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SAMENA TRENDS

FOR SAMENA TELECOMMUNICATIONS COUNCIL'S MEMBERS

BUILDING DIGITAL ECONOMIES



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THIS MONTH

USE CASES OF ARTIFICIAL INTELLIGENCE



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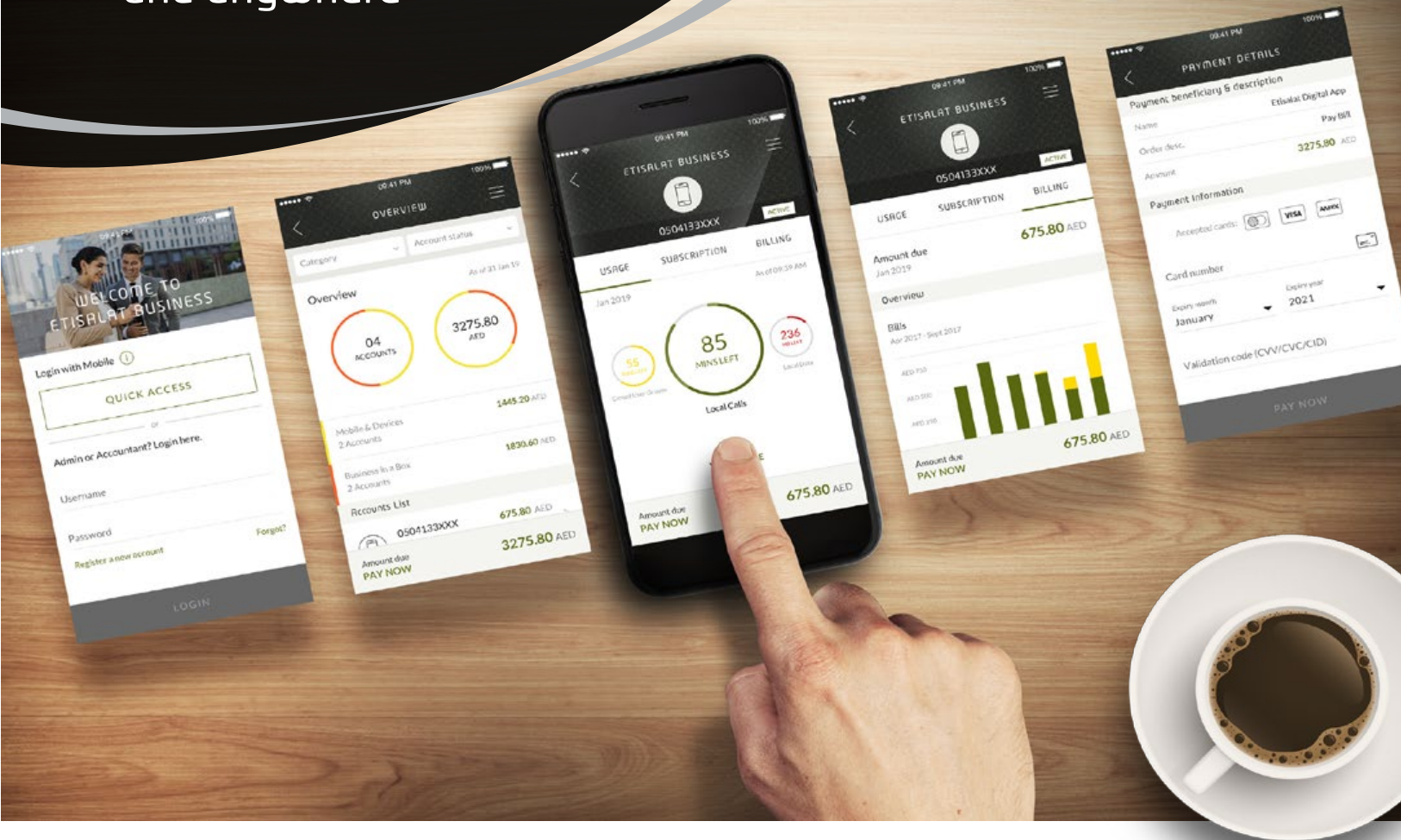
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Introducing Etisalat's Business Mobile App

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Together Matters



Use Cases of Artificial Intelligence

There is an ever growing need to introduce more intelligence, efficiency, creativity, and innovation-led sustainability across economic sectors. In this context, tremendous potential is being promised by artificial intelligence (AI). It is with AI that all of these modern needs can be met, to bring about a transformational shift in operating and thriving in smart environments.

While AI has been in use for some time now, especially as assistants in conducting precisely-defined tasks across customer care operations, SAMENA Council, in a previous edition of Trends, has highlighted its emerging use in improving network efficiency, lowering operational costs, and improving QoS in the new mobile networks; something of immense interest to Operators.

However, AI's applications and emerging uses stretch far beyond just telecommunications sector. The ability and implementation of

computational learning to imitate and augment human capabilities and thought have now been recognized as an immensely powerful dimension of digitization.

In the age intelligent connectivity and autonomous learning, artificial intelligence is a game-changer for all economic sectors. Given our region's focus on 5G, and to define revenue-rich use-cases for 5G, it is important that we look at some immediately implementable use cases for AI as well. It will require intra and inter-sector collaboration and coordination, and expertise to translate theory into reality.

Artificial intelligence is the next big thing we must understand well, in order to harness its beneficial use as we build the foundation of a thriving digital economy, built on the principles of inclusiveness and participation across all economic sectors and segments. 🌱



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

SAMENA COUNCIL ACTIVITY

During GSR-19, SAMENA Council Emphasizes on the Sustainable Expansion of Digital Infrastructure to Connect the Unconnected and Reiterates the Need to Achieve Equilibrium in Regulation, Multi-Stakeholder Engagement, and Market Forces

SAMENA Telecommunications Council, represented by its CEO Bocar A. BA attended the 19th Global Symposium for Regulators (GSR19), which took place from July 9 to 12 in Port Vila, Vanuatu. As the chairman of the Private Sector Chief Regulatory Officer's Meeting ("CRO"), Mr. BA Chaired the discussion of the industry that focused on the need to adopt collaborative approaches necessary for connecting the remaining 49% of the worlds' population, still unable to benefit from the digital revolution. In his opening remarks, preceding a leaders' debate, Mr. BA also drew attention to the globally important issue of protecting children in the digital space, and specifically called for action from governments to ratify an international "Child Safety On-line" declaration. Under the chairmanship of Mr. BA, the CRO Meeting called for new collaborative approaches to connect those who are still not able to benefit from the digital revolution, including a broader engagement of the public sector, as well as concerted efforts from all stakeholders of the ecosystem to facilitate financing of infrastructure expansion, particularly in areas with low commercial viability. As such, the Meeting identified that the policy and regulatory environment has to provide the right incentives to ensure that inclusivity can be achieved commercially in a sustainable way and emphasized that in areas that are uneconomical, the right balance has to be struck between regulation, public sector involvement and competitive market forces. Calling for broader, collaborative engagement of the public sector with the private sector, Mr. BA also emphasized on realizing a sense of urgency among the governments and collective responsibility of both the public and private sectors to bring about required changes; including among other priorities, taking proper regulatory measures



compliant with both globally-agreed and national aspirations, optimizing taxation regimes, ensuring the timely and cost-effective availability of spectrum to promote new technology adoption, stimulating demand, and, importantly, creating relevance in content to help promote internet access. In this 19th edition of the GSR, regulators and private-sector experts from all over the world discussed the future of regulation as the fast-changing ICT landscape – with new technologies such as Artificial Intelligence, Blockchain, the Internet of Things and 5G, as well as new business and investment models – continues its trajectory toward accelerated transformation. The GSR has successfully drawn attention to the need to connect the remaining 3.7 billion people who are still not using the Internet. SAMENA Council's participation in the GSR, both as a Sector-D Member as well as a contributing private-sector representative entity, entrusted to take leadership role in advocating on multiple areas of importance to the Digital Communications Industry, especially Telecom Operators, has been active with the ITU since the Union developed the key

concepts of "collaborative regulation" and "fifth-generation regulation" -- both of which have thus far successfully described the need for ICT policy and regulatory frameworks to be inclusive, relevant, and incentive-driven for the private sector. As a sector-development partner to Regulators in the SA-ME-NA region, SAMENA Council continues to anticipate and support the need for policy and regulatory frameworks to be practical, reality-based, and decision-oriented as well, so that national ICT visions can be fulfilled as smoothly and promptly as possible. This, in SAMENA Council's strong views, requires very close engagement and trust-driven exchange of information and partnership development between the public and private sectors. Held under the global theme of "Inclusive connectivity: The future of regulation", GSR has succeeded in serving as a needed opportunity for fostering dialogue and drawing world-wide policymaker and regulator-level attention to specific areas of the future ICT policy and regulatory environment. 📍

MEMBERS NEWS



STC Signs an Agreement with NEC

STC has signed a contract with NEC to manufacture and install LED screens for the network's operating center, measuring 32 m long x 8 m high for a total surface area of 256 m², with 1.5 Pixel, which are considered the largest in the Middle East, in addition to 10 medium-sized screens for the control. The agreement was signed by STC Group CEO, Eng Nasser Bin Sulaiman Alnasser, and NEC CEO Ms. Bernd Eberhardt. Mr. Nasser said that this agreement aims to meet the ambitious transformation programs relating to the company's processes and control and intelligent operation of all the network's components, information security systems and advanced data centers established by the company across the kingdom through the new strategy focusing on customer experience assessment around the clock. In addition it supports efforts to achieve target to achieve integrated digital transformation in government services and business sectors. The agreement was signed by STC Group CEO, Eng Nasser Bin Suliman Alnasser, and NEC CEO Ms. Bernd Eberhardt. Mr. Nasser said that this agreement aims to meet the ambitious transformation programs relating to the company's processes and control and



intelligent operation of all the network's components, information security systems and advanced data centers established by the company across the kingdom through the new strategy focusing on customer experience assessment around the clock, in addition to contributing to achieving Vision 2030 and NTP's target to promote integrated digital transformation in government services and business sectors. The center will measure and

follow up customers experience around the clock to ensure satisfaction of the various customer segments as the company provides unique integrated services, voice solutions and mobile/fixed broadband services to individuals and business sectors, as well as other operators and service providers inside and outside the Kingdom as a regional and international provider of voice services (Hubbing), internet and data.

STC's Net Income for Q2 and First Half of 2019 Compared to the Comparable Quarter and First Half of Last Year Increased by 16.5% & 11.3% Respectively



Saudi Telecom Company (STC) has announced the company's preliminary financial results for the period ending at 30 June 2019. In accordance with the approved dividend policy for three years starting from the 4th quarter 2018, which was announced on 16 December 2018, and has been ratified during the Extra Ordinary General Assembly Meeting on April 24th 2019, STC will distribute a total of SR 2,000 million in cash dividend for Q2 2019,

representing SR 1 per share. The eligibility of dividends shall be for the shareholders at the close of trading on Monday 29/07/2019 corresponding to 26/11/1440 H and as per the registered shareholders in the register of The Securities Depository Center Company at the end of the 2nd trading day following the eligibility date. Dividend distribution date will be on 26/08/2019 corresponding to 25/12/1440 H. Commenting on the results, Eng. Nasser

bin Sulaiman Al Nasser, STC group CEO, stated: STC continues to improve its performance and achieve positive results, which reflects the company's strong operational and financial capabilities, its success in implementing its strategy, and developing and diversifying its business by providing the latest integrated communication services, digital and technological solutions. As a result, revenue from various business units (BU) achieved remarkable growth in the current quarter compared to the same quarter last year due to the increase in revenue from data, Wholesale BU, and Enterprise BU supported by the innovative products offering in the field of IoT, cloud, cybersecurity and other telecommunication products and services. Mr. Al-Nasser also emphasized on the company's interest to improve and develop the information technology, communication infrastructure and to invest in digital economy and Cloud

Computing, which will contribute to the realization of the National Transformation Plan 2020 and the Vision 2030. STC now is considered a leading company in the field of cloud computing, where the company has established several platforms that have made it the largest cloud computing service provider in the region. This comes in conjunction with the increasing demand for Cloud Computing services in the kingdom as one of the key platforms for IT and digital developments. In addition and as part of the Integration project for infrastructure development, the company has officially launched the 5G network services in Saudi Arabia as first operator to provide this service commercially, and make it available to customers in a number of cities in the Kingdom with more than 600 5G sites. The 5G technology will play a major role in digital transformation as a key platform for future applications in the fields of IoT and artificial intelligence that

will support the existence of smart cities, cybersecurity infrastructure and providing faster mobile broadband Internet in all regions of the kingdom. Furthermore, the deployment of 5G technology will also lead to a significant social and economic positive impact and will contribute to the Kingdom's vision and the development of its digital economy as well as its impact on key sectors such as transportation, manufacturing, logistics, security, education, health and etc. As a part of the company's continued efforts to solidify its position among other brands, STC has won eight brand awards including the Brand Finance Award for the most valuable brand in Saudi Arabia in 2019. The report of the top 50 most valuable brands in Saudi Arabia revealed that the value of STC's brand reached nearly USD 7 billion, with an increase of 6.7% from the previous year, maintaining the first rank for the second year in a row.



Batelco Group Announces 1% Rise in Revenues in H1 2019

Bahrain-based Batelco Group has announced its financial results for the six months ending 30 June 2019, reporting a 1% year-on-year rise in revenues to BHD201.7 million (USD531.5 million). H1 2019 EBITDA stood at BHD74.4 million, 2% higher than the same period of 2018, while operating profits increased 1% y-o-y to BHD40.9 million. Batelco's impairment loss of BHD20.3 million on its investment in its associate company in Yemen was compensated by a gain of BHD27.2 million in Q2 2019 from the group's sale of Kuwaiti ISP Qualitynet, resulting in a consolidated six-month net profit of BHD34.0 million, 18% higher than H1 2018. The group highlighted that revenues were supported by a strong performance in its domestic market, with turnover from fixed broadband up 10% y-o-y alongside a 20% improvement for its data communications business, while international operations



contributed 57% of revenues and 55% of EBITDA. The group's total subscriber base stood at 8.4 million at the end of June, down from 9.2 million twelve months earlier. Batelco CEO Mikkel Vinter commented: 'Investment in 5G, data centres, enterprise

solutions and digital revenue streams are among our key priorities and support our efforts which contribute towards the growth of the digital economy in line with the Kingdom's vision.'

Batelco Awarded Service Provider Partner of the Year Award by Comstor

Batelco has been recognized as the 'Service Provider Partner of the Year' at the Comstor Partner Excellence Awards in Bahrain. Comstor is a dedicated value added distributor of Cisco networking, collaboration, security and data center solutions through a global network of

specialty resellers and is the distributor of Cisco products for Batelco in Bahrain. The Comstor Partner Excellence Awards recognize the top performing partners within specific categories with the award presented to Batelco for being the best service provider in combining telecom

and technology services for businesses that realize the full potential of Cisco's advanced technologies. Speaking on the award presentation, Comstor Middle East Divisional Director, Renton D'Souza said, "As one of Cisco's leading Value Added Distributors, we are proud to identify Batelco as a strategic partner within our channel ecosystem. It is indeed an honour for us to present this award to Batelco in appreciation of their vision, leadership and contribution as a loyal Cisco partner." Batelco's Enterprise General Manager Abderrahmane Mounir added, "We have a well-established relationship with Comstor and we look forward to strengthening this relationship to provide our customers with the best and latest technologies in the market. It is critical that we enable our customers to achieve maximum benefit from the provided solutions." Batelco is a major ICT and technology provider in the region and is a Gold Partner with Cisco in Bahrain. Batelco's partnership with Cisco offers a full suite of advanced and customized solutions ranging from networking, servers, storage, disaster recovery, IPT, and much more.



du Boosts Customers' 5G Futures with UAE's First 5G Router Supporting 50GB Data SIM

Slow browsing speeds are a thing of the past thanks to du, from Emirates Integrated Telecommunications Company (EITC), launching the UAE's first 5G-ready WiFi router. The innovative wireless 5G terminal device from ZTE is available to customers with zero upfront, starting from AED 210 per month. Combined with one of du's Data SIM plans, consumers can take full advantage of blazing fast speeds for numerous devices. By adding the ZTE 5G Indoor Router to its innovative portfolio of 5G-enabled devices, new and existing du customers now have even more ways to experience the thrills of the telco's 5G dynamic network evolution. The ZTE 5G router will allow customers to enjoy plug and play 5G access within all 5G-enabled

areas of the UAE. du's 5G locations are set to grow throughout 2019 as its intensive 5G rollout journey brings the next

generation of connectivity to more parts of the country.



du Becomes First VMware Verified Cloud Provider in the MENA

du, from Emirates Integrated Telecommunications Company (EITC), has taken a pioneering leap in the cloud arena by becoming the first Cloud provider to be VMware Cloud verified in the Middle East & North Africa (MENA) region. This accreditation solidifies du's ability to support and drive cloud implementation for government entities and enterprises in the UAE. Andrew Ward, Senior Vice President ICT Products, du, said: "Gaining VMware certification is a badge of honour and one that boosts our credibility as a dependable enabler of cloud platform solutions. This not only validates our solutions and expertise; it enables us to futureproof our offerings to support further transformation

and growth of our client partners in both the government and enterprise sectors." By becoming a VMware Verified Cloud Provider, du is now listed alongside other leading global verified cloud providers such as IBM, Fujitsu and NEC to name a few. This further highlights the company's efforts to become a cloud solution provider delivering the power of VMware Cloud Infrastructure. It also validates du's capabilities as a reliable partner to aid digital transformation through integrated cloud infrastructure and management solutions. Ahmed Auda, Regional Managing Director METNA at VMware, said: "We're thrilled that du has become the first VMware Cloud Certified partner

in the MENA region. By bringing our cloud solutions to a wider audience in the region, du will be able to help governments and enterprises increase their agility and efficiency by enabling them to run, manage, connect and protect all of their apps on any cloud." As a result of receiving certification, VMware will highlight du's deployments of VMware solutions through its cloud provider portal, VMware CIO blog series, as well as representation in the new VMware Discovery Center – a state-of-the-art facility at VMware's Palo Alto campus where customers, partners and VMware employees collaborate on cloud innovations.

EITC Is Strengthening the UAE's Bilateral Relations with Pakistan

du, from Emirates Integrated Telecommunications Company (EITC), is strengthening the UAE's bilateral relations with Pakistan, as well as the country's presence as a connectivity hub, with the announcement of its role in enabling a new 'Orient Express' submarine fiber optic cable between Pakistan and the UAE. As the partnering telecom operator for the landmark project alongside wi-tribe Pakistan LDI (Private) Ltd, a group company of HB International Investments Ltd, EITC will be the UAE landing party for the cable and will provide landing station infrastructure for connectivity of the fiber optic cable system's UAE presence. The establishment of this breakthrough agreement builds on the 'One belt, One Road' initiative – China's expansive multibillion dollar investment for development of global trade routes – to open up a gateway for onward terrestrial connectivity eastwards through Pakistan to China and westwards to Europe. The cable will also complement EITC's expanding datamena and UAE-IX ecosystems and provide connectivity to other cable systems in the region. Osman Sultan, CEO of EITC, said: "EITC is a regional leader in providing intelligent network solutions that facilitate digital transformation and accelerate economic growth. The UAE is one of Pakistan's

major economic trading partners and, by augmenting the rollout of the Orient Express subsea cable, we are playing a key part in further cementing the excellent ties between our two nations. With this milestone agreement, we are proud to be able to leverage off our extensive expertise to institute this new innovation via our strategic datamena facilities and the regional hub presence of over 150 content and cloud providers, including over 40 service providers in our ecosystem." Syed Rukhsar Ul Hassan Bokhari, Chairman of wi-tribe Pakistan LDI (Private) Ltd and HB International Investments, said: "As an industry leader in delivering best practices aimed at visions of digital excellence, EITC's support in our aspirations towards becoming a significant global multi-service provider and carrier focused on innovative technologies is warmly welcomed. We are trailblazing new paths towards digital innovation and the construction of the submarine cable system, 'Orient Express', is testament to our efforts in being a telecom pioneer." With this agreement, the completed Orient Express cable will offer high bandwidth capacity, internet services and transit facilities with low latency, high quality routes, and peering services to other service providers and enterprise customers. With the ability to connect to UAE-IX, as the in-bound provider, Orient

Express will deliver access to the high-potential content-savvy market with a reliable low latency route to international service and content providers. By peering on the UAE-IX, telco companies can offload customer IP traffic that terminates or originates in networks connected to the UAE-IX. The 1,300km cable system will link between landing points in Karachi and Gwadar in Pakistan, and Kalba in the UAE. The cable system will carry four fiber pairs and 40Tbps of total design capacity, providing consumers faster access to internet and content worldwide. The launch of the submarine cable system will help Pakistan's digital penetration, reducing the country's digital divide, and improving education and general awareness. It will also link the developing port city of Gwadar to the UAE and open up a new data highway to China through Pakistan. Additionally, this will provide Telecom operators in Pakistan with access to the competitive IP Transit market. Many of the worlds' Tier1 IP Transit providers are present inside datamena and offer IP Transit services directly to other datamena customers. With direct access to service providers, datamena hosts a number of different service providers across the ICT industry, from carriers, to content and cloud players.



Etisalat Group Announces Its Consolidated Financial Results for H1 Ending June 30, 2019

Etisalat Group announced its consolidated financial results for H1 ending 30th June 2019.

H1 2019 Financial Highlights and Key Developments

- Etisalat Group subscriber base reached 143 million representing year on year increase of 2%
- Etisalat Group Consolidated Revenues for first half of 2019 reached AED 25.9 billion while consolidated Net profit amounted to AED 4.4 billion representing 3.1% increase year over year.
- Consolidated EBITDA totaled AED 13.3 billion, representing an increase of 2% year over year and resulting in EBITDA margin of 52%.
- Etisalat is the first telecom operator in MENA to provide 5G network inside Abu Dhabi's new international airport, hence enabling it to become the first Airport in the region with 5G coverage allowing speeds of up to 1Gbps.
- Etisalat launches e-Wallet, the new mobile digital payment service in collaboration with Noor Bank.
- Etisalat collaborated with Microsoft as its strategic partner, to provide government entities, large enterprises, and small and medium enterprises with state of the art digital transformative solutions.
- Etisalat's innovation program 'Future Now' launched 3 challenges covering the topics of multi-cloud, insurance on demand and industrial IoT, in addition to selecting with 5 startups for next stage.
- Etisalat unveiled Robotic Centre of Excellence to deliver automated solutions for greater customer satisfaction.
- Etisalat launched a smartphone self-service vending machine, a 'first-of-its-kind' in the UAE.
- Etisalat opens 'Smiles UAE' application to all residents and visitors in the UAE.
- Etisalat awarded private sector's 'Leading Practice in Internal Audit' by UAE Internal Auditors Association.

International Recognition

- Etisalat achieved 'The Most Valuable

Telecoms Brand' in MENA by Brand Finance.

- UAE is ranked as a global leader in Fiber to the Home (FTTH) penetration for a third year in a row, according to the leading industry body FTTH Council.

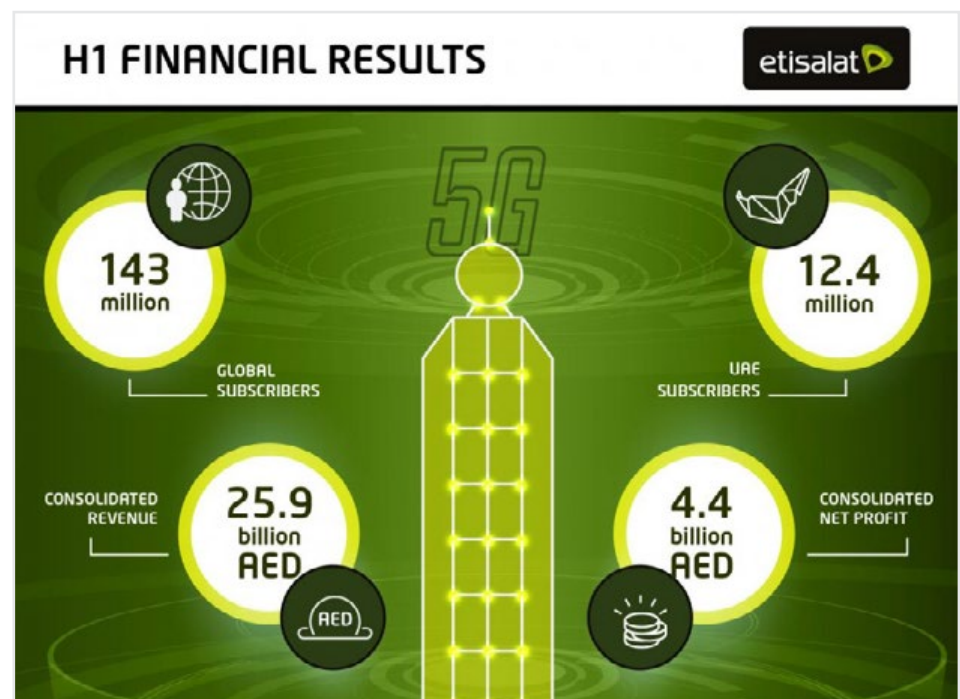
Essa Mohamed Al Suwaidi, Chairman of Etisalat Group

"Etisalat's performance in the first half of the year is a testimony of its regional leadership in the telecom sector. We have remained focused on our core business while demonstrating agility to transform and lead in the digital space driven by our bold vision 'To Drive the Digital Future to empower societies'. The launch of the first 5G network in the region is a major achievement as it opens up massive opportunities and adds value to both our customers and shareholders, it will help fast-track new innovative digital services. We have recently launched our mobile digital payment banking service e-Wallet, which is a solid step towards achieving the smart vision of UAE and is in line with country's overall objectives to achieve digital transformation. "Etisalat is thankful to the visionary leaders of United Arab

Emirates for their continuous support of the telecom sector and the management team for staying committed and focused to achieve our digital ambitions. We thank all our customers and shareholders for the continuous motivation that helped spark growth, contribute to our success, transformation and innovate boldly to make an impact in the near future."

Eng. Saleh Al Abdooli, CEO, Etisalat Group

"Etisalat Group's solid financial performance in the first half of 2019 is a result of our sincere efforts in building and investing in future networks while focusing on enabling innovation, and accelerating digital transformation across our operations. "While Expo 2020 was the first major commercial customer in MEASA to partner with Etisalat on 5G, Etisalat remains proud of its accomplishments as the first telecom operator to launch the first commercial 5G network in MENA. Through our network rollout and the pioneering launch of the first 5G handset in the MENA, we managed to provide our UAE customers with an opportunity to experience the power of 5G technology before many others. We have also empowered visitors at Abu Dhabi



international airport with indoor ultra-high speed 5G connectivity, making it the first airport in the region with 5G coverage. "These breakthrough achievements were only possible due to sincere commitment and focused efforts on key strategic priorities that would enable a smarter digital future, transform the ecosystem and open up opportunities to engage with business and customers in new ways. 5G will forever change the way we work and live by bringing positive impact on societies, industries and economies. Etisalat remains grateful to the country leadership for their continuous support, thankful

to our customers who are at the heart of everything we do and our shareholders for their constant encouragement, our focus will be to continue investments in futuristic solutions and next generation technologies to deliver the best-in-class services and solutions."

Subscribers

- In the UAE the subscriber base reached 12.4 million subscribers in H1 of 2019, while Aggregate subscriber base reached 143 million, representing a year over year increase of 2%.

Revenue & Net Profit

- Consolidated revenues amounted to

AED 25.9 billion and consolidated net profit after Federal Royalty amounted to AED 4.4 billion representing a year over year increase of 3.1% and resulting in a net profit margin of 17%.

EBITDA:

- Consolidated EBITDA totaled AED 13.3 billion, representing an increase of 2% year over year and resulting in EBITDA margin of 52%.

EPS

- Earnings per share (EPS) amounted to AED 0.51 in the first half of 2019; a 3% increase from the same period last year.

Etisalat Digital Signs Collaboration Agreement with 8 Banks on New Blockchain Platform

Etisalat Digital, in partnership with First Abu Dhabi Bank (FAB) and Avanza Innovations, have developed UAE Trade Connect (UTC), a new nationwide platform that will use the latest disruptive technologies to digitize trade in the UAE. The initial phase will focus on addressing the risks of double financing and invoice fraud before turning to other key areas of trade finance. UTC is aimed at driving digital transformation of trade in the UAE by enabling banks, enterprises and governments to collectively benefit from innovations such as blockchain, artificial intelligence, machine learning and robotics. Seven major UAE banks, in

addition to FAB, have joined the nationwide platform. The agreement to develop the solution was signed by Salvador Anglada, Group Chief Business Officer, Etisalat, with Manoj Menon, Head of Global Transaction Banking, First Abu Dhabi Bank (FAB); Sumit Aggarwal, Executive Vice President and Group Head - Transaction Banking Services at Emirates NBD; Hassan Al Redha, General Manager, Institutional & Transaction Banking, Commercial Bank of Dubai; Ahmed Abdelaal, Executive Vice President, Mashreq; Devid Jegerson, Head of Customer Experience and Platform Development, National Bank of Fujairah;

Peter England, CEO of RAKBANK; Haytham Elmaayergi, Global Head of Transaction Banking, Abu Dhabi Islamic Bank; and James Greenwood, Chief Operations Officer, Commercial Bank International. Etisalat Digital along with the eight banks will form a working group to further develop and extend the solution to other areas of trade. This nationwide platform, which is open for all UAE banks to join, will safeguard banks from potential fraud losses through advanced detection tools, allowing them to extend additional financing to their corporate clients.



Etisalat Digital and Microsoft Announce Strategic Partnership to Deliver the Intelligent Cloud

Etisalat Digital is collaborating with Microsoft as its strategic partner in the UAE, to provide government entities, large enterprises, and small and medium enterprises with state of the art digital solutions and enable transformation based on Microsoft Cloud services. The announcement coincides with the official launch of Microsoft's cloud regions in the UAE, to offer cloud-based services including Azure, Office 365, and ExpressRoute, as well as data residency options for customers. As a strategic Microsoft partner spanning cloud, security and access services, Etisalat Digital will provide end-to-end solutions based on Microsoft's intelligent and trusted cloud to Government institutions, large enterprises, small-medium businesses and start-ups. This offering, coupled with digital assessment, customer co-creation lab, cloud migration, and modernization along with deployment, support, managed services and ongoing monitoring, will

be valuable in the UAE market. Salvador Anglada, Group Chief Business Officer, Etisalat said: "Our collaboration with Microsoft perfectly fits our existing capabilities and positions Etisalat Digital as the digital enabler on the Microsoft local cloud, empowering our customers to move faster to the cloud, increase agility, accelerate innovation with enhanced service latency and performance. "Microsoft's trusted intelligent local cloud offering with world-class security and compliance combined with Etisalat's own advanced infrastructure and reliable connectivity and strong local presence address the digital transformation needs of organizations in the country, which reinforces the UAE 2021 Vision of attaining the global top position in smart services." "This strategic collaboration between Microsoft and Etisalat Digital is an effort towards achieving a shared vision of enabling organizations in the UAE to accelerate their digital transformation

journeys by embracing the cloud - and help them better engage their customers, empower employees, optimize operations and transform their products and services," said Sayed Hashish, Regional General Manager, Microsoft Gulf. "Etisalat Digital's breadth of expertise within the IT ecosystem, in concert with the Microsoft intelligent cloud, are a perfect combination to provide an end-to-end digital solution to our mutual customers, empowering them to achieve more." Etisalat Digital is collaborating closely with Microsoft as a cloud solutions provider, offering integrated connectivity with Microsoft ExpressRoute as well as private cloud services using Azure Stack. Etisalat Digital is also providing consulting, migration and managed services to ensure the smooth transition of business customers to the cloud and sees tremendous potential from Microsoft's intelligent cloud served from state-of-the-art datacenters.



Omantel and SQU Join Hands to Foster Innovation

Omantel and Sultan Qaboos University (SQU) have inked an agreement on a cooperation program that will contribute to the establishment of a state-of-the-art Innovation and Technology Transfer Centre at the varsity. The agreement was signed last week by Dr. Rahma Ibrahim al Mahrooqi, Deputy Vice Chancellor for Postgraduate Studies and Research at SQU, and Talal bin Said al Mamari, CEO of Omantel. The cooperation program is part of the mutual efforts to foster innovation in the sultanate and create the conditions that will enhance its contribution to driving economic growth, improving the lives of people in Oman, and creating an innovation and knowledge-based economy. The establishment of the Innovation and Technology Transfer Centre - one of the 14 research centers at SQU - was a response to the urgent need to expand innovation



activities and areas, as it is a strategic direction on which many economically and socially developed countries rely on. The Strategic Plan of the University (2016-40)

stressed on the importance of establishing an independent entity for innovation to expand the activities that support innovators, and develop and incubate the

Omani youth's innovative ideas in various fields. At the agreement signing, Dr. Rahma, said, "No two people will disagree on the importance of innovation in today's world, as it is the substance that leads to countless gains, whether economically, socially or intellectually. On the economic level, innovation is the key driver that contributes to enhancing and adding new value to existing resources and methods, and contributes to the development of new industries, products, and services, which in turn, creates jobs and multiple

opportunities for young people, and will ultimately drive Oman's economic growth. "The changing needs of our society and the world caused by a myriad of factors, especially the huge technological revolution and the advent of the Fourth Industrial Revolution, compel us to invest heavily in research and innovation to advance our country's industry, economy and to ensure the well-being of our society. Therefore, we must focus on ways and means to ensure that innovation is instilled as a culture in our society and

that the great benefits of innovation are realized in the various fields and sectors of the economy and society." Mamari said, "We are delighted with this new partnership with SQU. This partnership is one among many that Omantel has signed with the university, which have proven to be successful, with the latest one being the establishment of an Internet of Things Lab, in addition to the Omantel Fund for Scientific Research in the fields of ICT and nanotechnology."



Telecom Egypt and Cable Network Egypt (CNE) Sign a Strategic Partnership to enable IPTV Services

Telecom Egypt, the first fully integrated telecom operator in Egypt, signed a strategic partnership agreement with Cable Network Egypt (CNE) to provide Telecom Egypt's customers with Internet Protocol television services (IPTV) in collaboration with various content providers. Under this agreement, Telecom Egypt will provide its customers with unique content and TV channels through an interactive and unmatched IPTV platform. The company will offer numerous packages especially tailored to serve all customer segments and include content such as entertainment, sports, TV series, movies and kids channels, among others. Adel Hamed, Managing Director and Chief Executive Officer, commented: "I am very pleased to sign this agreement with CNE, which will enable us to deliver the latest services to our customers with the best customer experience possible. Providing IPTV services requires advanced networks and high internet speeds. Telecom Egypt's recent network developments leading to a shift in the quality of internet services in Egypt has enabled the company to provide triple (voice, data and IPTV) and quad play services (voice, data, content and mobile services) in line with its strategy. We will continue our development and modernization plans to provide the best services to our customers and meet their aspirations by employing the latest global technological solutions. Telecom Egypt



has chosen CNE as a partner due to its advanced technologies and expertise in the fields of encryption, distribution and subscription management using the latest internationally available systems in addition to its license to encrypt and disseminate Pay TV services in the region. Through this strategic partnership, we look forward to offering distinct IPTV services to our customers that would meet the aspirations." General Mohamed Kassem, Managing Director of CNE, said: We are very proud of this agreement with

Telecom Egypt, the country's leading ICT services provider, which demonstrates the confidence of companies and institutions in CNE's capabilities, its advanced infrastructure and its expertise in enabling a unique experience for customers based on the latest technologies. Through our partnership with the best content providers in the region, we seek to deliver exceptional quality of services and ensure an excellent experience for Telecom Egypt's customers."

Telecom Egypt and Etisalat Misr Ink Virtual Fixed Voice, Bitstream Agreements

Telecom Egypt and Etisalat Misr have announced the signing of four agreements which they claim are designed to 'maximize their customers' interest and provide them with the best services available in the Egyptian market'. In a press release outlining the development, Telecom Egypt said that a virtual fixed voice agreement will enable Etisalat Misr to provide fixed voice services to its customers over the former's infrastructure, while it noted that 'various' other agreements detail the commercial and legal frameworks between the pair, and protect the rights of users. As a result, Etisalat Misr is now able to offer fixed voice services to its customers across Egypt, having previously undertaken technical trials, which are expected to ensure that subscribers receive 'the best quality of service'. Meanwhile, with regards to bitstream agreements, under these Etisalat Misr will now be able to offer its fixed broadband customers VDSL-based connectivity, at speeds of up to 100Mbps. According to the press release the pricing of the bitstream service is 'based on the capacity utilized to allow customers to enjoy Telecom Egypt's network that recently underwent major developments'. Commenting on the matter, Telecom Egypt's managing

director and CEO Adel Hamed said: 'We are very pleased to continue to collaborate with Etisalat Misr on mutually beneficial agreements that will enrich the Egyptian market through service diversification and enhancement.' Hazem Metwally, Etisalat Misr CEO, added: 'These agreements fall within Etisalat's strategy to provide the latest and best quality integrated services

to its customers in Egypt utilizing the latest technology developed globally. During the next phase, Etisalat will provide its customers with a wide range of products and services that will be launched for the first time in the Egyptian market, based on Egypt's most powerful mobile network and the fastest mobile phone and landline technology.'



Telecom Egypt and Ericsson Showcase 5G Immersive Sports in Egypt

Telecom Egypt and Ericsson are giving sports enthusiasts a front-row seat for exciting new changes coming into play at the sporting experience at Alexandria stadium. The companies showcased demos based on concepts like Augmented Reality (AR), Virtual Reality (VR), and Mixed Reality (MR) – as well as AI Object and facial recognition. Eng. Adel Hamed, managing director and CEO of Telecom Egypt, said: "Consumers are always seeking new ways to experience their favorite sports content. Through the evolution of technology, we have the potential to push boundaries and

take the consumer to the heart of the game itself. Alexandria stadium is a great venue to demonstrate how far we have come technologically, and why it will matter to fans." Telecom Egypt and Ericsson are live with a full-stack telco cloud infrastructure with the successful deployment of Artificial Intelligence (AI) proof of concept, focusing on transforming the wireless network and providing a 5G-ready core. Rafiah Ibrahim, head of Ericsson Middle East and Africa, said: "We are happy to join Telecom Egypt and inspire football fans with a sneak-peek into the future.

This partnership marks as a milestone in our long-standing partnership, bringing our innovative technologies to elevate the consumer experience and pave the way for 5G." The objective is to demonstrate cloud use cases that enable Telecom Egypt to have faster time to market, offer high-quality user experiences and easily deploy ICT services such as Voice over LTE (VoLTE), Machine to Machine (M2M), Rich Communication Services (RCS) and enterprise solutions.

Telecom Egypt Announces a New Shift in Its Fixed Broadband Offering and Network

Telecom Egypt announces a new shift in its fixed broadband offering in line with its large project to develop its network capabilities and improve the quality of internet services in Egypt. As a result of the completion of the first phase of the project in June 2019, the company raised the maximum speed of its internet bundles to start at 30Mbps instead of 5Mbps, allowing customers to enjoy the maximum internet speed allowed by the network for their lines for two months without any price increase. Telecom Egypt has also increased the packages' quota to cater to the increased usage resulting from the higher speeds, offering its customers a lower price per GB. Telecom Egypt had developed an integrated operational plan for developing its infrastructure expanding its international, core, transmission and backbone networks across all Egyptian governorates. The plan also focuses on the speedy deployment of MSAN units and fiber optic cables to gradually improve the company's network capability to better serve its customers. To shorten the time it will take to implement the infrastructure development and network improvement project to two years rather than four, the company has developed an accelerated work plan to complete the project by 2020. Telecom Egypt has earmarked investments of EGP 17bn for 2019 and 2020 in addition to the EGP 26bn that has already been spent in the past 5 years leading the total investments since 2014 to amount to EGP 43bn. Adel Hamed, Managing Director and Chief Executive Officer, commented: "The developments witnessed in our infrastructure during the past year reflect our commitment to improve the service quality and enhance our network in record time to meet our customers' needs. This is a difficult process that has been based on years of effort exerted to develop the company's



infrastructure. The recent network upgrades have contributed to increasing speeds for a large number of customers and we are still on our way to offer more to our customers capitalizing on the efforts of our dedicated and diligent work force, who has been instrumental in achieving this great success. Today's milestone is a testament of Telecom Egypt's role as a leader in the Egyptian and regional telecommunications markets, and aims at positively contributing to the lives of our customers in particular and the Egyptian society as a whole. We are continuing to improve and develop our network according to the latest global technologies and we have developed a plan to speed up the completion of this project before the end of 2020."



VIVA Kuwait Achieves KD 20 Million Net Profit

Kuwait Telecommunications Company (VIVA), announced the financial results for the for six-month period ended 30 June 2019; whereby VIVA's Revenues reached KD 139.6 million, whereas the Net Profit reached KD 20 million during the first six-month period ended 30 June 2019. Commenting on the financial results, Eng. Maziad Nasser Al Harbi, VIVA's CEO said: "Despite the continued competition witnessed in the Kuwaiti Telecom Market, VIVA was able to achieve good levels of revenues as well as enhanced the operational efficiency to ensure generating value and positive return to our shareholders. VIVA achieved these results due to an integrated and sophisticated management approach by a highly professional team that reinforces VIVA's substantial and positive role as a leading telecommunications company that always provides intelligent communications solutions to satisfy the aspirations of its customers and meet their needs." Commenting on the quarterly results for the three months period ended 30 June



2019, VIVA's CEO added: "The Company's financial results have witnessed remarkable growth in the second quarter compared to the first quarter of 2019 as the revenue recorded KD 72.9 million in Q2-2019 compared to KD 66.6 million in Q1-2019 representing a growth of 9.5%. While EBITDA grew by 3.1% to reach KD 19.3 million in Q2-2019 compared to KD 18.7 million in Q1-2019. As a result the net profit for the same period increased by 7.1% to reach KD 10.3 million compared to 9.6 million. He added: "VIVA was able to achieve revenues of KD 139.6 million during the six-month period ended 30 June 2019. Also, VIVA managed to achieve positive earnings for its shareholders as a result of the commitment to elevate the quality of customer service and improving the operational efficiency". By achieving this good level of revenues and profitability during the six months of the year 2019 VIVA reflect its strong leadership in the telecom market, in line with the impressive success of fifth generation (5G) network nationwide launching, to be one of the first telecommunications companies in the middle east that offers this service to

its customers with the widest coverage in Kuwait which also to emulate the international companies in this field." Al Harbi added: The joining of Qualitynet Company in the second quarter of this year boosted VIVA's operational and financial results which is substantial supporter for us to successfully implement our corporate strategy to grow in the Enterprise segment, bringing to the International standards. At the same time individual customers will benefit from diversified and enhanced service offerings to solve their needs and requirements. VIVA was able to achieve a growth of 14% in its EBITDA to reach a KD 38 million with EBITDA margin of 27% during the first six-month period of 2019 compared to 22% during the first six-month period of 2018. As a result, VIVA reported a net profit of KD 20 million (earnings per share of 40 fils) during the first six-month period of 2019 with a profit margin of 14%. VIVA's customer base reached approximately 2.1 million at the end of June 2019. At the end Al Harbi added: "VIVA's financial results reflected its ability to compete, sustain revenues and maintain its position as the second largest

telecom operator in the Kuwaiti market in terms of market share of revenue volume in the telecom sector. Due to VIVA's secure financial policy we continued to implement the cost reduction program adopted by the company during the previous year to reach the best results to enhance profitability by adopting a balanced and effective financial policy in operating and capital expenditures. To shed the light on the financial position of the company as of 30 June 2019, the total assets at the end of the first six-month period of 2019 reached KD 380 million where total shareholders' equity reached KD 192 million, with a book value per share of 384 Kuwaiti fils. In addition, VIVA has strong financial solvency position, which is considered one of the best companies across the Middle East telecoms companies." The financial results for the six months ended 30 June 2019 are the first consolidated financial results for VIVA after the acquisition of Qualitynet Company on 6 May 2019. Therefore, the consolidated financial results of VIVA include Qualitynet financial results for the period from 7 May 2019 till 30 June 2019.



Zain Group launches 'WE ABLE' Initiative, Aiming to be Disability Inclusive by 2022



Zain Group, a leading mobile telecom innovator in eight markets across the Middle East and Africa, announces the launch of its far-sighted Disability Inclusion initiative, WE ABLE, which is set to position Zain as being Disability Inclusive by 2022. Supporting the program is Zain's entry as a signatory into the International Labor Organization (ILO) Global Business and Disability Network Charter, where as a member of the Network, Zain is committing to a groupwide plan. Zain's emphasis will be the development of an implementation plan that will act as a framework to guide the integration of people with disability into the company and include them in all facets of Zain's policies and culture. According to the United Nations Economic and Social Commission for West Asia (ESCWA), the unemployment rate in the MENA region for people with disabilities is as high as

86% for females and 66% for males. This high unemployment rate indicated to Zain's management the requirement to establish a clear framework to address the deficiency, while also highlighting the massive opportunity for the company to recruit people with disabilities to be part of Zain's 6,000 talented workforce. WE ABLE is the brainchild of Zain Vice-Chairman and Group CEO, Bader Al-Kharafi, complementing the company's Gender Diversity and Inclusion program. The immediate aim of the Disability Inclusion initiative is to achieve the following:

Increase the number of people who suffer with disabilities within the Zain workforce by 2022

Ensure all training programs are Disability Inclusive by 2022

Guarantee that accessibility across all Zain touchpoints are Disability Inclusive by 2022

Identify innovative and assistive technologies enabling more people with disabilities to join the company and succeed

Commenting on the new initiative, Bader Al-Kharafi said, "Zain's influential role in society means we must maintain our pioneering outlook with respect to creating positive change in the workplace and in all other areas of our activities. We are proud to stand as an example for other corporates to follow and the implementation of the WE ABLE initiative reflects our commitment to develop and implement a sustainable

Disability Inclusion program. We believe it is high time that the contributions that people with disabilities are able to make in our workforces and in society in general be recognized, and we are pleased to have the opportunity to raise awareness in this area through our words and more importantly through our actions." Al-Kharafi continued, "Zain has decided to position the introduction and development of disability issues within the workplace as a priority task that is part of our Diversification & Inclusion vision, and we will work with organizations and partners who are experts in this field to further strengthen this new strategy." Zain's Disability Inclusion program will particularly promote commitments from the ILO Global Business and Disability Network Charter as detailed below:

Open up routes to economic empowerment and financial inclusion so that persons with disabilities can enjoy decent work and achieve financial independence. This will mean creating more and better jobs, providing social protection, ensuring the necessary skills training, making workplaces accessible and hiring people with disabilities.

Revolutionize the availability and affordability of appropriate assistive technology, including digital, which will enable persons with disabilities to fully participate and contribute to society.

Gather and use better data and evidence to understand and address the scale, and

nature, of challenges faced by persons with disabilities, using tested tools including the Washington Group Disability Question Sets.

Hold ourselves and others to account for the promises we have made here today. We agree that our individual commitments will be reviewed, assessed and published on a regular basis, with the results published online.

Maryam Saif, Chief Diversity and Inclusion Officer at Zain Group said, "We have reflected on this issue of Disability Inclusion for some time and concluded that as an organization we need to further develop and promote this area in the workplace. We are delighted to launch this initiative that builds on Zain's Diversity and Inclusion achievements and activities." Saif continued, "We have spent the first two quarters of this year preparing for our approach to Disability Inclusion in our region. With collective research, feedback and advice from people with disabilities and representative organizations, we are implementing our strategy, with an emphasis on the development of a framework that will guide the integration of people with disabilities into our company policies and culture." Many countries across the MENA region have minimum quotas on the percentage of employees with disabilities, and Zain is committed to fulfilling and exceeding current quotas as well as investing in the training and further development of affected individuals.

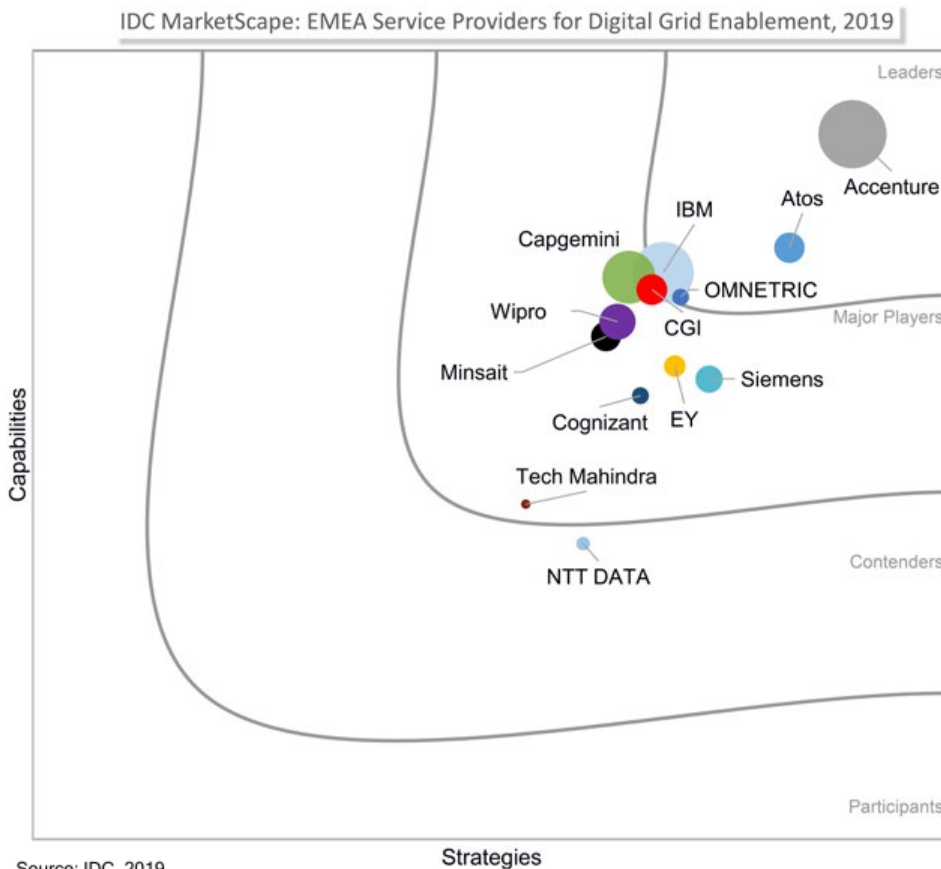


Accenture Positioned as a Leader in New IDC MarketScape Report for EMEA Service Providers for Digital Grid Enablement

Accenture was recognized for key strengths, including its ability to successfully envision and execute strategic projects and real transformational initiatives, and its numerous successful projects across all the core systems grid operators are using. Additionally its deep industry knowledge was cited, as well as quality of service delivery and its technical capabilities, strengthened and accelerated by the acquisition of companies specializing in operational technology services. The

report evaluated Accenture and 10 other companies with an established reputation for providing services to the utilities industry, with a particular focus on services that support grids' digital transformation, an offering designed to support utilities' core business processes as it relates to the grid, as well as a presence in at least three countries in EMEA. The IDC MarketScape assessed the capabilities and strategies of leading service vendors to support utility companies in

transforming and optimizing their grids (high, medium, and low voltage). The report analyzed the following services that vendors offer to grid companies: business consulting, process services, and IT and OT services, the latter of which includes systems and network implementations, data integration, application development and maintenance, deployment support and education and training. "We are delighted to have been named a leader in this report, and our position reflects our vision for



delivering the transformation transmission and distribution utilities require," said Matias Alonso, senior managing director for Accenture's utilities industry group. "We remain committed to the continued

expansion of our ecosystem of business and technology partners and concerted program of specialized acquisitions, to expand our offerings to the market and help electric grid operators navigate the new

challenge the energy transition represents. Through our innovation architecture, we're well-placed to work with our clients to transform their business operations, implement new business models and ultimately support their journey towards fully digital grids." Additionally, the report highlighted key differentiators offered by Accenture, including its comprehensive, global network of innovation hubs, six of which deliver R&D work for utilities, its efforts in solidifying its capabilities through the acquisition of consolidated firms and emerging start-ups, including Structure, Realworld Systems B.V., Davies Consulting and BRIDGE Energy Group, and its annual research program, identifying market trends regarding digital grid. The report also noted Accenture's robust partner ecosystem, including OT and technology companies, as well as the fact it offers a full suite of consulting, systems integration, application development, and outsourcing services. "Accenture has proven its ability to support transmission and distribution companies in their transformation journey and has experience on a wide range of digital grid use cases. Organic growth has been combined with targeted acquisitions, boosting its operational technology competencies," said Roberta Bigliani, Vice President and Head, IDC European Insights.

