only available options within the industry to provide 5G E2E capabilities. This was not the only groundbreaking 5G announcement at MWC. Huawei and a host of other leading companies including China Mobile, Deutsche Telekom, Digital Domain, Fraunhofer FOKUS, GE, CEPRI of SGCC, Tencent, TIM and Volkswagen AG together announced the inauguration of the "5G Slicing Association". The association will address requirements from vertical industry and the potential application scenarios of 5G network slicing on the way to defining new business models. The initiative will study key technical issues, cooperate with slicing related standards development organizations (SDOs) and foster test beds and trials to verify 5G network slicing capabilities. In addition, Huawei partnered with Zain Saudi Arabia, signing a Memorandum of Understanding promising to develop a new network strategy in the Kingdom. The aim of the MoU is to accelerate the realization of 5G networks and assist Zain in building the most advanced end-to-end networks in the region. The two companies will work together to accelerate the deployment of 4.5 to 5G networks, make further advances towards full cloudification, and produce additional strategy and planning in the field of ICT Synergy Cloud. Huawei also used MWC as a platform to release a range of cutting-

edge products and solutions. Day two saw the launch of AUTIN, an Operations Consulting and Software as a Service (SaaS) solution for Digitized Operations Services to help operators manage complex hybrid ICT environments. AUTIN delivers AUTomation and INtelligence to modernize and reshape operations for the digital era. On the same day, Huawei released the OceanStor Dorado18000 V3, a high-end, intelligent all-flash array (AFA), which helps customers manage storage resources for mission-critical enterprise services. Following on this, Huawei launched the Intent-Driven Network solution. This solution will bridge the gaps between the physical network and business goals by creating a digital twin of the network infrastructure. These technologies will enable software-defined networks (SDNs) to evolve into intent-driven networks, and maximize business value. Ken Hu, Huawei Rotating CEO, said: "The intelligent world is drawing near, filled with potential and possibilities. Groundbreaking technologies like 5G and IoT promise to solve complex business challenges and improve the lives of the population. Yet challenges remain on our path before these dreams are realized. MWC 2018 was an excellent opportunity for us to meet with other leading companies and discuss how together we can overcome these obstacles, achieve sustainable business growth, and Build a Better Connected World."

Huawei Launches Full Range of 5G End-to-End Product Solutions

At the World Mobile World Congress (MWC) held in Barcelona, Spain, Yang Chaobin, President of Huawei 5G Product Line, unveiled a full range of end-to-end (E2E) 3GPP-compliant 5G product solutions. This release covers the core network, the bearer network, base station, and terminals. Huawei's 5G product solutions are entirely based on 3GPP standards, with full range, full scenario, and all-cloud being the defining characteristics. The featured products are also the only available options within the industry to provide 5G E2E capabilities.

5G Base Station: Various forms to suit the deployment requirements in all scenarios and offer ubiquitous xGbps user experience

The first wave of 5G deployment will take place in buildings and densely populated urban areas. Diverse site forms are therefore required to accommodate the needs of complex deployment scenarios, offering continuous coverage and fulfill capacity requirements of indoor and outdoor hotspots. Huawei's newly released full range of 5G product solutions support millimeter wave (mmWave), C-band, and all Sub-3 GHz frequency bands. These products also cover all site forms including tower sites, pole sites, and small cells. Huawei launched the C-band 64T64R and 32T32R Massive MIMO AAUs to deliver ubiquitous Gbps experience. These AAUs support 200 MHz large bandwidth and 3D beamforming to cover buildings, offer uniform coverage, and meet the demands of various other scenarios. Coverage can be flexibly adjusted to optimize the experience for users at the near points and far points, and generate a 20 or 30 times increase in network capacity. mmWave products are suited to supporting 1 GHz bandwidth. The equivalent isotropically radiated power (EIRP) of Antenna ports reaches 65 dBm, ranking first within the industry. Huawei wireless products boast an integrated, compact, and lightweight design. These features greatly relax the requirements on the antenna installation platform while reducing engineering complexity. All products support diverse scenarios in centralized radio access network (C-RAN) and distributed radio access network (D-RAN) deployment mode. The optical interface speed is less than 25 Gbps, which is ideal for large-scale 5G deployment. In addition, the newly released compact 5G Massive MIMO products working in the C-band and mmWave allow for deployment on street lamp poles to fill coverage holes and boost hotspot capacity. The 5G LampSite is backwards-compatible with 4G. Existing CAT6A network cables or fiber optic cables can be used to achieve indoor 4G and 5G co-deployment with zero cable adjustment or site addition. In the 5G era, wireless sites will be deployed in hybrid D-RAN and C-RAN networking scenarios. Huawei launched BBU5900 and CBU5900 to suit distributed and centralized sites, respectively. BBU5900 is the most highly integrated site solution currently available in the industry. It supports all RATs (2G, 3G, 4G, and 5G) and all frequency bands, and offers 50 Gbps backhaul capability to meet 5G services' long-term development needs. CBU5900 features the centralized deployment of a large number of baseband units to support the C-RAN architecture. Using CBU5900 help to simplify remote sites, reduces the demands for air-conditioned equipment rooms, and contributes to quick satellite clock synchronization across the entire network. This approach also reduces the number of site visits during

maintenance and installation, and considerably lowers future site maintenance and expansion costs. In addition, it will boost performance of the entire network via large-scale close coordination.

5G Bearer Networks: Diverse active and passive solutions using 5G microwave and IPRAN to fully meet 5G networks' ultra-large capacity requirements

5G networks must feature 10 GE transmission capability to the site and 50 GE/100 GE transmission capability from fiber optic cables to access rings, fulfilling the ultra-large capacity requirements of multiple 5G eMBB services. In a C-RAN scenario, the transmission speed between the centralized equipment room and the site must reach 100 Gbps. Such requirements pose enormous challenges to operators' mobile bearer networks. The current release includes a range of Huawei 5G bearer product combinations that suit various scenarios, use different media, and take many distinct forms. In backhaul scenarios, 5G microwave series products are able to offer 10 Gbps high data rate and 25 µs low latency when traditional microwave frequency bands are used. 50 GE/100 GE adaptive slicing routers support smooth evolution from 10 GE to 50 GE and 100 GE. This allows operators to implement on-demand deployment. The active FO OTN fronthaul solution supports up to 15 channels of service access, hitless switching, and integrated access for multiple services. The Centralized WDM fronthaul solution uses innovative colorless optical modules to simplify site delivery and operation and maintenance (O&M). Huawei X-Haul 5G bearer solution supports multiple technologies, such as IP, OTN, and microwave. The aim is to help operators resolve bearer network issues in large-scale 5G deployment.

5G Core Networks: Enabling all-industry digitalization through all-cloud architecture, on-demand deployment, and smooth evolution

Based on the all-cloud architecture, Huawei's 5G core network solution uses microservice-centric architecture (MCA) to simultaneously support 2G, 3G, 4G, and 5G and realize a smooth evolution from non-standalone (NSA) to standalone (SA). Meanwhile, unlike the traditional network architecture, Huawei's 5G

all-cloud core network uses a distributed architecture based on control plane and user plane separation (CUPS) to help operators deploy the control plane at the central DC and flexibly deploy the user plane according to the service scenarios. For example, for eMBB services such as augmented reality (AR)/virtual reality (VR) and HD IPTV over WTTx, the user plane can be deployed at the network edge to minimize the roundabout traffic on the backbone network, achieve ultra-low latency, and eradicate congestion. The all-cloud 5G core network is also the basis of network slicing. As the new business model of 5G era, network slice will help operators to provide various services via a single network. This will enable the business transformation from the mass market to the vertical industry market,

while supporting the digitalization of the entire industry.

5G Terminal: World's only commercial product with small size and low consumption to provide fiber-like access experience of wireless home broadband
Huawei also released a range of 5G terminals at MWC 2018. Huawei's 5G customer premise equipment (CPE) is developed based on the 3GPP standards and chipset architecture. It is compact in size, low in power consumption, and highly portable. As the smallest 5G commercial terminal in the world, it supports C-band and mmWave. In Seoul and Canada, there have been the world's first wave of 5G subscriber who use Huawei's commercial 5G terminals. Based on 3.5 GHz and mmWave, users can enjoy a fiber-like

experience of wireless home broadband services with the rate exceeding 2 Gbps. In addition, Huawei will launch 5G smart phones in 2019. 2018 will be remembered as the first year that marks the beginning of the 5G era. Using a full range of leading and mature 5G E2E full-scenario product solutions, Huawei has realized the continuous deployment of 5G sites in more than 10 countries, such as China, Korea, Canada, Germany, UK, and Italy. In typical densely-populated urban areas, these product solutions have provided ubiquitous Gbps-level access rate, hundreds of Mbps of indoor access experience, and over 20 Gbps cell capacity. The countdown has begun for large-scale 5G commercial launch worldwide. Huawei is making the most comprehensive preparations.

Mobily is Racing to a Smarter Future and is Developing an IoT-Related Program in Partnership with Ericsson

Etihad Etisalat "Mobily" in cooperation with Ericsson are preparing an IoT world program to be the first of its kind in the Kingdom that aims to create an interactive platform between

university students and staff in order to develop IoT locally and internationally. This comes out of "Mobily" keenness to development and keeping up with the latest technologies around the world. Mobily is taking responsibility to place the Kingdom at the forefront of countries in the IoT era which is in line with its ambitious vision. The IoT world partnership agreement was signed between Mobily and Ericsson at 2018 Mobile World Congress in Barcelona by Eng. Ahmed Aboudoma, Mobily CEO, and Ericsson Chief in MENA Ms. Rafia Ibrahim. The partnership agreement aims to support and facilitate platforms available for young Saudis to participate and be creative in the IoT field as one of the technical tracks that support digital transformation. Worth mentioning that Mobily has sponsored and participated recently first Saudi IoT Exhibition since one of the companies that owns one of the best infrastructure in Asia and Middle East according to the international classifications of its data centers.

Mobily Launches FiberNet Service With speeds that Meets the Needs of SME

Etihad Etisalat (Mobily) has launched the new FiberNet service through FTTH technology, in a step aims to support Small Medium Enterprises (SME) in the business sector. Mobily clarified that this service is provided via FTTH technology at high speeds that meets the needs of business sector enterprises with stable network connection performance, which ensures high level of service and fast and effective technical performance. Mobily provides this service with competitive prices and in different packages suitable

according to the size of the enterprise. The FiberNet service is available with four packages; 25 Mbps, 50 Mbps, 100 Mbps and 200 Mbps. "Mobily Business offers a range of Telecom & IT services that support small and medium enterprises in line with the Kingdom Vision 2030, and also within Mobily's new business strategy to support SME. In the coming period, we aim to launch a number of new services to enhance the company's leadership in providing Telecom & IT services." said Eng. Ahmed Aboudoma,

Mobily CEO. It is worth mentioning that Mobily Business new strategy is to support the SME sector for its vital role in supporting the national economy, therefore; several new services and technologies have been developed to suit the requirements of both government and private sector, including Internet services, whether mobile via 4G, or fixed through fiber optic (FTTH) network, in addition to advanced IT services.

Mobily and Nokia to Launch 5G Tests in Saudi Arabia

Etihad Etisalat (Mobily) has signed a memorandum of understanding (MoU) with Nokia to launch 5G tests in the Kingdom of Saudi Arabia, Zawya writes. Under the agreement, Mobily and Nokia are collaborating in a strategic vision to develop 5G towards the next generation of advanced bandwidth network. The two partners will introduce new technologies in Mobily's network, including '4.5G' and '4.9G' LTE, 5G, transport modernization for both optic and IP, and fixed wireless access technologies, including FastMile and wireless PON. Mobily CEO Ahmed Aboudoma said: 'We are working in Mobily to achieve one of the pillars of the [Vision 2030], in which the Kingdom is seeking to increase high-speed internet coverage in different regions and enhance the quality of connection. In order to achieve this goal, we are currently working on signing a MoU with Nokia and other enterprises that [have] a track record in

launching new technologies over telecom towers.'

Nokia and Facebook Work Together to Expand Ecosystem for Fixed Wireless Access Over 60 GHz

Nokia and Facebook are working to accelerate the adoption of 60 GHz fixed wireless access technologies to deliver gigabit services and connect more people, faster. The 60 GHz band allows high-speed broadband connectivity in urban or suburban areas, complementing existing fiber. Nokia will combine its worldwide delivery capabilities and wireless passive optical network (WPON) with Facebook's Terragraph technology to launch global gigabit broadband trials in 2018 with select customers. Nokia's wireless passive optical network (WPON) technology provides a wireless gigabit drop to the home for broadband access networks. Facebook's Terragraph technology is a 60 GHz, multi-node wireless system that delivers a low-cost solution for high-speed wireless access. Combining WPON with Terragraph's mesh-routing and multi-hop capabilities allows broadband providers to wirelessly deliver gigabit services over wider areas with high reliability and meet growing demands for ultra-broadband access. Nokia and Facebook will also work together to accelerate IEEE's 802.11ay industry standard, leveraging Nokia's Wireless PON innovation and Terragraph's efficient TDMA scheduling capabilities. The goal is to create a strong platform and ecosystem for introducing 60GHz Terragraph-certified solutions to the marketplace, and deliver gigabit services to more people, sooner. Nokia last year launched its Wireless PON (WPON) solution, further expanding its fiber-to-the-most-economical-point toolkit. Wireless PON is based on 802.11ad WiGig technology and provides a wireless drop for fiber-to-the-home networks. Access points can be easily mounted on utility poles, street lights or a building facade, and deliver gigabit-per-second speeds to a self-installable WPON Home unit. By using the WPON solution rather than bringing fiber into every home, broadband providers can reduce up-front

investment cost and deploy faster. Julie Kunstler, Principal Analyst, Ovum's Next-gen Infrastructure Practice said: "Nokia and Facebook's collaboration is a perfect example of combining two strong solutions to bring gigabit broadband to more people faster. While fiber is being pushed deeper and deeper, the physical connection to the home or apartment requires additional resources. Combining Nokia's WPON solution with Facebook's Terragraph 60 GHz technology, ensures the future-proofing of bandwidth while meeting competitive time-to-market and cost points." Yael Maguire, VP of Connectivity, Facebook, said: "Terragraph is designed to help providers deploy fast and reliable connectivity for people in urban areas. Our partnership with Nokia will help advance Terragraph by building a robust, open ecosystem of interoperable commercial solutions based on 60GHz technologies." Federico Guillén, president of Nokia Fixed Networks, said: "It is definitely exciting when two companies like Nokia and Facebook join their innovation strength to bring new technologies to market. Fixed-wireless access is gaining ground and perfectly complements our multi-technology mix to bring gigabit broadband to more people, sooner."

Nokia, Intel and Verizon Collaborate on New Virtualized RAN Architectures on Path to Commercialization

Nokia, Intel and Verizon are collaborating on new groundbreaking Cloud RAN architectures to provide the flexibility needed for the operator's future services and requirements for 4G, 5G and IoT in the cloud. The first milestone in developing Verizon's vRAN 1.0 architecture and path to commercialization was a successful trial of Cloud RAN in Oklahoma City, using Verizon's existing edge cloud infrastructure and the Nokia AirScale Cloud Base Station Server, featuring the Intel® Xeon® Scalable Processor family. The trial furthers the joint work between Nokia and Intel to develop the next technological step of Cloud RAN, Verizon's vRAN 2.0 architecture, which will bring everything but the radio network in the cloud. The collaborative work represents a key milestone for Verizon's cloud migration path, enabling the operator to significantly lower capital and operational expenditures for its network, and increase the number of users per cell, leading to lower costs per user. The development efforts also provide flexible and scalable capacity, plus continuous software delivery for Verizon's customers. For the Oklahoma City trial, Nokia built the Cloud RAN software in Verizon's commercial cloud infrastructure using commercial off the shelf (COTS) hardware, proving the software is not dependent on a custom environment for deployment. Nokia used its AirScale Cloud Base Station Server, a virtual base station running on Verizon's Cloud Platform connected via Ethernet backhaul. This software defined and hardware agnostic solution retains key traits and benefits of cloud centralized RAN and edge cloud distributed RAN

deployment models. As a result, real-time and non-real-time functions can be co-deployed deeper in the network. The successful trial enables Nokia and Intel to push forward with Verizon to develop its new vRAN 2.0 architecture, which will use cloud computing capabilities that maximize efficiencies in preparation for the diverse demands of IoT and the 5G future. Bill Stone, vice president, Technology Development & Planning, Verizon, said: "Verizon is committed to furthering innovation within the ecosystem by ensuring deployment flexibility. Verizon's Intelligent Edge Network, which maximizes this flexibility, will allow faster upgrades, allowing our customers access to the latest technology as quickly as possible." Caroline Chan, vice president and general manager, 5G Infrastructure Division, Network Platforms Group, Intel, said: "Developing a software defined network is vital to transform today's infrastructure to the level of flexibility and agility

required to handle the demand of 4G, 5G, and IOT services. This successful trial and continued collaboration with Nokia and Verizon pushes the industry forward and demonstrates how Intel technologies and reference platforms can accelerate deployment of advanced virtualized RAN running on an open and flexible cloud architecture." Marc Rouanne, president of Mobile Networks at Nokia, said: "Virtualization is all about flexibility. By putting the radio access network in the cloud we can provide 5G architecture that quickly creates increased capacity in the baseband and scalability for both 4G and 5G networks. This is one of Nokia's clear strengths in the 5G story - a pioneer in virtual RAN, with networks already in commercial service. Now, with Verizon, we're developing a high-performing network that will allow it to remain continually on top of the traffic demands from its networks."

New Cloud-Native Nokia Enterprise Session Border Controller Delivers Unparalleled Security and Flexibility for Enterprise Communications

Nokia has launched a new cloud-native Enterprise Session Border Controller (eSBC) that brings secure, ultra-high-quality IP voice and video services to enterprise customers. Enterprises upgrading their outdated communications networks from IP PBX to UC and UCaaS systems face a number of challenges in ensuring high-quality voice and video calls, connecting existing

islands of communications infrastructure and in protecting their networks against malicious attacks. Acting as the gatekeeper of enterprise communications applications, Nokia eSBC software mitigates cyber-attacks, optimizes the use of IP bandwidth for communications and blocks unauthorized access attempts. It also delivers a continual high-quality IP voice and video experience by

using call admission control to prevent network overload, and by simplifying and optimizing communication paths in the network. Based on the technology that meets the stringent requirements of large communications service providers worldwide, Nokia eSBC allows enterprises to cost-effectively control, secure and manage media as well as signaling streams that cross the network

edges. It is a cloud-native software solution that runs on popular hypervisors, providing enterprise customers with the latest features and capabilities while allowing them to pay for only what they need, resulting in reduced operational and capital expenses. It also allows them to easily connect all types of PBX, Voice over IP (VoIP), call center and UC systems within their networks. Bhaskar Gorti, president of Nokia Software, said: "Nokia eSBC gives enterprises the same ultra-high reliability, quality and security that our service provider customers currently enjoy for their communications networks. It delivers a comprehensive set of capabilities that help enterprises protect their business efficiently and cost effectively. It also allows them to easily take advantage of new features as their needs change by simply enabling licenses or installing software updates." Irwin Lazar, vice president and service director at Nemertes Research, said: "Plans for private cloud SBCs have more than tripled in the last year. Our 2018 Unified Communications and Collaboration Study shows that more than 35 percent of organizations are now deploying or planning to deploy SBCs as virtual software. IT leaders cite flexibility, scalability, and cost considerations as driving their decision to move to private cloud. Cloud-native solutions such as Nokia eSBC have the potential to address these enterprise requirements." Leveraging automation and analytics insights, Nokia eSBC makes it significantly easier for enterprises to optimize the quality and performance of their communications networks.

Nokia and Orange Roll Out 4G LTE in Africa

Nokia and Orange Middle East & Africa are rolling out a Nokia single radio access network and network management technology across seven African countries in a three-year modernization project to prepare for the launch of 4G services. To facilitate the deployment Nokia has set up a dedicated West and Central Africa Support Center for Orange. In one of the largest LTE rollouts in Africa, Nokia will modernize around 11,000 radio sites in Egypt, Ivory Coast, Cameroon, Senegal, Mali, Guinea-Bissau and Niger. Leveraging Nokia's Single RAN technology and modernization services, Orange will be able to support existing 2G and 3G subscribers while enhancing speeds and coverage as it launches 4G services. With deployment underway, Orange has already lowered operational costs and launched new 4G services in Egypt, Ivory Coast, Cameroon, Mali, Senegal and Guinea-Bissau. The company is also enhancing 3G service with an average 85-percent increase in throughput, and is experiencing a 90-percent increase in traffic across the seven countries. From the dedicated Orange support center in the Ivorian capital, Abidjan, Nokia is leveraging its expertise to deliver full set of services, including alarm, performance and configuration monitoring, as well as corrective actions on the radio installed base, while speeding implementation and optimizing the network to ensure more than 60 million Orange subscribers experience consistent high-quality service. As part of the deal, Nokia Care Services ensure that service level agreements are met, thus ensuring flawless communications. In addition, the Nokia NetAct network management system will allow Orange to maintain network efficiency, stability and performance. The support center will also serve as a gateway for the future introduction of advanced solutions and technologies serving IoT, smart cities and other use cases in Africa.

PCCW Global to Link Rodrigues with High Speed Undersea Cable for Mauritius Telecom

PCCW Global, the international operating division of HKT, Hong Kong's premier telecommunications service provider, has agreed with Mauritius Telecom to construct and maintain a high speed submarine cable connecting the Indian Ocean Islands of Rodrigues and Mauritius which will vastly improve connectivity for Rodrigues. PCCW Global will cooperate with Huawei Marine Networks to construct the Mauritius and Rodrigues Submarine Cable System (MARS), a 700km undersea cable with a bandwidth design capacity of 16Tbit/s. MARS will be ready for service in 2019 and PCCW Global will manage operation for the cable. With a population of approximately 40,000 people, Rodrigues is the second largest island in the Republic of Mauritius. The residents of Rodrigues will not only benefit from vastly improved bandwidth and connectivity once the new cable is live, but will also have access to a rich portfolio of digital applications, online services and content via PCCW Global's international network. Mr. Frederick Chui, Senior Vice President of Global Data Sales, PCCW Global, said, "This project is very exciting for us because we are using our experience gained in designing, building, and maintaining submarine cables around the world to assist another service provider, in this case Mauritius Telecom, to commission their own fully-maintained cable investment. This completely eliminates any risk in the development, maintenance and operation of what might otherwise have been a technically daunting project." Mr. Mike Constable, Chief Executive of Huawei Marine, said, "We are proud to collaborate with Mauritius Telecom and PCCW Global to revolutionize the broadband infrastructure of Rodrigues by providing a step-change in high speed Internet connectivity and facilitate the growth of digital communications. This is the 12th submarine cable system we have deployed in the African region, which reinforces the confidence in our technology and robust network solutions to further enable the transformation of the region's digital economy."

