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SAMENA TRENDS

FOR SAMENA TELECOMMUNICATIONS COUNCIL'S MEMBERS

BUILDING DIGITAL ECONOMIES

THIS MONTH

DATA USAGE LANDSCAPE AMIDST COVID-19

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Data Usage Landscape amidst COVID-19

Industry-wide change catalyzed by COVID-19 merits that new data-centric strategies be adopted to accommodate high data influxes being experienced by networks all around the world. Streaming content services, the use of social media outlets to stay informed of changes in the environs, video conferencing to deliver academic instruction and to remain connected on business matters, have increased manifold over the past two quarters of the year 2020. Data traffic implications due to these trends are significant, indicating that data-usage landscape as abruptly transformed in a matter of months.

COVID-19 has accelerated digital transformation, causing reliance on network capabilities and digital infrastructure to be felt, physically. In the prevailing situation, the way we now access and use the Internet has so dramatically changed. It has now been proven that the presence of digital infrastructure is indeed critical to our operation as a society, which is increasingly becoming data-driven by each passing day.

As is now being discussed across the Industry, the COVID-19 crisis has reinforced the role of and the need for more data centers across the markets and cross-border data flows across nations as a necessary part of the envisioned (and inevitable) digital transformation; and cloud, leveraging big data and artificial intelligence, has become among the key defining enablers for the next industry transformation wave. Moreover, as our Industry and its vertical industry segments and enterprise customers learn to better exploit the power of ICTs, to reset themselves on the path to growth and sustainability, numerous shared challenges in the new journey into the world of digital connectivity and data are expected to emerge

in the need for and the use of data. Here, data analytics has a tremendous scope.

It is now more important than ever before that cybersecurity take a central role in our strategy to not only protect corporate networks, or digital infrastructure from intrusion, or ward off against other forms of manipulation of systems or humans through digital means, but also to protect the general public and businesses against threats, including infodemics of both misinformation and cybercrime.

Ultimately, all data usage trends and data protection measures to make data access and use efficient and meaningful, will have a direct impact on our collective ability to make progress on the Connect 2030 agenda and to fulfill the Sustainable Development Goals (SDGs). These are matters of importance to companies, governments, and institutions alike. Through state-level incentivization of data protection and cybersecurity implementation, many co-related issues can be addressed, such as the online safety of young citizens and children, and proliferation of digital services in the financial, education, and medical sectors, and sustainability issues for the enterprise sector.

Implementing well-defined data-oriented strategies requires both strengthening cooperation and achieving better coordination on digital governance systems, as well as implementing the right technology solutions. Fulfillment of the Connect 2030 agenda, or any national ICT vision for that matter, likewise, requires that data usage trends of the COVID-19 and 5G era be kept in mind, and that focus be given to fostering relevance and digital trust in the use of data.

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

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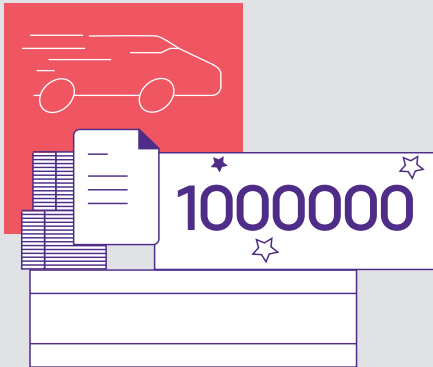
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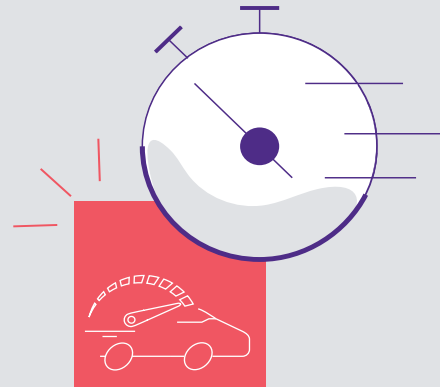
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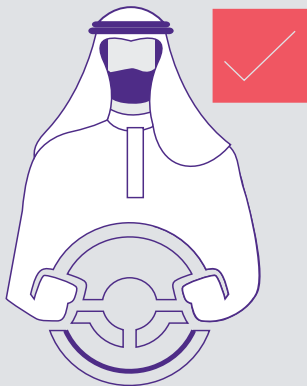
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Policy, Regulation, and Governance Considerations in the Wake of 5G Adoption

More than half of the world is now fully connected online and has begun to participate in the global digital economy. COVID-19 has impacted this connectedness even more. However, there is a need to formulate effective regulatory approaches in order to achieve more "meaningful connectivity" and "digital inclusion" across each stratum of society. This requires promoting relevance of digital connectivity and conducting capacity-building of those using the Internet only to a limited scale, or not using at all. Global benefits of digital infrastructure and broadband availability and access have been proven beyond doubt and well-recognized in the wake of the current health crisis. Moreover, the enabling role of broadband in the efforts to achieve the UN Sustainable Development Goals (SDGs) has been fully established, underpinned by national digital transformation drives to uplift socio-economics of countries previously dependent majorly on natural resources or labor force.

Given the ever-growing demand for mobile data and data-driven technologies and innovation over the years, and since the start of the year 2020 particularly, a fundamental overhaul of mobile service business models, offerings and technologies is being achieved. This requires that policy, regulatory, business, and infrastructure development and infrastructure utilization frameworks be overhauled as well. To meet data-driven needs of the Coronavirus pandemic times, for instance, a key advantage that 5G carries is that, rather than relying on a number of technologies and devices for our communication needs, it is able to singly offer almost an entire range of desired capabilities, services, and efficiencies needed in modern-day, and increasingly remotely-required, communications.

The need for new ICT policies is corroborated by the fundamental need for ensuring that changes in the economic, social and technical conditions of a given market are effectively taken into account to reflect on and execute national development objectives. In the case of ICT development, a sound national ICT policy sets forth a clear vision of the future, maps out key goals, and defines strategies to implement that vision. Effectively, ICT policies help harmonize various strategic aspects in the implementation process, define the roles of each stakeholder and decision-maker, and identify ambitions, reaching which requires active collaboration among concerned stakeholders, who act according to certain, mutually agreed recommendations and considerations.

Fortunately, ICT regulatory authorities appear ready to embrace new changes and recognize the imperative of continuing to exercise their mandated role while still encouraging private-sector leadership and be seen as the promoters of innovation, sustainability, and fulfillment of national ICT visions. This, in significant part, has been the result of natural evolution of the Industry, national ICT visions set forth as a matter of necessity for nation-building and international consensus on creating a sustainable ICT-driven future for all.

Areas where policy-makers and regulatory authorities need to prioritize and draw timely focus, in order to drive broadband growth today and to effectively tread the evolving regulatory landscape, include:

1. Updating ICT regulations and market approaches for sustainability
2. Devising new regulatory strategies and frameworks for spectrum allocation and licensing
3. Effectively utilizing Universal Service Funds to develop broadband
4. Revamping taxation regimes, industry fees, and duties
5. Dramatically reducing the cost of broadband delivery by Operators and of use by end-users
6. Fostering locally relevant content creation and local hosting
7. Taking steps to address the need for cross-border data flows for Operators
8. Implementing e-Government initiatives, with incentivization for relevant digital services
9. Monitoring and collecting meaningful ICT data for further planning
10. Building human digital capacity and skills
11. Applying open access approaches to infrastructure in collaboration with Operators (as may be desirable in a given market)
12. Fostering digital innovation by taking steps to protect intellectual property (IP) rights and ICT talent
13. Developing IoT & Smart City policy and implementation frameworks
14. Promoting advanced market commitments for rural broadband access
15. Improving right-of-way regulations
16. Encouraging e-Business and entrepreneurship
17. Undertaking public consultations on policy & regulation to invite private-sector viewpoints
18. Pursuing and enabling pubic-private partnerships to overcome connectivity and funding challenges

² Adapted from the Recommendations of the Broadband Commission from the years 2012 to 2018

In the larger interest of the digital economy, investing in 5G will open opportunities to capture value from new 5G use-cases and widespread adoption of the Internet of Things (IoT). At the same time, nonetheless, Operators are keenly aware that they'll have to increase their infrastructure investments in this technology. Both the private sector and the public sector decision-makers thus need to be aligned on strengthening three pillars for supporting efforts to materialize 5G in a regionally harmonized and timely manner. These include:

Subtantiating new large investments	Preventing digital divide from increasing	Overcoming uncertainty through objective dialogue
• Create commercial cases for 5G, including implementation scenarios in the wake of COVID-19 • Reduce cost of deployment • New funding models to ensure resilient connectivity and affordable access • Enable strong backhaul support	• Incentivize out-of-city investments in 5G network • Early on, multi-stakeholder approach for developing 5G should be exercised, i.e., via PPP models	• While making existing 4G investment to best use, open mindedness in addressing 5G development hurdles is required • Accelerate robust use-case development for 5G in parallel to existing 4G networks and 4G use-cases

In today's evolving digital economy, and in view of the global efforts to exit from COVID-19 as smoothly and as soon as possible, digital infrastructure and broadband connectivity are more essential to surviving and thriving than could be previously imagined. In the new digital

Post COVID-19, socio-economic revival all around the world will be greatly propelled by advanced broadband and integrated digital communications capabilities, and thus attention to policy, regulatory, and governance challenges should be among the top priorities for the industry decision-makers to address.

era, where increasing interdependence and fast pace of change are the new realities, technological advances driven by the Internet greatly rely on the low-cost availability of broadband connectivity. Thus laying the foundation of an inclusive digital society, and digital economy, requires that broadband availability and resilient connectivity be given priority, and that attention be given to key areas within the ICT policy framework of any given nation aspiring to transform itself and materialize a knowledge economy, so that investment, innovation, sustainability, and beneficial use of ICTs can be achieved.

Post COVID-19, socio-economic revival all around the world will be greatly propelled by advanced broadband and integrated digital communications capabilities, and thus attention to policy, regulatory, and governance challenges should be among the top priorities for the industry decision-makers to address. Doing so may also help accelerate digital cooperation in implementing 5G in a harmonized manner.

Global policy development for new digital technologies is a formidable challenge, and thus requires extensive policy, regulation, and governance-centric dialogue among the stakeholders, which should help generate both nation-specific as well as collective, global benefits. Furthermore, as any given technology transcends national and cultural or political bounds, the challenge to embed it in policy and regulatory frameworks and to achieve governance is far more difficult than localized, indigenously existing technologies. Factors such as understanding of the technology, perceived impact on the society and business environment, investment requirements, beneficiaries and the affected, and long term alignment with national priorities, all determine how well policy and regulatory frameworks could cater to the timely deployment and proliferation of such technologies to help advance 5G around the region and beyond.

SAMENA COUNCIL ACTIVITY

China Mobile International Joins SAMENA Council to Extend Cooperation on Industry Development Matters

SAMENA Telecommunications Council has announced that China Mobile International Limited (CMI), the international arm of China Mobile, which is the world's largest operator in terms of mobile network size and customer base, has joined its membership to take active part in addressing issues surrounding digital communications, as business sustainability challenges and advanced technologies take center stage in Telecom Operators' strategy and evolving role within the world's digital economy.

Expressing his warm welcome to CMI on having joined SAMENA Council's community of Telecom Operators from and operating in the SA-ME-NA (South Asia - Middle East - North Africa) region, **Bocar BA, CEO & Board Member stated,** "CMI's experience in integrated digital communications is world-class and its ability to address digital communications needs of the world's largest subscriber base is astounding. SAMENA Council and CMI recognize the importance of the SA-ME-NA region as a high-potential market for business growth and for fulfilling the digital development goals. I warmly welcome the CMI team on joining SAMENA Council, and we look forward to a close association that can benefit CMI in a strategic manner, while strengthening SAMENA Council's advocacy work on behalf of Telecom Operators."

"China Mobile International is very pleased to join SAMENA Council, which is an excellent community allowing us to communicate and exchange information with the partners in the SA-ME-NA region. Our global network resources and continuous investments in the region, and our high quality and competitive services would facilitate our partners to tackle the challenges in the ever-changing world, to help contribute to the digital economy of the region", stated **Alex Y.S. LEE, Managing Director, China Mobile International Middle East.**

CMI is a wholly-owned subsidiary of China Mobile, mainly responsible for the operation of China Mobile's international business. In order to provide better services to meet the growing demand in the international telecommunications market, China Mobile established a subsidiary, CMI, in December 2010. CMI currently has 70 terrestrial and submarine cable resources worldwide, with a total international transmission bandwidth of over 70T, and a total of 170+ POPs. With Hong Kong, China as its launchpad, CMI has significantly accelerated global IDC development, creating a strong network for data centre cloudification.

Leveraging the strong support by China Mobile, CMI is a trusted partner that provides comprehensive international telecom services and solutions to international carriers, enterprises, and mobile users. Headquartered in Hong Kong, China, CMI has expanded its footprint in 36 countries and regions.

SAMENA Council believes policies and co-operative approaches can help develop new methods and models of engagement, help frame future-friendly regulations and policies, and cross-stakeholder involvement should be fostered to incentivize and influence more investment in digital development. The digital ecosystem's sustainability challenges and the need for making better use of digital technologies, therefore, demand that Telecom Operators, across the regions, collectively communicate on common issues and needs, while benefitting from SAMENA Council's advocacy support in building communication bridges with regional governments.

From COVID-19 to CONNECT-2030: Celebrating the World Telecommunication & Information Society Day with ICTs for the Sustainable Development Goals

COVID-19 has challenged both the private and the public sectors in multiple ways, and various critical sectors of the economy have come under unprecedented pressures to perform. Amidst this unrelenting challenge, ICTs hold great hopes for driving recovery and helping us move forward albeit with new approaches, which will also be essential for the fulfillment of the Sustainable Development Goals (SDGs). Every year since 1969, the world has been celebrating the World Telecommunication and Information Society Day. However, the year 2020 represents a unique opportunity for the ITU membership, including SAMENA Telecommunications Council and its Members, to recognize and commemorate the contributions of the private sector, digital networks and ICTs in the advancement of the Information

Society. It is also time to proactively participate in the "Connect 2030 Agenda for Global Telecommunication/ICT Development" (PP-18 Resolution 200, Rev. Dubai, 2018) now linked to the Strategic Plan of the ITU for the period 2020-2023, specifically focusing on how technological advances in the coming decade will contribute to accelerate the achievement of the Sustainable Development Goals (SDGs) of the UN 2030 Agenda for Sustainable Development. The 2030 Agenda for Sustainable Development and 17 Sustainable Development Goals (SDGs), adopted by UNGA Resolution A/70/1, collectively, recognize that the spread of information and communications technology and global interconnectedness has tremendous potential to accelerate human progress and to bridge the digital

divide. Amidst the current Corona-virus crisis, the availability of ICT infrastructure has proven its necessity beyond any doubt, with Telecom Operators taking several measures at the network and customer-care levels, expanding not only radio network capacities to accommodate increasing data traffic, but also offering free-of-cost benefits to customers, including free data bundles, providing free access to educational platforms online, and effectively reducing financial pressures on households struggling to cope with the current situation. Regulators too have adapted to the necessities dictated by COVID-19 and have been quick in exercising their enabler's role by allocating additional spectrum resources to Operators and incentivizing out-of-box thinking. The prevailing COVID-19 crisis

Bocar BA
CEO - SAMENA Telecommunications Council
Commissioner - UN Broadband Commission for Sustainable Development

situation is thus serving as a catalyst for bringing about a paradigm shift in how we use ICTs for provisioning healthcare services; delivering education; and how the world's private and public-sectors cooperate, to help synergize collaboration in digital transformation through broadband connectivity, digitization, and innovation at an accelerated pace. In acknowledgement of the necessity to see the integral role of ICTs in managing the current situation and to revise our vision and strategy to fulfill SDGs for the next decade, the efforts led by initiatives such as the UN Secretary-General's High-level Panel on Digital Cooperation and of the UN Broadband Commission for Sustainable Development evidence commitment in putting digital cooperation into physical action, for instance, through an emergency "Agenda for Action"; to keep economies and societies working. This is in absolute accordance with the defined SDGs for the next decade. Each Commissioner in the Broadband Commission is tasked to drive meaningful collaboration and to assist in defining actionable steps based on the three pillars of resilient connectivity, affordable access, and safe use of online services

for informed and educated societies, to mitigate the impact of the COVID-19 pandemic; ease the immediate adverse impacts for economies and societies; and to help secure a sustainable next decade for ICTs and digital innovation. SAMENA Council, represented by Commissioner Bocar BA, acting on behalf of the Council's Telecom Operator Members, is advocating for the UN Broadband Commission's Agenda for Action and is inviting the Industry to join efforts to leverage the power of broadband for more effective emergency response, to promote faster and better overall recovery, connecting the unconnected, and to help put the world's economic and environmental health on a path to improvement and sustainability. In view of our immediate needs to get out of this unforeseen global crisis and with Connect 2030 Agenda in mind, SAMENA Council deems it necessary that industry decision-makers take immediate steps to:

1. promote that ICT infrastructure is fundamental to the survivability of the nations and thus positive policies must be framed as soon as possible to incubate innovation to accelerate digital infrastructure development and

transformation;

2. define clear digital blueprints, to achieve common consensus among policy-makers and ICT ecosystem players;

3. align national ICT visions with global trends and agreed ICT development objectives, by formulating clear telecommunications industry plans and corresponding digitization promotion policies, which should also help enhance competitiveness within the telecommunications industry;

4. encourage 5G+ industry applications to develop a full-fledged 5G ecosystem, by ensuring that platforms and facilities are provided to new comers and that market-entry barriers are reduced for new investors; and

5. identify and foster ICT talent, and put in practice talent management approaches.