Accenture Named a Leader by Gartner in Magic Quadrant for SAP S/4HANA® Application Services, Worldwide Magic Quadrant

Accenture has been named a Leader and positioned highest in ability to execute in Gartner's 2019 "Magic Quadrant for SAP S/4HANA® Application Services, Worldwide." According to Gartner, "This Magic Quadrant addresses the full life cycle of SAP S/4HANA application services, spanning project-based assessment and implementation and multiyear application management services (AMS). Analysts evaluate service providers for their ability to deliver discrete or comprehensive sets of assessment, implementation and management services for clients worldwide, across SAP S/4HANA version 1610 or later and any S/4HANA Cloud version." Christophe Mouille, Senior Managing Director and global lead for the Accenture SAP Business Group, said, "We believe that this recognition from

Gartner reflects our ongoing focus on helping clients create value from new SAP solutions and technologies, as well as our ability to drive end-to-end transformation with industry expertise, intelligence and innovation through Accenture myConcerto. With initiatives that focus on co-development and co-innovation around both SAP S/4HANA and more recently on experience management and SAP C/4HANA, our deep and longstanding relationship with SAP and our ability to execute allows our clients to evolve to intelligent enterprises and get the most powerful business outcomes." The Magic Quadrant report, the first of its kind, also states that, "Leaders are performing well today, gaining traction and mind share in the market; they have a clear vision of market direction and are actively building

competencies to sustain their leadership position in the market. Leaders have built a considerable S/4HANA track record and capabilities across multiple industries, geographies, deployment approaches or modules." Earlier this year, Accenture also won the SAP® Pinnacle Awards for SAP S/4HANA Partner of the Year – Large Enterprise. The report evaluates each vendor on its ability to execute and completeness of vision. Additionally, "This Magic Quadrant evaluates 18 service providers' capabilities to deliver SAP S/4HANA application assessment, implementation and management services on a worldwide basis. This research will help identify, evaluate and select potential SAP S/4HANA application services providers."

New Accenture Platform Provides Air Cargo Carriers Real-Time Visibility into Connectivity with Partners Networks

Accenture has introduced AFLS Exchange, a new cloud-based connectivity and collaboration platform that enables air cargo carriers to seamlessly integrate with their partner networks, helping them expand their footprint and create new business opportunities. Air France KLM Martinair Cargo (AFKLMP Cargo) signed up for AFLS Exchange, becoming the launch carrier to integrate this new industry platform. Developed by Accenture's Freight and Logistics Software (AFLS) business group, AFLS Exchange gives carriers real-time visibility into their partner and joint venture networks. AFLS Exchange enables efficient, seamless, and secure transactions for key business functions, including route enquiry, capacity availability checks, and bookings. As a result, the solution provides customers with more product and route options and enables significantly faster response times by replacing the existing cumbersome largely manual processes. "We are committed to leveraging innovative technology to transform our business, and AFLS Exchange will make integrating with our partner network simple and quick," said Marcel de Nooijer, EVP Air France KLM Cargo. "We're confident that AFLS Exchange will help us expand our network footprint and enable us to generate even greater value from our partnerships with other carriers." AFLS Exchange integrates easily and quickly with a carrier's existing booking system and allows simple onboarding, configuration, and off boarding of partners. By providing carriers with fast and secure access to their partners' systems, the solution helps carriers reduce the effort and costs associated with manual input and processing. The platform incorporates key cloud security measures and complies with the highest international security standards. "We are delighted and excited to partner with AFKLMP Cargo in their continued digital transformation journey with our innovative AFLS Exchange



platform," said Dirk-Jan Koops, a managing director in Accenture and Air France KLM Martinair Cargo client account lead. Ganesh Vaideeswaran, managing director of AFLS said: "AFLS Exchange is designed to help carriers realize the full potential of their partnerships and drive revenue growth. We are proud of this unique industry solution that addresses several pain-points we have discovered in our broader work with leading cargo carriers. The platform is highly configurable, reliable and equipped with a plug-and-play connector to meet the needs of every carrier and their partner networks." AFLS combines Accenture's deep industry knowledge of the aviation and air cargo industries with nimble platform and module development approaches that deliver best-of-breed solutions. The result for clients is lower costs, increased revenues, and optimized freight capacity. With these innovations, air cargo carriers also benefit from greater cost transparency, improved efficiency of assets allocation, and higher customer, employee, and partner satisfaction.



AT&T Receives "Fastest Wireless Network in the Nation" Recognition for Second Time in a Row



According to the most recent Speedtest® U.S. Mobile Performance Report by Ookla®, AT&T customers continue to enjoy the fastest speeds in the nation. Ookla has verified AT&T as the Fastest Wireless

Network in the Nation¹ for the second quarter in a row. This distinction comes following our most recent accolade from PCMag naming us the Fastest and Most Reliable Mobile Network in the nation², and recognition as the Nation's Best Wireless Network according to America's biggest test³. Based on results from consumer initiated tests taken with Speedtest, AT&T's wireless network performed the best in download speeds for iOS and Android. Consumers overwhelmingly choose Speedtest as the best way to check their network speed, and with over 10 million

consumer-initiated tests taken daily on Speedtest, Ookla provides invaluable insight into the performance, quality and accessibility of networks worldwide. These results reflect the billions of dollars of technology investments we have spent on our network creating great customer experiences. Our 5G Evolution foundation translates into a noticeably faster experience in areas where the network technologies are available – up to 2x faster than standard AT&T LTE.

AT&T Taps Microsoft for Broad Strategic Cloud Partnership

A day after AT&T announced a strategic partnership with IBM, the carrier announced another cloud-focused relationship with another blue-chip technology company, Microsoft. The two technology giants announced a multi-year alliance, focused on cloud, AI, 5G, and edge computing. The AT&T Microsoft partnership has AT&T agreeing to migrate much of its non-network infrastructure applications to the Microsoft Azure cloud. AT&T will also equip much of its workforce with the cloud-based Microsoft 365 office and collaboration suite. This looks to be a big win for the Microsoft cloud business line, and probably at the expense of Amazon AWS and Google cloud rivals. The partnership will also have Microsoft tap AT&T technologies, including 5G, to build edge computing capabilities and applications. The two companies plan to work together to bring integrated technology applications to market, including voice, collaboration and conferencing, intelligent edge and networking, IoT, public safety, and cybersecurity, a press release states. "AT&T is at the forefront of defining how advances in technology, including 5G and edge computing, will transform every aspect of work and life," said Satya Nadella, CEO, Microsoft in a prepared statement. "Together, we will apply the power of Azure and Microsoft 365 to transform the way AT&T's workforce collaborates and to shape the future of media and communications for people everywhere." The two companies point to a collaborative effort on an edge-computing based effort for tracking and detecting drones as an example of the type of applications that could emerge from this deal. Another potential example includes a scenario where a 5G equipped first responder uses AI-powered live voice translation to communicate with someone in need who speaks a different language. "AT&T



Microsoft CEO Satya Nadella with AT&T Communications CEO John Donovan

and Microsoft are among the most committed companies to fostering technology that serves people," said John Donovan, CEO, AT&T Communications in a prepared statement. "By working together on common efforts around 5G, the cloud, and AI, we will accelerate the speed of innovation and impact for our customers and our communities." The AT&T Microsoft partnership appears to be broader than the just announced AT&T IBM deal. That deal is cloud-focused as well but is limited to the AT&T Business Solutions business unit, helping to better manage internal applications. A key objective of the IBM deal is to provide tools for AT&T Business solutions to better serve enterprise customers.

AT&T Business and IBM Forge Closer Cloud Relationship

AT&T and IBM have worked together for 20 years, but today the companies announced an expanded two-way relationship where IBM will continue to provide AT&T Business with open source systems, which IBM mostly inherited from its recent acquisition of Red Hat. Also, AT&T will provide IBM with software-defined networking (SDN) expertise. In addition, AT&T Business will move more of its applications to the IBM Cloud. AT&T Business already has been using Red Hat's open source platforms, including Red Hat Enterprise Linux and Red Hat OpenShift to manage workloads associated with AT&T Business' internal applications. Now, on the heels of IBM's acquisition of Red Hat, AT&T Business will work with IBM to modernize its internal software applications to enable migrations

to the IBM Cloud. IBM will be the primary developer and cloud provider for AT&T Business' operational applications, and will also help manage the AT&T Communications IT infrastructure, on and off premises and across different clouds, both private and public. "We are proud to collaborate with AT&T Business, provide the scale and performance of our global footprint of cloud data centers, and deliver a common environment on which they can build once and deploy in any one of the appropriate footprints to be faster and more agile," said Arvind Krishna, IBM's senior vice president of cloud and cognitive software, in a statement. The companies' new multi-year partnership is a two-way street, as well. IBM says it will make AT&T Business its primary

provider of SDN expertise. AT&T has been a leader in SDN, building its own telco cloud with open source software and donating its own in-house code as part of the foundation of the open source group ONAP. IBM says AT&T Business will help transform IBM's networking solutions with AT&T technologies including 5G and IoT as well as multi-cloud capabilities. This builds on the existing relationship where AT&T Business is IBM's strategic global networking provider. The two companies say they will also collaborate on edge computing platforms, which they expect will be crucial for enterprises to capitalize on the power of 5G network speeds and the projected influx of internet-connected devices and sensors at the edge of the network.

AT&T Exploring USD3Bn Puerto Rico Sale, report Says

US telecoms giant AT&T is exploring the sale of its business in Puerto Rico, people familiar with the matter have informed Reuters. Indeed, the telco has hired an as-yet undisclosed financial adviser to manage the sale process, which could be worth up to USD3 billion. As per the report,

the Puerto Rican business generated twelve-month EBITDA of around USD300 million last year. The source noted that the potential sale is expected to help AT&T cut the debt pile it took on after the USD85 billion purchase of media and entertainment conglomerate Time Warner

Inc, which closed in June 2018. AT&T's strong market position in Puerto Rico – it is believed to be the territory's largest mobile operator by subscribers – has attracted interest from a mixture of media companies and private equity firms, the report adds.

AT&T Progresses on 5G in Sub-6 GHz Band; Nationwide 5G Will Target Consumers and Businesses

AT&T said this week that it might have a 5G smartphone to operate in sub-6GHz spectrum later this year. Such a device would be critical to supporting the company's plans to deploy nationwide 5G in the first half of 2020, as the company's nationwide deployment will rely on the sub-6GHz spectrum band. When it comes to 5G, "sub-6GHz" – or "sub-6" as AT&T refers to it – is a key buzzword. And we're hearing it more lately because the latest version of international 5G standards addresses service in sub-6GHz spectrum bands. Initial 5G deployments from Verizon, AT&T and T-Mobile used spectrum in millimeter-wave bands because those standards were ready first. But while high-frequency millimeter wave spectrum supports the highest speeds, it has relatively short range, making it difficult or impossible to quickly deploy nationwide 5G in those bands. Tellingly, in this week's blog post, AT&T said its millimeter-wave 5G service covers "iconic and high-traffic areas." Sub-6GHz spectrum, however, has broader coverage and, although 5G speeds in that band are not as fast as millimeter wave speeds, they are considerably faster than 4G LTE speeds. Sprint, which has deployed 5G in a sub-6GHz band in a few markets, has said it is seeing average speeds of 328 Mbps on those networks. Major nationwide carriers including AT&T, T-Mobile and Verizon have said they expect to use a mixture of millimeter-wave and sub-6GHz spectrum for their 5G deployments. And Sprint expects to piggyback onto T-Mobile's plans, assuming their merger is completed. As of now, however, only AT&T, Sprint and T-Mobile have provided specifics about their 5G sub-6GHz deployment plans.

For AT&T, that means using its ample 700 MHz holdings and for T-Mobile, its significant 600 MHz holdings. A combined Sprint/T-Mobile will also leverage Sprint's nationwide 2.5 GHz spectrum. Some industry observers have questioned whether Verizon has sufficient sub-6GHz spectrum to support a nationwide 5G deployment – although the company has said it expects to use dynamic spectrum sharing to deploy 5G on top of existing LTE networks and to refarm some spectrum that currently supports earlier-generation technology. The company also may be able to acquire sub-6GHz spectrum in upcoming auctions. According to this week's blog post, AT&T has made its first data transfer over sub-6GHz spectrum in the field using a Qualcomm smartphone form factor test device powered by a Qualcomm Snapdragon 5G modem, RF transceiver and RF front-end. "[A]lthough there are many more milestones to reach on the road [ahead], this one gets us closer to making those experiences a reality for both businesses and consumers," AT&T said in the blog post. The reference to

businesses and consumers is a telling one, in that AT&T emphasized the business market for its initial 5G launch using millimeter wave spectrum. The company said that approach meshed well with millimeter-wave 5G's high speeds and short-range, as the company was able to target its initial deployments around key business customer wins. This week's blog post comment suggests the company is casting a wider net for sub-6GHz 5G. AT&T clearly isn't concerned about appeasing the chorus of critics who objected to the company's use of the "5Ge" marketing term for a service that wasn't really 5G, as the company continues to use another bit of 5G marketing lingo that it has coined. Today's blog post reiterates that the company will use the term "5G+" to denote its millimeter wave 5G service. On the plus side (no pun intended), 5G+ actually does refer to a standards-based 5G service. 5Ge, on the other hand, is actually a hotrod version of LTE that can "evolve" to 5G. Nevertheless, one could argue that the 5G+ term will add more confusion to an already confused marketplace.



AT&T Bringing 5G-Enabled Robots to Retail

AT&T and Badger Technologies, a product division of Jabil, are working together to accelerate retail automation using autonomous robots with 5G wireless networking capabilities. Badger Technologies' robots empower retailers to improve operational efficiencies and customer experiences by identifying out-of-stock, mispriced or misplaced inventory as well as store hazards. These advanced mobile data collection systems can fill major gaps in the collection and sharing of vital in-store data and images, but also can tax a store's existing Wi-Fi network. To better enable seamless, uninterrupted network connectivity, the AT&T Foundry is testing 5G connectivity with Badger Technologies' robots in a multi-access edge computing (MEC) environment. The goal is to demonstrate how 5G using millimeter wave spectrum and edge computing could provide Badger Technologies and retailers with the lower latency and high throughput required to process and share vast amounts of data while running concurrently with other in-store network applications. "5G is an important next step to helping ensure

shared visibility across critical inventory, POS and operational systems," said Tim Rowland, CEO of Badger Technologies. "Working with AT&T enables us to better support our retail customers by delivering information faster to increase store efficiencies, improve customer service and boost profits." AT&T's multi-access edge computing solutions could also help Badger Technologies increase hyper-local data processing by providing a more private network connection than typically associated with in-store Wi-Fi. This gives Badger Technologies more control over what data travels beyond the walls of the store and what data stays onsite, which effectively addresses mounting privacy and security concerns among retailers. "In-building cellular solutions, including 5G and edge computing, are critical drivers of digital transformation for retailers," said Mo Katibeh, Chief Marketing Officer, AT&T Business. "These technologies will eventually equip robots with both the compute power and lower latency needed to increase revenue, improve the in-store experience, and elevate employees to better assist customers. Badger Technologies'



robots can help retailers make sure they have products in stock and in the right place, increasing customer satisfaction. That leads to increased revenue. That's the power of data."

With Millimeter Wave 5G Available Now, AT&T Working Sub-6 GHz Strategy

AT&T is currently offering up a commercial 5G service based on its millimeter wave spectrum holdings but the carrier is working to extend its 5G offering into sub-6 GHz frequencies. That effort hit a milestone this week with the company and its partners completing a data transfer in the field using sub-6 GHz spectrum. While the 5G focus in the U.S. is currently on millimeter wave frequencies to deliver enhanced mobile broadband and the focus in the rest of the world is mid-band 5G deployments, the broader vision is a blend of low-, mid- and high-band to provide a balance of high capacity and geographic coverage—think a combined T-Mobile US and Sprint with 600 MHz, 2.5 GHz and millimeter wave. In a blog post, AT&T's Igal

Elbaz, Senior Vice President of wireless Technology, laid out the goal: "We believe deploying 5G in both mmWave and sub-6 bands will provide the best mix of speeds, latency and coverage... And although there are many more milestones to reach on the road head, this one gets us closer to making those experiences a reality for both businesses and consumers." AT&T's millimeter wave network has supported speeds in excess of 2 Gbps downlink throughput. "By contrast," Elbaz wrote, "5G sub-6 speeds won't be in that range, but we do expect it to offer a good balance of impressive speeds over broader distances." For the purposes of this field test, AT&T said it used a 5G modem, RF transceiver, RF front-end and test device

provided by Qualcomm. Taking a wider look at AT&T's spectrum holdings, the carrier currently has 3G operating in the 850 MHz and 1900 MHz bands. The company has said it plans to discontinue 3G service in 2022. For LTE, AT&T uses a mix of 700 MHz, 850 MHz, 1700 MHz, 1900 MHz, 2100 MHz and 2300 MHz. So while it's not immediately clear which sub-6 GHz holdings would go toward 5G, the carrier has some options. AT&T has set mid-2020 as the goal for delivering nationwide 5G coverage. "After making our first data transfer over Sub-6GHz spectrum in the field this week," Elbaz wrote, "AT&T is a step closer to introducing 5G over sub-6 spectrum, with plans to offer nationwide 5G in the first half of 2020."

AT&T and MxD Accelerate 5G Deployment

AT&T and MxD have announced they are working together to help accelerate the deployment of 5G to the U.S. manufacturing industry. AT&T is collaborating with MxD (Manufacturing times Digital) to install 5G technology and Multi-access Edge Compute (MEC) within MxD's Chicago-based innovation center dedicated to advancing manufacturing innovation. "AT&T will bring a new perspective to our mission of helping U.S. manufacturers build every part better than the last," said Chandra Brown, CEO of MxD. "This is the first time we will bring a communications technology provider into our institute. By including AT&T's 5G network into our manufacturing testbed, our partners will get firsthand access to 5G technology to co-create use cases and test advanced digital manufacturing applications for the future of the industry." MxD, formerly the Digital Manufacturing and Design Innovation Institute (DMDII), is a non-

profit that brings hundreds of partners together to advance the future of the U.S. manufacturing industry. Its state-of-the-art innovation center offers its partners an ideal environment to focus on developing, demonstrating, deploying, and commercializing innovations that address manufacturing's most pressing problems. "5G has real potential to be one of the platforms that truly unleashes the power of Industry 4.0", said Jeff Wilcox, Vice President of Enterprise Transformation at Lockheed Martin and MxD Board Member. "We see the lower latency and high bandwidth of 5G as being key to creating the communication and processing infrastructure at the heart of the smart factory ecosystem." AT&T will install 5G millimeter wave (mmWave) technology to cover parts of MxD's 22,000 square foot factory floor. AT&T also expects to bring industry related technologies, applications, and new collaborations to the research

space to test manufacturing-related 5G use cases such as Industrial IoT, predictive maintenance, remote machine monitoring, autonomous robots, mixed reality training and spatial computing. In addition, AT&T plans to test and showcase its MEC solution. Using MEC, MxD partners will be able to test manufacturing capabilities that use locally-processed data for faster processing and lower latency, while boosting security in cloud services. "This is another example of our dedication to using 5G to transform businesses across the U.S.," said Mo Katibeh, Chief Marketing Officer of AT&T Business. "MxD is a premier leader in driving innovation for the manufacturing industry. By bringing 5G into their experiential testbed, we get to work with leading manufacturing companies to help drive new experiences and innovation not only today, but into the future."

AT&T and IBM Announce Multi-Year Strategic Alliance

AT&T and IBM have announced a multi-year strategic alliance. Under the agreement AT&T Communications will use IBM's expertise to modernize AT&T Business Solutions' internal software applications, enabling migrations to the IBM Cloud. In addition, IBM will provide infrastructure to support AT&T Business's applications. AT&T Business will utilize Red Hat's open source platform to manage workloads and applications. The improvements will allow AT&T Business to better serve enterprise customers. IBM will also make AT&T Business its primary provider of software defined networking. AT&T Business will help transform IBM's networking solutions with their latest technologies including 5G, Edge Compute, and IOT as well as multi-cloud capabilities using Red Hat. This builds on the existing relationship where AT&T Business is IBM's strategic global networking provider. "In AT&T Business, we're constantly evolving to better serve business customers around the globe by securely connecting them to the digital capabilities they need," said Thaddeus Arroyo, CEO of AT&T Business. "This includes optimizing our core

operations and modernizing our internal business applications to accelerate innovation. Through our collaboration with IBM, we're adopting open, flexible, cloud technologies that will ultimately help accelerate our business leadership." IBM will be the primary developer and cloud provider for AT&T Business's operational applications and will help manage the AT&T Communications IT infrastructure, on and off-premises and across different clouds –private and public. This approach will enable AT&T Business to build and deploy internal application workloads, and deliver new, innovative services. The two companies will also collaborate on edge computing platforms, which will help enterprise clients capitalize on the power of 5G network speeds and the internet-connected devices and sensors at the edge of the network. Using 5G, enterprises will one day be able to rapidly transmit data to and from multiple clouds and billions of edge devices with increased reliability and security, reduced latency and dramatic improvements in bandwidth. This will eventually help businesses transform the user experience for their customers and

optimize processes across industries from retail to financial services, transportation to manufacturing, to healthcare and beyond. AT&T Business has a strong commitment to utilizing open source technologies. As part of the relationship, AT&T Business will continue to use Red Hat's open source platform to manage the workloads associated with AT&T Business's internal applications. "Building on IBM's 20-year relationship with AT&T, today's agreement is another major step forward in delivering flexibility to AT&T Business so it can provide IBM and its customers with innovative services at a faster pace than ever before," said Arvind Krishna, Senior Vice President, Cloud and Cognitive Software, IBM. "We are proud to collaborate with AT&T Business, provide the scale and performance of our global footprint of cloud data centers, and deliver a common environment on which they can build once and deploy in any one of the appropriate footprints to be faster and more agile." The agreement between IBM and AT&T was signed in IBM's Q2, 2019.



British Telecom Turns to Canonical Ubuntu to Enable Next Generation 5G Cloud Core

BT announced it has selected Canonical's Charmed OpenStack on Ubuntu as a key component of its next generation 5G Core. Canonical, the company behind Ubuntu, will provide the open source virtual infrastructure manager (VIM) as part of BT's Network Function Virtualization (NFV) program, and the transition to a cloud-based Core network. This open source cloud-based approach will ensure that BT can quickly deploy new services, and increase capacity to stay ahead of customer demand driven by 5G and FTTP. Canonical's OpenStack architecture will also facilitate the delivery of BT's full 5G Core network. Openstack cloud software will enable the separation of network hardware and software, turning Core network components into software applications, meaning they can be updated faster with continuous integration and development. This separation allows different network applications to share the same hardware across data centers, making the network more resilient and scalable when additional capacity is needed. The speed at which software can

be updated compared to replacing core network equipment will lead to a new way of working for the development of 5G services where BT can build new services in weeks and deploy in days. Neil J. McRae, BT Group Chief Architect, said: "Canonical is providing us with the 'cloud-native' foundation that enables us to create a smart and fully converged network. Utilizing open source and best-of-breed technologies will ensure we can deliver on our convergence vision, and enable a world-leading 5G and FTTP experience for our customers." Mark Shuttleworth, CEO of Canonical, said: "BT has recognized the efficiency, flexibility and innovation afforded by an open architecture, and realizes the value of such an approach in enabling its delivery of new 5G services. We're delighted to be working with them to deliver the foundation to this approach, which will underpin BT's 5G strategy." BT's EE mobile network switched on 5G in six launch cities on Thursday 30th May 2019. Customers and businesses in London, Birmingham, Cardiff, Manchester, Edinburgh and Belfast are the first places

in the UK to experience the benefits of 5G. BT has also outlined its 5G roadmap, which will see the cloud-based full 5G Core introduced from 2022. The higher bandwidth and lower latency, coupled with expansive and growing 5G coverage, will deliver a more responsive network, enabling truly immersive mobile augmented reality, real-time health monitoring, and mobile cloud gaming. The full 5G Core is also a vital step on BT's convergence of network technologies, bringing together fixed, mobile and WiFi into one seamless customer experience. Further developments, able to be introduced with more agility thanks to the cloud-based architecture, will introduce Ultra-Reliable Low Latency Communications (URLLC), Network Slicing and multi-gigabit-per-second speeds. This phase of 5G will enable critical applications like real-time traffic management of fleets of autonomous vehicles, massive sensor networks with millions of devices measuring air quality across the entire country, and the 'tactile internet', where a sense of touch can be added to remote real-time interactions.

BT Elevates Schindler's Network to New Level

BT announced it has signed a contract with Schindler, one of the world's leading providers of elevators, escalators and moving walkways, as well as maintenance and modernization services. BT will provide Schindler with a reliable and secure network and voice solution connecting about 500 sites worldwide. BT will deploy and manage a consolidated global network infrastructure for Schindler, connecting their data centers, offices, factories and contact centers globally using IP Connect, BT's highly reliable and secure network service, and a global internet solution. This will remove the complexity of dealing with a multitude of network operators. It will offer Schindler better visibility of cost and performance as well as improved end-to-end service quality. Matteo Attrovio, Chief Information Officer, Schindler Group, said, "A global, secure, integrated network is a crucial element of our digital strategy. It will allow us to move from a fragmented network of suppliers to a global provider who can offer a fully managed, high quality end-to-end network service." Bas Burger, CEO of Global, BT, said, "We are proud to have been chosen by Schindler as a trusted advisor on their digital transformation journey. Schindler is a fast-growing, global company, and we are



happy to support them with our services and expertise all around the globe. Schindler moves more than one billion people every day, and it is fantastic that we can support them in providing a safe and secure service."

BT and Indian Institute of Science Kick Off New Phase of UK-India Research Collaboration

BT and the Indian Institute of Science (IISc), one of India's leading research institutions, today kicked off a new phase of UK-India joint research with the opening of a new collaborative research center in Bengaluru (Bangalore), focused on the development of the next generation of cutting-edge artificial intelligence (AI), mobility and software engineering technologies. The new BT India Research Centre (BTIRC) will join BT's network of collaborative research facilities around the globe, including centers in Northern Ireland, China, the US, and the UAE. This global innovation network is centered on the BT Labs at Adastral Park, Suffolk, UK, one of the world's leading centers for telecommunications research. The BTIRC will operate multiple research tracks, focused primarily on artificial intelligence, mobility and software engineering technologies for use in BT's strategic programmes, products and services. Future areas will include cybersecurity innovations. BT is one of the global research leaders in communications technologies and AI, filing the highest number of AI-focused patents amongst all UK companies with the UK patent office over the last 20 years. The center will build on these strong credentials, following a well-established model used for the company's other global research locations, combining academic, industry and government partnerships and BT's own commercial and research expertise. Professor Tim Whitley, Managing Director for Research at BT, said: "The opening of this new center is the start of an exciting new



chapter for BT, and for UK-India research. The technologies we'll be developing here, in fields such as AI, mobile and software engineering will accelerate the delivery of exciting innovations to our customers around the globe, taking advantage of the brilliant intellectual capital in Bengaluru." Professor Anurag Kumar, Director IISc said: "The Indian Institute of Science, one of India's premier institutes for education and research in science and engineering, looks forward with great anticipation to being an academic partner to the new collaborative research center being established by BT in Bengaluru. The proposed research topics of mobility and artificial intelligence, with the associated software engineering, are sure to attract strong interest from the IISc faculty and students. I look forward to the

many discoveries and innovations that will no doubt emanate from such collaboration. I wish the new BT research centre and the proposed IISc-BT collaboration the very best of success." BT has a long history of working with leading Indian universities on the development of new technologies and is a significant employer of highly-skilled IT and technology experts in Bengaluru and other locations across India including Gurugram, where the company opened a cutting-edge cyber-security center in 2018. The BTIRC will complement BT's existing relationship with the Indraprastha Institute of Information Technology, Delhi, which is focused on elastic optical networks and quantum key distribution technologies.

BT Launching 5G in 2019 to Give Customers the Fastest, Most Reliable Mobile Connections

BT announces it is launching 5G this autumn. BT Plus customers will be the first BT mobile customers to benefit from the option to upgrade to 5G, making BT the first provider to offer 5G as part of a converged mobile and broadband package. The move will continue to bring BT Plus customers the best connections possible from BT, in

and out of the home. 5G from BT Mobile will use the EE 5G network, which launched in May in six cities. 5G will be rolled out to the busiest parts of a further ten cities across the UK by the end of 2019 – giving BT Mobile customers the most reliable mobile experience, even in the busiest areas. Marc Allera, CEO of BT's Consumer

division, said: "We're bringing together the best fiber and mobile connections to help keep our customers connected, both on the go and at home. Launching 5G for BT customers will give them the opportunity to experience the fastest mobile speeds in the busiest areas of the UK, and our BT Plus customers will have the first

opportunity to sign up for 5G." 5G for BT mobile customers will be available in the busiest parts of London, Birmingham, Manchester, Edinburgh, Cardiff, Belfast, Glasgow, Newcastle, Liverpool, Leeds, Hull, Sheffield, Nottingham, Leicester, Coventry and Bristol by the end of 2019. From autumn 5G will be available for BT and BT business customers and will provide a more reliable experience and

higher speeds in high demand, crowded areas at peak times. 5G works alongside the UK's fastest 4G network and biggest WiFi network to help consumers and businesses stay connected, wherever they are and whatever they need to do. BT Plus is the UK's first converged fiber and mobile plan and comes with BT's Keep Connected Promise. If a BT Plus customer reports a fault with their home broadband, BT will

switch on free, unlimited data on their BT mobiles within an hour and will also send a free 4G Wi-Fi Mini Hub to arrive the next day, with unlimited data to keep customers connected at home while their broadband is repaired. BT Plus customers also benefit from 24/7 dedicated UK and Ireland support.



Cisco and du Enrich Customer Experience with an Innovative Digital Visual IVR Solution for the First Time in the Middle East

Cisco and UAE-based telecom service provider 'du', from Emirates Integrated Telecommunications Company (EITC), today announced the launch of a first-of-its-kind Visual IVR – a new, digital self-service solution in the Middle East region that will enable du customers to swiftly find answers to their queries at no extra cost, moving from traditional IVR technology to a more visually-appealing digital customer service solution. Visual IVR provides a visual interface alternative to traditional IVR: customers can see and touch their way to what they need, without having to simultaneously use their phone keypad, to listen to multiple options, repetitive information or memories menu options. Visual IVR bridges the gap between digital self-service and traditional customer service contact channels. With the addition of visual menu and rich multimedia content including text, images and video, the new self-service solution introduces new features and benefits for customers:

- On-demand digital assistance, anytime, anywhere
- No app download needed to access Visual IVR
- Menu based and flow driven support
- Intuitive & simple to use self-service tool from web and mobile
- Reduced time to find solutions
- Improved routing to specialized agents for faster support

The aim behind the initiative is to provide an enhanced level of service in alignment with du's vision of introducing more digital services for its digitally-savvy customers



and in line with Dubai's digitalization vision. The service will be available to both individual and business customers in five languages - Arabic, English, Hindi, Bengali and Malayalam. "As a company at the forefront of technology, we always look at exciting new ways to provide the customer with innovative new touchpoint that enhance our customer experience. Visual IVR offers us a unique and convenient way to address customer queries quickly," said Fahad Al Hassawi, Deputy CEO – Telco Services at EITC. "Moreover, our customers are already familiar with voice-based IVR format and therefore very little learning curve is involved in embracing this new customer service tool. We are certain this solution will delight our customers" "du is driving the introduction of visual

IVR technology in the Middle East as they are the first telecom operator to deploy it in partnership with us. Together we are aiming to empower customers with more self-service channels to resolve their enquiries with no need to visit store or call contact center," said Ali Amer, Managing Director for Service Provider, Cisco. The Visual IVR tool from du follows the recent launch of 'Blu' – an A.I-based channel virtual assistant that helps customers with common queries which they currently seek to address by contacting the contact center or visiting a retail store. To access the services, du customers need to call customer care on 155 or 188 (business customers) and select the Visual IVR option.

Cisco Predicts 30 Million Internet Users in Saudi by 2022

Cisco's Visual Networking Index (VNI) Forecast predicts 4.8 billion Internet users to be connected globally by 2022, out of which 549 million will be living in the Middle East and Africa. Cisco celebrated 30 years of the World Wide Web by sharing insights from the VNI Forecast to predict trends and behaviors evolving in the digital landscape in the region and globally. Cisco's VNI Forecast predicts four key drivers of IP traffic growth in Saudi Arabia and the wider MEA region by 2022:

An increase in the number of Internet users

The number of people using the Internet in Saudi Arabia will grow from 24 million in 2017, to 30 million in 2022. This will equate to approximately 82.6% of the population using the Internet, up from 73.2% in 2017. Cisco estimates that by 2022, the entire MEA region will have approximately 549 million Internet users and account for the highest growth rate in IP traffic, with a 41% increase over 2017.

A growing number of devices and connections

Cisco predicts there will be approximately 2.5 billion devices connected to the network in MEA, equating to 5.4 networked devices per capita in Saudi Arabia. In the Kingdom alone, there will be 83.3 million more devices and connections by 2022 – resulting in a total of 194.2 million. Non-PC devices are anticipated to drive the majority of Internet traffic, with machine to machine

Saudi Arabia Internet Growth and Trends



(M2M) modules expected to grow at the fastest rate, followed by portable devices such as smartphones and tablets. Cisco anticipates the enhanced connectivity to create new possibilities for AI and Machine Learning across industries and in smart homes.

Faster broadband speeds

As broadband connection speed is a key enabler for IP traffic growth, Cisco predicts the speeds will increase more than three-fold, from 2017 to 2022. Accordingly, it is expected that broadband speeds in Saudi Arabia will increase from 12.2Mbps in 2017 to 41.2Mbps by 2022 – enabling businesses and individuals to operate with greater speed and efficiency. As this speed continues to increase, large downloads will go from taking hours to a matter of minutes and eventually, seconds. The

average Internet user in Saudi Arabia will generate 40 gigabytes of Internet traffic per month, up 68% from 2017. Household traffic is predicted to increase by 196%.

More media-rich content and applications

In terms of rich media, data-heavy files and video are anticipated to make up 85% of the Kingdom's IP traffic by 2022, up from 70% in 2017. The predicted 15% increase in media-rich Internet traffic can be partially attributed to the rapid growth of Over-the-Top (OOT) film, television and music streaming services, in addition to the growing popularity of gaming in Saudi Arabia. As online gaming also continues to grow in popularity, Cisco predicts that the nation will experience a five-fold increase in Internet gaming traffic from 2017.

Cisco Acquire Acacia Communications in USD 2.6 Billion Deal

Shares of Acacia Communications soared 38% on Tuesday after the tech company announced it will be acquired by Cisco Systems, Inc. in a USD 2.6 Billion deal. "With the explosion of bandwidth in the multi-cloud era, optical interconnect technologies are becoming increasingly strategic," said David Goeckeler, Executive Vice President and General Manager of Cisco's networking and security business. "The acquisition of Acacia will allow us to build on the strength of our switching, routing and optical networking portfolio to address our customers' most demanding requirements." Acacia, headquartered in

Massachusetts, develops, manufactures and sells high-speed optical interconnect products. It is also a current supplier to San Jose-based Cisco. Following the deal's expected close in the second half of fiscal 2020, Acacia employees will join Cisco's optical systems and optics business within the networking and security business under Mr. Goeckeler. According to Bill Gartner, Senior Vice President and GM of Cisco's Optical Systems and Optics Group, cloud and service providers face three primary challenges: increasing the capacity on existing fiber infrastructure, driving down cost per bit, and eliminating

human error. Cisco said Acacia's technology will "allow the growing number of customers transitioning from chassis-based systems to pluggable technology to simplify operations and reduce network complexities." Last October, Cisco announced in completed the acquisition of cloud-based cybersecurity firm Duo Security for USD 2.35 Billion in cash and stock. The Company followed up with the purchase of semiconductor company Luxtera in February. Shares of Cisco have gained 30% this year versus telecom rivals like Juniper Networks, down 3%, and Hewlett Packard up nearly 12%.

Cisco Strives to Reduce Hardware Dependency with Acacia Acquisition

Cisco Systems is to buy optical networking firm Acacia Communications for \$2.6 billion to help it make inroads into the cloud market. Cisco is the biggest provider of routers, switches and other computer networking elements, which make up a substantial part of the internet's backbone infrastructure and many enterprises' networks. It is looking for growth from selling to hyper scale data-center owners, like Amazon.com and Google, which it has not had great success with so far. Acacia manufactures chips and modules that turn optical signals into data, which is intrinsic to providing super-fast links between data centers. Woo Jin Ho, Senior Technology Analyst at Bloomberg Intelligence, was quoted saying, "Bringing Acacia's high-speed digital signal processing (DSP) technologies in-house allows Cisco to better compete with peers, such as Ciena". However, Dell'Oro Group analyst Jimmy Yu said if it is not successful at cracking this market, the cost of producing the components could be high, but Acacia's existing customer base might be less than keen to buy from Cisco, which is a competitor. Those customers include Nokia, Huawei Technologies and ZTE Corp. Cisco currently accounts for about 18% of Acacia's revenue, according to Bloomberg's supply chain analysis. Since Robbins became Cisco's CEO in July 2015, the company has made acquisitions aimed at moving the business further into software and services, away from its dependency on hardware. Following the example of companies like Apple and IBM, the plan is to increase the



proportion of recurring revenue, which is more predictable; for example by managing and monitoring networks for customers, to improve their efficiency and security. The Acacia deal is expected to be completed in the second half of Cisco's next fiscal year. The company has almost no penetration of the Chinese market and American tech companies being shut out of the Chinese market is part of the ongoing trade war between the US and China. Robbins advised against the 15% tariff on Chinese goods that the Trump Administration says it will impose on a widening range of products unless the Chinese Government takes action.

Adelboden Tourist Center Opens Co Working Location with Cisco Technologies

Cisco announced it has worked with the Adelboden (Switzerland) Tourist Center to provide state-of-the-art communication technologies for the co-working space at the new MountainLAB. MountainLAB serves both visitors and locals, offering working and meeting areas. MountainLAB Adelboden was developed in cooperation between Cisco, TALK AG (Adelboden-Lenk-Kandersteg Tourism), architecture and project management company gutundgut and local Internet provider Adelcom. In addition to individual workplaces with views of the Bernese Alps, innovative meeting and video conference rooms are available. The project is part of Cisco's Country Digital Acceleration (CDA) program for Switzerland. "In the first phase of the Country Digital Acceleration program, we focused on digital skills and education, with initiatives such as the Cisco Cybersecurity Academy and our cooperation with digitalswitzerland. Now we go one step further: working with the Adelboden Tourist Center, we would like to show how digitization can positively impact local communities and create new services in tourism, a key sector of the Swiss economy," said Christian Martin, General Manager Cisco Switzerland.

Benefits for Adelboden

Co-working spaces have sprung up in recent months, especially in urban areas. "Modern, flexible forms of work are becoming increasingly popular for individuals and companies. More and more organizations want to offer employees greater freedom in how they organize their working hours, transforming the concept of "work-life balance", into "work-life mix," said Joel Curado, Country Digital Acceleration lead for Digital Village at Cisco Switzerland.

"MountainLAB keeps our region connected to the digital economy. Thanks to the cooperation with Cisco, we offer far more than a co-working area. Visitors and locals can use the latest, intuitive communication and collaboration technologies, and virtually meet colleagues and business partners from anywhere around the globe in HD," Urs Pfenninger, Director of TALK AG, added. The MountainLAB project takes into account two important trends. Guests have more choice: they can combine work and leisure, stay longer and enjoy the many activities offered by the region. For locals, co-working creates an alternative to long commutes or moving to urban centers. Following the successful launch of the MountainLAB in Adelboden, the concept may be extended to other regions in collaboration with local Tourist Centers and other public venues.

Equipped with Cisco Webex

Cisco technologies help enable fast and secure data transmission and extend the co-working concept to meeting participants in other locations. "Webex Collaboration cuts distances - as if people were in the same room," adds Joel Curado. This is made possible by co-creation devices such as Cisco Webex Boards and video conferencing with Cisco Webex Meetings. Visitors can participate in virtual meetings, share content and presentations. In addition, they can use the whiteboarding features of the Webex Board, working on the same whiteboard or document in real time from multiple locations. Interaction with remote participants is quickly and easily established in HD quality. The secure wireless network serves multiple users.



UNIFI/WIS Selects the Dialogic ControlSwitch to Virtualize the UNIFI/WIS Global Network

Dialogic, a cloud-optimized applications and infrastructure solutions provider for global service providers, enterprises, and developers, announced today that UNIFI Communications, a leading US-based international telecommunications carrier, has chosen the Dialogic® ControlSwitch™ System as the foundation for virtualizing and revamping of its UNIFI/WIS Global Network. UNIFI/WIS prides itself on providing high quality and scalable solutions to mobile operators and global carriers; and to maintain this high standard while increasing functionality, UNIFI/WIS made the decision to replace its aging NGN platform. Of high importance was a solution that could provide management of TDM and SIP traffic and central management of global SIP routing for its UNIFI/WIS Global Network. Also key was the ability to integrate a long list of functions, such as high availability and geo redundancy, quality monitoring, call barring, performance monitoring, and fraud management, which were currently being accomplished using disparate systems from a variety of vendors. And lastly, there was the need to execute these feature demands in a single, cost-effective, scalable solution. "As we looked to upgrade and virtualize our NGN platform, it was important that we maintain our goal for UNIFI/WIS to be the most flexible and efficient value enabler for our customers," stated Adrian Shatku, UNIFI's founder and CEO. "After reviewing all the other vendors' options, we felt the Dialogic ControlSwitch System met our long list of demands and will be able to replace multiple systems from multiple vendors. We



look forward to implementing the ControlSwitch into our UNIFI/WIS Global Network as we grandfather the existing systems, including our Huawei TDM infrastructure." "We are pleased to have been selected by UNIFI/WIS to provide the virtual core functionality for the UNIFI/WIS Global Network," added Bill Crank, President & CEO of Dialogic. "We also look forward to expanding our relationship with UNIFI/WIS as they not only explore offering Platform as a Service (PaaS) capabilities, but also look to deploy the Dialogic BUZZ™ Unified Communications platform, which combines Dialogic's real-time communications leadership, and application development with AI/IoT proficiency, into a single business communications solution."



Broadpeak Raises 10 Million Euros From Eutelsat

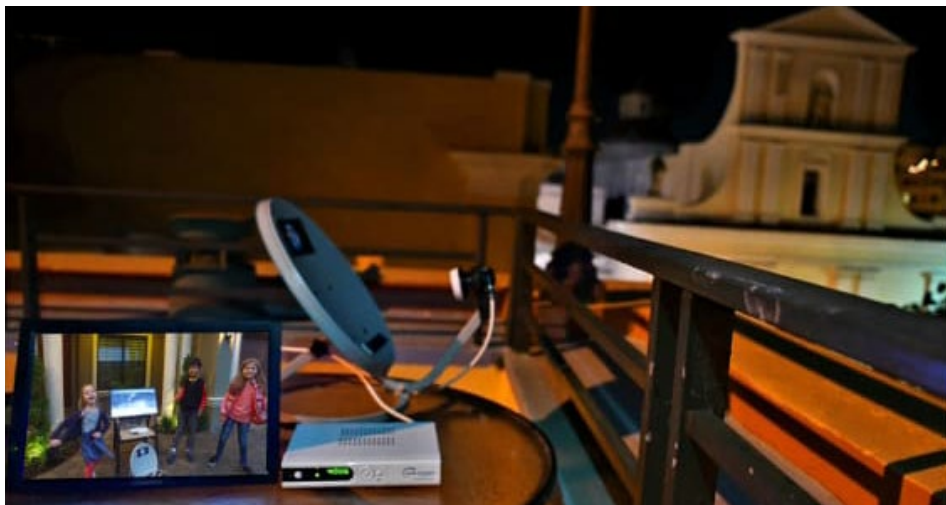
Eutelsat Communications and Broadpeak announce a circa 20% investment in Broadpeak, an industry leader in video content delivery solutions. Broadpeak is a supplier of CDN (Content Delivery Network) technologies optimizing the delivery of video content over terrestrial and satellite networks to provide end-users with best-in-class viewing quality on all their devices. Eutelsat's investment in Broadpeak is a further step in its strategy to integrate satellite into the Internet Protocol (IP) ecosystem, following the launch in September 2018 of Eutelsat CIRRUS, its hybrid satellite-OTT solution giving satellite TV channels and operators the ability to offer a flexible and homogeneous multi-screen consumer experience. Eutelsat and Broadpeak will pool their technological resources to expand their

respective portfolios of services for telecom operators, media groups and content owners by offering them turnkey video delivery solutions enabling them to respond to the rising demand for video content on all networks. They will also work together on projects aimed at integrating satellite technology into the 5G generation of mobile networks. Eutelsat's investment, in the form of shares and convertible bonds, represents a consideration of circa 10 million euros. Jean-Hubert Lenotte, Chief Strategy and Resources Officer at Eutelsat: "We are delighted to partner with Broadpeak with whom we have been working since 2015. This association with a recognized and innovative leader in video content delivery solutions will enable us to expand our offer in this area. Following the launch of Eutelsat CIRRUS last September,

this investment reflects our strategy to accelerate the integration of IP and satellite technologies by expanding the portfolio of technological solutions available to our broadcast customers to distribute content to viewers across multiple channels." Jacques Le Mancq, Co-Founder and Chairman, explains that this operation is a new chapter in Broadpeak's development: "This investment by Eutelsat will enable us to strengthen our team and finance the strong growth of our business. We are very excited to develop our partnership with Eutelsat, with whom we will build next-generation services to deliver, optimize and monetize high-quality video experiences for end-users, whether at home or on the move."

Eutelsat 65 West A selected by Ultra DTH for New Pay-TV Platform across the Caribbean and the Andean Region

Ultra DTH Inc. has signed a multiyear, multi-transponder agreement with Eutelsat Americas, a subsidiary of Eutelsat Communications (Euronext Paris: ETL) for capacity on the EUTELSAT 65 West A satellite to support the launch of a white label DTH platform across the Caribbean and the Andean region. Ultra DTH will leverage EUTELSAT 65 West A's exceptional Ku-band coverage to reach millions of households in the Caribbean and the Andean territories. Channel aggregation, encoding and ground infrastructure will be provided by United Teleports. Strategically headquartered in San Juan, Puerto Rico, Ultra DTH will rely on a network of key country pay-TV operators to commercialise its platform across several markets in the Caribbean and the Andean region. These partner operators will benefit from Ultra DTH's expertise for ease of deployment and expansion within their markets, while retaining the freedom to rebrand the platform to fit the specific demands of each audience. The low-cost service will allow pay-TV operators to give access to content from across the



globe, combining a unique international offering with content in English, Spanish, French, Dutch and Hindi to respond to the diverse demand from the Caribbean islands and Andean region. Ricardo Dias, CEO of Ultra DTH, said: "Our DTH service will be able to provide multilingual content to millions of households. By allowing partner operators to create a full range of country specific line-ups, we aim to unlock previously unexplored markets at all price

points" Mike Antonovich, CEO of Eutelsat Americas, added: "We are delighted to be joining forces with Ultra DTH to take pay-TV further in the Caribbean and the Andean region, especially in underserved areas where audiences are eager for content in their native language. This agreement highlights the benefits that satellite can bring to sparsely populated areas with a need for diverse content on a single platform."

Eutelsat Communications Full Year 2018-19 Financial Results



The Board of Directors of Eutelsat Communications, chaired by Dominique D'Hinnin, reviewed the financial results for the year ended 30 June 2019. Rodolphe Belmer Chief Executive Officer of Eutelsat Communications, said: "On the operational front, the past year was notable once again for the resilience of core Broadcast, supported by rising channel count and HD penetration. The successful launch of EUTELSAT 7C will bring incremental capacity to the dynamic African market. In Fixed Broadband, our

Konnect Africa operations are now up and running and our new distribution strategy in Europe is starting to bear fruit. In Mobile Connectivity, we have carved a strong foothold in the maritime segment with some major commercial wins. In the context of a challenged operating environment which continues to weigh on the revenues of our core businesses, the effective execution of our financial strategy has enabled us once again to meet or exceed all our other financial objectives with, notably, a record level of EBITDA margin supported by the successful completion of our LEAP 1 cost-savings plan, and the attainment of our Net debt / EBITDA target. By leveraging all elements of cash-generation, we produced a further strong rise in Discretionary Free-Cash-Flow, enabling us to exceed our target a year early. Our efforts remain focused on maximizing cash generation, with the two recent successful bond issuances reducing interest by circa €34 million per annum, the reduction of over €70 million in our annual tax burden, and a follow-on cost-savings program aimed at generating additional savings of €20 to 25 million by FY 2021-22. We are setting a new Discretionary free cash flow target with an objective of circa €500 million in FY 2021-22, and enhancing our remuneration policy by maintaining our dividend at 1.27 euros per share and committing to a share buyback program of at least €100 million by end-June 22."