Toggle and ViuTV Collaborate for Their Inaugural Co-Production, Bluetick

Mediacorp (which owns digital entertainment service Toggle) and HK Television Entertainment Company Limited (operator of PCCW's free television service ViuTV) announce their first collaboration to co-produce a 20 episode series, Bluetick. The collaboration will see Toggle and ViuTV pooling the best of their production capabilities together. Viewers can look forward to an elevated production value not usually seen in local dramas. Filming will take place across Singapore, Hong Kong and various places in mainland China, enabling viewers to experience new sights and sounds and catering to new consumption preferences. The suspense drama strengthens both Toggle and ViuTV's brand presence in Southeast Asia. This project aims to add on to the lineup of ViuTV's original production. As the first co-produced Toggle Originals program, the project is fully supported by Singapore's Infocomm Media Development Authority (IMDA). The co-production will cast artistes from Singapore and Hong Kong, exposing them to a diverse mix of talents from both territories, ranging from veteran actors to up-and-coming stars. Cast members include film-award-winning actor Wong You Nam (HK), veteran actors Liu Kai Chi (HK) and Law Kar Ying (HK), Mediacorp artistes Desmond Tan (SG), Ya Hui (SG), Jeffrey Xu (SG) as well as

actress-model Sheila Sim (SG). ViuTV artistes Bonde Sham (HK), Scarlett Wong (HK), Dixon Wong (HK), Colin Chan (HK), Hailey Chan (HK) will also participate in the drama. Based on Hong Kong author Ray Leung's best-selling novel, Bluetick revolves around ten strangers who attend the funeral of their common friend. One of them, Bi Nianxia, sends a message to her deceased friend, only to receive a "blue tick", indicating that the message was delivered and read. Nianxia brushes it off as a prank initially, but realizes that something is amiss when those who attended the funeral gets murdered one after another. She decides to investigate and the plot thickens with cliffhangers, unpredictable twists and an unforeseeable ending. Mr. Anil Nihalani, Head Digital Products and Technology Mediacorp, said, "The collaboration with ViuTV marks another milestone for Toggle, and reinforces our commitment to delight our audiences with quality original content, up the ante with international production and casts that they can already relate to. Through this collaboration, we also hope to introduce Mediacorp's wide content offerings to audiences in Hong Kong through Toggle." Ms. Doreen Neo, Chief Content Officer, Mediacorp, said, "We feel privileged to collaborate with ViuTV for this co-production. Having the opportunity to

participate in a myriad of co-productions over the years, we hope to bring into this collaboration our production expertise and creative talents. With the strength of both platforms, Toggle and ViuTV, and a combination of production and acting talents from both sides, I am confident that we can create content that will resonate with viewers not just in Hong Kong and Singapore, but across Asia." Mr. Lofai Lo, General Manager of ViuTV, said, "It is a great pleasure to collaborate with Mediacorp. By forging a creative dynamic between our two production arms, we hope to produce a creative and unique drama series that blends the best of both cultures in Singapore and Hong Kong. Our collaboration enhances our ability to serve the Chinese audience in different parts of the world, and also heightens ViuTV's production quality. By taking an initial step in international co-production, ViuTV can establish and strengthen its brand presence around the world, and further our mission to provide more variety and choices to our Chinese audiences." Bluetick will be simulcast to audiences in Singapore and Hong Kong, via Toggle and ViuTV respectively. Scheduled for launch in September 2018, the series will commence filming in March and will be released over 20 30-minute episodes.

PCCW Solutions Expands Data Center Services in Asia through New Collaboration with SCSK under D-Infinitum Global Data Center Alliance

PCCW Solutions, the IT services flagship of PCCW Limited, announces a new collaboration with SCSK Corporation (SCSK), a leading system integrator in Japan, to expand data center services in Asia. SCSK becomes the newest partner of D-Infinitum Global Data Center Alliance ("D-Infinitum"), a strategic alliance of leading data center service providers around the world initiated by PCCW Solutions. The D-Infinitum alliance network now combines more than 130 data center facilities across over 80 cities globally. The coverage has doubled since its launch in June 2016, with extensive footprint in Asia, North America and Europe. In addition to the existing facilities in Hong Kong

and mainland China, PCCW Solutions has expanded its world-class data center and infrastructure outsourcing services globally through D-Infinitum, assisting clients to build a scalable IT infrastructure to support their business expansion. Mr. Ramez Younan, Managing Director of PCCW Solutions, said, "The strong momentum of D-Infinitum reflects the market demand for cost-effective multi-site co-location and value-added services with rapid deployment. PCCW Solutions, together with SCSK, is committed to providing robust, scalable and secure IT infrastructure globally to support enterprise digital business." Mr. Younan added, "The new collaboration with SCSK not only further extends our

D-Infinitum footprint in Japan but also aligns with PCCW Solutions' strategic direction to expand our IT services offering beyond our core markets to support our clients at the regional level." Mr. Atsushi Watanabe, Managing Executive Officer of SCSK Corporation, said, "The D-Infinitum presents a perfect gateway for enterprise customers to enjoy multi-location hosting under simpler contractual agreement with greater efficiency, transparency and flexibility. We look forward to supporting the D-Infinitum clients across the globe with premium data center services and extensive connectivity in our data centers in Japan."

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Beyond Connectivity - From Bit Pipe to Service Orchestrator: How Telcos have to Adopt Their Business Models

Dr. Alexander Henschel
Managing Director and Global Head of TMT
goetzpartners Management Consultants

goetzpartners

Mobile communication service providers are increasingly struggling with competitive challenges that put their established business models at risk. Consumers' willingness to pay for voice and data connections is declining. Based on GSMA Intelligence, global voice and sms revenues will continue to decrease until 2025 with a CAGR of -5%.

High performance mobile networks are rapidly expanding and becoming more capable with Mobile Data Traffic showing high growth rates. 4G COVERAGE is extending at high pace, reaching almost full coverage in developed markets. 5G will be the next Mobile Communications standard with roll-out expected to start around 2020

Some of these challenges are:
· Market Saturation: SIM card penetration rates exceeding 100%
· Shift in Service Usage: Growth of internet-based alternatives
· Low willingness to Pay: Low and decreasing price acceptance for telco services
· Declining Revenues: Average revenues per user (ARPU) with downward movement
· Growing Investments: High investments needed to cope with soaring traffic
· Price Competition: Price-focused rivalry within service category
· Service Commodities: Traditional voice, SMS, data access perceived as commodities
· ...

These developments are being spurred by Over-the-top (OTT) services such as WhatsApp, skype or Apple' Facetime that destroy the telcos voice revenue streams. The text message is emblematic of entire revenue streams that have been obliterated within a short time due to new technologies and new market players.

While all service provider types are impacted by these developments, Mobile Network Operators are most heavily under pressure due to their exposure to soaring network investment requirements.

Also, these developments are not limited to specific markets but are a global challenge that is, however, strongest for players in developed markets (e.g., Europe, Americas, Asia).

However there are still in this market environment opportunities to grow, mainly due to new technical opportunities.

High performance mobile networks are rapidly expanding and becoming more capable with Mobile Data Traffic showing high growth rates. 4G COVERAGE is extending at high pace, reaching almost full coverage in developed markets. 5G will be the next Mobile Communications standard with roll-out expected to start around 2020. Some of the standard's highlights are:
• Higher data rates
• Ultra-low latency
• Higher connection density
• Higher spectrum efficiency
• Higher energy efficiency

Advanced Devices will from the other angle drive the potential of powerful networks and infrastructure. Mobile devices and Wearables are becoming smarter: 75% of all devices, including around 900m wearables, are forecasted to be "smart" by 2021.

Connected consumers become increasingly diverse with younger people below 30 years showing the highest "internet affinity" but also older age groups demonstrating high growth rates. Providers of mobile communication services can and should extend their service portfolio through value-added services to increase revenues and to counteract customer churn.

Given the number of service types (e.g., communication vs entertainment) and delivery models (e.g., development vs reselling), a systematic approach is of central importance.

Value-added services go beyond core voice, text messaging, and internet access services and can be divided into four categories: Communication,

DELIVERY MODELS' APPLICABILITY BY TYPE OF VALUE-ADDED SERVICES

INDICATIVE

DELIVERY MODEL	COMMUNICATION SERVICES	ENTERTAINMENT SERVICES	COMMERCIAL & UTILITY SERVICES	INFORMATION SERVICES
INTERNAL DEV.	Low willingness-to-pay, high network effects (i.e., any additional user increases the service's value to others)	High investments in content, high data traffic, uncertain returns	High regulatory entry barriers (e.g., banking, transport), network effects	High costs depending on service type (e.g., maps), low willingness-to-pay
EXTERNAL DEV.		Exclusive cooperation with established original content provider	Exclusive cooperation with established, licensed service provider	Exclusive cooperation with established content/service provider
JOINT DEV.	Joint efforts of major telcos can reduce barriers, low willingness-to-pay	Split costs but lower or no exclusivity, high data traffic	Joint efforts of major telcos can reduce barriers	Split costs but lower or no exclusivity, low willingness-to-pay
BRANDED RESELLING	Rebranding creates perceived barriers due to network effects	Balanced risk profile depending on partner's market performance	Rebranding creates perceived barriers due to network effects	Balanced risk profile depending on partner's market performance
UN-BRANDED RESELLING	Zero-rating of established services	Zero-rating and/or discounting of established services	Offering of established services at special conditions	Offering of established services at special conditions and zero-rated

■ indicate combinations where the opportunities outweigh the risks
■ that a combination is less feasible against the background of our assessment
■ situations where theoretical opportunities and risks are rather balanced

Source: goetzpartners

Entertainment, Commercial/Utility and Information.

Based on technology innovations, increasingly better network infrastructure and high-end mobile devices, the demand and usage of especially mobile communication and entertainment services is constantly growing. Mobile messaging and voice-over-IP is continuously replacing conventional communication services.

Specifically entertainment services that require high data traffic benefit from the increased network infrastructure and performance. Time is money and information is everything. In a fast moving world having information at hand whenever needed is key.

Mobile commerce and utility apps allow for fast transaction and seamless booking and shopping experiences.

The availability of information 24/7 saves time and money. Peer reviews help for decision-making processes, and street maps and navigation services facilitate to find the way.

The selection of an appropriate Delivery Model is of vital importance for successfully extending the range of provided services.

Internally developed services are created by combining internal capabilities and offer the greatest differentiation potential: exclusive end-user provisioning and reselling to competitors.

Externally developed services involve partners of other value chain stages (e.g., developers, content suppliers) and offer similar potentials.
In contrast, jointly developed services involve partners of the same value chain stage (e.g., two MNOs). Such creations have a lower differentiation potential that is depending on the competitive relationship of the partners.
Reselling models involve already established services that are marketed either under the original brand (unbranded reselling) or using the telco's own brand (branded reselling).

What matters right now is that telcos realize that they have to offer products and services beyond connectivity. If they realise this and if they succeed in offering their customers attractive Value Added Services, telcos will still play a central role in numerous growth areas and will be an important enabler for growth areas – and at the same time ensure the future viability of their own business. goetzpartners can provide support to telcos creating an attractive Value Added Service Offering.

REGIONAL NEWS

UAE Leads MENA in Digitization

The UAE is now leading the MENA region with an impressive 16.4 percent in digital penetration, according to a detailed report by Al Masah Capital Limited titled, "Digital Banking - ME Trends". "Digitization continues to take the global economies by storm. As a revolution whose uptake in the Middle East and North Africa has gathered noticeable momentum, the digitization of core financial and banking processes can no longer be termed as a passing phase," said the report. The UAE is followed closely by its neighbors: Bahrain with 13.6% and Saudi Arabia with 11.5%, it added. "In order to remain competitive, swift response to the evolving consumer needs is paramount as more and more customers are now expecting their respective banks to be at the forefront of effective and efficient technological transformations." The MENA region offers compelling and promising opportunities for the banks and other financial institutions, with UAE and Saudi Arabia emerging as two of the most active markets in the development of a digital ecosystem. Collectively, the MENA region, with 4.1%, seems to be closing the digital gap with North America with 8% and Europe with 6.2%, as players in the Gulf region continue to make meaningful investments in telecom infrastructure, digital readiness initiatives, and competitive arrangements for network providers. According to Al Masah Capital, the MENA region enjoys a large millennial population, which is expected to further drive the future of digital banking industry. With cost reduction through digitization as the main focus for regional banks, major players are now creating ecosystems that will ultimately offer

customers multiple interaction-points such as the branch, ATM, online presence (e-banking) and mobile banking apps. Al Masah Capital Limited report reveals that the MENA region banking and financial sector is undergoing a significant digital transformation in order to keep their customers engaged with next-generation services and offering. "The Middle East, being no exception to the global trend, is now on the verge of a massive digital disruption. Businesses and governments are now alive to the fact that in order to optimize operating costs and resources, guarantee customer satisfaction, attract new customers, and gain competitive advantage, digital adoption is a must." said Shailesh Dash, chief executive officer of Al Masah Capital.

UAE Ranked as Global Leader in Fiber Optic Network for a Second Year in a Row

UAE is ranked no. 1 for the highest Fiber to the Home (FTTH) penetration among all its global counterparts for a second year in a row, according to the leading industry body FTTH Council. The council published its annual report recently that highlighted UAE with a coverage of 94.3 percent compared to countries such as Singapore (90.3 percent), South Korea (81.6 percent), Hong Kong (75.6 percent) and Japan (69.1 percent). Saleh Al Abdooli, CEO, Etisalat Group, said: "Our network is a backbone to our long-term strategy as a company to enable and drive digital transformation across our network. Today's announcement signifies that we have maintained consistent leadership globally in FTTH penetration setting a benchmark in the global telecom

industry. This achievement was only possible due to the continuous support and vision of the leadership of UAE in the development and modernization of the infrastructure. "Etisalat invested more than AED 31 billion in the network infrastructure. This has led to the launch of innovative services meeting the growing demand and changing requirements of our customers across the country." With Etisalat's corporate strategy focused on 'Driving the Digital Future to Empower Societies' the network forms a significant component of this digital transformation journey. Etisalat has continuously focused on investing in innovation and on next generation technologies and services to expand and enhance the network. In today's connected world, with the greater

need for computing and connectivity capabilities such an advanced network also enables the implementation of futuristic technologies like augmented reality, robotics and artificial intelligence. For enterprises, cloud plays a pivotal role in digital transformation requiring a network that will support advanced use cases, applications and technologies. Consumers are also able to experience high performance and capabilities required in advanced gaming, streaming, applications and entertainment with a high-speed network today, which is at 1GBps for Etisalat eLife customers. eLife TV also includes the country's widest portfolio of on-demand movies and TV series with 150 TV channels in High Definition.

Multi-Cloud Integral to Business, Say GCC Executives

Majority of the C-level executives and business leaders in the GCC and Egypt overwhelmingly agree on cloud computing's positive and transformative impact, according to new findings released recently. Commissioned by security and cloud experts F5 Networks, and conducted by research agency Think Positive, the study is one of the most in-depth of its kind to involve board-level decision-makers. The results are the most up-to-date gauge on current regional attitudes to the cloud, drawing on the views of 250 C-level executives and business owners from Saudi Arabia, the UAE, Kuwait, Bahrain, Oman and Egypt. "Cloud computing has significant potential to radically alter how businesses and organisations run in the GCC," remarked Diego Arrabal, VP – Middle East, Turkey & Africa, F5 Networks. "This new study shows that, while the region still has plenty of room to ramp up cloud deployment projects, the overall recognition of the technology's possibilities is at an all-time high. Decision-makers in the region see the cloud as a business priority. Firms that continually innovate and build a sustainable cloud strategy will increasingly stand out from their competitors, meet intensifying compliance targets, and be better able to substantively contribute to major government-backed transformation projects," he noted. Although the GCC is relatively early in its multi-cloud embrace compared to mature markets, such as the USA and parts of EMEA, there is widespread and enthusiastic receptivity for the technology's potential. Almost all GCC businesses (99 per cent) believe the cloud can have a positive impact on market share and help to displace competitors. Around 90 per cent pointed out that it can improve brand perception, and 89 per cent praised its capacity to improve innovation. A clear consensus was also reached on the cloud's potential

to enhance the overall customer experience (90 per cent). Similarly, 96 per cent of decision-makers were keen to highlight the cloud's likely starring role in driving major government-led transformation initiatives. 97 per cent believed that the cloud would be integral to the ongoing rollout of Saudi Arabia's Vision 2030 and 91 per cent believed the same for the UAE's Vision 2021. Most respondents also flagged the importance of local regulations as a constructive cloud conduit, with 68 per cent stating they had a favourable influence. Kuwait was the most positive in this respect (78 per cent) followed by the UAE (77 per cent), and Saudi Arabia (64 per cent). Cloud computing's most commonly cited benefits included greater business efficiency (64 per cent of surveyed businesses), followed by cost savings (52 per cent), operational flexibility (48 per cent) and time-to-market (46 per cent). As many as 35 per cent estimate that cloud migration unlocks business growth of between 25-50 per cent. 25 per cent predict it drives 51-75 per cent growth, and 18 per cent went as far as 76-99 per cent. The most critical apps currently used in the cloud were related to operations (57 per cent), services (47 per cent), marketing (43 per cent), business (40 per cent) and HR (28 per cent). By 2025, 39 per cent of GCC businesses said 25-50 per cent of apps would be in the cloud; 23 per cent said the total would be between 51-75 per cent; and 20 per cent as much as 76-99 per cent. Almost half of respondents currently use one cloud provider (45 per cent) but, as awareness and enthusiasm levels rise, multi-cloud realities are fast entering the picture, said the study. Nearly 20 per cent currently use 2-6 providers and 3 per cent use 7-10. Google is the most commonly used vendor (43 per cent), followed by Microsoft (25 per cent). 23 per cent of respondents use other global providers but were not specific, it added. Majority of

the respondents believed that the biggest cloud concern for GCC businesses was data security (78 per cent). Saudi Arabia is particularly wary (92 per cent), closely tailed by Bahrain (83 per cent), and the UAE (80 per cent), said the study. Other major concerns include consistency of policy (44 per cent) and data integrity (31 per cent). Finding the right staff to manage the technology is also a burning issue, with 83 per cent of decision-makers citing it as a key challenge. The countries with the biggest perceived skill-gap are Saudi Arabia (89 per cent), and Oman (89 per cent), it added. Think Positive's findings align with F5's recent State of Application Delivery (SOAD) report, which reported that applying consistent security policies for applications is the "most challenging or frustrating" aspect of managing multi-cloud environments (42 per cent of F5's surveyed EMEA customers), said a senior official. "The GCC is ideally placed to reap the benefits of the cloud in all its incarnations. Governments have ambitious, world-class plans in place to change the way people live and work, and there is a huge base of tech-savvy youngsters about to enter the workforce," stated Tabrez Surve, MEA Security Head, F5 Networks. "As the findings show, there is also a strong appetite among key decision-makers to use the cloud as a conduit to move fast and innovate," he added.

UAE Tops FTTH Rankings

The United Arab Emirates (UAE) has been named the leading market for fiber-to-the-home (FTTH) penetration for the second year in a row. A report from industry body the FTTH Council says 94.3% of the country's population has access to a FTTH connection, ahead of Singapore (90.3%), South Korea (81.6%), Hong Kong (75.6%) and Japan (69.1%). FTTH services are provided in the UAE by Etisalat and Du.

MTN Could Offload Syrian Unit, Other 'Conflict Markets'

South Africa's MTN Group may exit markets that are not 'self-funding' as CEO Rob Shuter embarks on a review of its international portfolio. In a separate interview with BusinessTech.co.za, CFO Ralph Mupita named Syria, Afghanistan, Yemen and South Sudan as markets that are likely to come under review. MTN will not invest in countries it classes as 'conflict markets', which means the local units have to be cash-flow positive to stay in business. Mr. Mupita told the news site: 'If the markets are able to return to a non-conflict situation they could be attractive to us. Syria, for instance, was one of our top ten markets not so long ago.' On a more positive note, Mupita named a handful of markets in which it is keen to explore future opportunities, noting: 'We will certainly look at Angola and also Ethiopia, if it opened up for a licensee. There are a couple of countries in West Africa that we could look at, like Togo and Senegal.'