COVID-19 is an opportunity to see the Connect 2030 Agenda in new light, and to develop an ICT + Collaboration culture not only to deal with natural disasters and similar crisis situations in the future, but to build a sustainable new decade for the world and its Digital Economy through ICTs.

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MEMBERS NEWS

The Kingdom's Infrastructure Investments Helped It Contain the Repercussions of the Corona Crisis: Nasser Al Nasser

Eng. Nasser Sulaiman Al Nasser, stc Group CEO, said that he is proud of the Kingdom's infrastructure that helped it contain the repercussions of the Corona crisis that affected economy all over the world. Al Nasser said that investing in the digital infrastructure a long time ago has enabled the telecom sector undertake its central role in this crisis. stc Group CEO said: "I am proud of our country's achievements in facing these circumstances we are living. This crisis never put our lives on hold; it enriched our creative ideas and we dedicated all kinds of technology to the service of our Kingdom, citizens and residents. We can all appreciate the role

of digital technology in enriching people's lives and its effective role in combating disease. We have drones that take the temperature of mall visitors and we offer remote healthcare services for patients." Al Nasser made this statement while taking part in the launch of the workshops of the Hope Hackathon workshop launched by the Deputy Minister at the Ministry Of Communications And Information Technology, Dr. Ahmed Al Thenayan. At the end of last April, the Ministry Of Communications And Information Technology launched the Hope Hackathon in a strategic cooperation with the Saudi Federation for Electronic and Intellectual Sports and stc to create new innovative business models and come up with solutions to overcome the current crisis and face future ones. The Hackathon aims to promote digital innovations and highlight the digital capabilities of youth worldwide to face the Coronavirus pandemic. Al Nasser added: "Our partnership in the International Hope Hackathon for which prizes will reach USD 1 million to develop creative ideas is a reflection of our approach. We have dedicated ourselves to supporting creativity and creative people around the world". He reiterated the Group's commitment to its strategy that supports innovation in the field of digital and smart solutions and to dedicating all its capabilities to bring such innovations to life. He pointed out that this is the

best time to invest in creative ideas for innovative, unique technological solutions while people are staying home as part of the precautionary measures taken to limit the spread of Coronavirus. Al Nasser called upon participants in the Hackathon to come up with digital innovations that could help humanity and to apply the quality of life concept effectively and keep abreast of the challenges facing us. Al Nasser said that stc has been a pioneer in supporting entrepreneurs and start-up owners through its InspireU program that supported many successful projects which introduced education, health and marketing applications. He added that stc's latest partnerships in this field were the fruit of its program to promote local content "Rawafed". Al Nasser added: "Being the leading digital enabler in the Kingdom, stc has a responsibility to actively contribute to the Kingdom's digital economy. I hope that we will continue to support innovators and their projects and that this kind of event will help them achieve their dreams and turn them into reality. Indeed, creativity has no limits." Eng. Al Nasser congratulated all Hackathon participants and commended their commitment to providing exceptional solutions and innovations. He also thanked the Ministry of Communications and Information Technology and the Quality of Life Program as well as all those who lent their support to this event.

stc Confirms Switching-Off Its 3G Network

stc has been at the forefront of technological innovation in the kingdom. It has always invested in future technologies to ensure that it meets the growing needs of its customers. Over the last decade, wireless technology has changed dramatically and it has transformed

the way people use telecom services and applications. Therefore, customers continue to demand faster speeds and increased data volumes, which resulted in a dramatic and exponentially grown in data traffic. To address the future needs and offer a much higher quality of service

to its deserving customers, stc is phasing out its legacy 3G network to make way for more advanced technologies such as 4G and 5G. Work on the '3G Sunset Program' has already started and is expected to be concluded in less than two years' time. These plans are helped by a decreasing

number of customers still using 3G devices on stc network. As part of this process, stc is committed to ensuring a smooth transition of all remaining 3G customers (to 4G and 5G devices) before the actual shutdown date in 2022. The 3G freed spectrum will be re-utilized in the new and more advanced technologies. stc has been focusing investment in the 4G network over the last few years; delivering the best 4G network in the kingdom, in terms of both coverage and quality. stc has the largest 4G customer base in the country, who can now enjoy fastest and most reliable Internet services, through different flexible customer offerings. stc has also embarked on the mission of being the pioneer in the 5G technology. It has already rolled out 5G network in many parts of the kingdom and will continue to expand its

5G footprint in the months and years to come. A number of 5G Internet packages have been launched by the company, along with the introduction of compatible 5G devices (e.g. Smartphones, Routers, Mi-Fi, etc.). The new and highly advanced 5G use cases are designed to benefit many customers and industry verticals. 5G will offer the necessary high speed data, latency, security and reliability to support VOLTE voice services and cutting-edge "Industry 4.0" capabilities, incorporating advanced technologies such as AI, Data Analytics, IoT, etc. Eng. Khaled Al Dharrab, Infrastructure VP, stc, said: "stc took a bold and daring decision to phase out its legacy 3G network in order to focus investment on more modern and advanced technologies such as 4G and 5G technologies. This will ensure that stc customers continue to

enjoy the best possible experience with the network, as part of a comprehensive digital transformation journey. stc is a technology pioneer in the region and at a global level, therefore, this move will cement its leadership status in the kingdom and will remain a dynamic role model for the operators in the region. 4G and 5G technologies will provide the incentive for economic growth; at both individual and enterprise level, supporting the Kingdom's vision 2030". The aforementioned technological advancements by stc will help in transforming the digital landscape of the country and will also confirm stc's position as a "world-class digital leader providing innovative services and platforms to its customers and enabling the digital transformation in the MENA region".

stc Group and Nokia Sign a Strategic 5-Year Master Frame Agreement

stc Group and Nokia signed a five-year Master Frame Agreement (MFA) to further strengthen their strategic partnership. The agreement aims to expedite buying process of Nokia's latest equipment, software and services for stc Group to introduce innovative services faster to its subscribers as a pioneer. This will allow stc Group companies to seamlessly buy advanced technologies such as 5G, Internet of Things (IoT), IP & Optical network technologies, and customer experience management from Nokia's end-to-end portfolio for mobile and fixed networks. For the first time in the region, the agreement was remotely signed due to COVID-19 pandemic, purely relying on software innovations and demonstrating the power of AR and AI. These technologies enabled Virtual Signing Ceremony in a digital environment. The agreement was signed by the signatories

STC GROUP AND NOKIA MASTER FRAME AGREEMENT SIGNING CEREMONY

stc GCEO and by Rajeev Suri, President and CEO of Nokia. stc Group CEO Nasser Suliman Al-Nasser said: "This strategic partnership with Nokia, supports Saudi Vision 2030 focused on leveraging advanced technologies for digital transformation and growth of the country, aligning with stc Rawafed Program that aims to enhance local content". "We strive to introduce advanced technologies and services faster as a true pioneer and ensure that enrich our subscribers' lives", he added.

Amr K. El Leithy, SVP of Middle East and Africa market at Nokia said: "We are committed to bringing our technology innovations to stc in an agile manner, and supporting stc Vision to be a world-class digital leader, empowering innovative services and platforms for digital transformation. This agreement is a major milestone in the stc -Nokia strategic ties and is a strong testimony of the solid relationship we have built with STC over the years."

Batelco Introduces Gobal SD-WAN Service

Batelco, Bahrain's leading digital solutions provider has launched its Global Software-Defined Wide Area Network (SD-WAN) service, an end-to-end networking solution that seamlessly blends MPLS, Internet and LTE technologies into a single communication channel and delivers improved visibility, agility, control and cloud integration with greater ease of use. SD-WAN enables business customers to gain superior visibility of applications with the capability to dynamically route network traffic across the best available links to maximize throughput. Global SD-WAN offers a seamless approach to customers that need to balance their dependency on MPLS and internet connectivity coupled with the demand for cloud computing, mobility and digitization governed by customer defined Service Level Agreements (SLAs). Commenting on the occasion, Chief Global Business Officer, Adel Al-Daylami said, "We are confident that our latest offering will contribute greatly towards an enhanced experience for our enterprise customers, through making sophisticated global networks easier to monitor, manage and become more agile with the support of a dedicated team to configure and maintain their SD-WAN service. As the Kingdom's leading digital solutions provider, we are dedicated

to supporting our customers with scaling their networks and business, through providing the optimal platform for digital commerce." Batelco's Global SD-WAN is based on an orchestrated platform from Nokia's Nuage Networks that leverages Batelco's Global Network coverage and partnerships to enable customers to utilize the superior capabilities of SD-WAN whilst defining their own levels of control from a service offering that is fully managed or self-managed model. Roque Lozano, Vice President of Nokia's IP and Optical business

in the Middle East and Africa, said: "Our SD-WAN 2.0 solution supports Batelco's global requirements by allowing seamless scalability for its global networks and customers. The Nuage Networks SD-WAN service helps to strengthen digital offerings that meet enterprise requirements driven by virtualization and cloud. By leveraging these SD-WAN capabilities, Batelco has the opportunity to expand its portfolio to deliver new age micro-services and IoT-driven business applications to its global enterprise customers."

Eng. Saleh Al Abdooli Resigned and Eng. Hatem Dowidar Appointed as Acting Chief Executive Officer for Etisalat Group

Etisalat Group announced today in a statement that Eng. Saleh Al Abdooli, has submitted his resignation as the Chief Executive Officer of Etisalat Group, for personal reasons. The Board of Directors accepted his resignation and appointed Eng. Hatem Dowidar as Acting Chief Executive Officer for the Group. Dowidar is currently the CEO International of Etisalat. His Excellency Obaid Humaid Al Tayer, Chairman of Etisalat Group, and the members of the board directors thanked Al Abdooli for the efforts he made and the accomplishments achieved for Etisalat Group during his tenure as Group CEO and his 28 years of service to the company.

Etisalat, Roambee Bring IoT Monitoring

Etisalat has chosen Silicon Valley-based Roambee Corporation to deliver IoT solutions for monitoring goods, assets and workers in the region. Enterprises in construction, logistics, manufacturing, public transportation, and other industries are looking to improve visibility of their workers and leased or rented equipment in the field to improve utilization and productivity. This solution enables these companies to digitally transform their operations with ease. In Middle East & Africa, timely logistics is critical to bring essential commodities ranging from foods & beverages, pharmaceuticals, consumer goods, and industrial goods via road, rail, air, and ocean from around the globe. The Etisalat and Roambee joint solution offers

real-time location, accurate arrival time predictions, and live condition analytics (temperature, humidity, and handling data) to minimize unpredictability and make supply chains more efficient. This preferred partnership is set to eliminate IoT adoption hurdles by offering an "out-of-the-box" service that bundles readily-deployable sensor hardware, IoT connectivity, IoT platform, actionable analytics, and 24x7 control-tower monitoring to mitigate business risk. With zero upfront investment and a completely managed service model, enterprises can start monitoring their goods, assets, and workers in less than $1 a day. Alberto Araque, Vice President of Etisalat Digital said: "Together we can provide industry specific solutions

for utilities, construction, facilities management, warehousing, distribution & logistics with optimization and efficiencies to guide the digital transformation for companies with connected worker, asset, and condition monitoring needs." Adli Dehelia, Vice President & Managing Director of Roambee for Middle East, Turkey, and Africa said: "Our partnership with Etisalat is a testimony to our efforts and focus on our enterprise-centric IoT strategy in the region. We have simplified the IoT solutions by uniting the core strengths of our respective companies. Enterprises can now start small and grow their usage as they start realizing the value of actionable data."

Omantel Launches 2019 Sustainability Report

Omantel, the leading integrated communication services provider issued its annual "Sustainability Report" 2019 under the theme "Amazing Happens Together". The report, which comes within the company efforts to enhance transparency with different stakeholders, is issued in line with the guidelines of the Global Reporting Initiative (GRI). Commenting on the launch of this report, Talal bin Said Al Mamari, CEO of Omantel, said, "In Omantel, we pay great attention to governance and sustainability in our endeavor to ensure the sustainability of our business and adhere to local and international frameworks and standards related to governance and sustainability. Besides being an important channel for communication with various stakeholders, sustainability reports also enable us to measure our performance in the economic, social and environmental fields, which in turn will help us in addressing any

challenges facing the improvement of our performance indicators". "Sustainability reports provide an internationally recognized clear mechanism for each business sector to measure sustainability performance and provide us with the opportunity to make annual comparisons that highlight the key achievements and the gaps that we should address. While we are proud of the progress and achievements made over the past years, we also attach great importance to addressing any issues or gaps identified in the report', he added. Al Mamari pointed out that the Omantel Sustainability Strategy took into consideration the Sustainable Development Goals announced by the United Nations and the strategic direction of Oman Vision 2040. In 2014, Omantel developed its own Sustainability Framework that included a number of goals for digital inclusion and social responsibility to be achieved by 2020. Among these

goals were investing RO 10 million in social responsibility programs and covering 95% of the populated areas in the Sultanate with broadband services at speeds of not less than 10 Mbps. Within the people theme, we also targeted enhancing the capabilities of employees and empowering them to become future leaders at various levels of the company. Today, we are proud to announce that we have reached the social responsibility objective a year ahead of schedule. ", he added. "The move to the new headquarters of the company has contributed to improving many indicators as we have taken into consideration many sustainability aspects at the design stage and while awarding the construction works to contractors. Among the key criteria was the purchase and procurement of local materials and services - which accounted for more than 46% in the project. We have also used recycled materials without compromise on the quality of the building to help conserving environment. The building is also in compliance with U.S LEED design criteria to provide a work environment that help employees in improving the productivity. We provided our staff with proper lighting, ventilation and means that help them rationalize power consumption", he concluded. It is worth noting that Omantel new headquarter has been designed to use the steel mesh surrounding the building to install solar panels to provide the energy required for

the building. This will contribute to saving energy from non-renewable sources and preserving the environment. On her part, Laila Mohammed al Wahaibi, Manager of Corporate Social Responsibility at Omantel said, "We are proud to be one of the leading companies that produce sustainability reports in the Country which reflects our transparency approach and commitment to all stakeholders. The report provides in-depth information about Omantel's social, economic and environmental performance covering the period from 1 January to 31st of December 2019". Omantel CSR focus areas included improving the quality of life of the targeted groups and achieving digital inclusion by supporting important sectors such as education and health in addition to promoting HSE behaviors, entrepreneurship and small businesses," she added. "Omantel seeks to adopt best international practices to ensure that the environmental system in the Sultanate of Oman is not compromised despite the rapid and successive developments and the digital transformation that we are witnessing. Omantel, which pays great attention to electricity and water issues, closely monitors the consumption of electricity and looks for alternatives such as renewable energy. It also carries out several campaigns to raise awareness among members of society of the importance of saving electricity. In recognition of its noticeable efforts,

Omantel has received in a special gala in Lisbon in Portugal the Green Era Award, one of the most prestigious global sustainability awards, she continued. "Omantel, which launched 5G network last December, was the first operator to launch this technology in the Sultanate. The move is considered as a qualitative leap and the most important technical event during the past year. Omantel's network is expected to contribute to meeting the growing demands for broadband services as well as enabling the adoption of Fourth Industrial Revolution technologies. This will be a valuable addition to the digital transformation efforts in the Sultanate", she furthered. "Our efforts in preserving the environment contributed to a significant reduction in the use of paper by 75% i.e. from 4 million paper sheets in 2017 to one million papers in 2019. During the past year, we sent more than 4.6 million e-bills, which represent 23% of 19.9 million bills we issue every year. This has resulted in saving of 1017 trees. "Omantel is the Sultanate's first and leading integrated telecommunications services provider, enabling the digital society to flourish, allowing new ways of doing business and delivering a world of information, news and entertainment. While seeking to get optimum customer satisfaction, Omantel plays a key social role to provide the required support and subsidy to all sectors of the Omani society.