Huawei Launches Kunpeng Industrial Ecosystem Base in Xiamen

Chinese technology giant Huawei launched Kunpeng industrial ecosystem base and supercomputing center in Xiamen, Southeast China's Fujian Province, which will provide computing services for local governments and major local state-owned enterprises using Huawei chips and operating systems. The Kunpeng ecosystem base will be based on a safe and reliable software and hardware development platform of Huawei, and aims to foster an industrial ecosystem and attract partners to cooperate in the development of a series of products, Xinhua News Agency reported on Sunday. Huawei announced an investment of 3 billion yuan (\$436 million) in the next five years on its ARM-based server CPU Kunpeng to enrich its own ecosystem, Xu Zhijun, rotating chair of Huawei, told an industry conference. Based on the

Kunpeng CPU, Huawei plans to join hands with partners in the ecosystem to offer IT infrastructure and industrial applications to various industries, including big data platforms and cloud services. Relying on the products and services independently developed by Huawei, the supercomputing center will use servers with Kunpeng CPU as the core, and introduce a domestic operating system and database system to provide end-to-end computing services for governments, state-owned large and medium-sized enterprises in Xiamen, said Xinhua. The supercomputing center project is expected to cost 1.5 billion yuan, according to the report. Against the backdrop of US' tightening restrictions on Chinese technological companies, many "countries have realized the importance of technological independence," Xin Haiguang, a Beijing-based IT industry

analyst told. "To realize technological independence, it is not enough to just pursue a technology-leading position. Fostering a sound ecosystem is ever more important," Xin said. Xin further noted forming an industrial ecosystem takes enormous work and needs support from every link in the industrial chain. "With the firm support of governments, the Kunpeng ecological base could achieve great success within five years, if it goes well," he said. The launching of the Kunpeng industrial ecosystem base will promote the city's advanced manufacturing and information industries. Through this cooperation, Xiamen could continue to cultivate domestic industrial ecosystem and local talent, and accelerate the development of key industries, said the report.

MIT Technology Review Lists Huawei in 50 Smartest Companies

Huawei was named one of the 50 Smartest Companies by MIT Technology Review on June 29, 2019. Since 2010, the MIT Technology Review, a globally influential technology media outlet, has annually published a list of the 50 companies that best combine innovative technology with an effective business model around the world. MIT Technology Review picks the 50 smartest companies based on what the companies did over the last year, what methods they used, and what achievements they made. They evaluate the companies' core competence with emerging technologies and any breakthroughs and innovation the companies have achieved for themselves, their industries, or even the world. Huawei was included in the list this year for its outstanding capabilities in innovation. William Xu, Huawei's Director

of the Board and President of the Institute of Strategic Research, delivered a speech about Huawei's innovation strategy at the 50 Smartest Companies 2019 China Summit. He stated, "Over the past 30 years, Huawei mainly made technical and engineering innovations as well as innovations in solutions based on customer needs. We call that Innovation 1.0. In the future, Huawei will pursue Innovation 2.0, which refers to theoretical breakthroughs and inventions driven by vision. Huawei sticks to open innovation and inclusive development. Open innovation means innovating together with global experts. In this process, resources and capabilities are shared. Inclusive development means the fruits of any innovation should be shared and used by all humanity and industries. This can lighten the future

of the world and industries." William Xu added that academia is a source for theoretical breakthroughs and inventions, while industries drive progress through raising challenges, addressing customer needs, and funding the research conducted by universities. Huawei will continue to support the research of universities and institutions, and is committed to exploring and identifying future-proof technologies along the whole information process, from information generation, storage, computing, transmission, and presentation, to information consumption. The MIT Technology Review celebrated the 50 Smartest Companies for the first time in China this year, with the list containing entries for Chinese companies and international companies that operate in China.

Huawei and SAR Sign MoU to Develop Smart Railway in Saudi Arabia

Saudi Railway Company (SAR) has selected Huawei, a leading global provider of information and communications technology (ICT), as a partner to initiate smart railway and digital transformation in the Kingdom. The companies signed a strategic Memorandum of Understanding (MoU) to initiate their partnership during a ceremony held recently at SAR. Dr. Bashar Al Malik, CEO of SAR, and Dennis Zhang, CEO of Huawei Tech Investment Saudi Arabia were signatories to the MoU. Through their new partnership, SAR and Huawei will work together to jointly design and innovate in the field of smart railway, including the application of next generation railway wireless network, Internet of Things, artificial intelligence, cloud services and 5G across SAR's railway network. The collaboration will also include training and knowledge transfer for innovative railway ICT solutions, which will enable SAR to provide a distinctive, high quality and reliable railway service across the Kingdom of Saudi Arabia. Additionally, Huawei established its ICT Roadshow at SAR's headquarters. The Huawei ICT Roadshow 2019 showcases some of the most influential, cutting edge technologies



and solutions that are at the heart of the digital transformation era. These include artificial intelligence-enabled ICT infrastructure, All Flash Storage, Wi-Fi 6, Campus Network, Cloud Data Center, Software-Defined Wireless Area Network (WAN), Active-Active Disaster Recovery, and Intelligent Video Surveillance. Dennis Zhang, CEO of Huawei Tech Investment Saudi Arabia, said: "We are looking

forward to working with SAR to develop a unique smart railway system that will be designed specifically to the needs of the Kingdom. This is a major infrastructure project that will have a significant impact on the country, and we are honored to have been selected as a partner to bring our technology into making this vision a reality."

CC Group Agrees US\$100 Million Deal with Huawei to Launch 4G Services

Chaudhary Group (CG) has signed a 4G network deal worth about \$100 million with Huawei Technologies to launch 4G services in Nepal, Reuters reported. CG plans an initial \$250 million investment for building the new 4G network across Nepal, Chairman Binod Chaudhary said. It will include free voice services but focus on data, online payment and other services, he said. Huawei would supply equipment for the launch of 4G services, which could be upgraded to 5G at a later stage. Huawei is already working with the state-owned Nepal Telecom. Huawei Technologies is facing challenges in supplying 5G equipment because the United States has asked allies to reject Huawei technology, argu-

ing that it could be vulnerable to Chinese eavesdropping. Huawei denies its equipment is a security risk. CG Group has entered into a deal with Lifecell, a subsidiary of Turkey's Turkcell, for technical and design services, with Huawei providing the infrastructure. CG is already running a limited telecommunications services in rural areas in Nepal. Min Prasad Aryal, a spokesman for Nepal's telecom regulator, said CG group has applied for a license for a much wider network including cities. "If they meet the standard specified by us we have no objection," he said when asked whether CG would get permission even if it used Huawei equipment. Nepal has near 100 percent mobile penetration and about

50 percent for data services. Nepal Telecom is the market leader with a 51 per cent market share by subscribers, followed by Ncell and Smart Cell. "We are confident to achieve one third market share in three-to-four years' time as we will have an advantage to bring in the latest technology," Chaudhary said. Meanwhile, the Dutch government said it will force telecoms to vet their equipment suppliers thoroughly as they roll out 5G mobile networks, but made no mention of banning Huawei or any other supplier over spying fears. Dutch telecommunications providers include KPN, T-Mobile and VodafoneZiggo.

Huawei's 2018 Sustainability Report - Digital Inclusion: Driving Equal Access for All

Huawei released its 2018 Sustainability Report. It has published this report for the 11th year in a row. The 2018 report explains Huawei's four strategies for sustainability: digital inclusion, security and trustworthiness, environmental protection, and a healthy and harmonious ecosystem. Over the past year, Huawei has been working to help achieve the UN's Sustainable Development Goals (SDGs), build a sustainable and more inclusive ecosystem with its industry partners, and execute its own sustainability strategies. At the launch event for the report, Liang Hua, Chairman of Huawei, said, "Huawei has been creating value for its customers through innovation. We are doing everything we can to bridge the digital divide and meet the world's needs for connectivity," Liang continued, "We want to make digital services more affordable and equally accessible to all, and to do our part in contributing to social and economic development." Liang explained that environmental protection is also a key component of Huawei's sustainable development initiatives. Liang added, "Energy efficiency has become a major consideration for future communications networks. We have to use less energy to transmit more data, and reduce the overall energy consumption of power systems. ICT technologies can help." Liang explained that Huawei has made many innovations in the course of its 5G research, product development, and engineering. Huawei has managed to reduce the power consumption per 5G site to 20% less than the industry average. This has been made possible by the new Huawei chipsets, system software, professional services, and advanced hardware and heat dissipation technologies. These innovative technologies have made Huawei's 5G more energy-efficient. With the right solutions, Huawei's 5G will be a green technology. Kevin Tao, Board Member and Chairman of Sustainable Development Committee of Huawei, remarked, "We want to bring the benefits of digital technology to every person, home, and organization. To this end, we have launched a global digital inclusion initiative called TECH4ALL. For example, our RuralStar solution has connected 40 million rural residents as of the end of 2018." Tao added, "We currently provide communications services to over three billion people around the world, and we are committed to supporting secure network operations worldwide. We honor this commitment no matter what. For example," he said, "In 2018, after a magnitude 7.7 earthquake hit Indonesia, Huawei was the first and the only vendor to the scene." Tao also announced Huawei's new sustainability strategies, which include two major changes. First, Huawei has expanded its strategy of bridging



Huawei Investment & Holding Co., Ltd. 2018 Sustainability Report

Bring digital to every person, home and organization
for a fully connected, intelligent world



the digital divide into a digital inclusion strategy. Building on connectivity, the company is now also paying more attention to applications and skills. Second, its strategy of supporting stable and secure network operations and protecting user privacy has been upgraded into the "security and trustworthiness" strategy. Huawei incorporates sustainability in everything it does – in its innovation, value creation, and value sharing with its partners – so that it can deliver greater business value and social value. Looking forward, Huawei will work even harder and do its part in building a better, sustainable future.

Monaco Rolls Out Huawei-Built 5G Network

Monaco Telecom has switched on a 5G mobile network based on technology supplied by Chinese vendor Huawei, reports France 24. It follows the signing of an agreement between Monaco Telecom and Huawei last September to make the princi-

pality the first country in Europe to be fully covered by 5G. Monaco Telecom's CEO Martin Peronnet has defended the decision to work with the Chinese supplier, despite the US government's concerns over potential security risks. Speaking last month,

he stressed that the company was working with the principality's digital security agency to implement all necessary measures and 'systematically isolate' each component within the network.

Huawei Launches First 5G Smartphone in Kuwait

Huawei Consumer Business Group (CBG) has introduced the Huawei Mate 20 X (5G) to consumers in Kuwait in a recent event at Huawei Experience Store (HES) at the Avenues Mall. Tech-enthusiasts were beyond excited to pre-order the device during the event and gain valuable prizes with every pre-order, a Huawei statement said. For consumers who were not able to attend the launching event, the Huawei Mate 20 X (5G) will be in all stores in Kuwait. For those who seek an upgraded smartphone experience, the HUAWEI Mate 20 X (5G) guarantees a powerful performance that entails faster internet speed, long lasting battery and an unparalleled entertainment that will most definitely elevate your 5G experience, the statement said. "It is our honor and pleasure to consistently bring a higher level of innovative technology to Kuwait and the world. Our aim is not only building a connected world, but to have the world cherish the quality of every captured memory," said Jason Jiang, general man-



ager of Huawei Consumer Business Group. Huawei's launching event gave attendees an evening to remember through giving them the chance to pre-book the Huawei

Mate 20 X (5G), enjoying the live entertainment of star bands and valuable offers.

Huawei Wants Morocco to Be the First Country to Launch 5G in Africa

Huawei, a global provider of information and communications technology infrastructure and devices, outlined the goal for its Moroccan operations at the 9th annual North African suppliers conference in Skhirat, south of Rabat. "We are the [world] leaders in 5G, and we want to be the leader in Morocco," said Chakib Achour, the marketing and strategy director of Huawei in Morocco. "We want the Kingdom to be the first to launch 5G in Africa," he specified. According to Achour, the company is now only waiting for the green light from the government. 5G is the new generation of mobile internet connectivity, which promises much faster data upload and download speeds, wider coverage and more stable connections. Internet is important to Moroccans. According to a report released this week by the Moroccan National Telecommunications Regulations

Agency (ANRT), access to the internet by Moroccan households has increased three-fold over the last eight years. 74.2% of households are now equipped with internet. According to ANRT, the leading reason behind the need for an internet connection is "entertainment" (including games and social networks), with Whatsapp and Facebook being the most used apps. Moroccan telecommunications provider Inwi announced in March that it was ready to launch 5G. "5G is a reality for Inwi. It is a reality that we anticipated and prepared for through modernising our infrastructure [...]. Inwi has modern and agile infrastructure, capable of adapting to all technical evolutions, now and in the future," declared Fadoua Laaroussi, the performance director at Inwi, in a press release. Huawei has stated that Inwi is its "strategic partner in the North Africa

region." "Inwi is the first operator who has signed an agreement with Huawei for the 5G pilot projects [...]," Huawei marketing vice-president Eric Liu said. Huawei is not the only player on the Morocco 5G field. In March, Huawei competitor Ericsson organized a live 5G demonstration at Maroc Telecom headquarters in Rabat, showcasing the technology's capabilities. Huawei is firmly present in Morocco, with, according to Achour, an annual revenue of MAD 3 billion, reports Moroccan news source Aujourd'hui le Maroc. Huawei works with the three major local telecommunication providers: Maroc Telecom, Inwi, and Orange. Expansion into Africa might be Huawei's next big move, as its future trade relations with the US are currently uncertain.

Huawei Shares Its Privacy Protection Governance Framework and Practices

The IAPP Asia Privacy Forum 2019 centering on privacy protection, trust, and digital innovation was hosted by International Association of Privacy Professionals (IAPP) in Singapore. In attendance were officials from data protection regulators in countries and regions such as Singapore, Hong Kong, the Philippines, India, and Japan, as well as privacy protection opinion leaders, experts, and scholars from around the world. Since the General Data Protection Regulation (GDPR) took effect over one year ago, EU data protection regulators have received more than 200,000 cases related to personal data breaches and complaints from data subjects. Recently, Information Commissioner's Office (ICO), the UK's data protection regulator, planned to impose fines of £183 million and £99 million on an airline company and a hotel group, respectively, drawing wide attention once again to privacy protection. Kevin Wang (privacy protection owner, Huawei GSPO Office), Fabrice Naftalski (Global Head of Data Protection, EY), Dr. Zhong Lin (partner, EY Chen & Co), and Shawn Li (DPO, L'Oréal China) delivered the speech entitled "When the GDPR Meets Chinese Data Protection Compliance: Privacy Protection Governance Framework and Practices", focusing on the discussion of compliance strategies and solutions for personal data protection in different judicial systems. Kevin Wang, Fabrice Naftalski, Dr. Zhong Lin, and Shawn Li demonstrated the similarities and differences between EU and China's privacy protection laws and regulations, analyzed the challenges faced by multinational enterprises in complying with personal data protection laws, and provided feasible solutions and suggestions for personal data protection compliance based on enterprises' privacy protection governance experience. Kevin Wang said that Huawei's privacy protection compliance framework sets



differentiated privacy protection objectives based on Huawei's characteristics in different business domains, thereby meeting the privacy expectations of consumers, customers, and internal employees. Huawei's privacy protection practices cover the management and operation mechanism of personal data throughout its lifecycle. These practices integrate the Privacy by Design and Privacy by Default concepts into business processes and ensure transparency in the collection and use of personal data in business activities. He emphasized that Huawei, as an international company, has developed a set of globally applicable personal data protection principles based on the GDPR and Generally Accepted Privacy Principles (GAPP) in the privacy protection field and has localized these principles. To effectively evaluate and mitigate personal data protection risks, Huawei implements privacy impact assessment (PIA) for systematic control in terms of privacy notification, choice and consent, data collection, data use and retention, data security protection,

disclosure to third parties, cross-border data transfer, and response to data subject rights. In addition, Kevin Wang expressed his belief that privacy compliance is not just a matter of the Legal Affairs Dept. Huawei ensures that privacy protection activities can be effectively implemented and supervised through the top-down organizational governance structure. Huawei actively responds to privacy law changes, consumer expectations, and customer requirements. Huawei's privacy protection organization continuously interprets and breaks down privacy protection requirements into business control requirements, and implements and optimizes these requirements in the existing business process system. How international companies establish and implement an efficient privacy protection compliance governance framework was the focus of attention at the forum, during which many participants held extensive and in-depth discussions with Kevin Wang, Fabrice Naftalski, Dr. Zhong Lin, and Shawn Li.



Mobily Revenues Grow for Seventh Quarter in a Row

Mobily continued to grow its revenues for the seventh consecutive quarter to reach SR3.3 billion in Q2 2019, with a YoY growth of 15.1%. This is mainly attributed to the growth of revenues of business and wholesale units, the growth of FTTH active base, and the continued growth and better mix of subscribers' base, its CEO Salman Albadran said. In addition, the company continued delivering positive net results for the third consecutive quarter, as Q2 2019 net result reached SR37.77 million compared to a loss of SR78.62 million in Q2 2018 while QoQ comparison shows a decrease by 48.8%. This is mainly due to the increase in selling and marketing expenses caused by the seasonality of Q2 2019, which included the month of Ramadan, as well as Q1 2019 contained an improvement in the collection of government fees for the business and wholesale units that led to reversing related provisions and improving the profitability of Q1 2019. Moreover, Mobily succeeded in increasing its EBITDA to reach SR1,221 million in Q2 2019, with YoY increase of 14.5%. The



EBITDA increase is attributed to the growth of revenues, the improvement in operational performance and the implementation of IFRS16. Capex in H1 2019 reached SR1,126 million, reflecting the company's continuous commitment to invest in its infrastructure and continue to develop its services, and improve the quality of ser-

vices and customer experience. In addition, Mobily substantially improved its H1 2019 operational cash flow (EBITDA-CAPEX) by 83.7% to reach SR1,368 million; contributing to the company's ability to deleverage its debt levels and meet its obligations to its creditors and suppliers.

Mobily Appoints Khaled Abanami as CFO



Etihaad Etisalat "Mobily" has announced the appointment of Mr. Khaled Abanami as Chief Financial Officer (CFO), succeeding Kais Ben Hamida. "Mobily seeks to attract

highly qualified Saudis to bolster its position and leadership in the ICT sector. This appointment underscores the company's keenness to strive to empower national talent to lead the company's key roles," commented Mobily CEO, Eng. Salman Albadran. Albadran added that Abanami enjoys vast experience in leading finance functions with extensive knowledge in the telecom sector, financial restructuring, finance, cost reduction, IFRS implementation, and digital transformation. Albadran is confident that Abanami will be a strong asset to Mobily helping lead the company towards its next phase of growth and value creation. Khaled Abanami has over 22 years of professional and academic experience. He was appointed as a Finance lecturer at the College of Business Admin-

istration in King Saud University in 1996. Later, he moved to build his experience in the telecom sector at STC where he held a number of senior positions at the Group level and its Viva Kuwait subsidiary. At Viva, Abanmai led the finance, logistics, facility management, procurement and contracts teams during the company's establishment phase. In 2013, he became the CFO and acting VP Shared Services at Saudi Railway Company. Previously, he was the Financial Controller at the National Water Company where he managed the consolidation, budgeting and planning of the company. Khalid was an honor student at King Saud University - College of Business Administration and holds an MBA from Sam Walton College of Business University of Arkansas.

Mobily Implementing the International Standard for Quality Management, Customer Satisfaction and Complaint Handling

Mobily became the first telecom operator in the Kingdom to get certified to ISO 9001: 2015 for the quality management system and ISO 10002: 2018 for the complaint handling management system and customers' satisfaction, by the British Standards Institution (BSI) - the world's leading standard making and certification body. The Quality Management System - ISO 9001 is the international recognized standard for quality management, which mainly ensures meeting customers' demands and expectations, high-level competition in business sector, capacity to effectively cater for customers' needs, saving time, costs and resources, and

to ensure operational performance with minimum errors. Eng. Ismail Alghamdi, Chief Customer Care Officer, said: "Mobily's certification confirms its leading position in the market, the top-level customer services, and the fulfillment of international quality requirements with commitment and distinction, through the implementation of international standards for Quality Management and Complaint Handling". The Customer Satisfaction - ISO 10002 is the guidelines for the process of complaints handling in a more effective and professional way, to ensure the customers' satisfaction of the service level. Moreover, it helps to identify and handle the

complaints and gradually eliminate them; along with recognizing areas that need improvement and eventually remove the cause of complaints. Eng. Alghamdi added that the two certificates demonstrate Mobily's commitment towards technical development and enhanced service level, noting that the company has already been certified for ISO/IEC 20000 for the provision of international standards in quality application within information technology and service management. In addition, Mobily is also certified for ISO 27001 for Information Security Management System and ISO 22301 for Business Continuity Management System.



China Unicom Deploys Nokia Optical Fronthaul to Support 5G Deployment in 2019

Nokia announced that China Unicom has chosen the Nokia optical fronthaul solution to power its 4G and 5G networks in Beijing, supporting the operator's ambitious commitment to deliver 5G in the 2019 timeframe. Part of the Nokia end-to-end 5G portfolio, the solution will accelerate the deployment of 4G and 5G base stations and reduce operational costs. In order to meet its 2019 5G goals, China Unicom requires a robust fronthaul solution that will speed deployment of 4G/5G radios and simplify the installation and management of the network. The Nokia 1830 Versatile WDM Module (VWM) provides multiservice WDM optical transport and is ideally suited to the performance needs of advanced 4G and 5G fronthaul in cloud RAN architectures. Its low cost of operation and integrated backhaul to fronthaul management system are matched by its low latency and jitter performance



— ensuring precise synchronization between cell sites. Gao Bo, Head of the China Unicom CBT at Nokia Shanghai Bell, said: "We share China Unicom's vision and commitment to creating this world-leading 5G service for its customers. The

Nokia Anyhaul solutions are a key element in faster network deployment, simpler management and lower operational costs. The optical fronthaul solution will be key to providing top notch performance for China Unicom's 4G/5G subscribers."

Taiwan Star Telecom Expands LTE Services and Prepares for 5G Migration with Nokia End-to-end Portfolio

Nokia has announced that TST (Taiwan Star Telecom) has chosen the Nokia end-to-end (E2E) solution to expand the coverage and capacity of its LTE network to support subscriber growth. The new solution will also enable TST to offer narrowband Internet of Things (IoT) services, as well as prepare TST to migrate to 5G services in the future. The expansion will enhance network quality and improve the user experience. With their open and transparent mobile rates and highest price-to-performance scores, TST continuously invests in the performance of their mobile network in order to enhance the customer experience and support the fast growth of their subscriber base. With this upgrade, using the Nokia end-to-end 5G-ready portfolio, they will expand their coverage in the 900MHz/2600Mhz band nationwide.

The Nokia 5G-ready solutions selected by TST include:

- The AirScale eNodeB solution, which introduces the Nokia AirScale Remote Radio Head (RRH). This will help TST to cost-effectively create the capacity they need with more flexible cell sizes. The diverse deployment options include macro, mini-macro and small cells for dense urban spots, grey/white spots, indoor and stadium coverage.
- The 7750 Mobile Gateway (MG) and Cloud Mobility Manager (CMM) for expansion of the packet core.
- The 7750 ServiceRouter for IP backbone expansion, due to its reliability, high capacity, and 5G compatibility.
- The Smart Plan Suite (SPS), which provides a full policy and charging solution and paves the way for 5G

monetization.

Cliff Lai, CEO of Taiwan Star Telecom, said: "We are always striving to provide our customers with better, more reliable services at the best price point. Nokia shares our vision for how to best meet the future needs of our customers with the expansion of our LTE coverage and the eventual migration to 5G services." Jason Liu, Head of Market Unit Taiwan Nokia, said: "We have been especially pleased to be chosen as the sole supplier to TST for their LTE expansion. Working closely with TST to understand their vision and commitment to their customers has helped us to refine our approach and together build better solutions for LTE today and 5G tomorrow."

Nokia's Digitalization of Its 5G Oulu Factory Recognized by the World Economic Forum as an "Advanced 4th Industrial Revolution Lighthouse"

Nokia's 5G "factory of the future" in Oulu, Finland was selected by McKinsey and the World Economic Forum as an Advanced 4th Industrial Revolution (4IR) Lighthouse, reflecting leadership and proven success in adopting and implementing 4IR technologies at scale. Leveraging Nokia technologies to digitalize its own pre-production facility demonstrates Nokia's ability to digitally transform and modernize its customers' manufacturing facilities for Industry 4.0. Designed to showcase Industry 4.0 concepts for the manufacturing of Nokia 4G and 5G base stations, the "factory of the future" in Oulu leverages Nokia's private (4.9G/LTE) wireless networks for secure and reliable connectivity for all assets within and outside the factory, IoT analytics running on Edge cloud, and a real-time digital twin of operations data. The factory, which produces 1,000 4G and 5G base stations per day, generated significant annual improvements, including more than 30 percent productivity gains, 50 percent savings in time of product delivery to market, and an annual cost savings of millions of euros. The Lighthouse program,



conducted in collaboration with McKinsey, includes select Lighthouse factories that are transforming work to make it safer, less repetitive, diversified and productive. Nokia was selected as a Lighthouse by an expert panel based on its implementation of 4IR technologies that drove financial and operational impact in the Oulu factory. As part of the Global Lighthouse Network, Nokia will collaborate with other world leaders to share knowledge and best practices to help enterprises and manufacturers adopt the technologies of

the future, and overcome key challenges enterprises face during their digital transformation journeys. Kathrin Buvac, President of Nokia Enterprise and Chief Strategy Officer, said: "We are paving the way for enterprise customers to realize the vision of Industry 4.0 and industrial automation by applying our technology to our manufacturing needs. For our Oulu 5G facility, we created a 'factory of the future' environment leveraging private wireless networks for reliable and secure in-factory connectivity, edge cloud and

IoT analytics. We are very pleased that our technology has delivered productivity gains of over 30 percent for our factory and we look forward to share this expertise with customers, helping them accelerate growth and unlock their full potential." Most manufacturers seek to increase flexibility while automating and reconfiguring factories. Nokia's expertise adjusting to high-demand environments ensures that the company is well equipped to lead enterprises into the Industry 4.0 era. The award-winning factory of the future illustrates how customer facilities can

reap the benefits of increased productivity, agility, product quality, and product lead time for their businesses, as achieved in Oulu.

- Demonstrated use cases in Oulu pre-production factory include:
- Virtualization of new product introduction (NPI)
- Flexible robotics to ensure high-productivity and agility for continuous new ramp-ups
- 4.9G/LTE Private wireless network to speed up NPI line re-layout
- Cloud-based digital data control,

enabling real-time process management

- No-touch internal logistics automation via connected mobile robots

Heikki Romppainen, Head of Oulu Factory, Nokia, said: "For factory employees, the automation of our Oulu manufacturing environment increases flexibility and adaptability. The 'conscious factory' has evolved the working ecosystem - increasing motivation and the wellbeing of employees by automating the traditionally repetitive tasks, making work more diversified and productive."



PCCW Global and Global Switch Expand On-Demand Global Connectivity in Asia

PCCW Global, the international operating division of HKT, Hong Kong's premier telecommunications service provider, and Global Switch, a leading owner, operator and developer of large-scale carrier and cloud neutral data centers in Europe and Asia-Pacific, today announced the launch of a new Console Connect point-of-presence (PoP) at Global Switch's Tai Seng data center in Singapore. The Console Connect Software-Defined Interconnection (SDI) platform delivers a simple, user-friendly and affordable way to connect to cloud-based applications, partners, client IT infrastructure and the world's major cloud hosting services. The platform currently interconnects over 100 data centers in 36 countries on the worldwide PCCW Global MPLS network, which is physically separate to the public Internet and features an uncontended, redundant core network with multiple low-latency paths between countries. Through the Console Connect SDI platform, Global Switch customers in Singapore will be able to access connectivity on-demand to a global network of key data center ecosystems and major cloud on-ramps through a single dashboard interface, including Alibaba Cloud, AWS Direct Connect, Google Interconnect, IBM Cloud, Microsoft Azure ExpressRoute, QingCloud and Tencent Cloud. The carrier and cloud neutral Global Switch data center at Tai Seng in Singapore is already widely recognized as being one of the most

important connectivity hubs in the Asia Pacific region and beyond, hosting vibrant and ever-expanding ecosystems. Uniquely, Global Switch Tai Seng has a number of submarine cable systems landing directly at the facility, and has direct links with Global Switch Singapore Woodlands, which was launched earlier this year. Through diverse connectivity with the Tai Seng data center, Global Switch's Woodlands facility also offers access to the same rich diversity of telecommunications services. Mr. Michael Glynn, PCCW Global's Vice President of Digital Automated Innovation, said, "Global Switch hosts a thriving, densely interconnected ecosystem in Singapore, with major connections to other business hubs around the world. The new PoP is a significant addition to our global network, and we look forward to working with new and existing Global Switch customers to simplify and streamline their

network service with the same agility they experience with cloud." Once established on the Console Connect SDI platform, it is a straight forward and easy process for Global Switch customers to set up, change or upgrade a virtual circuit across the network to any connected user or service, for any available period from a day to a year at a time, but importantly only pay for bandwidth rather than data volume, with no lock-in contract. Mr. Damon Reid, Global Switch's Group Director, Asia-Pacific, said, "PCCW Global is already an important part of the connectivity ecosystem at our Singapore Tai Seng data center, and we are delighted to see their services expand in this location. The availability of PCCW Global's on-demand digital SDI platform is important to our customers as it provides reliability, scalability, performance and economies that are critical in today's fast-moving technological world."



strategy&

GCC Telecom Operators Seize the Blockchain Opportunity

Blockchain technology is expected to have a tremendous impact on GCC national economies. However, its success depends on several factors. To harness its full potential, telecom operators have to adopt the right strategy, operating model, partnerships, and capabilities for their selected blockchain value proposition, and engage with regulators according to a recent study by Strategy& Middle East, part of the PwC network. The new Strategy& study discusses the major benefits that blockchain can offer and how telecom operators in the Middle East and North Africa (MENA), with their developed digital infrastructure and strong customer relationships, are positioned to profit from this technology. In particular, telecom operators can reap blockchain's rewards internally and externally, creating additional services and revenue streams through greater efficiencies in handling data or through new business models. Commenting on the report, Dr. Daniel Diemers, partner with Strategy& in Zurich said: "Blockchain as a technology has been adopted by businesses across various industries and its potential is expected to reach USD 96 billion by 2024 according to market estimates. Like other industries, we are witnessing an increased adoption of blockchain technology within the telecom sector." Blockchain is one way to reassure customers that their information is protected. Due to its encryption technology and the dispersal of information, it is very difficult to hack and is not susceptible to a single point of technical failure. It can also greatly reduce transaction costs by removing unnecessary middlemen and document duplication. According to the study, internally, blockchain can streamline telecom operators' storage of customer identities, reduce the costs of number portability, and facilitate roaming services between multiple operators. Externally, there are four main opportunities for telecom operators. They can: use their infrastructure to host clients' blockchain; employ their existing cloud infrastructure to manage clients' blockchain software; offer industry-specific, blockchain-based applications; or supply blockchain professional and advisory services. "However, telecom operators have to adapt", said Jad Hajj, Partner with Strategy& Middle East. "They must carefully analyze their own capabilities before selecting their value proposition and a target market. A portfolio of relevant use cases for each target market is needed for more effective marketing and business development", he added. Telecom operators should engage with regulators to ensure a supportive regulatory system for blockchain adoption. Furthermore, telecom operators can play a key role in enabling blockchain ecosystems in countries by, for example, engaging in national and global blockchain alliances and partnerships. Commenting on the adoption of blockchain in the region, Ramzi Khoury, Principal with Strategy& Middle East said: "There has been limited adoption of blockchain within the MENA region, although there is considerable interest in the countries of the Gulf Cooperation



Council (GCC). Interestingly, GCC organizations are creating the very partnerships that telecom operators should consider. For example, the Dubai Future Foundation has established the Global Blockchain Council to "explore and discuss current and future applications" of blockchain." Dubai's government is planning for all visa applications, bill payments, and license renewals to be transacted digitally using blockchain. Recently, Smart Dubai and the Ministry of Finance of the United Arab Emirates (UAE) announced the integration of blockchain technology into the online payment portal, DubaiPay. Saudi Arabia's central bank, the Saudi Arabian Monetary Authority, has declared a joint initiative with the Central Bank of the United Arab Emirates to use blockchain to issue a digital currency for cross-border transactions. Imad Atwi, principal with Strategy& concluded: "While currently nascent, the potential impact of Blockchain on economies, societies, and environment is transformative. Telecom operators have a golden opportunity to not only be part of that revolution of redefining trust, but also lead the way into a new era digital transformation and doing business in the region."



SES Announces Half Year 2019 Results

SES S.A. announced its financial results for the six months ended 30 June 2019 with performance in line with SES' expectations, continued growth in Networks' revenue and financial outlook unchanged. Steve Collar, President and CEO, commented: "We've had a solid first six months with financial results in line with our expectations, with continued revenue growth in Networks, strong control over cost and discretionary spending and important progress towards reshaping SES with the objective of delivering exceptional services and driving customer success. Our Networks business continued to expand on the back of another strong performance in Mobility and Government while we've built further commercial traction that can support our Fixed Data business. Of note in H1, we've added again to our market-leading position in cruise – with more ships for Genting and the announcement of premium brand Ritz-Carlton; we've secured Teleglobal as an anchor customer for SES-12 in Indonesia; expanded connectivity services in Colombia and Brazil; while also restoring connectivity to citizens in Papua New Guinea following a major earthquake. With encouraging levels of demand across our Networks segments, I'm looking forward to the contribution from the additional O3b satellites, which very recently came into operation, as well as being that much closer to the launch of O3b mPOWER in 2021. While the market environment in Video remains challenging, we've delivered value to customers across



our core neighborhoods and are starting to see benefits of bringing together our infrastructure and MX1 businesses into a single operational unit. In the period, we signed further renewals in our core neighborhoods; grew our video platforms with new customers in Ethiopia, Brazil and Ivory Coast; expanded our managed services relationship with Discovery in Germany; and MX1's Sports & Events team were instrumental in bringing the Women's World Cup and Eurovision Song Contest to viewers across our neighborhoods. Looking ahead, our priority for H2 is to deliver on our financial outlook and the revenue expansion implied. We achieved this in H2 2018 and we are on track to do so this year. We've now secured 90% of the expected revenue for 2019 and have good

visibility of future revenue across Video and Networks. With respect to C-Band and our ongoing market-based engagement in support of the rapid deployment of 5G services in the U.S., through the C-Band Alliance, we have made further progress this quarter. The CBA has been extremely active with all stakeholders as focus and intensity around the repurposing of spectrum gathers momentum. I believe the record clearly shows that our proposal remains the only one that appropriately balances the support to the 120 million U.S. TV and radio households with the need to quickly, efficiently and safely repurpose mid-band spectrum for 5G. I'm encouraged by the comments of the FCC Chairman who believes that there will be 'results to show' in the fall."

Ethiopian Broadcasters to Migrate to SES Satellite Creating Dedicated Ethiopian TV Environment

Ethiopian private and public broadcasters, and the local media market, are poised for growth following two agreements signed between SES and the Association of Ethiopian Broadcasters (AEB), and the Ethiopian Broadcasting Cooperation (EBC) that will result in the creation of a dedicated Ethiopian TV environment. In particular, the AEB agreement will see the most popular Ethiopian TV channels

migrate to a new TV neighborhood hosted by SES's NSS-12 satellite at 57 degrees East. Ethiopia currently has more than 4 million TV households that access television service via satellite. The majority of content is currently broadcast from an orbital location that also supplies content to Middle Eastern and North African countries, mixing local and international content. The migration agreement with AEB

will create a dedicated TV neighborhood for Ethiopians on SES's East Africa Digital TV platform on NSS-12 at 57 degrees East and will be launched in August 2019. The consolidation of Ethiopian content into one prime TV neighborhood under a new orbital location means that the AEB members comprising private broadcasters EBS, Fana Broadcasting, Walta TV, Arts TV, Afrihealth, OBS, LTV, Kana, JTV, DWTV, Asham TV,



Ahadu TV, Ministry of Education and Nahoo TV will be able to easily expand their audience reach. Together, these 14 members of the association control more than 50% of the viewership of Ethiopia and will be able to foster healthy advertising markets that will strengthen the development of the country's free-to-air (FTA) market. In a separate agreement with SES, the public and regional channels including ETV News, ETV Entertainment, ETV Languages, OBN TV, Tigray TV, South TV and Amhara TV led by the public service broadcaster EBC will also be distributed via this Ethiopian-dedicated TV neighborhood. The Ethiopian content via NSS-12 will be broadcast mainly in high-definition (HD), introducing a new level of viewing experience to Ethiopian audiences. Given that 16 million homes in Ethiopia do not have TV service today, the consolidation of broadcasting Ethiopian-only content to the people offers strong potential growth in the

local media sector. In addition to satellite capacity and video services such as content transportation and management, SES also will provide on-the-ground services to ensure the success of the new neighborhood. SES's local team will train local installers to correctly repoint the satellite dishes of each TV household, making the migration possible. "We are at a critical juncture in Ethiopia. We want to harness the momentum for change and create a truly Ethiopian TV neighborhood that will deliver local content to viewers in high quality, and fuel growth in the Ethiopian media sector," said Amman Fissehazion, Chairman of AEB. "We are pleased to be working with SES and its local team toward this goal as they provide the dedication and experience needed to successfully implement such an ambitious project." "We are excited for our channels to be part of an Ethiopian-only TV bouquet that is broadcast on SES's East Africa video platform on NSS-12 at 57 degrees East. Over the last few years, SES has been working closely with all the key stakeholders in the Ethiopian media sector and building up their local presence with the opening of SES East Africa office in Addis Ababa. They have been providing excellent 24/7 technical support, and training locals how to install satellite dishes. These activities will intensify in the months to come, and can only benefit our economy and end consumers," said Belete Esubalew Gemberie, Deputy CEO and Media Technology Cluster Head of EBC. "We are honored to be working with AEB and EBC on this endeavor, which recognizes our full commitment to our customers," said Ferdinand Kayser, CEO of SES Video. "We are proud that the migration will bring a completely new television experience to Ethiopians and drive new levels of growth in the Ethiopian media industry."

Syniverse and China Telecom Global Partner to Deliver Connectivity Services to Middle East and Africa for Mobile Operators

Syniverse and China Telecom Global (CTG), a subsidiary of China Telecommunications Corporation, one of the largest providers of integrated telecommunications services and intercontinental capacity, announced they have formed a strategic partnership to provide mobile operators in the Middle East and Africa with a new suite of connectivity solutions for quickly and cost-effectively migrating to 4G and other advanced voice, data, and video services. The partnership will allow customers of Middle East and Africa operators to move to the next generation of mobile internet services like 4G, Rich Communication Services (RCS), and the internet of things (IoT). A crucial part of implementing 4G in developing markets, such as in the Middle East and Africa, involves the deployment of



an IPX network, the network backbone that makes 4G roaming possible, and Diameter, the industry-standard signaling protocol for messages from mobile devices. The Syniverse IPX Network decreases network complexity and ensures high-quality, end-to-end mobile services through a secure connection to more than 750 operators in over 150 countries. In parallel, the Syniverse Diameter Signaling Service provides a powerful tool for managing, simplifying, and translating data across networks that enables 4G data to be passed between operators and devices securely. Leveraging this reach and capacity, CTG will be able to customize a cost-efficient connectivity solution for each operator while still providing the same high performance and security. CTG has continued to strengthen its collaboration with leading African mobile operators by dramatically strengthening its network build-out and providing world-class connectivity across the continent and the world. The partnership with Syniverse is designed to provide a high-speed mobile network as well as a continued investment in the infrastructure for the Middle East

and Africa, an investment that CTG began in 2008 and includes point of presences (PoPs) and data centers that reduce latency and enhance end-user experience. The Middle East and Africa have one of the fastest-growing groups of internet users and highest-growing demand for 4G connectivity. The Professional Business Development & Operation Team of China Telecom (Africa and the Middle East) Limited in the region is experienced in serving multinational companies in Africa and the Middle East, and through their partnership, CTG and Syniverse are strategically positioned to capture business opportunities in this fast-growing market. "4G service – and soon, 5G – will quickly become the new mobile-service standard in the developing mobile markets of the Middle East and Africa," said Deng Xiaofeng, CEO, China Telecom Global. "Mobile users in this region will increasingly expect access to 4G speed and capacity anywhere they go. To meet this demand, China Telecom Global is working closely with Syniverse to deliver this service offering to our operators' subscribers in a flexible, cost-efficient

way." "The increasing sophistication of 4G rollouts and the need to quickly complete these service upgrades present challenges that will only be able to be fully solved with the high-performance technology of IPX," said Dean Douglas, CEO and President, Syniverse. "Syniverse was the first to offer an IPX-based single-solution 4G testing environment to ensure that mobile operators could test all their services through one connection. We look forward to using this experience, our IPX Network and Diameter Signaling Service products, and our partnership with China Telecom Global to deliver the next generation of mobile internet connectivity to the rapidly growing mobile markets of the Middle East and Africa." The Middle East and North Africa market offers a promising opportunity for the rollout of 4G and other advanced mobile services in the next few years, according to GSMA Intelligence. Mobile penetration rates still are below 80%, allowing plenty of room for subscriber growth. 4G presents an even bigger opportunity since only about a quarter of connections in the region currently use 4G.



Tech Mahindra Acquires Leading Strategic Design Consultancy, Mad*Pow

Tech Mahindra, a leading provider of digital transformation and consulting services and solutions has announced the acquisition of Mad*Pow, a strategic design consultancy headquartered in the US. The addition of Mad*Pow to the Tech Mahindra portfolio is expected to help bolster capabilities in Customer Experience (CX) and digital transformation such as research, experience strategy and service design, user experience design, behavior change design, content strategy, mobile app and web development, design ops, data science and analytics. The Boston-area consultancy will offer a strong complement to Tech Mahindra's existing offerings and capabilities across design, marketing and commerce. CP Gurnani, MD & CEO, Tech Mahindra, said, "Mad*Pow's acquisition is in sync with Tech Mahindra's global digital charter. With this collaboration, our digital



footprint will take a deeper root not just in the US, but in the wider ecosystem world over. I welcome the Mad*Pow team into the Tech Mahindra family, and I am confident that together we will achieve greater success." A pioneer in the experience

design field, Mad*Pow leverages strategic design and the psychology of motivation to create innovative experiences and compelling digital solutions for global clients. Mad*Pow's unique human-centered design approach is fueled by

deep empathy and an understanding of behavior science, which will create real differentiation for Tech Mahindra's 900+ customers. Will Powley, Founder and Chief Creative Officer, Mad*Pow, said, "Tech Mahindra's experience and reach will enable Mad*Pow to scale faster by greatly enhancing its digital transformation offerings with existing and potential clients. The collaboration will also create vast opportunities for Mad*Pow to provide

it's unique and differentiated strategic design services to Tech Mahindra's large global customer base." Vivek Agarwal, Global head of Corporate Development, Tech Mahindra, said, "We are excited to announce Tech Mahindra's key acquisition of a digital asset in North America. The addition of Mad*Pow to Tech Mahindra family will greatly enhance our ability to create and deliver enhanced customer experiences for our global clients."

Mad*Pow's acquisition underlines Tech Mahindra's focus on digital growth, under the TechMNxt charter, which focuses on leveraging next generation technologies and solutions to disrupt and enable digital transformation, and to build and deliver cutting-edge technology solutions and services to address real world problems to meet the customer's evolving and dynamic needs.

Mahindra École Centrale (MEC) College of Engineering Graduates Its Second Batch of Engineers

Tech Mahindra, a leading provider of digital transformation, and IT based services and solutions announced the graduation of 218 engineers of the 2015-2019 batch in the second annual convocation of Mahindra École Centrale (MEC) College of Engineering. Established by the Mahindra Group, in collaboration with École Central Paris (now CentraleSupélec) - a 180-year-old leading French institution, and Jawaharlal Nehru Technological University (JNTU) Hyderabad, MEC aims at fostering the growth of an industry ready talent pool in next generation technologies. The convocation held at the MEC Campus in Bahadurpally, Hyderabad saw various eminent personalities from industry and academia. The Chief Guest and other dignitaries – Shri C. Vidyasagar Rao, Hon'ble Governor of Maharashtra; Vineet Nayyar, Chairman, Mahindra Educational Institutions and Chairman, Executive Committee, Mahindra École Centrale; and CP Gurnani, Member, Executive Committee (MEI), Managing Director and CEO, Tech Mahindra conferred degrees upon the second batch of graduating students during the convocation. Vineet Nayyar, Chairman, Mahindra Educational Institutions and Chairman, Executive Committee, Mahindra École Centrale, said, "At the Mahindra École Centrale (MEC) College of Engineering, we are training students to leverage next generation technologies, along with teaching subjects like Humanities, Economics, History, Philosophy - so they can relate technical sciences to the real business environment. Our goal is to shape leaders of tomorrow by offering best in class education and job opportunities," CP Gurnani, Member, Executive Committee



(MEI), Managing Director and CEO, Tech Mahindra, said, "Providing the young workforce with a platform where they can learn to leverage disruptive technologies is key to drive innovation and future business growth. Through Mahindra École Centrale, we aim at bringing industry and academia together to address the skill gap in the industry today and foster a future-ready talent pool." Dr. Yajulu Medury, Director, MEC, said, "To realize today's challenges, Mahindra École Centrale is focusing more on project-based assessments along with team work. This will ensure that our graduating students are ahead of their peers and counterparts. Congratulations to the new batch of graduate students, their families, and the faculty and management of Mahindra École Centrale!" With the intent to build upon next generation Artificial Intelligence (AI) technologies, Tech Mahindra assisted Supercomputer Lab of Mahindra Ecole Centrale is created out of the baseline requirements for supporting high intensity computations for AI research and applications, that incorporate Machine learning, Deep



learning and Data Science. Established in 2014, MEC offers programmes in computer science, electrical and electronics, mechanical and civil engineering. MEC's focus has been on shaping engineers who are imbued with industry-ready skills and abilities. Batch 2015 graduates have opted for either higher education or industry positions – the former in top-ranked campuses such as Columbia, Cornell, Georgia Tech, USC, Princeton, Centrale, etc., and the latter in organizations such as Line Inc/Oisix Systems/Tecnos of Japan, Cisco, Capgemini, ZS Associates, Jocata, Intel, Deloitte, Orange, M&M, and Tech Mahindra. Set in a sprawling 130-acre green campus replete with the latest technology backbone, high-end laboratories, workshops and recreational areas, MEC was set up with the overarching idea of creating "New Engineers" - leaders who accept no limits, entrepreneurs who drive positive change, and innovators who think alternatively, to solve today's problems. This philosophy is a DNA level fusion of both the École Centrale ethos and the Mahindra Rise philosophy.

Tech Mahindra Focuses on Banking, Transport, & Citizen Services to Fuel Digital Business Growth in Bangladesh

Tech Mahindra, a leading provider of digital transformation, consulting and business re-engineering services, announced today its focus on banking, transport and citizen services sectors to fuel digital business growth in Bangladesh. Tech Mahindra aims at addressing the growing business opportunities in the region, under the digital transformation charter of Bangladesh by leveraging innovative and next generation technologies. In the banking space, Tech Mahindra is focusing on digitization of core banking processes, customer experience, customer relationship management and security. The aim is to drive digital transformation for large banks and move towards a cashless economy. Further, since Bangladesh is heavily dependent on water transportation, ports modernization and digitization is another area where next generation technologies can be leveraged to drive growth in the region. Also, with an aim to strengthen citizen services by leveraging digital technologies, Tech

Mahindra is focused on public service modernization in Bangladesh to drive ease of living for citizens. This would focus on making smart cities more citizen-friendly and sustainable. Indian high commissioner to Bangladesh, Riva Ganguly, said, "India-Bangladesh ties continue to play an instrumental role in fostering economic growth of the two countries. We look forward to creating more value for both the economies and supporting Bangladesh through its digitation journey." State Minister for ICT (Information and Communication Technology) Division, Zunaid Ahmed Palak, said, "The Information and Communication Technology sector is a key priority sector for the government, and we are investing heavily in training the local talent to fuel the digitization process. Our endeavor is to make citizen service easier and generate job employment in the coming days. I am happy that a global technology leader like Tech Mahindra is supporting

and participating in realizing the digital Bangladesh vision." Sujit Bakshi, President, Corporate Affairs & Business Head APAC, Tech Mahindra, said, "Bangladesh is amongst the most prominent emerging markets in the Asian region, and we are seeing a healthy traction amongst leading enterprises to leverage digital technologies for sustainable development and growth. Tech Mahindra looks forward to leverage its global expertise in digital transformation, and nurture the local talent in next gen technologies to make the "Digital Bangladesh" vision a reality." Tech Mahindra currently offers a diverse range of professional services globally to clients in the Telecom and BFSI (Banking, Financial Services and Insurance) space. As part of its expansion strategy, Tech Mahindra aims to focus on digital transformation projects in both government as well as private sector across various industries.