Etisalat Misr and Huawei Complete CloudAIR GL15MHz Trial
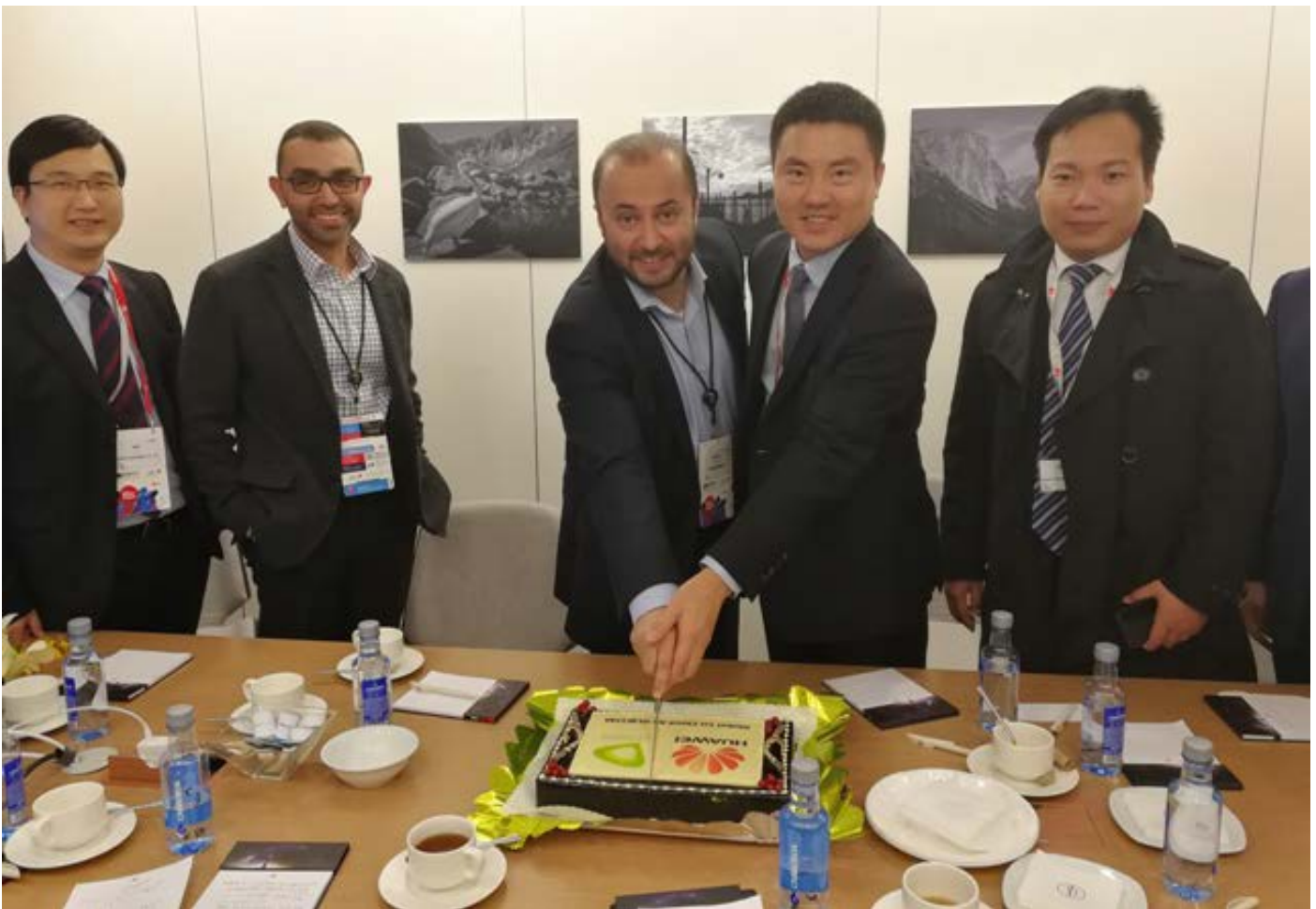
Egyptian mobile network operator (MNO) Etisalat Misr and Chinese vendor Huawei have completed what they claim is the world's first verification of the CloudAIR GL15MHz spectrum dynamic sharing solution on the former's 1800MHz network in Cairo. In a press release, the pair noted that the solution enables spectrum dynamic sharing between GSM and LTE with 'unprecedented' overlap between the two technologies, increasing both LTE data rate and cell capacity in the 1800MHz spectrum allocation. The pair went on to say that in the trial, the average user throughput had increased by 20% on downlink, while peak throughput reached 92Mbps. Commenting on the tests, Etisalat Misr's chief technical officer Khalid Murshed said: 'Frequency spectrum resources are extremely valuable … Spectrum allocation is static in the traditional refarming solution, which results sometimes to in low utilization rate. In comparison, CloudAIR GL spectrum sharing supports more efficient spectrum sharing between GSM and LTE. That has helped to boost spectral efficiency and improve the overall experience of 4G users in Cairo. I am very pleased with the favorable results.'

ARTICLE

Monetizing Mobile Network Data Drives Efficiency

Mohamed Samir
Head of Services, MEA
Nokia

NOKIA

The data analytics market is enormous, with valuations ranging from around EUR 80 billion by 2025 to well over 100 billion . But it's a complex market, with lots of players and a great deal of investment required to develop the platforms and algorithms that allow operators to mine vast datasets to create value and insight. Operators want (and need) to be focusing on their customers and streamlining their business, not figuring out how to process data – particularly if their data is too limited to provide the level of insight needed.

Increasingly, companies are recognizing the value of mobile network data and Ovum's report on data insights in digital advertising and the role of operators found that 67% of brands already view mobile operators as good original sources for customer data insight, ahead of digital media companies, chat app platforms, and device manufacturers.

Right insights
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The conundrum is how to track customers in the real world, without invading their privacy and grossly overstepping boundaries.

The answer is simple. Every day, we carry a small slab of glass and metal in our pockets that connects us to the world and, by virtue of being with us at all times, can fill in the blanks around where we go and how we behave even when we're not online. This isn't a case of creating new data or tracking, but rather using existing network traffic data to provide powerful insights.

Mobile devices already share a great deal of data with network providers in order to receive and maintain a signal, send messages and make calls. That data can, and should, work harder. When anonymized and collated across vast populations, the data shows how people flow through cities or how they engage with public services, even billboards and advertising.

Making data work harder
The potential in this mobile network data is huge, but transportation, city planning and the travel industry are the most likely to see the short-term benefits. By seeing population movements, city planners can better plan urban environments, transport agencies can provision better services and travel companies can provide a more bespoke service to their customers. At a more granular level, mobile network data will allow you to contact passengers affected by disruption, implement congestion charging based on real time traffic, and identify the routes customers take as they navigate the city.

The telco market has been at the forefront of improving efficiency to drive down costs and improve customer service and other industries need to learn from these lessons.

On top of this, truly insightful and accurate data improves efficiency, lowers costs and creates a better customer experience. By seeing where there is real demand and provisioning appropriately, businesses can reduce costs by only taking decisions they know will prove profitable. Customer satisfaction will also increase through both better service provision and added value through things like travel alerts with advice on avoiding delays or re-routing due to incidents.

The biggest challenge is getting enough data and being able to effectively interpret it. Some network operators won't have enough market penetration to collect the enormous amounts of data required and developing the platform and tools for making sense of the data is challenging

and time consuming. Using a platform that can amalgamate data from multiple networks using smart analytics and algorithms is the most effective way to increase the quality of their data and drive real business value.

Putting it into practice
This is already a reality. In a recent trial with a UK operator, we collected 9 billion data points to test our platform and prove its viability for coverage assurance. In Asia, our partner StarHub has already added web browsing data to the anonymized profiles created from analyzing network data, to better identify customer behaviour. By seeing where and what customers are looking at, decision makers can understand buying journeys and potential companies & brands considered.. This allows for highly targeted advertising that reaches customers in the right place and at the right time.

This is just a very small snapshot of what is currently possible and being done around the world. As the technology develops, it has the potential to use location data to harmonize app usage or disable certain features in key locations (such as disabling cameras in airports or other areas with heightened security). Similarly, the data could be used to improve parking by automatically identifying whether the correct permit or payment is in place. There is even the potential for network data to inform advertisers how effectively their billboards are performing.

The telco market has been at the forefront of improving efficiency to drive down costs and improve customer service and other industries need to learn from these lessons. Efficiency will increasingly become the key metric for every industry and data will be the primary route to unlocking it.

Supporting Telco Operators
Operators face huge challenges to improve network availability and quality against a background of rising traffic, increasing technology complexity, and static or falling revenue.

Our Nokia Network Analytics solutions (AVA) offer deep, predictive insights into network performance and capacity to

Operators face huge challenges to improve network availability and quality against a background of rising traffic, increasing technology complexity, and static or falling revenue.

accelerate optimization efforts. As an example, rather than relying on traditional OSS and Drive Test data, we collect billions of crowd-sourced performance measurements and will use Bell Labs machine learning for a granular view of mobility and usage patterns.

Operating a telco network has always been complex. With the massive growth of data and multiple technology layers, it gets even more complex. Nokia AVA is our differentiator and
will enable us to deliver more value for Telco operators in below 5 fields:

1. Deep telco expertise: We have 38,000 telco services engineers and we're ranked #1 in the world for network performance optimization.
2. DevOps approach: Agile development means we can get solutions into production much faster.
3. Open ecosystem: Open APIs mean our solutions can integrate easily with a broad range of third-party offerings.
4. Use case factory: We've ramped up our analytics capabilities by hiring data scientists and training our best telco engineers to become Citizen Data Scientists. They co-create bespoke solutions with our customers to meet specific business needs.
5. Cognitive analytics and AI: We enrich forensic analysis with machine learning to provide timely, granular insights.

This isn't a revolution, but rather an evolution that we need to set in motion today.

SATELLITE NEWS

Nigeria Looks Up to Turkey to Develop Satellite Market

The Nigerian Communications Satellite Ltd, NIGCOMSAT, is engaging Turkish satellite operator, Turksat A.S on the possibility of expanding their market across various industries to deepen services at more affordable rates. The two parties are currently having the talks at the ongoing Satellite 2018 Conference and Exhibition in Washington DC. NIGCOMSAT said the parties are exploring technical and commercial agreements that would expand their satellite footprints allowing customers to leverage bandwidths on satellite infrastructure of both companies, entail exchange of Nigerian and Turkish contents on their broadcast platforms to give audience more viewing options. According to the Executive Director, Marketing at NIGCOMSAT, Samson Osagie: "We are already considering the strength of our joint marketing, our mutual business development within the framework of the commercial and technical agreements, and the required time frame to put all these into action. Once we agree on a working and agreeable business model, including building a gateway on

NIGCOMSAT platform and then training of NIGCOMSAT technical team in Ankara on the technical requirements of the Turksat system, we can begin to deliver the expectations of our agreement. More than 15,000 satellite connectivity professionals are attending this year's Satellite 2018 conference to further their

knowledge of satellite communications and space technology. Turksat A.ª is one of the world's leading companies providing diverse satellite communication through Turksat series of satellites. Türksat, established 21 December 1990, is a satellite communications and cable TV operations company.

LeoSat Enters Agreement with Network Provider Signalhorn

LeoSat, which is launching a constellation of up to 108 Low Earth Orbit (LEO) communications satellites, has entered into an agreement with Signalhorn, a provider of hybrid network solutions for enterprise and government customers. According to LeoSat, its system of LEO communications satellites can achieve lower latency and stronger end-to-end security

compared to traditional satellite and terrestrial solutions used today. This is achieved through system architecture that uses optical inter-satellite laser links to create fiber-like symmetry at Gigabit speeds, while providing total security as the data is encrypted and secured from end-to-end across the network, with no terrestrial touch points. For enterprise and government customers, the key attributes of the LeoSat system are appropriate for a number of applications, such as to give banks secured networks with foreign offices, provide significantly more bandwidth for oil and gas exploration than is available today, enable seamless connectivity for shipping and fleet management, or provide primary 4G and 5G satellite backhaul connectivity for cellular operators. "We are often asked if LeoSat is a satellite or a networking company. In fact, we are both and with our laser-connected satellite constellation we will effectively have a network of 78 Multi-Protocol Label Switching (MPLS) routers in space, completely covering the Earth," said LeoSat Chief Commercial Officer (CCO) Ronald van der Breggen. Signalhorn has signed on for 2 Gbps of capacity, van der Breggen stated.

Hispasat to Help Make Barcelona a 5G Testing Hub

Hispasat announced its participation in a team of companies that will perform testing on the design of hybrid networks, which will provide 5G services for mobile telephone networks in the future through a more efficient combination of different space and terrestrial technologies. The 5GBarcelona initiative, announced at the Mobile World Congress, aims to convert the city into a living lab which will experiment with the implementation of new infrastructures necessary for the deployment of 5G connectivity in its different uses and verticals. Within this initiative, Hispasat will participate in a European Commission proposal, still in evaluation stage, which could be financed through the European Union (EU) 5G-PPP Program. One Hispasat satellite will form part of this project, with the aim of testing and approving performance indicators established as standards. It consists of an R&D initiative led by the i2CAT Foundation in which organizations such as the Telecommunications Technological Centre of Catalonia (CTTC), the Polytechnic University of Catalonia (UPC) and Huawei will participate. The pilot will serve to integrate satellites as an additional component to future 5G architecture and will demonstrate that the 5G satellite-terrestrial combination can make the distribution of video more efficient by means of code caching techniques, in addition to testing the support of said integration by means of

network function virtualization. It will also validate the ubiquity indicator for extending the range of 5G services to areas with poor connectivity, or with none at all. The use cases the initiative will study are related to connected cars, smart cities, connected hospitals, public safety, and immersive virtual reality, and data on speed, latency and performance of different technologies will be tested, as well as improvements in efficiency that will allow for the combination of these elements. Work is to begin in once the program is approved by the European Commission, and a demonstration in Barcelona can be expected for 2019. Hispasat is also actively participating in other European projects focused on the development of the future generation of 5G mobile services, such as the NRG5 Project, the aims of which include, among

others, predictive maintenance of the electric distribution lines and gas plants by using drones. In this case, Hispasat will provide connectivity to link the remote base stations to the control and operations center, to which data collected by the drones will be transmitted, and it will analyze the requirements and precise architecture of the networks for this service. Hispasat is also part of a group of 16 companies from the satellite industry which signed a joint statement with the European Space Agency (ESA) in 2017 to collaborate on the project known as Satellite for 5G. As part of this initiative, the development of which is expected for 2018 to 2020, the ESA and satellite operators, service providers and manufacturers will work together on testing 5G services, transversal activities and their scope.

Vodafone to Establish First 4G Network on the Moon

The Moon will get 4G coverage next year, 50 years after the first NASA astronauts walked on its surface. Vodafone plans to create the first 4G network on the Moon to support a mission by PTScientists in 2019 and has appointed Nokia as its technology partner. Berlin-based company PTScientists is working with Vodafone Germany and Audi to achieve the first privately-funded Moon landing. Mission to the Moon is due to launch in 2019 from Cape Canaveral on a SpaceX Falcon 9 rocket. Vodafone will connect two Audi lunar quattro rovers to a base station in the Autonomous Landing and Navigation Module (ALINA). Nokia, through Nokia Bell Labs, will create a

space-grade ultra-compact network — a piece of hardware weighing less than a bag of sugar. According to Vodafone, the 4G network will enable the Audi lunar quattro rovers to communicate and transfer scientific data and HD video while they carefully approach and study NASA's Apollo 17 lunar roving vehicle that was used by the last astronauts to walk on the Moon (Commander Eugene Cernan and Harrison Schmitt) to explore the Taurus-Littrow Valley in December 1972. Vodafone testing indicates that the base station should be able to broadcast 4G using the 1800 MHz frequency band and send back the first ever live HD video feed of the Moon's surface, which will

be broadcast to a global audience via a deep-space link that interconnects with the PTScientists server in the Mission Control Center in Berlin. "This is a crucial first step for sustainable exploration of the solar system. In order for humanity to leave the cradle of Earth, we need to develop infrastructures beyond our home planet. With Mission to the Moon we will establish and test the first elements of a dedicated communications network on the Moon. The great thing about this LTE solution is that it saves so much power, and the less energy we use sending data, the more we have to do science," said Robert Bohme, Chief Executive Officer (CEO) and founder of PTScientists.

ARTICLE

Overview of the European General Data Protection Regulation

In the wake of rapid technological developments coupled with business models that rely on cross-border data collection and -processing and the associated challenges such as data- and privacy breaches, a stronger and more coherent approach to and enforcement of data protection is paramount to ensure a sustainable digital society and economy in the future. By 2020 the amount of mobile data will have increased 10-fold and much of it will be unstructured, which highlights the urgency to install appropriate data shields and internal compliance controls to minimize the risk of breaches. In this context, the new European Data Protection Regulation ("GDPR" or "Regulation") has been designed and is coming into force in just over a month's time. It was adopted in April 2016 by the European Parliament after four years of preparation and debate, and replaces the outdated Data Protection Directive 95/46/EC ("DPD"). The GDPR was designed to harmonize data privacy laws across Europe, to protect and empower all EU citizens' data privacy and to reshape the way organizations across the region approach data privacy. It consists of 11 Chapters and carries provisions that require businesses to protect the personal data and privacy of EU citizens for transactions that occur within EU member states and it regulates the exportation of personal data outside the EU. The provisions are consistent across all 28 EU member states. This means that companies have just one standard to meet within the EU.

The GDPR was designed to harmonize data privacy laws across Europe, to protect and empower all EU citizens' data privacy and to reshape the way organizations across the region approach data privacy.

So, why should we care about the GDPR in the SAMENA region? Firstly, we should care about the new EU GDPR, because it is wider in scope than its predecessor and could therefore impose further obligations on businesses in regions outside the EU. For example, activities such as data processing by controllers or processors that are not established in the EU, but where their activities relate to the offering of goods or services to EU citizens (irrespective of whether payment is required) or the monitoring of behavior of individuals that live in the EU will now be affected by the Regulation. Non-compliance can lead to heavy fines as high as €20 million or 4% of global turnover. In this context, a recent report by Ovum Consulting highlights that about 60% of U.S. companies believe that the GDPR will require them to rethink their

Imme Philbeck
Chief Economist and Director of Sector Development
SAMENA Telecommunications Council

strategy in Europe. Moreover, more than four-fifths of U.S. companies worry that the GDPR will put them at a competitive disadvantage with European companies. Businesses across the SAMENA region should therefore be informed of what the new Regulation bears in terms of potential impact. Secondly, the EU GDPR may guide governments and regulators in SAMENA region on how to address data protection. While there are no concerted efforts yet across SAMENA region or any of its sub-regions, individual countries such as Qatar or Bahrain have introduced or are consulting on potential data protection regulation.

So, what is new in the GDPR? The key reforms to the old DPD consist of the GDPR itself and the Data Protection Directive. Firstly, the GDPR is now a Regulation rather than a Directive, and therefore directly applicable at national level, bringing a higher level of harmonization than the DPD. It is designed to enable individuals to better control their personal data. Also, it is hoped that these modernized and unified rules will allow businesses to make the most of the opportunities of the Digital Single Market by reducing regulation and benefiting from reinforced consumer trust. The second key reform is the Data Protection Directive, which is designed to ensure that the police and criminal justice sectors can guarantee that the data of victims, witnesses, and suspects of crimes, are duly protected in the context of a criminal investigation or a law enforcement action. At the same time, more harmonized laws will also facilitate cross-border cooperation of police or prosecutors to combat crime

and terrorism more effectively across Europe.

If we examine the Regulation in more detail, we can distill the following key areas that the Regulation focuses on: harmonization across and beyond the EU and extended territorial scope; stronger consumer rights, including a broad and all-encompassing definition of personal data, the obligation to appoint a data protection officer ("DPO"), more obligations for data controllers and processors, and the recognition of the value of data and the privacy challenge of data, i.e. how data can be collected and processed, the ways and types of consent that must be obtained, how privacy should be managed, including guidance on direct marketing and profiling, the right to be forgotten and the right to data portability. Moreover, the Regulation also focuses on fines and enforcement in case of non-compliance.
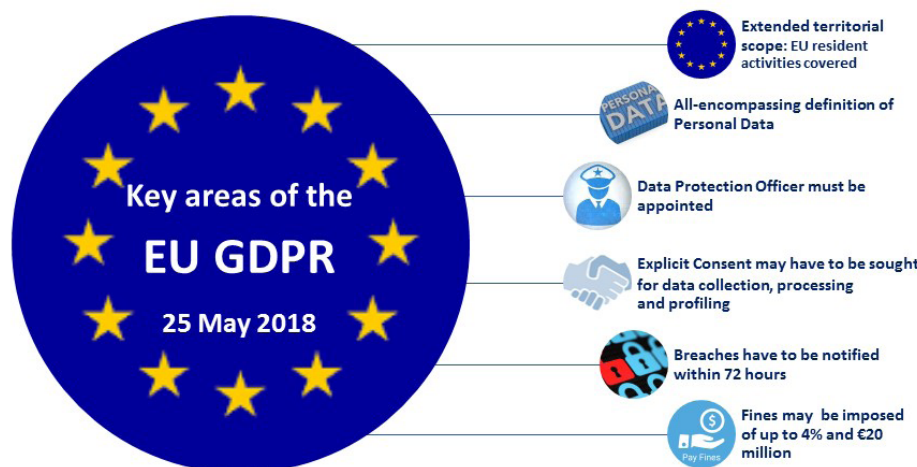
To achieve a higher level of harmonization across and beyond the EU, the Regulation establishes one single set of rules across Europe. EU policy makers believe that this will make it simpler and cheaper for organizations in- and outside the EU to do business across the EU. Based on EU estimations, such organizations will only have to deal with one single supervisory authority producing an estimated saving of €2.3 billion per year. Moreover, the scope of the regulation has been extended by subjecting the activities of organizations outside the EU in relation to collecting and processing data concerning an EU resident to the jurisdiction of the EU regulators. This means that any organization that collects

or processes data (including profiling) of EU residents, but is based outside the EU territory will have to adhere to the GDPR when it comes into force.

The new Regulation strongly focuses on the strengthening of consumer rights and includes a number of measures that target the protection of the former, such as an all-encompassing definition of personal data, the obligation to appoint data protection officers, a risk-based approach to privacy management, and the requirement to obtain consent from data subjects before engaging into data collection, -processing, and also profiling (including an opt-out option). Moreover, consumer rights are also strengthened through allowing data subjects to request access to and obtain the purpose of the information that is collected and processed, the right to data portability as well as the right to be forgotten.

Personal data has been defined in an all-encompassing way in the Directive and the GDPR. Personal data in both is defined as "any information relating to a person who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that person." This means that in many cases online identifiers including IP addresses, cookies and so forth will now be regarded as personal data if they can be (or are capable of being) linked back to the data subject without undue effort. The inclusion of online identifiers and location data as information, which can be personal data implies, that it may apply to identifiers in certain web analytics, mobile applications with geo-tagging abilities, and to companies that operate in the internet-of-things. No distinction is made between personal data about individuals in their private, public or work roles.

A Data Protection Officers must be appointed for all public authorities, and where the core activities of the controller or the processor involve regular and systematic monitoring of data subjects on a large scale or where the entity conducts large-scale processing of special categories of personal data (such as that revealing racial or ethnic

Key areas of the EU GDPR
25 May 2018

- Extended territorial scope: EU resident activities covered
- All-encompassing definition of Personal Data
- Data Protection Officer must be appointed
- Explicit Consent may have to be sought for data collection, processing and profiling
- Breaches have to be notified within 72 hours
- Fines may be imposed of up to 4% and €20 million

Source: Imme Philbeck

Figure 1: Key areas of the EU GDPR

origin, political opinions, religious or philosophical beliefs, and the like). This is likely to apply to some of the larger scale marketing service providers and research organizations, but needs further clarification. The Regulation requires that Data Protection Officers have expert knowledge of data protection law and practices, the level of which should be determined in particular according to the data processing operations carried out and the protection required for the personal data processed by the controller or the processor. The Data Protection Officer's tasks are further broken down in the Regulation. Important to note is that Data Protection Officers are granted significant independence in their job functions.

The Regulation extends obligations on data controllers and processors by mandating a risk-based approach, such where the organization must develop appropriate controls according to the degree of risk associated with the processing activities.