Omantel GA Meeting Approves the Amendments of the Company Articles of Association and Financial Statements for 2019

Oman Telecommunications Company (Omantel) held its first two e- extraordinary and ordinary general assembly meetings in line with the decisions of the Supreme Committee Tasked With Handling the Developments Of Coronavirus (COVID-19) Pandemic and the directives of the Capital Market Authority. As per these instructions, public joint stock companies were asked to hold their annual general assemblies remotely as per the guidelines set by CMA. The extraordinary general assembly of the company, which was held on May 10, 2020, was chaired by His Excellency Abdul Salam Al Murshidi, Chairman of the Board of Directors in the presence of board members,

external auditors of the company, the legal advisor, the observer of the Capital Market Authority and the Shareholders. The meeting approved the amendments made to the company's articles of association (MoA) to ensure compliance with the Commercial Companies Law issued by Royal Decree No. 18/2019. According to the new amendments, all members of the Board of Directors are elected by the general assembly of the company. The extraordinary meeting was followed by the annual ordinary general assembly meeting which took note of the Company's decision to distribute cash dividends to registered shareholders as of March 26, 2020 (55

Baisas per share), based on the Capital Market Authority 's circular No. 4/202 dated March 18, 2020. The ordinary general assembly also approved the company's financial results for 2019 and approved the amount allocated for the community support for 2020. The general assembly also elected by secret ballot 9 members (from the shareholders and others) for the new term namely His Excellency Abdul Salam Al Murshidi, Saud Al Nahari, Khaled Al Khalili, Ayman Al Hosni, Sayyid Zaki Al Busaidi, Matar Al Mamari, Mulham Al-Jarf, Atef Al Siyabi, and Muslim Al-Barami. The new board held its first meeting and elected His Excellency Abdul Salam bin

Mohammed Al Murshidi as Chairman and Mr. Saud Bin Ahmed Al Nahari , as the Vice Chairman. The BoD sub committees were also formed and their members were elected. Commenting on the meeting , His Excellency Abdul Salam bin Mohammed Al Murshidi, Chairman of Omantel Board of Directors, said, "The Group continued its good financial performance during 2019 despite the challenges that faced the sector, especially in the local market." "Zain operations continued to contribute to the growth of Omantel Group business and to make off the weak growth in the local market. Zain Group operations grew by 25% on an annual basis. This remarkable growth is attributed to the full consolidation of Zain KSA results in the Group in 2019 (the results of Zain KSA were consolidated for only 6 months during 2018)", His Excellency added. "Omantel's acquisition of a strategic stake in the Zain Mobile Group contributed to raising the revenues and profits of Omantel Group and as a result of this acquisition, the third largest mobile operator in the MENA region was created. The acquisition provided opportunities for synergies between the two companies, enhanced the ability to compete more effectively in the market and helped in addressing the risks of operating in a single market", His Excellency concluded. On his part, Talal bin Said Al Mamari, CEO of Omantel, said, "Omantel continued its growth trajectory despite the challenges that the sector

witnessed in general. Omantel Group total revenues (including Zain Group's operations) grew by 18.6% reaching RO 2592 million compared to RO 2186 million last year. Earnings before interest, tax and depreciation and amortization grew by 28% from R.O 855 million to R.O 1098 million. Omantel Group net profit (before non-controlling interests) grew by 43.5% to RO 299.7 million compared to RO 208.8 million during 2018. The net profit (after non-controlling interests) increased by 19.9% to RO 77.7 million, compared to RO 64.8 million in 2018. "During 2019, we implemented several initiatives to overcome the challenges that faced the sector and take advantage of available opportunities to ensure sustainability of Omantel business. We further capitalized on available synergy opportunities between Omantel and Zain, especially in areas such as wholesale, enterprise and digital services as well as enhancement of customer experience, he added. Commenting on the networks, Al Mamari pointed out that Omantel launched the first 5G network in the Sultanate in December 2019 to keep pace with the latest global technology advancements. The move is expected to pave the way for the introduction of many technologies related to the fourth industrial revolution such as the Internet of Things, artificial intelligence and Fintech solutions. Omantel continued its local network expansion plan and strengthening its international

connectivity benefitting from the unique geographical location of the Sultanate and the significant investments made by the company during the past period in building a robust submarine cables network linking the whole globe through the Sultanate". As for the company's social responsibility, Talal Al Mamari said: "Omantel CSR strategy focuses on building partnerships and launching initiatives aimed at improving the standards of living of the targeted groups. Omantel CSR initiatives also facilitates digital transformation by supporting important sectors such as education and health in addition to supporting entrepreneurship, SMEs and promoting positive attitude towards environment and HSE". "Omantel has launched several initiatives in cooperation with partners from government and civil society institutions to maximize the impact of its CSR initiatives on the targeted groups and society in general. The number of beneficiaries from Omantel social initiatives during 2019 stood at about 122,613, he continued. "In 2019, Omantel managed to achieve the sustainability goals that were set as part of Omantel Sustainability Framework in 2014 to be achieved in 2020. Omantel has invested more than RO 10 million in sustainability-related initiatives in addition to reaching 95% broadband coverage at speeds of not less than 10 Mbps - a year before the target date, he concluded.

New Technologies Enable Omantel Call Center Employees to Work Remotely

Call centers play a pivotal role in serving customers in normal circumstances, such importance is even doubled in exceptional circumstances such as those faced currently by the Sultanate and the world as a result of COVID-19 outbreak. Omantel call center, the first support line for customers and one of the largest call centers in the Sultanate, receives 10 million calls every year enquiring about the company's various services and products - an average of more than 20,000 calls a day. Considering the importance of maintaining the expected level of service by customers and since the beginning of the spread of COVID 19, Omantel considered alternative solutions that can
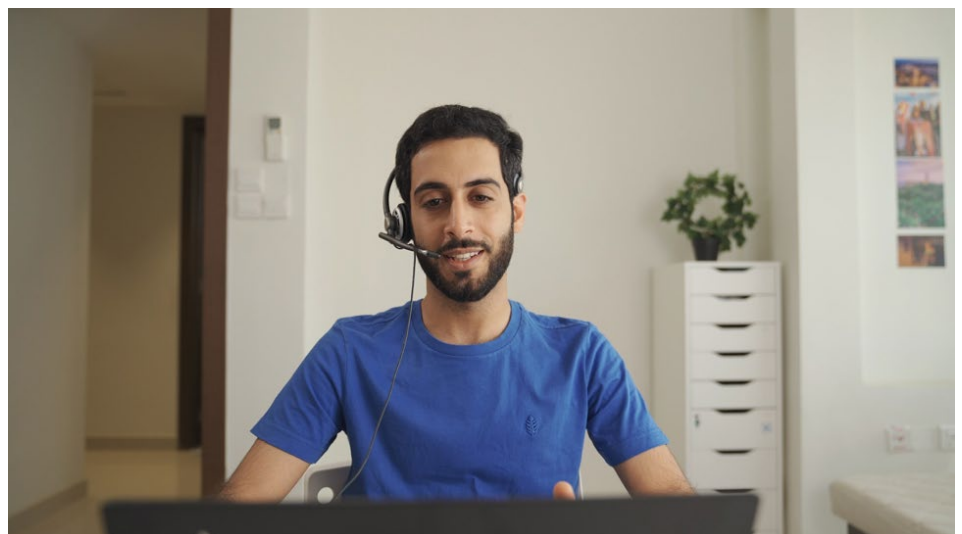
help the company deal with the challenges posed by COVID-19, especially those related to social distancing and reducing the number of employees in the various sites of the company as per the directives issued by the Supreme Committee. As a result, Omantel's call center has been receiving an increasing number of calls since COVID-19 started to impact the country, which exceeded 35,000 calls a day. Omantel empowered the largest number of its employees to work remotely from home, ensuring their safety while maintaining the services rendered to customers. The new approach included call center employees whose nature of work requires immediate response to customers' inquiries and requests, a key function especially after the closure of Omantel outlets. Omantel call center has been provided with state-of-the-art facilities and devices including computers, mobile phones and required software enabling the Call Centre team to work remotely from home without compromise on the quality of the service provided to customers. The early preparations have enabled the call center to handle 1,507,211 calls over the past 42 days; this includes all the calls that have been received through the automated-reply system for self-service and to call center employees. In addition, the number of hours worked from home exceeded 9,684 hours per week. Moreover, within the framework of its social responsibility, Omantel has endeavored to benefit from its accumulated experience and technical capabilities in providing support to a number of government institutions working in the front lines to confront the pandemic, the most important of which are the Ministry of Health and Muscat Municipality. Omantel's call center has been equipped to serve as a parallel call center for the Ministry of Health main call center working hand by hand with the main call center. In addition, Omantel state-of-the-art solutions enabled Muscat Municipality staff to work remotely from home.

Orange Jordan CEO Emphasizes Roles of Technology, Telecom Sector in Equipping Kingdom for Crisis

The coronavirus crisis has shown the concept of cooperation in the local telecommunication sector, demonstrated the importance of the Internet and technology and significantly changed citizens' digital habits, said Orange Jordan CEO Thierry Marigny. In a press statement shared with The Jordan Times, Marigny asserted that 'since day one of the crisis', the company 'has proactively declared' the state of alert and prepared its networks to deal with the expected increase in traffic, especially as people were asked to stay home and decisions of continuing study and work remotely were announced. The company has adopted financial and social initiatives to support governmental efforts to overcome the crisis, Marigny said, noting that Orange Jordan's support provided to combat the pandemic amounts to around $2 million, which reflects the company's social responsibility and values, according to the statement. He added that telecom operators have taken the initiative to deal with the massive increase in data consumption, as the company's networks have witnessed a 60 per cent increase in traffic. Telecom companies have reinforced their networks to deal with this sharp increase. Marigny pointed out that the Kingdom has also witnessed a 'significant increase' in Internet usage due to the lockdown. Telecom companies have been 'the first contributors to the success of the government's decision to digitize learning:' by offering free browsing of the Ministry of Education's e-learning platform 'Darsak' for school students, in addition to offering special bundles for university students and additional internet bundles at affordable prices, he said in the statement. The strength of these networks has, as well, contributed to the success of the specialized medical and supply digital platforms, on which demand have increased during the self-quarantine, Marigny said. Orange Jordan's technical and engineering teams have been ready to address and fix any malfunction or interruption in a timely manner, while the Telecommunications Regulatory Commission (TRC) has granted companies additional frequencies, thereby providing greater capacities for network operators, he said. The huge surge in data usage during the lockdown was expected, as shown by TRC's technical reports. The daily data traffic on mobile fourth-generation networks alone increased by 31 per cent, which is equal to 1,260 terabytes, he noted. Download speeds improved by 36 per cent to 73 per cent among mobile companies, considering that the Internet networks have proven their resilience to endure any emergency, which 'demonstrates the sector's strong infrastructure and ability to maintain sustainability in all circumstances, despite the immense pressure', the CEO said. Providing more insights, Marigny noted that, parallel to the 'unprecedented' increase in Internet usage, the Kingdom witnessed an increase in the use of social media applications, for instance, usage of WhatsApp and Instagram increased by 40 per cent, while watching videos via

social media platforms such as Facebook, YouTube and TikTok made up 52 per cent of the total data flow. 'This crisis has cast a shadow over a vast segment of society. As part of our social responsibility and commitment to local communities, we presented the Himmat Watan fund with JD1 million to support the government's efforts, alleviate economic and social repercussions and stand united to confront such consequences,' Marigny asserted in the statement. The Orange family also donated $100,000 to support the Ministry of Health, in addition to JD20,000 to the NAUA platform initiative aiming to support daily wage workers who have been affected by the lockdown, as well as increasing Internet capacity in quarantine hotels for free and recently supporting the Ministry of Health with 120,000 euros in cash and necessary medical equipment, he added. Marigny said that the company further provided 4,500 free mobile lines, charged for three months for nurses working at the hospitals that are dealing with potential and confirmed COVID-19 cases, noting that the total support provided by Orange Jordan

amounts to around $2 million, 'reflecting the company's social responsibility and values of reinforcing cooperation and solidarity and commitment to harnessing resources to support and serve the Kingdom'. The company decided to keep all lines and Internet subscriptions, including those with unpaid bills, active and grant free 5GB internet bundles to all mobile users across the Kingdom and 20GB to Irbid residents during the complete isolation period, he said. Orange Jordan has also enabled people with disabilities to request support via an emergency line that answers their inquiries and connects them with concerned authorities regardless of their network, according to the statement. The company has promoted several digital channels to ensure safety, such as My Orange App, Orange.jo, eFAWATEERcom and Orange Money App, with a new feature that allows all mobile phone users to activate their e-wallets from home without visiting any shop. On the level of strategic plans and policies adopted by the company to face the crisis and ensure business continuity internally and externally,

Marigny described Orange Group's global response, which was reflected on the local level, as 'proactive', according to the statement. 'When 100 per cent of the company moved to work from home, following the government decisions, we completed our operations according to our business continuity plan and harnessed our technical resources to excel and succeed in this challenge,' he asserted. Marigny went on to say that customer call center agents are now working from their homes with laptops and VPNs. 'We are at a crossroad of the country's digitalization due to the coronavirus crisis. Citizens have had to change their habits and this will continue in the future, not only because we are all convinced that it perfectly meets our needs during the containment, but also as it makes us more efficient,' Marigny said. He highlighted the e-learning experience as a 'prime example' that will lead universities and high schools to consider adapting part of their curricula to be online after this alternative has proven to be efficient and convenient for teachers and students, according to the statement.

Orange Jordan Provides Services to Jordanians Returning from Abroad

Orange Jordan has enhanced its networks in the Dead Sea area and increased the internet speeds by establishing stationary and mobile cellular cells with high capacities that support, the advanced, 4G+ technology, to meet the needs of the students

returning home and offer them high-quality Internet services, a statement issued by the company said, stressing that the company's networks can manage the large number of users. In collaboration with the Jordan Armed Forces, and through Royal Signal Corps Directorate, Orange Jordan provided Jordanians in quarantine with mobile lines to keep them connected with their families, bring them closer to all that matters to them, and to ease students' access to their courses. This initiative is one of the company's initiatives to support the government in fighting against coronavirus pandemic and its efforts to reduce its repercussions and to encourage everyone to stay in quarantine for the health and safety of all Jordanians. Orange Jordan stressed in a statement that as a national company it is committed to protecting the joint, social and official achievements, praising the governmental decisions that considered Jordanians' safety and welfare a top priority, such as facilitating the return of students studying abroad back home. Since the outbreak of COVID-19, Orange Jordan has supported the government, especially the health sector, and all segments of society through social initiatives, with a total of JD 1,300,000 to highlight the importance of solidarity in overcoming the pandemic.

Zain Deploys Full Traffic Management Portfolio across Its 4G and 5G Networks In Kuwait

Zain Kuwait announced that it is deploying the full traffic management suite from Enea to amplify its 4G and 5G network deployments, and support the country's increasing appetite for mobile technology. For a country of just over 4 million people, Kuwait has more than 7 million mobile subscribers, making its mobile penetration rate of 168 percent one of the highest in the world. Zain Kuwait also has an extremely high mobile data consumption per SIM, driven in large part by users sharing and streaming mobile videos. To ensure that its subscribers don't suffer from poor quality of experience (QoE) – such as long wait times and degraded video quality – Zain Kuwait is using the Enea Openwave Encrypted Video Manager, which enables transparent classification of encrypted video flows to balance picture and playback video quality in real time according to radio network conditions. Additionally, the solution features the Enea Openwave TCP Accelerator to maximize download speeds for both 4G and 5G, and the Traffic Classifier to augment application and encrypted content classification. "Zain Kuwait is an innovative pioneer in the region with an outstanding track record, having deployed the first mobile network in the Middle East," said Nawaf Algharabally, Chief Technology Officer of Zain Kuwait. "Our partnership with Enea ensures that we deliver outstanding subscriber experience by putting the right solutions in place to provide smoother video streaming and improved Internet browsing. This solution enables us to optimize video streaming and deliver the highest in-country download speeds, regardless of whether the content is encrypted." John Giere, President of Enea's Openwave Division, said, "Zain is an outstanding example of a truly innovative operator. Our research in the Middle East shows that video buffering can be a major

frustration that causes subscribers to abandon a video within just six seconds, which often is enough to make a subscriber switch to another operator. By deploying Enea Openwave technology, Zain Kuwait is future-proofing its 4G and 5G networks and ensuring they're equipped to manage the rising levels of encrypted video traffic to deliver outstanding QoE for their subscribers." The Enea Openwave Division provides mobile operators with 5G-ready products for the mobile core. Our Traffic Management Solutions alleviate RAN congestion, accelerate video delivery, and maximize subscriber QOE. Our 5G Core Solutions provide a common data layer to unify subscriber data. Enea Openwave solutions have been deployed in 8 out of the 10 largest multi-territory mobile operator groups in the world.