Tech Mahindra and SSH to Deploy Cutting Edge Cybersecurity Solutions to Secure Access Control for Enterprises



Tech Mahindra Ltd. a leading provider of digital transformation, consulting and business reengineering services and solutions, announced a strategic partnership with SSH.com - one of the most trusted brands in cyber security, to deploy cutting edge cybersecurity solutions to secure access control for enterprises. Through this partnership,

Tech Mahindra will bolster its Identity & Access Management portfolio by adding two extensive enterprise solutions - Universal SSH Key Manager (UKM) and Privileged Access Management solution (PrivX®). These cutting-edge solutions aim to protect enterprise businesses from unforeseen security breaches arising due to bypass of older solutions

in the Privileged Access Management (PAM) space. Based on this joint unique offering, Tech Mahindra is implementing a cyber-security solution for one of the largest European semiconductor chip makers by supplementing and providing an additional layer of security on top of its existing password vaulting system. With UKM, the customer can be assured of security and compliance in a critical part of its operation. Rajiv Singh, Global Head of Cybersecurity, Tech Mahindra, said, "We are pleased to be partnering with SSH.COM to accomplish our shared vision of assisting our customers with future ready solutions to secure their digital assets and providing them with 24x7 global managed services. The industry-leading solutions by SSH (UKM and PrivX) are a natural fit to Tech Mahindra's cybersecurity offerings that answer today's security issues especially across large enterprises for their privileged access management needs." The SSH protocol, also known as Secure

Shell, refers to a cryptographic network protocol is a method for secure remote login from one computer to another. The global gold standard for secure remote system administration, the SSH protocol is being widely used by data centers and large enterprises to mitigate security risks that could hamper growth as part of their digital transformation journey. Sami

Ahvenniemi, Chief Customer Officer, SSH. COM, said, "We are excited to work with Tech Mahindra to bring UKM and PrivX to an even wider audience. Tech Mahindra's strong footprint across 90+ countries, coupled with its subject matter expertise in cybersecurity, will provide SSH with a sustainable competitive advantage, thus improving our ability to scale rapidly,

help customers prevent cyber-attacks and achieve compliance." As part of the TechMNxt charter, Tech Mahindra is betting big on next gen technologies such as Cybersecurity to solve real business problems of the customers by delivering innovative solutions and services.

Tech Mahindra and Prometeia Collaborate to Provide Governance, Risk & Compliance Services to Banks

Tech Mahindra Ltd., a leading provider of digital transformation, consulting and business re-engineering services and solutions, and Prometeia, a leader in risk management consulting and software solutions, announced their strategic partnership to provide Governance, Risk and Compliance services to banks in order to improve their overall performance, in line with Basel III framework. Basel III is a set of international banking regulations developed to promote stability in the international financial system. Tech Mahindra's capabilities in banking risk management & compliance, business intelligence, analytics, data management and system integration, combined with Prometeia's ability to provide local industry specialists, will help in effectively responding to regulatory challenges impacting banks all over the world. While risk (credit, market & operational) management function is important from the banks' compliance and regulatory perspective, it also has a direct correlation with the bank's profitability. Asset & Liability Management, which is an integral part of Prometeia's product suite, helps in improving the profitability by managing the asset and liability in a much more efficient manner. Effective risk management assures that the customers assets are safe with the bank and it also helps in reducing the reputational risk of the bank. Gautam Bhasin, Banking & Financial Services, Vertical Head, Tech Mahindra, said, "Our partnership with Prometeia



will help us expand our presence in the Banking Enterprise Risk Management space, especially in Europe with best of breed solutions on ALM, credit risk, IFRS 9 and regulatory compliance. We hope to leverage Prometeia's proven expertise in developing niche solutions in the Risk, Wealth & Performance Management domain to better serve our customers globally." Tech Mahindra and Prometeia have complementary, mature experience in Risk and Compliance, ranging from implementation experience for credit risk frameworks and regulatory reporting to liquidity risk, Asset & Liability Management and International Financial Reporting Standards (IFRS) 9 compliance. Massimo Pedroni, Senior Partner and Head of International Business at Prometeia, said, "Our partnership with global partner Tech Mahindra enlarges Prometeia's footprint in the whole Enterprise Risk Management

space, reinforcing our presence in the Middle East and extending our reach to Asia. Our collaboration with Tech Mahindra will enrich our client offering, via a larger team of specialists with global experience and local presence." Tech Mahindra's partnership with Prometeia is also reflective of India's commitment to promote safe and secure banking practices. Over the last two years, government has implemented a number of measures to ensure clean banking. To meet the capital requirements under Basel III, government has done with an investment of Rs 2.6 lakh crore as recapitalization in PSBs. Basel III is an internationally agreed set of measures/ reforms that provide a regulatory and risk management framework to build a resilient banking system that supports the real economy. 📌

15 Practical Use Cases of Artificial Intelligence



Artificial Intelligence (AI) is a realm of new possibilities for the human race, inclusive of a plethora of new technological advancements such as machine learning, deep learning, computer vision, natural language processing (NLP), machine reasoning, and strong AI. AI can be defined as an information system that is inspired by a biological system designed to give machines with powerful computational capabilities the almost-human-like abilities of reasoning and learning, based on sensory inputs, feedback, and data analytics.

From healthcare to business, finance to education, AI is revolutionizing all sectors of the economy, and its impact on the evolutionary path of the digital economy is becoming more obvious.

Based on available data, industry discussions, available literature, practical possibilities, and emerging trends, SAMENA Council considers the following use-cases of AI to be of immediate interest in the SA-ME-NA region as the region embraces 5G:

From healthcare to business, finance to education, AI is revolutionizing all sectors of the economy, and its impact on the evolutionary path of the digital economy is becoming more obvious.

AI in Health Sector

1. Gene Analysis and Pattern Recognition

Pervasive use of antibiotics is known to be fatal across the globe. Researchers make use machine learning (an AI technique) to identify genes which cause antibiotic resistance in bacteria. AI is also being used in the medical sector to identify pre-symptomatic patterns in electronic healthcare records (EHRs) so more alerts can be sent to healthcare providers.

2. Brain-Computer (Human to Machine) Interfaces

Although brain computer interfaces are not a mainstream technology yet, however, there is a lot of interest in this area because brain-computer interfaces can replace other types of computer interfaces, which is particularly helpful for people with permanent or temporary disabilities. For example, AI-enabled brain-computer interfaces can help stroke patients communicate with healthcare providers soon after a stroke rather than after rehabilitative therapy (Morgan).



3. Cancer Treatment through Immunotherapy

Immunotherapy for cancer has been in the use for several years. While there are many immunotherapy options which are available, however, a patient's DNA determines whether the treatment will be effective. Since AI can analyze far more information far faster than humans, it's capable of recognizing patterns in genetics strings and correlating those against immunotherapy options. The capability could result in a truly personalized approach to cancer treatment (Morgan).

AI in medical imaging empowers physicians with additional information which can help them more quickly and accurately diagnose particular conditions.

4. Medical Imaging

AI in medical imaging empowers physicians with additional information which can help them more quickly and accurately diagnose particular conditions. An algorithm could be written, for example, to review a million different chest films, both with and without malignancies, and learning to spot malignancies. The goal is to enhance the care provider's decision-making (Lembo).

5. Time Optimization

AI-powered Project Management tools have been helping in the management and prioritization of activities by delving into impact analysis.

Artificial Intelligence has added a valuable feature of detecting any critical tasks or goals and raising reminders. This has changed the workflow of workspace and raised employee efficiency standard. The AI also helps in deciding the deadlines and later generating regular reports for review by management (Gupta).

6. Data Analytics

AI has shifted the businesses' concept of data from Describing to Monetizing. AI is not only classifying the data in a presentable form for users, but also has been giving business the directions to turn new found knowledge or insights into visible profits (Gupta). Sentimental Analysis and textual Analysis play a major role in this data gathering. AI allows for the comprehension of a huge amount of unstructured text and visual data to empower various products and companies.

7. Data-driven Recruitment Decisions

Artificial Intelligence saves HR decision makers from the mundane and tedious process of shortlisting potential candidates for next rounds. It optimizes this process by relevant keyword-

AI has shifted the businesses' concept of data from Describing to Monetizing. AI is not only classifying the data in a presentable form for users, but also has been giving business the directions to turn new found knowledge or insights into visible profits.

based searches. AI aids in analyzing the filled application form and various pre-filled answers by candidates too. It has aligned the recruitment workflow to be more intelligent and data-driven (Gupta).

AI in Financial Sector

8. AI and Credit Decisions

Artificial Intelligence provides a faster, more accurate assessment of a potential borrower, more cost effectively and efficiency, and accounts for a wider variety of factors, which leads to a better-informed, data-backed decision. Credit scoring provided by AI is based on more complex and sophisticated rules compared to those used in traditional credit scoring systems. It helps lenders distinguish between high default risk applicants and those who are credit-worthy but lack an extensive credit history (Bachinskiy).

9. AI and Risk Management

Enormous processing power allows vast amounts of data to be handled in a short time, and cognitive computing helps to manage both structured and unstructured data, a task that would take far too much time for a human to do. Algorithms analyze the history of risk cases and identify early signs of potential future issues (Bachinskiy).

10. AI and Fraud Prevention

AI is especially effective at preventing credit card fraud, which has been on the rise in recent years due to the increase in e-commerce and online transactions. Fraud detection systems

analyze the clients' behavior, location, and buying habits and trigger a security mechanism when anything seems out of order and contradicts the usual spending pattern. (Bachinskiy)

Banks also employ artificial intelligence to reveal and prevent money laundering. Machines recognize suspicious activities and help to cut the costs of investigating the alleged money-laundering schemes.

11. Trading & Investment

Data-driven investments have been on the rise since the last 5 years. In 2018, the closing for data driven investments was a trillion dollars. The predictions using AI are far accurate than hunches or predicting manually. (Bachinskiy)

AI for Process Improvement & Delivery

12. AI-driven Logistics Optimization

AI driven logistics optimization can reduce costs through real-time

forecasts and behavioral coaching. Application of AI techniques such as continuous estimation to logistics can add substantial value across many other sectors. AI can optimize routing of delivery traffic, thereby improving fuel efficiency and reducing delivery times (Mckinsey).

13. AI and Customer Experience Management

AI can be a valuable tool for customer service management and personalized marketing. Improved speech recognition in call center management and call routing by applying AI techniques allow a more seamless experience for customers—and more efficient processing. The capabilities go beyond words alone. (Mckinsey)

14. Predictive Maintenance


Some existing predictive maintenance systems have analyzed time series data from Internet of Things (IoT) sensors, such as those monitoring temperature or vibration, in order to

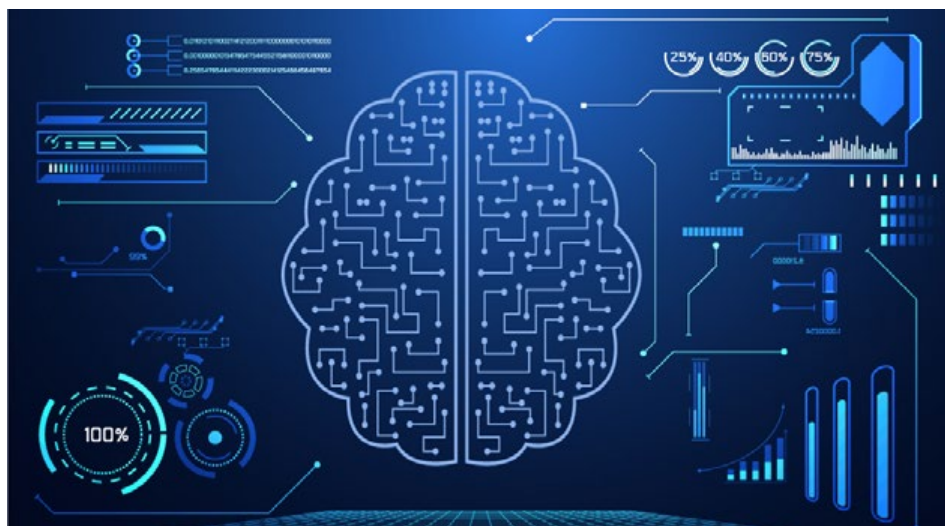
AI is especially effective at preventing credit card fraud, which has been on the rise in recent years due to the increase in e-commerce and online transactions. Fraud detection systems analyze the clients' behavior, location, and buying habits and trigger a security mechanism when anything seems out of order and contradicts the usual spending pattern.

detect anomalies or make forecasts on the remaining useful life of components. Deep learning's capacity to analyze very large amounts of high dimensional data can take this to a new level. AI's ability to predict failures and allow planned interventions can be used to reduce downtime and operating costs while improving production yield (Mckinsey).

AI in Education Sector

15. Education and AI

Distant learning, subject matter expertise, and automatic grading have made self-taught online courses available for anyone with Internet access, making it an important means to improve quality of lives and career advancement. (Bachinskiy).



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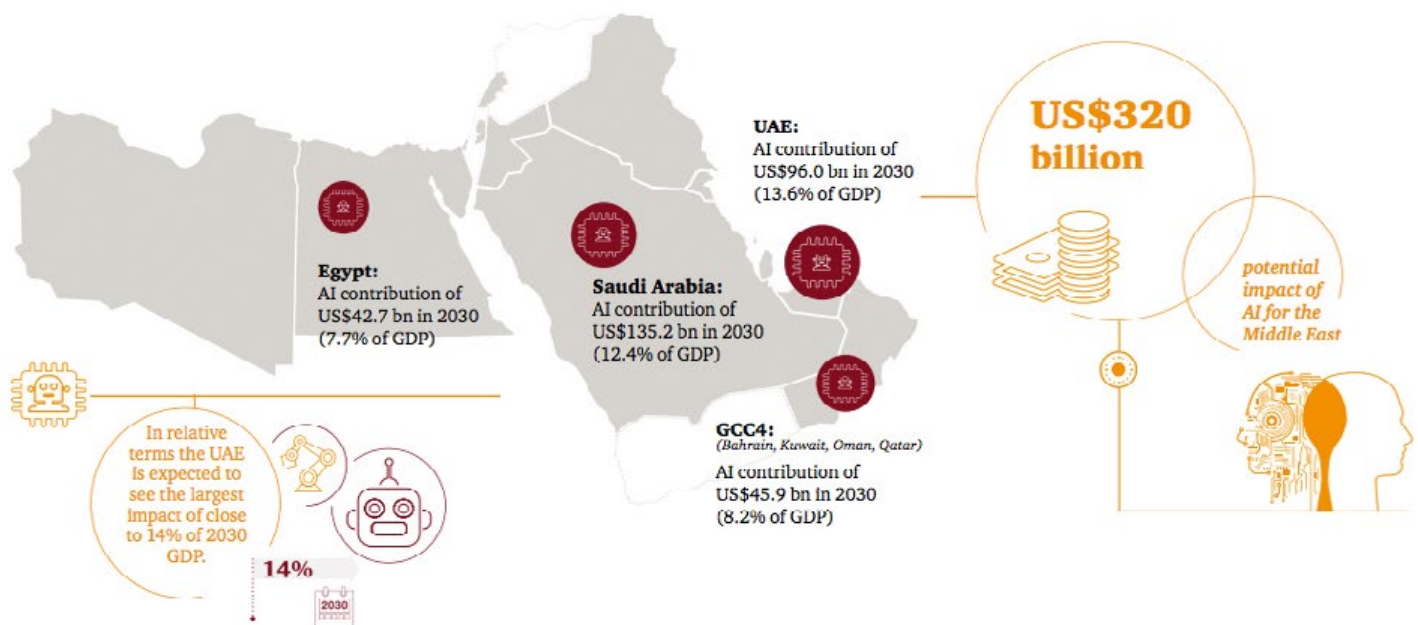
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REGIONAL NEWS

Artificial Intelligence to Boost Middle East's GDP by 11% by 2030

Decision makers in the Middle East are looking to embrace artificial Intelligence (AI) in their business, according to a recent report by PwC. Almost 91% of the Middle Eastern CEOs interviewed by PwC would adopt AI in conducting business, with 78% of these CEOs believing that AI has a greater impact than the internet, the report highlighted. Moreover, PwC research forecast that AI would contribute around \$320 billion, or 11% of gross domestic product (GDP), to the Middle East's economy by 2030. Riyadh Al Najjar, KSA country leader and transformation management business unit leader in the Middle East, said: "AI will certainly change the future of project management and how projects are delivered. In the middle of this evolution, however, it is important to remember that as much as AI takes over traditional project management functions, AI cannot have the human skills like ideation, people-management, empathy, problem-solving and emotional intelligence." The world's second largest professional

services firm said in its research that AI would help to cut project management cost, improve efficiency, and provide decision making support through active assistance that would provide managers with projects status follow-ups and updates. AI will also conduct actions on behalf of project managers based on past experiences and behaviors, as well as predict imminent risks and suggest solutions, the report noted. Faisal Al Sarraj, a KSA transformation management partner, said: "AI can transform project management by amplifying benefits from other technological breakthroughs such as analytics, Robotics Process Automation (RPA), IoT, blockchain and, eventually, quantum computing." AI is likely to affect the displacement of jobs in several sectors in the Middle East, however, not every job is at equivalent risk. PwC estimated a relatively low displacement of jobs at 3% until the early 2020s that would increase to 30% by the mid-2030s.



UAE is Fastest Growing e-Commerce Market in MENA

The UAE has retained its position as the most advanced e-commerce market in the Middle East and North Africa (Mena) region, with e-commerce transactions in the country estimated to hit Dh59 billion in 2019, new data has shown. According to a joint study by Dubai Economy and Visa, e-commerce transactions will grow 23 per cent on average annually between 2018 and 2022, driven by tech-eager consumers, an ecosystem that promotes

startup growth, and innovative initiatives such as Dubai Smart City. While the Mena region remains the fastest growing e-commerce market globally, government adoption of e-commerce payments on platforms such as Dubai Smart City and exponential growth in categories such as quick service restaurants and transportation enable the UAE to maintain a clear edge in online payments within the region. "Public-private partnerships to drive awareness and

trust on the value, convenience and security of online shopping and expand the digital payment option are critical to sustaining the e-commerce momentum that Dubai and the UAE have gained through promoting cashless payments and providing secure payment platforms for businesses and the public," said Sami Al Qamzi, director general of Dubai Economy. Global e-commerce leaders, such as Amazon, expanding to Dubai is a strong testament to the emirate's competitiveness as a digital innovation hub, Al Qamzi added. "Dubai has not only established an enabling e-commerce ecosystem for innovators, entrepreneurs and end-users but also continues to launch path-breaking e-commerce initiatives." Deeper Internet penetration along with an advanced digital infrastructure and younger population eager to embrace technology-driven solutions available across smart phones and social media are at the core of the e-commerce growth in Dubai and the UAE. At 4.2 per cent of total sales, e-commerce penetration in the UAE is not only higher than the Mena region average of 1.9 per cent and GCC average of three per cent, but also highest in the region. The report also shows that while consumer preference for e-commerce channels in the UAE is nearly at par with mature benchmark markets, the country has a healthy lead in average transaction size. The average size of e-commerce transactions in the UAE in 2018-2019 is \$144, while it is \$79 in mature markets and \$26 in emerging markets. Marcello Baricordi, Visa's GM for Mena, said: "By growing the e-commerce sector in the UAE, there is a tremendous opportunity to drive economic growth and extend the benefits of digital payments to residents and businesses in the country. We will continue to work with our government and industry partners to promote a regulatory ecosystem wherein public and private partnerships can thrive and spur technological advancements and entrepreneurship, and stimulate foreign investment." The e-commerce growth in the UAE largely owes to the retail sector and the thriving mall culture. Retailing in the UAE, which also comprises non-store sales, was valued at Dh202 billion in 2018 and is forecast to rise to Dh234



billion by 2023, with non-store sales including online shopping set to grow at 78 per cent.

Iran to Establish Joint ICT Market with Russia, Turkey, Azerbaijan

Iranian ICT Minister Mohammad Javad Azari Jahromi announced that a joint ICT market will be formed between his country, Russia, Turkey and Azerbaijan. Making the remarks on the sidelines of the quadrilateral meeting among Communications Ministers of Iran, Azerbaijan, Russia, and Turkey Jahromi said by holding this meeting, the four countries seek to find a remarkable share in the future of international digital market. "It is about a year since we have reached some agreements on forming a joint ICT

market with each other," he said. "The first agreement was made with Azerbaijan in Baku on establishment of a center to support innovation and creativity and the center is on the process of being formed." "During meeting, the attending Ministers of the four countries agreed to hold eight events in future, two events by each, to have their digital economy players take part in," he added. "We have formed a committee in this regard to finalize the framework of the center," he added. He, elsewhere, referred to the upcoming Iran International

Electronic, Computer and E-Commerce Exhibition (ELECOMP 2019), saying that some 11 high ranking delegations will participate in the event. "General Secretary of International Telecommunication Union (ITU), General Secretary of Asia-Pacific Telecommunity (APT) and that of the Regional Commonwealth in the Field of Communications (RCC) are to attend the event in Iran besides Ministers from Iraq and Armenia, Deputy Ministers from Qatar and China and a delegation from Turkmenistan" Jahromi said.

TRA UAE Hosts Delegation from Ministry of Infrastructure Development

The Telecommunications Regulatory Authority (TRA) received a visiting delegation from the Ministry of Infrastructure Development, which included a number of the Ministry employees. The visit aims to identify best practices in the financial management and administrative affairs of TRA. The delegation reviewed the best practices of TRA in warehouse and inventory management, best practices in asset and property management, electronic systems used for warehouse management, asset tracking and inventory, destruction and recycling mechanisms, KPIs to ensure the efficiency and effectiveness of warehouse and property management, and procedures expenditure saving. On this visit, Mohammad Al Kitbi, Director of Administration Affairs Department, said: "TRA has adopted a number of updated strategies and plans that have contributed to accelerating the work, improving operational efficiency and improving asset management. TRA has also benefited from national expertise and competencies, empowered human resources and optimized the available resources. This has led TRA to winning the Sheikh Mohammed Bin Rashid Government Excellence Award for best federal entity with less than 500 employees. TRA has endeavored to share its successful experience with all government entities in order to achieve integration at the level of systems, databases, knowledge and expertise as a major step into the age of Artificial Intelligence and smart cities in an efficient manner that achieves the desired goals." He stressed that TRA welcomes all government delegations wishing to know more about the management experience of TRA, which is reflects positively on the achievement of the National Agenda. He added: "TRA welcomes all meetings with government entities, whether for learning about the experience of TRA or exchanging of experiences and knowledge. The visit of the delegation of the Ministry of Infrastructure Development today comes in this context, as it reflects the spirit of cooperation and coordination between TRA and other governmental and private entities, in line with the directives of the wise leadership, and it contributes



to achieving the UAE 2021 and the objectives of the National Agenda." TRA has been awarded Sheikh Mohammed Bin Rashid Government Excellence Award for best federal entity with less than 500 employees. Moreover, It has won Sheikh Mohammed Bin Rashid Government Excellence Award in 2017 in the National Agenda and enablers categories. TRA has received many ISO certificates in the areas of business continuity, quality management system, environmental management system, information management and security system, health and safety, energy management. TRA was established in the UAE according to the Federal Law by Decree No. 3 of 2003. The role of TRA focuses on two fields: regulating the telecommunications sector, and enabling government entities in the field of smart transformation, as well as promoting cyber security in order to preserve the society's safety and enhance its happiness and wellbeing. In regulation, TRA role focuses on ensuring excellent telecom services, developing the ICT sector, protecting the stakeholders' interests, implementing relevant policy and regulatory frameworks, developing human resources and promoting research and development, in order to ensure that the UAE has a leading regional and global position in the ICT sector. In enablement, TRA is responsible for the mGovernment according to the Law No. 3 of 2011. Since then, TRA has been responsible for digital transformation in the Federal Government through two strategic goals:

enhancing smart lifestyle and leadership in smart technological infrastructure in the UAE. Last week the Ajman Chamber of Commerce and Industry (ACCI) and the Telecommunications Regulatory Authority (TRA) discussed the ways to enhance the cooperation in the UAE Hackathon and to optimally make use of its benefits during a meeting held at the Chamber's premises. Among the attendees were Jamila Kajour, Director of Franchise Development Department at Ajman Chamber and Amal Ismail, project director at the UAE Hackathon-TRA. During the meeting, the attendees were briefed on the objectives of the UAE Hackathon and its role in providing the opportunity for young people to use open data to innovate and find innovative ideas and solutions to various challenges in all sectors serving the public and private sectors. Jamila Kajour stressed the importance of the UAE Hackathon and its community role in providing ideas and innovative technological applications that support the various economic, tourism, educational, health and other sectors. She also pointed out that Ajman Chamber would strive to support and connect entrepreneurs with businessmen and investors until their ideas become real projects on the ground. She pointed out that innovative entrepreneurs could benefit from Regis Business Incubator located in the Ajman Chamber's premises. It provides office solutions for entrepreneurs with a stimulating environment for their business and project development, she added.

Minister of Communication and Information Technology of State of Palestine Visits NTRA

The Minister of Communication and Information Technology of the State of Palestine, Mr. Ishaq Sider, visited this morning the premises of the National Telecom Regulatory Authority (NTRA) at Smart Village. The esteemed minister's visit comes on the sidelines of his participation in the activities of the Executive Office of the Arab Telecommunications and Information Council of Ministers (ATICM)

that was held in Egypt on 28 July 2019. His Excellency was received by Dr. El-Sayed Azzouz, member of NTRA's Board of Directors and Dr. Hossam Abd El-Mawla, Executive Director of Technical Affairs Department, and a number of executive officials and experts of NTRA. At the onset of the meeting, Dr. Azzouz has expressed his gladness to receive the Palestinian Minister and the delegation accompanying

him in Egypt. He has highlighted that Egypt puts on top of its foreign priorities the Palestinian issues and will spare no effort to provide all possible technical assistance to develop its ICT sector. On his turn, the Palestinian minister expressed his appreciation for the cordial reception and Egyptian efforts. He underscored the historical robust relations between the two peoples and the unity of interests between the two countries. The meeting examined best ways to consolidate cooperation between the Egyptian and Palestinian sides and eliminate the obstacles related to roaming services. Moreover, Egyptian experts presented their expertise in technical fields like number portability. Furthermore, the two sides reviewed the possible means of developing the structure of the telecom sector in the State of Palestine. The two sides agreed to complete consultations between experts and to hold bilateral meetings to finalize what was agreed upon, especially in the field of provision of Egyptian know-how and expertise in the regulatory and legislative fields and numbering. At the end of the meeting, the two sides exchanged memorial gifts to express the strength of relations between the two countries.



Egypt Gets a National ICT Monitoring Center

The Egyptian ICT Minister, Amr Talaat inaugurated last week the country's new National ICT Monitoring Center. The center is affiliated with the National Telecommunications Regulatory Authority (NTRA) and based in the Smart Village. With this new development, the Egyptian government is confirming its ambition to improve the quality of telecommunications and Internet services provided to citizens. The government says it will take all necessary proactive measures to encourage telecom companies to maintain a high level of performance. The

National ICT Service Monitoring Center will periodically measure the quality of voice and Internet services provided by telecommunications companies operating in Egypt. Services will be measured in 94 areas, 70 main roads and 25 public gathering spaces nationwide, such as shopping malls and high-density government institutions. Data collected by the Center will be made available to the public through the monthly reports published on the NTRA website (www tra.gov eg). This action will keep consumers informed about the performance of

telecommunications companies, making it easier for them to choose the network to subscribe to according to their needs. According to Minister Amr Talaat, the Center's construction required a financial investment of EGP50 million. In addition, NTRA has partnered with the German company Rohde and Schwarz, which specializes in testing and measuring ICT services, to acquire the expertise needed to use the modern machines. The first report measuring the quality of ICT services will be released on September 1, the official said.

TRA Launches 'Leadership Program' for Trainees

The UAE's Telecommunications Regulatory Authority (TRA) said that it has launched the "Leadership Program" to develop the capacities and expertise of its human resources. The program will run until November. The program, developed by TRA in cooperation with the International Center for Training and Development (ICTD), is an intensive practical training program, supported by many tools, methods, and success stories, to enable leaders to become more effective in their roles. The program will help develop skills of leadership, innovation, future shaping, excellence, strategic planning, project management, change management, negotiation, conflict resolution, and effective team building, said a statement from the organization. The program also contributes to strengthening the culture of corporate excellence in TRA. It supports leaders to come up with many innovative practices for sustainable results, keeping pace with global leadership levels in the telecom and smart government sectors, in addition to concepts of continuous improvement according to many modern methods. It assists the trainees through their participation in international and local excellence awards that reflect advanced performance levels. Hamad Obaid Al Mansoori, director general, TRA, said: "The program is inspired by our wise leadership directives to work on creating second and third lines of leaderships to ensure sustainability and efficiency and to make leadership a culture and business style in

the UAE." "It emphasizes the importance of supporting the human element as a key for sustainable development. It is part of our efforts to prepare national talents and future leaders capable of meeting future challenges, achieving the requirements of effective management and leadership and keeping pace with change in all fields," he said. "We have launched the 'Leadership Program' to develop the capabilities and expertise of our human resources. It aims to develop our national talents and cadres, enhance their abilities and personal skills, and promote the culture of creativity, innovation and vision of the participants in line with the UAE vision 2021 and other strategic directions of the country, in addition to enabling the participants to adopt best international practices in analysis and decision-making," he added. Moreover, the trainees will learn about the true meaning of leadership and its seven traits, leadership theories, the characteristics of effective leaders, the outlines of leadership responsibilities, and special training to learn about leadership styles and competencies and the impact of changes in the workplace to create a new generation of leaders. Trainees will also have the opportunity to learn the critical team leadership skills, understand the behavioral styles, gain effective listening and communication skills, improve performance, and build a culture of trust, integrity and high performance, and to identify potential pipeline failures. In a special module, trainees

will learn modern coaching methods, as coaching is a leadership tool to stimulate performance and achieve results. The program will address a range of coaching models, coaching high performance, and establishing the coaching agreement. The program also focuses on coaching as a leadership tool in motivating performance and achieving results. It highlights emotional intelligence and the main elements of emotional intelligence in leadership, the strength of emotions, self-control, flexibility, and emotional honesty. At the end of the program, the graduates are expected to have the ability to deal with the new trends in innovation management, their implementation in government entities, distinguishing between the various concepts of the management of organizational innovation, the classification of different types and forms of innovation, the use of different innovation tools, understanding the strategic innovation and its role in business success, and evaluating the skills of innovation and individual creativity. TRA makes all efforts in building the future cadres to lead the ICT sector, by adopting strategies and methods that prepare UAE leaders for the post-oil phase, which will radically change the form of the economic, education and social sectors. The human cadres will be capable of dealing with the requirements of the next phase, such as artificial intelligence, e-commerce, new media, and others, it stated.

PTA's Workshop on 5G Development & Evolution in Collaboration with GSMA Concluded

Two days' training workshop on 5G networks organized by Pakistan Telecommunication Authority (PTA) in collaboration with GSM Association (GSMA) concluded in Islamabad. Workshop was arranged under the 'PTA-GSMA Capacity Building Centre of Excellence Program'. The workshop covered the underlying technology of 5G, its evolution phases and the tests, trials and development in various countries. Around 30 participants including foreigners attended it. The Workshop was conducted

having several sessions with national and international speakers. These sessions focused on the opportunities and challenges in the deployment of 5G networks. During the event Chairman PTA, Maj Gen(R) Amir Azeem Bajwa emphasized that the PTA as a regulator has always encouraged new ideas and supported initiatives for the use of technology for the betterment of the citizens in line with the government policies. In this regard, PTA is facilitating the licensed operators, academia, R&D orga-

nization and all relevant entities for trials of 5G networks in Pakistan. Chairman further added that Pakistan will have 5G services launched in due course of time and consumer will be able to experience faster broadband services. Chairman PTA distributed certificates among the participant at the end of the workshop. It may be added that the first ever international 'PTA-GSMA Capacity Building Centre of Excellence' has been established at PTA for regional regulatory trainings.

Amazon WS Middle East Region Launches in Bahrain

Amazon Web Services has announced the opening of the AWS Middle East Region out of Bahrain, which the company says will allow companies, educational institutions and governments to run their applications and serve end-users from data centers located in the region. "The cloud has the change to unlock digital transformation in the Middle East," said Andy Jassy, the CEO of Amazon Web Services. "Today, we are launching advanced and secure technology infrastructure that matches the scale of our other AWS regions around the world and are already seeing strong demand in the Middle East for AWS technologies like artificial intelligence and machine learning, data analytics, IoT and much more." "We are excited to see how our cloud technology will provide new ways for governments to better engage with citizens, for enterprises to innovate for their next phase of growth, and for entrepreneurs to build businesses and compete on a global scale," he added. Around the world, AWS regions are composed of 'availability zones', each one located in a separate geographic location with enough distance to reduce the risk of a single event impacting business continuity. At the outset, the AWS Middle East Region will offer three availability zones. In the region, a number of start-ups and companies are building their businesses on or moving to AWS, including Careem, BitOasis, Al Tayer Group, Aramex, Bahrain Bourse, Flydubai, MBC Group and Virgin Middle East. Another, Emirates NBD, is using AWS's AI and machine learning services, data analytics and natural language processing technologies to better engage with customers. "Emirates NBD has been collaborating with AWS and taking advantage of AWS's technologies and innovation practices to develop personalized, real-time banking experiences," said Abdulla Qassem, Emirates NBD's group COO. "The new AWS Middle East region will allow us to further experiment and enhance our solutions as we continue to realize our vision of being the region's most innovative financial services organization." Careem, for its part, started working with AWS to help it expand to 14 countries in under seven years. "When we started building Careem, we knew that the ability to scale fast, in a secure and reliable way, would be critical to our long term

success," said Careem co-founder Magnus Olsson. "Thanks to AWS, we have been able to focus our efforts on geographical and new vertical expansion and to innovate new technologies and services." Olsson added that "we will now be able to benefit from data centres with lower latency in the region." Public sector entities in the region using AWS include various Bahraini government ministries, Kuwait's Communications and Information Technology Regulatory Authority, Tamkeen and Mumtalakat. Additionally, AWS is launching a new 'direct connect' location in Bahrain, joining two others – and two Amazon CloudFront Edge – locations in the UAE. These centers make it easier for customers to establish a dedicated private network connection between AWS and their data center, office or colocation environment. AWS is also offering instructor-led training programmes for customers and partners. According to IDC's latest Middle East CIO survey, 73 percent of organizations in the region are undergoing formal digital transformations, with total spending on public cloud services expected to grow at a compound annual growth rate (CAGR) of 27.2 percent to reach \$5.2 billion in 2023.



All Three Kuwaiti Cellcos Launch 5G Smartphone Packages

Viva Kuwait this week launched post-paid 5G smartphone voice/data packages with the Huawei 'Mate20 X 5G' handset, with monthly prices starting from KWD37 (USD121). Haneen Al-Fulaij, Acting Chief Consumer Officer at Viva, said: 'This new smartphone is the key to the 5G era and will definitely meet the customers' aspirations and expectations.' Furthermore, on its website Viva Kuwait is advertising 5G post-paid monthly plans suitable for usage with any 5G-capable handset, with two options: KWD35 (with 100GB mobile data) or KWD45 (with 250GB) which both

allow unlimited domestic calls and 1,000 SMS per month. Ooredoo Kuwait has also launched post-paid Mate20 X 5G packages, under the 'Shamel 5G' banner, starting at KWD36 (with 100GB and unlimited domestic minutes/on-net minutes/SMS). The Shamel 5G 250GB (KWD50) and premium Shamel 5G 1TB (KWD75) plans include 2,000 and 500 domestic minutes respectively plus unlimited on-net minutes/SMS. Zain Kuwait is also offering the Mate20 X 5G in post-paid packages, and appears to have trumped both its rivals in the premium user segment by launching

a 2TB monthly 5G plan for KWD75 (with unlimited domestic minutes) alongside three lower-tier options: 500GB for KWD55 (with 5,000 domestic minutes); 200GB for KWD45 (with 2,000 domestic minutes); and 100GB for KWD37 (with 1,000 domestic minutes). All three cellcos' 5G smartphone packages are based on a 24-month device/service tariff plan. Last month Viva, Zain and Ooredoo Kuwait all launched user packages for 5G fixed modem usage on their new 3.5GHz networks.

Maroc Telecom Exceeds Financial Targets in H1 2019

Maroc Telecom (IAM) has published its financial results for the six months ended 30 June 2019, reporting a 0.5% decrease in revenues from MAD17.939 billion (USD1.86 billion) to MAD17.844 billion, attributed to a 4.0% drop in sales generated by the group's international operations, which was partly offset by a 1.4% increase in revenues in its domestic market. The telco's six-month EBITDA increased by 6.2% year-on-year to MAD9.409 billion, fuelled by a 10.7% growth in pre-tax earnings from domestic operations, despite a 1.4% decrease in its subsidiaries' EBITDA contribution. IAM's consolidated earnings from operations reached MAD5.862 billion in 1H19, a 5.8% increase y-o-y, while the group's share of adjusted net income amounted to MAD3.022 billion, up by 1.0% when compared to 1H18. CAPEX including frequencies and license costs amounted to MAD3.227 million at

the end of June 2019, down 10.3% y-o-y. The group also disclosed that as part of the implementation of the 2019 Budget Act, the Moroccan government divested 8% of the capital and voting rights in IAM in the form of blocks of shares on 17 June 2019 (equivalent to 6% of the capital); a public offer sale was closed on 16 July 2019 (2% of the capital). After the completion of the transaction, the Kingdom of Morocco holds 22% of the capital and voting rights in Maroc Telecom. In operational terms, the group reported annualized growth of 3.9% for its consolidated customer base, with the total reaching 63 million connections at end-June 2019. In Morocco, wireless subscribers increased by 3.2% y-o-y to reach 19.547 million, up from 18.935 million in 2Q18; the telco's 3G/4G user base passed 11.119 million (up by 10.3% y-o-y), while broadband customers increased by 6.2% y-o-y to 1.529 million.

In Niger, wireless accesses increased by 23.6% to 2.810 million, while Togo saw a sizeable 14.5% y-o-y rise in mobile subscribers to 3.608 million at 30 June. Furthermore, mobile subscriber growth was also reported in Cote d'Ivoire (8.899 million, up 9.0%), Mauritania (2.389 million, 10.6%), Burkina Faso (8.020 million, 6.6%) and Central African Republic (153,000, 4.1%), while Mali and Benin reported annual declines of 10.5% (7.270 million) and 0.5% (4.362 million), respectively. Abdeslam Ahizoune, Chairman of IAM's Management Board, commented: 'Maroc Telecom achieved better-than-target results in the first half of 2019, thanks in part to the success of Data in all its markets, despite the strong competitive intensity. Profitability is improving significantly thanks to cost optimization efforts, which offset the increasing sectoral tax pressure in some subsidiaries' countries.'

Oman Data Park Collaborates with Microsoft and Cisco for Digital Economy



Oman Data Park (ODP), in collaboration with Microsoft and Cisco, has announced the deployment of Microsoft Azure Stack solutions in its facilities. The Microsoft Azure Stack is an extension of Microsoft's Azure Cloud that brings the innovation of cloud computing to build and deploy hybrid applications while meeting local data sovereignty and regulatory requirements. ODP was faced with the challenge of delivering on its digital

transformation promises to customers while complying with the Sultanate's regulations on data sovereignty. The organization engaged Microsoft to explore deploying the country's first Azure Stack, as a major step towards offering Azure services and capabilities within the compliance framework. "The major challenge faced by us in providing Azure services to our customers in Oman was the inability to store data locally," said

Maqbool Al Wahaibi, CEO, Oman Data Park. "This new addition is our way of supporting the economic development of Oman by elevating the ICT sector to a new level of international expertise that offers a wide spectrum of Microsoft software portfolios while creating specialized jobs that supports this environment," Al Wahaibi added. Organizations in Oman is expected to innovate with a consistent cloud platform and make technology decisions based on business requirements, rather than business decisions based on technology limitations. Sheikh Saif Hilal Al Hosni, Country Manager, Microsoft Bahrain and Oman, commented, "The ability to dynamically deliver business-critical applications is a major requirement for all organizations in the age of digitization. Cloud computing is one of the main technologies driving this change." "By deploying the Cisco Integrated System for Microsoft Azure Stack for the first time in Oman, ODP has a comprehensive and pre-integrated cloud platform to accelerate service delivery and thus contribute to the development of the country's digital economy,"

Digital Transformation as an Enabler of Sustainability

The role that technology plays within the realm of sustainability is one that is widely discussed. Governments using cutting-edge tech to make decisions on education, healthcare and urban development. Sustainability is now at the center of most conversations globally. It is intrinsic to dialogues on the environment, the economy and increasingly, technology. As digital transformation becomes a key part of government agendas in the region, we are seeing sweeping changes in the way the public and private sector functions, with day-to-day operations increasingly moving online. But above all, the environmental impact of this digitalization is a game-changer by itself. Earlier this year, Sheikh Hamdan bin Mohammed bin Rashid Al Maktoum, Crown Prince of Dubai and Chairman of the Dubai Executive Council, kicked off a three-year countdown for implementing the Dubai Paperless Strategy. As a fully-paperless government, a hundred per cent of internal and customer transactions will be digitized from 2021. As the first phase of the Dubai Paperless Strategy was completed at the end of 2018, six government departments helped reduce paper consumption by an average of 57 per cent, saving 37 million papers

in total. A very impressive figure, which is a result typical of the UAE to achieve. Sustainable cities and communities is one of the key areas under the United Nations Sustainable Development Goals for 2030, and programmes such as the Dubai Paperless Strategy are prominent contributors to this goal, and help to lead by example, especially for the Middle East region. At the same time, as countries around the region undergo the digital transformation of their governance, such programmes act as best practices they can learn from. The role that technology plays within the realm of sustainability is one that is widely discussed. With artificial intelligence, the Internet of Things and big data offering new possibilities and transformative solutions to diverse global challenges, these technologies are among those considered game-changers for sustainability. Autonomous cars and smart buildings are already a reality and as they see an increased presence globally, the significant positive impact these technologies have on the environment and in society are now the real success stories governments can tell. We are now said to be in the Fourth Industrial Revolution. And the technological innovations from

this period are showing great potential in the transformation of governments and businesses, and creating a deep impact on society and the environment. Today, governments are using these cutting-edge technologies to make decisions on education, healthcare and urban development. With clear planning and foresight, I am confident governments will be able to keep sustainability at the center of their development projects. Being a resident of Dubai for several years, it is very exciting for me to witness the digital transformation of the public sector and be a part of it. As we continue to see further results under the Dubai Paperless Strategy, I hope other countries will look to implement similar programmes for the digital transformation of their governments. While launching the strategy in 2018, Sheikh Hamdan said: "This reflects our holistic vision for our role as human beings, not only towards Dubai, but towards the world as a whole." I could not agree more. As digital transformation is implemented across sectors, we will no doubt see a growing positive impact on society. And this is central to everything we aim to do as technology companies.

Egypt Hosts 25th Arab Spectrum Management Group (ASMG) Meeting



At the invitation of the General Secretariat of the League of Arab States (LAS), Egypt will host 25th meeting of the Arab Spectrum Management Group (ASMG) in the period from 27 July to 1 August 2019 in Cairo. A number of significant topics will be discussed in this meeting. The

Chairman's report and the reports of heads of the Working Groups on the agenda of WRC-19 will be examined. Furthermore, the final positions of the Arab group, the proposed Arab documents, and the Group's mechanism of work will be tackled as well. The proposed Arab documents

on the works of the Radiocommunication Assembly (RA-19) will be presented in the meeting as the participation in 3rd ITU Inter-regional Workshop on WRC-19 Preparation will be considered.

TRA Participates in the Meeting of the GCC Committee of National Centers for Computer Emergency Response

The Telecommunications Regulatory Authority (TRA), represented by the Computer Emergency Response Team (aeCERT), participated in the 16th meeting of The GCC Committee of National Centers for Computer Emergency Response, hosted by Riyadh, the Kingdom of Saudi Arabia. The meeting was chaired by H.E. Eng. Bader bin Ali Al Salhi, Director General, National Center for Information Safety, Information Technology Authority, Sultanate of Oman. On this participation, Eng. Mohammad Al Zarooni, Director of Policies and Programs Department in TRA, said: "The GCC is a unique situation in the region, as it constitutes a union that binds Member States. The United Arab Emirates and our wise leadership have stressed on

the importance of activating all initiatives and strategies issued by the Council and working, coordinating and cooperating with Member States to serve their common interests in various fields. We at the TRA are keen to take an active part in the Council's activities related to the ICT sector and provide the necessary support to serve the interests of our brothers in the GCC." Eng. Al Zarooni emphasized on the importance of the topics discussed in the meeting. He said: "The Kingdom of Saudi Arabia hosted this meeting as the importance of activating cooperation and coordination among the GCC countries in the field of Cybersecurity is increasing, in order to meet the requirements of the coming phase. The meeting also

contributes to the continuation of the great cultural renaissance witnessed by the GCC countries. The region is one of the fastest growing regions and has become a global investment destination, thus, the importance of solid infrastructure to serve the ICT sector and secure electronic space that encourages investors to invest in various economic sectors in the GCC countries." During the meeting, the UAE delegation gave a visual presentation on the upgraded version of the (IP Reputation) system, and discussed the system proposed name. In addition to a number of reports and statistics on the interaction of Member States with the system. The new services added to the system, which are a platform for sharing security policies and best practices in Cybersecurity, data leakage protection service, sharing of information and methods of Cybersecurity, and new Cybersecurity newsletters, were also reviewed. The Committee thanked the UAE for this updated version. The UAE will prepare a report on the new system after the completion of the practical tests and receiving the observations of the Member States. A detailed report on the system upgraded version will be submitted to the Executive Committee at its next meeting (September 2019). The 17th meeting of The GCC Committee of National Centers for Computer Emergency Response will be held on 3 & 4 December 2019 at the GCC Secretariat HQ in Riyadh.



Pakistan Telecom Imports Decline by Over 10% in FY2018-19

Mobile phones imports witnessed a decline of 10.87% in this fiscal year (July-June) 2018-19, dropping from \$847.654 million to \$755.545 million, according to Pakistan Bureau of Statistics (PBS). Mobile phone imports in June 2019, which stood at \$57.733 million, registered a 34.18% decline as compared to \$87.717 million in June 2018. Last month's figure was 12.27% lower when compared with \$65.81 million in May 2019. A growth of 19.44% was reported in the fiscal year 2017-18 as it was

\$847.654 million compared to \$709.690 million during the same period of 2016-17. Overall telecom imports saw a decline of 10.07% during July-June (2018-19) when compared with the same period last year. Total imports were recorded at \$1.379 billion during this period when compared to \$1.534 billion last year, registering a 25.14% decline in June 2019. This figure stood at \$103.234 million in June 2019 as compared to \$119.588 million during May 2019. The number stood at \$1.534 billion

during 2017-18 compared to \$1.351 billion in 2016-17. A 9.08% decrease has been reported in telecom apparatus imports in this fiscal year i.e. \$624.115 million against \$686.432 million during the same period last year. When compared to May 2019, other telecom apparatus imports registered a 15.39 percent drop in June at \$45.501 million compared to \$50.191 million in May 2019. The numbers rose from \$642.119 million to \$686.432 million from 2016-17 to 2017-18.

UAE TRA Launches 5th Edition of Innovation Camp

The Telecommunications Regulatory Authority, TRA, has announced that the fifth edition of 'TRA Innovation Camp' will be held on 7th July and 8th August, 2019. The camp aims to introduce the youth to the important future technologies, exploration, future-shaping, and self-development skills, in line with the UAE's strategy in the Information and Communications Technology, ICT, field. Hamad Obaid Al Mansoori, TRA Director-General, said, "The Innovation Camp reflects the TRA's commitment to the leadership's directives to create an innovation stimulating environment to make the UAE first globally in various fields. The camp contributes to the promotion and dissemination of the ICT innovation culture among the youth, and encourages them to excel and create, as part of the efforts of building and preparing the UAE's talents and capacities." Al Mansoori added, "The camp is managed by a group of the top TRA employees who have extensive experience in ICT, Artificial Intelligence, AI, and Internet of Things, IoT. They will introduce the students to the requirements of the next phase and future fields that serve the aspirations of the country in smart cities, information security, space science and AI. The TRA opened the door for university students to volunteer as administrative and training assistants in order to gain practical experience in the management of such activities." The camp, which targets school children aged 6 to 17 years, includes a variety of programmes, particularly in the fields of ICT. The camp focuses on programming, which is included in

the three main tracks: digital innovation and entrepreneurship, AI and data science, and Robotics and IoT. This will allow all students to learn about the latest techniques and methods of programming, and help them prepare for future jobs. The camp will allow students to learn the principles of establishing a virtual company by designing and programming electronic platforms to serve the project, such as project marketing, an interface to serve the project customers and others. The students will also acquire research, product design, presentation and marketing skills. The camp is also an ideal opportunity to acquire teamwork and collaboration, presentation and public speaking skills.



Digital Transformation Driving Iraq's Vision 2030



Nationwide digital transformation is driving Iraq Vision 2030's diversified economic growth and job creation, and GDP growth to 8% in 2020. The Undersecretary for Administrative and Financial Affairs at

the Iraqi Ministry of Communications, the German Ambassador to Iraq, and global technology company SAP announced at an event on the future of Iraq's digitization. As the Iraqi government advances Vision

2030 and invests in reconstruction, Iraq's real GDP growth is set to nearly triple to 8.1% in 2020, especially thanks to an increase in diversified economic growth, according to a recent report by the World Bank. "Achieving Iraq Vision 2030's nationwide transformation goals requires a government with real-time insights across every ministry and level of government," said Dr. Karim Mezel Shebbi, Undersecretary for Administrative and Financial Affairs at the Iraqi Ministry of Communications. "Public-private partnerships, such as with SAP, can provide digital government services that can make Iraq's government more responsive and predictive to citizens' needs, and foster new levels of diversified economic growth and youth job creation." Showing the strong trade opportunities, the European Union is Iraq's second-biggest trade partner. Bilateral trade ranked at 16.6 billion euros in 2017, according to a recent report by the European Commission.

Liquid Telecom Building South Sudan's First Fiber Broadband Network

Liquid Telecom is building South Sudan's first fiber broadband network. It will be connected to the "One Africa" broadband network, which is approaching 70,000 kilometers in length across 13 African countries. South Sudan President Salva Kiir Mayardit, various government ministers and other VIPs joined Liquid Telecom executives in a symbolic groundbreaking on July 1. With phase one due to be completed before the end of 2019, Liquid Telecom's network will eventually make reliable and affordable Internet connectivity available for nearly 13 million citizens of South Sudan, as well as thousands of businesses, government institutions and non-governmental organizations. "Liquid Telecom is immensely proud to bring fiber connectivity to South Sudan for the first time," said Strive Masiyiwa, executive

chair of Ecomet Global and Liquid Telecom. "This modern ICT infrastructure will help address the most pressing challenges within South Sudan, including the urgent need for peace and state building, job creation and improved livelihoods. South Sudan's 13 million citizens will be connected to 300 million people across the East African Community. Connecting South Sudan to the 'One Africa' broadband network will also champion pan-Africa trade and help build Africa's digital future." Said South Sudan President Salva Kiir: "The implementation of this critical fiber infrastructure is a landmark step in the delivery of affordable communications access to the people of South Sudan, the business community, government and civil society. By connecting South Sudan to the global internet, this important

infrastructure development will help improve social mobility, enable economic diversification and drive inclusive private sector-led growth and productive employment. The agreement is also ideally timed, coinciding with the signing of the Revitalized Agreement on the Resolution of Conflict in the Republic of South Sudan." The first phase of the agreement signed between the government of South Sudan's National Communication Authority and Liquid Telecom will include a 300-kilometre fibre backbone operating from the border of Uganda, through South Sudan, to Juba. Multiple metro clusters will also support the capital city. This first phase is scheduled to go live in the last quarter of 2019. The network will be expanded to other cities in subsequent phases.