Organizations will have to think more carefully about privacy and its management. The Regulation extends obligations on data controllers and processors by mandating a risk-based approach, such where the organization must develop appropriate controls according to the degree of risk associated with the processing activities. For example, controllers and processors are required to implement appropriate technical and organizational measures taking into account the state of the art and the costs of implementation and the nature, scope, context, and purposes of the processing as well as the risk of varying likelihood and severity for the rights and freedoms of individuals. Appropriate controls can include the undertaking of privacy impact assessments with the focus on protecting data subjects' rights. Moreover, data protection safeguards must be designed into products and services from the earliest stage of development, a concept know as Privacy-by-Design. For example, privacy-friendly techniques such as pseudonymisation will be encouraged to reap the benefits of big data innovation while protecting privacy. Also, there is an increased emphasis on record keeping for controllers to ensure that compliance with the Regulation can be demonstrated and to improve the capabilities of organizations to manage privacy and data effectively. There is an exemption for small businesses (less than 250 staff) where data processing is not a significant risk. Other appropriate controls put forward by the Regulation include the ability to ensure the ongoing confidentiality, integrity, availability and resilience of systems and services processing personal data; and the ability to restore the availability and access to data in a timely manner in the event of a physical or technical incident.

For any data processing- or collection activity, the Regulation stipulates that consent must be sought from data subjects from the beginning of the process, to ensure that consent forms the basis for legal processing (along with legitimate interests, necessary execution of a contract and others). According to the Regulation consent means "any freely given, specific, informed

The Key Changes at a glance:
(Source: https://www.eugdpr.org/key-changes.html)

Increased Territorial Scope (extra-territorial applicability)
The biggest change to the regulatory landscape of data privacy comes with the extended jurisdiction of the GDPR, as it applies to all companies processing the personal data of data subjects residing in the Union, regardless of the company's location. Previously, territorial applicability of the directive was ambiguous and referred to data processing 'in the context of an establishment'. GPDR makes its applicability very clear - it will apply to the processing of personal data by controllers and processors in the EU, regardless of whether the processing takes place in the EU or not. The GDPR will also apply to the processing of personal data of data subjects in the EU by a controller or processor not established in the EU, where the activities relate to: offering goods or services to EU citizens (irrespective of whether payment is required) and the monitoring of behaviour that takes place within the EU. Non-EU businesses processing the data of EU citizens will also have to appoint a representative in the EU.

Penalties
Under GDPR, organizations in breach of GDPR can be fined up to 4% of annual global turnover or €20 Million (whichever is greater). This is the maximum fine that can be imposed for the most serious infringements e.g. not having sufficient customer consent to process data or violating the core of Privacy by Design concepts. There is a tiered approach to fines, e.g. a company can be fined 2% for not having their records in order (article 28), not notifying the supervising authority and data subject about a breach or not conducting impact assessment. It is important to note that these rules apply to both controllers and processors -- meaning 'clouds' will not be exempt from GDPR enforcement.

Consent
The conditions for consent have been strengthened, and companies will no longer be able to use long illegible terms and conditions full of legalese, as the request for consent must be given in an intelligible and easily accessible form, with the purpose for data processing attached to that consent. Consent must be clear and distinguishable from other matters and provided in an intelligible and easily accessible form, using clear and plain language. It must be as easy to withdraw consent as it is to give it.

Data Subject Rights
• Breach Notification
  Under the GDPR, breach notification will become mandatory in all member states where a data breach is likely to "result in a risk for the rights and freedoms of individuals". This must be done within 72 hours of first having become aware of the breach. Data processors will also be required to notify their customers, the controllers, "without undue delay" after first becoming aware of a data breach.

and unambiguous indication of his or her wishes by which the data subject, either by a statement or by a clear affirmative action, signifies agreement to personal data relating to them being processed." It also needs to be clear to the data subject, what their data is going to be used for at the point of data collection. Consent should be "demonstrable", meaning that organizations need to be able to show clearly how consent was gained and when. Consent must be freely given: a controller cannot insist on data that is not required for the performance of a contract as a pre-requisite for that contract. Withdrawing consent should always be possible and should be as easy as giving it.

In this context, a key new aspect included in the Regulation is the explicit requirement to seek consent also in the case of profiling. It recognizes that individuals have the right not to be subject to the results of automated decision-making, as such processes can have significant legal and direct effects on individuals. This is highly relevant not only to marketers, but also to communication services providers. The Regulation therefore considers profiling or any automated processing of personal data as impacting consumers' rights and therefore explicitly requires consent and the possibility of an opt-out. Automated decision-making will only be legal where consent has been given, or if profiling is part of a contract between an organization and an individual, or if profiling is authorized by EU- or Member State Law. This provision will likely impact marketing processes and services such as personalization, as well as the dissemination of emerging technologies such as ML and AI. Indeed, the Regulation also includes a legitimate interest provision, which specifically recognizes that the processing of data for e.g. direct marketing purposes can be considered a legitimate interest. It should be noted that direct marketing has not been defined, so that consideration needs to be given to the precise nature of the marketing activity proposed for processing. It may, for example, mean that a simple mailing of similar goods and services to existing customers and prospects is completely legitimate without direct consent. This, however, does not include profiling for marketing purposes, which requires explicit consent.

The Regulation also contains detailed guidance on the types of information that must be made available to a data subject when data is collected. This pertains to information such as the identity and the contact details of the controller and DPO; the purposes of the processing for which the personal data are intended; and the legal basis of the processing. In addition, information has to be provided regarding the legitimate interests pursued by the controller or by a third party; the recipients or categories of recipients of the personal data; if the controller intends to transfer personal data internationally; the period for which the personal data will be stored, or if this is not possible, the criteria used to determine this period; the existence of the right to access, rectify or erase the personal data; the right to data portability; the right to withdraw consent at any time; and the right to lodge a complaint to a supervisory authority. Importantly, where the data has not been obtained directly from the data subject (in case of, e.g. a third-party data controller), additional information must be provided, including from which source the personal data originate and the existence of any

- **Right to Access**
  Part of the expanded rights of data subjects outlined by the GDPR is the right for data subjects to obtain from the data controller confirmation as to whether or not personal data concerning them is being processed, where and for what purpose. Further, the controller shall provide a copy of the personal data, free of charge, in an electronic format. This change is a dramatic shift to data transparency and empowerment of data subjects.

- **Right to be Forgotten**
  Also known as Data Erasure, the right to be forgotten entitles the data subject to have the data controller erase his/her personal data, cease further dissemination of the data, and potentially have third parties halt processing of the data. The conditions for erasure, as outlined in article 17, include the data no longer being relevant to original purposes for processing, or a data subjects withdrawing consent. It should also be noted that this right requires controllers to compare the subjects' rights to "the public interest in the availability of the data" when considering such requests.

- **Data Portability**
  GDPR introduces data portability - the right for a data subject to receive the personal data concerning them, which they have previously provided in a 'commonly use and machine readable format' and have the right to transmit that data to another controller.

- **Privacy by Design**
  Privacy by design as a concept has existed for years now, but it is only just becoming part of a legal requirement with the GDPR. At its core, privacy by design calls for the inclusion of data protection from the onset of the designing of systems, rather than an addition. More specifically - 'The controller shall (....) implement appropriate technical and organizational measures (....) in an effective way (....) in order to meet the requirements of this Regulation and protect the rights of data subjects'. Article 23 calls for controllers to hold and process only the data absolutely necessary for the completion of its duties (data minimization), as well as limiting the access to personal data to those needing to act out the processing.

- **Data Protection Officers**
  Currently, controllers are required to notify their data processing activities with local DPAs, which, for multinationals, can be a bureaucratic nightmare with most Member States having different notification requirements. Under GDPR it will not be necessary to submit notifications / registrations to each local DPA of data processing activities, nor will it be a requirement to notify / obtain approval for transfers based on the Model Contract Clauses (MCCs). Instead, there will be internal record keeping requirements, as further explained below, and DPO appointment will be mandatory only for

profiling and meaningful information about the logic involved, as well as the significance and the envisaged consequences of such processing for the data subject.

In case of non-compliance with the Regulation, there will be a substantial increase in fines for non-compliant organizations. In the event of violations of record-keeping, security, breach notification, and privacy impact assessment obligations, Regulators are now able to issue fines of €10 million or 2% of the entity's global gross revenue.

A key area of the Regulation concerns data breaches and subsequent notification. The Regulation defines a personal data breach as "a breach of security leading to the accidental or unlawful destruction, loss, alteration, unauthorized disclosure of, or access to, personal data transmitted, stored or otherwise processed". The Regulation makes no distinction between the willful destruction or alteration of data and actual theft. Both constitute a breach. Once a breach has occurred, controllers must notify the appropriate supervisory authority "without undue delay and, where feasible, not later than 72 hours after having become aware of it". They also must inform the affected data subjects. Processors must notify controllers. Where notification is not made within the stipulated time-frame, a justification must be provided by the controller. The exception to this provision is when the breach is not likely to result in a risk for the rights and freedoms of individuals (however, the Regulation does not provide further clarification on this point).

In case of non-compliance with the Regulation, there will be a substantial increase in fines for non-compliant organizations. In the event of violations of record-keeping, security, breach notification, and privacy impact assessment obligations, Regulators are now able to issue fines of €10 million or 2% of the entity's global gross revenue. Violations of obligations related to legal justification for processing (including consent…), data subject rights, and cross-border data transfers may result in fines of up to €20 million or 4% of the entity's global gross revenue (whichever is greater).

In terms of impact on telecommunications operators, the Regulation will place new demands on business- and operations support systems (BSS / OSS) and beyond. The systems should be appropriately adapted and upgraded to ask for consent at each step and be capable of erasing a customer's entire data footprint if requested. Operators that transfer information for data warehousing, reporting and marketing purposes will now need to delete or 'anonymise' these data sets. Internet Service Providers will also have to make sure that they store and use consumer information only with explicit consent and when it is not easily linkable to a single individual. Organizations that need to store data for legitimate legal purposes will now need to separate this data from other systems so that this data is not accidentally processed for other purposes. In addition, the

those controllers and processors whose core activities consist of processing operations which require regular and systematic monitoring of data subjects on a large scale or of special categories of data or data relating to criminal convictions and offences. Importantly, the DPO:

- Must be appointed on the basis of professional qualities and, in particular, expert knowledge on data protection law and practices
- May be a staff member or an external service provider
- Contact details must be provided to the relevant DPA
- Must be provided with appropriate resources to carry out their tasks and maintain their expert knowledge
- Must report directly to the highest level of management
- Must not carry out any other tasks that could results in a conflict of interest.

appointment of Data Protection Officers (DPO) will be mandated for data controllers where monitoring and processing of personal data is done on a large scale. Another important area for communication services providers will be data portability. Telecommunications operators should be able to provide consumers with a copy of their personal data in an electronic format. This means they need to keep this data in a structured and commonly used standard electronic format. A straight extract of tables from different disparate systems is unlikely to be acceptable. Businesses should also use encryption wherever possible, to ensure that a security breach does not develop into a data breach. In addition, organizations falling under the GDPR legislation must now conduct rigorous testing and hardening of all internet-facing applications.

There are a number of factors that should be considered when assessing whether the GDPR applies to an organization or not. Firstly, the GDPR has an extended territorial scope and may therefore also apply to organizations that are based outside the EU and whose data processing activities entail the following:

- personal data in the context of the activities of an establishment of a controller or a processor in the Union, regardless of whether the processing takes place in the Union or not.
- personal data of data subjects who are in the Union by a controller or processor not established in the Union, where the processing activities are related to:
  - the offering of goods or services, irrespective of whether a payment of the data subject is required, to such data subjects in the Union; or
  - the monitoring of their behaviour as far as their behaviour takes place within the Union.
- personal data by a controller not established in the Union, but in a place where Member State law applies by virtue of public international law.

Secondly, the Regulation also stipulates that even where a party "envisages" to offer products to individuals in the EU, the GDPR shall apply to them. Alongside undertaking due diligence, the following factor assessment should therefore be undertaken to ascertain whether the GDPR applies and whether you are compliant:

The GDPR will come into effect on 25 May 2018. How different stakeholders will individually be impacted in detail and how enforcement will unfold is unclear at this stage, but it is certain that timely preparation is imperative.

1. **Physical presence in the EU** – does the organization have a physical presence of a branch, office, subsidiary, or other establishment in the EU that processes personal data, even if the processing itself does not take place in the EU;

2. **What are the organization's activities?** Undertake a comparative assessment of the processing of personal data activities and whether they pertain to personal data of residents in the EU for economic purposes (other than public security or personal data, even if the processing itself does not take place in the EU), regardless of whether you have a registered presence in the EU or not;

3. **Determine Nature of activities / products and services offered** – undertake and assessment of the nature of activities or products and services offered to individuals in the EU, whether for consideration or free. If the activities / offers exhibit these characteristics, certain check-boxes have to be met such as direct targeting to individuals in the EU, accepting payment in euros, communicating the offer in a European language (other than English), or offering to ship products to buyers in the EU; or monitoring behaviour of individuals in the EU which includes tracking individuals on the internet, collecting their data, and predicting their behaviour based on such data.

4. **Undertake a complete Review Procedure** – review current end-user contracts, terms and conditions, data protection clauses etc. and ensure to have an appropriate Privacy Policy in place and review regularly.

5. **Undertake data protection impact assessments** – ensure that data protection impact assessments are undertaken to meet the Regulation's requirements.

6. **Identify Access Rights** – identify and list access rights to data that should be granted.

7. **Identify Personal data** – undertake a Personal Data Analysis, by identifying and analyzing all personal data from relevant activities that is collected, stored and processed.

8. **Data breach procedure** – design and implement a data breach procedure.

9. **Data protection officer** – check if the organization has to appoint a DPO.

The GDPR will come into effect on 25 May 2018. How different stakeholders will individually be impacted in detail and how enforcement will unfold is unclear at this stage, but it is certain that timely preparation is imperative. While there may be some inconveniences during the adjustment process, inbuilt privacy mechanisms will help organizations, in particular (tele)communication service providers, in the future to gain consumer trust and loyalty, and ultimately improve sales through new revenue streams. Moreover, this move also comes at the beginning of a data explosion with the Internet of Things (IoT). In that sense, companies can truly future-proof their business with GDPR.

Figure 2: GDPR Compliance Checklist

WHOLESALE NEWS

Red Compartida 700MHz Wholesale Network Launches Ahead of Schedule

Mexican consortium ALTAN Redes has confirmed that 'Red Compartida', the country's 700MHz 4G wholesale network, has gone live slightly ahead of schedule, covering 32.2% of the population. Locations covered by the infrastructure from launch are understood to include parts of Mexico City, Nuevo Leon, Jalisco, Puebla, Michoacan, Colima, Nayarit, Aguascalientes and Guanajuato. The wholesale network – which has exclusive access to a 90MHz block of spectrum in the 700MHz band – was scheduled to be operational no later than March 31, 2018, by which date it was obliged to cover at least 30% of the country's population. Going forward, the network must cover 50% of the population by 2020, and 92.2% of the population by 2024. In November 2016 the Secretariat of Communications

and Transport (Secretario de Comunicaciones y Transportes, SCT), selected ALTAN Redes – a consortium including Axtel, Megacable, the International Finance Corporation (IFC) and Dutch and Chinese investors – as the

winner of the wholesale network tender. ALTAN was left as the only eligible bidder after its sole competitor, New York-based Rivada Networks, was disqualified for failing to meet the necessary financial obligations to compete.

Red Compartida will improve access to **banking**, **health**, and **education** services in Mexico, even for people in remote areas.

#IFCimpact

FICORA Orders Lower Wholesale Fiber Broadband Prices, Streamlines Copper Regulations

The Finnish Communications Regulatory Authority (FICORA) has unveiled proposals under which certain telecoms providers must reduce wholesale broadband prices by between 28% and 80%. In a press release regarding its plans to nurture sector competition, the watchdog confirmed it will impose price caps on the fiber local loops provided by Elisa, Telia Finland and DNA Finland, while also revealing that it plans to streamline

the regulation related to copper-based wholesale connectivity. Its decisions, it noted, are expected to come into effect in three months. The FICORA said that, having analyzed the Finnish broadband market, it has made significant market power (SMP) decisions relating to a total of 21 service providers which will now be required to provide regulated wholesale broadband products to other telecoms providers on a non-discriminatory and

transparent basis. Meanwhile, it has called for the imposition of a three-year price cap on the wholesale fiber services of DNA, Elisa and Telia, which together are said to account for almost 90% of the local loop market. With regards to the price caps, FICORA Director General Kirsi Karlamaa was cited as saying: 'Targeting the fiber prices of these operators with ex ante regulation benefits the market and society the most.'

TCI Extends Wholesale Fiber Access to Two More ISPs

Telecommunication Company of Iran (TCI) has signed separate wholesale network agreements with privately-owned ISPs, Mabna Telecom and AsiaTech, allowing its rivals to use its fiber infrastructure to deliver their own services to end users. The latest infrastructure sharing agreements follow similar contracts signed with Shatel and HiWEB in February this year – the first time state-backed TCI opened

up its fiber networks to competitors. Incumbent fixed line operator TCI was ordered by the government to share its fiber infrastructure in July 2017, when the Communications Regulatory Authority of Iran issued a mandate called 'Wholesale Bitstream Access' obliging TCI to share its infrastructure with private companies. At the time, telecoms minister Mohammad Javad Azari Jahromi confirmed that a

network rolled out using public funds should be available to all providers, not just TCI. The state-owned firm is deploying a fiber-to-the-home (FTTH) network which will pass some 580,000 households in the first phase of its rollout. A number of other Iranian ISPs such as Pars Online, Saba Net, Psihgaman, Helma Gostar and Afra Net are expected to come forward to seek similar deals.

MoTC Backs Nkom's Wholesale Mobile Market Ruling

Norway's Ministry of Transport and Communications (MoTC) has upheld a July 2016 decision under which specific obligations continue to be imposed on Telenor Norge, after it was determined to still hold SMP in the wholesale sector for access and call origination on mobile networks. With Telenor having challenged the decision, which was made by the National Communications Authority (Nasjonal kommunikasjonsmyndighet,

Nkom), the latter has now confirmed its ruling will stand. It was noted, however, that the MoTC has moved to clarify some of the obligations which apply to Telenor, including those related to improving indoor coverage, non-discrimination precautions, the wording of standard agreements, and margin squeeze principles. Meanwhile, although the Nkom is not required to notify the EFTA Surveillance Authority (ESA) of new draft

decisions until July 1, 2019, the MoTC has directed it to speed up this process, citing the rapid technical developments in the mobile market as a spur for doing so. In addition, the MoTC has specifically suggested that the Nkom should consider a whether future regulation should be more access neutral, while it has requested that the developments within the M2M and mobile IoT sectors are monitored.

ntel Partners With 9mobile, MTN to Provide National Roaming

Nigerian telecoms operator ntel has agreed a national roaming partnership with cellcos MTN and 9mobile, reports local newspaper The Punch. ntel's Managing Director and CEO, Ernest

Akinlola, told journalists that the national roaming scheme is expected to commence in April, enabling ntel to provide mobile 2G and 3G services across the country. He added that the company

has already reached the 'commercial decision stage' with 9mobile and was finalizing the pricing, while MTN has agreed to commence a trial of national roaming with ntel.

Osiptel Cuts Price of Fixed-to-Mobile Calls

Peruvian telecoms watchdog the Supervisory Agency for Private Investment in Telecommunications (Organismo Supervisor de Inversion Privada en Telecommuniciones, Osiptel) has lowered the price ceiling for calls from Movistar fixed lines to any mobile line from PEN0.12 (USD0.037) per minute to PEN0.06 (including the General

Sales Tax). The reduction is the sixth adjustment implemented by the regulator since the mechanism was introduced in 2011, at which date the tariff was PEN0.30 per minute. Osiptel estimates that the price reduction will generate savings of approximately PEN15.7 million per year for customers.

EU Data Roaming Traffic Jumps 435% in Q3 After RLAH Implementation

Data roaming traffic in the EU rose 435 percent year-on-year in the third quarter of 2017 to over 84 million GB, according to a report from the EU regulatory

group Berec. The first quarter after the implementation of 'roam like at home' charging in the EU shows the measure is a "clear success from the end-user point

of view", said Johannes Gungl, chairman of Berec, at a debriefing following Berec's latest plenary meeting.

Benin Officially Joins 'Free Roaming' Zone

Benin officially entered the 'free mobile roaming zone' established by fellow West African countries Senegal, Cote d'Ivoire, Guinea, Mali, Burkina Faso, Sierra Leone, Senegal and Togo. From now on, travelling

Beninese in the above countries will benefit from outgoing calls billed at local rates, plus free incoming calls (currently capped at 300 incoming minutes per month). The 'free roaming' project was

initiated by Senegal in November 2016 and launched commercially in March 2017.

For illustration purposes only

Proving scientific predictions can take centuries of trial and error

Exploration
never stops at failure

Perseverance enables the commitment to build
the foundation for future technology

HUAWEI

ARTICLE

5G will Unleash the Power of New Technology

Charles Yang
President
Huawei Middle East

Huawei firmly believes in the power of 5G to transform society. In the future, all things will be connected: this includes 100 million new generation bicycles, 300 million LED street lamps, 1.8 billion water meters worldwide. 10Gbps connectivity is also essential to foster the growth of high quality AR and VR experiences. From self-driving cars to virtual reality, from Internet of Things to drones, 5G is the foundation necessary to support all these connections – nurturing the growth of 5G is therefore essential to the next stage of digitalization.

Everyone can benefit from the huge commercial value 5G will unlock: Huawei estimates that the digital transformation market will be worth US$23 trillion. In order to benefit from this, stakeholders should enhance capabilities, build connections, develop business, and forge partnerships to tackle obstacles and shape a better future.

While the switch from 3G to 4G was mostly a matter of increased speed, the rise of 5G will unlock the potential of a flood of new technologies. In November, Huawei Wireless X Labs released a white paper on the Top Ten 5G Use Cases. These included cloud VR/AR, connected automotive, smart manufacturing, connected energy, wireless eHealth, wireless home entertainment, connected drones, social networks, personal AI assistant, and Smart City.

At Huawei we are working to ensure that the Middle East is at the forefront of these trends. We accomplish this by focusing on infrastructure and smart devices that provide a plot of 'rich soil' for the development of information, automation, and intelligence technologies. This includes a full range of 5G networks, products and solutions. At MWC 2018, we demonstrated to our partners and customers how 5G can transform their industry, and how close we are to making it a reality.