Accenture Positioned as a Leader in New IDC MarketScape Report for EMEA Service Providers for Digital Transformation Services to the Oil and Gas Industry

Accenture has been positioned as a leader in the inaugural IDC MarketScape: Europe, Middle East and Africa (EMEA) Digital Transformation Services Providers for the Oil and Gas Industry 2020 Vendor Assessment. Accenture was recognized for key strengths, including its integrated service portfolio, which positions Accenture as a one-stop service and solution provider for oil and gas clients, and enables those clients to adopt a comprehensive approach to innovation and digital transformation. Additionally, Accenture's track record of co-innovation

and co-development directly with oil and gas companies was cited, supported by a global delivery network and over 100 innovation centers, including seven energy-specific innovation hubs. Accenture was also recognized for its solid subject matter expertise and comprehensive technology portfolio, facilitating the execution of complex, innovative, and large-scale transformation programs. The report evaluated Accenture and 16 other companies with an established reputation for providing services to the oil and gas industry. Vendors had to have a broad

offering that specifically supports oil and gas companies' digital transformation, services that cater to business processes in the upstream, downstream and midstream sectors, 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 enable and support oil and gas companies in their digital transformation journey. The report specifically looked at the following services that vendors offer to oil and gas companies: business consulting, business process services, and IT services. "We are

thrilled to have been named a leader in this new IDC Marketscape", said Andrew Smart, a senior managing director and energy lead for Europe, Accenture. "The oil and gas industry is currently facing unprecedented challenges, which will be felt throughout the whole

IDC MarketScape: EMEA DX Service Providers for the O&G Industry, 2020

Source: IDC, 2020
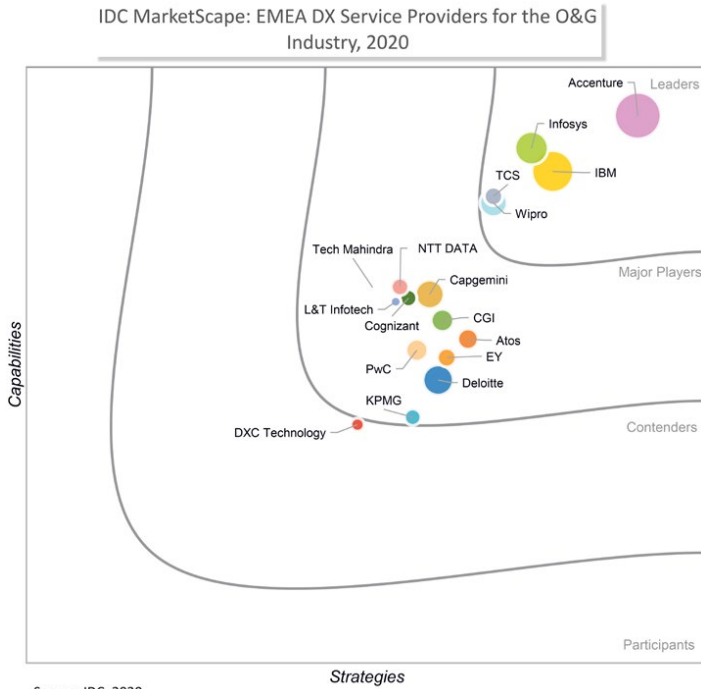
value chain. Industry volatility means our oil and gas clients need to digitally transform their businesses quickly to become more efficient and crucially more resilient. We are committed to applying deeper industry insight and expertise to help our clients drive the changes needed to emerge stronger from the current crisis and face the challenge of the energy transition going forward." Additionally, the report noted Accenture's significant experience in digital transformation use cases spanning the value chain and its innovation architecture. Also noted as a differentiator was Accenture Ventures' work in partnering with and investing in over 5,000 start-ups and supporting acquisitions like Enaxis Consulting, which provides digital transformation services to the oil and gas industry. IDC also cited Accenture's long-standing relationships with industrywide platform providers such as SAP, Microsoft, Amazon Web Services (AWS), and Salesforce, and a variety of technology players through its strong partner ecosystem. "Digital transformation is a consulting-led business, and to embark on a successful journey, oil and gas companies need more than just an IT service provider," said Gaurav Verma, Research Manager, IDC Energy Insights. "They need a business and technology partner who can help them clear business bottlenecks. Accenture has clearly positioned itself to meet this need, with a comprehensive solutions portfolio and partner ecosystem, global footprint and agile approach to technology-driven innovation. The ability to combine vision and execution for companies across the value chain is Accenture's strength in the domain of oil and gas digital transformation."

AT&T Expands Relationship with Cradlepoint

AT&T and Cradlepoint are trying to make it easier for first responders and enterprises to get end-to-end wireless wide area network (WAN) solutions from AT&T. Customers can now order Cradlepoint wireless edge solutions and have them fulfilled and billed directly from AT&T. Select Cradlepoint wireless routers are being offered with AT&T's LTE service along with an optional AT&T Wireless Broadband (AWB) data plan. Cradlepoint has been developing a deeper relationship with AT&T for a while. It was the first to support Category 18, or 5G Evolution as AT&T calls it, for over a year before other suppliers entered the market, according to Cradlepoint CMO Todd Krautkremer. Now with COVID-19, a lot of first responder agencies are dealing with unforeseen expenses and by offering this payment option, they can pay overtime via their wireless bill rather than making an upfront payment all at once. Enterprises likewise are capital constrained at the same time they need wireless routers and WAN technology to support their communications. "In recent months, we have witnessed more businesses and public safety agencies than ever deploying wireless WAN solutions on AT&T LTE networks in response to the global health crisis," said Robert Boyanovsky, VP, Enterprise

Mobility, AT&T Business, in a statement. "This surge in demand underscores the agility, flexibility, and speed of deployment that only wireless can deliver. It also provides validation of our expanded relationship with Cradlepoint that will make it easier for customers to acquire end-to-end wireless WAN solutions from AT&T." Under the expanded relationship, AT&T will continue to add newly released Cradlepoint solutions over time, including the company's recently announced 5G Wideband Adapters and next-generation

E300 (5G Ready) and E3000 (5G Optimized) wireless routers. The new E3000 Series is the latest Cradlepoint solution to target the LTE-based WAN market. The new design provides a "branch-in-a-box" solution in a compact footprint; the router is available starting at $2,023 with a one-year subscription. The company also is working with AT&T on 5G and providing customers a path to get there, so that they don't have to rip out existing gear to get to the next-generation equipment. In the future, the expanded collaboration

will enable an enterprise customer to upgrade to AT&T 5G by adding a 5G Wideband Adapter to any Cradlepoint 5G Ready or 5G Optimized wireless router via an Ethernet connection. Cradlepoint doesn't sell direct to the enterprises but goes to market through wireless carriers, resellers, managed service providers and vendors that integrate its technology into their products and services. The company has about 600 employees, with about 350 of them based out of its headquarters in Boise, Idaho.

AT&T Drops 5G Evolution Branding

AT&T bowed to pressure from advertising watchdogs around branding its LTE-A network as 5G Evolution, following concerns the naming could mislead consumers. An operator representative told Mobile World Live it "respectfully disagrees" with National Advertising Review Board (NARB) conclusion, but will comply with its direction to drop the term from TV, radio and online adverts. NARB is the appeals division of the advertising industry's system of self-regulation, which is run by the Better Business Bureau (BBB). The bureau investigated after T-Mobile US complained about the moniker, deciding the 5G Evolution name was "misleading" because it implied "a level of technology that AT&T's service does not deliver". This view was upheld by NARB on 20 May, because the naming was "not likely to alert consumers to the fact that the service is not 5G". AT&T did not respond to questions about whether the logo would be removed from phones. The

operator faced a backlash after introducing the branding in 2018, with competitors accusing it of false advertising. Sprint filed a lawsuit in February 2019 to stop AT&T using the term, but later settled the case.

AT&T: Full Speed Ahead for 2020's Goals Despite COVID-19

AT&T has not only weathered the networking storm of the coronavirus pandemic, it has also stayed on track for some of this year's biggest goals. AT&T's Scott Mair, president of technology and operations, said in a Tuesday blog that 2020 has demonstrated the resilience of the network that the telco first drew up over a half decade ago. AT&T first outlined its virtualization project back in 2013 as part of its Domain 2.0 initiative. The following year it announced its goal of having 75% of its core network functions virtualized by 2020. Despite the extra work involved with enabling millions of employees to work from home—as well students' remote learning from home—during the coronavirus pandemic, Mair said AT&T was still on track to hit its 75% software-defined networking (SDN) and automation goal this year. After firing up a 400G connection between Dallas and Atlanta late last year, Mair said AT&T was also making strides on its 400G deployment, which was also on top of the telco's to-do list this year. And AT&T is still planning to deliver its 5G service across the nation this summer. "Addressing the COVID-19 surge while staying on track with our long-term goals is only possible because we've spent years putting in place people and plans that can adapt, improvise, and overcome any obstacle," Mair said in his blog. Mair also announced on Tuesday that AT&T has joined a global initiative

called the Open COVID Pledge to make its patents available free of charge to help fight the coronavirus. Mair said AT&T generates roughly five patents on every business day. "With the Open COVID Pledge, we're also committing our patents to the world, doing what we can to accelerate work on medical equipment, network products, software and other technology that might be useful," Mair said. Mair also recapped AT&T's network efforts during the COVID-19 crisis, which have been largely successful due to its SDN network. During an average business day in the pre-COVID-19 fourth quarter, AT&T's network carried 335 petabytes of data. With shelter in place policies across the nation, millions of employees started to work from home, which sent AT&T's core network traffic levels up by 20% "almost overnight," according to Mair. Wireless voice usage and video streaming usage have also soared during the coronavirus pandemic, as well as the need for businesses to enable more robust VPNs for their home bound employees. "In the face of that historic demand, though, our network teams both kept the current systems running smoothly and have continued to deliver on our long-term innovation strategy," Mair said. Mair also called out AT&T's FirstNet network, which was built for first responders, and AT&T Fiber hitting its availability goal of more than 14 million locations.

BT Reportedly Exploring Sale of Stake in Openreach

British fixed line incumbent BT has reportedly begun talks with interested parties over a possible sale of a stake in its network unit, Openreach. According to The Financial Times, which cites three unnamed sources with knowledge of the discussions, talks are said to be at an early stage, while the mechanism by which any investor would acquire a holding in Openreach is also said to be under consideration. Potential buyers are reported to include Australia's Macquarie Group and an unidentified sovereign wealth fund, although Reuters separately cited sources close to the Australian fund as saying it had not expressed interest Openreach and was not in talks with its management. It has been suggested that the sale of a stake in Openreach could help generate funding for BT's planned rollout of fiber to homes and businesses across the UK, which is expected to cost it around GBP12 billion (USD14.7 billion). As previously reported by CommsUpdate, earlier this month the operator announced plans for a 'rapid acceleration' of its ongoing fiber-to-the-premises (FTTP) rollout, saying it now

aims to pass 20 million premises with the technology by 'the mid- to late-2020s'.

BT Announces 'Rapid Acceleration' of FTTP Build Plans as It Publishes Full Year Results

British fixed line incumbent BT has announced plans for a 'rapid acceleration' of its ongoing fiber-to-the-premises (FTTP) rollout, saying it now aims to pass 20 million premises with the technology by 'the mid- to late-2020s'. Revealing the scaled-up plans in the publication of its financial results for the year ended 31 March 2020, BT confirmed that its existing FTTP footprint extended to 2.575 million homes and businesses across the UK at that date, up from 1.247 million a year earlier. It noted that around 32,000 premises are being passed with fiber each week, while in terms of its future deployment plans CEO Philip Jansen said that BT aims to add more than two million premises to the coverage area in the year to March 2021, and ultimately envisages a maximum build rate of three million premises per year. Further, the executive stated that there will be a 'significant' rollout of FTTP in rural areas. In the wireless arena, meanwhile, BT confirmed that mobile subsidiary EE is now offering 5G connectivity in 80 cities and large towns across the country. According to the company it aims to double this figure by March 2021, albeit subject to what it terms 'the right conditions'. In its

full year 2019/20, the British operator reported total revenues of GBP22.905 billion (USD28.4 billion), down 2% year-on-year, with it saying the drop mainly reflected 'the impact of regulation, declines in legacy products, strategic reductions in low margin business and divestments'. Adjusted EBITDA for the financial year under review totaled GBP7.907 billion, down 3%, with lower revenue and 'investment in customer experience' partly offset by cost savings from the

telco's transformation programmes. BT meanwhile had a reported net profit of GBP1.734 billion for FY 2019/20, down from GBP2.159 billion a year earlier. Capital expenditures in the twelve-month period stood at GBP3.960 billion, almost unchanged against the previous financial year (GBP3.963 billion). Looking ahead, BT said it was opting not to provide a financial outlook statement for 2020/21, 'given the uncertainty created by COVID-19'.

China Mobile and Huawei Deliver World's Highest 5G

Huawei and China Mobile have jointly taken 5G connectivity to a new height by bringing the network to the summit of Mount Everest upon the completion of the world's highest 5G base station on the altitude of 6500 meters. Together with the launch of the Gigabit optical fiber network at the altitude of 6,500 meters, Huawei enables China Mobile to run its dual Gigabit network on Mount Everest. On the occasion of the 60th anniversary of the first successful arrival at Mount Everest from the northern slope, and the 45th anniversary of China's first official accurate measurement and announcement of Mount Everest, the 5G network on Mount Everest will provide communication services for this 2020 Mount Everest re-measurement is of great significance. Huawei has offered its end-to-end solutions in the construction of China Mobile's Everest dual Gigabit network, where base stations were built in Mount Everest Base Camp at the altitude of 5,300 meters, the Transition Camp at 5,800 meters, and the Forward Camp at 6,500 meters. Huawei's 5G AAU and SPN technologies are applied at these base stations, where network maintenance and optimization are done by a dozen of network specialists who station 24/7 in regions at altitude of 5,300 meters and above to ensure smooth network operations. Huawei's 5G AAU is highly

integrated in a compact size, making it easy for deployment and installation. It fits particularly well for infrastructure in extreme environment such as Mount Everest. In this project, a network in the "stand alone plus non-stand alone" (SA+NSA) mode connects five 5G base stations. Meanwhile, the 5G fast and huge-capacity connectivity is achieved by Huawei's Massive MIMO technology supporting lightning speed and large bandwidth. Huawei's Massive MIMO is highly reliable with excellent coverage. With its highly flexible three-dimensional narrow beams, the technology works particularly well vertically in Mount Everest. At the altitude of 5,300 meters, the 5G download speed exceeded 1.66 Gbps, where the upload speed tops 215 Mbps. Meanwhile, quality and undisrupted networks are guaranteed by Huawei's Intelligent OptiX Network solutions, with data-thirsty transfer of high-res videos, VR live broadcast and the likes, supported by enterprise gateways with 1Gbps upstream/downstream connections. The Everest base camp at 5,300 meters is fully covered at a logged speed of 1.43Gbps, thanks to the Gigabit ONT. Huawei's 10G PON OLT and 200G ultra-high-speed transmission platform can intelligently manage data throughput, making it possible families and businesses to enjoy super-fast

internet access at such high regions. With its HoloSens intelligent video surveillance system, Huawei ensures streaming quality with the capabilities of optimization and fault locating with just one click, keeping the networks always on even at the altitude of 6,500 meters at the summit of Everest. Huawei strongly believes that technology means to make the world better. The beauty of Mount Everest can be displayed via 5G high-definition video and VR experience, which also provides further insights for mountaineers, scientists and other specialists into the nature. The ground-breaking establishment on Mount Everest once again proves that 5G technology connect Mankind and the Earth harmoniously.