NTC & IBM sign MoU to Establish Data Recovery Center in Pakistan



Pakistan's National Telecommunication Corporation (NTC) signed a contract with IBM for "Establishment of Data Recovery Center (DRC) for the National Data Center, at Lahore". The establishment of DRC being an essential requirement in the industry will not only provide redundancy which will ensure continuity of services and minimize


loss of data in case outage. This facility will also add more security and advanced features to the data center related services being provided to the Government and public sector Organization. The Government is keen to digitalize the country for enhancing the efficiency and transparency which are required for good

governance. On the instructions of Ministry of IT, NTC is taking initiatives for facilitating with secure and reliable data services to the federal government and other public sector organizations. As a policy provision, the Government is discouraging the establishment of silo IT infrastructure to avoid duplication and wastage of resources. Brig. Viqar Rashid Khan, MD NTC on the signing ceremony expressed that NTC is making all-out efforts to facilitate its valuable customers with quality ICT Services in terms of reliability /continuity and remains abreast with the evolving market. He further highlighted that no one can deny the importance of security of Government data and is the need of the hour, especially under potential cyber threat. Engr. Miraj Gul, CTO NTC illuminated the details of newly planned DRC and explained that the project will minimize disruption of services and loss of precious data. The Country Head of M/s IBM Pakistan also spoke on the occasion and showed his resolve to work closely with NTC for successful completion of the project and long term business relations.

Jordan Committed to Closing Digital Divide



Prime Minister Omar Razzaz underlined the importance of closing the digital divide, highlighting the government's commitment to strengthening the digital economy, which is key to creating needed jobs. Deputizing for HRH Crown Prince Hussein, the Regent, at the Digital Mashreq Forum, which is the first such event in the region, the Premier said that Jordan's biggest challenge is empowering the youth and closing the digital divide, stressing that such improvement can only be carried out through digital disruption and improvement. Held by the World Bank Group and the government, the two-day forum will bring together some 400 representatives from the public and private sectors of Jordan, Lebanon and Iraq, as well as executives from international and regional businesses, startups and investors to discuss the role of digitization in shaping the region's future from their perspectives. Jordan is moving towards the Fourth Industrial Revolution, said Razzaz, highlighting the significance of focusing on the digital economy. Speakers during the event emphasized the importance of the digital economy to address some of the pressing challenges in the region including creating jobs, especially since there will be 30 million university graduates in the Middle East and North Africa by 2020, and 140 million jobs will be needed by 2020. While the global economy used to be defined by a supply of natural resources, Razzaz stressed that Jordan is equipped to compete globally, despite being a smaller country, as it does not need natural resources but human resources and talent which it already possesses. Jordan has a comparative advantage in Ed Tech, Fin Tech and Health Tech which are well developed and comparable to technology around the world, according to Razzaz. 'We commit to a path toward deepening, strengthening and widening the digital economy,' said Razzaz, voicing his keenness to make it easier and less costly for startups to begin business. Minister of Digital Economy and Entrepreneurship Muthanna Gharaibeh said that digitization serves as one of the main ways of assuring jobs and good quality of living for the Jordanian people. For his part,

Ferid Belhaj, World Bank Group Vice President for Middle East and North Africa, stressed during the inauguration session of the forum that the bank seeks to generate 500,000 jobs in the coming years through cooperation with the regional governments. Belhaj also highlighted the importance of the role of the private sector for being the driver of digital development. He noted that regional youth are educated and open to the world, yet education and knowledge have to be associated with the labour market, where the job system has to be connected with this transformation, adding that: 'Today's jobs may not be needed tomorrow'. He stressed that MENA has a 'wonderful opportunity', noting that the forum will be held next year in Lebanon and the year after in Iraq, which highlights the forum's continuous efforts to promote envisioned change. Gharaibeh said that business entrepreneurship in Jordan, whose population is 3 per cent of the region's total, accounts for 23 per cent of the business entrepreneurship in the Arab region. Figures also show that the Kingdom has advanced seven ranks on the global business entrepreneurship index to the 49th place, and that Jordan moved from the 70th to the 50th place on the International Talent Competition in only three years, the Minister noted. Gharaibeh said that technology and software exports have been granted tax exemptions, where companies investing in the ICT sector in the local market have also been given similar exceptions to stimulate the sector and attract more investments, adding that Jordan seeks to reach 100 per cent Internet penetration to support the use of e-services and e-payments. As part of efforts to support programming, the Minister said that the One Million Arab Coders program has been launched in partnership with the UAE, where, in conjunction, the ministry launched training programmes that target ICT graduates for modern programming skills. Iraqi Deputy Prime Minister for Economic Affairs and Minister of Finance and Planning Fuad Hussein stressed that the digital economy and business entrepreneurship constitute an opportunity and a solid base to rebuild Iraq, noting that his country will be digitally connected to the world and technology will play an important role in the reconstruction. The Minister also voiced Iraq's commitment to drawing an organizational and political framework for e-payments and presenting electronic government services with the highest level of cyber security. Lebanese Minister of State for Information Technology and Investment Adel Afrouni said that Arab Mashraq, (eastern Arab region), countries need to improve their competitiveness and sign joint agreements, noting that Arab countries can create a 'significant economic bloc'. He voiced his belief that technology and the knowledge economy form 'the lifeline and haven' for the youth to utilize these developments. The conference's agenda will focus on trends in digital economy in the Middle East and North Africa, factors for achieving Mashreq's digital economy development targets and the potential role global technology companies could play in supporting governments' development plans. Discussions will also cover means to better position the region as a favorable destination for global technology companies, to provide technical support and development services to regional and global markets. 

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ARTICLE

Intigral's Innovation in Digital TV and Broadcasting



Hamoud Al Rumayan
Chief Executive Officer
Intigral

intigral

In an age of increased connectivity and mobile technologies, numerous services have rapidly shifted towards mobile-based, highly customized experiences. One such example is OTT (over-the-top) television, which is the delivery of film and TV content via the internet, without the need for subscription to a traditional cable or satellite pay-tv services.

At Intigral, we recognize the huge potential of OTT services, particularly in the Kingdom of Saudi Arabia, with its highly youthful population and their propensity to be early adopters of technology.

At Intigral, we recognize the huge potential of OTT services, particularly in the Kingdom of Saudi Arabia, with its highly youthful population and their propensity to be early adopters of technology. Furthermore, Saudi Arabia boasts one of the highest internet penetration rates in the world which reached 89% in 2019 and is expected to grow to 96% by 2023.

OTT is thriving today and forcing television and cable industries to evolve or else be deemed obsolete. Last year globally viewers consumed 8 times more OTT content than on-demand cable television, including extensive coverage of major international events including the FIFA World Cup, the Academy Awards, and others.

We develop solutions that enable telcos to utilize OTT services, such as Jawwy TV, an innovative platform based on a cloud solution and capable of delivering high quality video. The Jawwy TV set top box offers a "plug-and-play" experience, offering both the consumer and the telco maximum convenience and ease. Through Jawwy TV, telcos can present content to consumers and develop deeper brand loyalty as well as finding additional revenue generation opportunities.

The Jawwy TV application offers a diverse selection of entertainment content with over 10,000 uploaded videos, and presents a multitude of easy-to-use features, such as seven days of rewind on live channels, personalized watch lists, multi-screen viewing, and social media sharing.

We develop solutions that enable telcos to utilize OTT services, such as Jawwy TV, an innovative platform based on a cloud solution and capable of delivering high quality video. The Jawwy TV set top box offers a “plug-and-play” experience, offering both the consumer and the telco maximum convenience and ease.

Following a remarkable growth of the OTT market in the MENA region, as the number

of subscribers reached 4.5 million at the end of 2018, increasing 6% compared to 2017, the first original production, the “Galabt Jad” series, was released on Jawwy TV last month. It is an outstanding Saudi action-comedy that adds great value to Jawwy TV. The series was produced by a distinguished team of Saudi and Arab producers, directors, and actors, and targets youth in the MENA region.

Furthermore, our Dawri Plus app is the go-to platform that caters to the needs of all Saudi football fans. During the live coverage of matches, the innovative OTT solution enables a rich-media experience that goes beyond video and includes various levels of interactivity, social engagement and gaming.

As way of example, our Match Centre provides users with a full content-suite that any football fan can dream of – from live video streaming, to real time stats, near-live multimedia snippets (photos, goal videos), and social aggregation.

Going beyond the live coverage of matches, our Club Zone and Gaming sections drive up fan engagement throughout the week. Our aggregated and curated content

allows them to follow all of the latest and relevant updates from their favorite teams and players. Recurring and frequent interactions from users with our gaming suite also contribute towards positioning the platform as the leading sports gaming destination in the Arab World.

Through providing innovative technological solutions, Intigral aspires to contribute towards revitalizing the Saudi entertainment sector which forms a main pillar of Saudi Vision 2030.

Through providing innovative technological solutions, Intigral aspires to contribute towards revitalizing the Saudi entertainment sector which forms a main pillar of Saudi Vision 2030. A robust entertainment sector will play a major role in achieving a vibrant society and strong, varied, and knowledge-based economy, which the Kingdom is moving forward towards accomplishing. 🇸🇦

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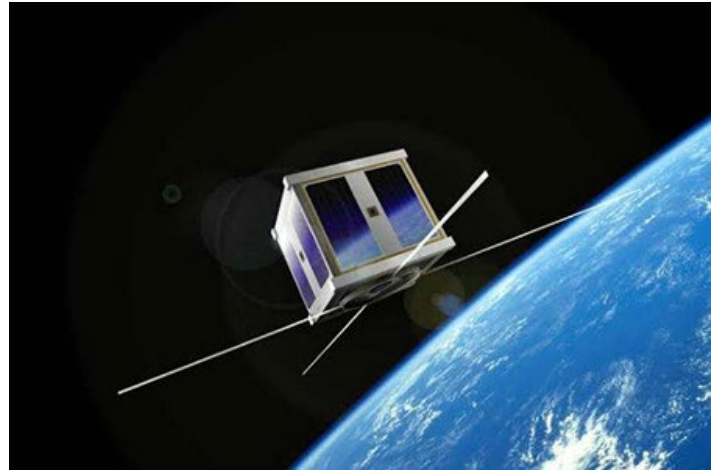
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SATELLITE NEWS

Egypt Sends Mini-Satellite to Space

Egypt sent a mini-satellite to the International Space Station, where it will be put into orbit next week, a senior Egyptian official said. The CubeSat was completely designed, built and tested in Egypt, Mohamed Zahran, chief of the National Authority for Remote Sensing and Space Sciences, told Egypt's MENA news agency. Egypt cooperated with the Japanese Space Agency in testing the satellite before being shipped to the United States, where it was launched Saturday among other items into the space by a Falcon-9 rocket from Cape Canaveral in Florida, Zahran added. Zahran said that the satellite is 1 kg in mass and cost around 1 million Egyptian pounds (about 60,000 U.S. dollars). The Egyptian official pointed out that the satellite is meant for research purposes, adding that it will also test space systems developed by the Egyptian space agency. Another satellite of the same kind will be sent to space within two months, he revealed.

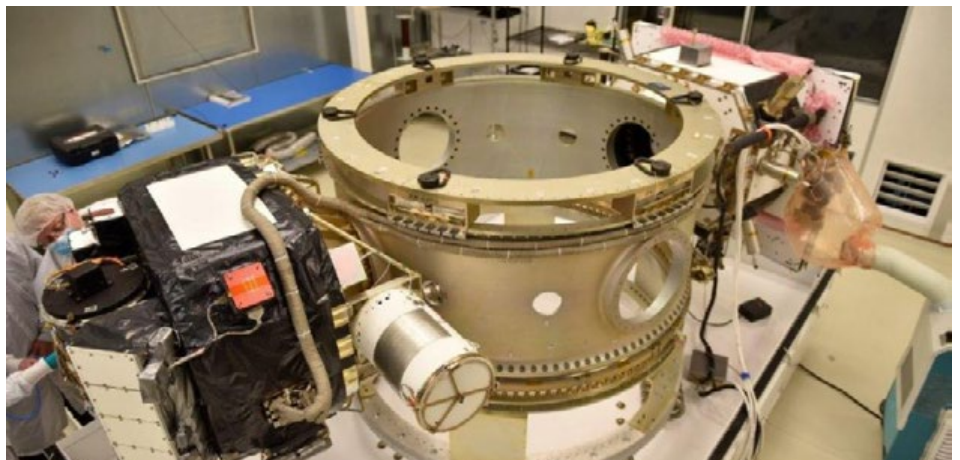


Air Force Experimental Satellite Billed as the 'Largest Unmanned Structure in Space'

An Air Force satellite spanning nearly the length of a football field was successfully deployed on July 12, the Air Force Research Laboratory announced. AFRL's demonstration and science experiments, or DSX, will collect data that will be used to study the radiation environment in space. DSX was the largest of the 24 satellites that a SpaceX Falcon Heavy rocket launched on June 25 from Cape Canaveral, Florida. The vehicle delivered 24 satellites into four different orbits. DSX was designed and built at AFRL's Space Vehicles Directorate at Kirtland Air Force Base, New Mexico. Col. Eric Felt, director of the space vehicles directorate, said the satellite is conducting new research to "advance understanding of the Van Allen radiation belts and their effect on spacecraft components." In a news release, Felt said DSX will conduct on-orbit experiments for at least a year. "The Air Force is interested in operating satellites in the region where DSX is collecting data," said James McCollough, DSX principal investigator. This experiment will help study the environment, he explained. "This is a region where Very Low Frequency radio waves strongly interact with electrons that

are hazardous to spacecraft." DSX can actively transmit VLF signals to study their influence on the electron population, he said. "This will allow a more thorough understanding of a key process governing the radiation environment." Lt. Col. James Caldwell, DSX mission director, said the satellite is currently in "launch and early operations" where an operations team works with scientists and engineers to perform checkouts on various satellite components, deploy the antenna booms and prepare for data collection within

the Van Allen radiation belts. On July 12, the longer pair of the 80-meter antenna booms (about 262 feet) was successfully deployed as the largest unmanned structure ever in space, said Jeffrey Christmas, DSX program manager. He explained that the long antenna allows DSX to transmit the VLF radio waves that will be used in experiments. Felt said AFRL plans to share the results of the research with the public, through its website and social media platforms.



Chinese iSpace Achieves Orbit with Historic Private Sector Launch

iSpace became the first Chinese private firm to achieve orbit with successful launch from a national space center in the Gobi Desert. Beijing Interstellar Glory Space Technology Ltd., also known as iSpace, launched the Hyperbola-1 launch vehicle from Jiuquan Satellite Launch Center at 1 a.m. Eastern on July 25. The test flight carried CAS-7B, an amateur radio satellite, and a technology verification payload for China Central Television, into a 300-kilometer-altitude orbit, with three more small payloads attached to the upper stage. The success makes iSpace the first Chinese private rocket company to achieve orbit, following failures by Landspace in October and OneSpace in March 27, both of which used solid propellant rockets. The Hyperbola-1 was earlier slated for launch in April, then early June, before slipping for unannounced reasons. The Hyperbola-1, consisting of three solid stages with a liquid-propellant fourth stage, has a length of 20.8 meters and mass at takeoff of around 31 metric tons. The buildup to the launch was relatively quiet. The rocket was delivered to Jiuquan in the Gobi Desert July 6, according to a social media video post from Chang'an Automobile Co., Ltd. a Chinese automobile manufacturer, which sponsored the launch



through naming the launch vehicle. iSpace, with a team of over 120 members, is one of the leading NewSpace actors in China. It had already received over \$100 million in Series A funding from Matrix Partners China, CDH Investments, tech giant Baidu and others, before announcing July 2 that it had secured additional A++ series round funding. Chinese NewSpace startups have emerged up following a central government policy shift in late 2014 which opened the launch and small satellite sectors to private capital. Support for the sector has continued, with state and military bodies last month releasing a first set of set of rules and regulations to guide the development of commercial launch vehicles in China. The speed of the development of launch vehicles by private companies in China has been influenced by a civil-military integration national strategy, facilitating the transfer of restricted technologies to approved firms in order to promote innovation in dual-use technology. Leena Pivovarova, an analyst at consulting firm Northern Sky Research, told SpaceNews that, China is growing its space program by leaps and bounds, including access to space, including through, "a unified strategy for coordinated public-private efforts to dominate space markets at large." "We are seeing accelerated private sector development because of this integration of startups to state-owned defense contractors, who are able to offer pricing well below competition. This is largely possible because of the integrated structure of its industrial base," Pivovarova says. The iSpace news release issued after the launch thanked the China Aerospace Science and Technology Corporation (CASC), the giant state-owned space contractor, the defense contractor China Aerospace Science and Industry Corporation, as well as state authority SASTIND, which oversees the space sector, and the Equipment Development Department of the Central Military Commission for their support. Pivovarova notes however that current regulations restrict China's customer base, meaning its target market is mainly domestic, in addition to some customers in emerging space countries.

Viasat Provides Ground Station Support to General Atomics OTB Satellite

Viasat's Real-Time Earth (RTE) service achieved a major milestone by providing ground station service support to General Atomics Electromagnetic Systems' (GA-EMS) Orbital Test Bed (OTB) satellite after its successful launch on a SpaceX Falcon Heavy rocket on June 25, 2019. Once in orbit, Viasat's RTE service provided critical satellite commissioning activities and subsequent operations from two of its U.S. ground stations: one in Georgia and the other in Hawaii. The GA-EMS OTB satellite is a new Low Earth Orbit (LEO) hosted payload spacecraft, and aims to provide customers with affordable access

to space in order to test and qualify various technologies. Viasat's role in the OTB program has been to provide initial communications, control and telemetry services to the spacecraft via the Viasat RTE ground station network. Viasat's RTE network provides Ground-Station-as-a-Service (GSaaS) to the Earth Observation (EO) and remote sensing community. The service offers affordability and reduced latency through automation and geographic diversity on a pay-per-use basis. Viasat's RTE service can support next-generation and legacy LEO satellites using the S-, X-, and Ka-bands. "Supporting

General Atomics Electromagnetic Systems in the successful launch and early orbit operations of the first OTB satellite is a testament to the strength of our RTE ground-to-space tracking services," said John Williams, vice president for Real-Time Earth services at Viasat. "As our RTE network grows in terms of locations and capabilities, we feel confident we can provide enhanced state-of-the-art GSaaS capabilities and expect to grow our customer base and opportunities, globally."

Liquid Telecom Connects South Sudan to “One Africa” Broadband Network and the World



Leading pan-African telecoms group Liquid Telecom will implement and operate South Sudan's first fiber broadband network, connecting the country to the “One Africa” broadband network, which is approaching 70,000km across 13 African countries and to the rest of the world. This breakthrough foreign direct investment by Liquid Telecom has been recognized by Salva Kiir Mayardit, President of South Sudan. Ministers along with other national VIPs are joining senior executives from Liquid Telecom during a symbolic fibre digging inauguration on Monday 1 July. With phase one due to be completed before the end of 2019, Liquid Telecom's network will eventually make reliable and affordable internet connectivity available for nearly 13 million citizens of South Sudan, as well as thousands of businesses, government institutions and non-governmental organizations. South Sudan will link to Liquid Telecom's network across the region which covers the East African Community, a regional intergovernmental organization of six partner states, the Republics of Burundi, Kenya, Rwanda, South Sudan, United Republic of Tanzania, and Republic of Uganda. The Community connects up to 300 million

people and stimulates cross-border investment and trade. This transformative infrastructure will ultimately create a foundation for digital growth, innovation and prosperity in this young country, while supporting the Government of South Sudan's positive economic growth forecast over the next ten years. “Liquid Telecom is immensely proud to bring fiber connectivity to South Sudan for the first time,” says Strive Masiyiwa, Executive Chairman of Econet Global and Liquid Telecom. “This modern ICT infrastructure will help address the most pressing challenges within South Sudan, including the urgent need for peace and state building, job creation and improved livelihoods. South Sudan's 13 million citizens will be connected to 300 million people across the East African Community. Connecting South Sudan to the ‘One Africa’ broadband network will also champion pan-Africa trade and help build Africa's digital future.” Salva Kiir Mayardit, President of South Sudan, commenting on this new partnership, says, “The implementation of this critical fiber infrastructure is a landmark step in the delivery of affordable communications access to the people of South Sudan, the business community, government and civil society. By connecting South Sudan to the global internet, this important infrastructure development will help improve social mobility, enable economic diversification and drive inclusive private sector-led growth and productive employment. The agreement is also ideally timed, coinciding with the signing of the Revitalized Agreement on the Resolution of Conflict in the Republic of South Sudan.” The first phase of the agreement signed between the Government of South Sudan's National Communication Authority and Liquid Telecom will include a 300km fiber backbone operating from the border of Uganda, through South Sudan, to Juba. Multiple metro clusters will also support the capital city. This first phase is scheduled to go live in the last quarter of 2019. The network will be expanded to other cities in subsequent phases, in time supporting the country's 13 million citizens.

Speedcast Delivers VSAT Services for Nam Cheong

Speedcast International will deliver Ku-band Very Small Aperture Terminal (VSAT) services for 17 SK Offshore and Marine (SKOM) vessels, the chartering division of one of Malaysia's largest Offshore Support Vessel (OSV) providers, Nam Cheong. “We are pleased to announce this multi-year agreement to provide connectivity services for the SKOM fleet,” said Athina Vezyri, Executive Vice President of Maritime for Speedcast. “SKOM is an existing Speedcast customer that wanted to upgrade from a basic L-band service to a higher-throughput Ku-band VSAT service from Speedcast. This migration to broadband connectivity is a trend we see in the market because these services are becoming essential in the modern world of commercial shipping. We are proud that a customer like SKOM trusts Speedcast to deliver these critical services.” “As we continue to scale our chartering capabilities further, we look forward to furnish the majority of our vessels

with a more comprehensive suite of connectivity solutions from Speedcast,” said Jonathan Leong, Executive Director of SKOM Group. “Based on our long-standing partnership, we are confident that Speedcast will provide state-of-the art support for fleet-wide applications, with consistent costs across our fleet.”



Satellite IoT Market to Reach €5.23 Billion by 2025 and 30.3 Million Devices

Initial market growth will not take away from low-power wide area network (LPWAN) sector, but competition will become hostile in the later part of the forecast period. A new forecast from ReThink Technology Research predicts the global market for IoT-focused satellite services will grow to \$5.9 billion (€5.23 billion) in 2025, taking into account end-device connectivity hardware and the annual connectivity fees, once the sector starts to expand 2021 to 2022. Incumbent satellite providers will be pressured by a new wave of startups that leverage advances in smaller, cheaper satellite technologies, which include launch technologies and miniaturization of the satellites themselves. Some low Earth orbit (LEO) designs now weigh 10kg and are about the size of two shoeboxes. Even so, many new entrants will be struck out or be absorbed by their larger and entrenched rivals. LEO networks are able to provide lower power consumption for end devices, and they can be deployed in a modular fashion, expanding as more customers or funding becomes available. While terrestrial LPWAN networks have taken hold, they have not achieved the sorts of footprints first promised by the most enthusiastic marketeers, and the same applies to the hype around nanosatellites. Nevertheless, there are vast swathes of the Earth without LPWAN coverage that could make use of these low-cost satellite networks. For the incumbent satellite providers, IoT customers could be a good way to improve margins, especially in the increasingly cut-throat broadband and broadcast satellite market. There are potentially hugely lucrative opportunities for the nanosatellite startups that can avoid the immense capex burdens that the incumbent satellite network operators are saddled with. Still, this market is around three times smaller than the terrestrial LPWAN market, despite higher hardware and connectivity revenues per device. While some of the industries overlap with LPWAN installations, these nanosatellites will not often compete directly with LPWAN deployments as their use cases have much better tolerances and allowances for the power consumption of end devices.

Connectivity is often said to be between 10% and 20% of the total cost of ownership for an application, which means higher value applications are likely to drift towards satellite or non-LPWAN cellular options, as these applications will be able to justify or settle for having to replace batteries when needed. The unlicensed spectrum LPWAN (U-LPWAN) markets also need to solve the global roaming problem quickly if they are to counter the marketing narrative from the satellite community – that satellite is the only way to get truly global coverage. While there are an estimated 2.5 million satellite IoT devices deployed currently, ReThink expects that 2021 will see a major jump in deployed devices, as the first few startups begin launching their constellations and supporting live customers. When viewed on a graph, this presents as an initial bump that slows the next year, before a period of prolonged growth settles in. Due to the scalability of nanosatellites, more units can be added to a constellation to support more devices when maximum throughput thresholds are met. By 2025, ReThink expects there to be some 30.3 million satellite IoT devices deployed globally, growing at a compound annual growth rate of just under 40%. The company thinks this growth to begin to flatten off in around 2027, due in part to the spread of terrestrial rivals for satellite IoT connectivity, and improvements in fixed and local networks that can be used as alternatives for the global satellite ones. In terms of usage.



Maxar Begins Production on Legion-Class Satellite for Ovzon

Maxar Technologies today announced that it has begun production on a Legion-class geostationary satellite for Ovzon, a company located in the United States and Sweden dedicated to meeting the demand for increased mobile broadband connectivity in underserved regions. Ovzon selected Maxar in December 2018 to build its first satellite, Ovzon 3, which will provide extremely versatile mobile broadband communications for small vehicles, aircraft and users on-the-move. Now that Ovzon has secured financing to build the satellite, Maxar will begin building it in its Palo Alto, California manufacturing facility. The satellite will

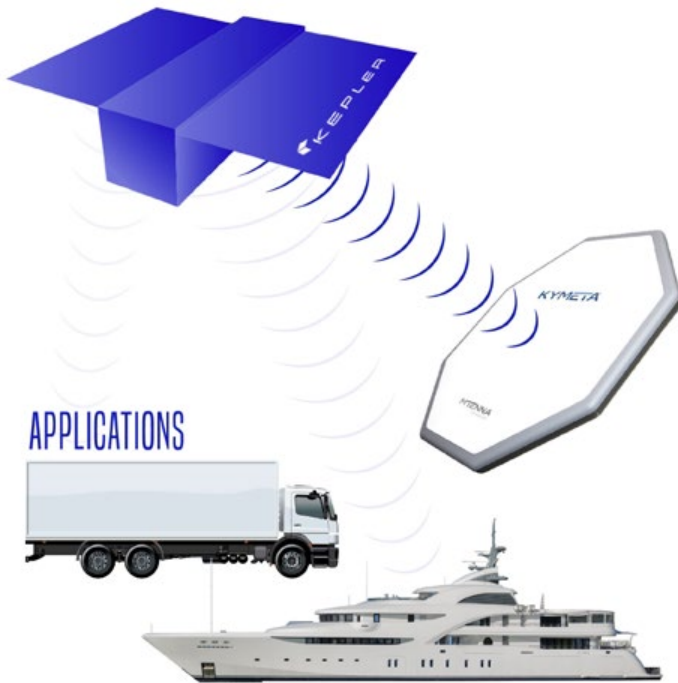
be based on the mid-size Legion-class platform, formerly called the SSL-500, and is expected to be launched by SpaceX in 2021. "Maxar's Legion-class platform offers the benefits of the company's proven technology and performance from the 1300-class satellite bus with a lower cost and smaller form factor," said Megan Fitzgerald, Maxar's Senior Vice President and General Manager, Space Solutions. "We're delighted to collaborate closely with Ovzon on the development of the first satellite in their architecture, which will deliver better communications from space for a better world here on Earth." "We chose Maxar to build Ovzon 3

because they have a strong reputation of delivering world-class, reliable products backed by industry leading customer service and manufacturing agility. Ovzon 3 is an important first step towards fulfilling our strategy to further revolutionize mobile broadband by satellite, offering the highest bandwidth with the smallest terminals," said Magnus René, Chief Executive Officer of Ovzon. The operations of DigitalGlobe, SSL and Radiant Solutions were unified under the Maxar brand in February; MDA continues to operate as an independent business unit within the Maxar organization.

Kepler Communications Demonstrates LEO Tracking and Data Transfers on Kymeta's Electronically Steered Antenna

Kepler Communications, a pioneer of nano-satellite telecommunications solutions, today announces that it has successfully demonstrated compatibility between its low-Earth

orbit (LEO) satellites with a commercially-available, flat-panel satellite antenna purchased from Kymeta. This testing marks the first time a Kymeta antenna has been used to demonstrate integration with an operational LEO satellite system. Kepler was able to successfully track and exchange data with Kymeta's u7 electronically steered antenna (ESA) and Kepler's two technology demonstration satellites, achieving data transfer speeds of 15 Mbps down and 5 Mbps up, in repeated trials. "We are truly excited about the future applications that can now be enabled by Kymeta's u7 antenna and our high-capacity, low-cost LEO platform," said Wen Cheng Chong, Chief Technology Officer at Kepler. "For our customers it is important to gain access to a wide range of user hardware to respond to challenging operational and system specifications. The demonstrated ability to take the currently available u7 and have it connect with our satellites makes the Kymeta ESA a great addition to our growing portfolio of compatible antennas." Kepler's Global Data Service (GDS), currently enabled by Kepler's first two satellites in orbit, is a high-capacity data communication service. Covering every part of the globe, from pole to pole, GDS allows the movement of Gigabytes of data to and from the user's location at economic rates. The store-and-forward nature of the solution makes it suitable for delay-tolerable data such as large multimedia files, high-resolution videos and imagery, and other bandwidth-intensive data within the maritime, oil & gas, tourism, and scientific communities.



China Launches Three Smallsats for their Chuangxin-5 Constellation

China has successfully pushed three, new, remote sensing satellites into orbit from the Xichang Satellite Launch Center in southwest China's Sichuan Province. The satellites – members of the Yaogan-30 family and for incorporation into the Chuangxin-5 (CX-5) constellation – were launched by a Long March-2C carrier rocket at 11:57 a.m. (Beijing Time). The satellites have entered their planned orbits and will be used for electromagnetic environment detection and related technological tests – analysts, however, believe these smallsats are designed for military intelligence and image capture and scrutiny. This launch was the 308th mission of the Chinese Long March rocket series. 🇨🇳



HUAWEI OceanStor Dorado

6 OF THE TOP 10 CARRIERS PROCESS THEIR DATA WITH THE WORLD'S *FASTEST* ALL FLASH STORAGE



ARTICLE

Opening the Doors to Industrial AI

How a focus on data management, regulations, and all-inclusive platforms will propel AI to the forefront of industry in the Middle East

Today's Artificial Intelligence (AI) advancements are an important part of the world's wider digital transformation journey. Those of us in the ICT industry have been championing the benefits of AI for some time now, and many organizations in the Middle East now realize these benefits and are starting to embrace the AI movement as a real game changer.

We have found that industries are embedding AI in key enabling technologies – Broadband, Data Centers, Cloud, Big Data and IoT – to turn connectivity into intelligent connectivity, unleashing innovation to propel a new wave of economic growth. Perhaps unsurprisingly, AI is estimated by PwC to contribute up to \$15.7 trillion to the global economy in 2030, with approximately \$320 billion of that being accrued from the Middle East alone.

That confidence comes as the world's economy has started to benefit from this historical technology pivot. We can see this in Huawei's latest Global Connectivity Index—an annual comprehensive study that measures how nations are progressing with digital transformation from both a national and industrial perspective. We have found that industries are embedding AI in key enabling technologies – Broadband, Data Centers, Cloud, Big Data and IoT – to turn connectivity into intelligent connectivity, unleashing innovation to propel a new wave of economic growth. Perhaps unsurprisingly, AI is estimated by PwC to contribute up to \$15.7 trillion to the global economy in 2030, with approximately \$320 billion of that being accrued from the Middle East alone.

This economic value will be bolstered even further by the roll-out of 5G broadband starting in the GCC. The road to 5G is in fact paved with AI. Enabling more people, things and devices to be connected than ever before, 5G will facilitate the kind of real-time data sharing and analysis at the heart of AI applications. It will generate unprecedented productivity in government, society, enterprises, and even on an individual level.



Charles Yang
President
Huawei Middle East



But there is still work to be done. Entering this new era, many organizations must now relook at their data's value, the regulations around AI, and how they can bring AI into their business in a cohesive and efficient way.

Valuing data in an AI world

For many organizations today, data is their most critical asset. Our Huawei Global Industry Vision 2025 report predicts that global data volumes will increase from 32.5 ZB in 2018 to 180 ZB in 2025, with enterprise demand for AI computing power doubling every three months and adoption rising to 80% by 2025.

AI can help them to effectively analyse data, process those insights, and make decisions that improve the efficiency, effectiveness and the intelligence of their operations. This is a core task for businesses in today's fourth industrial revolution, and AI is helping to lead the transformation of industries while also being a source of competitive advantage.

It's worth noting that traditional data analytics platforms cannot be powered by AI. They also do not support real-time stream processing, so the value of data is not fully unleashed. In the intelligent era, more diversified data will be processed, including structured and unstructured data. Powered by cloud and distributed technology, the modern data processing platform that combines database, big data, and AI is becoming mainstream.

The movement towards autonomous driving is a great example of this. There's a massive amount of data in the autonomous driving industry. For example, in level-5 autonomous driving, each car will generate 64 TB of data every day. From development to mass production, over 10 billion kilometres of autonomous driving experiences need to be gained, and this will generate over 50 EB of data. Octopus, the autonomous driving cloud service facilitated by Huawei Cloud, supports simulation tests across 30,000 virtual scenarios, combining Data + Intelligence to significantly shorten the time for model development from months to weeks.

Creating open standards and regulations

In addition to data, organizations in the Middle East are also relooking at the

regulations around AI. It is extremely important to have the right regulations to govern AI applications. Moreover, the regulations are going to be different if you are looking at banking verification or autonomous cars or smart utility metering.

One of our priorities, therefore, needs to be making AI more inclusive. To do that, businesses and governments must have access to open, flexible, and secure digital platforms that host AI capabilities. It is essential for those in the Middle East to work together with government, industry partners and academia to synchronize on standards and policies wherever possible. By the end of 2018, Huawei alone had more than 1,000 solution partners, 3,600 service partners, and 650 talent alliance partners working with us around the world to deliver solutions to enterprises, and AI was a strategic consideration in many of these relationships.

Tying together platforms, AI & ecosystems

Finally, once organizations have a grasp on their data and understand the regulations governing AI, organizations will be ready to welcome AI cohesively and efficiently across the business. Matching the latest advancements on new technologies such as AI, IoT, Cloud Computing and Big Data, we strongly believe in conducting AI implementation with a "Platform + AI + Ecosystem" approach.

This comprehensive view of AI recognizes that industries need a portfolio of full-stack, all-scenario AI solutions. In other words, a means of accessing the full computing power of AI through easy-to-use platforms that weave intelligence into the cloud, network edge, or an individual device. The term "all scenarios" is particularly important as organizations in the Middle East prepare for different AI adoption scenarios across public clouds, private clouds, industrial IoT devices, and consumer devices.

To facilitate that, we are continuously pushing our AI strategy forward by creating an industry ecosystem of openness, collaboration, and shared success. This can be seen in the recent launch of our AI-Native Database, GaussDB, which embeds AI capabilities into the full lifecycle of distributed databases. The solution is already widely used in industries such as

finance, telecoms, government, energy, healthcare, and transportation, and this list is growing as we develop industry applications with our partners.

A great example of AI industry applications can be seen in the field of public safety. Consulting and technology companies, as well as public safety agencies, have begun to implement digital transformation to deal with operational challenges. To date, more than 230 cities in over 90 countries have deployed our own public safety solutions, and an increasing number of cities have introduced AI technology into these solutions. Our AI technologies have also helped local, regional and national agencies respond effectively to fast-moving public safety situations and, as a result, have improved overall citizen wellbeing.

At the same time, 5G is growing much faster than expected. The Middle East region's rapid adoption of 5G again comes into play by improving the quality of communication in all industries; not only human to human, but also machine to machine communication. 5G development is on and regional telecom operators are quickly developing 5G commercial deployments. Large-scale rollout have been started since 2018. We are happy to see GCC countries are in the first wave of 5G rollouts globally. The landscape is already set with 5G standards, 5G products, terminals, security, and business models in place. Enabling these things to share intelligence through a full-stack, all-scenario AI system will help businesses to reap the full economic value offered by 5G. As we digitize and connect more things, AI is becoming a new general-purpose technology.

In the end, we believe the intelligent connectivity of AI will trigger innovation on a scale previously unknown in the region. The resulting new business models will change the way entire industries are run, and how products and services are consumed. By sharing a renewed appreciation for data's value, building stronger AI regulations, and developing more inclusive AI deployment platforms—all supported by 5G—we will ultimately create a new "Digital Village" where everyone is included and closely connected. 🌍

WHOLESALE NEWS

Roaming Service Charges Lowered Locally and in Gulf

The two Lebanon local mobile operators, Alfa and Touch, and their counterparts in the Gulf Cooperation Council (GCC) countries have agreed to significantly lower the cost of voice and data roaming services both within Lebanon and the GCC countries. The decision, which takes immediate effect, reduces roaming costs to close to rates available in Lebanon, according the Media Office of the Minister

of Telecommunications. The move aims to encourage tourists from the Gulf to visit Lebanon and to facilitate communications services for Lebanese expatriates residing in GCC countries. Customers will be able to use their own mobile lines without having to resort to convoluted and costly alternatives, the Media Office said. The deal was sponsored by the Lebanese Ministry of Telecommunications (MoT). Last May,

the MoT commissioned the Switzerland-based company Wonet to provide a new Value Added Service (VAS) for roaming. At \$25 per month, Wonet's service allows Alfa and Touch users to use the Internet abroad, consume data, and receive and make phone calls at tariffs equal to local rates. Wonet is a mobile application that is activated through a new chip and using the subscriber's existing phone number.

Mercosur Nations to Scrap International Roaming Charges

Member states of the Mercosur (Southern Common Market) economic bloc – Brazil, Argentina, Uruguay and Paraguay – have approved the end of international roaming rates for voice and data communications,

Brazil's Ministry of Foreign Affairs has announced. The agreement is expected to come into force 30 days after being ratified by the relevant authorities in the four countries, the Ministry noted. The

Mercosur trade bloc was established by the Treaty of Asuncion in 1991 and the Protocol of Ouro Preto in 1994. (Note: Venezuela was suspended from Mercosur on 1 December 2016.)

BIPT Proposes Lower Wholesale Cable Access Prices

Telecoms regulator the Belgian Institute for Postal Services and Telecommunications (BIPT) has launched a public consultation on its proposed lower rates for wholesale access to cable networks. The new pricing, which aims to enhance competition in the broadband internet and broadcasting markets, follows a ruling in June 2018 that required cable

operators to open their networks to competitors and apply fair tariffs for the services they offer competitors. The new pricing model determines the costs of an efficient operator while taking account of their specific characteristics, such as economies of scale, investment history and coverage areas. The BIPT also proposes a small margin of 5%-10% on the

prices for internet services over 200Mbps in order to encourage investment. The new rates cover broadband access only, access to television and a combination of both services. Stakeholders have until 6 September to submit their comments on the new prices, which would apply from 2019 to 2023.

MTN Group Restructures Wholesale Infrastructure Business GlobalConnect

Agence Ecofin writes that South Africa-based MTN Group is conducting a major restructuring of its wholesale infrastructure business GlobalConnect, transforming it into an infrastructure operating company. The evolved operation will reportedly

operate as the Group's primary commercial vehicle, contributing to the consolidation of its international and national wholesale activities, and helping to provide reliable solutions for MTN's fixed connectivity and international mobile services (e.g. SMS,

signaling, roaming and interconnection). MTN GlobalConnect is based in Dubai, a strategic telecoms hub linking Africa and the Middle East to the rest of the world.

Vodafone, Nos Ink Fiber Pact with Wholesaler dstelecom

Portuguese full-service telecoms operators Vodafone and Nos have signed an agreement with rural wholesale provider dstelecom, which will see the three companies collaborate on the deployment of up to 1.2 million fiber-to-the-home (FTTH) lines in areas not covered by an existing network sharing agreement

between Vodafone and Nos. In February 2010 dstelecom – a joint venture between national construction group DST and Portuguese conglomerate Sonaecom – was awarded a 20-year contract to deploy open-access fiber-to-the-home (FTTH) networks covering rural municipalities in the North, Alentejo and Algarve regions

of Portugal. The fiber-optic network was opened to operators in January 2014, and today covers a total of 90 municipalities. TeleGeography notes that rival wholesale operator Fibroglobal counts PT Portugal (MEO) as a minor shareholder and has faced repeated accusations from Vodafone and Nos that its prices are too high.

Zong 4G Offers International Roaming

Pakistan's No 1 Data Network, Zong 4G, offers the widest 4G roaming services in over 32 countries, with 48 international roaming partners, a statement said. Offering the customers convenience to roam internationally, Zong 4G is offering unmatched and competitive roaming rates to Zong 4G's customers across 32 popular tourist and business destinations, it added. Through its widest network of over 11,000 national sites and more than 48 international roaming partners, Zong 4G is offering the best-in-class 4G experience both at home and abroad. Being in a new country and discovering that your network SIM is not supported or finding roaming charges to be unaffordable is a great ordeal;

however, this inimitable data roaming facility by Zong 4G eliminates the need to purchase a local SIM every time you visit a new country. Through interconnection,

Zong 4G's subscribers can now roam internationally, while maintaining their LTE connectivity, it said.



Swisscom Lays Claims to Two 5G Roaming Firsts

The Swiss operator and Elisa (Finland) announce roaming, and Swisscom with South Korea's SK Telecom. Swisscom's customers with a 5G-enabled mobile phone can access the 5G data network in Finland from tomorrow and in South Korea before the end of July. South Korea is widely acknowledged to have one of the most advanced 5G rollouts, with more than 62,000 antennas and about 1.64 million active users. Finland and Switzerland are leaders in Europe. "We were amongst the first countries to start building 5G networks in Finland. Now that Swisscom has opened their 5G network, we are more than happy to be able to provide the ultrafast 5G to our consumer and corporate customers travelling to Switzerland", said Elisa's

Director, Consumer Handset Subscriptions, Jan Virkki. Dirk Wierzbitzki, Head of Product and Marketing and member of the Swisscom Group Executive Board, said, "We want to offer our customers the best network – both in Switzerland and abroad. "We are proud to be one of the world's first providers to offer 5G abroad. We will continue to expand 5G availability abroad with additional partners". BICS, a division of Belgian operator Proximus, says it established the world's first intercontinental live 5G data roaming link between Swiss operator Swisscom and South Korean carrier SK Telecom on 15 July. According to BICS, this marks a major milestone in establishing 5G roaming around the world. The 5G

roaming service relies on BICS' 5G global IPX network. BICS says international 4G roaming increased by increased by 95% in 2018, which was almost double the growth rate in 2017. There appears to be an insatiable appetite among subscribers for seamless international connectivity. Mikaël Schachne, CMO and VP Mobility & IoT Business, BICS, commented, "With over 50% of global data traffic exchanged over our global IPX network, BICS offers an unrivalled roaming coverage and quality to communication service providers around the world; [the] successful implementation of a trans-continental 5G data roaming relation further endorses our position at the forefront of global mobility for people, applications and things."

Western Balkan Nations Cut Roaming Charges

New regulations lowering roaming fees across the western Balkans came into effect earlier this week, setting price ceilings for charges on users travelling between Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia under a Roam Like At Home Plus (RLAH+) scheme. The rules were agreed in April this year and will eventually see roaming charges across the six countries abolished entirely from 1 July 2021. From 1 July 2019, though, the guidelines set strict limits on the amount that an operator can charge for roaming within the region. The rates

are applied on top of the user's domestic retail prices and vary depending on the customer's plan, but typically reduce the maximum fee by more than 90%. Albanian sector watchdog the Electronic and Postal Communications Authority (Autoritetit Te Komunikimeve Elektronike Dhe Postare, AKEP), for example, notes that the previous maximum fee for outgoing calls was ALL215 (USD1.97) per minute but from 1 July that charge was lowered to either ALL7.5, ALL11.16 or ALL28.5, depending on the user's plan. The highest fee is applied to customers without an active

bundle, or no minutes/credit remaining on their plan and the lowest fee is charged to customers with an active plan and their usage is deducted from their allowance. The middle bracket can be applied if technical limitations prevent the provider from deducting usage from the customer's plan. The smallest cut in price was on outgoing SMS, which fell by 86% from ALL65 to ALL9, whilst the charges for data transmission saw the greatest price cut, with the maximum roaming charge falling from ALL365 per MB to just ALL3.75 for most users – a reduction of 99%.

Mobilis Launches Roaming Add-Ons for Prepaid Customers Travelling to Tunisia

Mobilis is offering prepaid subscribers travelling to Tunisia the choice of two voice and data roaming add-ons, in partnership with Tunisie Telecom and Orange. For DZD 500, customers benefit from 15 voice minutes (covering calls to Mobilis numbers and incoming calls) plus 250 MB of data, valid for 10 days. The allowance increases to 60 minutes and 500 MB of data with the higher-tier DZD 1,200 add-on, valid for 15 days. 📍

Roaming Tunisie

Parle & Connecte toi
برش
مع Mobilis من تونس

500
15 Min vers Mobilis
+
250 Mo Internet
Valable 10 Jours

1200
60 Min vers Mobilis
+
500 Mo Internet
Valable 15 Jours

Plans Roaming Tunisie disponibles sur 10001 ou via Mobilispace
Offre valable avec l'opérateur Orange Tunisie et Tunisie Telecom



Nokia 5G Future X

Unleashing the
potential of 5G

NOKIA

ARTICLE

Data and AI's Advantage in Improving Customer Experience for Telcos



Santeri Jussila
Head of Analytics Product Line
Management Nokia



Henrique Vale
Head of Nokia Software for MEA at
Nokia

Telcos are most successful when customers feel as though their operator truly understands them. Data is the key to building that trust because it can reveal insights that lead to effective problem resolution, and identify customers' needs, wants, and opportunities. To

data in order to get a 360 view of the customer and can factor in the NPS (net promoter score), service tickets that users have opened with customer service, rate and subscription plans and more, in order to get the full picture.

Telcos may be the "legacy" player in the game, but that legacy includes decades of customer data, plus the resources to invest and maximize emerging technologies like AI. The opportunity is ripe for personalized customer engagement, and AI-powered data analysis can enable it.

take things a step further, CSPs can also invest in automation and artificial intelligence (AI) to support proactive customer engagement by automating business processes and solving issues on-the-fly.

Data analysis can be the differentiator, because it provides the insight telcos need to create a better customer experience overall. With this in mind, CSPs may be even better positioned to tap into the data's value than digital players, because they have the resources to invest in a long-term change, deep knowledge of both their business and the industry, plus – most importantly – many years of customer behavior data such as call and SMS history or location-based data, which is a manifestation of customers' specific needs. CSPs know to go beyond network

Customer experience is the new competitive frontier for telcos, and it would appear traditional operators are losing the battle to best-in-class digital players such as Google, Amazon and Apple. As a result, customer expectations for digital experiences are being set in other industries, and those expectations are trickling into the telco space; so CSPs must be ready in order to stay relevant.

Although telcos are sick of hearing about how their net promoter score compares to digital champions, the reality is that CSPs rank far worse than the digital-only heavyweights in terms of customer satisfaction. Ultimately, it's all about creating a toolkit of capabilities and technologies that support perfectly timed customer engagements.

Data Supports Effective Decision-Making

Recently, the CEO of a CSP wanted to find out what was causing customer churn. Though he had an idea, he wanted to see proof in the data. The analysis showed that his intuition was correct: The customers who spent the most money were leaving in search of a better deal elsewhere.

Customer experience is the new competitive frontier for telcos, and it would appear traditional operators are losing the battle to best-in-class digital players such as Google, Amazon and Apple.

However, he hadn't known about a second group of customers who were also leaving – customers who paid too little. Those customers weren't engaged and didn't get enough value from the service.

The insights gleaned through data analysis enabled the telco to design several marketing campaigns to address these two potential problems. First, if a customer called and indicated that they were paying too much, the telco gave them the option to lower their rate. Second, the telco reached out via email to customers

who were paying too little and offered a better deal expand their services and get them engaged enough to stay. Intuition is almost always right, but it is not a holistic view of the situation. Data analysis helps to complete the picture and find trends that you might not otherwise see.

AI Enables Digital Time

At the same time, data analysis can do more than reveal opportunities based on past information. When it's supported by AI, real-time data analysis empowers CSPs to analyze usage and customer behaviour in-the-moment – driving contextually relevant engagements in this era of instant gratification.

For example, imagine a specific mobile customer uses Netflix more than any other video-streaming application, but is also dangerously close to reaching the monthly data cap. By analyzing the IP address' traffic patterns, a telco can uncover the perfect moment to offer this customer a data package that includes unlimited Netflix streaming.

Now, imagine if this entire process was automated – from AI-driven analysis to automated offer generation to immediate fulfillment and accurate billing. In this scenario, it's possible for the customer to hear about a perfectly tailored service package at the peak moment of interest (e.g. right at the data limit).

When it's supported by AI, real-time data analysis empowers CSPs to analyze usage and customer behaviour in-the-moment – driving contextually relevant engagements in this era of instant gratification.

This is how customer perceptions toward CSPs start to change, when they view offers not as an annoying or unwelcome intrusion, but as a relevant and perfectly timed solution to an immediate problem. And it's already possible, especially as AI continues to make its way into the CSP technology stack. If CSPs are to remain competitive with encroaching digital service providers, it's time they start viewing certain aspects of their business as assets and not liabilities. Telcos may be the "legacy" player in the game, but that legacy includes decades of customer data, plus the resources to invest and maximize emerging technologies like AI. The opportunity is ripe for personalized customer engagement, and AI-powered data analysis can enable it. 📍

TECHNOLOGY NEWS

5G Core Platforms Set to Generate US\$8 Billion as MSPs Transition to More Software-centric Networks

Telecoms vendors and Mobile Service Providers (MSPs) are probing new revenue opportunities and business models that look beyond where the money is in the value chain, to where it will be in the years to come. An increased emphasis on software-centric networks like 5G, which favor services, is expected to usher in the next wave of growth in telecoms, finds global tech market advisory firm ABI Research. But the industry will only reap the benefits of advanced use cases such as ultra-reliable low-latency communications (uRLLC) and massive machine-type communications (mMTC) when they migrate wholesale to full 5G networks. "The industry must realize that 5G is not just about radio and core network evolution," says Don Alusha, Senior Analyst at ABI Research. "The introduction of 5G is almost certainly going to require investment in other parts of the ecosystem, like transport networks and cloud-based platforms. The supply side of telecoms, therefore, must accompany its 5G offering with a clear understanding of how 5G-specific use cases fit into the wider connectivity-centric telecoms ecosystem to unlock new commercial opportunities for the industry at large." At present, vendors are providing a converged solution where 4G functions can combine with 5G capability in the same product, but standalone 5G commercial offerings are bound to hit the market soon. Incumbent vendors (ZTE, Ericsson, Huawei, and Nokia) are expected to play a vital role in migrating the large number of existing 3G and 4G networks into 5G environments. Other vendors like Mavenir, Parallel Wireless, and Affirmed Networks will also offer complementary capabilities around virtualization and cloud technologies.