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Because of our belief in the power of 5G, in 2018 Huawei will invest CNY5 billion in R&D in the field, and launch a full range of commercial 5G equipment, including wireless access networks, bearer networks, core networks, and devices.

At MWC 2018, we focused on the three areas we believe are essential to making progress in digitalization: better connectivity, better business growth, and better experience, Huawei, together with its carrier customers and partners, is building a fully connected, intelligent world.

Better connections: By building more connections and expanding data pipes, Huawei is enabling industry-wide digitization and helping carriers fully leverage the power of 5G and cloud-network synergy.

Better business growth: Huawei helps carriers dig deeper into their installed base to maximize network value. It also helps carriers develop video and IoT services to enable new business growth.

Better experience: Huawei's digital operation & maintenance solutions enable agile business and intelligent and efficient operations. This helps carriers deliver a Real-time, On-demand, All-online, DIY, and Social (ROADS) experience.

Because of our belief in the power of 5G, in 2018 Huawei will invest CNY5 billion in R&D in the field, and launch a full range of commercial 5G equipment, including wireless access networks, bearer networks, core networks, and devices. Additionally, Huawei will drive the large-scale commercial deployment of NB-IoT networks around the world, and increase the number of NB-IoT connections to over 100 million.

The Mobile World Congress 2018 was held in Barcelona from February 26 to March 1. This was a great opportunity to meet with our leaders in the ICT industry and discuss how we can facilitate the growth of 5G. Beyond developing the technology itself, the telecom industry needs to ensure the mobile ecosystem is able to nurture the implementation of 5G. In the past, we focused on connecting people. That was like planting a single tree. Now we're connecting things. That's like planting an entire forest. We have to integrate with the ecosystem, and build it out together. At MWC, we hope to have come a step further on this journey to Building a Better Connected World together.

Beyond developing the technology itself, the telecom industry needs to ensure the mobile ecosystem is able to nurture the implementation of 5G.
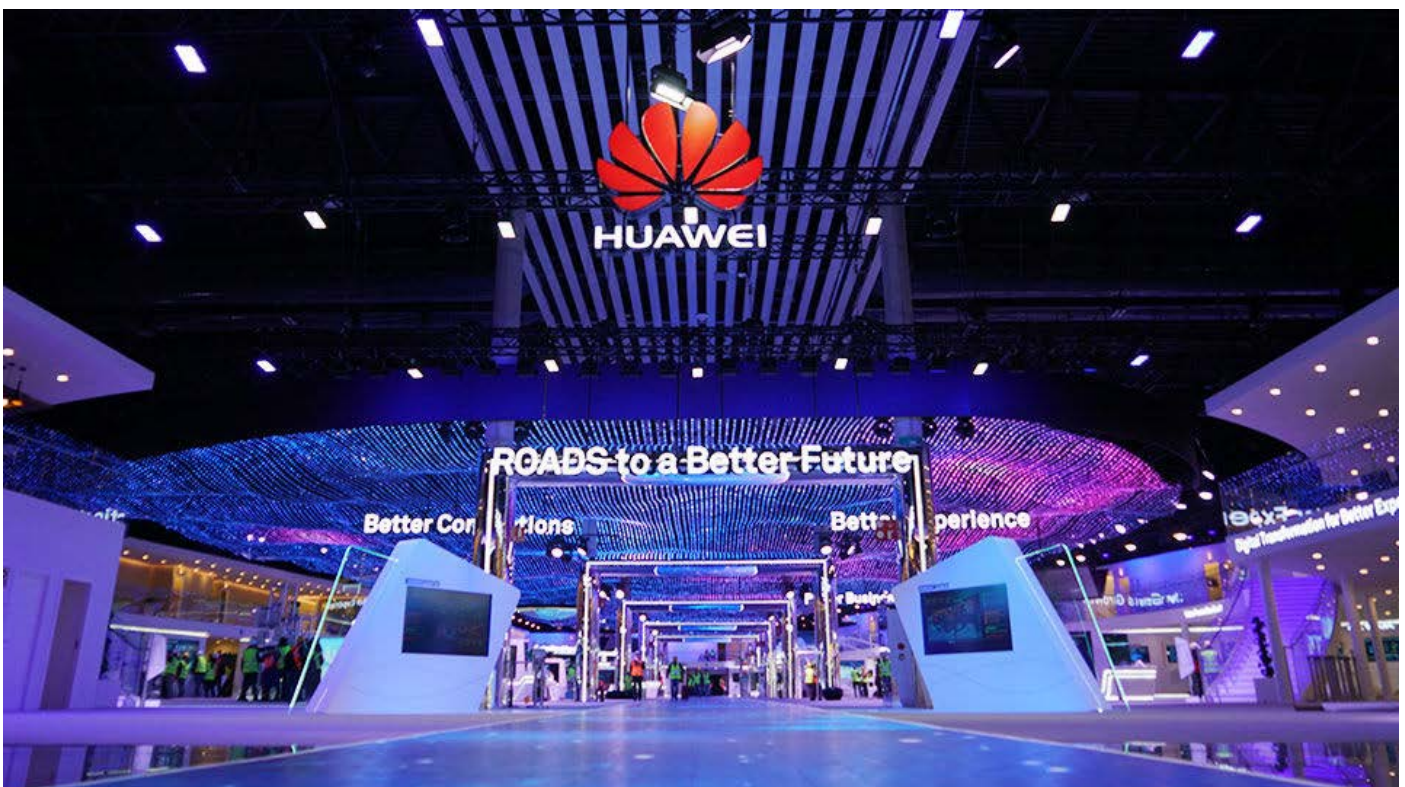
TECHNOLOGY NEWS

5G Standards Work Continues as 3GPP Plenary Meets in India

A 3GPP plenary meeting is being held in Chennai, India, this week, where Lorenzo Casaccia, vice president of Technical Standards at Qualcomm Technologies, reminds us that even though December 2017 marked a huge milestone, there's still a lot of work that needs to be done. December saw the ratification of the Release 15 5G New Radio (NR) Non-Standalone (NSA) standard; the Standalone (SA) part of the standard is due for completion in June. In addition, in order to meet the December deadline, the 3GPP left some issues outstanding that are to be addressed in the first half of this year. "The primary focus for the completed 3GPP Release 15 5G NR NSA standard is enhanced mobile broadband (eMBB) services, as well as establishing the foundation for the 5G NR design to support the future evolution," Casaccia blogged. "But the work in 3GPP continues to make the specifications ready for implementation of commercial products and services. As such, there are ongoing efforts in 3GPP to stabilize the Release 15 specifications and essentially take care of bug fixes, or 'Change Requests' in 3GPP lingo." Industry observers say these change requests are always to be expected in the standards process, so that's not a surprise. Release 15 will include both the NSA and SA variants of 5G NR. NSA and SA share common 5G NR physical layer specifications for the air interface, and these common aspects were completed as part of the December 2017 milestone, according to Casaccia. "Therefore, the main focus for the SA standardization is on the upper layers with full user and control plane capability and on the next-gen core network architecture including, for example, network slicing, a more granular QoS model, and a more advanced security architecture," he wrote. He also points out that while making 5G NR eMBB a commercial reality is a huge step for the industry, it just scratches the surface of what is possible with 5G technology. 3GPP has begun preparing for work in 3GPP Release 16 and beyond. 5G NR will continue to evolve and expand just like LTE has evolved with new features and use cases since its first introduction in 3GPP Release 8, he said. The road map of 5G NR technologies coming in Release 16 and beyond spans from ultra-reliable low-latency communications, to the use of unlicensed and new spectrum sharing paradigms, to vehicle communications for autonomous driving use cases to the continued evolution of the 3GPP low-power wide-area technologies and a lot more, according to Casaccia. Various study and work items have already been approved in 3GPP to define the next phase, and others will be approved in the coming months.

Huawei, DOCOMO, Railway Firm Extend 5G mmWave Trials

Chinese vendor Huawei Technologies, working in partnership with Japanese cellco NTT DOCOMO and Tobu Railway Co, says it has conducted fresh 5G trials as part of a wider program instituted by the Ministry of Internal Affairs and Communications (MIC) of Japan. In a press release confirming the development, the equipment maker said the system trial was carried out as part of NTT DOCOMO's commitment under the MIC's program, 'to research technical conditions for using the 28GHz band and other candidate spectrums for 5G in dense urban areas'. The companies involved are exploring areas such as radio propagation characteristics, as well as evaluating 5G system performance with focus on enhanced Mobile Broad Band (eMBB) applications. The release goes on to say that in December 2017, Huawei and DOCOMO successfully completed a long-distance, high speed data transmission test of 5G between the Tokyo Skytree (in Sumida, Tokyo) and a shopping facility at Asakusa railway station, using the 28GHz Millimeter Wave (mmWave) band. Also in December last year, Huawei and DOCOMO reportedly completed a field trial of 5G mobile technology using the 39GHz mmWave band. In those trials, which were carried out in the commercial district of Yokahama, the pair reported achieving peak download data speeds of over 2Gbps on a test vehicle with user equipment (UE) equivalent to a mobile phone, while driving at speeds over 20km per hour.

Ericsson Showcase Super Low Latency of 5G at MWC 2018

Ericsson has demonstrated latency levels of just 6 milliseconds, during a live test at its stand at Mobile World Congress 2018. Using the 28GHz frequency of Ericsson's 5G test bed, Ericsson allowed visitors to their stand to experience super low latency levels over a video conference call., providing a glimpse of what 5G will feel like. Granted, this wasn't a showcase of the full 5G experience, but rather a hint at the possibilities to come. The call did provide a dramatically clearer and faster connection than anything I had experienced before, with no discernible lag or lull in the conversation. Driving down latency levels for VoIP calls is probably not going to be one of the most important use cases for developing 5G technology, but it did provide a good deal of wow factor at this year's Mobile World Congress.

Ericsson 5G Marketing Chief Urges Early IoT Action

Operators should work to define their role in the IoT ecosystem

immediately, even though initial 5G opportunities are likely to be in enhanced mobile broadband, Ericsson's 5G marketing director said. In an interview with Mobile World Live, Monika Bylehn (pictured) said while IoT was still a small part of the 5G opportunity it was important for operators to decide on the part they wished to play well ahead of launch. "You should absolutely start today with IoT opportunities," she said: "It's still a small part of the business, but you need to start to build and see what role you take in the value chain – is it as a network developer…in service enablement or service creation?" She added deciding which "business you want to grab" in 5G was the critical issue facing operators deploying the next generation technology, though early opportunities were likely to be based around improving existing consumer services.

GSMA Calls for Regulation to Support 5G Innovation

Forecasts of rapid uptake of 5G services in China will only be achieved if regulators encourage innovation by releasing harmonized spectrum in a timely manner and promote technology-friendly rules, the GSMA's head of public policy argued. In a keynote sharing key trends from the recent Mobile World Congress, Andrew Hudson said his biggest takeaway from Barcelona was the huge potential network slicing creates for mobile operators to deliver different levels of service. China Mobile demonstrated how a 5G network slice can deliver ultra-low laten-cy or ultra-high capacity, but not both at the same time. "To me this shows 5G has the potential to open up new opportunities because the needs of different verticals, be it automotive or smart energy, require those multiple slices at different times. Those slices are dynamic and can change," he said. From a policy and regulatory point of view this matters because the last thing the industry wants to do is separate the available spectrum and fragment it into lots of small slices for different uses in different verticals, Hudson noted. "That would be enormously inefficient for the verticals and ultimately consumers," he said. "Any rules that restrict an operator's ability to manage the network in the most efficient way will limit the ability to innovate and enable new services." This is just one example of the changes 5G will bring which policymakers and regulators must consider. Other key areas are spectrum licensing models; moving to sharing arrangements to improve efficiency; and network densification, which will require more small cells: "We think regulation needs to evolve and requires a light touch," he said.

MSIT Aiming For 50% Adoption Rate of 10Gbps by 2022

The South Korean Ministry of Science and ICT (MSIT) has announced the establishment of a new fund specifically targeting technologies and projects that can provide data rates of 10Gbps, with plans to reach 50% adoption rate of the super-fast speeds by 2022. According to unnamed sources, the ministry will award up to KRW940 million (USD918,000) in financial support to two companies/consortia for facilitating 10Gbps deployments in the country, with the deadline for applications set as 10 April. An ICT ministry official was cited as saying: 'The ministry hopes to achieve competitiveness in the ICT industry by successfully commercializing 10Gbps internet through close cooperation between the private and public sectors.'

Du-Nokia Now to Trial and Deploy 5G NR Technology

Du announced that it is working with Nokia to trial 3GPP standardized 5G New Radio (NR) non-stand-alone technology and subsequently deploy live 5G sites in selected areas in the UAE. Du-Nokia Now to Trial and Deploy 5G NR Technology. According to this collaboration it aims to test available 5G-ready products from Nokia including its AirScale radio platform and Massive MIMO Antenna based on 3GPP Rel. 15 New Radio non-standalone architecture. It also aims to leverage Nokia's recently announced state-of-the-art chipset ReefShark for the evolution of du's network to provide the 5G network of the future. TRA's vision has been the guiding force for our telecommunications sector and we have been pioneering to introduce advanced services that has led to the evolution of ICT and delighting our customers across the country. EITC's Chief Infrastructure Officer, Saleem Al-Blooshi, said: We have been collaborating with Nokia to develop 5G technology since 2015 and look forward to continue working with Nokia to usher in 5G era in 2018. As EITC group brands, both du and virgin mobile customers will eventually benefit from this development. This announcement

takes du and virgin mobile customers closer to the 5G era. Further that Du and Nokia signed an MoU on 5G partnership in 2015 and showcased 10 Gbps speed using mmWave band. Continuing their collaborative efforts, the two companies successfully tested Nokia's TWDM-PON technology to achieve 40 Gbps in Dec 2016. Although they also demonstrated Middle East first 4K 3D 360 virtual reality

video streaming using 5G-ready network with massive MIMO technology at GITEX in Oct 2016, showcased 5G industrial robot and live streaming using Nokia OZO camera at GITEX in Oct 2017 and trialed Nokia's Software Defined Access Network that establishes the foundation essentials for 5G.

NTT Docomo Determining 5G Use Cases with Partners

Hiroshi Nakamura, CTO of NTT Docomo said the company is eager to determine precise use cases for 5G through discussions with partners to identify their exact future needs and expectations for the next-generation wireless technology. In an interview with Mobile World Live, Nakamura said it opened 5G trial sites in May 2017 and so far collected 15 exact use cases by working closely with its many partners across various vertical industries. Last month the operator, Japan's largest mobile player, introduced its 5G Open Partners Program and already signed up more than 600 partners. Unlike past mobile technologies, most future 5G services will be launched together with partners, he said: "Our partners will benefit and be able to enhance their businesses by innovating." Tied in with identifying the key use cases is being able to monetize 5G services: "We have a lot of challenges. But the technology part can be solved

more easily than the marketing aspect, so we're more focused on discussions with partners," he said. Nakamura sees future 5G services moving in two broad directions: those supporting consumer lifestyles; and those enhancing industrial operations by expanding business opportunities or creating new markets.

NTT Docomo previously announced it is gearing up to launch 5G by 2020, in time for the Summer Olympics which will be held in Japan. He said it is keen to learn from South Korea's example with the Winter Olympics and is a close partner with KT.

Tele2 Netherlands Deploys Nokia Cognitive Analytics Real-Time Software to Consistently Deliver a Superior Customer Experience

Nokia Traffica is helping Tele2 Netherlands deliver a superior real-time subscriber experience on its mobile network by more quickly and accurately identifying and resolving service issues and improving network quality. Nokia Traffica software is part of the Nokia Cognitive Analytics portfolio. It is a real-time network analytics solution for monitoring and troubleshooting that provides deep insights into traffic, network conditions, locations, devices and subscriber activity. It enables service provider customer care and operations teams to better understand how subscribers are experiencing their services. Building upon Tele2 Netherlands' existing Traffica

deployment, Nokia Traffica's geolocation capabilities provide a granular view of services issues down to the geo-tile level. They also provide an intuitive, map-based visualization system making it easier for service providers to precisely pinpoint the location of service issues, such as poor cell coverage and dropped calls. With these powerful new capabilities, Tele2 Netherlands can better detect, troubleshoot and resolve network and subscriber issues using real-world, real-time data, dramatically improving overall network quality, delivering a better subscriber experience and reducing churn. Meile de Haan, CTO of Tele2 Netherlands, said: "Working with Nokia

as our long-term strategic partner, the Traffica solution is well-suited to our needs. The new geolocation capabilities provide our customer care and operations teams with deeper insights that will enable us to consistently deliver the highest level of quality for our state-of-the-art LTE network." Mikkoa Ylä-Kauttu, account director, Netherlands at Nokia said: "Our Cognitive Analytics portfolio provides powerful tools and capabilities to help service providers increase efficiencies and improve network quality. We are delighted to work with Tele2 Netherlands to deliver the highest levels of network and service quality to their customers."

Huawei Completes Cloud VR POC Test on 5G Trial Networks

Huawei said it finished the Cloud virtual reality (VR) POC verification on 5G trial networks and announced the formation of a Computer Graphics (CG) Cloud VR/AR Special Interest Group (SIG) at a VR

roundtable during the 2018 Mobile World Congress (MWC). In related news, Huawei and NetEase jointly completed a latency test at Huawei Lab for online games that use the latest low-latency platform.

The platform includes key technologies complying with 3GPP Release 15, such as Short TTI. Huawei also released a complete range of full-scenario 5G wireless products at MWC.

REGULATORY NEWS

UK Kicks Off 5G Spectrum Auction

The UK regulator, Ofcom, has opened the UK 5G spectrum auction, with 5 companies expected to make bids in the coming day. The UK's 5G spectrum auction got underway today, with 6 firms bidding for the chance to host 5G services on their networks. The UK's four main mobile network operators, 02, EE, Vodafone and Three, plus Airspan Spectrum Holdings Ltd, have all been pre-approved by Ofcom to submit bids in the auction. "Our job is to release these airwaves quickly and efficiently, and we want to see them in use as soon as possible. We are glad the auction is now underway. This spectrum will help improve people's experience of using mobile broadband today, and also help companies prepare for future 5G services," said Philip Marnick, Ofcom's spectrum group director. Ofcom has set a 37 per cent cap as the maximum amount of spectrum each network operator can own. The bidding process is expected to last a number of weeks and much will hinge on the results of the auction. Analysts are calling on the mobile operators to press ahead with their preparations for 5G roll out, in order to ensure that Britain is not left behind in the race to commercialized 5G services. "The 5G landgrab between Britain's largest operators is creating a lot of noise, and not much action, on the UK's path to 5G. The prospect of being the sleepy connectivity backwater of Europe should provide enough impetus to boost investment and speed up timelines. 5G is undoubtedly going to play a key role in the mixed economy of connectivity technologies that will enable ultrafast broadband, so it must be prioritized accordingly," said Alastair Masson, Head of Telco Media, NTT Data UK. Masson cites a recent report published by Juniper, which claims that

there will be 1.4 billion 5G connections by 2025, but as few as 1 million by 2019. "The report also forecasts that China, the US and Japan will have the highest number of 5G connections by 2025. If the UK wishes to remain 'open for business' post Brexit, it must deliver on the 5G promise or risk losing out on the revenues, prestige and opportunities that is coming with the Internet of Things," he added. Ofcom will publish the results of the auction in the coming weeks, once the bidding process has been completed. Ofcom's spectrum group director, Philip Marnick, will be taking part in a lively panel session on 5G at this year's Connected Britain event. Click here to find out how you can be part of the conversation.

NBTC Mulling SIM Re-Registration Process

The National Broadcasting and Telecommunications Commission (NBTC) is reportedly planning to issue a directive to all mobile operators ordering them to re-register their entire customer bases, The Bangkok Post writes. The new registration process will require operators to record the real owner of a SIM under a 'registered by' formula or record the user under the 'holder by' formula. If the draft proposal is enacted, all cellcos will have 180 days to complete the process.

Connexin Drops Out of UK's Upcoming Spectrum Auction

British telecoms regulator Ofcom has published an updated list of participants for the principal stages of its impending spectrum auction, which is due to get underway on 20 March. In doing so, it has confirmed that one of the previously announced six bidders – Connexin Limited – is no longer taking part in the sale process, leaving Airpsan Spectrum Holdings, EE, O2 UK, Three UK and Vodafone UK as the companies still involved. No reason has been given for the company's decision. As previously reported by CommsUpdate, as per Ofcom's sale plans, 40MHz of spectrum in the 2300MHz band and 150MHz in the 3.4GHz band is set to offer up, with the upcoming bidding process expected to last for a number of weeks.

Malian Government Invites Expressions of Interest for Fourth MNO License

Mali's government has announced plans to proceed with the award of a fourth mobile network operator (MNO) license as part of its telecommunication sector reform program. In a call for expressions of interest (EoI) published on the Authority for the Regulation of Telecom/ICT and Post (AMRTP's) website it was noted that the state aims to grant a concession to a new provider that has the 'operational and financial capacity to comply with the term of reference of the license and to contribute to the development

of [the country's] telecommunications sector'. Companies interested in the proposal have been invited to request an information memorandum which contains: a summary of the planned license sale procedure; the conditions of access to the tender documents; and summary information on Mali its telecoms sectors. Dependent on the level of interest received, the government may look to organize one or more working meetings to collect feedback on its plans and to issue updates on the progress

and schedule for the license award. An indicative calendar for the licensing process has also been published, with it revealing that the government expects to liaise with companies that have submitted an EoI on 19 March, before sending a dossier regarding the sale process to candidates from 9 April 2018. A provisional date of 22 May 2018 has been set as a deadline for the submission of bids, while the finalizing of the license sale procedure is expected by end-June 2018.

UK Government awards £25m in Funding to Six 5G Projects

The UK government has allocated £25m in new funding to six 5G pilot schemes across the country. The six projects are run by small and medium sized enterprises (SMEs), universities

and local authorities and are spread out across the length and breadth of the United Kingdom. The projects will each help to pave the way for the roll out of 5G technology in the coming years. The £25m funding is part of the government's broader £1 billion Digital Strategy, aimed at developing the UK's digital economy. "One year on from the Digital Strategy, we are delivering on our commitments to create a Britain fit for the future, with a thriving digital economy that works for everyone. The ground-breaking projects announced today will help to unlock 5G and ensure the benefits of this new technology are felt across the economy and wider society," said Margot James, minister of state for Digital and the Creative Industries. Each test bed site will receive between £2 million and £5 million in government funding as part of the initiative.