China Mobile Joins China Broadcasting to Build 5G Network

China is getting a fourth wireless provider — China Broadcasting Network (CBN) — which has been awarded spectrum by the Chinese government. CBN is a cable and broadcasting company that has been struggling, partly due to competition from the telcos who have been taking market share with fiber-to-the-home and IPTV. CBN will enter the wireless market by partnering with China Mobile to co-build and share a 5G network under an 11-year agreement. The parties shall "carry out 5G co-construction and sharing as well as content and platform collaboration," according to a China Mobile statement. China Mobile currently holds a license for

using the 2.6 GHz and 4.9 GHz frequency bands for 5G on a nationwide basis. CBN has authority to use the 700 MHz and 4.9 GHz frequency bands. The parties shall jointly construct a 5G network in the 700MHz band. And before the 5G network in the 700 MHz frequency band becomes commercially available, CBN may share China Mobile's 2G/4G/5G networks on a paid basis to provide services to its customers. New Street Research analyst Chris Hoare said, "Entry of China Broadcasting Network in this way is a net negative for all Chinese mobile network operators in our view. Although we don't at this stage envisage a major change

in market dynamics post CBN launch, it likely adds incremental pressure to trends. Also, even if it takes time for a new entrant to develop its business and risks to materialize, we have seen in different markets that a new entrant is negative for incumbents'/challengers' share prices." China Unicom and China Telecom are also involved in a 5G partnership to co-build new infrastructure. When China Unicom and China Telecom announced their partnership last year, they said that jointly building a 5G network would result in huge cost savings. China Telecom is building 60% of the network and China Unicom is building 40%.

China Mobile International Partners with Omantel for its Third PoP in the Middle East

Deepening its collaboration within the Middle East, China Mobile International (CMI) has joined hands with Omantel to establish its third Point of Presence (PoP) in the region in the Sultanate of Oman. The new partnership leverages Oman's strategic location and the complementary strengths of CMI and Omantel to enable closer ties between the Middle East, Africa, Asia and Europe. The new PoP will leverage Omantel's vast subsea network to provide latency improvement, prevent single point failure and connect with other CMI PoPs for resilient connectivity in the Middle East to support increased global connectivity for multinational businesses. Omantel has invested in 20 subsea cable systems covering 120 locations around the world. It is also the first and only carrier within the six Gulf Cooperation Council (GCC) countries to land a submarine cable in Europe. The Oman PoP connects to the Dubai, Fujairah and Djibouti PoPs through CMI's SMW-5 and AAE-1 cable system, and connect to other APAC cable systems in Singapore, such as SJC and APG going to Hong Kong. In the future, more new

cables will be linked to the Muscat PoP to strengthen CMI's connectivity and provide an alternative path through the Middle East. Sohail Qadir, Vice President, Wholesale, Omantel said, "With the globalization of the telecommunications sector, we are looking at an exciting future of our partnerships and expansion with CMI. Omantel became the preferred choice to help CMI take its strategies forward in part because of the Sultanate of Oman's geographical location, policies that feel the pulse of a digital future, and an infrastructure network that enables us to reach further. Forming the backbone of this partnership will be Omantel's robust infrastructure, subsea network, professional facilities management and access to power." "In an era of digitization and global cooperation, CMI and Omantel are coming together to provide secured and reliable connectivity for businesses working in GCC countries, Africa, Europe and beyond," said Andrew Niu, CMI Chief Partnership Officer, "As part of our commitment to the GCC region, CMI will be investing in backhaul to connect our new Oman POP with our PoPs at

SmartHub and Datamena and globally to our infrastructure in Djibouti, Singapore and other key hubs. This will bring Oman into a CMI network that covers China and across six continents." The partnership with CMI underscores Oman's economic potential and business-friendly climate, as a secure and stable Gulf state. It also reflects Omantel's growing reputation as a trusted global player. With modern high-speed infrastructure and ultra-low-latency connectivity, Omantel supports enterprise customers and as a state-owned company and experienced in submarine industry helps major telecom service providers with cable landing and terrestrial fiber construction to expand their reach. As the Sultanate's first and leading integrated telecommunications services provider, Omantel capitalizes on ultra-low latency networks to enable innovation and digital transformation globally. It utilizes Oman's geographic advantage at the absolute nexus of the east, west, north, and south to enable its customers and partners to deliver their services with the best possible end-user experience.

Cisco Acquires ThousandEyes For Around $1 Billion To Make Deeper Push Into Software

Cisco continued its software acquisition spree, announcing on Thursday the purchase of ThousandEyes, whose technology helps companies monitor their network for outages. Terms of the deal weren't disclosed, but a person familiar with the matter confirmed a Bloomberg report that the purchase price was about $1 billion. Since Chuck Robbins was named Cisco's CEO in 2015, the company has been focused on expanding its portfolio of cloud-based software so it can cater to companies that are moving away from their own data center and into more distributed environments. ThousandEyes will be part of Cisco's new Networking Services business unit, which is run by

Todd Nightingale, the company said in the release. The purchase follow's Cisco's

2017 acquisition of AppDynamics for $3.7 billion, which brought in software

The deeper visibility and insights will improve network and application performance across enterprise and cloud networks.

that helps companies spot bugs in their apps and quickly fix them. In addition to AppDynamics, Cisco's prior software deals include the $2.35 billion purchase of Duo Security in 2018, to bulk up in the authentication space, and the $1.9 billion acquisition of Broadsoft in 2017, to add technology for contact centers. This was the first acquisition Cisco has done completely online, which was the only real way to handle transaction given the stay-at-home requirements in place since March. "It was tough to sign a deal like this without ever walking into the same room to do technology diligence and business diligence," said Todd Nightingale, senior vice president and general manager of enterprise networking and cloud at Cisco. Mohit Lad, co-founder and CEO of ThousandEyes, said they used features of Cisco's Webex video-calling service to do the deal, including rooms where a few people can split off from the larger group and keep the conversation going. Like Zoom, Microsoft Teams and other calling technologies, Webex has become more widely used in recent months with people working from home to avoid further spread of the coronavirus. ThousandEyes still has all the money it raised last year, Lad said. The start-up has raised over $110 million. Venture investors included GV (formerly Google Ventures), Salesforce Ventures and Sequoia. "We were seeing so much pull from the market that we didn't think we could cope with the demand, so that was one of the reasons we accelerated this," Lad told CNBC. ThousandEyes says its customers include Microsoft, Slack, PayPal and Lyft.

CAMH Enhances Virtual Capacity to Respond to Demand for Mental Health Services

As Canadians grapple with the mental health effects of the COVID-19 pandemic, Cisco Canada and the Centre for Addiction and Mental Health (CAMH), Canada's largest mental health teaching hospital, are announcing the successful expansion of virtual care to meet the demand for mental health services. Telehealth innovation and expansion have long been a priority for CAMH and through a partnership with Cisco, CAMH was able to drastically increase the number of virtual visits it can offer to patients during the COVID-19 pandemic. Last year the hospital provided virtual care to over 3,000 patients from over 550 communities across Ontario. From March to April 2020 alone, CAMH's virtual care visits increased from approximately 350 per month to almost 3,000 per month, an increase of over 750 per cent. "While we are apart right now, no one is alone and technology is helping to keep populations and patients connected during this difficult time. This is a pivotal moment for a new frontier of telemental health care in Canada – CAMH is reshaping how we deliver care now and into the future," said Dr. Catherine Zahn, President and CEO of CAMH. "There is no going back. The adoption of virtual health platforms will be a permanent and growing fixture of the health care system, and be offered as an accessible, flexible and secure mental health care option for patient care going forward." In March, Cisco's highly secure Webex technology was rapidly deployed across the organization, enabling the training of upwards of 400 CAMH clinicians – from 50 in February

– to deliver virtual care and 1,500 more virtual visits in April. Patients have more flexibility scheduling appointments and follow-ups, shorter wait times, seamless communication with clinicians and the ability to receive care securely no matter where they live. "Cisco understands how critical technology can be in bridging gaps, breaking down barriers and connecting the unconnected. This pandemic has fueled the digital revolution in mental health services — it's been a catalyst for delivering remote care at scale and helping those in need get access during a difficult time," said Rola Dagher, President and CEO of Cisco Canada. "By working with world-class partners like CAMH, we can evolve the way healthcare services are delivered in Canada and around the world." The expansion of telemental health capacity since the start of the pandemic builds on CAMH's long-standing record as a leader in this area. With strong groundwork in place, the hospital was well-positioned to rapidly adapt policies and transform service delivery. "Mental health care looks fundamentally different today than it did three months ago, and yet at its core we continue to strive for compassionate, quality care. We have made incredible strides in our ability to deliver virtual care, accelerating our digital transformation and enhancing our ability to provide care to more patients in more communities," said Dr. Allison Crawford, CAMH. "Through innovation and technology, we have an opportunity to reimagine and rebuild a broader system of virtual care that is safe, secure, flexible and accessible." Over a two-year partnership, Cisco Canada has contributed nearly $2 million in technology, funding and services to support CAMH research, develop and build new models of care.

Cisco Webex Teams Earns HITRUST Certification

Cisco announced that Webex Teams, Webex Control Hub and Webex API have achieved HITRUST CSF Certification, the world's most widely adopted security framework in the healthcare industry. The certification, which combines best-in-class standards from HIPAA, NIST, COBIT, and many others, as well as key regulations, further validates the Cisco Webex commitment to providing customers with easy to use, reliable and secure collaboration and protecting sensitive information. Patient privacy is paramount for healthcare customers and this certification delivers additional confidence in Cisco's dedication to keeping data safe and confidential. "Webex is the leading collaboration solution and we're backed by the largest enterprise security company in the world. We have a longstanding commitment to privacy—it's part of our culture and a foundational element in how we build our products. By achieving HITRUST® certification, our healthcare customers are assured we're protecting sensitive data and information according to the highest standard, allowing them to focus on the critical work they're doing." said Jeff Wicks, Chief Security Officer, Cisco Collaboration. "With healthcare providers increasingly relying on collaboration technologies, we understand

even more the growing importance of meeting complex compliance and privacy requirements." HITRUST CSF Certified status places Cisco Webex in an elite group of organizations worldwide that have earned this certification. By including federal and state regulations, standards, and frameworks, and incorporating a risk-based approach, the HITRUST CSF helps organizations address these challenges through a comprehensive and flexible framework of prescriptive and scalable security controls. "Reliance on secure collaboration tools is becoming a top priority for every industry, including healthcare, and we expect that trend to

continue," said Jim Lundy, Founder and CEO of Aragon Research. "Further mitigating risk for customers is essential, especially when it comes to protecting sensitive information, and HITRUST Certification provides that added level of confidence and trust for those relying on Webex for connection and collaboration needs." "HITRUST helps organizations ensure that the highest standards of information protection requirements are met when sensitive data is accessed or stored," stated Jeremy Huval, Chief Compliance Officer, HITRUST. "Cisco can be recognized as an organization that can be counted on for keeping information safe."

Eutelsat Selected by Telenor Maritime for Maritime Mobility Services in Europe, Trans-Atlantic Routes, the Caribbean, and South East Asia

Eutelsat Communications (NYSE Euronext Paris: ETL) has secured a multi-year contract with Telenor Maritime to provide Ku coverage on a regional basis for sailing areas in Europe, Trans-Atlantic crossings, the Caribbean and South East Asia. Eutelsat will leverage several of its satellites in order to deliver targeted capacity with guaranteed levels of throughput to specific sailing areas under a managed services agreement. It will enable the delivery of high speed internet connectivity to cruise and ferry passengers by extending GSM roaming to the vessel and/or selling access to on-board WiFi networks. From

the outset of the contract, Telenor Maritime Vessels will progressively transfer vessels onto the network in a proactive manner. At a later stage, Telenor Maritime will migrate vessels onto Eutelsat's Ka band satellite, Konnect VHTS in Europe when it is available, making it the first reference customer from the maritime industry on the new satellite. Lars Erik Lunøe, CEO of Telenor Maritime said: "We are pleased to extend our collaboration with Eutelsat. Eutelsat was selected based on its ability to deliver the right platform/ and service mix to suit our target markets and the flexibility to accommodate our high standards with

respect to the latency of voice traffic, capacity management and deployment flexibility." Philippe Oliva, Chief Commercial Officer of Eutelsat Communications said: "We thank Telenor Maritime for placing its trust in Eutelsat, and making us its main supplier of managed maritime connectivity services, enabling it to extend its offer of high speed connectivity to its customers. This contract testifies to the unparalleled coverage of Eutelsat's fleet as well as its flexible and innovative approach in delivering tailor-made solutions for its customers."
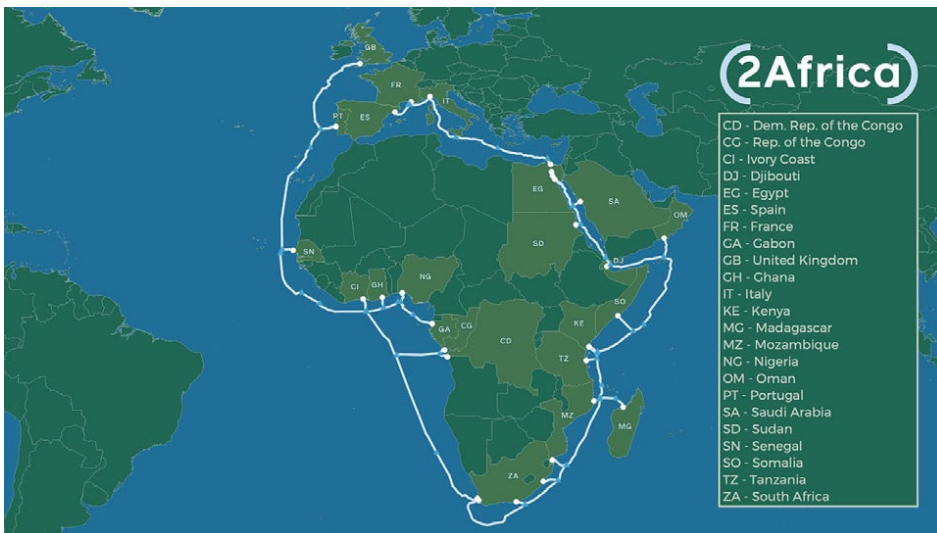
FACEBOOK

Facebook Rebrands Digital Wallet to Escape Libra

Facebook revamped its Calibra digital wallet, rebranding the service to Novi, in an apparent attempt to differentiate the platform from its Libra Cryptocurrency project. In a blog post, David Marcus, head of Facebook's digital wallet play, said the rebranded Novi wallet would also gain a new logo, which includes a Libra icon, "to underscore our commitment to the Libra network". The move comes a month after Facebook moved to reposition the Libra Cryptocurrency project, scaling back its initial vision to make it run more akin to a traditional digital payments platform, to appease regulators. The company first unveiled Libra and the Libra Association, the group designed to operate the Libra Cryptocurrency, in June 2019. As part of the initial vision, Facebook and its partners aimed to develop new digital currencies, operated on the Calibra payments wallet, powered through blockchain technology. However, the project came under fire from regulators in the Europe and the US, which led to several high profile backers,

including Vodafone Group, pulling out. By rebranding Calibra to Novi, it appears Facebook is now attempting to make it clear that Libra is a separate entity from its digital wallet. Marcus added Novi will operate as a standalone app, as well as on its Messenger and WhatsApp platforms, with no remittance costs and instant transfers. It will be operated by Novi Financial, a Facebook subsidiary that operates independently from Facebook.

Facebook, Telcos Plan Subsea Cable to Connect Africa, Middle East and Europe

Facebook and a group of African and worldwide telecommunications majors have actually struck an offer to construct among the globe's biggest subsea cable networks, improving net accessibility throughout 3 continents, they stated in a joint declaration. South Africa's MTN GlobalConnect and Mauritius- based facilities company WIOCC are companions in the task, together with China Mobile International, French telecommunications significant Orange SA, Saudi Arabia's stc, Telecom Egypt, and Vodafone. The task, called 2Africa, purposes to construct

37,000 kilometers of subsea cable facilities which will straight connect nations around the African shore to Europe and the Middle East, according to its website. The network will certainly have a style capability of up to 150 terabytes per 2nd (Tbps) on vital components of the system, the website stated. The 11 brand-new wires presented in between 2009 and 2016 in below-Saharan Africa supplied about 70Tbps of style capability. Subsea facilities company Alcatel Submarine Networks will certainly construct the task, which is anticipated to be functional by 2023/24, the declaration

stated. The firms did not expose just how much cash they were spending. "2Africa... will interconnect Europe, the Middle East, and 21 landings in 16 countries in Africa," the companions stated in the statement. Subsea wires develop the foundation of the net, bring 99 percent of the globe's information website traffic. Africa's huge economic situations have a huge and quick expanding populace of net individuals, with development in net usage sustained by quickly increasing mobile broadband networks and ever before much more economical phones. However, with a populace of 1.3 billion, Africa is still a laggard in net connection, with ordinary net infiltration at around 39 percent versus a globe standard of 59 percent. On conclusion the subsea network will certainly provide greater than the overall mixed capability of all subsea wires offering Africa today, the companies stated in the declaration. "Improving connectivity for Africa is a significant step which lays the groundwork for increased digitalization across the continent," stated Vodacom International Business Chief Officer Diego Gutierrez. Vodacom, which is bulk possessed by Britain's Vodafone, is South Africa's 2nd greatest telecommunications gamer.