Initial ABI Research estimates point to a market that is projected to start at a modest US\$29 million in 2020, growing to US\$8.4 billion in 2024, at a Compound Annual Growth Rate (CAGR) of 313%. MSPs are pursuing different strategies to embrace 5G mainly focused on radio enhancements, but eventually, they must face the prospect of upgrading to full 5G functionality. The sentiment in the operator community varies. Some assert that they intend to wait for the ecosystem to reach a high degree of maturity, while some others are already pursuing trials aimed at a full-fledged 5G network. The transition to a 5G network is not a quick endeavor, but that should not preclude MSPs, and the industry at large, from taking a step now and accelerating investment down the line for a wholesale migration. Orange Spain and Telefonica, in collaboration with ZTE, are two telcos that have begun that migration with 'full' 5G trials. "A utopian vision of a perfect migration path is just

that: utopian. Pursuing the perfect 5G deployment path may not be the optimal way to realize the full benefits of 5G. MSPs' adoption of 5G will vary in line with where they currently are from a technology perspective and business potential, and priorities from a commercial perspective. While each MSP will chart its own course, it is essential that they have a clear plan in place that captures some benefits now, but - and this is important - does not drift away from the goal of ultimately creating a large-scale commercial upswing," Alusha concludes. These findings are from ABI Research's 5G Next-Generation Core and Service-Based Architecture technology analysis report. This report is part of the company's 5G Core & Edge Networks research service, which includes research, data, and analyst insights. Based on extensive primary interviews, Technology Analysis reports present in-depth analysis on key market trends and factors for a specific technology.



Worldwide Public Cloud Services Spending Will More than Double By 2023

Worldwide spending on public cloud services and infrastructure will more than double over the 2019-2023 forecast period, according to the latest update to the International Data Corporation (IDC) Worldwide Semiannual Public Cloud Services Spending Guide. With a five-year compound annual growth rate (CAGR) of 22.3%, public cloud spending will grow from \$229 billion in 2019 to nearly \$500 billion in 2023. "Adoption of public (shared) cloud services continues to grow rapidly as enterprises, especially in professional services, telecommunications, and retail, continue to shift from traditional application software to software as a service (SaaS) and from traditional infrastructure to infrastructure as a service (IaaS) to empower customer experience and operational-led digital transformation (DX) initiatives," said Eileen Smith, program director, Customer Insights and

Analysis. Software as a Service (SaaS) will be the largest category of cloud computing, capturing more than half of all public cloud spending in throughout the forecast. SaaS spending, which is comprised of applications and system infrastructure software (SIS), will be dominated by applications purchases. The leading SaaS applications will be customer relationship management (CRM) and enterprise resource management (ERM). SIS spending will be led by purchases of security software and system and service management software. Infrastructure as a Service (IaaS) will be the second largest category of public cloud spending throughout the forecast, followed by Platform as a Service (PaaS). IaaS spending, comprised of servers and storage devices, will also be the fastest growing category of cloud spending with a five-year CAGR of 32.0%. PaaS spending

will grow nearly as fast (29.9% CAGR) led by purchases of data management software, application platforms, and integration and orchestration middleware. Three industries – professional services, discrete manufacturing, and banking – will account for more than one third of all public cloud services spending throughout the forecast. While SaaS will be the leading category of investment for all industries, IaaS will see its share of spending increase significantly for industries that are building data and compute intensive services. For example, IaaS spending will represent more than 40% of public cloud services spending by the professional services industry in 2023 compared to less than 30% for most other industries. Professional services will also see the fastest growth in public cloud spending with a five-year CAGR of 25.6%.

DOCOMO Starts Taking 5G RU Equipment from NEC

NEC Corp announced the provision of radio units (RU) for 5G base station equipment to Japan's leading mobile operator by subscribers, NTT DOCOMO. In a press release, the equipment maker said it has already begun shipping three types of small-cell RU that support the 3.7GHz, 4.5GHz and 28GHz bands, all of which are compliant with O-RAN fronthaul interface specifications – defined as 'open interfaces between the master and slave stations of the base station defined by the O-RAN Alliance (Open Radio Access Network Alliance)'. NEC went on to note that the RUs are compact, lightweight and offer a low-power consumption solution via efficient heat transfer technology, which it claims makes it easier to install the RU on rooftops and walls of buildings, thereby reducing installation and operation costs. In collaboration with DOCOMO, NEC says it has been developing products



that are compliant with O-RAN fronthaul interfaces, an open interface, for 5G. NEC products will contribute for flexible 5G

network deployments and support diverse use cases.

HUTCH Deploys First Fully-Fledged NFV Based Core Network in Sri Lanka

HUTCH, Sri Lanka's fastest growing mobile telecommunications provider, consolidated its position in the market by upgrading its high-tech hub located in Walpola to a fully modernized facility. Affirming its technological advancements, HUTCH recently established its superior 4G network in Western and Eastern Provinces and a nationwide roll-out is currently ongoing. During this process, HUTCH has deployed the first fully-fledged NFV (Network Function Virtualization) based Core Network, a technology that allows operators to move out from a traditional hardware-based system and move to a more generic IT server for telecommunication services. Through this deployment, all specialized systems tailor-made for telecom applications will run on any standard IT server, allowing flexibility, rapid deployment and low Capital Expenditure in upgrading, which are essential aspects in a rapidly-changing technology landscape. HUTCH will also be deploying one of the most advanced Converged Billing Systems (CvBS) in the world where Post-pay and Pre-paid billing systems can run on a single platform. This gives flexibility to defining unique packages which will suit

any individual or corporate user, based on their requirements. Thirukumar Nadarasa - Chief Executive Officer of HUTCH Sri Lanka stated, "The deployment of the most advanced core network and converged billing systems in Sri Lanka demonstrates Hutch's commitment to providing the best and most advanced services to its subscribers. This is coupled with the ongoing deployment of a nationwide 4G

network that will help to bring affordable broadband services throughout the entire country. The recent takeover and integration of Etisalat 2G/3G network under Hutch will also finally offer competitive 2G and 3G services nationwide on par with its major competitors. We are therefore pleased that Hutch is now able to offer a competitive alternative mobile service to the market".



European Commission Launches €14 Million Evolve Project to Tackle Big Data Processing Comprising of 19 Organizations from 11 European Countries



Evolve is a project funded by the European Commission under the Horizon 2020 Research and Innovation program. It aims to take concrete steps in bringing the big data, high-performance computing, and

cloud worlds in a unique testbed that will increase our ability to extract value from massive and demanding datasets. Evolve is part of European Commission's answer to the unprecedented data growth currently experienced. Evolve uses an advanced HPC computing platform [from ATOS/BULL], with large memory, accelerated processing, fast communication, and high-performance shared storage [based on DDN's Infinite Memory Engine (IME)]. Evolve designs a versatile software stack that employs existing data processing engines with proven flexibility and wide acceptance in data processing applications. Evolve's advanced testbed

will be demonstrated through pilots in seven domains: agri-production, maritime surveillance, sentinel-2 satellite imaging, bus transportation, mobility services, predictive vehicle maintenance, and automotive services. In all cases, domain experts are working on models that provide accurate predictions and data processing and validation techniques over massive datasets, in an effort to improve substantially the efficiency of existing or introduce new services in the respective domains. Evolve's consortium is composed of 19 organizations from 11 European countries with expertise in several technological domains.

Three UK Boasts 'world's First 5G-Ready, Fully Integrated Cloud Core' Gives It the Edge

This new virtual core is a crucial phase in Three's £2 billion 5G infrastructure investment program and offers greater security and flexibility, and is cheaper to run. According to the press statement, "It's also a critical building block for Three to deliver the UK's fastest 5G network, set to launch from August this year" and will enable Three to scale "more quickly and efficiently". The network will be capable of speeds up to 2.15Gbps, although the end devices that run on it won't be for the foreseeable future. Three is hoping its unique network and operational model will allow it to disrupt the UK market through:

- Faster time to market as it will be easy to introduce new products on the more flexible infrastructure
- Greater capacity at less cost
- More security because the infrastructure has to all the latest security standards embedded.

The core network will be managed from Three's 20 new data centers which are distributed across the UK to bring the 5G network's edge closer to customers to deliver "the lowest possible latency". Three has tested the core network with 3,500 Three employees and started to migrate 4G customers' traffic on to the new core. The migration will continue throughout 2019, connecting new and existing customers to the cloud core. When migration is complete, the core network will have massive scalability so, the companies say, it will easily support the potential for increased capacity created by a mixture of Three's spectrum assets and 5G tech. Three UK's vision for what it says is the world's first ever, cloud core network has involved complex integration of products and services from across the Nokia portfolio. Nokia will provide essential systems integration, security, and managed services capabilities, alongside its routing, software and mobile radio technology. Although Nokia is at the center of the new core, partners are providing applications which run on or manage the core. Affirmed Networks and Mavenir are providing applications for traffic management and messaging. EXFO, MYCOM OSI and BMC supply Operational Support Systems to manage the Nokia cloud core, the radio access network and IT systems. Dave Dyson, CEO at Three UK stated, "Our new core network is part of a series of connected investments, totaling £2 billion that will



provide a significant step change in our customers' experience. "UK consumers have an insatiable appetite for data as well as an expectation of high reliability. "We are well positioned to deliver both as we prepare for the launch of the UK's fastest 5G network." Bhaskar Gorti, President of Nokia Software added, "This project delivers a joint vision that has been forged from the catalyst of Three's strategy for complete business transformation. "The project will deliver a flexible 5G core network, enabling the next generation of mobile services and cementing Three UK as a true leader of 5G in the UK."

Poland to Increase 5G Network Security

The government of Poland is proposing an increase in security standards for future 5G networks, including measures which could ban certain products or suppliers from network rollouts. There have been concerns that utilizing products from overseas suppliers – particularly Huawei of China – could pose a risk to national

security. A report from Reuters cites a document from Poland's Ministry of Digitization which recommends the use of equipment only from trusted suppliers and also diversifying the use of suppliers. Huawei has denied that its equipment poses a cyber-security risk. The country is also in favor of an EU-wide certification

scheme for 5G equipment. Poland's second largest cellco by subscribers, Play (P4), told Reuters that it is against the introduction of a certification process, however, saying it could lead to increased costs for operators which would then be passed on to end users, and slow down network rollouts.

TIM Takes First Commercial 5G Steps in Italy with Ericsson

TIM is switching on its 5G network in Italy and has chosen Ericsson 5G commercial hardware, software and solutions, including radio access network (RAN) and core network, for the initial deployment of the new technology. TIM has already launched the first commercial offers for consumer and business customers and has entered into partnership with handset device makers Samsung, Xiaomi and Oppo to enable an immediate use of the new-generation network. TIM will also offer 5G roaming in six countries, starting this month in Austria, Great Britain and Switzerland and then extended to Spain, Germany and the United Arab Emirates. TIM rolled out its 5G network on 3.6-3.8 GHz mid-band. In this initial phase TIM is deploying Ericsson's 3GPP standards-based Non-Standalone 5G portfolio from Ericsson Radio System, supported through a software upgrade of their existing Ericsson core network. Built on top of TIM's 4G network, the enhanced mobile broadband capabilities will enable customers to connect to both 4G and 5G simultaneously to get the best possible experience even in the most crowded areas. Ericsson has provided TIM with Massive MIMO radios from its mid-band portfolio. With the 4G-5G dual connectivity technology, TIM's 5G network provides top data speeds to deliver a superior user experience. Elisabetta Romano, CTIO, TIM, says: "TIM is launching the digital transformation of the country with 5G,

through the progressive roll-out of the new technology in major cities and industrial districts. Thanks to the collaboration with Ericsson, we are creating a clear roadmap and building a robust ecosystem that will enable us to maximize the potential of 5G." Emanuele Iannetti, Head of Ericsson Italy, says: "We are excited to support the launch one of the fastest mid-band 5G networks in the world. We have been working in close partnership with TIM on 5G for tests in the lab, research projects, field trials, and now initial commercial deployment. The introduction of 5G will create a powerful platform for innovation. Using 5G, new use cases benefitting society, consumers and enterprises will be created. Consumers will benefit from a premium experience with higher speeds and better coverage, while

new wireless functionality will accelerate digital transformation of Italian industries." Ericsson and TIM have conducted several 5G trials in recent years, reaching important milestones. The companies started their 5G collaboration with the 5G for Italy program in 2016, aimed at creating an open ecosystem for research and implementing innovative projects enabled by 5G, and accelerating the country's digitalization. In 2017 TIM and Ericsson were the first to activate a 5G millimeter wave antenna in Italy. Other important national milestones were the first 5G connection in Italy on TIM's live network using the country's first 5G prototype smartphone; the first 5G New Radio video call using millimeter wave spectrum in Europe; and the virtualization of the 5G radio access network in Turin.



Use of mmWave Propels US to 5G Speed Test Summit

Peak download speeds for 5G in several early launch markets clocked-in at more than double those of 4G, Opensignal research discovered, with the quickest services found in the US, South Korea and Switzerland. The company assessed the highest download speeds for 4G and 5G services across Australia, the UK, USA, UAE, Italy, South Korea, Switzerland and Spain. In the US the maximum speed of 5G was 2.7-times higher than 4G at 1.815 Gb/s. The next fastest was Switzerland

(1.145 Gb/s) followed by South Korea (1.071Gb/s), with these three markets significantly ahead of the others. Every market measured recorded a significant speed uplift from using 5G with the exceptions of Australia, which actually had a lower speed than 4G, and Spain which was almost flat between the two network technologies. In a blog discussing the findings, Opensignal VP Analysis Ian Fogg said it was no surprise maximum rates in the US were significantly higher than 4G,

"because operators there are already able to use mmWave spectrum for 5G". "This is extremely high capacity and extremely fast spectrum, but has very limited coverage compared with the 3.4GHz to 3.8GHz 5G mid-band spectrum typically used in most of the other countries we analyzed." The company added it expected maximum speeds to increase as more spectrum and wider channels are used. [4](#)

REGULATORY NEWS

19th Global Symposium for Regulators Turns Spotlight on the Future of Regulation

Regulators and experts from all over the world are in the Pacific island of Vanuatu from 9-12 July to discuss the future of regulation at the 19th edition of the Global Symposium for Regulators (GSR-19). In a fast-changing ICT landscape – with new technologies like Artificial Intelligence, Blockchain, the Internet of Things and 5G, as well as new business and investment models – GSR-19 highlights the need for strong partnerships, innovative regulatory tools and approaches, and for collaborative regulatory mechanisms across sectors to help connect the remaining 3.7 billion people who are still not using the Internet. "ITU has developed the key concepts of 'collaborative regulation' and 'fifth-generation regulation' to describe the need for ICT policy and regulatory frameworks to be inclusive, up-to-date, flexible, incentive-based, evidence-based, decision-oriented and market-driven," said ITU Secretary-General Houlin Zhao. "At stake is the regulators' ability to unlock investment to support growth, jobs, innovation, and digital transformation across sectors and regions." "The theme of this year's Global Symposium for Regulators, 'Inclusive connectivity: The future of regulation,' is close to us in the Pacific region," said Charlot Salwai Tabimasmias, Prime Minister of Vanuatu. "GSR-19 offers our country, and indeed other countries in the Pacific, a unique opportunity for dialogue and to exchange ideas on the future of the ICT policy and regulatory environment, with a view to leveraging the vast opportunities offered by ICTs to transform our economies." Organized by ITU, in collaboration with the Government of Vanuatu, GSR-19 will discuss, among others, digital strategies and policies, infrastructure regulation, innovative investment and financing mechanisms, spectrum, preparing for 5G and the changing role of the consumer. For the first time, GSR will welcome the Broadband Commission for Sustainable Development. Commissioners will set the scene and



share views on the best approach to bringing the next 3.7 billion people online. "It is important for us regulators, especially for Small Island States, to collaborate with the respective Governments to create and maintain a regulatory environment that will not only bring the remaining 3.7 billion people online, but also ensure the market environment is fair and allows innovation," said Mr. Brian Winji, Chairman of GSR-19 and Regulator of the Republic of Vanuatu. "The market environment should sustain competition and offer choices for our citizens." "Regulation has entered a new age. Today, digital platforms represent the best opportunity ever to close the development gap. Innovative and collaborative approaches to policy and regulation are more urgently required than ever," said Doreen Bogdan-Martin, Director of the ITU Telecommunication Development Bureau and Coordinator of the Broadband Commission. "In the nearly 20 years since I helped set-up the very first GSR, the Symposium has evolved to become the pre-eminent global meeting of the ICT regulatory community. At this GSR let's be bold and define new ways of doing business that deliver rapid benefits to governments, the industry, and most importantly, people."

Other Highlights:

An interactive natural disaster simulation exercise will help regulators understand the importance of developing national emergency plans and explore new regulatory measures and the role of ICT regulators in such preparations – something of particular importance in the Pacific region in response to the climate crisis.

The Regional Regulatory Associations meeting will be an opportunity for such associations to exchange ideas on actions, opportunities and challenges as well as highlight possible areas of cooperation.

At the Private Sector Chief Regulatory Officers' meeting (CRO), participants will address the critical business and regulatory and technical challenges to create an enabling ecosystem for connectivity.

An Executive Roundtable for Heads of Regulators will focus on:

- the future of regulation for digital transformation, and
- the path towards 4th and ultimately 5th generation regulation.

ITU-Academy-GSMA training on competition policy in the digital age and an information session on technological solutions for connectivity titled 'From First Mile to Last Mile: Thinking out of the Box.'

TRA UAE Implements the Plan of Enhancing National Cadres and Preparing the Second Line of Leadership

The Telecommunications Regulatory Authority (TRA) has launched the "Leadership Program" to develop the capacities and expertise of its human resources. The program, developed by TRA in cooperation with the International Center for Training and Development (ICTD), is an intensive practical training program, supported by many tools, methods, and success stories, to enable leaders to become more effective in their roles. The program will last until November 2019. The program develops skills of leadership, innovation, future shaping, excellence, strategic planning, project management, change management, negotiation, conflict resolution, and effective team building. The program also contributes to strengthening the culture of corporate excellence in TRA. It supports leaders to come up with many innovative practices for sustainable results, keeping pace with global leadership levels in the telecom and smart government sectors, in addition to concepts of continuous improvement according to many modern methods. The program assists the trainees through their participation in international and local excellence awards that reflect advanced performance levels. On this program, Hamad Obaid Al Mansoori, TRA Director General, said: "The Leadership Program launched by TRA is inspired by our wise leadership directives to work on creating second and third lines of leaderships to ensure sustainability and efficiency and to make leadership a culture and business style in the UAE. It emphasizes the importance of supporting the human element as a key for sustainable development. It is part of TRA's efforts to prepare national talents and future leaders capable of meeting future challenges,

achieving the requirements of effective management and leadership and keeping pace with change in all fields. We have launched the "Leadership Program" to develop the capabilities and expertise of our human resources. The program aims to develop our national talents and cadres, enhance their abilities and personal skills, and promote the culture of creativity, innovation and vision of the participants in line with the UAE vision 2021 and other strategic directions of the country, in addition to enabling the participants to adopt best international practices in analysis and decision-making. "Moreover, the trainees will learn through the program, about the true meaning of leadership and its seven traits, leadership theories, the characteristics of effective leaders, the outlines of leadership responsibilities, and special training to learn about leadership styles and competencies and the impact of changes in the workplace to create a new generation of leaders. Trainees will also have the opportunity to learn the critical team leadership skills, understand the behavioral styles, gain effective listening and communication skills, improve performance, and build a culture of trust, integrity and high performance, and to identify potential pipelines failures. In a special module, trainees will learn modern coaching methods, as coaching is a leadership tool to stimulate performance and achieve results. The program will address a range of coaching models, coaching high performance, and establishing the coaching agreement. The program also focuses on coaching as a leadership tool in motivating performance and achieving results. It highlights emotional intelligence and the main elements of emotional intelligence



in leadership, the strength of emotions, self-control, flexibility, and emotional honesty. At the end of the program, the graduates are expected to have the ability to deal with the new trends in innovation management, their implementation in government entities, distinguishing between the various concepts of the management of organizational innovation, the classification of different types and forms of innovation, the use of different innovation tools, understanding the strategic innovation and its role in business success, and evaluating the skills of innovation and individual creativity. TRA makes all efforts in building the future cadres to lead the ICT sector, by adopting strategies and methods that prepare UAE leaders for the post-oil phase, which will radically change the form of the economic, education and social sectors. The human cadres will be capable of dealing with the requirements of the next phase, such as artificial intelligence, e-commerce, new media, and others.

Ukrainian Regulator Extends Datagroup and Pan-Telecom Permits

Ukrainian national telecommunications regulator NKRZI has extended permits for Datagroup and Pan-Telecom to use

radio frequencies for broadband services. Datagroup has received an extended permit to use the bands in 27 regions. Pan

Telecom has obtained an extension to do so in the Sumi region. Both companies' permits will be valid for five years.

ICT Regulators Endorse New Best Practice Guidelines

Regulators from around the world gathered in Port Vila, Vanuatu, from 9 to 12 July for the ITU Global Symposium for Regulators (GSR). They identified and endorsed a set of regulatory Best Practice Guidelines to fast forward digital connectivity and allow people everywhere to benefit from digital transformation and participate in today's digital economy. To unlock the full potential of digital technologies and accelerate progress towards the United Nations Sustainable Development Goals (SDGs), the Guidelines emphasize the need for a more actionable, collaborative, and innovative outcome-based approach to regulation. They urge regulators and all stakeholders to be open to new regulatory tools and solutions and act now. "Vanuatu was the center of the ICT regulatory world. GSR-19 gave us a golden opportunity to discuss connectivity strategies with regulators from the entire Pacific region and the rest of the world," said ITU Secretary-General Houlin Zhao. "As regulators everywhere are faced with new technologies and new business and investment models, the GSR-19 Best Practice Guidelines show how critical collaborative regulation is to achieving the SDGs and delivering on the promise of the digital economy, including for the 3.7 billion people who are still not using the Internet." "The regulatory landscape of digital markets is fast-moving and extremely complex. There is still much work to be done, and regulators across all sectors must rise to the challenge of connecting the other half of world's population," said Mr. Brian Winji, Chairman of GSR-19 and Telecommunications, Radiocommunications and Broadcasting Regulator of the Republic of Vanuatu. "The GSR-19 Best Practice Guidelines we adopted are an invaluable tool that enables

regulators to address the challenges ahead and navigate through rapidly evolving technologies, business models and market structures that are affecting economies, society and people around the world." The GSR-19 Best Practice Guidelines call for the adoption of three new and innovative approaches for achieving inclusive digital infrastructure and services, based on:

Core design principles for collaborative regulation – to help respond to new technology paradigms and business models.

Benchmarks for regulatory excellence and market performance – grounding regulatory decisions in robust, multifaceted and thoughtfully interpreted evidence can prove instrumental in generating positive market dynamics in the short and long term.

Regulatory tools and approaches at hand for enabling digital experimentation – to contribute towards improving digital market outcomes, countries need to leap forward to the next level of collaborative regulation with a new attitude and a new toolbox.

"Looking back over nearly 20 years of

GSR, the role of the ICT regulator has never been more important," said Doreen Bogdan-Martin, Director of the ITU Telecommunication Development Bureau. "ICTs are at the heart of efforts to attain the 17 UN Sustainable Development Goals, and accessible, affordable ICT infrastructure is the pre-condition of every nation's ongoing socio-economic development. Based on the contributions of regulators from all regions, and adopted by consensus, the new guidelines will light the way towards achieving inclusive digital connectivity globally." At the 10th Private Sector Chief Regulatory Officers meeting, regulators addressed critical questions from the industry's perspective. To ensure that inclusivity can be achieved commercially in a sustainable way, participants highlighted the need for appropriate incentives provided by the policy and regulatory environment. They also stressed that in areas that are uneconomical, the right balance has to be struck between regulation, public sector involvement and competitive market forces.



Bangladeshi Internet Users Reach Nearly 100 Million

The total number of Bangladeshi Internet users reached nearly 100 million at the end of June 2019 with addition of about 5 million new users in the first 7 months of this year, the statistics of the country's telecom regulator showed. Bangladesh

Telecommunication Regulatory Commission (BTRC) data showed that the number of subscribers in the country reached 96.199 million, which accounts for a little less than two-thirds of the country's population. Of the total subscribers, the

BTRC data showed that there were 90.409 million mobile internet and 5.734 million broadband Internet users in the country while the rest of the connections are through WiMAX (Worldwide Interoperability for Microwave Access).

ITU Releases Its Third Global Cybersecurity Index



More than half the world is now online for the first time ever. This is a significant step towards a more inclusive digital economy. But as information and communication technologies (ICTs) become stitched into the fabric of our daily work and lives, the exponential increase in personal, business and government data flowing across the internet and between devices is exposing us to an ever-widening range of cyber threats. So how are governments keeping themselves and their citizens safe from cyber threats? The ITU Global Cybersecurity Index (GCI) sheds light on the range of government responses and helps countries learn how they can increase their commitment to cybersecurity. Data shows considerable improvements in cybersecurity worldwide. More countries have national cybersecurity strategies, national plans, response teams,

and specific legislation to counter the threats. Unfortunately, there remains a significant gap between different regions. In addition, there is a visible gap between many countries in terms of knowledge for the implementation of cybercrime legislation, national cybersecurity strategies (NCS), computer emergency response teams (CERTs), awareness and capacity to spread out the strategies, and capabilities and programmes in the field of cybersecurity. The United Kingdom tops the list of countries most committed to cybersecurity, according to the GCI, followed by the United States, France, Lithuania and Estonia, Singapore, Spain, Malaysia, Norway and Canada round out the Top 10, in that order. How the Index works The GCI brings together 25 indicators built on the five pillars of the ITU Global Cybersecurity Agenda: legislative measures, technical mechanisms, organizational structures, capacity-building activities and cooperative arrangements. The GCI represents a composite index that reflects high levels of diversity and complexity of cybersecurity. In addition to the GCI score, the report also provides information on national practices that give insights to the progress achieved. To produce the GCI, data collected through an online survey is used to reflect Member States' commitment to each pillar. The questions of the survey are weighted by a group of experts. This initiative is encouraging countries to strengthen their cybersecurity commitment, to raise awareness around the issue and to enable more collaboration at national, regional and international levels. It is in this spirit that the GCI is contributing to achieve a global cybersecurity culture. Moreover, the

GCI is an integral part of the membership-driven approach in guiding ITU's cybersecurity-related work. The overall GCI process, from the data collection to the analysis and the elaboration of the report has been validated by relevant ITU Study Groups, in order to ensure alignment with the ITU's mandate. In this iteration, most countries have improved their rates. The majority of changes can be observed in the Europe region, whereas the Africa and the Americas regions showed little changes. However, globally, the level of awareness and commitment worldwide has visibly improved. Since the GCI data collection is multidimensional, there is no one-size-fits-all tailored solution to address cybersecurity. In the long term, cooperation will play a vital role in cybersecurity development. Cybersecurity knowledge should be shared and transferred among various organizations and relevant stakeholders such as central governments, local public authorities, the private sector, academia, civil society, and international organizations. Overall, the GCI is contributing to the cybersecurity awareness in the world's least-developed countries, providing indications on capacity-building activities that might be undertaken at the national level. ITU is addressing the need and importance for countries to establish national computer incident response teams (CIRTs) as well as national cybersecurity strategies by providing them with fundamental tools to establish it. All these measures and crucial elements serve as a basis to render cyberspace more secure, hence improving socio-economic stability and opportunities for a real, concrete digital transformation.

PTA Clarifies It Is Not Auctioning 5G Licenses, Will Allow 5G Trials for Now

Pakistan Telecommunication Authority (PTA) has clarified that it is not going to issue 5G licenses in November this year. In a rebuttal of erroneous media reports, the authority issued a clarification explaining that the public notice published in the newspapers was to invite applications for development and testing of the

fifth-generation wireless network. It mentioned that in November this year, the telecommunication authority plans to begin testing the latest wireless technology before it can start issuing licenses. PTA went on to highlight that as per its previous advertisement issued on July 18th, Research & Development organizations,

academic institutions, equipment and/or Device manufacturers and vendors for 5G wireless network trials may submit their applications. It maintained that the watchdog had uploaded the framework and every other detail on its website, which can be viewed at pta.gov.pk.

Telcos Likely to Approach Court Over Price and Terms of License Renewal

The deadlock between Pakistan Telecommunication Authority (PTA) and mobile operators on quality of service and rollout obligations – the integral parts of license renewal – persists as the latter have linked it with the value of renewal fee of the license. While renewing the license, PTA, while exercising its rights, telecom consumers' interest and for the proper conduct of telecommunication services, has decided to enhance the quality of service and rollout targets in order to meet the parameters of quality of service so as to bring it in harmony with the international best practices. Further, the telecom licenses are going to be technology-neutral; therefore, the licensees are entitled to deploy any latest technology for the provision of the licensed services. Accordingly, the necessary changes in the terms of licenses were incorporated as shared with the licensees. Official sources told ProPakistani that the licensees have raised various concerns

on the terms and conditions dealing with enhanced quality of service and rollout obligations. In this respect, the licensees' persistent stance has been that the issue of quality of service and rollout obligations is dependent on the value of renewal fee of the licenses. This is mainly due to the fact that higher the license renewal fee, lesser the amount operators will be able to spend on infrastructure to meet minimum quality benchmarks. Even in the recent meeting on this issue, the licensees reiterated their earlier stance that without the determination of the renewal fee, the terms and conditions pertaining to the quality of service and rollout obligations cannot be finalized. Not to mention, PTA had rejected mobile operators' apprehensions relating to the price of mobile license renewals and passed an order while fixing the fee for license renewal at \$39.5 million per MHz for frequency spectrum of 900 MHz and \$29.5 million per MHz for frequency spectrum of 1800 MHz. However, mobile operators

have concerns over the cost. PTA has directed operators to pay their license fee before August 21st, 2019 or their licenses will be termed expired and they will not be allowed to provide telecom services after the deadline. CEO of a mobile phone company, who wanted to remain unnamed, while speaking with ProPakistani said that his company will definitely move court against PTA's decision on price and terms of the license renewals. Another official of a mobile phone company said that PTA didn't address telcos' grievances as was directed by Islamabad High Court in its May 21st, 2019 order. The official said that PTA was directed to discuss the issues with telecom operators and come up with an amicable solution, however, that didn't happen as PTA didn't change its stance on any issue. If telcos go into litigation, the matter could linger on for another few months until a solution is found. Not to mention, telecom operators will continue to hold the license fee until then.

Europe Progresses with Risk Assessment for 5G

Most European Union (EU) member states – 24 out of 28 – have completed their 5G national risk assessments, the European Commission says. The member states' assessments will feed into an EU-wide risk assessment which will be completed by 1 October. Julian King, Commissioner for the Security Union, and Mariya Gabriel, Commissioner for the Digital Economy and Society, issued a joint statement, saying, "The national risk assessments are essential to make sure that member states are adequately prepared for the deployment of the next generation of wireless connectivity that will soon form the backbone of our societies and economies. "Close EU-wide cooperation is essential both for achieving strong cybersecurity and for reaping the full

benefits, which 5G will have to offer for people and businesses." King and Gabriel urged member states to use the outcomes from the risk assessments to inform 5G spectrum auction processes and 5G network deployment. Their statement noted, "We need all key players, big and small, to accelerate their efforts and join us in building a common framework aimed at ensuring consistently high levels of security." National risk assessments include an overview of:

- the main threats and actors affecting 5G networks
- the degree of sensitivity of 5G network components and functions as well as other assets; and
- various types of technical and non-technical vulnerabilities, including those potentially arising from the 5G supply chain.

Based on the information received through the national reports, member states, together with the Commission and the EU Agency for Cybersecurity (ENISA), will prepare a coordinated EU-wide risk assessment by 1 October. ENISA is analysing the 5G threat landscape in parallel as an additional input. By 31 December 2019, the NIS Cooperation Group, which leads the cooperation efforts together with the Commission, will outline a toolbox of mitigating measures to address the risks identified. By 1 October 2020, member states will need to evaluate the effects of measures implemented to assess whether further intervention is required. After the implementation of the Cybersecurity Act last month, Commission and the EU Agency for Cybersecurity will set up an EU-wide certification framework covering 5G networks and equipment.



DCC Green lights USD442m of Fines, Proposes Separate Spectrum Policy for Government Entities

The Digital Communications Commission (DCC) has approved the imposition of fines totaling INR30.5 billion (USD442 million) on Bharti Airtel and Vodafone Idea for failing to provide sufficient points of interconnection (PoI) to Reliance Jio Infocomm (Jio) when the cellco launched in September 2016. The Economic Times quotes Telecom Secretary Aruna Sundararajan as saying that the DCC will accept the recommendations of the Telecom Regulatory Authority of India (TRAI) on the matter. As previously reported by TeleGeography's CommsUpdate, the DCC last month approved plans to penalize the cellcos but had asked the TRAI to reconsider the level of fine, due to the current level of financial stress on the

sector. In its reply, however, the watchdog pointed out that whilst it agreed that 'penalties should be commensurate with the violation,' it was unable to lower the fine as there is currently no mechanism for determining what level of penalty should be imposed for what license violation'. The TRAI's recommendations suggested penalties of INR500 million per license area affected, equating to INR10.5 billion for Airtel plus INR10.5 billion and INR9.5 billion for Vodafone India and Idea Cellular, respectively, as the duo were separate companies at the time of the infraction. The operators plan to challenge the decision in the courts once they receive formal communication of the penalty. Meanwhile, the DCC has proposed the

creation of a dedicated policy for the allocation of spectrum resources to state entities. The telecom secretary noted that to-date the government has issued frequency rights to government-owned entities on an ad hoc basis, and in line with the regulatory recommendations but without a clear policy. Under the DCC's proposed system, there would be a public portal detailing the available spectrum, along with 'frequent audits of spectrum to ensure that no one is squatting on it'. If implemented, such a policy would provide a clear pathway for state-owned providers such as Bharat Sanchar Nigam Limited (BSNL) and Mahanagar Telephone Nigam Limited (MTNL) to secure long-sought 4G spectrum.

Hong Kong Sets Reserve Prices for 5G Auctions

Hong Kong's Office of the Communications Authority (OFCA) published guidelines, including reserve prices and spectrum

caps, for upcoming 5G auctions in three spectrum bands. The 3.5GHz band sale will be held on 14 October, followed by the

4.9GHz and 3.3GHz band auctions, with the reserve price per MHz set at HKD4 million (\$512,318), HKD3 million and HKD2 million respectively. In a statement, the agency said "to avoid an unduly high concentration of spectrum being held in the hands of a single spectrum assignee" it will limit a bidder to 70MHz in the 3.5GHz band and 40MHz in each of the 3.3GHz and 4.9GHz bands. The spectrum utilization fees will be determined in the respective auctions, OFCA said. Applications are due on 12 and 13 September. In March HKT, China Mobile Hong Kong and SmarTone each was assigned 400MHz of spectrum in the 26GHz and 28GHz bands. The regulator announced in December 2018 it would assign 5G spectrum in the two bands for use across the territory by Q2 and auction 380MHz of spectrum in the 3.3GHz, 3.5GHz and 4.9GHz bands in mid-2019.



Indian regulator Dismisses Request to Cut Operator Fines

The Telecom Regulatory Authority of India (TRAI) told officials it was unable to recommend the reduction of a huge fine it wants levied on Bharti Airtel and the constituent parts of Vodafone Idea for hindering Reliance Jio's access to interconnection points, Business Standard reported. Its dismissal followed a request for a reassessment on the size of the charge, which amounted to INR30.5 billion (\$445 million) in total, from India's Digital Communications Commission (DCC).

TRAI said it was bound by rules restricting its ability to revisit recommendations which had already been submitted, the newspaper reported. Last month the DCC backed TRAI's conclusion Bharti Airtel, Vodafone India and Idea Cellular had restricted access to interconnection points by Reliance Jio during its formative months. This, TRAI argued, essentially formed a cartel and meant many of the calls on the newcomer's network dropped. However, given the current severe price-

pressures facing mobile operators in the Indian market, the DCC called for the size of the penalties to be slashed from INR500 million per service area to between INR5 million and INR50 million. Although the DCC has the final say, it had sought to get TRAI's backing for making a reduction. Since the entry of low-cost challenger Reliance Jio several of India's operators have suffered sizable cuts in revenue and profit with some selling-up or merging operations.

FCC Votes to Modernize 2.5GHz Band Regulatory Framework

On 10 July the Federal Communications Commission (FCC) voted to modernize the outdated regulatory framework for the 2.5GHz band to make the spectrum available for advanced wireless services, including 5G. According to the regulator, the 2.5GHz band – which it says is the single largest band of contiguous spectrum below 3GHz – offers favorable coverage and capacity characteristics for next-generation mobile services. As per the

FCC media statement, the new order gives incumbent entities more flexibility in how they use this spectrum and provides opportunities for other entities, including Tribal Nations, to access unused spectrum in this band. In addition, the order eliminates restrictions on the types of entities that can hold licenses as well as educational use requirements (see below), while preserving incumbent licensees' private contractual arrangements and provisions in existing leases. Further, the order removes limitations on leases entered into on a going-forward basis under the FCC's secondary markets rules, which will create incentives to roll out in rural areas. Additionally, the order establishes a priority filing window for rural Tribal Nations to provide them with an opportunity to obtain unassigned 2.5GHz spectrum to address the communications needs of their communities. The remaining unassigned spectrum will be available for commercial use via a competitive bidding process. To maximize participation by small wireless service providers, the auction will allow for small business, rural service provider and Tribal lands bidding credits. The 2.5GHz band is currently reserved for Educational Broadband Service (EBS) use. The band is understood to comprise 114MHz of spectrum, which has been earmarked for educational TV use since 1995 but remains unused in many rural areas.



Ethiopian Government Officially Confirms Liberalization Plans

Ethiopia has confirmed it plans to award two telecoms licenses to multinational mobile companies, Reuters reports, citing a senior official. Marking the first detailed announcement of the state's plans related to the expected opening up of the nation's telecoms markets, it was also

confirmed that the government intends to offer a 49% minority stake in monopoly operator Ethio Telecom, with foreign firms to be invited to bid for this. Commenting on the plans officially, Ethiopia's State Minister of Finance Eyob Tekalign Tolina was cited as saying: 'We have announced

the market structure as 'two plus one'. Meanwhile, according to a statement issued by Ethiopia's Ministry of Finance the government is aiming to complete both the partial privatization of Ethio Telecom and the awarding of the two new licenses 'during the first quarter of 2020'.

FCC to Introduce New Simplified Licensing Regulations for Smallsats

The U.S. Federal Communications Commission will release the draft text of new regulations this week meant to streamline licensing procedures for small satellites. FCC Chairman Ajit Pai, speaking at a U.S. Chamber of Commerce event here, said the regulations will make licensing small satellites cheaper and faster in order to better match cost and pace at which smallsat operators often function. "If operators want to launch satellites with certain characteristics, such as short orbital lifetimes, they would no longer be forced to comply with the longer and more expensive approval processes required for larger-scale missions," Pai said July 9. "I see no reason why a satellite the size of a shoe box, with the life expectancy of a guinea pig, should be regulated the same way as a spacecraft the size of a school bus that will stay in orbit for centuries." Pai said the streamlined regulations, as proposed, will apply to satellites 180 kilograms or less. The maximum design life for applicable satellites is six years or less, and they will also need to have the ability to "quickly" deorbit if they lose contact with ground control, he said. A draft copy of the regulations will be released Thursday, Pai said. He encouraged the satellite industry to give the FCC feedback on the draft. Pai said the FCC will vote on the draft regulations Aug. 1 in an effort to make U.S. regulations keep up with the rate of development in the space industry. The draft represents an "entirely new regulatory process designed for smallsats," he said. Industry representatives praised the chairman's push for simpler regulations for the smallsat sector. Steve Nixon, president of the SmallSat Alliance, said the industry



would benefit from correcting what he described as "discrepancies" in the FCC's satellite licensing costs. "Right now, if you want to apply for an FCC application for a geosynchronous bird – which might be a half a billion dollar asset – that application fee is \$130,000," Nixon said. "If you want to do something in [low Earth orbit] with a small satellite, right now the application fee for that is about \$450,000 – and that satellite might only cost that much, so there is a little bit of a discrepancy there. In a statement, Tom Stroup, President of the Satellite Industry Association, also remarked positively on the draft regulation. "We look forward to seeing the text of the new order and to working with the Chairman and his team at the Commission in helping ensure continued American innovation and leadership in the commercial satellite and space industries,"

he said. Pai said that the quickening speed at which small satellites can be built and launched is increasing the importance of having responsive regulations. "That's why we are committed to streamlining our regulatory processes and ensuring flexible rules that can adapt to new technologies, such as these massive, next-generation constellations," he said. He noted that the draft regulations won't affect large broadband constellations like those of SpaceX and OneWeb (at 227 kilograms each, SpaceX's Starlink satellites are too big to qualify for the new regulations, though Pai didn't give specifics on why large broadband constellations in general were excluded). Pai said the FCC wants to move quickly on broadband constellations too, and is in the process of evaluating constellation proposals from Boeing and Amazon.

Takeover Panel Undertaking Auction to Resolve KCOM Bid Stalemate

An auction is to be conducted by the UK's Takeover Panel after the two prospective bidders for Hull-based KCOM failed to submit final offers for the telco. In April 2019 UK-based pension fund Universities Superannuation Scheme Limited (USSL) announced that its Humber Bidco subsidiary had offered to acquire all

shares in KCOM for a total consideration of GBP504 million (USD634 million). Then, in June KCOM's board said it had withdrawn its recommendation for the takeover offer made by Humber, following a new, higher bid of GBP563 million from MEIF 6 Fiber Limited, a company backed by Macquarie Group. Now, with neither of the bidders

having confirmed their respective offers were final, the Takeover Panel has said that 'in order to provide an orderly framework for the resolution of this competitive situation, and in the absence of any alternative auction procedure having been agreed between the parties', it will oversee an auction starting 7 July.

Spectrum Groups Urge Lawmakers to Prevent 'Private Auction' of C-Band

More than 20 entities signed off on a letter to Congressional leaders calling on lawmakers to ensure the Federal Communications Commission doesn't allow for a private auction of C-Band spectrum to the benefit of four foreign satellite operators. New America's Open Technology Institute, the American Library Association, the Dynamic Spectrum Alliance (DSA), the Public Interest Spectrum Coalition and others sent the letter (PDF) to lawmakers saying the C-Band offers Congress "a unique opportunity." That opportunity involves directing \$10 billion or more in auction revenue to pay for broadband infrastructure in underserved areas and to authorize the use of spectrum in that band for high-capacity fixed wireless service in rural and less densely populated areas on a shared basis, according to the coalitions. The letter urges Congress to direct the FCC to conduct a public auction, to designate the expected \$10 billion to \$30 billion in revenue to close the rural and low-income broadband divide, and to direct the FCC to authorize shared access to the unused C-band spectrum needed to bring high-speed broadband to rural

areas. Identical letters are addressed to the chairs and ranking members of the Senate Commerce Committee and House Energy and Commerce Committee. "The FCC lacks legal authority to allow a private auction and windfall to satellite companies that never paid for spectrum," said Michael Calabrese, director of the Wireless Future Program at New America's Open Technology Institute, in a press release. "This gives Congress an opportunity to mandate both a public auction and coordinated shared access to unused spectrum in the C-band, which together can provide billions in funding for infrastructure and the spectrum that rural broadband providers, schools, and other enterprises need to close the connectivity gap in underserved areas." The C-Band Alliance (CBA), which is composed of Intelsat, SES, Telesat and Eutelsat, proposed to voluntarily relinquish some spectrum in the 3.7-4.2 GHz band, but it's not enough to satisfy all the parties interested in using it for 5G. The CBA says its plan is the most efficient and fastest way to get spectrum into the hands of 5G operators, but critics say it's susceptible to litigation and further

delays. In a filing last week, the CBA reiterated that its members have invested billions of dollars in the infrastructure and systems necessary to provide C-Band service, which is relied upon by nearly 120 million American households that receive programming content over the spectrum. They said the compensation the C-Band Alliance would receive from terrestrial mobile operators for voluntarily forfeiting interference protection rights would be used to cover repacking costs and to ensure uninterrupted service for satellite operators and their customers. "Any effort to have the FCC reclaim C-band spectrum without the consent of the C-Band Alliance would run headlong into statutory and constitutional limits on the agency's authority," the CBA told the commission. FCC Chairman Ajit Pai told attendees at a 5G workshop in Argentina last week that the FCC is working on "the complicated task" of freeing up spectrum for 5G in the 3.7-4.2 GHz band, and he's optimistic that they will have "results to show on this front this fall."

Crowded Singapore Market Gets 2 New Players

Singapore's already intensely competitive mobile market just got more crowded with the entry of two new MVNOs – redONE and Grid Mobile – in less than a week. Malaysia-based redONE



officially launched services and is targeting Malaysians working in Singapore and frequent visitors to Malaysia with discount post-paid plans. Using StarHub's mobile network, the company started trial service in June and is offering price plans ranging from SGD8 (\$5.90) to SGD28 a month. Grid Mobile, a joint venture between market leader Singtel and ST Telemedia, launched mobile service on 27 June. The operator's only offering is a SGD24.95 no-contract plan with 20GB of data a month. With the entry of the two newcomers, Singapore now has seven MVNOs including Circles.Life, MyRepublic, VivoBee, Zero Mobile and Zero 1, along with four mobile network operators: Singtel, StarHub, M1 and TGP Telecoms, which recently launched service after winning a license in December 2016. Both MyRepublic and VivoBee use StarHub's network, while Zero Mobile and Zero 1 are hosted on Singtel. Circles.Life, the first MVNO in Singapore, has a partnership with M1. Singapore, with a population of 5.8 million people, has 8.4 million mobile connections, Q2 data from GSMA Intelligence showed.

French Politicians Back 5G Security Bill

A group of French MPs and senators agreed on the detail of a proposed law, which would require the country's operators to seek direct permission from authorities about equipment used in 5G networks.

The bill was given the green light by the group, which was charged with assessing national security issues around the deployment of 5G. It will now be heard by the complete senate and parliament before

going to French President Emmanuel Macron for final sign-off. If adopted, it will set stringent security regulations related to 5G networks and outline the severity of punishments for non-compliance. The original proposal stated the aim was to: "Ensure the development of 5G while preserving the interests of defense and national security of France." A statement made by the working group looking into the issue added the risks of 5G were due to the new industrial use cases opened up by the technology, including connected vehicles, next generation factories and telesurgery. The regulations will not cover previous technology generations. Authorities began the process in March, when pressure was being applied by the US for partner countries to follow its stance on restricting the use of Huawei equipment in 5G networks. Shortly after France initiated its review, the European Commission outlined its position calling for a common approach to 5G security across all 28 member states.



FCC Gets Set to Relax Telecom Unbundling Regulations

The FCC took the first steps toward relaxing telecom unbundling regulations on voice services last week when FCC Chairman Ajit Pai circulated a draft order that would eliminate certain requirements for incumbent carriers. If the order is adopted, incumbents would no longer be required to provide their competitors with analog voice-grade copper loops on an unbundled basis at regulated rates. In addition, the incumbents would not have to make certain services that they provide at retail available for resale at regulated rates. According to an FCC backgrounder document, the order calls for a three-year transition period to provide "a seamless move" for competitive carriers and their end-user customers to "alternative voice service arrangements." The order would "not grant forbearance from regulatory obligations governing broadband networks," the FCC said in the

backgrounder. This comment appears to indicate that incumbents would still be required to offer unbundled copper loops to competitors that want to add their own transport equipment to the loops to support DSL services. As the FCC explains, the requirements that the commission may relax were designed to create competition at a time when incumbent carriers dominated the telecom service market. "More than two decades later, the communications marketplace has transformed," the FCC said. "Consumers are migrating away from plain old telephone services provided over copper wires by their local telephone company toward newer, any-distance voice services provided over next-generation networks by cable, mobile and fixed wireless, and over-the-top VoIP providers." The draft order circulated last week is one of several

steps that the commission has taken in response to a forbearance petition filed previously by incumbent carrier organization USTelecom. The commission will vote later this week on a separate order triggered by the USTelecom petition that would grant price cap carriers relief from ex ante pricing regulation of their lower speed time division multiplexed (TDM) transport business data services nationwide. Commissioners also will vote on a memorandum opinion and order that would partially grant USTelecom's request for forbearance from DS-1 and DS-3 transport unbundling obligations for price cap carriers. As part of its forbearance petition, USTelecom initially asked for relief from unbundling dark fiber but withdrew that request in June.

EU States Take Initial Steps Toward 5G Security

Twenty-four European Union Member States have now completed the first step and submitted national risk assessments, in response to a recommendation by European Commission for a common approach for of 5G networks' security, These assessments will feed into the next phase, a EU-wide risk assessment which will




be completed by October 1, EU Commissioner for the Security Union, Julian King, told a news conference here Friday. "We are pleased to see that most Member States have now submitted their risk assessments ... to our call for concrete measures to help ensure the cybersecurity of 5G networks across the EU," he said. "The national risk assessments are essential to make sure that Member States are adequately prepared for the deployment of the next generation of wireless connectivity that will soon form the backbone of our societies and economies," he noted. EU National risk assessments include an overview of main threats and actors affecting 5G networks; degree of sensitivity of 5G network components and functions as well as other assets; in addition to various types of vulnerabilities, such as those potentially arising from the 5G supply chain, he said. Fifth generation (5G) networks will form essential digital infrastructure in the future, connecting billions of objects and systems, including critical sectors such as energy, transport, banking, and health, as well as industrial control systems carrying sensitive information and supporting safety systems. According to media reports, Chinese companies account to 34% of worldwide applications for major patents related to 5G technology.