Panama Watchdog: 140MHz of AWS Spectrum Now Freed Up

Panama's National Public Services Authority (Autoridad Nacional de los Servicios Publicos, ASEP) has confirmed that 140MHz of spectrum in the 1710MHz-1780MHz/2110MHz-2180MHz (AWS) band was successfully

freed up in 2017, in line with Resolucion AN No. 9319-Telco, which was signed back in November 2015. The development was shared by the watchdog this week, as it gave a presentation of its annual results to the National Assembly (Asamblea

Nacional). The frequencies in question were originally expected to have been freed up by the end of 2016; a prospective date for a future spectrum auction has yet to be disclosed.

TIM will Challenge Regulator's EUR4.8m Fine

Telecom Italia (TIM) will appeal a EUR4.8 million (USD5.9 million) fine handed out by Italy's competition watchdog Autorita Garante della Concorrenza e del Mercato (AGCM). The regulator imposed the fine after finding the telco guilty of misleading

consumers with its fiber broadband advertising. The AGCM said TIM failed to clarify that users would have to pay extra to access the highest available download speeds of 1Gbps and it was not clear on the characteristics and geographical

reach of its fiber services. In a statement TIM labelled the regulator's decision as 'groundless', adding that it was 'harmful and detrimental' to its image and interests.

EU Unveils Plans for 3% Tax on Online Services

The European Commission has unveiled its proposals for increasing tax collected on digital services such as online advertising. As an "interim measure", large companies would pay a 3 percent levy on revenues generated from such services in the EU. In the longer term, EU members would be able to tax profits from the services if they exceed a certain threshold.

Russia Issues Spectrum Permits for World Cup

Russian federal telecommunications regulator Roskomnadzor has started issuing permits for the use of frequency bands in preparation for the FIFA 2018 World Cup this summer. A total of 133 permits have already been issued on the basis of applications submitted until 1 March. Of the total, 67 permits have been issued to fixed and mobile operators.

ANACOM Unveils 5G Consultation; 700MHz Band Will Be Key

Portugal's National Communications Authority (Autoridade Nacional de Comunicacoes, ANACOM) has unveiled a public 5G consultation, highlighting a number of spectrum bands which it is considering making available to domestic cellcos. Top of the watchdog's list is the 700MHz band, which ANACOM hopes to auction by mid-2020. ANACOM notes that it is currently working with its regulatory counterparts in Spain and Morocco to ensure that there will be no cross-border interference issues as it seeks to introduce the 700MHz band. Other frequencies under discussion are: 450MHz, 900MHz, 1500MHz, 1800MHz, 2100MHz, 2.6GHz, 3.6GHz and 26GHz. ANACOM is seeking feedback from interested parties until April 19.

Telecoms Sector Undergoing Major Digital Transformation

The telecoms sector is undergoing a digital transformation, which will change the way telcos deploy software within their network architecture, according to Red Hat's world-wide vice president for ICT, Darrell Jordan-Smith. "What we are doing is virtualizing physical infrastructure, we are providing the middleware necessary for them to develop the telemetry and data that they need, and we are providing containerized platforms that, working consistently together over a reference able architecture, will enable them to deliver containerized services," he said. "That will really enable them to do things like block chain, analytics, AI based services and to deliver IoT based services," he added.

EE Chief Believes Industry Struggling with 5G Model

EE boss Marc Allera (pictured) suggested the main value proposition for 5G remains unclear, stating most of the industry is "wrestling" with creating a business model for the technology at this stage. Allera, speaking to Mobile World Live, revealed the UK was realistically 18 months from a 5G launch. He explained the country's largest mobile operator had stepped up trials over the past year and entered into discussions with handset and equipment vendors to build a 5G ecosystem. As 5G moves ever closer, Allera highlighted a number of different areas where the technology could be useful, such as addressing demand from consumers and businesses for high capacity in urban areas, and low latency use cases for IoT and autonomous cars. However, it remained unclear what service proposition the operator would launch with: "Everyone is still trying to figure that out," Allera admitted. Allera said this made it difficult to build a business model around 5G, while adding that "the reality will be that we will have to assume that consumers and businesses will be prepared to pay a little bit more for faster, higher quality access to the internet and that's how the business case will be for everyone else". He continued: "There will be Capex investments and spectrum investments to deliver 5G and, as a result, we are going to have to look for revenue streams and getting some sort of premium out of 5G, as we did with 4G."

Ofcom Confirms Start Date for 2.3GHz, 3.4GHz Spectrum Sale

Having earlier this month unveiled the identities of the six companies that will take part in the sale process, UK telecoms regulator Ofcom has now confirmed that bidding for frequencies in the 2.3GHz and 3.4GHz bands will start on 20 March. The bidding process itself is expected to last for a number of weeks. As previously reported by CommsUpdate, in February 2018 Ofcom revealed that six companies had qualified to proceed to the sale process, all of which have confirmed they plan to participate, namely: Airspan Spectrum Holdings Limited; Connexin Limited; EE Limited; Hutchison 3G UK Limited; Telefonica UK Limited; and Vodafone Limited. As per the sale plans, 40MHz of spectrum in the 2300MHz band and 150MHz in the 3.4GHz band is set to offered up.

Ofcom Begins Consulting on Proposed Coverage Obligations for 700MHz Frequencies

British telecoms regulator Ofcom has announced the start of a consultation on its plans to introduce coverage obligations as part of the upcoming sale of spectrum in the 700MHz band. Saying that it has a 'duty to ensure the wide availability of communications services to citizens and consumers', the regulator has claimed that current levels of mobile coverage are not meeting consumers' needs, citing its 'Connected Nations 2017' report, which it said showed that coverage was particularly poor in rural areas. As such, in arguing that the technical characteristics of the 700MHz band make it suitable for improving mobile coverage, Ofcom has said it plans to attach coverage obligations to some of the licenses that will be awarded. Specifically, it has proposed setting three coverage obligations, one focusing on where people live – the 'premises' obligation – a second focused on improving outdoor coverage across the UK's land mass, and a third, effectively placing more stringent obligations on boosting coverage at the 'constituent nation' level. As per the premises obligation, the successful bidder would be required to deliver good quality in-building coverage to 60% of the 200,000 residential and business premises in rural areas that Ofcom has predicted will lack good indoor coverage from any mobile operator at the time of the 700MHz auction, which is scheduled to take place in H2 2019. Meanwhile, the geographic obligations would require operators to provide good voice and data services across at least 92% of the UK's total land mass, while also requiring successful bidders to improve the coverage they provide in each of the UK's constituent nations. Operators would need to boost geographic coverage in England and Northern Ireland to 92%, while increasing it to 83% and 76% for Wales and Scotland, respectively. Ofcom has proposed that these coverage obligations should be met within three years of the license being awarded.

Sprint to Start Massive MIMO Deployment, Plans 5G Launch in H1 2019

Sprint announced at Mobile World Congress plans to start rolling out massive MIMO in April in select US cities, in preparation for the launch of a 5G mobile network in the first half of 2019. Customers in Chicago, Dallas and Los Angeles will begin experiencing "5G-like" capabilities, including significant increases in data speed and capacity, as Sprint rolls out massive MIMO from this spring. Sprint said it will "aggressively expand" to additional markets including Atlanta, Houston and Washington, DC later this year. In 2018 and 2019 Sprint said it expects to deploy "thousands" of massive MIMO radios. Sprint's first 5G-ready massive MIMO cell sites are capable of delivering up to 10 times the capacity of current LTE systems, significantly increasing data speeds for more customers in high-traffic locations. The company is rolling out the technology in the 2.5 GHz band over TDD-LTE, after testing the equipment over the past year with vendors. In addition, Sprint said it is working with Qualcomm and device manufacturers to launch 5G mobile devices in the first half of 2019. The recently announced Qualcomm Snapdragon X50 5G modem supports 5G NR for Sprint's 2.5 GHz spectrum band. Sprint will deploy 64T64R (64 transmit, 64 receive) massive MIMO radios using 128 antennas, working with suppliers Ericsson, Nokia and Samsung Electronics. The massive MIMO radios from all three suppliers are software-upgradable to 5G without additional tower climbs. The radios support split-mode service, enabling Sprint to offer both LTE and 5G on the same radio. Sprint said its spectrum holdings give it an advantage in bringing 5G quickly to market. It holds a total of 204 MHz of spectrum, including more than 160 MHz of 2.5 GHz spectrum in the top 100 markets. This gives it enough capacity to operate LTE and 5G simultaneously over 100-200 MHz on the same massive MIMO radios.

ETNO Slams EC Agreement on 5G Spectrum

Telecoms lobbying group ETNO hit out at an agreement struck between EU countries and lawmakers late last week to free up spectrum for 5G, arguing the deal lacked ambition. ETNO released a statement responding to an announcement by the European Commission which said it had reached an agreement with the European Parliament and Council regarding the implementation of new telecoms rules and radio spectrum policy. The new measures includes an arrangement to free up radio spectrum for 5G by 2020, with licenses valid for 20 years, as the continent attempts to compete with early 5G movers the US and Asia. However ETNO, which represents the interests of European telecoms operators including Orange and Telefonica, said the planned policy falls short of initial ambitions for 5G, while arguing 25-year long licenses were needed to ensure the investment required for 5G is met. "5G is too important for Europe to accept a compromise falling short of the original ambition," said Lise Fuhr, ETNO director general. "Future licenses need to deliver increased certainty with respect to the status quo and a truly effective peer review system is essential to ensure the credibility of spectrum," she added. The agreement on spectrum forms part of the EU's wider telecoms reform, known as the European Commission's Electronic Communications Code, and follows years of negotiations between the regulator and EU governments. Reuters reported the EU wants a formal agreement in place by the end of July. While the EU targets a 5G launch by 2020, US operators have revealed ambitions to launch mobile 5G services by the end of this year, while many leading Asian countries are targeting rollout in 2019.

Turkey Has Opportunity to Realize 5G in Telecom Field

Turkey has a great opportunity to build a 5G system and the latest technologies in the telecommunications field, the chief executive officer of the Open Networking Foundation (ONF) has said. "Almost every telecom operator brings tremendous service to society, while the communication sector is one of the fields which need the biggest infrastructure investments," Guru Parulkar told state-run Anadolu Agency in an interview. "We are trying to move it further, so we can do faster innovation on this infrastructure," he said. "We think that the communication infrastructure has gone quite far but there is still a long way to go," he added. "More opportunities are coming up with Internet of Things [IoT], Virtual Reality [VR], Augmented Reality [AR], and connected cars... There are so many new technologies requiring better networks," Parulkar said. "What we are trying to do is to enable that the rate of innovation is at a cost point which operators and society can afford," he added.nParulkar stated that it is not economically viable to build communication infrastructures in rural areas with the current traditional ways while the open source materials allow establishing such networks at a very different type of investment — much more cost-effective. Pointing out the Turkish government's efforts to expand universal service network to bring communication infrastructure to the country's rural areas, he noted that a protocol was signed between the ONF and the Turkish government to test the latest telecommunication technologies during the Mobile World Congress in Barcelona this week. "Using this government program as an opportunity to deploy the latest technology is a great idea," Parulkar said. "If you can test the latest instruments, prove them in the rural areas, then you can deploy them in the mainstream metropolises," he added. "So there are a couple of ifs, but if those ifs become true then Türk Telekom and whoever other partners will have tremendous opportunity not only to create the best infrastructure in the country but also to export it to other countries as well," he noted. Noting that not many telecom operators are willing to deploy such disruptive or very programmable technologies based on open sources, he said: "If Türk Telekom can indeed deploy the technology coming out of our labs this year the company would be a world leader in 5G." Since 2011, the ONF consortium has been working with around 150 organizations including universities, equipment vendors, chip manufacturers, and software suppliers.

EU Reaches Preliminary Agreement on Spectrum Licensing Reform

The EU reached a breakthrough in negotiations over new rules to coordinate mobile spectrum licensing, according to European Commission vice-president Andrus Ansip. The agreement between the Commission, European Parliament and Council should see licenses in the EU available for longer periods and more spectrum released for 5G.

A SNAPSHOT OF REGULATORY ACTIVITIES IN SAMENA REGION

Afghanistan

The Afghanistan Telecoms Regulatory Authority (ATRA) has signed 'national fiber-optic network license, investment and expansion' agreements with three private companies, the watchdog has announced. Under the agreements, Afghan Wireless Communications Company (AWCC), Etisalat Afghanistan and Asia Consultancy Group (ACG) were issued with national fiber-optic network licenses, with the trio expected to invest USD383 million in fiber infrastructure projects. Khaama Press notes that MTN Afghanistan was not approved for the project due to a failure to comply with the terms and conditions of the contract, whilst an application from Amania and Connectivity International was also rejected. Roshan's participation, meanwhile, was greenlit on the condition that it clears its outstanding taxes. (March 19, 2018) telegeography.com

The Afghan government approved a Fiber Optics related project worth USD 383mn at the latest meeting of the National Procurement Commission (NPC) chaired by President Mohammad Ashraf Ghani. According to a statement from the presidential palace, four companies have been approved to obtain investment licenses from the Telecom Regulatory Authority of Afghanistan (ATRA) for investment in the Fiber Optics project. The approved companies are: Afghan Wireless, Etisalat, Roshan and Asian Consultancy Group. The statement added that Amania & Connectivity International was not approved for the project as certain contradictions were noted in their joint offer submitted for the approval. The MTN Company was also not approved for the project for their failure to comply with the terms and conditions of the contract. Additional contracts worth USD 475mn approved included reconstruction of the first phase of Gardez to Zurmat highway belonging to the Ministry of Public Works, and construction of five compounds belonging to the Ministry of Higher Education for quality assurance and professional development of the universities. Other contracts approved during the meeting included completion of a 7-story building belonging to the Ministry of Interior, procurement of fuel for the Ministry of Urban Development and Housing, and procurement of lubricants for the administrative office of the President.

(March 14, 2018) menafn.com

Algeria

The Regulatory Authority of the Post and Telecommunications (ARPT) informs the entry into force of the Decision on specifications defining the conditions and the modalities of establishment and operation of the services of lodging and storage of computerized content for the benefit of remote users, in the context of the provision of so-called cloud computing services. The Regulatory Authority invites all operators and service providers already active in this market segment, as well as any other operator or service provider, natural or legal person, wishing to offer this type of service to be closer to its structures, to carry out the formalities necessary to obtain the authorization. The constituent elements of the application for authorization are specified in Article 7 of the specifications, which is available for download on the ARPT website.

(March 19, 2018) arpt.dz

The Regulatory Authority of the Post and Telecommunications (ARPT) informs the entry into force of the Decision on specifications defining the terms and conditions of establishment and operation of radio positioning and / or radiolocation services satellite, as well as radio geolocation services. The Regulatory Authority invites all operators and service providers already operating on the national market, as well as any other operator or service provider, natural or legal person, wishing to offer this type of service to move closer to its structures, with a view to the formalities necessary to obtain the authorization. The constituent elements of the application for authorization are specified in Article 6 of the specifications, which is available for download on the ARPT website.

(March 19, 2018) arpt.dz

Bahrain

Kaspersky Lab and the Telecommunications Regulatory Authority (TRA) of the Kingdom of Bahrain have embarked on a series of interactive cyber security roadshows in schools in Bahrain aimed at raising awareness about the threats that await children on the Internet and effective ways to respond to them. Among the main threats to be addressed are cyberbullying, inordinate disclosure of personal information and general rules of online behavior. All of the mentioned threats represent a real danger not only for the global community, but also for Bahrain pupils in particular. According to a survey conducted by The Telecommunications Regulatory Authority, about 38% of young people in Bahrain have faced cyberbullying, which represents the biggest cyber threat to young people in the region. The second most worrying problem is the danger associated with meeting strangers online. The percentage of such encounters has significantly dropped, however it remains at an alarming 16%. "There has never been a more important time to truly educate children about online safety and the dangers of the online world than now." Says TRA Senior Advisor of Consumer Affairs Development, Sheikh Abdulla Bin Humood Al Khalifa. "Our connected lifestyles have given room for a lot of dangers out there, and we are very happy to collaborate with Kaspersky Lab and bring the Safe Kids cyber security roadshow to children across schools in Bahrain. Cyberbullying in particular comes with dangerous and far-reaching implications which could impact our children's academic performances and overall well-being. Children are the future of our society. Empowering them and giving them the intellectual tools to survive in a digital world is our prime responsibility." He further added. Amir Kanaan, Managing Director in the Middle East, Turkey and South Africa at Kaspersky Lab, says "Children's safety is one of the key priorities of Kaspersky Lab as a cybersecurity company. Firstly, because family well-being is something everyone is concerned about, regardless of status and origin. And secondly, only by instilling the basic principles of safe behavior online in the children of today we can make the Internet of tomorrow safer — and this, of course, is one of the main goals of our company. It is almost impossible to reach this goal without the support of governments and public organizations, so we are very glad and grateful to TRA for supporting our initiative". Kaspersky Lab's findings are in line with the TRA survey. According to KSN data, 81% of children in Bahrain actively spend time socializing online, which includes both the usage of social networks and various messengers, exposing them to all the threats associated with these services. Every third parent (32%) interviewed globally fears that their child is at risk of becoming a victim of cyberbullying. The same number of respondents are afraid of the dangers that can await children when dealing with strangers. At the same time, 7% of respondents are aware of cases when their children have suffered from cyberbullying and communicated with suspicious strangers. Such discrepancy between the real rate of cyberbullying and the share of cases that become known to parents indicates that this and other threats can be more significant than they seem at first glance. TRA and Kaspersky Lab Held a Press conference to mark the beginning of the roadshow on Monday the 4th of March where the members of the media community had the opportunity to learn more about these threats and for their questions to be answered. The roadshow will continue until the March 13, 2018 and will target children between the ages of 7 to 13.

(March 5, 2018) tra.org.bh

The Telecommunications Regulatory Authority (TRA) announces the publication of its 2017 4th quarter report on Broadband Quality of Service on its website. Among other highlights in the report, Wired Residential Download Speeds average at 7.09 Mbps based on ADSL packages that are supposed to reach a speed of 8 Mbps, while High Speed Residential packages varied at a 9.92 Mbps Average for the Fiber optics package that is supposed to reach a speed of 8 Mbps, 22.94 Mbps Average for the package that is supposed to reach a speed of 25 Mbps and 89.15 Mbps Average for the package that is supposed to reach a speed of 100 Mbps. Consumer's experience degraded quality of service indoor compared to open areas, due to the nature of penetration of mobile signals inside buildings. "It's critical to keep customers updated by regularly publishing these quality of service reports, as they provide insights that give the end user a more transparent view of what to expect in their areas of residence before choosing which service best suits them." Says TRA Director of Technical & Operations and Acting Director of Cyber security, Eng. Mohamed Alnoaimi. "We appreciate mobile operators continued efforts in improving the customer experience through enhancements and upgrades of the mobile networks. It is highly recommended that consumers read the report before choosing a service provider." He continued.

(February 28, 2018) tra.org.bh

Bangladesh

Bangladesh has reached 147 million mobile telephony subscribers in January 2018, up from 145.11 million users in tDecember 2017, according to a report from the Bangladesh Telecommunication Regulatory Commission (BTRC). At end-January, mobile operator Grameenphone had 65.86 million mobile phone customers, followed by Banglalink and Robi Axiata with 32.35 million and 44.22 million mobile phone users, respectively. Teletalk came next with 4.55 million mobile telephony subscribers at end-January.