Huawei Launches Its Carrier Consulting Services to Create Multi-Dimensional Value for Customers

Huawei recently announced the launch of its Carrier Consulting Services and 5G Consulting portfolio and practice. Huawei Carrier Consulting Services' aim is to help carriers to proactively cope with the opportunities and challenges brought by new technologies, new business, and new models, to create and obtain value for customers. With changes to the ICT industry and the emergence of new technologies such as 5G, Cloud, and AI, and the rise of B2B market demand, carriers are facing more and more uncertainties and refined operational challenges. To solve these difficulties, carriers require comprehensive professional consulting services and solutions, covering strategic predictions, top-level design, product and offering designs, end-to-end network planning, operation optimization, and reconstruction and ecosystem value-based operations, to maximize investment benefits, achieve sustainable development and positive business cycles. On this basis, Huawei will now offer consulting services for the carrier market and its customers. Based on Huawei's rich experience and global practices in the carrier field, Huawei Carrier Consulting has developed the V-ID3EA methodology, a consulting operation platform and more than 150 methods, models and tools to efficiently support global consulting project delivery. Huawei will provide carriers with 12 consulting portfolios in the four domains of strategy, business, operations, and networks. These portfolios include: 5G Business-Network Synergetic Consulting, Value-based Management Consulting, Enterprise Know-how Consulting, Operation Optimization and Reconstruction Consulting, a DTPC®[2] (Digital Transformation Practice Center), Operation Assistance Consulting, Video Consulting, Home/ Fixed Network Consulting, Consumer/ Mobile Network Consulting, Intelligent Operation

Consulting, Digital Service Consulting, and Service Experience Monetization Consulting. To address typical challenges faced by carriers in different stages of 5G development, such as a lack of confidence in 5G investment, difficulties in bridging the gap between massive sites, and the slow innovation of new products and offerings, Huawei 5G Business-Network Synergetic Consulting provides consulting services in the areas of 5G industry and service-network synergetic planning, 5G product and offering innovation, and large-scale 5G service development for carriers. It does this by offering close linkage with business design and network planning, Huawei's profound professional knowledge, its DTPC innovation, and Cloud Open Labs platform. This ensures network deployment is driven by service development, on-demand network construction and precise network construction, to achieve a positive business cycle during 5G development. Huawei has already provided 5G consulting services to carriers in China, Europe, the Middle

East, Africa, and across the Asia Pacific region. Huawei Carrier Consulting Services aims to become a professional consulting service provider with in-depth scenario capabilities, systematic analysis and problem-solving capabilities, with global reach and telecom industry know how. As of today, Huawei Carrier Consulting has served more than 100 carrier customers around the world with the support of a consulting team distributed across nine regions and two competence centers. In the future, Huawei will continue to invest in carrier consulting services to help more carriers create and obtain value. Meanwhile, Huawei is expecting to cooperate with more global carriers, industry partners, and professional institutions to establish a regular communication mechanism to enhance mutual understanding and collaboration, thus playing a more active role in the development of the telecoms industry generally and the consulting industry specifically.

Huawei Releases ADN Solution White Paper and Joins Hands with the Industry to Accelerate Intelligent Network Upgrades

Huawei recently released the Autonomous Driving Network Solution White Paper at Huawei Global Analyst Summit (HAS) 2020. This white paper systematically describes the future network architecture, O&M architecture, and key technologies. With the collaboration of AI capabilities at the NE, network, and cloud layers, simplified and ultra-broadband networks are emerging, and network O&M is evolving to man-machine collaboration, providing carriers and industry partners with practical reference for digital transformation. Lu Hongju, President of Huawei's General Development Dept, said: "The next 10 years will be the golden decade for the booming development of the intelligent era. New technologies represented by 5G, cloud, and AI will inject core momentum to intelligent connection upgrades. Huawei calls on industry peers to explore practices and leverage data and knowledge to build an autonomous network that features automation, self-healing, and self-optimization, and seize new opportunities presented by the digital economy." The white paper points out that two changes are required to build ADNs: First, the NE-centric fragmented network construction mode must be changed to the service-centric modular autonomous network construction mode. Converged "Manager+Controller+Analyzer" achieves single-domain autonomy and real-time closed-loop, balancing the cost and speed of intra-domain innovation and

inter-domain collaboration. Second, all industry parties should jointly define the target architecture for cross-domain openness and collaboration, as well as programmable API standards, greatly simplifying cross-domain service collaboration and assurance, reducing R&D and operation costs and risks, achieving agile business through simplified integration, and ultimately reducing the collaboration costs of the entire industry. The white paper also suggests using L4 (high autonomous network) as the phased objective of the future architecture. This architecture should include the following four features: 1. Digitalization of network knowledge and expert knowledge, as well as a transition from reactive, manual O&M to predictive, intelligent O&M. 2. Simplified

network infrastructure and intelligent NEs. 3. Hierarchical single-domain autonomy and cross-domain collaboration, achieving online and real-time closed-loop networks. 4. A unified cloud-based AI training, knowledge management, and O&M design platform, supporting the iterative evolution of telecom networks. To achieve the ambitious ADN goal, the white paper suggests that all industry parties need to reach a consensus as well as jointly develop unified standards and hierarchical evaluation systems in compliance with the three-stage (development, research, and exploration) strategy, enabling the formation of an efficient and collaborative industry ecosystem and jointly facilitating intelligent upgrades as well as healthy and sustainable industry development.
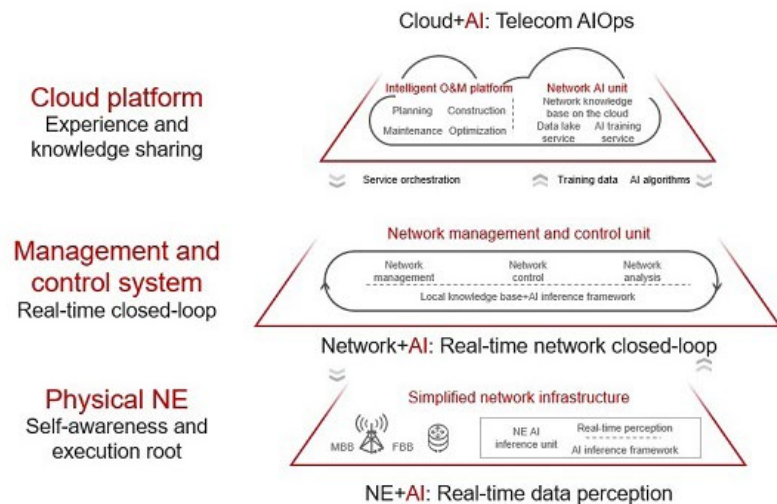
Huawei Releases Media Statement on Foreign Direct Product Rule Changes Made by US Government

Huawei categorically opposes the amendments made by the US Department of Commerce to its foreign direct product rule that target Huawei specifically. The US government added Huawei to the Entity List on May 16, 2019 without justification. Since that time, and despite the fact that a number of key industrial and technological elements were made unavailable to us, we have remained committed to complying with all US government rules

and regulations. At the same time, we have fulfilled our contractual obligations to customers and suppliers, and have survived and forged ahead against all odds. Nevertheless, in its relentless pursuit to tighten its stranglehold on our company, the US government has decided to proceed and completely ignore the concerns of many companies and industry associations. This decision was arbitrary and pernicious, and threatens to

undermine the entire industry worldwide. This new rule will impact the expansion, maintenance, and continuous operations of networks worth hundreds of billions of dollars that we have rolled out in more than 170 countries. It will also impact communications services for the more than 3 billion people who use Huawei products and services worldwide. To attack a leading company from another country, the US government has intentionally

turned its back on the interests of Huawei's customers and consumers. This goes against the US government's claim that it is motivated by network security. This decision by the US government does not just affect Huawei. It will have a serious impact on a wide number of global industries. In the long run, this will damage the trust and collaboration within

the global semiconductor industry which many industries depend on, increasing conflict and loss within these industries. The US is leveraging its own technological strengths to crush companies outside its own borders. This will only serve to undermine the trust international companies place in US technology and supply chains. Ultimately, this will harm

US interests. Huawei is undertaking a comprehensive examination of this new rule. We expect that our business will inevitably be affected. We will try all we can to seek a solution. We hope that our customers and suppliers will continue to stand with us and minimize the impact of this discriminatory rule.

Huawei to Invest US$200 Million In Computing Ecosystem in 2020 Alone, and Unveils New Services to Empower Developers, Partners & Customers

At the conclusion of the 17th Huawei Global Analyst Summit recently held online, Huawei was joined by over 2,000 analysts, opinion leaders, and media representatives to discuss the global acceleration towards an intelligent world. Amongst the highlights, Huawei announced that it would advance its computing strategy in the year ahead, fostering an ecosystem anchored in computing and the HUAWEI CLOUD. Throughout 2020, Huawei will invest USD200 million in the computing ecosystem and help support 2 million developers worldwide. By cultivating product innovation and optimizing business models, Huawei aims to give partners more ways to develop digital applications and fully tap into data value for business benefits. On the second day of the summit, Huawei also highlighted how intelligent IP networks accelerate intelligent connectivity. Kevin Hu, President of Huawei's Data Communication Product Line, said: "2020 is the first year for commercial use of intelligent IP networks. The entire industry has witnessed a historic shift of IP networks from Internet IP in the World Wide Web era to video-driven All IP, and is now on the way to intelligent IP oriented at the 5G and cloud era. Huawei will keep proactively increasing investment in super capacity, intelligent experience, and autonomous driving to build end-to-end intelligent IP networks for customers." Separately during the summit, Yu Haitao, Vice President of Huawei Packet Core Network Product Line, provided insights into Huawei's latest 5G core network strategy and its dedication to building a 5G core network based on the CORE

factors: cloud native, one core, real-time operation, and edge computing. Based on 5G Deterministic Networking (5GDN), the 5G core network will deliver innovative service solutions including 5G MEC, network slicing, and 5G LAN, providing differentiated network capabilities and a deterministic networking experience. Executives from the company also reviewed how Huawei is helping operators achieve 5G business success in all service scenarios by building simplified, converged 5G networks that deliver multi-band coordination and superior experience while continuously reducing OPEX. In parallel, the European Telecommunications Standards Institute (ETSI), China Broadband Development Alliance, Altice Portugal, and Huawei jointly launched the Fifth Generation Fixed Network (F5G) industry initiative. The initiative invites global upstream and downstream partners

of the fixed network industry to join the F5G organization to open up a new era for the global optical industry, and to foster the rapid development of the global digital economy. Huawei's Enterprise Business Group also confirmed working with partners to explore the industry digitization market and help customers to accelerate digitization and intelligence processes. Mr. Peng Zhongyang, Director of the Board, President of the Enterprise Business Group at Huawei, said: "With over 30 years of industry experience and accumulated capabilities, we have an in-depth understanding of industry and customer needs. This is why many customers have chosen Huawei to be their partner as they go digital. In the digital era, together with our 90,000-strong R&D teams, we will dive into the digital transformation market and develop scenario-specific solutions for government and enterprise customers."

Huawei Intelligent IP Networks, Accelerating Intelligent Connectivity

During Huawei Global Analyst Summit 2020, Huawei's "Leading Intelligent IP Networks, Accelerating the Transformation Towards Intelligent Connectivity" summit was successfully held. This summit shed light on three typical characteristics of intelligent IP networks: super capacity, intelligent experience, and autonomous driving. Besides this, Huawei shared its numerous success stories of intelligent IP networks across industries, signifying the data communications industry's arrival in the intelligent IP network era. As 5G, cloud, and AI pick up pace among enterprises of all sizes, enterprises, amid their pursuit for digital transformation, are confronting once-in-a-generation challenges, such as collaboration between hundreds of billions of production and office terminals, 100% migration of enterprise services to the cloud, and 97% AI adoption rate. As a decisive part of enterprises' digital transformation, IP networks are also encountering a wide range of issues typified by insufficient bandwidth, poor service experience, and low efficiency of network O&M and troubleshooting. Intelligent IP networks are the key to conquering such issues. To better understand what kind of network can be called an intelligent IP network, Huawei took the lead by defining three typical characteristics of such a network:

1. Super capacity: IP networks achieve a future-proof shift from 100GE to 400GE and from Wi-Fi 5 to Wi-Fi 6, and transform towards intelligent IP networks, boosting bandwidth resources. In addition, such future-oriented networks adopt slice-based bandwidth isolation, implementing flexible bandwidth adjustment.

2. Intelligent experience: Intelligent IP networks stand out with intelligent identification of service types, service intent inference, and flexible, real-time network resource adjustment upon cloud changes. These highlights deliver always-on network connectivity experience.

3. Autonomous driving: Intelligent IP networks can be automatically deployed, achieving rapid adjustment of services. In addition, they can perform automatic, AI-powered fault rectification, implementing proactive O&M and ensuring high network availability.

Kevin Hu, President of Huawei's Data Communication Product Line, said: "2020 is the first year for commercial use of intelligent IP networks. The entire industry has witnessed an historic shift of IP networks from Internet IP in the World Wide Web era to video-driven All IP, and is now on the way to intelligent IP oriented at the 5G and cloud era. Looking ahead, Huawei will keep innovating and

continuously, proactively increasing investment in super capacity, intelligent experience, and autonomous driving to build end-to-end (E2E) intelligent IP networks for customers." Huawei's innovative intelligent IP network solution achieves a future-proof integration of the three characteristics, and has embraced wide applications in various scenarios, such as campus network, data center network, and wide area network (WAN) scenarios. Specifically, this feature-rich solution is perfectly suited to building high-quality campus networks. It adopts Huawei's industry-leading AirEngine Wi-Fi 6 that stands out for exclusive 16T16R smart antennas, delivering up to 1.6 Gbps single-user performance (20% higher than the industry average). Another highlight of Huawei's AirEngine Wi-Fi 6 lies in AI-powered intelligent radio calibration that improves the average downlink rate of stations (STAs) by more than 50%. The solution also employs an AI-powered intelligent O&M system that slashes the mean time to repair (MTTR) from four hours to as short as just 10 minutes. These differentiators significantly optimize user experience, helping build future-proof, fully-wireless, and intelligent campus networks in an extensive range of scenarios, such as Huawei's super-large campus serving 194,000 employees, and the digital warehouse of SONGMICS — the largest home necessity seller on Amazon in Germany. The solution also performs well in the data center network domain. It adopts Huawei's innovative iLossless algorithm that ensures zero packet loss on the Ethernet, thereby improving data computing efficiency by 27% and data storage efficiency by 30% compared with the industry average. The solution also achieves AI-powered intelligent O&M, which can remediate a typical fault in just 9 minutes — fault detection in 1 minute, fault locating in 3 minutes, and fault rectification in 5 minutes. Such superb performance has attracted more than 40 Internet service providers (ISPs) and financial service customers, such as China Merchants Bank, China CITIC Bank, and People's Insurance Co. (Group) of China Ltd. (PICC). Besides the campus network and data center network domains, this solution is also highly suited to the WAN domain for its industry-leading FlexE-based slicing that provides 100% bandwidth assurance, achieving 5 times higher slicing granularity than the industry average. In addition, this feature-rich solution uses IPv6+ to select the optimal path based on the service intent, ensuring committed latency for key services. As such, this solution achieves superb transmission of key services and has been widely applied in multiple scenarios, such as China Mobile (smart grid services), Agricultural Bank of China, and China Unicom Beijing branch (services for the Beijing Daxing International Airport). Capitalizing on more than 20 years of expertise in the IP network domain, Huawei keeps on building highly competitive intelligent IP network products and solutions, as well as providing smooth, continuous services for carriers and customers in the financial services, government, transportation, and energy sectors in more than 100 countries and regions. Looking forward, Huawei's Data Communication Product Line will collaborate with more customers in innovative design and in-depth service cooperation to help more customers achieve digital transformation so as to better embrace the "5G + cloud + AI" era and build intelligent IP networks with continuous leadership.