GSMA Warns Protectionist Attitudes Risk 5G Future

Industry group the GSMA backed the use of mmWave for 5G services to fuel global economic growth of \$565 billion by 2034, but cautioned this sum was being risked by attempts to block use of some frequencies by the space industry. In its latest forecast on the global impact of 5G, the GSMA predicted a huge impact on the GDP of developing regions if mmWave spectrum is made available. By 2034, the association expects the GDP of sub-Saharan Africa to increase by \$5.2 billion as a result of the availability of 5G. In the developing economies of South East Asia it expects the figure to be \$45 billion, with

the effect on Latin America valued at \$20.8 billion. A global agreement on the use of mmWave technology is expected to be made at the World Radiocommunication Conference in Egypt, which begins in late October and runs for almost a month. In a statement released as preparations for the event are being made, the GSMA slammed "protectionist attitudes" from some in the space industry adding they threatened to derail the expected 5G economic growth. It added the attitude shown by the space industry was "ringing alarm bells throughout the mobile communications world". Among the critics of the blanket

use of mmWave frequencies for 5G are NASA and the National Oceanic and Atmospheric Association in the US, which claim the technology would interfere with collection of data related to climate and weather forecasting. The GSMA's head of spectrum Brett Tarnutzer said: "We can't let misinformation and the overly protectionist attitudes of the space industry derail the 5G revolution. Over-stringent protection will limit the spectrum needed for 5G and have huge consequences for society. This could put the economic and innovation bonanza accompanying ultra-fast networks on hold for a generation." 

A SNAPSHOT OF REGULATORY ACTIVITIES IN SAMENA REGION



Bahrain

The Minister of Transportation and Telecommunications, Eng. Kamal bin Ahmed Mohammed said that, in line with the 4th National Telecommunications Plan, the Telecommunications Regulatory Authority (TRA), after the approval of the Council of Ministers, granted additional frequency licenses to mobile operators in the 800 and 2600 MHz bands to meet the increasing demand for mobile services in the Kingdom of Bahrain. This step coincides with the changing pattern of consumer use of mobile services. Data consumption rates have grown steadily over the past years as demand for data services, especially social networking applications, has increased, requiring additional frequencies to meet the needs and expectations of consumers. TRA has contracted with a specialized consulting company to find out the best mechanisms for granting frequency licenses to operators in line with the characteristics of the telecommunications sector in Bahrain in addition to adopting the best international practices in this regard. Accordingly, TRA has published two consultation documents which examined the views of operators and manufacturers on the most appropriate mechanism for granting frequency licenses, including the proposed prices for the frequencies introduced. After extensive consultation, frequency allocation was performed through the

administrative granting process of most frequencies (180 MHz out of 200 MHz) and by bidding on the remaining 20 MHz. "The granting process was part of the requirements of the 4th National Telecommunications Plan to provide additional frequencies to mobile operators to ensure optimal use of this national resource. We look forward to operators' continued efforts to develop mobile networks and services which will promote Bahrain's leading position in the telecommunications sector regionally and internationally. We value the fruitful efforts of TRA and the Spectrum Strategy and Coordination Committee with all its members that have led to successfully granting these important frequencies." Eng. Kamal added. "The demand of operators to obtain all frequencies available to them reflects the appropriate granting mechanism that has been adopted to meet the spectrum needs of the operators. We expect that the availability of additional frequencies to operators will have a positive impact in terms of the quality of services available and the sustainability of competition for the benefit of consumers in the Kingdom. The total revenues of this granting process exceeded BHD 15 million." Says TRA's Acting General Director General of the Authority, Sh. Nasser bin Mohammed Al Khalifa.

(July 20, 2019) tra.org.bh



Bangladesh

The Bangladesh Telecommunication Regulatory Commission (BTRC) has cancelled the licenses of 48 ISPs (25 national and 23 central zonal) for failure to clear their dues. Following the revocations, a total of 133 national ISPs and 84 central zonal licenses are left in the country. A senior official said that within the next few days the BTRC will cancel additional licenses in different categories on the same grounds. In related news, the telecom regulator has suspended the award of any no objection certificates (NOCs) to GrameenPhone (GP) and Robi Axiata to create pressure on the operators to clear dues totaling BDT125.80 billion (USD1.46 billion) and BDT8.67 billion, respectively, which were detected in audits and are currently disputed by the two operators. Earlier this month the regulator directed all international internet gateway (IIG) operators in the country to slash Grameenphone's bandwidth by 30% and Robi's by 15%, though the BTRC lifted the partial block on their bandwidth capacities last week and said issuing NOCs

would be blocked instead. Hossain Sadat, acting chief corporate affairs officer of GP, said that GP applied before the commission for an arbitration and 30 days have passed with no result: 'As per the arbitration law, we will now request the regulator, with the help of a court, to sit for an arbitration in order to resolve the issue.'

(July 30, 2019) The Daily Star

The Bangladesh Telecommunication Regulatory Commission (BTRC) will soon finalize Equipment Identity Register (EIR) directives for mobile network operators (MNOs) in the country. After ending the second phase of public consultations, the commission is now working to finalize the EIR directives. "It will not take much time to finalize them. We hope to finish the EIR directives soon," said BTRC Chairman Md. Jahurul Haque. He also said the Equipment Identity Register will protect the customers' devices and simultaneously prevent misuse of the devices. "We

have received comments till July 18. There are various types of suggestions here and we are now examining these. These will then be placed at the commission's meeting," the BTRC Chairman told. Earlier, the BTRC sought public views on draft directives on the EIR for MNOs in Bangladesh. "If a device is lost or stolen, the subscriber will have to file a general diary (GD) at a local police station and go to the customer care center of the MNO of the SIM with the copy of the GD and the National Identity Card (NID) to lodge a complaint and block the stolen device," said the BTRC. The EIR is a database containing a list of all valid mobile equipment on the network. An Equipment Identity Register reduces the threats of mobile device thefts by enabling individual operators to prevent the use of stolen phones. A Central Equipment Identity Register (CEIR) is a database of the International Mobile Equipment Identity (IMEI) numbers of blacklisted handsets. If a device's Emergency Services Network (ESN) or International Mobile Equipment Identity (IMEI) number is listed on a CEIR, it is not supposed to work on member service providers' networks (only paying members can access the database). BTRC Chairman Jahirul Haque said: "Individuals importing/carrying mobile devices from abroad for personal use will be required to register the IMEI of the devices in the National Equipment Identity Register (NEIR) through personal/manual/web registration interface provided by the NEIR." After the EIR verifies the device information, the request will be forwarded to the NEIR for further action. The NEIR, after necessary verifications, shall shift the IMEI from the previous list (except BL) to lost/stolen list (LSL), thereby blocking access to all MNO networks. If the IMEI is already blacklisted, it will remain there and no further action will be taken, say the draft guidelines. According to the draft guidelines, subscribers will request access to MNOs who will record the IMEI, mobile station international subscriber directory number (MSISDN), international mobile subscriber identity (IMSI) and other attributes in the EIR of their own subscribers. The EIR will check whether the device (IMEI) is a valid device type other than mobile phones by the device ID flag—vehicle trackers, digital utility meters, modems, etc. The EIR will allow it network access. If the device is detected to be a mobile phone, the EIR will check if the composite number (IMEI) is in the BL and/or Lost/Stolen List (LSL) provided by the NEIR. If the device is in the BL and/or LSL, the EIR will deny it access to the network, the guideline says. If not, the EIR will check the White List (WL)/Grey List (GL)/Roaming List (RL), and if the composite number (IMEI+MSISDN) exists, the EIR will allow network access. MNOs shall ensure compatibility in order to be connected with the NEIR including but not limited to connectivity, protocol, API etc. Necessary instructions related to integration will be given by the BTRC from time to time.

(July 22, 2019) theindependentbd.com

Telecoms regulator the Bangladesh Telecommunication Regulatory Commission (BTRC) has refused mobile phone operators' various payments amounting to BDT10 billion (USD116 million) and relating to, among other things, revenue sharing, the social obligation fund and annual spectrum fees for the April-June period, after the cellcos declined to include the associated VAT tax, estimated at DBT1.5 billion, in the sum. The operators have said they are withholding the VAT as the BTRC does not have the relevant registration to receive it. SM Farhad, Secretary General of the Association of Mobile Telecom Operators of Bangladesh (AMTOB), said that according to the recently passed VAT and Supplementary Duty Act 2012, it was mandatory for suppliers or service entities, including the BTRC, to have the VAT registration. Meanwhile, BTRC Chairman Md Jahurul Haque said the commission would only accept the payments excluding VAT if the operators could produce in writing proof that the National Board of Revenue (NBR) would receive the VAT, adding: 'Even if they do collect the NBR note, the last date has already passed and the operators failed to make their payments, so they will be charged 15% in late fees.' BTRC officials say that if the commission gets registered, the operators will be able to claim rebates on the VAT, but the NBR is not willing to register it. (July 11, 2019) telegeography.com

The Bangladesh Telecommunication Regulatory Commission (BTRC) has partially blocked the bandwidth capacity of GrameenPhone (GP) and Robi Axiata due to non-payment of dues totaling BDT125.80 billion (USD1.46 billion) and BDT8.67 billion, respectively, which were detected in audits and are currently disputed by the two operators. The regulator directed all the international internet gateway (IIG) operators in the country to slash Grameenphone's bandwidth by 30% and Robi's by 15%, with the watchdog stating that the bandwidth capacity will remain blocked until the duo pays the 'disputed audit demands'. GP said in a statement: 'This instruction disregards our invitation to BTRC for a constructive arbitration process on the audit. The decision to forcefully reduce bandwidth runs counter to supporting customer interests ... This instruction seems to be designed to penalize our gateway partners and could have a negative impact on millions of Bangladeshi data users ... We are surprised by the instruction and question the legality of this action.' In a separate statement, Robi Chief Corporate and Regulatory Officer Shahed Alam said: 'we are deeply disturbed by this draconian step from a regulator ... We had already raised our concerns regarding the fundamentally flawed audit claims through official correspondence with BTRC.' For its part, the BTRC said that there was no scope for arbitration under the existing law over its action against the two operators.

(July 9, 2019) The New Age



The National Telecom Regulatory Authority (NTRA), participated in the COMESA Infrastructure Experts Meetings held in the period from 17 to 19 June in Kenya's capital, Nairobi. These meetings

were followed by a ministerial-level meeting conducted on 20 and 21 June 2019. The agenda of these Experts' meetings comprised a number of hot topics, mainly the best ways to strengthen

Egypt

cooperation between member states with the aim of reducing telecom service costs, hence providing affordable access thereto. The attendees also discussed the proposals submitted for harmonizing the regulatory environment among these states, setting a common strategy for developing these states' infrastructure. Moreover, they examined the current status of the COMESA project of the proposed cable that links the member states, and the causes of slow pace of the project implementation. The attendees also discussed the delays in implementation of the Regional Cybersecurity and Cybercrimes Center and the COMESA data center. It is worth mentioning that COMESA is one of the most active organizations in Africa that focuses on joint trade, energy, water management, telecommunications and information technology. (July 21, 2019) tra.gov.eg

Egypt, represented by the National Telecom Regulatory Authority (NTRA), is participating in the 19th Global Symposium for Regulators (GSR-19) organized by the International Telecommunication Union (ITU) in collaboration with the Government of Vanuatu, at Port Vila, Vanuatu, from 9 to 12 July 2019. The theme of this year's Global Symposium for Regulators

is "Inclusive Connectivity: The future of regulation". Discussions will focus on digital strategies and policies; infrastructure regulation; innovative investment and financing mechanisms, trust and confidence in a data driven economy; the need for spectrum; preparing for 5G and the changing consumer role. GSR-19 provides a unique platform for ICT regulators and stakeholders to collaborate, share experiences and knowledge, and identify means to bring affordable, safe, secure and trusted connectivity and online access and use to people everywhere. As part of the symposium, a number of thematic events and workshops will be held, including the Heads of Regulators Executive Roundtable, the Regional Regulatory Associations Meeting, and the Private Sector Chief Regulatory Officers (CRO) Meeting on July 9. Since 2000, the Global Symposium for Regulators (GSR) brings together heads of national telecom/ICT regulatory authorities from around the world and has earned a reputation as the global annual venue for regulators to share their views and experiences on the most pressing regulatory issues they have identified. GSR also fosters a dynamic global industry regulators dialogue, between regulators, policy makers, industry leaders and other key ICT stakeholders.

(July 9, 2019) tra.gov.eg



The bilateral meeting was held between I.R. of Iran delegation, from CRA, ISA & IRIB, and Oman high-level delegation with presence of His Excellency, Mr. Fallah, the Deputy Minister of ICT and President of CRA in Tehran.

The meeting yielded the following results which were agreed upon and signed by the two parties:

- Cooperation and collaboration on radio monitoring
- The primary agreements on frequency coordination between satellite networks of both sides were reached and the two parties jointly prepared their draft agreement in this regard before being sent to ITU

- Outstanding improvements were achieved concerning frequency coordination and elimination of radio interferences, based on previous agreements on terrestrial broadcasting networks.
- Both parties expressed their satisfaction with implementation of frequency coordination between their mobile networks in their border areas based on the previous agreements, and concluded further agreements on the necessary actions toward elimination of problem(s).

(July 22, 2019) cra.ir



The revenues of telecom service providers in the Kingdom grew by 5 per cent in 2018, amounting to approximately JD673 million, compared with JD641 million in 2017. The primary sources of revenue for Jordan's three mobile services companies Zain, Orange Mobile and Umniah were call, data and interconnection services, which comprised 35, 42 and 20 per cent of the companies' profits, respectively, while the remaining 3 per cent was generated through the sale of telecommunication devices, Chief Commissioner of the Telecommunication Regulatory Commission (TRC) Ghazi Jbour said. Profits from data and interconnection services witnessed 12 and 20 per cent hikes in 2018, compared with the previous year,

while revenue generated from call services fell by 11 per cent, Jbour said in a statement carried by the Jordan News Agency, Petra. This spur in revenue has made a "notable contribution" to the growth of average revenue per user (ARPU), which stood at JD6.42 per month in 2018, a 16-per cent rise in comparison with the previous year, Jbour said.

(July 29, 2019) jordantimes.com

The TRA launches a public consultation on the results of the review of fixed and mobile telecommunications markets and allocated capacities. The TRA reviews the telecommunications markets in

Iran

Jordan

order to achieve effective competition by adopting and applying the rules of prior regulation. In 2009, the Authority reviewed the markets for the first time. These documents represent the second round of the review, which began in 2018. The review identifies the relevant telecommunications markets an assessment of whether an operator has significant market power and then impose remedial provisions if necessary. The TRA publishes three advisory documents for the mobile telecommunications market, fixed telecommunications market and customized capacity markets. (July 25, 2019) trc.gov.jo

The Supreme Royal Decree was approved by the Council of Ministers approving the agreement between the International Telecommunication Union (ITU) and the Telecommunications Regulatory Authority (TRA) concerning joint activities for human capacity building, which was signed in Geneva in August 2018 for the purpose of carrying out joint activities for human capacity building And benefit from the accumulated experience, knowledge and technical capabilities of the staff of the Commission in the field of quality of telecommunication services for the purpose of holding training workshops for ITU members, in addition to the implementation of mutual study visits . The Chairman of the Board of Commissioners of the Telecommunications Regulatory Authority, Eng. Ghazi Jabour, said that the adoption

of the agreement will strengthen the position of the Authority as a leading regulator not only at the local level, but also at the Arab, regional and international levels by attracting all specialists from outside the Kingdom to receive knowledge and experience in the Authority , In addition to exchange of experiences between the cadres of the Commission concerned and representatives of local bodies with their counterparts from foreign institutions and specialized institutions. Dr. Jabbour added that under the agreement, ITU will undertake the activities for which it is responsible under this agreement, provided that it is in compliance with the rules, regulations and procedures of the executive union, and the obligation to train and train trainers and provide the necessary training materials for the implementation of this agreement. E-Federation Academy or any other platform available to the Union, as well as its commitment to providing its e-learning platform through the Union Academy and providing technical support for e-learning activities. On the role of the Authority in the implementation of the agreement, Dr. Jabour said that the Authority will provide all required resources including human, technical, technical and financial experts and required by the activities intended to be implemented in exchange for the agreed fees between the parties, in addition to the availability of space and places and cadres, tools, and the necessary means of communication. (July 21, 2019) trc.gov.jo



Kuwait is to issue a virtual telecom operator license, effectively creating a fourth player in a market serving roughly four million people. Virtual network operators do not own the networks they use to provide communications services but instead lease capacity from conventional operators, usually paying them a percentage of their revenue as well as fees. Kuwait's Communications and Information Technology Regulatory Authority has issued a request for applications for the license, according to a document seen by Reuters. State news agency KUNA also reported a license would be granted. Applications must be submitted by Nov. 14, 2019 and the selected application will be announced by Feb. 6, 2020,

the document shows. The applicant will have to partner with a company that can provide it with the technology, know-how and operational and management experience. The partner will also own at least 40% of shares and have a five-year management agreement. Kuwait's current telecom providers are Zain, Ooredoo, and Viva. Kuwait's existing telecom providers, as well as anyone holding 25% or more shares in Kuwaiti telecom companies, are not allowed to apply. Foreign ownership would be subject to Kuwaiti law, which restricts non-Kuwaitis to minority ownership.

(July 14, 2019) reuters.com

Kuwait



Minister of Communications Mohammed Shuqair held a working meeting with the Telecommunications Regulatory Authority (TRA), in which Amine Mukheiber, Acting Director of the Authority, participated in the presence of the Director General for Investment and Maintenance Bassel Al Ayoubi, General Manager of Construction and Equipment Naji Andraos, Naji Aboud. The meeting was devoted to activating cooperation between the

Ministry of Communications and the governing body and benefiting from existing expertise in service to the sector. "The activation of the work of the Telecommunications Regulatory Authority is a necessity and a necessity for the sector, and I am confident that through the existing positive relationship we can increase the level of cooperation to benefit from the great potentials and expertise enjoyed by the staff of the Authority," he said. Emphasizing the

importance of applying the law, including the appointment of a board of directors for the body, he said: "We will not wait until the appointment is made. There are many areas that can be worked on, because in the end we form one administration and we mean one sector and our goal is one. Activate existing capacities and benefit from the experiences that we need, so it is necessary to be one hand in the service of the public interest. "After a round

of discussions and presentation of the work and the terms of reference of the Directors of the Authority, the participants praised Shukair's intentions and expressed their readiness to cooperate fully. A series of works initiated by the Authority in cooperation with the Ministry of Communications were agreed upon.

(July 25, 2019) nna-leb.gov.lb



The National Telecommunications Regulations Agency (ANRT) has released its annual report into telecommunications access and usage in Morocco. The ANRT report analyzes information from 5820 households and 5820 individuals aged 5 years and over, to identify trends in mobile phone, laptop, and internet usage. According to the report, 99.8% of Moroccans have mobile phones, and of these, 75.7% have smartphones. This is a significant increase from 2011 figures, when only 12% of phone owners had smartphones. The data shows Moroccans seem to prefer smartphones over computers, as smartphone ownership growth rates far exceed computer ownership rates. In 2018, only 60.6% of Moroccans had computers, up from 34% in 2010. According to ANRT, access to the internet by Moroccan households has increased three-fold over the last eight years. 74.2% of households are now equipped with internet. Access rates in rural areas remain lower than in urban areas. The report finds eight out of ten households in urban areas have an internet connection, compared to just over half of households in rural areas. 74.2% of people access the internet from their phones.

Those who do not have internet in their homes cite a number of reasons for this: lack of need (51.6%), high price of equipment and connection (60.4%), unavailability of internet (14%), access to internet elsewhere (15.1%), confidentiality and security (5.5%), cultural reasons (4.9%), and absence of electricity in the household (1.4%). The reasons for having an internet connection are diverse. The leading reason is "entertainment" (including games and social networks) at 95.2%, following the news (86.1%), work (51.3%), studies or research (33.3%), and access to television through the internet (17.1%). The report finds that Whatsapp is the most used online social network in Morocco, used by 96.5% of respondents. Whatsapp is closely followed by YouTube (90.6%), then by Facebook (88.4%), and Instagram (44.7%). Millions therefore noticed when Whatsapp, Facebook, and Instagram were down for a few hours on July 3. Users blamed Maroc Telecom for slow internet, but the national network provider quickly issued a statement explaining that the problem "came from platforms located outside the national territory."

(July 17, 2019) moroccoworldnews.com

Morocco



The number of 4G users in Nepal has reached 3.6 million. The 4G mobile network subscribers have increased rapidly in a year period. Telecom operators have also driven to expand their 4G network coverage lately. As per the latest NTA MIS report, the 4G subscriber number is increased by more than 100 percent in a year span. Last years (Mid April-May) data shows the no of 4G subscribers was at 1.6 million which now reaches to 3.6 million, which is 125% increment. The three mobile operators, namely Ntc, Ncell, and Smart Telecom have a 4G mobile network in the country. Nepal Telecom (NTC) started the fourth generation mobile network first on Jan 1, 2017. They still have 4G coverage in Kathmandu and Pokhara only. Ntc has around 7.6 lakhs, 4G users. But Ncell which started some months later than Ntc has widest 4G coverage in the country. Recently Ncell announced to have launched 4G in 1000 locations. Ncell has around 2.6 million (26 lakh) 4G subscribers across the country. Similarly, the third operator Smart Telecom has 1.7 lakhs, 4G users. They have 4G coverage in 19 districts, including Kathmandu, Pokhara,

Biratnagar and more. Nepal Telecom is currently working to expand the 4G network across the country, with a brand new 4G project. They have already started to test their Core network which is provided by Chinese Telecom company ZTE Corporation. Similarly, the works for 4G Radio access network are underway too. Ntc has a target to cover major city areas in a matter of a few months. Ntc has a contract with CCSI, Hongkong for the radio network works (mobile towers).

Some of the reasons for 4G subscribers increment are:

No of 4G handsets increased: 4G mobile network support is now ubiquitous in every range of phones. As phones are affordable, people prefer the latest technology (4G) over old phones (without 4G).

Demand in data speed: People have started using more multimedia services like video, audio streaming, etc than before. For such high volume data, a 4G network having faster internet is always preferred.

Power-efficiency: Compared to 2G, 3G, mobile phones are found

to last longer in the 4G network due to power-efficient technology. This only happens if the 4G coverage is considerably similar to that of 2G, 3G.

Marketing Scheme: As the operators have also started to push more subscribers to 4G, they have upped their marketing to drive 4G customers. All of the telecom operators have a big focus on the 4G network only. To all those people who use internet data from a mobile network, we also recommend to use the 4G network, for the fast evolution of mobile network and take up the 4G adoption rate. (July 30, 2019) nepaltelecom.com

Nepal's telecom sector regulator, the Nepal Telecommunications Authority (NTA), has said that work to extend broadband services to all rural areas in each of the country's seven provinces will be completed within the year. According to NTA spokesperson Prasad

Aryal: 'Compared to previous days, work on making broadband service accessible has gathered pace in recent times.' The NTA is currently implementing two projects as part of the Nepalese government's National Broadband Policy, which aims to provide connectivity for all rural areas of the country and increase access to high-speed internet services. While work on the so-called Information Highway (a national backbone network) is ongoing, the Broadband Access Network Project is nearing completion, with work already completed in eight districts of Karnali Province and projects in other areas expected to be completed within a year. According to the NTA, while Nepal Telecom and Smart Telecom have made satisfactory progress on their contracts, United Telecom has faced a number of hurdles in Gandaki Province and Province 5, although the regulator hopes these will soon be overcome. (July 1, 2019) The Himalayan Times



The total Internet subscriptions, excluding active mobile subscriptions, surged by 5.1 per cent in the sultanate to touch 446,039 in May 2019, up from 424,284 by the end of December 2018. Of this, fixed broadband Internet connections, which have more than 256KB speed, increased by 5.2 per cent to 443,884 in May 2019 whereas fixed narrowband Internet connections, which have less than 256KB speed, fell by 3.3 per cent to 2,155 subscriptions at the end of May 2019, according to the latest data released by National Centre for Statistics and Information (NCSI). The number of active mobile broadband subscribers rose by 0.9 per cent to 4.150mn in May 2019, from 4.113mn by the end of December 2018. Total fixed telephone lines rose by 2.6 per cent

to 574,627 at the end of May 2019, from 560,326 subscribers by December 2018. According to the NCSI report, the number of voice-over-internet protocol (VoIP) lines surged by 6.7 per cent to 192,300 from 180,186 subscribers by the end of December 2018. Further, analogue fixed telephone lines rose by 0.2 per cent to 324,926 from 324,129 subscribers during the period under review. Public payphone connections remained unchanged at 6,801 whereas ISDN channels rose by 2.9 per cent to 48,949 subscribers. The total number of mobile subscribers increased by 2.5 per cent to 6.601mn by the end of May 2019 compared to 6.440mn subscribers by the end of December 2018.

(July 20, 2019) muscatdaily.com



Pakistan Telecommunication Authority (PTA) has rejected mobile operators' apprehensions relating to the price of mobile license renewals and passed an order while fixing the fee for license renewal at \$39.5 million per MHz for frequency spectrum of 900 MHz and \$29.5 million per MHz for frequency spectrum of 1800 MHz. PTA said that it passed the order in compliance of the court order dated 21-06-2019 passed by the Islamabad High Court (IHC), where PTA was asked to make a decision and announce terms for renewal of telecom licenses. PTA has directed operators to pay their license fee before August 21st, 2019 or their licenses will be termed expired and they will not be allowed to provide telecom services after the deadline. Mobile licenses of Telenor and Jazz were expiring on May 26, 2019. Usually, the process for the renewal of licenses starts at least 18 months before the deadline. During the time, telecom operators, PTA consultants and other stakeholders sit and discuss various aspects of the renewal, including the price of the license. This time around,

however, PTA was unable to communicate anything to operators until the first week of May 2019 and that's when Telenor and Jazz approached Islamabad High Court with a plea that PTA should be asked not to block their services due to expiry of licenses and that PTA should formulate the mechanism for renewal of licenses at a fair price. Islamabad High Court, in response to the petition, ordered PTA to decide the terms for the license renewal at the earliest and that operators should be given sufficient time to get their licenses renewed. In line with the IHC order, PTA passed a verdict relating to license renewals of Jazz and Telenor, details for which are as following:

- Fee for renewal of license shall be US\$ 39.5 million per MHz for frequency spectrum of 900 MHz and US\$ 29.5 million per MHz for frequency spectrum of 1800 MHz;
- Licenses will be renewed with effect from 26th May, 2019 for a period of further fifteen (15) years, on a technology-neutral basis, subject to the payment of renewal fee to be calculated in

Oman

Pakistan

accordance with per MHz price as mentioned above

- The payment terms for the renewal fee shall be 100% upfront or 50% upfront with the remaining 50% in five (5) equal annual installments on LIBOR plus 3%.
- The payment can be made in US\$ or in equivalent Pak Rupees calculated at the market exchange rate at the time of payment.
- The upfront payment, as given above, shall be paid on or before 21-08-2019. In case of non-payment of upfront fee, the license will stand expired
- The terms and conditions relating to enhanced quality of service and coverage of network shall be finalized in line with applicable regulatory practice and 2015 Policy after consultation with the licensee on or before 21-08-2019.
- In case, the licensee opts for non-renewal of its license, it shall pay a fee on pro-rata basis of the renewal fee along with all other applicable fee and other charges of the License commencing from 26-05-2019 till the date of withdrawal/vacation of the radio frequency spectrum.

(July 24, 2019) propakistani.pk

Pakistan Telecommunication Authority (PTA) has invited mobile phone operators and other organizations to test the world's most advanced internet facility – 5G. PTA has issued a public notice under the title "Test and Development of Fifth Generation (5G) Wireless Networks in Pakistan". "Pakistan Telecommunication Authority invites applications from its licensees, research and development (R&D) organizations, academic institutions, equipment and/or device manufacturers, vendors, etc for the trial of fifth generation wireless networks in Pakistan," read the notice. Pakistan is witnessing a massive growth in mobile data traffic as the country has 71 million broadband subscribers, including 69 million 3G/4G subscribers. Owing to the rapid growth in subscribers, the existing infrastructure is facing congestion. Therefore, consumer demand for 5G is increasing in the country. Last month, the regulator of mobile service operators, PTA, had issued a framework for modern technology, saying the trial of 5G would be non-commercial for innovative use of the radio frequency spectrum apparatus and academic purposes like scientific research, radio concepts and new system demonstrations. Any entity registered with the Securities and Exchange Commission of Pakistan (SECP) and/or Pakistan Engineering Council (PEC), research and development (R&D) organizations, academic institutions, equipment manufacturers, etc are eligible to apply for the test and development authorization, according to the PTA framework. Aspirant organizations can apply for authorization from PTA, which will analyze the application for any clarification or additional information and will forward it to the Frequency Allocation Board (FAB) that will assign the spectrum to the applicant. After the allocation of spectrum by FAB, the applicant will also have to obtain authorization from PTA. Both authorities will issue the authorization to the applicant, which is consistent with the specified terms and conditions. For the trial of 5G on non-exclusive and non-commercial basis, PTA has decided not to charge any regulatory fee, thus consumers will not be charged for any services offered during the trial. Mostly, the trial will be held for three to four months, however, the organizations can request extension from PTA.

(July 21, 2019) tribune.com.pk

Pakistan Telecommunication Authority (PTA) has processed a total of 1862 URLs/websites containing content related to impersonation/fake accounts. According to official documents in accordance with section 37 of Prevention of Electronic Crime Act (PECA), PTA is empowered to block/remove online content which is unlawful under the Act including fake accounts. PTA has constituted a dedicated cell named as "web analysis cell (WAC)" to receive / process complaints requiring internet content regulation. A standard operating procedure has been devised to execute the process in an effective manner. In accordance to the SOP, complaints from individuals and stakeholder (government departments) requiring blocking/regulating web content of different categories including defamation/ impersonation are received through an electronic portal, email, and postal media. At present 30 federal and provincial government organizations/offices are assessing e-portal for lodging complaints. For lodging of complaints by the general public, PTA has notified a dedicated email address i.e. info@pta.gov.pk. On receipt of a complaint, PTA issues necessary directions for blocking/removing of the alleged content to telecom licensees. In case any content for fake account hosted on a secured platform like Facebook, Twitter, and Youtube, the relevant administration is requested to remove the content / block the fake account. Since Laws of Pakistan do not apply on such platforms, therefore, they take action in accordance with their community standards. Content Removal/ Blocking for impersonation/fake account is concerned; PTA has processed 1862 such URLs/websites including 106 Dailymotion, 923 Facebook, 13 Instagram, 211 Other / Misc, 341 Twitter, and 268 Youtube. Ministry of Information and Broadcast (MoIB) has raised a Cyber Wing which reported about 85-fake accounts, defamatory/impersonation including 13 facebook and 72 twitter accounts. It is observed that Social Media Platforms promptly respond to their users instead of any government organization. In this regard, PTA has also run a media campaign to educate SM users about their rights in accordance with the rules of SM.

(July 12, 2019) phoneworld.com.pk

The Pakistan Telecommunication Authority (PTA) has published guidelines for issuing temporary authorizations and spectrum to service providers, vendors and academic institutions or other research organizations for technology trials. The 'Framework for Test and Development of Future Technologies (Particularly Fifth Generation [5G] Wireless Networks)' establishes the rules for the allocation and use of radio spectrum on a trial basis for non-commercial purposes, such as technology trials and equipment tests as well as for academic and research purposes. The document does not restrict which bands the spectrum must be in, simply stating that the frequencies can include – but are not limited to – airwaves in the 2.6GHz, 3.6GHz and millimeter wave (mmWave) ranges. There is no charge from the government for the temporary licenses, which have a duration of either three or six months but may be extended, subject to approval from the PTA. The guidelines state that any interconnection with public telephone networks must first be approved by the regulator, any publicity material for the trial must similarly be green lit by the PTA, and the authorization holders must not claim to be a service provider based on the temporary license.

(July 11, 2019) telegeography.com



Saudi Arabia

Saudi Arabia has made the largest breakthrough among the G20 countries, in terms of the amount of radio spectrum awarded to operators in globally identified frequency bands for public mobile telecommunication services, according to global radio spectrum allocation reports. Since the end of Q2 2019, the Kingdom has been ranked second on the list following Japan. This comes as a direct result of the Kingdom's efforts to implement the National Spectrum Plan and the National Transformation Program 2020 initiatives, specifically, the coordinated plans that were developed and executed to identify and reallocate a large number of frequency bands, as part of the Kingdom's continuous efforts to improve the quality and speed of Internet services. In this regard, Dr. Abdulaziz Al-Ruwais, Governor of the Communications and Information Technology Commission (CITC), affirmed, "The Kingdom's ICT sector enjoys the support and empowerment of its leadership, which directly resulted in creating this breakthrough, putting the Kingdom amongst the most advanced countries in this vital sector." He also commended the efforts of all concerned government sectors and the fruitful cooperation between them in implementing this project. The Global Broadband Speed Test, Speedtest.net, has recently revealed that the Kingdom has succeeded in increasing the average speed of Mobile Internet services from 9.2 by the end of September 2017, to 37.5 Mbps by the end of May 2019. Radio frequency spectrum is the medium for providing all wireless services leveraged across a wide range of industries and it is a critical national resource that is owned by the state. In the Kingdom, the Council of Ministers is the authority responsible for approving the National Frequency Plan, which is prepared by CITC to facilitate the introduction of new technologies and enable the delivery of high-quality wireless services.

(July 13, 2019) saudigazette.com.sa

The Electronic Commerce Law, approved by the Council of Ministers, aims to enhance the reliability of e-commerce in the Kingdom so as to increase its contribution to the national economy to achieve the goals of the Kingdom's Vision 2030 and stimulate and boosts e-commerce activities in the Kingdom. This is a first of its kind code in the Kingdom to regulate the relationship between consumers and those e-commerce practitioners who do not have a commercial registration. The Cabinet approved the law after examining the two decisions of the Shoura Council and recommendation of the Council of Economic and Development Affairs (CEDA) following the presentation of a report by the Ministry of Commerce and Investment. The Cabinet also endorsed amendment in the Public Transport Authority Law to change the name of "Public Transport Authority" to the "General Authority for Transport." Minister of Commerce and Investment Majed Al-Qasabi thanked Custodian of the Two Holy Mosques King Salman and Crown Prince Muhammad Bin Salman on the occasion of the Cabinet's approval of the E-Commerce Law. Al-Qasabi said that the e-commerce law is a new historical phase in the national economy that enhances its position and its ability to cope with all

the changes and modern trading patterns in the world. "The law aims to enhance the reliability of business transactions, stimulate and develop e-commerce activities and protect all rights of consumers and safeguard them from fraud, deception and misleading." Al-Qasabi stressed the importance of e-commerce and its role in strengthening the national economy in light of the robust growth witnessed by the Kingdom. "Strengthening the e-commerce system is one of the most important objectives of the National Transformation Program in support to achieve the Vision 2030," he said, while pointing out that the wise leadership has paid great attention to this vital sector. E-commerce is a promising global market worth more than \$ 30 trillion. The Kingdom is one of the top 10 countries in the world in terms of e-commerce growth rate that exceeds 32 percent annually. The volume of e-trade in the Kingdom reached SR80 billion in 2018, with an increase of average online spending per capita to SR4,000. The Council of Ministers approved earlier the establishment of an E-Commerce Board comprising a number of government and private sector representatives, which are implementing 39 initiatives supporting e-commerce in the Kingdom. The e-commerce law regulates the relationship between shoppers and electronic stores, and allows people, who do not have a commercial registration to practice business activity and deliver goods and services to consumers, to do it in accordance with some specific regulations. The law requires service providers to disclose data of their trade, goods and services to consumers, set conditions to be observed during the conclusion of electronic contracts that guarantee the rights of all members of the purchasing process, protect personal data of the consumer, regulate the consumer's right to retrieve goods, addresses delay in delivery of products and services, and regulates and intensifies censorship of the e-commerce advertising market to prevent fraud and deception. The law also enhances the role of department store registries and digital platforms that act as intermediaries between the service provider and the online shopper. The Ministry of Commerce and Investment said that the law consists of 26 articles that provide the necessary protection for e-commerce transactions from fraud and deception in a manner that preserves the rights of both the trader and the electronic shopper. E-commerce is an open market, 24 hours a day, providing time and effort to the shopper to access all goods and services with various options in a transparent and competitive environment. According to the new law, the right of the consumer to return the product or service shall be within seven days in the event of not using or benefitting from it except for certain circumstances specified in the law. It gives the consumer the right to cancel the purchasing process if the service provider delayed delivery for more than 15 days. The law regulates the electronic advertising market to protect consumers from infringing or misleading advertisement. The law specifies that those e-commerce practitioners who do not have a commercial registration need to identify their place of business, clarify their data through the online store to ensure the protection

of consumer data and privacy, and to document their business through one of the electronic store documentation platforms. The law stipulates the formation of one or more committees to consider violations of the provisions of the law or its executive regulations and punish the violator with one or more of the

following penalties: warning; stopping the activity temporarily or permanently; blocking the Internet service partially or completely; and slapping fines amounting up to SR1 million.

(July 10, 2019) saudigazette.com.sa



Telecoms operators have begun restoring internet access for their customers in Sudan, after a court ordered authorities to end a blackout enforced to contain political protests, reports Reuters. The move follows the announcement of a deal reached last week between the Transitional Military Council (TMC) and civilian opposition for a three-year power sharing arrangement. The military removed long-time ruler Omar al-Bashir from office in April after months of protests and unrest, but ordered telecoms firms to cut off internet access in June following a deadly crackdown by security forces on protesters in the capital. Following a court ruling earlier this week, internet connections for operators including South Africa-based MTN and domestic telco Sudatel (Sudani) have now been restored.

(July 11, 2019) telegeography.com

The Sudanese authorities have imposed new restrictions on the telecommunications sector and the internet, blocking the loading and uploading of multimedia (images and videos) from most active Internet lines, stopping the international roaming of some

telecommunications companies, the deliberate delay of landlines, and the cutting of the Kanar 4G service. In a statement, members of the Sudanese Professionals Association (SPA) working in the technology and communications sector denounced "this deliberate suppression of freedoms", and called for a constitutional provision that exempts government intervention in telecommunications services and information technology in times of political crisis". Activists have criticized the failure of Mustafa Abdelhafiz, Director of the Postal and Communications Corporation, who had promised to restore internet service this week. Sudan News Agency (SUNA) said that "the relevant authorities have been directed to activate the national network of the internet so that all service providers within Sudan can continue their services and the return of applications". On June 10, the Transitional Military Council ordered the shut-down of the internet in the country for an indefinite period of time, claiming it forms a threat to national security.

(July 5, 2019) balancingact-africa.com



Information Technologies and Communications Authority President Ömer Abdullah Karagözoğlu spoke at Huawei 5G Event. The importance of 5G was discussed at the 5G Event organized by Huawei. BTK President Ömer Abdullah Karagözoğlu stated that they are happy to share the innovations, opportunities, developments, studies and success stories about 5G. Turkey's 5G, and beyond that period prepared as the electronic communications regulatory agency responsible for voicing them be ready to play its part Karagozoglu, gave information about the work. Karagözoğlu said, "In December 2017, 3GPP completed the non-standalone part of 5G standards. 3GPP completed the standalone 5G New Radio specification in June 2018 as well. This offers a new end-to-end architecture for the mobile network and makes it easier to develop new business models. However, it is aimed to release Version 16 in 2020". Prime Minister Recep

Tayyip Erdogan led and 2023 vision scope with high added value innovative works of Karagözoğlu that expresses carried out in Turkey, "We are producing the Authority with sector stakeholders to come together technology with the highest possible degree of local and national resources but are committed to becoming one of the countries. I reiterate that we attach great importance to this cooperation, and I am pleased to inform you that we will continue our efforts with all our efforts and beliefs. We created the 5G Valley Open Test Site to provide our technology developers with a neutral and free test-trial space. METU, Hacettepe and Bilkent campus area between Turkey as we have defined the priority 5G-trial testing area. Currently, the first test-trial studies have started in 5G Valley.

(July 11, 2019) btk.gov.tr

Sudan

Turkey



United Arab Emirates

The fixed broadband speed and connectivity in the UAE is the fastest in the region, according to the latest data from Ookla, a global leader in internet testing, data and analysis. The data from Ookla showed network performance of the UAE as one of the highest in the world with the country jumping 16 places in the ranking in one month. The average download speed in a fixed broadband network measured by Ookla at 88.35mbps. Currently, UAE ranks 25th on a global list out of 177 countries and among the top 20 of global advanced economies. Commenting on this achievement, Hamad Obaid Al Mansouri, Director-General of the Telecommunications Regulatory Authority, said, "The advancement in connectivity and infrastructure is a result of the leadership's vision that helped drive the growth of ICT across all sectors and segments of the economy and society. The UAE is also ranked number one for Fiber to the Home, FTTH, penetration across the world for a third year in a row. I take this occasion to thank the national telecom operators, etisalat and du for their contribution to the UAE leadership and competitiveness. They have recently doubled the speed for businesses and consumers which led to increase in business productivity in the country."

(July 21, 2019) gulfnews.com

The Telecommunications Regulatory Authority (TRA) has published a new policy regulating services and devices associated with the Internet of Things (IoT Policy). The IoT Policy's introduction reflects a growing regional trend to regulate specific market sectors and technologies in response to their increasing prevalence and perceived risks they present. Internet of Things (IoT) refers to the growing network of inanimate objects connected to the Internet, including devices as diverse as home electrical appliances, thermostats, gas meters and vending machines. Also referred to as "machine-to-machine" or "M2M," IoT technology promises transformative economic benefits in two distinct ways – as an industry vertical which uses the technology to amass data and thereby conduct superior analytics; and as a horizontal industry enabler which can be adopted across industries to allow for the smarter use of infrastructure, improved efficiency and growth of new business segments. The TRA has only recently published the IoT Policy on their website, although it is dated 22 March 2018. Accordingly, the one-year grace period provided to IoT service providers has already expired and compliance with the requirements of the IoT Policy is now mandatory. Some of the key requirements are as follows:

Registration: All IoT service providers are required to obtain an IoT Service Registration Certificate from the TRA, in addition to the existing type approval. This also applies to offshore service providers offering IoT services to UAE-based customers.

Onshore representation: IoT service providers must have a local presence in the UAE or an official representative in the UAE who can liaise with the TRA on their behalf.

Data protection: The IoT Policy requires compliance with data

protection concepts adopted from the European data protection regime, namely: data minimization obligations; limitations on the purpose for which data can be used; and the obligation to put in place minimum security requirements for the protection of data captured.

Data localization: Certain data of government entities are required to be kept within the geographic boundaries of the UAE (e.g., "Secret, Sensitive and Confidential" data). Other categories of data may be transferred overseas provided certain minimum criteria are satisfied.

IoT connectivity: IoT service providers who provide "connectivity" for IoT ecosystems over a "wide area" using the Public Switched Telecommunications Network (PSTN) are obliged to notify the TRA of those activities in advance so that the TRA can take a view on whether or not those activities should be regulated under the IoT Policy. This could in theory capture providers of applications designed to interact with and manage the data collected from IoT-enabled devices.

Although the IoT Policy has only been made publicly available recently, compliance is now required. Failure to do so may result in penalties being levied by the TRA under the UAE Telecoms Law. IoT service providers operating in the UAE should assess their activities and take steps as necessary to meet the compliance requirements as set out by the IoT Policy.

(July 3, 2019) globalcompliancenews.com

The Telecommunications Regulatory Authority (TRA) has hosted the 22nd meeting of the Executive Team of the National Online Services Index, one the indicators of the UAE Vision 2021 National Agenda. The OSI Executive Team includes representatives of 11 federal and local government entities. This meeting aims to review the achievements of the plan based on the six phases' concept (O6). The plan represents the roadmap for the UAE to reach the third position globally by mid this year, based on four pillars: simulating expectations at the local government level, addressing the challenges of the OSI, the impact of soft power, and application of innovation factors. The plan was divided into four phases, six weeks each, where the sub-teams are assigned with a list of tasks to be completed before moving on to a new phase of six more weeks. These tasks constitute a participatory work program among the relevant government entities. On this meeting, H.E. Salem Al Housani, Acting Deputy Director General for Information and eGovernment Sector and Leader of the OSI Executive Team, said: "During our meeting, we focused on ways to enhance the application of the principles and directions of the government's system of excellence, including exploring all future opportunities, contributing to the development of government entities that are proactive and flexible to achieve readiness for the future through innovation and modernity, and contributing to achieving the principles of economic, social and environmental sustainability. During our discussions, we focused on the

concepts and values of digital participation, open data and the provision of high quality services, through which we can create the global competitiveness advantage that allows us to achieve one of the top three global positions according to the United Nations' OSI. These principles have been adopted by TRA, and led it to excellence in the implementation of the national agenda objectives in the previous two sessions. During the meeting, we also discussed the implementation of the O6 Action Plan. The results are scheduled to be evaluated by mid-July. The main objectives of this plan were discussed, and ways to accelerate the work and achieve the pending tasks before the evaluation phase." Al Housani praised the hard work and efforts made by the team since its establishment in December 2016. He added: "We reviewed during this meeting the most important stages of the National OSI Team, and its most important accomplishments. Among the most important of these stages is the extraordinary meeting with His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, When he launched the official and supporting portals. This launch was followed by the formation of the task forces, the hosting of regional experts, and the organization of specialized

workshops. The Deira system was launched in order to monitor the achievement of the national agenda goals, especially the OSI. This system includes everything related to minutes of meeting, presentations and others. "During the meeting, the participants discussed the possible ways to achieve the goals of the O6 Plan and to meet the targets before reaching the evaluation stage. The meeting also discussed the initiatives launched to promote e-participation in response to the directives of His Highness Sheikh Mohammed bin Rashid Al Maktoum, Which aim to ensure that the practices of the UAE government are the standard practices adopted by the rest of the world, such as the UAE Hackathon, the Interactive Lab, SDGs Buzz, and the Smart Government Maturity Model. The OSI Executive Team contains representatives of 11 federal and local government entities. Its priorities include providing a sustainable environment and an integrated infrastructure, in addition to achieving the planned objectives on the international level. The team uses the latest global trends in the e-government survey, i.e. bridging the digital gap, open data, enhancing the usage, several service channels, inter-connected government and e-participation. 📌

(July 1, 2019) zawya.com

REGULATORY ACTIVITIES BEYOND THE SAMENA REGION



Argentina

Speaking at the 7th Latin American Telecommunications Congress in Cordoba, Argentina, Andres Ibarra, Argentina's Minister for Modernization, indicated that the country's plans for a pair of multi-band spectrum auctions are at an advanced stage, and should take place within the next 60 days. According to a report by iProfesional.com, a nationwide tender will be scheduled for mobile incumbents Claro, Movistar and Personal to bid on frequencies, while a second tender will target smaller regional players. The frequencies in question were previously managed by state-owned telecoms firm ARSAT, and comprise spectrum in the following bands: 738MHz-748MHz/793MHz-803MHz (nationwide); 1745MHz-1770MHz/2145MHz-2170MHz (nationwide); 1895MHz

-1905MHz/1975MHz-1985MHz (Region I – North); 1890MHz-1900MHz/1970MHz-1980MHz (Region II – Buenos Aires Metropolitan Area); and 1880MHz-1890MHz/1960MHz-1970MHz (Region III- South). As per Decree 58/2019, which was signed in January this year, no less than 20% of the frequencies will be reserved for smaller, regional operators. Also at the event, Silvana Giudici, President of the National Communications Agency (Ente Nacional de Comunicaciones, ENACOM), stated that the government is optimistic that the country's cellcos will reach the target of 93% 4G coverage by end-2019. She said that LTE coverage currently stands at an average of 67%, and the country is home to a total of 27.6 million 4G users.

(July 5, 2019) telegeography.com



Australia

Australia approved new consumer protection rules designed to crack down on poor sales practices by requiring telecoms operators to promote and sell their products in a fair and responsible manner. The strengthened Telecommunications Consumer Protections (TCP) code, passed by the Australian Communications and Media Authority (ACMA), requires operators to clearly explain key terms and conditions to enable consumers to make informed decisions, and to assess a customer's capacity to pay. ACMA Chair Nerida O'Loughlin explained: "We see evidence of customers being encouraged to sign up to multiple plans which do not meet their needs, are excessive or beyond their financial capacity. The impact of this is serious, particularly for those in vulnerable circumstances, leading to financial hardship and denial of access to critical services." For new customers where the total cost of the contract exceeds AUD1,000 (\$698), operators will require them to provide information about how they will pay their bill. In addition, an external check from a credit reporting body will be required. These provisions will also apply to prepaid customers moving to post-paid accounts. "The new TCP code puts the onus on telcos to ensure customers understand what they are buying. We will be subjecting telcos to close scrutiny as to how well their practices conform to the new code," O'Loughlin said. In a statement, ACMA said it will monitor and investigate non-compliance and test the effectiveness of the new rules. Repeated breaches of the code could lead to penalties of up to AUD10 million. The new rules covering sales practices, financial hardship and credit

assessment go into effect on 1 August 2019.

(July 2, 2019) mobileworldlive.com

Australia's domestic Mobile Terminating Access Service (MTAS) for voice services will be regulated for a further five years, the Australian Competition and Consumer Commission (ACCC) has confirmed. In publishing its final report, the regulator also revealed that regulation of the MTAS for SMS services will not continue. With the previous declaration of voice and SMS MTAS having been scheduled to expire on 30 June 2019, the ACCC had launched a public inquiry regarding the services back in August 2018, examining whether the declaration should be revoked, extended or varied. On the back of this inquiry, and what the regulator called an 'extensive' consultation, it has now said it will continue the declaration of voice terminating services until 2024, but will end declaration of the SMS MTAS service on 1 January 2020. According to the ACCC, while some stakeholders were reported to have expressed concerns about the impact of ending SMS MTAS regulation on app-to-person (A2P) services – which are often used by businesses to communicate special deals or sales to customers – the regulator said it considered that there were sufficient alternatives to A2P SMS to constrain wholesale SMS MTAS prices. Commenting on the matter, ACCC Commissioner Cristina Cifuentes said: 'When we decided to regulate wholesale SMS termination services in 2014, mobile operators were charging each other significantly above cost for these services, with a flow-on impact for retail SMS prices ... We have found that this need to regulate

SMS termination has disappeared over time because of increasing competition from over-the-top services like WhatsApp and iMessage, and because most mobile plans in the market now offer unlimited SMS

... However, over-the-top voice services are not yet substitutes for mobile voice calls, so it is appropriate to continue declaration of MTAS for voice services.'