(February 28, 2018) telecompaper.com

The Bangladesh Telecommunication Regulatory Commission (BTRC) has announced it will block 3 million SIMs as part of a crackdown on violations of the limits on the number of SIMs that can be registered against one national ID card. Local regulations prohibit more than 15 SIMs from being registered using one national ID card. At the end of last year, the government gave subscribers a two-month window to deactivate their excess cards, but the response was low. Now the regulator is taking matters into its own hands with plans to block excess SIMs at random without providing prior notice, the Daily Star reported. The BTRC estimates that around 500,000 national ID cards have had more than 15 SIMs registered to them. According to the report, the SIM blocking process will commence soon. State-owned operator Teletalk may be spared from the cull. The BTRC last year proposed to bring down the number of SIMs that can be registered to any one card from 20 to 5, but local mobile operators strongly objected to the plan on the grounds that

many legitimate connections could be affected. The regulator and the industry subsequently negotiated a compromise of the current cap of 15 SIMs per card. (March 5, 2018) telecomasia.net

The Bangladesh Telecommunication Regulatory Commission (BTRC) is set to block three million SIMs belonging to subscribers that currently have more than 15 SIMs registered against one national ID card. On December 31, 2017 the government gave a two-month timeframe for subscribers to deactivate their excess SIM cards, though a top official of the telecom division said that the 'response was low'. The SIM blocking process will start soon, he said. A fingerprint-based biometric verification system – checking the fingerprint data associated with a national identity card – was adopted in December 2015, with a maximum of 15 SIMs allowed to be linked to one ID card (20 SIMs prior to October 2017).
(March 5, 2018) telegeography.com

Egypt

The National Telecom Regulatory Authority (NTRA) hosted the Plenary Meeting of the European Mediterranean Regulators Group (EMERG) on March 20, at NTRA premises, in Smart Village, where AGCOM, the Italian communications regulatory authority, handed over EMERG Chairmanship to NTRA. During the Plenary Meeting 2017, EMERG Member States decided to select Egypt, represented by NTRA, to chair EMERG during 2018-2019. The event comes within the framework of NTRA participation in EMERG meetings and activities and EMERG meeting of contact points, held in Sarajevo, Bosnia and Herzegovina on February 20-21. EMERG Members voted on the draft of 2018 agenda, to be fully adopted at the Plenary Meeting. The agenda entails discussing the regulation of Fifth Generation (5G) services, the Internet of Things and Machine to Machine (M2M) technologies and innovation support. In a related context, the European Union (EU) decided to maintain funding EMERG after the completion of phase III of the New Approaches for Telecommunication Policies (NATP) project, started in January 2015, to be extended for four years with the fourth phase of the NATP project. The EU interest in funding the activities of EMERG is primarily due to the significance of sharing experiences among the Mediterranean countries and contributing to the regulation development in the Mediterranean region's telecommunications sectors. The agenda of the meeting will present the latest developments made by EMERG after last year's plenary meeting and the latest version of the EMERG guidance report. In addition, the European Commission (EC) will provide a brief overview on the activities of the Union for the Mediterranean (UfM). The ARCEP, which

carries out the international activities of the Body of European Regulators for Electronic Communications (BEREC), will also extend the Memorandum of Understanding (MoU), which was signed in April 2014 between EMERG and BEREC, for two years.
(March 20, 2018) mcit.gov.eg

The National Telecom Regulatory Authority (NTRA), is partaking in the World Summit on the Information Society (WSIS) Forum 2018, hosted by International Telecommunication Union (ITU) in Geneva, Switzerland, on March 19-23, under the theme "Leveraging ICTs to Build Information and Knowledge Societies for Achieving the Sustainable Development Goals (SDGs)". The WSIS Forum 2018 represents the world's largest annual gathering of the 'ICT for development' community. The annual WSIS Forum is a global multi-stakeholder platform facilitating the implementation of the WSIS Action Lines for advancing sustainable development. The Forum provides an opportunity for information exchange, knowledge creation and sharing of best practices, while identifying emerging trends and fostering partnerships, taking into account the evolving Information and Knowledge Societies. The WSIS Forum is constantly evolving and strengthening the alignment between the WSIS Action Lines and the Sustainable Development Goals. The Forum will serve as a key platform for discussing the role of ICTs as a means of implementation of the Sustainable Development Goals and targets, with due regard to the global mechanism for follow-up and review of the implementation of the 2030 Agenda for Sustainable Development. (March 18, 2018) mcit.gov.eg

Iraq

A total of 30,000 fiber-to-the-home (FTTH) lines in Karkh, Baghdad, are now available to the public, the Ministry of Communications (MoC) announced this week. The rollout was handled by government-owned State Company for Internet

Services (SCIS) and Chinese vendor partner Huawei, but marketing of the lines will be handled by the MoC's official private sector partner ScopeSky Communications.
(March 7, 2018) telegeography.com

Jordan

The TRA and the Central Bank of Jordan have signed an amended memorandum of understanding with the aim of cooperating and coordinating in the field of supervision in their respective fields of competence over mobile payment providers and mobile network operators. The memorandum was signed by HE Dr. Ziad Fariz Governor The Central Bank of Jordan and Eng. Ghazi Jabour, Chairman of the Board of Commissioners of the Telecommunications Regulatory Authority. According to the regulatory authority, the TRA has followed up on mobile operators to comply with their obligations to provide their services to mobile payment providers and beneficiaries of this service through the national switch according to the requirements specified in the relevant legislation. According to the new amendment of the memorandum of understanding, New arrangements for coordination between the two parties to ensure effective supervision and control in accordance with its competence and in accordance with the agreements signed between the operators of the mobile telecommunication networks and the service providers by providing their services at a high technical level and Meh electronic payment to the service in the Kingdom of justice and reliably and securely and without the exercise of any kind of discrimination. Dr. Jabbour pointed out that the importance of the partnership between the Central Bank of Jordan and the Telecommunications Regulatory Authority confirms the depth of cooperation between these two supervisory institutions in the field of supervision and supervision of service providers and network operators in accordance with its jurisdiction and under the legislation governing the work of both parties in order to provide the service easily and efficiently to achieve the objective Increase the financial inclusion in the Kingdom and protect the interests of beneficiaries of the mobile payment service. It is noteworthy that the Central Bank of Jordan is the supervisor and observer of the national mobile phone payment, which is the issuance of legislation governing the provision of mobile payment service through the national exchange, in addition to considering the operators of mobile networks are essential partners for the success of the provision of service both as operators of mobile networks or as service providers through their respective financial companies.

(March 18, 2018) trc.gov.jo

The Board of Commissioners of the Telecommunications Regulatory Authority (TRA) recently approved amendments to the Regulations governing the licensing, approval and organization of the work of those wishing to issue electronic authentication certificates and provide related services in the Kingdom. And was published on the website of the Commission and to inform the relevant authorities. The amended instructions are based on the provisions of Article (23 / B) of the Electronic Transactions Law No. (15) for the year 2015 and the provisions of Article (13) and Article (15) of the Licensing and Approval of Electronic Authentication Authorities Law No. (11) of 2014 and its amendments for 2016, The task of issuing these instructions. During the year 2017, the Authority issued draft instructions for the purposes of public consultation by all relevant parties. The Chairman of the Board of Commissioners, Eng. Ghazi Jabour, said that the amendment of the instructions included instructions regarding the granting of license or accreditation, cancellation or suspension, and instructions to regulate the audit and control of the electronic authentication bodies. Al-Jabour confirmed that the Authority, in accordance with the Electronic Transaction Law No. (15) for the year 2015, will license local companies or grant accreditation to foreign companies wishing to operate in the Kingdom to become electronic certifying bodies and will monitor their operations and ongoing and periodic audits to verify their efficiency and integrity. Accreditation and instructions issued by the Authority. The amended instructions included specialized definitions and scope of application, conditions to be met by those applying for a license or obtaining accreditation, procedures for submitting and studying the application for licensing and accreditation. The amended instructions indicate that the license or approval of the electronic authentication bodies is issued by a decision of the Board of Commissioners for a period of three years renewable. The Authority shall pay a fee of JD (15) thousand for the purposes of issuing the license or for the first time or renewal, for the authorization and approval of electronic authentication bodies for the year 2014 and its amendments for the year 2016. The regulatory framework established by these amended and effective provisions of the Authority's powers as the competent authority in the Kingdom by licensing, approving and regulating the electronic authentication bodies as defined in Article 23 (b) of the Electronic Transactions Law No. (15) for the year 2015 is a fundamental motive for building confidence and confidence in such transactions In electronic commerce in general, and electronic commerce in particular in the Kingdom through the provision of electronic certificates of authentication, which will be issued by the electronic authentication bodies licensed and approved by the Authority to prove the proportion of electronic signature to a specific person based on the documentation procedures Which in turn will enable the parties to the electronic transaction to verify the identity of the other party dealing with it. One of the most important uses of these certificates is their use in cross-border electronic transactions, bank transactions, online purchases and government e-transactions; each requires a third party that guarantees the identity of the service provider, whether bank, vendor, marketing company, etc. The service to a third party guarantees the identity of the customer, which is assumed by the electronic authentication authority, regardless of whether it is governmental or non-governmental.

(March 12, 2018) trc.gov.jo

Kuwait

The Chairman and CEO of the Communication and Information Technology Regulatory Authority, Eng. Salem AlOzainah, assured the significance of the Regional Communication Corridor between Kuwait and Iraq, in transforming the country to a global communications hub, as well as its contribution in developing the state's infrastructure. AlOzainah added in a speech during a workshop held on Monday by the Authority regarding The EU General Data Protection Regulation (GDPR), that the project aims to connect international cables between the Western and Eastern Hemispheres, starting from Kuwait, passing through the Arabian Gulf, then Iraq, and reaching Turkey; along with providing a lot of job opportunities for citizens and attracting foreign investments. AlOzainah pointed out that the Authority has launched a series of important initiatives and projects that support many projects specialized in this field, including the National Strategy for Cyber security for the State of Kuwait Project, that supports the safe and correct use of cyberspace, in addition to the electronic system relevant to the allocation, organization and management of domain name addressing for access to the World Wide Web. In respect of the workshop itself, AlOzainah said that it clarifies the EU General Data Protection Regulation (GDPR) which can be applied to governments, considering it to be one of the most important international regulations in the field of security and privacy of information. He explained that the holding of this type of workshops comes from the responsibility of the Authority, which includes the preparation of information programs to raise awareness of the importance of the ICT sectors and to show their positive impact on the economic and social development in the State of Kuwait. AL-Ozainah stated that the main mission of CITRA is to supervise and optimize the ICT market to be competitive and to provide excellent and advanced services through a fast and secure telecommunications network that benefits individuals, government and private entities and protects their interests. He pointed out that the Authority is working to create a climate conducive to investment in the telecommunications and information sectors and encourages initiatives and youth projects and the application of the highest international standards to upgrade e-government services and make it available to individuals. He said that the Fourth Industrial Revolution focused on digital technology as it became a major engine of innovation, which contributes to the renaissance of countries through the development of all government services, especially health and education, pointing out that the growth and increasing use of technology means we should promote and work at a rapid pace to be able to keep abreast of the latest services and global developments in this the field. The Communication and Information Technology Regulatory Authority (CITRA)established in 2014 and is responsible for overseeing the telecommunications sector, monitor and protect the interests of users and service providers and regulate the services of telecommunication networks in the country.
(March 12, 2018) citra.gov.kw

Nepal

In a move that adds to the global telecommunication infrastructure potential, Nepal is joining with the University of Tokyo as part of the latter's project to launch around 20 microsatellites in the next three years. Nepal will be joining Laos and other 18 other countries as part of this project. The project aims to boost mobile communication and also add to the demand for satellite and related services across emerging nations. A team led by Shinichi Nakasuka, Professor at the University of Tokyo, is planning to create a network of nearly 20 satellites around Earth to ensure seamless communication. Nakasuka's network of satellites facilitates the measurement of temperatures and water levels using sensors set up in farms, river bodies and other sources of information. This information will help the authorities to check the spread of infections, monitor climate change, floods and other disaster situations. Application of microsatellites matters a lot to countries like Nepal that are more prone to climate change. Satellites weighing less than 100 kg are termed as microsatellites, which hold high demand among smaller enterprises. Another advantage of these satellites is the time of their production. It takes just one or two years to manufacture a microsatellite, which is almost half the time required for normal satellites. It is noteworthy that the Government of Nepal has been taking many measures to mitigate disaster and climate change concerns with the support of international bodies. In a similar move supporting Nepal, the United Nations Development Program (UNDP) Nepal had recently partnered with the Himalayan Consensus Institute (HCI) to assist Nepal in crisis prevention and conflict mitigation. As part of the deal, UNDP agreed to develop early warning systems to assist the government at the time of disasters. Upon successful implementation of this pilot project in Nepal, UNDP plans to conduct a similar conflict programs across other countries that are sensitive to climate change.
(March 6, 2018) nepalisansar.com

Oman

The TRA issued Access and Interconnection Regulation in April 2016 via Decision no. (25/2016). In accordance with the said Regulation, the Dominant operators (Omantel and Ooredoo Oman) submitted their Reference Access and Interconnection Offers (RAIOs) for TRA approval. The TRA conducted extensive consultation with the industry on the proposed RAIOs and issued two Decisions (67/2017 and 68/2017) containing detailed directions for amendment of the terms and conditions of the RAIOs of the two dominant operators. These Decisions required the Dominant operators to make specific amendments in their RAIOs within 30 days. During the 30 days granted to Omantel to amend its second Draft RAIO, Omantel filed a Review Request dated January 29, 2018 regarding TRA's decision no. (68/2017), in accordance with the Telecommunications Act. In accordance with the applicable legal frameworks, the TRA has admitted the review request of Omantel for further examination and issued a preliminary decision in this respect on February 27, 2018. The preliminary decision includes suspension of the implementation of TRA's decision no. (68/2017) until the issuance of the final decision on Omantel's Review Request, which will be issued after completion of consultations with the relevant licensees regarding the issues and reasons stated in Omantel's Review Request. To this end, TRA urges all licensees to accord high importance to this issue, and provide their views during the consultations process, in light of the significance of the RAIO decision for the Industry. It is pertinent to mention that Ooredoo Oman has submitted its Final RAIO after making required amendments as directed by TRA under its Decision 67/2017, which is under review to ensure compliance with all required amendments. This publication is in line with the principle of transparency adopted by the TRA in dealing with important regulatory matters that affect the interests of various parties.

(March 2018) tra.gov.om

The mobile sector in Oman has become more and more competitive in recent years, due to both the market becoming saturated as well as the rise of MVNOs. The two mobile operators, Omantel and Ooredoo Oman, are beginning to feel the impact of the MVNOs with both Friendi and Renna capturing more and more subscriber market share each year. In particular, Omantel has seen its market share of mobile subscribers decline by around 5.5% over the past 5 years or so, compared to the resellers which have grown market share by around 5%. The resellers are proving popular amongst a lower-income and younger demographic. A third mobile network operator (MNO) license was up for tender throughout 2017 and four operators had expressed an interest in bidding for the license. However, in October 2017, the government announced the tender process had been cancelled. It was reported the license would be awarded to a local consortium instead. There has also been a recent and renewed push towards improving fixed broadband infrastructure for Oman - particularly fiber-based networks. As part of it National Broadband Strategy, Oman Broadband Company (OBC) hopes to have all homes and businesses connected to its national broadband infrastructure by 2040.

Key developments:
- There was a third mobile network operator (MNO) license up for tender in Oman in 2017, which was subsequently cancelled.
- Omantel's fixed lines revenue is decreasing as Fixed-Mobile Convergence (FMC) takes place.
- The royalty fee payable by Oman's telecom operators was raised in early 2017.
- Microwave backhauling was being trialled in Oman in 2016.
- Integrated Telecommunications Oman (TeO) acquired the MVNO, Renna, in mid-2016.
- The Telecommunications Regulatory Authority (TRA) has approved the Access and Interconnection (A&I) Regulation which aims to make market entry easier for new players in order to promote competition.

(March 12, 2018) budde.com.au

Pakistan

Pakistan Telecommunication Authority is taking comprehensive steps to block sectarian, hateful and blasphemous material on social media. According to PTA sources, after the posting of blasphemous material on Facebook efforts have been made to communicate with the social media application authorities based in the US regarding the blockage of such blasphemous material in Pakistan. It has also been communicated to Facebook authorities that publishing of blasphemous material is not allowed on pretext of freedom of speech. The sources added that Facebook has ensured Pakistan Telecommunication

Authority that objectionable material will be blocked. In addition, FIRs have been registered against the individuals found to be involved in posting and sharing such kind of information. PTA is regularly sending SMS messages to mobile users to report any incident of blasphemous or hateful information they see on social media applications. (March 18, 2018) telecoalert.com

The number of 3G and 4G users in Pakistan reached 49.46 million by the end of January 2018. Number of mobile phone users in Pakistan reached 145.99 million by the end of January

2018, compared to 144.52 million by December 2017, registering an increase of 1.47 million users during the period under review. Jazz's total count for 3G users stood at 14.546 million by January 2018, compared to 14.299 million by December 2017, registering an increase of 0.247 million. Jazz's 4G user numbers jumped from 1,934,752 by the end of December 2017 to 2,238,018 by January 2018. Zong's 3G subscribers increased to 9.089 million by the end of January 2018, compared to 9.044 million by the end of December 2017, while the number of 4G users jumped from 4,961,350 by December to 5,072,443 by January. The

number of 3G users on Telenor's network increased from 10.63 million by December 2017 to 10.756 million by January 2018. Like others, the number of 4G users increased from 1,594,897 by December 2017 to 1,883,616 by January 2018. Ufone added 0.149 million 3G users on its network during the month of January as the total reached to 5.869 million by end of January 2018 against 5.720 million by December 2017. Teledensity for cellular mobile users reached 73.44 percent and broadband subscribers reached 51,767,141 by January 2018 compared to 50,512,909 by December 2017. (March 4, 2018) brecorder.com

Sudan

Pan-African telecoms company Liquid Telecom has signed a memorandum of understanding (MoU) with Sudatel Telecom Group for the deployment of new fiber-to-the-home (FTTH) networks across Sudan. Comparable to similar networks deployed in Zimbabwe, Zambia, Kenya and Rwanda by Liquid Telecom, the new FTTH networks will deliver speeds initially up to 100Mbps for business and residential customers. 'Liquid Telecom has a proven track record of bringing world-class

fiber networks to previously underserved regions of Africa,' commented Nic Rudnick, Group CEO of Liquid Telecom, adding: 'We are delighted to support Sudatel with its efforts to deliver leading FTTH services to more businesses and consumers in Sudan, which will help grow the country's digital economy.' Liquid Telecom, a subsidiary of Econet Global, has deployed a fiber network spanning over 50,000km in Eastern, Southern and Central Africa. (February 28, 2018) telegeography.com

United Arab Emirates

As part of its package of initiatives aimed at achieving customer satisfaction, the Telecommunications Regulatory Authority (TRA) today officially launched a "Coverage Center" which provides early detection of the quality of coverage of mobile networks in the UAE. The Center provides a field survey to test, measure, analyze the quality of mobile operator networks in the UAE, and simulate user experience. The launch of "Coverage" is an embodiment of the TRA's strategy to improve and develop telecommunications services and improve customer satisfaction by continuously improving the quality of services offered in the UAE. The mechanism of the project based on the development of a smart and innovative technology that works on a survey to test, measure, analyze the quality of the mobile operator networks in the country and simulate the user experience. The smart system is being installed in specially designed vehicles, as well as smart devices for interior areas. After the survey is completed, the system transmits data that has been collected automatically and displays it in a special monitoring room TRA that has been specially constructed for this purpose. In this room (coverage room) analyzing the data of the operators networks and follow up the problems of different networks and solve them as soon as possible in coordination with operators. Network performance reports will be issued and shared with service providers periodically to identify, develop

network performance issues and thus improve the services provided to individual, institutional and customers. H.E. Hamad Obaid Al Mansoori, Director General of TRA, said: "The launch of a coverage center is part of a series of important initiatives launched by the TRA in order to achieve the ultimate goal of any government action, which is to delight the customers. The UAE is one of the leading countries in the field of telecommunications as the mobile networks in the country of the finest networks compared to developed countries. Mobile coverage is available throughout the country, including developing and interior areas, and even good results in these surveys are not the end of the road. We see it as an incentive to move forward and to maintain the excellent level we have. In addition, strive to reach higher levels and provide excellent telecommunications services to citizens and residents of the UAE." Eng. Mohammed Al Saadi, Manager Telecom Networks Operations said: "The TRA has identified a number of keys international standards that assess the quality of the services of the licensees, the most important of which are the quality standards of voice services, data services that include mobile phone coverage, call completion rate, The success rate of creating mobile calls, the rate of call interruption, as well as the quality of voice in mobile networks, to ensure that the service is available."
(March 21, 2018) zawya.com

REGULATORY ACTIVITIES BEYOND THE SAMENA REGION

Australia

The Government announced that auction process for 5G spectrum, paving the way for new 5G services in metropolitan and regional Australia. According to the announcement, the 125 MHz of spectrum in the 3.6 GHz band will be sold at competitive auction. Spectrum in the 3.6 GHz band is highly valuable as it is being recognized internationally as a key band for the roll out of 5G services. In Australia, this band is currently used for fixed satellite service earth stations, point-to-point links and site-based wireless broadband services. "I have carefully considered the implications for regional Australians in making this decision, and the declaration provides protections for incumbent users in the band while ensuring Australia is well-positioned to take advantage of 5G technology in years to come," Australian Minister for Communications Senator Mitch Fifield said. As reported earlier, Minister Fifield released a 5G directions paper in October 2017 and announced the formation of a 5G working group to ensure Australia has the right regulatory settings to allow 5G applications to flourish. Minister Fifield has now issued re-allocation declarations for the 3.6 GHz band consistent with a recommendation from the Australian Communications and Media Authority (ACMA). The ACMA is the independent statutory authority and spectrum regulator that is tasked with ensuring most elements of Australia's media and communications legislation, related regulations, and numerous derived standards and codes of practice operate effectively and efficiently, and in public interest. The ACMA's recommendation was informed by an extensive public consultation process which commenced in October 2016. "The ACMA's recommendation provides for an unprecedented 7-year re-allocation period in regional Australia. This will allow incumbents, such as regional fixed wireless broadband operators, to continue to deliver services until the middle of next decade – and this could continue beyond the re-allocation period if agreed with a new spectrum license holder," Minister Fifield said. In addition, the ACMA has proposed to work with these providers to establish site-based, coordinated licensing arrangements in the 5.6 GHz band, and is investigating the possibility of licensing in alternative bands. Incumbent users will have 2 years to vacate the band in the metropolitan capitals of Adelaide, Brisbane, Canberra, Melbourne and Sydney; 5 years to vacate the band in Perth; and 7 years to vacate the band in regional Australia, ensuring incumbent operators have ample time to make new arrangements. As part of the reallocation process, the Minister has also written to the

Australian Competition and Consumer Commission (ACCC) seeking advice on competition limits for the auction process. The ACMA is expected to commence the auction in October. The declaration documents are available at the Federal Register of Legislation. Australian Government recognizes that 5G technology is an enabler of innovation and productivity across industry sectors and can significantly contribute to Australian's growth and future prosperity. Last December, the Australian Government has formed a 5G working group that brings together representatives from across Government and industry to foster an ongoing discussion on 5G issues. As reported earlier, the 5G Working Group met last month to discuss the development of 5G technology in Australia. It is expected to meet at least twice each year, before the review of its role by June 30, 2019.

(March 8, 2018) opengovasia.com

A public inquiry has been launched by the Australian Competition and Consumer Commission (ACCC) which seeks to determine whether the 'declaration' of the Domestic Transmission Capacity Service (DTCS) remains appropriate due to changes in the market which include the 'growth of commercial alternatives available to service providers, new NBN products for business customers and industry consolidation'. With the current DTCS declaration set to expire on 31 March 2019, in launching its review the regulator noted that many service providers are now acquiring non-regulated commercial domestic transmission services in preference to the regulated DTCS service. Further, since the DTCS was last published, the ACCC has highlighted a number of other factors, such as the announcement of several new business enterprise products by NBN Co, the company responsible for the National Broadband Network (NBN), and the introduction of 5G networks that could offer an alternative technology over which high capacity short distance transmission services may be delivered. Commenting on the matter, ACCC chairman Rod Sims said: 'It is important to review the scope of our regulation to determine whether the way in which we describe the regulated service adequately reflects the manner in which transmission services are currently being sold and purchased … If the market has changed to a significant extent, we will examine whether other service features should be included in the service description.' Submissions to the inquiry are being accepted until April 13, 2018.