Huawei and China Mobile Guangdong Announce First Enterprise Private Line Service Based on NG OTN

China Mobile Guangdong and Huawei have jointly announced the launch of the world's first enterprise private line service based on Next-Generation Optical Transport Network (NG OTN) technology between Guangzhou's Dongfengzhong and Liwan districts. Launch of the service marks a significant upgrade of China Mobile Guangdong's smart private network, which will fully adapt to the differentiated private line connection requirements of enterprises of all sizes, accelerate the digital transformation of vertical industries, and lay a solid foundation for a booming digital economy in Guangdong Province. New infrastructure construction represented by 5G and all-optical networks will be increasingly crucial in supporting high-quality economic development. In 2018, China Mobile Guangdong established an all-optical smart city group in the Greater Bay Area (covering Guangdong, Hong Kong, and Macao) and built an all-optical network in the region centering on Guangdong's major cities: Guangzhou, Shenzhen, Dongguan, and Foshan. In 2019, China Mobile Guangdong built a smart private network covering the entire province, enhancing capabilities of virtual channel grooming based on the Greater Bay Area's all optical network and providing premium private line services for industries such as finance and healthcare as well as government. To further utilize the potential of the new all-optical infrastructure network, China Mobile Guangdong will continue to innovate in 2020 to promote application of smart private networks in additional industries and enterprises, supporting the rapid development of Guangdong's digital economy. China Mobile Guangdong and Huawei's joint innovation in NG OTN technology defines a smaller-granularity and more flexible optical network that supports an expanded number of service connections, higher resource utilization, and lower transmission latency, further enhancing the capability of smart private networks.

- Minimum service granularity is 2 Mbit/s, and the number of network connections

is increased 100 times. 100G can support 1000 service connections, providing massive premium private line services for industries.

- Reducing processing latency of devices by up to 90% assures ultra-low latency for financial and industrial manufacturing scenarios.
- 2 Mbit/s to 100 Gbit/s stepless speed and hitless adjustment provides bandwidth on demand (BOD) without interrupting services.
- The integrated all-optical network is compatible with multiple technologies such as SDH, OTN, and NG OTN, supports flexible access of enterprise customers anywhere in the province, and ensures fast service provisioning within days.

Cai Weiwen, Deputy General Manager of China Mobile Guangdong, said, "China Mobile Guangdong insists on driving business development through technological innovation, enabling digitalization of the industry, and helping make breakthroughs for industry groups. In our collaboration with Huawei, smart private networks powered by NG OTN can provide more enterprise customers with high-quality private line services that are secure, convenient, and simplified, effectively supporting the innovation and development of vertical industries, and facilitating digital transformation in the Greater Bay Area." Simon Lu, President

of Huawei's Transport Network Domain, said, "The joint innovation of Huawei and China Mobile Guangdong in development of NG OTN is another milestone in our collaboration. As a next-generation optical transport technology, NG OTN will accelerate popularization of all-optical networks, provide a high-quality experience for various industries, promote success of the optical industry, and enable collaborative development of industry and business innovation." In line with the strategic aim of the all-optical smart city group, China Mobile Guangdong has deployed Optical Cross-Connect (OXC) devices at more than 40 transmission nodes. The cloud-based OTN intelligent management and control system has managed over 55,000 NEs, facilitating China Mobile Guangdong's construction of a world-leading all-optical network. The provisioning of NG OTN-based government and enterprise private line service will accelerate the penetration and convergence of all-optical networks as well as various fields and industries, paving the way for a new digital infrastructure in the Greater Bay Area. In the future, China Mobile Guangdong and Huawei will continue to explore innovations in the all-optical field, jointly promote construction of an all-optical smart city group, and drive technological innovation and industry upgrades.

MTC, Huawei in Partnership for Oman ICT Ecosystem Development

The Ministry of Technology and Communications (MTC) signed a memorandum of understanding (MoU) with Huawei at the Ministry. The MoU was signed to launch a new collaborative effort to develop Oman's digital society and ICT ecosystem. The MoU was signed by Dr. Salim bin Sultan Al Ruzaiqi, CEO of MTC and Chen Bing, CEO of Huawei Oman. This MoU represents a long-term cooperation program between MTC and Huawei Oman to develop the ICT sector in the Sultanate. The MoU will see the two entities work together to foster knowledge transfer, develop Oman's ICT talent, and establish new digital processes that will streamline the Sultanate's communications, amongst other benefits. Dr. Salim bin Sultan Al Ruzaiqi, CEO of MTC, said "We're pleased to tie up with Huawei today to empower the Omani talents and innovators in ICT field. Through this MoU with Huawei, we will use technology to enhance government services, enable businesses to thrive, and build ICT talent and knowledge throughout the Sultanate." "One of the key component of this partnership is the cooperation to launch and promote the apps developed by the trainees at Center for Mobile Apps Development through Huawei Mobile Service (HMS), as well as adopting the immerging 4IR technologies to create digital solutions directed towards different life aspects," he further added. Chen Bing, CEO of Tech. Investment (Oman), said: "It is an honor to have the opportunity to expand our relationship with the Ministry of Technology and Communication. By working closely with the Ministry, we aim to contribute to Oman's digital evolution, not only by providing world-class technologies that will enable digital transformation and support Oman 2040 National Vision, but by building the human expertise who will be the future leaders of the Sultanate's technological development for many years to come." MTC and Huawei will jointly make efforts to foster ICT Omani talents and capabilities through internship program, campus recruitment, ICT training and certification. MTC and Huawei will also cooperate in innovation and development for Digital Government Transformation with introducing artificial intelligence (AI), Cloud and 5G technology solutions. Furthermore, MTC and Huawei will organize events, competitions and workshops on modern digital technologies accompanying the Fourth Industrial Revolution to further elevate the technical skills and competencies of Omani talents. In order to share latest ICT trends and advancement, Huawei will support MTC in planning for workshops, sessions, technical forums, highlighting Cloud, AI, IPV6 and 5G technologies. MTC through signing such MoUs and partnerships with leading telecommunication and tech international companies seeks to build and improve the Omani ICT ecosystem and embrace the advent of the fourth Industrial Revolution technologies.

Microsoft, Workday Announce Strategic Partnership to Accelerate Planning for Today's World

Microsoft Corp and Workday, Inc announced a strategic partnership prioritizing enterprise planning in the cloud and expanding the business solutions customers can use to better optimize their everyday work. Through this partnership, Workday customers will also be able to run Workday Adaptive Planning on the Microsoft Azure cloud. Further, Microsoft will adopt Workday Adaptive Planning for its global finance teams for planning, budgeting and forecasting to help accelerate decision-making. The companies also unveiled new integrations between Workday's suite of applications and Microsoft Teams and Azure Active Directory that will enable customers to simplify day-to-day tasks, foster collaboration, increase productivity and enhance security. As businesses adjust and adapt to changing business environments, the need for real-time planning capabilities is accelerating. Making faster, informed decisions across all areas of the business requires a continuous planning process. Workday Adaptive Planning offers customers a modern platform that ties data, people and plans together in one version of truth, accessible in the cloud to finance, HR, sales, functional business leaders, and more. Adding Workday Adaptive Planning to Azure offers increased flexibility as customer demand for cloud-based planning grows. The addition of Workday Adaptive Planning brings a leading modern planning, analytics and reporting solution at scale to the Azure community. Power users can trust the enterprise security and global availability of Azure to handle robust models, multiple instances and nearly unlimited dimensionality for "slicing and dicing" data in Workday.

Microsoft, IDC Host Digital Event To Discuss Business Continuity And Cybersecurity in The Era Of Remote Working

Microsoft and IDC hosted an exclusive webinar featuring industry experts to discuss business continuity and its challenges, as organizations in the region and around the world maintain the remote working norm. The session titled 'Powering Through Together 'explored the recent surge in uptake of cloud technologies and collaboration tools and urged business leaders to take a holistic approach to Cybersecurity, while ensuring productivity of their workforce. Mark Walker, Associate Vice President, Vertical Industries for IDC Middle East and Africa, delivered the opening keynote and discussed the challenges that leaders are facing during the unprecedented times, as well as the implications on businesses considering the outlook. Business has significantly changed in terms of priorities, customer focus, and digital transformation plans across all sectors – uncertainty and risk has increased significantly. IDC research indicates that after an initial surge in IT investment in communication and collaboration solutions, focus is now on accelerating digital transformation using highly secure cloud-based platforms to deliver solutions that accommodate remote work and provide reliable, secure accessibility. Ann Johnson, Corporate Vice President for Cybersecurity Solutions Group at Microsoft, shared her perspective on business continuity, and laid out guidance for businesses to adapt and enable secure remote work options to become more operationally resilient in short and longer term. "Cybersecurity provides the underpinning to operational resilience and business continuity as more organizations adapt to enabling secure remote work options, whether in the short or longer term," said Johnson. "Cloud technology and artificial intelligence help unlock new capabilities to extend the power across endpoints, networks, data, applications, and infrastructure to improve productivity and collaboration as we must also be empathetic to the end user experience during times of constant disruption." Microsoft has been a frontrunner in empowering organizations to adopt remote working solutions while implementing the right security measures. The AI capabilities built into Microsoft Security tools are trained on 8 trillion daily threat signals backed by insights from 3,500 security experts. Custom algorithms and machine learning models make, and learn from, billions of queries every day. And

as a result, Microsoft Security solutions help identify and respond to threats 50% faster, as well as automate 97% of the routine tasks that occupied defenders' valuable time. During the webinar, Microsoft experts from the Middle East and Africa highlighted key security strategies that can help organizations in improving their security posture. Mina Nagy, Azure Security Lead shared best practices for security professionals on how an organization can enable security and management for their remote workforce. And Mehmet Uner, Services Strategy Lead discussed ways that can allow secured access to cloud and on-premises applications with ease of modern management capabilities for all devices. The session also hosted a panel discussion with participants from the financial services industry. Yuri Misnik, Group Technology Office at First Abu Dhabi Bank (FAB) shared insights on the strategy put in place while implementing remote working procedures. "Security of our customers and their data is our top priority. Our model is one of continuous improvement across all functions of the Group, this discipline that gives us confidence that we will stay one step ahead of the emerging threats and determined adversaries. " concluded Misnik.

Microsoft Announces New Supercomputer at Build Conference, Lays Out Vision For Future AI Work

Microsoft has built one of the top five publicly disclosed supercomputers in the world, making new infrastructure available in Azure to train extremely large artificial intelligence models, the company is announcing at its Build developers conference. Built in collaboration with and exclusively for OpenAI, the supercomputer hosted in Azure was designed specifically to train that company's AI models. It

represents a key milestone in a partnership announced last year to jointly create new supercomputing technologies in Azure. It's also a first step toward making the next generation of very large AI models and the infrastructure needed to train them available as a platform for other organizations and developers to build upon. "The exciting thing about these models is the breadth of things they're

going to enable," said Microsoft Chief Technical Officer Kevin Scott, who said the potential benefits extend far beyond narrow advances in one type of AI model. "This is about being able to do a hundred exciting things in natural language processing at once and a hundred exciting things in computer vision, and when you start to see combinations of these perceptual domains, you're going to have new applications

that are hard to even imagine right now," he said. A new class of multitasking AI models Machine learning experts have historically built separate, smaller AI models that use many labeled examples to learn a single task such as translating between languages, recognizing objects, reading text to identify key points in an email or recognizing speech well enough to deliver today's weather report when asked. A new class of models developed by the AI research community has proven that some of those tasks can be performed better by a single massive model — one that learns from examining billions of pages of publicly available text, for example. This type of model can so deeply absorb the nuances of language, grammar, knowledge, concepts and context that it can excel at multiple tasks: summarizing a lengthy speech, moderating content in live gaming chats, finding relevant passages across thousands of legal files or even generating code from scouring GitHub. As part of a companywide AI at Scale initiative, Microsoft has developed its own family of large AI models, the Microsoft Turing models, which it has used to improve many different language understanding tasks across Bing, Office, Dynamics and other productivity products. Earlier this year, it also released to researchers the largest publicly available AI language model in the world, the Microsoft Turing model for natural language generation. The goal, Microsoft says, is to make its large AI models, training optimization tools and supercomputing resources available through Azure AI services and GitHub so developers, data scientists and business customers can easily leverage the power of AI at Scale. "By now most people intuitively understand how personal computers are a platform — you buy one and it's not like everything the computer is ever going to do is built into the device when you pull it out of the box," Scott said. "That's exactly what we mean when we say AI is becoming a platform," he said. "This is about taking a very broad set of data and training a model that learns to do a general set of things and making that model available for millions of developers to go figure out how to do interesting and creative things with." Training massive AI models requires advanced supercomputing infrastructure, or clusters of state-of-the-art hardware connected by high-bandwidth networks. It

also needs tools to train the models across these interconnected computers. The supercomputer developed for OpenAI is a single system with more than 285,000 CPU cores, 10,000 GPUs and 400 gigabits per second of network connectivity for each GPU server. Compared with other machines listed on the TOP500 supercomputers in the world, it ranks in the top five, Microsoft says. Hosted in Azure, the supercomputer also benefits from all the capabilities of a robust modern cloud infrastructure, including rapid deployment, sustainable datacenters and access to Azure services. "As we've learned more and more about what we need and the different limits of all the components that make up a supercomputer, we were really able to say, 'If we could design our dream system, what would it look like?'" said OpenAI CEO Sam Altman. "And then Microsoft was able to build it." OpenAI's goal is not just to pursue research breakthroughs but also to engineer and develop powerful AI technologies that other people can use, Altman said. The supercomputer developed in partnership with Microsoft was designed to accelerate that cycle. "We are seeing that larger-scale systems are an important component in training more powerful models," Altman said. For customers who want to push their AI ambitions but who don't require a dedicated supercomputer, Azure AI provides access to powerful compute with the same set of AI accelerators and networks that also power the supercomputer. Microsoft is also making available the tools to train large AI models on these clusters in a distributed and optimized way. At its

Build conference, Microsoft announced that it would soon begin open sourcing its Microsoft Turing models, as well as recipes for training them in Azure Machine Learning. This will give developers access to the same family of powerful language models that the company has used to improve language understanding across its products. It also unveiled a new version of DeepSpeed, an open source deep learning library for PyTorch that reduces the amount of computing power needed for large distributed model training. The update is significantly more efficient than the version released just three months ago and now allows people to train models more than 15 times larger and 10 times faster than they could without DeepSpeed on the same infrastructure. Along with the DeepSpeed announcement, Microsoft announced it has added support for distributed training to the ONNX Runtime. The ONNX Runtime is an open source library designed to enable models to be portable across hardware and operating systems. To date, the ONNX Runtime has focused on high-performance inferencing; today's update adds support for model training, as well as adding the optimizations from the DeepSpeed library, which enable performance improvements of up to 17 times over the current ONNX Runtime. "We want to be able to build these very advanced AI technologies that ultimately can be easily used by people to help them get their work done and accomplish their goals more quickly," said Microsoft Principal Program Manager Phil Waymouth. "These large models are going to be an enormous accelerant."
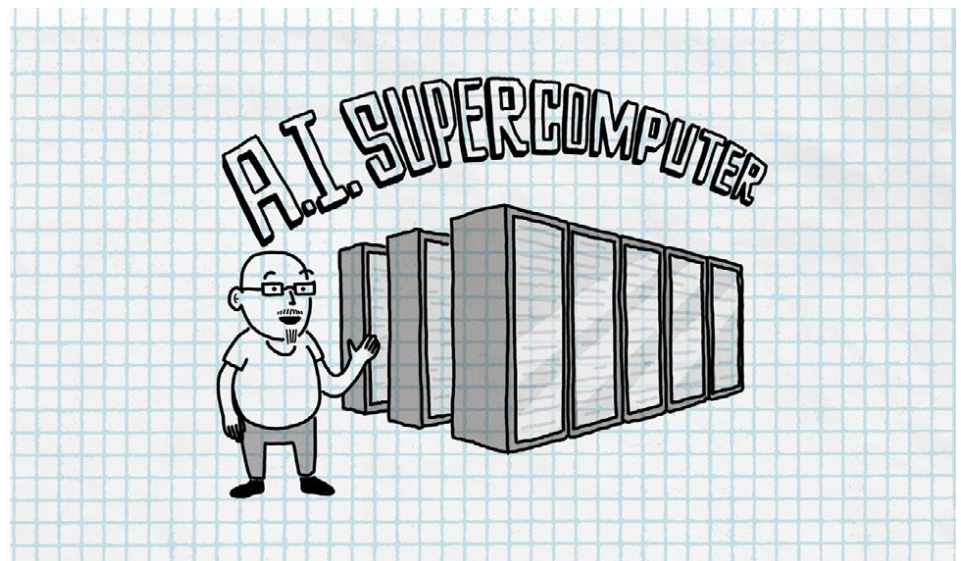
Microsoft Announces Definitive Agreement to Acquire Metaswitch Networks