(July 1, 2019) telegeography.com



Colombia

The ICT Ministry Mintic has launched a public consultation on the proposed tendering of the 700MHz, 1,900MHz, and 2,500MHz bands, which the government plans for the fourth quarter for 4G use. In April, Mintic published a resolution asking for expressions of interest in participating in tenders for the three bands. Some 75MHz would be tendered in the 700MHz and 1,900MHz bands. Minister Sylvia Constaín has said the government prioritizes improving 4G coverage before looking to 5G. However, spectrum agency ANE published in April a draft document on 5G for which it is proposing to tender spectrum in low

(600, 700MHz), medium (1-6GHz, 3.4GHz, 3.5GHz, and 3.6GHz) and high bands (24.25-86GHz.) In June, Mintic launched a public consultation on its 5G plan, and saying they will be invited to participate in pilot tests in the second half. President Iván Duque has promised to double broadband coverage to 100% by the end of his term in 2022 and is pushing for national 5G coverage by 2024. In June, Colombia's congress approved an ICT reform bill, which will extend spectrum concession licenses to 20 years, consolidate the ICT and TV regulators into one and drive investment, according to officials. (July 17, 2019) bnamericas.com



Croatia

The Croatian Regulatory Agency for Network Operations (Hrvatska Regulatorna Agencija za Mrežne Djelatnosti, HAKOM) has launched a public tender to find a universal service provider, with a view to awarding a three-year contract. The winning bidder will be expected to provide the following services: access to the public communications network and publicly available telephone services at a fixed

location; the provision of a directory of all subscribers of publicly available telephone services; a directory enquiry service; operation of public payphones; special measures for people with disabilities; and a special pricing system tailored to the needs of socially vulnerable users. Universal services are currently provided by fixed incumbent operator Hrvatski Telekom (HT). (July 9, 2019) telegeography.com



Czech Republic

Nordic Telecom (formerly Air Telecom), owned by private equity firm Nordic Investors, has called on the Czech Telecommunication Office (CTU) to offer a greater share of the 5G spectrum it expects to auction off in January 2020. The cellco is seeking to become the Republic's fourth player in a country dominated by O2, T-Mobile and Vodafone. However, the CTU is planning to auction off frequencies in the 700MHz and 3.5GHz bands early next year, as it seeks to boost competition in a market where high prices have long been a complaint of customers and politicians; an EC study on mobile broadband prices published in February showed that the Czech Republic and Cyprus had the most expensive data prices in Europe, prompting Prime Minister Andrej Babis to put pressure on Czech operators to lower charges. Whilst the Czech regulator has committed to reserving a block allocation of 2x10MHz in the 700MHz band for would-be new entrants, with the option to bid for an additional 5MHz if the incumbents show little interest, plus a higher limit than incumbents in the 3.5GHz band, Nordic Telecom says the plans do not go far enough. In response to the CTU public consultation that closed on 26 July, the company argues for a bigger block of

frequencies and called for a shortening of the period allowed to achieve nationwide coverage to encourage what it termed 'serious bidders'. Reuters cites Nordic Telecom's communications director David Voska as saying: 'Our models show that we cannot fully become a competitor to the current mobile operators because we would not have enough frequency'. Nordic Telecom has more than 100,000 customers in the country and offers high speed internet data access through its LTE-450 network. Meanwhile, having secured two 40MHz spectrum blocks in the 3.7GHz band (3600MHz-3800MHz) in September 2017, a commercial launch of the operator's TD-LTE-based '5G internet at home' service followed in October 2018. It now aims to use the upcoming 5G auction to enter the mobile sector as a full-service provider. Operators in the auction will have to commit to giving coverage to cities without high speed internet, reaching 95% within three years. Transportation corridors and 95% of towns and cities with populations of more than 50,000 should be covered by 2025. Incumbents bidding for the 700MHz blocks on offer will also have to commit to providing national roaming for six years to new operators.

(July 31, 2019) telegeography.com

Telecoms industry watchdog the Czech Telecommunication Office (CTU) has received separate applications from the country's three mobile network operators (MNOs) – Vodafone, T-Mobile and O2 – to change the allocation of radio frequencies to provide a public communications network in the 900MHz and 1800MHz bands. The CTU notes that the MNOs' applications are based on previous negotiations with them to refine the 900MHz frequency band, in order to ensure the future effective use of allocated frequencies (e.g. in particular the deployment of broadband technologies), Vodafone has now requested the reallocation of its frequencies originally issued on 1 August 2005 (renewed in June 2009 and again on 19 April 2019) requesting to change its current allocation from 881.9MHz–885.5MHz/926.9MHz–930.5MHz (2×3.6MHz), 889.9MHz–894.3MHz/934.9MHz–939.3MHz (2×4.4MHz), 912.9MHz–914.9MHz/957.9MHz–959.9MHz (2×2.0MHz), to the new specification: 880.1MHz–890.1MHz/925.1MHz–935.1MHz (2×10.0 MHz). T-Mobile has requested to change the allocation of its radio frequencies originally issued on 1 January 2005 (renewed in June 2009) from the current specification, 886.9MHz–889.9MHz/931.9MHz–934.9MHz (2×3.0MHz), 894.3MHz–897.1MHz/939.3MHz–942.1MHz

(2×2.8MHz), 899.9MHz–902.1MHz/944.9MHz–947.1MHz (2×2.2MHz), 904.1MHz–906.1MHz/949.1MHz–951.1MHz (2×2.0MHz), 909.3MHz–911.7MHz/954.3MHz–956.7MHz (2×2.4MHz) to the new specification 890.1MHz–902.5MHz/935.1MHz–947.5MHz (2×12.4MHz). Finally, O2 has requested the reallocation of its frequencies issued on 9 October 2015 from the current specification, 880.1MHz–881.9MHz/925.1MHz–926.9MHz (2×1.8MHz), 885.5MHz–886.9MHz/930.5MHz–931.9MHz (2×1.4MHz), 897.1MHz–899.9MHz/942.1MHz–944.9MHz (2×2.8MHz), 902.1MHz–904.1MHz/947.1MHz–949.1MHz (2×2.0MHz), 906.1MHz–909.3MHz/951.1MHz–954.3MHz (2×3.2MHz), 911.7MHz–912.9MHz/956.7MHz–957.9MHz (2×1.2MHz) to the new specification: 902.5MHz–914.9MHz/947.5MHz–959.9MHz (2×12.4MHz). Under provisions laid out in Section 22a (1) and Section 130 of the Act No. 127/2005 Coll., On Electronic Communications and on Amendments to Certain Related Acts (Electronic Communications Act), as amended, the CTU has now launched a public consultation on the plan. Comments may be submitted within one month of the publication of the call.

(July 15, 2019) telegeography.com



Ecuador

The government has outlined plans to allocate 3.5GHz spectrum in 2020 in preparation for the launch of 5G services. Speaking at the presentation of the 'Digital Ecuador' strategy intended to foster digital transformation, the Minister for Telecommunications & Information Society, Andres Michelena Ayala, highlighted that one of the priorities of the initiative is to establish a regulatory framework governing spectrum allocation. The government hopes this will

reduce mobile internet prices and promote investment. Under the plan, the process of allocating frequencies in the 700MHz and 2.5GHz bands will begin by November 2019, with the goal of extending 4G coverage from the current 50% to 80% by 2021, while spectrum in the 3.5GHz band will be awarded in 2020. The Digital Ecuador strategy anticipates 5G services will be available between 2021 and 2022.

(July 15, 2019) TeleSemana



Ethiopia

Authorities in Ethiopia confirmed plans to break up the country's telecommunications monopoly and issue licenses to two new entrants in Q1 2020, with MTN, Orange and Vodacom among the likely contenders. In a statement, the Ministry of Finance of the Federal Democratic Republic of Ethiopia, said state-owned Ethio Telecom will be split into two. One part of the business will take control of the services and retail side, while the other will manage the country's mobile and fixed network infrastructure and supply new entrants on a wholesale basis. While making changes to the composition of the incumbent, the government is in the process of establishing an independent communications regulator which will issue the new licenses. The ministry expects the process to bring significant investment into the country and improve

the quality, speed and scale of network coverage. These elements, it added, would close digital gaps and prepare it for "high tech industrialization". GSMA Intelligence estimated Ethio Telecom had 43 million connections (excluding IoT) at end Q2. Of these, 96 per cent were prepaid with less than 9 per cent on 4G. "To ensure the success of the partial privatization process, the government will adopt competitive process that is open and transparent and properly manages the due diligence and bidding process," the Ministry stated. As rumors on the detail of the country's new policies emerged over the last year, executives from MTN, Vodacom and Orange have all expressed an interest in making a move in the market.

(July 8, 2019) mobileworldlive.com



France

Telecom regulator Arcep outlined rules for its auction of 5G-suitable frequencies, which will be held in the autumn ahead of commercial launches in 2020. It opened a public consultation for the allocation of spectrum in the 3.4GHz to 3.8GHz range, which runs until 4 September. Arcep will then look to adopt contributions into its terms and conditions, before submitting a proposal to the government. The regulator said frequencies would be allocated for 15 years, with a possible extension of five years. Its tender will run in two parts. Operators will first be required to make a series of commitments which will allow them to apply for a chunk of spectrum at a fixed price. The size of the block available in this phase will be at least 40MHz per operator. Obligations include coverage targets and the delivery of speeds of at least 240Mb/s at each cell site. By 2022, at least 75 per cent of an operator's footprint

must be 5G-capable, rising to 100 per cent by 2030. They should also launch 5G services in at least two cities before the end of 2020. Operators are also invited to make a series of optional commitments, which could aid their bids for the fixed-price blocks. The second part of the process will run like a traditional auction, allowing operators to bid for frequencies still available following the first phase. Arcep said the French government had detailed objectives for it to pursue when drafting specifications for 3.4GHz to 3.8GHz band allocations. These objectives require Arcep to ensure 5G services benefits everyone across the country and allow at least four operators to provide 5G services under good conditions. France's main operators Orange, Bouygues Telecom, SFR and Iliad are expected to compete in the auction.

(July 16, 2019) mobileworldlive.com



Germany

Germany completed the clearance of the 700MHz band, which had previously been used by broadcasters, with operators now free to use the bandwidth to improve coverage. In a statement, regulator Bundesnetzagentur said use of the band for mobile would provide a coverage boost in rural areas, due to the relatively long-range transmissions available on the frequency. The spectrum was auctioned to operators in 2015, with Deutsche Telekom, Telefonica Deutschland and Vodafone Germany all winning allocations. Clearance

of the 700MHz band is mandated by the European Union and must be completed by 30 June 2020 unless permission is gained from EU authorities for a two-year extension. Announcing the completion of the process in Germany, the regulator warned operators they must "observe the protection of foreign broadcasting uses" in parts of the country close to borders with nations yet to clear the band.

(July 5, 2019) mobileworldlive.com



Ghana

The Finance Minister, Ken Ofori-Atta, has revealed plans to increase the Communications Service Tax (CST) to 9% from the current level of 6%. Announcing the proposal in the mid-year budget review statement, the minister said the higher rate is intended to 'develop the foundation for the creation of a viable technology

ecosystem in the country'. The tax was introduced in 2008 at an ad valorem rate of 6% and is levied on charges for the use of communication services provided by operators in the country.

(July 31, 2019) [The Business World Ghana](http://TheBusinessWorldGhana.com)



Hong Kong

Hong Kong's Office of the Communications Authority (OFCA) has invited applications for 5G licenses in the 3.3GHz, 3.5GHz and 4.9GHz bands. The regulator intends to auction a total of 380MHz of spectrum across the three bands, including 100MHz at 3.3GHz, 200MHz at 3.5GHz and 80MHz at 4.9GHz. The first auction – for the 3.5GHz frequencies – will be held on 14 October, and this will then be followed by the 4.9GHz and 3.3GHz sales. Applications are being accepted until 13 September. Reserve prices have been set at HKD2 million (USD256,000) per MHz for the 3.3GHz spectrum, HKD4 million per MHz for the 3.5GHz spectrum and HKD3 million per MHz for 4.9GHz frequencies. A spectrum cap of 70MHz will be imposed on winning bidders in the 3.5GHz band auction, while

a limit of 40MHz per operator will be imposed in the other two bands. In March this year OFCA awarded 5G-capable licenses in the 26GHz and 28GHz bands to HKT, SmarTone and China Mobile HK (CMHK). The territory's fourth celco, Hutchison 3, declined to take part in the award process, saying that there will be sufficient spectrum available for 5G services in the 3.3GHz, 3.5GHz and 4.9GHz bands, while the higher range frequencies are also not suitable for providing indoor coverage.

(July 22, 2019) telegeography.com

Hong Kong's Communications Authority (CA) has created a new Localized Wireless Broadband Service (LWBS) license in the 26GHz and 28GHz bands for

5G services. Up to 400MHz will be allocated between 24.25GHz and 28.35GHz to allow for localized 5G coverage. Permits will be valid for five years, with five-year extension options, and will carry an annual fixed fee of HKD100,000 (USD12,800) plus other variable fees depending on the number of base stations and devices in use. A spokesperson for the CA said: 'The shared spectrum under the LWBS license will be assigned on a geographically sharing basis, for use in different specified locations such as university campuses, industrial estates, the airport and technology parks. It may also be used to support fixed-wireless access or smart city applications. Assignees may each deploy the shared spectrum as assigned to provide localized

network coverage in their specified locations having aggregate specified areas of not exceeding 50 square kilometers.' The statement continued: 'The services to be provided with the use of the shared spectrum under the LWBS license would be distinct from conventional public mobile services, and would in general be confined to wireless data-centric communications for specific groups of users.' The regulator has previously said that it will offer a total of almost 4,500MHz of frequencies for 5G services, including 100MHz in the 3.3GHz band, 200MHz at 3.6GHz and 80MHz at 4.9GHz, plus 4,100MHz across the 26GHz and 28GHz bands.

(July 8, 2019) telegeography.com



Hungary

The National Media and Infocommunications Authority (NMHH) has kicked off the auction process for awarding new 5G spectrum. Market players will be able to bid for blocks in the 700MHz, 2100MHz, 2600MHz and 3600MHz bands. The NMHH has published detailed process documentation. The regulator says it had made several changes to the process based on feedback from an industry consultation held earlier this month. Companies must submit their interest by 8 August. Participants can submit their bids for spectrum licenses between 23 September and 11 October. Licenses will be valid for 15 years, with a one-time option for a five-year extension. The winners will be announced in mid-October. Hungary wants 5G services at major industrial sites in 2020 – an

approach with similarities to that taken by Orange in France, which is focusing on industry use cases first – and to cover all big cities and main transport routes by the middle of the next decade. The main mobile players in Hungary are Deutsche Telekom's subsidiary, Magyar Telekom, Vodafone and Telenor. Hungary's Innovation & technology Minister, Laszlo Palkovics, recently said it could cost operators up to 700 billion forints (€2.6 billion) to deploy enough 5G antennas to support national coverage. According to Reuters, he added, "The state has to play some role in the construction of 5G network infrastructure. Otherwise it could be slow. If we co-ordinate this with service providers, the build-up of the infrastructure can be faster."

(July 22, 2019) mobileeurope.co.uk



India

Indian cellcos owe the government a total of INR926.4 billion (USD13.5 billion) in pending fees due to a long-standing dispute over the calculation of adjusted gross revenue (AGR), upon which license fees and spectrum usage charges are based, the Department of Telecommunications (DoT) has told the Supreme Court. The legal battle dates back to 2003, with the DoT arguing that all sources of income should be included in the AGR calculations, whereas the providers claim the amount should be limited to telecom services. According to the ministry, Vodafone Idea and Bharti Airtel have the largest outstanding bills, of INR283.1 billion and INR216.8 billion, respectively, followed by Reliance Communications (RCOM, INR164.6 billion), Tata Teleservices Limited (TTSL, INR99.9 billion) and Aircel (INR78.5 billion).

(July 30, 2019) The Economic Times

The Department of Telecommunications' (DoT's) Wireless Planning and Coordination (WPC) division has published in an Office Memorandum (OM) guidelines for the allocation of temporary licenses to promote the development of mobile technologies, in particular

5G. The document sets out three types of licenses, each of which has a number of subcategories based on the intended use and featuring slightly different terms and conditions. The main types of temporary concessions are: Experimental and Technology Trial License; Manufacturing and Testing License; and Demonstration License. The concessions are each priced at INR5,000 (USD72.7), covering a single service area and typically valid for up to three months, although duration varies between the various categories. A demonstration license, for example is capped at three months with no potential for extension, whilst the authorization for manufacturing and testing lasts five years and can be renewed for another five years. The spectrum available to licensees is not limited to a specific band, and the guidelines are flexible regarding the amount of spectrum to be awarded, stating that the quantum of spectrum can be distributed as necessary and 'as per feasibility.'

The Department of Telecommunications (DoT) has rejected a resolution proposal from bankrupt cellco Aircel that would have seen each of the company's

operational creditors receive INR165 million (USD2.4 million). There was no specific provision for the DoT, which said the figure was insufficient to cover Aircel's licence and spectrum dues. The ministry has been largely opposed to the cellco's bankruptcy resolution plans as they hinge on the sale of the operator's spectrum rights to repay its creditors. The DoT contends that the rights cannot be sold by resolution professionals (RPs) and should be returned to the

government. The National Company Law Tribunal (NCLT) has asked the DoT to submit an affidavit on the matter by 22 July and Aircel's RP will have until 28 July to respond. The court is set to make a decision on the resolution plan by 30 July. The outcome of the case is expected to have an impact on the resolution process for Reliance Communications (RCOM), which is also hoping to sell off its spectrum assets to help clear its debts. (July 2, 2019) The Economic Times



Italy

The Italian Ministry of Economic Development has published the roadmap for the transition of the digital terrestrial network to DVB-T2/MPEG-4 standard. The new road map divides the country into four geographical areas and provides for the activation of DVBT/MPEG-4 encoding in the last four months of 2021 and the roll-out of the DVBT-2 standard at national level in the period between 21 June 2022 and 30 June 2022. The new road map was published after the so-called "constructive" discussion held within the TV 4.0 Coordination Board and after the public consultations carried out by the Ministry with all stakeholders. Thanks to the publication of the new road map and guidelines for the local television sector, "another important step has been added to the process of transition to the new DVB-T2 technology of television networks",

declared Marco Bellezza, Legal Adviser to the Minister Di Maio for Communications and Digital Innovation and Coordinator of the TV 4.0 Table. Minister Luigi Di Maio said, it is necessary to accompany, with the involvement of all public and private stakeholders, the process of transition to DVBT-2 technology, to ensure that the transformation of the broadcasting system and the transfer of frequencies take place without delay with respect to the deadlines set. Operators still have the "right to activate DVBT/MPEG-4 encoding or the DVBT-2 standard before the scheduled deadlines", while "voluntary early scrapping of networks for local operators who request it, with advance payment of the compensation required by law".

(July 24, 2019) broadbandtvnews.com



Kenya

Mobile and financial sector regulators have warned against Parliament's quest to split the popular money transfer service, M-Pesa, from telecoms giant Safaricom. The Ministry of ICT, Central Bank of Kenya (CBK) and Communications Authority of Kenya (CA) Wednesday asked MPs to be cautious in their push to de-link mobile money services such as M-Pesa, Airtel Money and T-Kash from their parent mobile telecommunication firms. The warning comes even as MPs prepare to debate the Kenya Information Communications (Amendment) Bill, 2019, that is seeking the registration of mobile money services as separate business units. If MPs have their way, the telecommunications regulator will be compelled to ensure that mobile money services are licensed as banks. The telecommunications firms will then be licensed to only offer voice, data and SMS services. CBK governor Patrick Njoroge, ICT principal secretary Jerome Ochieng and CA director-general Francis Wangusi on Wednesday told MPs the proposal should be thought through properly before a decision is made. "A lot of investigations need to go into this before we make any decision to de-link. "Our opinion is that this needs to be thought through properly and see the pros and cons of either de-linking them or making them stay together," Mr. Ochieng said in response to demands by Narok Senator Ledama Ole Kina. Mr. Ole Kina pushed

the ICT, CBK and CA to explain why Safaricom cannot be split, saying money services should be treated as banking services. The Narok legislator said the use of national identification cards to carry out M-Pesa transactions has perpetuated identity theft by unscrupulous players. The senator claimed that the use of M-Pesa has led to loss of personal data, with lost Identification Cards being used to register Sim Cards. But Mr. Ochieng asked Senators to step back and reflect on the origin of M-Pesa. "Safaricom was originally telecommunications company but M-Pesa came as one of its innovations. The ICT Ministry appreciates such innovations. "If we split M-Pesa from Safaricom, will we be encouraging innovation or stifling it?" the PS asked. Dr. Njoroge said there are no risks to the economy with the current arrangement. "M-pesa or any other money in the mobile wallet does not sit in the balance sheet of the telcos. It is a separate trust that holds the money that is secure in a commercial bank," Dr. Njoroge said. "If the telco goes under or faces whatever risks, it is not significant risk in terms of financial sector operations. But there will be shocks, we can't always eliminate these risks just like a bank going under." Dr. Njoroge said. He said financial services are not linked with telcos but they are revenue sources for the telcos because they provide a service.

(July 10, 2019) businessdailyafrica.com



Luxembourg

Luxembourg's Department of Media, Telecommunications and Digital Policy has launched a call for projects involving 5G mobile communications or similar technologies, such as IoT or smart cities. The initiative aims to facilitate the emergence of innovative technologies and services that will leverage the extra

reliability, speed and capacity of the next-generation network, in line with the country's National 5G Strategy. Applications must reach the Department by the end of September. Projects should have a duration of between six and 24 months.

(July 2, 2019) telegeography.com



Malaysia

The Malaysian Communications and Multimedia Commission (MCMC) has launched a public inquiry into the allocation of spectrum bands for mobile broadband services, marking the first time the regulator has sought public feedback on spectrum allocation matters. The consultation will run until 30 August 2019 and will seek views from interested parties on the 700MHz, 2300MHz and 2600MHz frequency bands. The public inquiry document outlines some of the regulator's preliminary positions relating to the proposed optimum bandwidth for each spectrum band, the award mechanism (tender or direct conversion), timeline for the allocation process and broad principles to determine spectrum fees. According to the MCMC, these preliminary positions are based on a recent study it conducted and are designed to 'ensure optimized use of spectrum through effective spectrum allocation

strategies'. Specific questions related to each of the bands covered in the consultation have been posed by the watchdog, and include requests for views on: the optimum spectrum block per operator for assignment in both the 700MHz and 2300MHz bands; the proposed allocation plans for the 700MHz, 2300MHz and 2600MHz bands, particularly with reference to the award mechanism and timeline; and the appropriate range (per MHz) for spectrum allocation fees. In a press release announcing the start of the consultation, the MCMC noted: 'Optimizing the use of spectrum is important to ensure improved quality of service, wider coverage and better mobile broadband speeds. This is also in line with the aim of achieving the average speeds of 30Mbps in 98% of populated areas by 2023 under the National Fiberization and Connectivity Plan (NFCP).' (July 9, 2019) telegeography.com



Mexico

The Federal Telecommunications Institute (Instituto Federal de Telecomunicaciones, IFT) has confirmed that all fixed and mobile numbers will comprise ten digits from 3 August, following a nationwide standardization process. Currently, local telephone numbers in Mexico City, Monterrey and Guadalajara all have eight digits, while numbers elsewhere in the country comprise seven digits. To dial a fixed number from one city to another, customers must use the '01' domestic long-

distance prefix, as well as a two-or-three-digit city code. Going forward, the '01' prefix will be deleted and only the ten digits composed of the city code and the local number will be used. For calls to cellular numbers, the prefixes '044' and '045' will be eliminated, leaving a ten-digit number. The ten-digit national numbers are all unique, so there is no risk of a number being repeated anywhere in the country, the watchdog has clarified. (July 18, 2019) telegeography.com



Mozambique

Mozambique's Communications Regulatory Authority (ARECOM, also known as INCM) has granted a unified telecoms license to Movitel, the smallest of the country's three cellcos. The operator is now entitled to provide telecommunications services, 'regardless of the supporting technology, without prejudice to the need to obtain spectrum or numbering frequencies and other applicable rules,' ARECOM says. Movitel recently launched its first 4G networks covering parts of the capital city Maputo. Rival operators Vodacom and TMCEL were awarded unified licenses in July 2018 and May 2019, respectively.

(July 29, 2019) telegeography.com

The Communications Regulatory Authority (ARECOM, also known as INCM) has given the country's three cellcos ten days to ensure that they are fully compliant

with SIM registration guidelines. SIM registration has been compulsory in Mozambique since 2015, but authorities are now concerned that operators are not adhering to the regulations. According to a report from AllAfrica, the regulator's spokesperson Edmundo Manhica told television station STV: 'recently ARECOM has been receiving denunciations of the existence of unregistered SIM cards, or cards with irregular registration.' He added that unregistered SIM cards can assist SIM box fraud, where international calls are routed via a VoIP gateway to disguise them as local traffic to avoid higher international call charges. Mozambique is home to three mobile network operators – Vodacom, Mocambique Telecom (TMCEL) and Movitel – which between them served around 16.1 million active users at the end of March 2019.

(July 4, 2019) telegeography.com



Nigeria

In a bid to ensure that the telecoms ecosystem is regulated in tandem with the demand of the fourth industrial revolution (4IR), the Nigeria Communications Commission (NCC) has disclosed that it has embarked on a review of the National Numbering Plan. According to the executive vice chairman (EVC) of the NCC, Prof. Umar Garba Danbatta, during the 2019 Information Communications Technology and Telecommunications Expo (ICTEL Expo) in Lagos, based on recent developments in the global telecommunications industry such as M2M communications, the Internet of Things (IoT), OTT, and other services made possible by fourth generation networks and the futuristic 5G/6G technologies, the NCC has considered it important for the numbering plan in the country to be reviewed. Hear him, "As you may be aware, numbering plan is very key to telecommunications services for proper identification of devices and key services, and as such we are reviewing the existing NNP with the objective of developing a new NNP that is robust, futuristic and adaptable to address the numbering needs of the country, taking into account the country's growing population. Indeed, new services have emerged in the Nigerian digital space and there is need to integrate such services into the telecom environment." Represented by Ismail Adedigba, deputy director, consumer affairs, NCC, he stated that people were now interested in having all their communication services conveyed by a single device: "Services such as voice, data, short messaging services (SMS), television programmes, banking services, etc, are now being received via a handheld mobile device. This convergence of services requires upgrade and adopting the numbering plan to accommodate the new habits and culture. Hence, the commission is upgrading, expanding and re-designing the numbering system in order to ensure Nigeria derives the maximum

benefit from this scarce resource." He stated that the development of the new NNP would will help to provide numbers that would satisfy the needs of the projected 500 million Nigerians to be connected and about one billion globally-interconnected machines and devices by 2050; promote efficiency in the allocation of this scarce national resource; promote competition among service providers; eliminate the risk of running short of all categories of numbers; facilitate the introduction and development of new and innovative services and above all, encourage growth of the telecommunications sector, increase job creation and contribute to National gross domestic product (GDP), among others. Earlier, Mr. Babatunde Ruwase, president, Lagos Chamber of Commerce and Industry, said, to be actively involved and benefit from 4IR, Nigeria must narrow the gaps between technological potential and required policy framework as it had become more pertinent for the nation to focus on exploring innovative approaches to harness the benefits of technological advancements. He added that, to do this, the engagement of key stakeholders had never been more urgent than now. "Reaping the benefits of new technologies, while maintaining trust requires the collaborative effort and of government, business and other stakeholders in the society. "Recent technological advances have the potential to fundamentally redefine the economy and this presents ample opportunities that needs to be explored for the present generation and future generations." "In order to catch up with the fast-growing trends in ICT, the country needs to address necessary policy challenges in three key areas, e-commerce, data flows and new technologies," he said. He stressed that there was need to develop the digital skills of Nigerian youths in order for them to respond to the challenges posed by the digitization of the labor market, education and other spheres of life. (July 24, 2019) sunnewsonline.com



Peru

The Ministry of Transport and Communications (MTC) has opened a public consultation on a proposal to allow Azteca Communications, the operator of the National Fiber Optic Backbone (Red Dorsal Nacional de Fibra Optica or RDNFO), to offer end-user services. Under current rules the provider is prohibited from offering services to end users and is restricted to wholesale carrier services. The MTC notes, however, that the network has been underutilized and, as such, is not fulfilling its intended purpose of improving connectivity, lowering prices and bridging the digital divide. A study of the RDNFO last year found that the projected capacity demand for the network by June 2018 was 137Gbps, but actual usage was just 21Gbps. The analysis blamed inflexible pricing – which had not been changed since 2012, despite shifting market conditions – and the duplication of infrastructure by

private players for the underutilization of the backbone. The MTC went on to launch a comprehensive review of the project to determine the best way to remedy the situation. (July 12, 2019) telegeography.com

The Ministry of Transport and Communications (MTC) has published a draft proposal on utilizing spectrum in the 3400MHz-3800MHz range for mobile services, with a view to promoting the introduction and expansion of 5G technology. Stakeholders have 15 calendar days to submit comments on the proposals. The order also proposed an increase in spectrum caps, suggesting upper limits of 60MHz for combined sub-1GHz spectrum holdings, and 280MHz for middle band spectrum – covering the 1900MHz, 2100MHz, 2300MHz, 2500MHz and 3500MHz ranges.

(July 11, 2019) telegeography.com



Poland

A report from Poland suggests that the country's telecoms regulator, the Office of Electronic Communications (UKE), could miss its target to auction 3.6GHz spectrum for 5G mobile services by the middle of next year. The consultations on the 3.4GHz-3.8GHz license tender will not now begin until late September, with some doubt also surrounding the timeline for the award of 800MHz and 26GHz spectrum. UKE said in April this year that it hoped to be in a position to run the 3.6GHz auction in the first half of 2020, but the second half of the year is now looking to be a more likely timeframe, the report says. Delays are said to have been caused by recent work to amend the country's telecoms legislation plus disputes between UKE and the Ministry of Digitization.

(July 30, 2019) The Parkiet

The head of Poland's telecoms regulator has called on the government to ease restrictions on base station radiation levels to encourage operators to deploy 5G networks. Marcin Cichy of the Office of Electronic Communications (Urząd Komunikacji Elektronicznej, UKE) told Reuters that legislation must be passed to reduce limits on radiation emissions to allow each base station to cover a wider area, otherwise telcos will find it too expensive to roll out effective networks. Poland has some of the tightest restrictions on base station radiation levels in the EU. Cichy said: 'If we want to meet the EU goal of launching 5G in Poland by the end of 2020, there are a few months left to convince investment funds and shareholders that this problem will be solved.'

(July 22, 2019) reuters.com



Portugal

The National Communications Authority (Anacom) said it signed protocols with seven consumer dispute arbitration centers, in an attempt to make the process of resolving disputes between consumers and communications operators simpler and faster. This is relevant in a sector characterized by a high level of conflict and a high number of consumer complaints,

Anacom said. For the regulator, the consumer dispute arbitration centers must be swift and have adequate means to respond to consumer requests. Significantly, the funding to be made available is conditional on the achievement of results.

(July 28, 2019) telecompaper.com



Romania

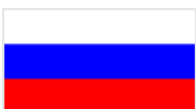
consultation on the conditions for the auction of licenses in the 700MHz, 800MHz, 1500MHz, 2600MHz and 3400MHz-3800MHz frequency bands. The consultation concerns the auction's tender specification, license fees, the draft decision setting the spectrum usage tariff, and the draft decision for organizing the competitive selection procedure for the licenses. Interested parties are invited to submit their views before 2 September 2019.

(July 30, 2019) telegeography.com

The Ministry of Communications and Information Society (MCSI) has initiated a draft emergency

ordinance (OUG) in order to enable the planned 5G spectrum auction to proceed later this year. The draft OUG is aimed at correcting the problems posed to the telecoms sector by the controversial Ordinance 114 (OUG 114/2018), which has been criticized by the National Authority for Management and Regulation in Communications (ANCOM). Last month the regulator warned that the 5G auction may not proceed later this year as planned, unless provisions related to the telecoms industry contained in OUG 114 are repealed, stating that the ordinance would lead to unnecessarily high asking prices for spectrum licenses.

(July 2, 2019) HotNews



Russia

The state corporation Rostec and national telco Rostelecom have entered into a tripartite agreement with the government on developing a '5G roadmap'. Rostec is responsible for details regarding development of Russian manufactured 5G technologies and their promotion in the market, while Rostelecom takes responsibility for sections of the roadmap covering 5G infrastructure deployment and stimulating 5G

market demand. Rostelecom and Rostec will jointly develop roadmap sections concerning 5G frequencies and technical requirements including hardware and software, characteristics of consumer end-user technological solutions, as well as estimates of the required volumes of domestically produced equipment.

(July 16, 2019) ComNews



Slovakia

The Office for Regulation of Electronic Communications & Postal Services (RU) has announced that it has begun the process of awarding 5G-capable wireless spectrum in the 700MHz band. Frequencies in the 694MHz-790MHz range will be awarded by 30 June 2020 in accordance with EU guidelines, though work is still ongoing to transfer digital TV broadcasts out of the band. A number of operators in Slovakia already hold

spectrum in the 3.6GHz band which is suitable for 5G services, so the regulator says firms do not necessarily have to wait for 700MHz frequencies to be released to launch 5G networks. Just last week cellco 4ka announced plans for a live trial of 5G technology using the 3.5GHz-3.7GHz band.

(July 8, 2019) telegeography.com



Slovenia

The Slovenian fixed and mobile operator Telemach has won a legal appeal which will allow it to keep 2x5MHz of spectrum in the 2100MHz band which it had been ordered to relinquish by the country's telecoms regulator. As reported by CommsUpdate earlier this month, the Agency for Communications Networks & Services (Agencija za komunikacijska omrežja in storitve, AKOS) wanted to revoke the spectrum on 30 September and then offer it for sale. The frequencies

were originally awarded free of charge in 2008 to Tusmobil, a cellular operator which was acquired by Telemach in 2014. Slovenia's other cellcos challenged the decision to hand the frequencies to Tusmobil at no cost when they themselves had paid for 3G licenses which included 2100MHz spectrum, but Tusmobil, and then Telemach, were permitted to retain the license.

(July 19, 2019) telegeography.com



South Africa

The telecoms regulator ICASA has issued an invitation for a tender to evaluate high-demand spectrum bands ahead of the planned assignment of the frequencies. The watchdog said: 'ICASA wishes to appoint consultants to provide consultancy services to assist it with determination of the fair economic value of the IMT700, IMT800, IMT2300, IMT2600 and IMT3500 radio frequency spectrum.' ICASA will hold a briefing for parties interested in bidding for the consultancy tender on 6 August, while the deadline for submitting bids is set as 20 August. The development comes after new telecoms minister Stella Ndabeni-Abrahams released a policy direction to ICASA on the assignment of new frequencies, asking that preferential access to spectrum

in the 700MHz, 800MHz and 2600MHz bands is given to a new wholesale open-access network (WOAN) in an effort to increase competition in South Africa's mobile telecoms market. Although the new policy envisages that only a fraction of the new airwaves be awarded to the WOAN (previous government plans stated that all frequencies should be awarded to it), successful bidders in the spectrum auction have to commit to buying at least 30% of their national capacity from the WOAN. In addition, Ndabeni-Abrahams said that the assignment of spectrum suitable for 5G networks will be undertaken after the ITU's Radiocommunication Conference (WRC-19) at the end of the year.

(July 30, 2019) telegeography.com



Tanzania

The government of Tanzania has allowed Airtel Tanzania to defer its listing on the Dar es Salaam Stock Exchange (DSE), reports The East African. In June 2016 an amendment to the Electronic and Postal Communications Act of 2010 made it a legal requirement for the country's telecoms operators to float 25% of their shares on the DSE, but Airtel has received a waiver of the listing requirement pursuant to settlement arrangements agreed with the government last month. Indian telecoms firm Bharti Airtel agreed

to pay TZS60 billion (USD26 million) over a five-year period to resolve a dispute with the Tanzanian government over the ownership of its local mobile unit. Bharti Airtel also cancelled USD407 million of debt owed to it by Airtel Tanzania as part of the settlement. In return, the firm agreed to hand over part of its stake to reduce its shareholding from 60% to 51%, with state ownership rising from 40% to 49%.

(July 1, 2019) telegeography.com



Uganda

The Uganda Communications Commission (UCC) has ordered local cellco Airtel to provide proof of its 4G network coverage and download speeds. According to a report, the regulator says it has received consumer complaints that Airtel's 4G network – which is advertised as 'nationwide' – is not present across the country, while data transmission rates are lower than expected. The UCC has carried out preliminary testing in the cities of Kampala, Mukono, Entebbe and Jinja and found that LTE-based services were available in over 90% of areas sampled. Its main concern, however, was with the data rates, which it found to be 'much lower than what is internationally expected for a countrywide 4G network service'. Airtel has therefore been asked by the UCC to: show technical evidence to prove that it provides the claimed nationwide 4G service across Uganda 'in terms of performance and geographical coverage'; and 'show cause why regulatory sanction(s) should not be instituted ... for misrepresenting to its customers and the general public about its network quality and speeds'. Indian-owned Airtel Uganda announced the nationwide availability of 4G services in February this year, claiming to have 1,632 LTE-enabled sites connected by over 3,900km of fiber, covering 95.9% of the population.

(July 23, 2019) Techjaja

The government of Uganda has been criticized for proposed changes to regulations which could increase state control over internet access. A report cites a communication from privately-run Uganda Internet

eXchange Point (UIXP), says that draft regulations from the Uganda Communications Commission (UCC) will require all local ISPs to channel traffic through a Designated National Internet Exchange Point (DNIXP), which will be controlled by the government. Furthermore, the report says that plans to create a single national backbone network run by the state will also increase government influence, effectively nationalizing communications infrastructure. With internet blackouts having accompanied presidential and parliamentary elections in 2016, some critics say the current proposals are politically motivated ahead of the next planned vote in 2021, while they will also create a virtual government monopoly which has been labelled as 'counter-productive'. The UCC has defended its stance. Fred Otunu, director of corporate affairs at the regulator, says: 'It is not about nationalizing but aims to avoid duplication and government playing a central role in providing infrastructure. The issue of the national broadband policy should be understood in the same context like we talk about other infrastructure, whether roads, airports and so forth. ICT had been thought that it should be left to the private sector, but the world over is saying this is a sector that the government should have a central interest in. If government is providing road infrastructure, why shouldn't government provide ICT infrastructure because this is a cyber-super highway.' The wireless and fixed broadband penetration rates in Uganda are some way below regional averages.

(July 2, 2019) The Daily Monitor



Ukraine

Ukraine's new President, Volodymyr Zelensky, has signed a decree on the redistribution of mobile frequencies in the 900MHz GSM and 800MHz-850MHz CDMA bands for 3G/4G LTE usage, with the aim of narrowing the digital divide between cities and rural areas. The decree calls for the 'release' of the 790MHz-862MHz band for 3G/4G LTE by 1 August 2019, followed by the 880MHz-915MHz/925MHz-960MHz band by 1 October 2019, under an action plan supposedly agreed with telecoms regulator the NCCIR – although the presidential order did not specify any mechanism for the redistribution. The decree has unclear consequences for Ukraine's leading CDMA operator Intertelecom which owns part of the 800MHz-850MHz spectrum in question and uses it on a national basis for its 3G EV-DO-based services, whilst smaller CDMA player PEOPLEnet also uses the frequencies in a handful of areas. Intertelecom and GSM operators Kyivstar, Vodafone Ukraine and Lifecell are involved in an ongoing process overseen by the NCCIR to redistribute the 800MHz-900MHz bands amongst themselves under technology-neutral licences. Kyivstar owns the largest share of GSM-900 spectrum.

(July 12, 2019) Liga.net

The government has issued a decree (No. 547 of 26 June 2019) which permits fixed operators to provide commercial fixed-wireless telephony services using a mixture of their own fixed infrastructure and cellular mobile networks for local access connectivity. The move will immediately benefit nationwide fixed line operator Ukrtelecom, which launched a pilot service in August 2018 connecting fixed telephony users over its 3G cellular subsidiary TriMob's network. Ukrtelecom users are issued with specialized fixed handsets and the same tariff plans as regular fixed telephony subscribers, whilst telecoms regulator the NCCIR recently adopted amendments to regulations on numbering resources allowing fixed operators to provide convergent services. The joint Ukrtelecom/TriMob fixed-wireless service has multiple benefits for the group: combating rampant copper theft in areas across the country and enabling Ukrtelecom to shut down uneconomical sections of its fixed infrastructure, whilst representing an alternative way to gain value from the struggling mobile division, which the group previously failed to divest. The Liga.net report surmises that TriMob's national mobile roaming agreement with larger cellco Vodafone Ukraine may also be utilized to

extend coverage of converged services.

(July 3, 2019) Liga.net

Ukrainian mobile operators Kyivstar and Intertelecom, the country's dominant holders of 900MHz GSM and 800MHz CDMA frequencies, respectively, have been given a month to submit a statement to the telecoms

regulator NCCIR regarding the redistribution of the bands for 4G usage, a process which will involve both companies reducing their allocations, Liga.net reports. Other Ukrainian operators must also submit applications for 3G/4G usage of the 900MHz and 800MHz bands.

(July 3, 2019) telegeography.com



United Kingdom

The flurry of activity in the UK mobile market continues. Now the regulator is to open airwaves previously reserved for certain parties and will allow different groups to access airwaves licensed to mobile companies that are not being used by them. Under the new sharing framework, these airwaves will be available for local use by a range of other parties – such as small businesses or start-ups. Ofcom is adding safeguards to ensure that these users do not cause interference to other users. The new approach could pave the way for a number of new services. For example:

- Connected factories could use a reliable, high-speed wireless networks to connect, control and monitor machinery.
- Farmers could also set up their own local network across large sites, improving communications between people and connected agricultural devices that monitor livestock and crops, irrigation systems and smart tractors.
- Business parks could set up their own tailored, secure communications networks without needing to relying on mobile and broadband coverage.
- Holiday parks could connect visitors during their stay by setting up local mobile broadband networks.

Other possibilities include shopping centers, transport hubs, such as ports, and companies in the logistics industry. The sharing approach could also help small communities – mostly in rural areas – where national mobile networks have yet to reach. Philip Marnick, Spectrum Group Director at Ofcom, said, "Wireless spectrum is a valuable, finite resource, so it's vital we use it efficiently. "Our new sharing approach will help more people access airwaves to create local networks around the UK. The benefits of this innovation could extend across our economy, from farms to factories, as well as supporting new technology firms." Ofcom is opening up spectrum in the 3.8-4.2 GHz, 1800 MHz1 and 2300 MHz2 bands, available through local licenses. People can apply to Ofcom for coordinated access to these bands on a first-come, first-served basis and will pay a license fee to cover Ofcom's cost of issuing the license. The regulator will align the authorization for existing licensees in the 1800MHz shared spectrum with the authorization approach for the newly released shared access bands. It is introducing a new way to access spectrum that is already licensed to mobile operators but which is not being used or planned for use

in a particular area within the next three years. People can apply to Ofcom for a license and, if the application is successful, will pay £950 per license, which allows them to use the spectrum for three years unless they ask for a different period and this can be agreed with the existing licensees. Finally, Ofcom has added the 24.25-26.5GHz band to the spectrum-sharing framework for indoor deployment only. This is part of the 26GHz band, identified as a European pioneer 5G band, and could provide additional spectrum for new applications. Joe Barrett, President of the GSA (the Global mobile Suppliers Association), said Ofcom's decision is "a significant and welcome step in the UK, and is one that is being taken by more and more regulators around the world. "5G connectivity is a key pillar in enabling Industry 4.0 and so this opening up of the airwaves is to be welcomed as an important move towards ensuring sufficient spectrum and the favorable regulatory conditions required to enable vertical industries such as smart manufacturing, mining, hospitals and agriculture to take advantage of the 5G opportunity." The GSA outlined four options for providing capacity for industries, businesses and communities looking to benefit from the mobile or wireless broadband networks:

- using mobile network operators' services within dedicated network slices,
- leasing spectrum from mobile operators
- local licensing of spectrum (for example, through geographical sharing) and
- License-exempt bands.

Barrett concluded, "Ultimately...there should be sufficient spectrum and adequate regulatory conditions to enable the integration of vertical industries both through 5G public mobile networks and locally-operated private networks. "We encourage spectrum regulators to further investigate details of these options to ensure timely availability and balance with national and local use of spectrum, taking into account equipment availability timelines and spectrum options within global tuning ranges supported by the 5G ecosystem."

(July 29, 2019) mobileurope.co.uk

British telecom regulator Ofcom has launched a consultation on proposals to support a trial being undertaken by BT's infrastructure unit Openreach,

in which it aims to migrate customers to full fiber – and then withdraw copper services entirely. The trial is scheduled to take place in Salisbury, ahead of which Openreach has requested changes to existing regulation to facilitate the early stages of the trial. The infrastructure operator is understood to be targeting the withdrawal of copper services there by the end 2022. Ofcom's consultation sets out its proposals in relation to these requested changes, with the regulator stating that it 'recognizes the importance of supporting a smooth transition to full fiber networks while ensuring vulnerable consumers are protected'. Further, the watchdog noted that it recognized that further changes will be required to support Openreach's longer term plans to withdraw copper services in Salisbury, and in future around the country. As such, it said it plans to consider such matters as part of its single Fixed Telecoms Market Review, on which it will consult at the end of this year.

(July 25, 2019) telegeography.com

The telecoms regulator Ofcom has confirmed its final decisions following a review of both the physical infrastructure market (access to Openreach's ducts and poles) and connections that are used by business broadband networks. As such, the watchdog has published a statement setting out how it intends to regulate these areas for the period to April 2021, noting that, having submitted a draft of its decisions to the EC for consultation last month, the European body had made comments on this but suggested 'no material changes'. As a result of Ofcom's review of the physical infrastructure market, the watchdog has confirmed that companies laying fiber cables for broadband and mobile networks will benefit from greater access to Openreach's existing infrastructure of telegraph poles and underground tunnels. While Openreach

– BT's network unit – is already required to let rival companies use its telegraph poles and underground ducts to lay their own fiber networks under rules set by Ofcom last year, until now such access has only been available to companies focusing on residential and small business customers. Under the new regulatory decision firms serving large businesses, as well as companies laying high speed lines that support mobile and broadband networks, will have access to the Openreach infrastructure. Meanwhile, on the back of Ofcom's review of leased lines, the regulator has said that in areas of the country where Openreach faces limited competition from other leased line networks it will continue to regulate what it can charge providers to use these services, with a view to 'keeping prices flat'. Furthermore, strict requirements will also be imposed on Openreach for repairs and installations, it said. In the 'many' areas where there are no rival networks present at Openreach's exchanges, Ofcom has determined that the operator will be required to give competitors physical access to its fiber-optic cables, at a price that reflects its costs. Introducing dark fiber in only these areas will, Ofcom claims, 'significantly reduce the cost for mobile and broadband operators to connect their networks, without undermining their incentives to lay new, competing fiber cables where it is economic to do so'. Looking to the future, Ofcom has also confirmed that from 2021 it plans to regulate business and residential markets together, so that companies investing in full fiber can offer a range of services over a common underlying network. To that end, the regulator has said that in December 2019 it plans to begin consulting on detailed proposals for this single wholesale fixed telecoms market review for the period to 2026.

(July 1, 2019) telegeography.com



United States

The Federal Communications Commission announced that it had authorized more than \$563 million in funding to expand rural broadband services in 24 states. Internet service providers in those states will be building out broadband services in the underserved areas of those states over the next 10 years, according to a story by Ars Technica. The ISPs will have access to the latest funding round this month. "High-speed internet provides access to opportunity in the 21st century, and the FCC's top priority is closing the digital divide so that all Americans can fully participate in our connected society," FCC Chairman Ajit Pai said in a statement. "Today's authorization of funding is the largest yet from the auction, nearly double the amount authorized in the first two rounds nationwide, and serving over twice as many rural homes and businesses." The ISPs that receive funding need to build out to 40% of the

required homes and businesses within three years, and an additional 20% each year until finishing the build out at the end of the sixth year, according to Ars Technica. The money is being distributed primarily to smaller ISPs in Alabama, Arkansas, California, Colorado, Delaware, Illinois, Indiana, Iowa, Kansas, Kentucky, Maryland, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New York, North Carolina, North Dakota, Ohio, Oklahoma, Texas, and Virginia. Verizon, which is getting \$18.5 million to serve 7,767 homes and businesses in New York, is the biggest internet provider on the list, according to Ars Technica. Monday was the FCC's third round of funding for rural broadband as part of last year's Connect America Fund Phase II auction, which granted \$1.488 billion to support over 700,000 homes and businesses. The FCC previously authorized funding in May and June to support connectivity in

around 100,000 homes and businesses. The FCC is slated to authorize more funding in the coming months as it approves more applications from the auction's winning bidders.

(July 17, 2019) fiercetelecom.com

The Federal Communications Commission (FCC) voted to modernize the outdated regulatory framework for the 2.5GHz band to make the spectrum available for advanced wireless services, including 5G. According to the regulator, the 2.5GHz band – which it says is the single largest band of contiguous spectrum below 3GHz – offers favorable coverage and capacity characteristics for next-generation mobile services. As per the FCC media statement, the new order gives incumbent entities more flexibility in how they use this spectrum and provides opportunities for other entities, including Tribal Nations, to access unused spectrum in this band. In addition, the order eliminates restrictions on the types of entities that can hold licenses as well as educational use requirements (see below), while

preserving incumbent licensees' private contractual arrangements and provisions in existing leases. Further, the order removes limitations on leases entered into on a going-forward basis under the FCC's secondary markets rules, which will create incentives to roll out in rural areas. Additionally, the order establishes a priority filing window for rural Tribal Nations to provide them with an opportunity to obtain unassigned 2.5GHz spectrum to address the communications needs of their communities. The remaining unassigned spectrum will be available for commercial use via a competitive bidding process. To maximize participation by small wireless service providers, the auction will allow for small business, rural service provider and Tribal lands bidding credits. The 2.5GHz band is currently reserved for Educational Broadband Service (EBS) use. The band is understood to comprise 114MHz of spectrum, which has been earmarked for educational TV use since 1995 but remains unused in many rural areas. 📍

(July 13, 2019) telegeography.com

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**5G is available
at the holy
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5G

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