(March 5, 2018) telegeography.com

Austria

The government of Austria has included a requirement for the introduction of SIM registration as part of a 'security package' of new legislation due to come into force on 1 January 2019. Der Standard reports that under the regulations, any existing users of pre-paid SIM cards will need to register their personal details with their service provider, while mobile operators will be able to sell unregistered SIMs.
(February 28, 2018) telecompaper.com

Brazil

Juarez Quadros, President of the National Telecommunications Agency (Agencia Nacional de Telecomunicacoes, Anatel), has revealed that of the 58 regulatory initiatives that the watchdog intends to approve during the remainder of 2018, 20 of them relate to spectrum management – with a particular focus on the introduction of 5G technology. At the top of the regulator's agenda is the re-auction of unused 700MHz spectrum licenses, although Anatel also intends to evaluate the 3.5GHz band for 5G use, ensuring there are no interference issues. Anatel initially auctioned the 700MHz band in September 2014, generating a total of BRL5.85 billion (USD2.39 billion) – well below its BRL7.71 billion target. While Vivo, TIM Brasil and Claro all picked up nationwide spectrum blocks, Oi did not participate in the auction. Likewise, regional operator Algar Telecom acquired spectrum within its own footprint, but Sercomtel opted not to. Another concession – nationwide barring the Algar/Sercomtel operating regions – also went unsold.
(March 21, 2018) telegeography.com

Canada

The Government along with the provinces of Ontario and Quebec, has announced the country's first major public-private partnership aimed at increasing economic growth driven by 5G technology, led by five digital technology heavyweights – Ericsson, Ciena Canada, Thales Canada, IBM Canada and CGI. The CAD400 million (USD306 million) project aims to secure 'over 4,000 good middle-class jobs, including 1,800 specialized 5G jobs, over the next five years, leading to new innovations in wireless telecommunications' plus create jobs at an estimated 1,000 SMEs across Ontario and Quebec. The 'ENCQOR' – standing for 'Evolution of Networked Services through a Corridor in Quebec and Ontario for Research and Innovation' – project is one of the first programmes to be funded under the federal government's CAD1.26 billion Strategic Innovation Fund. The governments of Canada, Ontario and Quebec will each contribute CAD66.7 million to ENCQOR, with the private sector investing the other CAD200 million. The federal and provincial governments, SMEs and academics will collaborate on 5G technology development through linked research facilities and laboratories located in Ontario and Quebec. This network will provide access to advanced technologies such as programmable broadband networks, the Internet of Things, silicon photonics, big-data analysis and cloud computing, a statement from Innovation, Science & Economic Development Canada (ISED) reads.
(March 21, 2018) telegeography.com

China

The telecoms watchdog the Ministry of Industry and Information Technology (MIIT) has issued a basic telecom service business license to China Satellite Communications Group (China Satcom), enabling the company to provide mobile and fixed satellite communications services nationwide. During the sector reforms in 2008, Satcom had been partially dismantled, with elements of the business being taken over by China Telecom whilst Satcom itself became a subsidiary of China Aerospace Science and Technology Corporation (CASC). In mid-2017 Satcom was reincorporated as a joint stock company, as part of plans for the company to re-enter the market.
(March 14, 2018) telegeography.com

Cuba

The telecoms operator Empresa de Telecomunicaciones de Cuba (ETECSA) installed a total of 279 3G base stations in 2017, as it gears up to extend the data service to its citizens on a wider basis. According to a report by CubaSi, the total number of 3G base stations has now reached 409, providing coverage to 47% of the population. A 3G platform has been available for visitors roaming in Cuba from foreign networks since 2012, providing coverage of the main tourist areas and provincial capitals. Last year, however, ETECSA launched a pilot 3G network utilizing the 900MHz frequency band in the city of Santiago de Cuba, followed by other locations including Camaguey.
(March 5, 2018) telegeography.com

Denmark

The Danish Energy Agency (DEA, or Energistyrelsen) has opened a consultation on a draft auction document for the sale of spectrum in the 700MHz, 900MHz and 2300MHz bands. The DEA has invited comments on the document by April 9, 2018, at which date it will hold a hearing on the auction rules, design and terms and conditions for the spectrum allocation. The DEA will award the nationwide spectrum authorizations on a service and technology neutral basis in 2018. The government has pledged to free up additional spectrum for wireless broadband services in order to ensure that all Danes have access to high speed internet access by 2020. In 2014 telecoms regulator Erhvervsstyrelsen completed a study of the future spectrum requirements for TV broadcasting and the possibility of reserving the 700MHz frequency band for mobile broadband services by 2020. The report claimed that there would be an economic gain of between DKK2.5 and DKK4 billion (USD361.5 million and USD578.5 million) in the period 2020-2030 if the 700MHz band was used for mobile broadband.
(March 9, 2018) telegeography.com

France

The telecoms regulator Arcep has issued four authorizations for spectrum in the 3.5GHz (3400MHz-3800MHz) band, after inviting applications from interested parties in January 2018. Under Decision No. 2018-0177, Orange will be allowed to use the spectrum for 5G trials for twelve months starting June 2018, in the French cities of Lille (with Orange authorized to trial the technology over 30 sites in the city) and Douai (48). Arcep has also issued a temporary license (Decision No. 2018-178) to Bouygues Telecom, for 5G pilots in the cities of Bordeaux, Lyon and Villeurbanne. The authorization (valid until 30 September 2020) grants Bouygues rights to stage 5G pilots using the 3645MHz-3745MHz block in the three locations in the period May-September 2018. Elsewhere, Arcep has awarded additional spectrum in the 3.5GHz band in the French overseas territory of Saint-Martin to help operators restore fixed-wireless broadband services disrupted by hurricane Irma. With Decision No. 2018-0253 Arcep authorized Dauphin Telecom to utilize the 3510MHz-3550MHz block in Saint-Martin until 30 June 2020, while Orange Caraibe was granted rights to the 3410MHz-3450MHz block (also valid until June 2020). (March 2, 2018) telegeography.com

Greece

The telecoms authority the Hellenic Telecommunications & Post Commission has announced the results of its public consultation on the award of spectrum in the 3400MHz-3800MHz band for 4G/5G use. The EETT disclosed that there is primarily interest from existing service providers to exploit the untapped spectrum frequencies in the band, though the authority pointed out that the available TDD frequencies in the band are not sufficient to provide the continuous blocks of spectrum required for 4G LTE/5G NR services. The regulator said that the synchronization of spectral blocks between neighboring providers is an important measure for smooth coexistence of the networks and the optimal spectrum management, and that it is necessary to further investigate it. The EETT envisions that it would authorize the trial of 5G NR technology in the period 2018-2019, while the award of the spectrum in the 3400MHz-3800MHz band would take place in Q4 2019. The regulator also forecasts that the gradual implementation of 5G should commence in Q3 2019 in urban areas and expand throughout the country by 2020.
(March 6, 2018) telegeography.com

India

India's Supreme Court has refused to lift a stay on the sale of Reliance Communications' (RCOM's) assets to Reliance Jio Infocomm (Jio), imposed after Swedish vendor Ericsson challenged the deal, the Economic Times reports. RCOM's creditors are battling to reclaim dues from the operator, with the firm's financial backers such as the State Bank of India (SBI) claiming that, as secured investors, they have the right to be repaid first from the sale of assets. Ericsson has contented, however, that RCOM ceased making payments in December 2016 and had no intention of attempting to repay the vendor, behavior which Ericsson claims amounts to fraud. RCOM has a debt pile of around INR450 billion (USD6.9 billion), and was due to sell its tower, fiber and spectrum assets to Jio for around INR250 billion. For its part, Ericsson is attempting to reclaim INR10 billion in unpaid dues.

The apex court is scheduled to hear pleas relating to the case on April 5.
(March 22, 2018) telegeography.com

The Union Cabinet has approved relief measures for the telecom sector, revising limits on spectrum holdings and allowing operators longer to pay for airwaves won at auction, with a view to freeing up funds for investment, improving ease of doing business and allowing for consolidation in the sector. The government approved recommendations from the Telecom Regulatory Authority of India (TRAI) and the Telecom Commission to increase the overall spectrum cap from 25% of all licensed frequencies in a circle to 35% and remove the 50% cap for holdings with a particular band per circle. Instead, the latter will be replaced by a 50% cap on combined sub-

1GHz (700MHz, 800MHz and 900MHz) spectrum holdings, with no upper limit set on spectrum in the higher bands. However, the government noted that the revised limits may be revisited following the ITU's World Radiocommunication Conference (WRC) in 2019. The reforms will primarily affect mergers and acquisitions, simplifying the ongoing consolidation drive in the sector, but the government also hopes that the move will encourage providers to participate in the upcoming spectrum sale. Operators have also been given a one-time opportunity to spread the cost of spectrum won at auction over 16 years rather than the current ten. 'With the restructuring of the deferred payment liability, the cash flow for the telecom service providers will increase in the immediate timeframe providing them some relief,' the government explained in a press release.
(March 8, 2018) telegeography.com

Italy

The Communications Regulatory Authority (Autorita per le Garanzie nelle Comunicazioni, Agcom) has launched a public consultation regarding 5G wireless spectrum, as it seeks to firm up the rules regarding allocation procedures and usage requirements. Potential 5G bands identified by the regulator are as follows: 694MHz-790MHz, 3.6GHz-3.8GHz and 26.5GHz-27.5GHz. The consultation was launched on March 5, 2018 and interested parties have 30 days to contact the watchdog with their thoughts.
(March 9, 2018) telegeography.com

Japan

Japan's biggest e-commerce company Rakuten submitted an application for cellular frequencies to the Ministry of Internal Affairs and Communications (MIC), as it takes the next big step in its quest to become the country's fourth major mobile network operator (MNO). The e-tailer is aiming to launch the new service in 2019, offering tariff plans linked to its online shopping platform in a bid to lure in customers. Rakuten – which has some experience of the market already via its MVNO venture with host network operator NTT DOCOMO that has amassed around 1.4 million customers – is targeting signing up around 15 million customers by the end of year ten, by throwing down the gauntlet to Japan's dominant 'big three', DOCOMO, KDDI (au) and SoftBank. To help realize this, the group established a new wireless venture, Rakuten Mobile Network, last month, with Rakuten's chairman and CEO, Hiroshi Mikitani, at the helm. The company will invest JPY600 billion (USD5.61 billion) to deploy base stations and ancillary infrastructure, it said. The MIC will consider Rakuten's application over the coming weeks, with a decision expected by end-March. Local industry watchers note that the government usually views applications for spectrum from new players more favourably than those submitted by existing carriers, given it is keen to nurture competition in the market. Rakuten's decision to shift from MVNO to full-blown MNO is based in part on its calculation that having its own mobile network would be more economical than paying connection fees to its host carrier if its customer base expands. 'Considering the cost and other hassles [of renting the lines], it's hard to generate a lot of revenue,' Rakuten chairman, president and CEO Hiroshi Mikitani explained. The communications ministry plans to free up the 1700MHz and 3.4GHz bands (currently being used by the Defence Ministry and others), and confirmed that the big three also applied for the spectrum on Monday. Should Rakuten Mobile Network prove successful in its application, it would mark the first new player in the market since eAccess secured frequencies back in 2005 and launched two years later under the branding eMobile. Despite signing up around four million users though, it struggled to make headway and was bought out by SoftBank in 2013. (February 27, 2018) telegeography.com

Mexico

The Federal Telecommunications Institute (Instituto Federal de Telecomunicaciones, IFT) has ordered America Movil (AM)-backed fixed line operators Telmex and Telefonos del Noreste (Telnor) to work towards a 'functional separation' of their retail and wholesale businesses within a two-year time-frame. The decision – which relates to Telmex's Agente Economico Preponderante (AEP, or preponderant economic agent) status – means that AM must create a wholesale business unit to provide other concessionaires with voice and broadband access, intercity and international long-distance dedicated-links and access to certain passive infrastructure services, including the shared use of towers. AM notes that the new entity will be a direct subsidiary of Telmex and will receive the necessary assets and employees to provide the unbundled services, although its board of directors have resolved not to subsidize or finance the new company. The functional separation was ordered by the IFT on 27 February 2017, following a biennial review of the effectiveness of the asymmetric regulation imposed on the AEP. Telmex offers services on a nationwide basis, while Telnor operates in the north-western state of Baja California.
(March 6, 2018) telegeography.com

New Zealand

The Ministry of Business, Innovation and Employment (MBIE) has launched a consultation into future 5G services and the allocation of wireless spectrum to support the new technology. The paper states: 'The objective of this discussion document is to canvas the industry's views on the key issues and actions by the government required to support the roll out of 5G technology. In particular, we wish to better understand the preferred spectrum configuration and optimal timing for spectrum release for 5G services, including providing for early technical and pre-commercial testing of 5G services in New Zealand.' Submissions are being accepted until 30 April. Meanwhile, domestic telco Spark has conducted what it says is the first live trial of 5G technology in New Zealand. A live test site has been switched on in Wellington, achieving download speeds of up to 9Gbps. Spark says it also plans to open a 5G lab in Auckland later this year. Equipment for the trial is being provided by Chinese vendor Huawei.
(March 19, 2018) telegeography.com

The government says the rollout of fiber infrastructure is ahead of schedule under its Ultra-Fast Broadband (UFB) project. The UFB scheme proposes to have high speed fiber networks available to 87% of the population in 390 cities and towns by end-2022. There were 506,075 UFB connections at the end of December, with households able to access download speeds of up to 1Gbps. Broadcasting, Communications and Digital Media Minister Clare Curran said: 'In total more than 1.25 million New Zealand households and businesses have access to UFB and 40% of those who have access are actually connected. There was a 10% uptake in connections between September and December.' The UFB deployments are being carried out by a number of firms, including Chorus, Ultrafast Fiber, Enable Networks and Northpower Fiber. End-user services are then re-sold by third-party providers such as Spark and Vodafone. Rural areas of the country are being targeted under a separate scheme, the Rural Broadband Initiative (RBI), which uses a combination of fixed and wireless technologies.
(March 1, 2018) telegeography.com

Philippines

In a move that some have interpreted as a relaxing of its position, the Department of Information and Communications Technology (DICT) has dropped a requirement for the would-be third player to have a minimum capital of PHP10 billion (USD193 million), instead focusing its revised draft guidelines on the newcomer's rollout, specifically its coverage, internet speed, and range of services after five years. DICT is poised to issue its final memorandum circular (MC) on the matter on April 9, 2018, with the government painfully aware of the challenges of a start-up faced with an entrenched duopoly in the shape of PLDT Inc. and Globe Telecom. Whilst the financial liquidity issue is important, the Philippine authorities appear to be coming around to the idea of a performance bond – possibly pegged at PHP40 billion, but the exact amount to be confirmed – with a clause that 'should the chosen telco fail to perform to expectations, the

runner-up bidder taking its place will be allowed to dip into the bond'. Local press cites Gamaliel Cordoba, head of the industry regulator the National Telecommunications Commission (NTC), as saying that in year one, the successful third telco should be able to provide coverage to 15% of the population, broken down as 25% of cities, 10% of so-called first and second class municipalities, and 5% of third and fourth class municipalities. In its second year of operation, meanwhile, the third telco's total coverage obligations rise to 30%, then 45%, 60% and 70% in years three-to-five, and finally 80% of Filipinos in year seven or eight. The government has officially moved the deadline for bid submissions for the third telco slot to May 24, 2018 – pushing back its original target date by nearly two months. Officials confirmed the decision on February 27.
(March 7, 2018) telegeography.com

Sweden

Swedish postal and telecoms regulator PTS said it has made a contiguous frequency block of 200 MHz within the 3.5 GHz band available for 5G service testing in Stockholm County. The previous holder of

the permit for this block has handed it back, as it was not using it. This is an area with a population of 2 million people, said the watchdog.
(February 26, 2018) telecompaper.com

Tanzania

The Tanzania Communications Regulatory Authority (TCRA) has invited industry stakeholders to submit comments on a draft Information Memorandum (IM) for the upcoming auction of spectrum in the 700MHz band. The IM outlines the award process and sets out fundamental practical issues, such as qualification criteria and eligibility, spectrum caps and coverage obligations, to guide stakeholders wishing to participate in the spectrum auction procedure, which

is expected to take place in June. Mobile broadband spectrum in the 700MHz band was freed up via the migration from analogue to digital television, with the regulator planning to auction off a total of 40MHz (2×20MHz) in the 703MHz-723MHz/758MHz-778MHz range. A reserve price of USD5 million has been set for a 2×5MHz lot and bidders are subject to a spectrum cap of 2×10MHz each. (March 14, 2018) telegeography.com

Thailand

Thailand's much anticipated sale of spectrum in the 850MHz and 1.8GHz bands was delayed again and can't be held until a new National Broadcasting and Telecommunications Commission (NBTC) board takes over later in the year. The delay is a huge setback for dtac, the country's third largest mobile operator, whose concessions with state-owned CAT Telecom to operate 2G services on the 850MHz and 1.8GHz bands expire in September. The acting NBTC board, whose six-year term expired in October 2017, will no longer be able to make policy decisions at the end of this month, Bangkok Post reported. A new seven-member board could be selected by April, but won't be able to complete an auction by September, said NBTC board member Prawit Leesathapornwongsa. An original draft of the planned auctions was approved by the NBTC board and passed a public hearing in December 2017. But a revised plan, calling for the number of slots offered in the 1.8GHz band to be increased from three to nine to make the sale more competitive hasn't been approved by the acting board as some members disagree with the amendment, the newspaper said. In September 2017 the NBTC announced plans to conduct the auctions in January 2018, some three months earlier than originally planned to ensure continuity of service for dtac after the concession expires. But in November 2017 it pushed the planned auction date back to May, with the licences scheduled to be awarded by June to give dtac customers a few months to transfer. Dtac, owned by Norway-based Telenor, didn't participate in auctions at the end of 2015 which raised THB232.66 billion ($7.4 billion) for the government. With a total spectrum holding of just 50MHz, dtac needs to acquire new spectrum to replace the 35MHz it loses when the 2G concessions expire. The 15MHz of 2.1GHz spectrum it owns is unlikely to be enough to support the rapid increase in mobile traffic in future. GSMA Intelligence figures showed the operator had about 450,000 2G connections under its two concessions with CAT at end-December 2017, down from about 1 million at end-2016. It ended 2017 with 22.7 million mobile connections and a 24 per cent market share.
(March 12, 2018) mobileworldlive.com

Ukraine

The National Commission for State Regulation of Communications and Informatization (NCCIR) has announced the results of the country's 1800MHz 4G LTE mobile license auction, raising a total of UAH5.434 billion (USD204 million) in one-off license fees and awarding 2×75MHz of spectrum to the three leading Ukrainian mobile operators. The market's largest cellco by users Kyivstar (part of the VEON group) was the biggest winner, securing 2×10MHz via competitive bidding for UAH1.520 billion, and paying UAH1.325 billion for a further 2×25MHz block guaranteed to it prior to the auction (receiving a total 2×35MHz in the 1800MHz band for UAH2.845 billion). Second-largest cellular operator Vodafone Ukraine (owned by Mobile TeleSystems [MTS] of Russia) won 2×5MHz for UAH742 million in the competitive auction, and was guaranteed a further 2×20MHz costing UAH1.325 billion (paying a total of UAH2.067 billion for 2×25MHz of 1800MHz spectrum). Ukraine's third-placed mobile player Lifecell (part of the Turkcell group) did not win any blocks in the competitive auction, but was guaranteed 2×15MHz in the 1800MHz band in return for UAH795 million. All 1800MHz licenses are valid for 15 years, nationwide. Earlier this year the same three operators all won 15-year 2600MHz LTE mobile licenses – the first 4G concessions awarded in Ukraine.
(March 7, 2018) telegeography.com

United Kingdom

The telecoms regulator Ofcom has confirmed that six companies have qualified to participate in its forthcoming spectrum auction, which it expects to start in late-March. The regulator said that, having assessed the applications submitted by the 8 February deadline, the following companies have been selected to proceed to the actual sale process: Airspan Spectrum Holdings Limited; EE Limited; Connexin Limited; Hutchison 3G UK Limited; Telefónica UK Limited; and Vodafone Limited. All pre-qualified applicants now have three days to confirm whether they wish to take part, or withdraw from the process, and a final list of bidders will be published once that period passes. Spectrum in two bands is to be made available through the upcoming auction and includes 40MHz in the 2.3GHz band and 150MHz in the 3.4GHz band. Commenting on the latest development, Philip Marnick, Ofcom's Spectrum Group Director, said: 'We're pressing ahead with the auction to make these airwaves available as quickly as possible. This will benefit today's mobile users by providing more capacity for mobile broadband use. It will also pave the way for 5G – allowing operators to launch the next generation of mobile technology.' Meanwhile, in other Ofcom-related news, the watchdog has published a draft decision related to the regulation of the wholesale mobile call termination market for the period from April 1, 2018 to March 31, 2021. Following a public consultation on its plans which began last year, the draft includes a number of 'key decisions', most notably the decision to implement a single cap on mobile termination rates (MTRs) of GBP0.00495 (USD0.0069) per minute from April 1, 2018, with the rate to fall to GBP0.00489 from 1 June, before further reductions to GBP0.00480 and GBP0.00471 from April 1, 2019 and April 1, 2020, respectively. In

addition, Ofcom has confirmed it plans to designate 68 providers as having significant market power with respect to the (wholesale) market for terminating calls to the numbers it controls, while it will impose a network access obligation and a charge control on all such providers. In publishing the draft statement, Ofcom said it had notified the EC of its plans, and once the notification process is complete it will publish a final statement to bring its decisions into effect.

(February 27, 2018) telegeography.com

United States

The US plans to launch 5G spectrum auctions later this year, according to Ajit Pai, chairman of the US' Federal Communications Commission (FCC). Speaking at Mobile World Congress in Barcelona, Pai said that the US would hold auctions in November 2018 for spectrum in the 28GHz band. These will be followed by auctions for 24GHz band spectrum. "We aspire to lead the world in 5G…I am hopeful that we'll be able to kick off a major spectrum auction in November," he said. Pai stated that the US needed "modern, flexible, light touch network regulation," to help it progress rapidly with the development and roll out of 5G services, and to ensure that it doesn't get bogged down in the type of regulatory wrangling about which operators in Europe are complaining. Pai emphasized the importance of automated networks to the evolution of next generation services. "To realize the full promise of 5G we will need smart networks, not dumb pipes. Dumb pipes won't deliver smart cities. Dumb pipes won't enable millions of connected, self-driving cars to navigate the roads safely at the same time," he said.

(February 27, 2018) totaltele.com

Zambia

The Zambia Information and Communication Technology Authority (ZICTA) has announced that it will award the country's fourth mobile license to UZI Zambia Limited, a unit of Netherlands-registered Unitel International Holdings with operations in Angola, Sao Tome and Principe, Cape Verde and Portugal. UZI Zambia has pledged to invest more than USD350 million in the deployment wireless services, including the rollout of a nationwide 4G LTE network. The operator will receive a Network License under the 'International Market Segment' category and a Service License under the 'National Market Segment' category, along with 'the associated resources'. UZI Zambia, which beat one other unnamed bidder for the license, will compete with the Zambian market's three existing mobile operators MTN, Airtel and Zambia Telecommunications Company (Zamtel).

(March 20, 2018) telegeography.com

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