Microsoft announced that it has signed a definitive agreement to acquire Metaswitch Networks, a leading provider of virtualized network software and voice, data and communications solutions for operators. The convergence of cloud and communication networks presents a unique opportunity for Microsoft to serve operators globally via continued investment in Azure, adding additional depth to our hyperscale cloud infrastructure with the specialized software required to run virtualized communication functions, applications and networks. This announcement builds on our recent acquisition of Affirmed Networks, which closed on April 23, 2020. Metaswitch's complementary portfolio of ultra-high-performance, cloud-native communications software will expand our range of offerings available for the telecommunications industry. Microsoft intends to leverage the talent and technology of these two organizations, extending the Azure platform to both deploy and grow these capabilities at scale in a way that is secure, efficient and creates a sustainable ecosystem. As the industry moves to 5G, operators will have opportunities to advance the virtualization of their core networks and move forward on a path to an increasingly cloud-native future. Microsoft will continue to meet customers where they are, working together with the industry as operators and network equipment providers evolve their own operations. We will continue to support hybrid and multi-cloud models to create a more diverse telecom ecosystem and spur faster innovation, an expanded set of unique offerings and greater opportunities for differentiation. We will continue to partner with existing suppliers, emerging innovators and network equipment partners to share roadmaps and explore expanded opportunities to work together, including in the areas of radio access networks (RAN), next-generation core, virtualized services, orchestration and operations support system/business support system (OSS/BSS) modernization. A future that is interoperable has never been more important to ensure the success of customers and partners. By enabling advancements in enhanced mobile broadband, ultra-reliable low latency communications and massive machine-type communication to enable IoT at scale, 5G offers significant potential for enterprises and governments and in turn creates new opportunities for operators. 5G will ultimately give operators a path to accelerate service innovation and deliver new transformative experiences that are faster, more resilient and more secure, spurred on by software advances to drive transformation at scale. We have a long history of working with operators as they increasingly embrace software-based solutions and continue to support the advancement of cloud-based networking while helping create new partnership opportunities for existing network equipment providers. Our intention over time is to create modern alternatives to network infrastructure, enabling operators to deliver existing and value-added services – with greater cost efficiency and lower capital investment than they've faced in the past.

Microsoft Teams and Bahrain's MoE Accelerates e-Learning across the Kingdom with an Educational Platform

Bahrain's Ministry of Education joined forces with Microsoft to accelerate its E-learning strategy and make the transition to remote education in the Kingdom. The effort has enabled public schools with free access to Office 365, including Microsoft Teams for students, teachers, and faculty to connect, engage and learn. "Microsoft Teams is an international platform used by millions", said Dr. Mohammed Mubarak Juma, Undersecretary for Resources, Services and Chairman of Virtual Classrooms Committee at Ministry of Education. "And we found it easier to implement it across our schools. We brought all our departments together in the process to support the journey and create centralized classrooms for teachers

and students to attend virtually." To ensure a smooth roll out of the distance learning initiative, the ministry established a control room with personnel from each department to contribute their efforts in enabling a seamless implementation. With Microsoft Teams, schools were able to build collaborative e-classrooms bringing teachers and students together to use apps, chat, conduct audio and video calls, and collaborate on content as well as assignments in one digital hub. "We had over 60,000 students participating from the beginning of our first session. And we kept track of the numbers growing on a daily basis. Added Juma. "Through the Team's application I can track the number of the students that attended virtual

classrooms, and the times they interacted with teachers. The students felt just exactly as if they were in the physical classroom." The Ministry and Microsoft also conducted a series of joint e-workshops to train teachers and educators in helping them better leverage the remote learning tools and applications and embed them in their daily teaching models. An assessment form was also created by the ministry's IT team for each student to complete after each session. "The form enabled teachers to identify the level of understanding of each student." Said Shaikha Latifa Bint Ebrahim Al Khalifa, Head of Coordination, Follow-up, Undersecretary for Resources, Services at the Ministry. "The success of these sessions has been due to the

commitment of the students, as well as the dedication of all the teachers and the members from our control room." "We had a clear vision for digital transformation at the Ministry of Education, and this helped us to a great extent by setting our path and accelerating the remote learning program." Said Nawal Ebrahim Al Khater, Assistant Undersecretary for Planning, Information at the Ministry of Education. "We worked with Microsoft to create centralized virtual classrooms by assigning access for students to Microsoft 365. This also enabled them to use applications such as Word and PowerPoint from any device." To ensure consistent support, the Ministry has also setup a quality assurance system that assists teachers and students from training to tracking attendance, and from technical support to helping them leverage new features in Microsoft Teams. Dr. Mohammed Mubarak Juma lauded the

efforts of the team at the Ministry, as well as teachers and other supporting staff in their readiness to implement the distance learning program. He also extended appreciation to the students and their

parents for their willingness in adopting the remote learning model, to ensure continuity in education.

Microsoft and Adaptive Biotechnologies Launch Virtual ImmuneRACE Study

Adaptive Biotechnologies Corp. announced on Tuesday it has begun enrolling a virtual clinical study, ImmuneRACE, as part of a broader effort it has undertaken with Microsoft Corp. to rapidly map and measure the immune response to the COVID-19 virus to inform improved diagnostics to fulfill the need for more reliable testing. The study calls for 1,000 participants in select U.S. metropolitan areas impacted by COVID-19. De-identified data will be made freely available to public health officials, academia and industry to help accelerate solutions to the pandemic. LabCorp, through its Covance drug development business, will manage the collection of blood samples and nose/throat swabs from participants in the comfort and safety of their own homes. There are currently two types of tests for COVID-19. PCR tests indicate the presence of live virus from a nose or throat swab, and serology tests indicate exposure to and potential immunity against the virus by measuring the presence of antibodies in the blood. Adaptive and Microsoft believe a third type of test can potentially help address current challenges with testing, resulting in the following scenarios:

• Complementary or alternative diagnostic testing for individuals with

known exposures or symptoms
• Ability to triage patients and inform treatment strategies based on risk
• Ongoing immunity surveillance testing of the population to inform decisions on restrictions

"We've spent the past decade learning how the adaptive immune system naturally detects and treats all disease, and we are well-positioned to apply our immune medicine platform specifically to COVID-19. We're hopeful that we can contribute important information that will become part of an immune scan to help reopen society," said Chad Robins, CEO and co-founder of Adaptive Biotechnologies. "As many are sheltering in place wondering how they can help, we wanted to launch ImmuneRACE with Microsoft and give people an opportunity to participate. These efforts are complementary to many global initiatives underway to study the virus itself." As part of the study, the partners will measure the presence of specialized cells of the immune system in the blood, called T cells that identify the disease early on and proliferate to combat the infection. Together, Adaptive and Microsoft are mapping and measuring the immune response of T cells specific to many diseases and are now applying their

combined capabilities to COVID-19. "We are dedicated to being part of the solution against COVID-19," said Peter Lee, corporate vice president, AI and Research, Microsoft. "Immune response data may augment what we have been learning to date to help determine who is at greater risk of developing more severe symptoms and may help with future containment efforts. Anyone who has been affected by COVID-19 holds key information that can help contain and manage the virus."

In March, the companies announced an expansion of their existing partnership to use machine learning to map the immune system response to many different diseases, including infectious diseases, autoimmune disorders and cancer, at scale to study COVID-19. The information obtained from study participants, including how the immune system identifies the virus and how people are responding to the virus, will be integrated with data obtained from samples provided by hospitals and other institutions across the globe. The accuracy of the immune response signature will be continually improved and updated online in real time as more study samples are sequenced and by using Microsoft's hyperscale machine learning capabilities and the Azure cloud platform.

Other industry leaders, including Illumina and Providence, have also joined forces with Microsoft and Adaptive to accelerate this critical effort against COVID-19.

How to join ImmuneRACE

ImmuneRACE will enroll 1,000 individuals from more than 20 metropolitan areas in the U.S. You can be part of the solution if you are between the ages of 18 and 89 and:

- Currently have COVID-19
- Have recently recovered from COVID-19
- Were exposed to someone diagnosed with COVID-19

If you decide to participate and qualify for the study, you will be asked to provide relevant information about your medical history, symptoms and previous diagnostic tests. Patients who qualify for the study can schedule a blood draw and swab collection in the convenience of their own home. The phlebotomist completing sample collection will be using appropriate personal protective equipment to safely conduct the visit when entering participant's homes.

Microsoft to Invest $1 Billion in Poland for New Data Center Region and Training

Microsoft will invest $1 billion in Poland to build a data center region in order to provide cloud services to businesses and government institutions, among other verticals. Microsoft inked an agreement with domestic cloud provider Chmura Krajowa to provide cloud services across Poland and parts of Central Europe. "Poland has the opportunity to be the digital heart of Europe," said Mark Loughran, general manager, Microsoft Poland, in a statement. "This is why today we are announcing a partnership with Chmura Krajowa, and one of the biggest investments in digital technology in Poland ever of $1 billion investment in skilling, digital transformation support, and building a Microsoft global-scale and trusted cloud region, giving our customers and strong local partner ecosystem access to our world-class digital technology and innovative cloud solutions all located here in Poland." The investment followed on the heels of Microsoft working with Polish organizations and businesses over the past 30 years. Microsoft has more than 60,000 local partners in Poland. In addition to the cloud services, Microsoft will also offer a long-term training program

in Poland that will help businesses and organizations implement their cloud-based digital transformation strategies. "I deeply believe that Microsoft's investment in Poland will be important for enterprises, public institutions and the education system and will enable them to digitally transform and implement new work standards," said Polish Prime Minister Mateusz Morawiecki, in a statement. "Our primary goal is to accelerate Poland's transformation into a technological hub for

the region of Central and Eastern Europe," In addition to the Microsoft Azure cloud services, Poland's digital economy also stands to gain from Microsoft's Office 365 applications that can be hosted in the cloud for software-as-a-service (SaaS) workloads as well as its Dynamics 365 business applications. Microsoft has 59 cloud data centers across the globe with Microsoft Azure services now available in more than 140 countries.

Microsoft Cloud Strength Drives Third Quarter Results

Microsoft Corp. announced the following results for the quarter ended March 31, 2020, as compared to the corresponding period of last fiscal year:

- Revenue was $35.0 billion and increased 15%
- Operating income was $13.0 billion and increased 25%
- Net income was $10.8 billion and increased 22%

- Diluted earnings per share was $1.40 and increased 23%

"We've seen two years' worth of digital transformation in two months. From remote teamwork and learning, to sales and customer service, to critical cloud infrastructure and security – we are working alongside customers every day to help them adapt and stay open for business in a world of remote everything,"

said Satya Nadella, chief executive officer of Microsoft. "Our durable business model, diversified portfolio, and differentiated technology stack position us well for what's ahead."

"In this dynamic environment, our sales teams and partners executed a solid third quarter, with Commercial Cloud revenue generating $13.3 billion, up 39% year over year," said Amy Hood, executive

vice president and chief financial officer of Microsoft. "We remain committed to balancing operational discipline with continued investments in key strategic areas to drive future growth."

COVID-19 Impact

In the third quarter of fiscal year 2020, COVID-19 had minimal net impact on the total company revenue. In the Productivity and Business Processes and Intelligent Cloud segments, cloud usage increased, particularly in Microsoft 365 including Teams, Azure, Windows Virtual Desktop, advanced security solutions, and Power Platform, as customers shifted to work and learn from home. In the final weeks of the quarter, there was a slowdown in transactional licensing, particularly in small and medium businesses, and a reduction in advertising spend in LinkedIn. In the More Personal Computing segment, Windows OEM and Surface benefited from increased demand to support remote work and learn scenarios, offset in part by supply chain constraints in China that improved late in the quarter. Gaming benefited from increased engagement following stay-at-home guidelines. Search was negatively impacted by reductions in advertising spend, particularly in the industries most impacted by COVID-19. The effects of COVID-19 may not be fully reflected in the financial results until future periods.

Segment Highlights

Revenue in Productivity and Business Processes was $11.7 billion and increased 15% (up 16% in constant currency), with the following business highlights:

- Office Commercial products and cloud services revenue increased 13% (up 15% in constant currency) driven by Office 365 Commercial revenue growth of 25% (up 27% in constant currency)
- Office Consumer products and cloud services revenue increased 15% (up 17% in constant currency) with continued growth in Office 365 Consumer subscribers to 39.6 million
- LinkedIn revenue increased 21% (up 22% in constant currency)
- Dynamics products and cloud services revenue increased 17% (up 20% in constant currency) driven by Dynamics 365 revenue growth of 47% (up 49% in constant currency)

Revenue in Intelligent Cloud was $12.3 billion and increased 27% (up 29% in constant currency), with the following business highlights:

- Server products and cloud services revenue increased 30% (up 32% in constant currency) driven by Azure revenue growth of 59% (up 61% in constant currency)
- Enterprise Services revenue increased 6% (up 7% in constant currency)
- Revenue in More Personal Computing was $11.0 billion and increased 3% (up 4% in constant currency), with the following business highlights:
- Windows OEM revenue was relatively unchanged year over year
- Windows Commercial products and cloud services revenue increased 17% (up 18% in constant currency)
- Search advertising revenue excluding traffic acquisition costs increased 1%
- Xbox content and services revenue increased 2%
- Surface revenue increased 1% (up 2% in constant currency)

Return to Shareholders

Microsoft returned $9.9 billion to shareholders in the form of share repurchases and dividends in the third quarter of fiscal year 2020, an increase of 33% compared to the third quarter of fiscal year 2019.

Business Outlook

Microsoft will provide forward-looking guidance in connection with this quarterly earnings announcement on its earnings conference call and webcast.

Responding to COVID-19

At Microsoft, our focus remains on ensuring the safety of our employees, striving to protect the health and well-being of the communities in which we operate, and providing technology and resources to our customers and partners to help them do their best work while remote.

Quarterly Product Releases and Enhancements

Every quarter Microsoft delivers hundreds of products, either as new releases, services, or enhancements to current products and services. These releases are a result of significant research and development investments, made over multiple years, designed to help customers be more productive and secure and to deliver differentiated value across the cloud and the edge.

Here are the major product releases and other highlights for the quarter, organized by product categories, to help illustrate how we are accelerating innovation across our businesses while expanding our market opportunities.

Environmental, Social, and Governance (ESG)

To better execute on Microsoft's mission, we focus our Environmental, Social, and Governance (ESG) efforts where we can have the most positive impact. To learn more about our latest initiatives and priorities, please visit our investor relations ESG website.

Constant Currency

Microsoft presents constant currency information to provide a framework for assessing how our underlying businesses performed excluding the effect of foreign currency rate fluctuations. To present this information, current and comparative prior period results for entities reporting in currencies other than United States dollars are converted into United States dollars using the average exchange rates from the comparative period rather than the actual exchange rates in effect during the respective periods. All growth comparisons relate to the corresponding period in the last fiscal year. Microsoft has provided this non-GAAP financial information to aid investors in better understanding our performance. The non-GAAP financial measures presented in this release should not be considered as a substitute for, or superior to, the measures of financial performance prepared in accordance with generally accepted accounting principles (GAAP).

Nexign Appoints Andrey Gulidin as CCO and Strengthens Focus on Business Development

Nexign (part of ICS Holding), a leading Business Support System (BSS) and Internet of Things (IoT) solutions provider for communications service providers (CSPs), today announced that Andrey Gulidin has been appointed Chief Commercial Officer (CCO). Gulidin, promoted from his previous role as the Account Management Director, will lead all of Nexign's commercial activities, including business development, sales support, and customer service. Earlier the post was held by Alexey Volynkin. "I would like to thank Alexey Volynkin for the devotion he has shown to the company for more than 14 years and wish him very best in his career," said Igor Gorkov, CEO of Nexign. "We have established a very efficient sales team, which won new customers in the Middle East and Central Asia, and I am confident that, under Andrey Gulidin's leadership, we will not only consolidate our achievements on the global market, but also see a new wave of development, continuing to attain sustainable business growth in our target regions." Andrey Gulidin will report directly to Igor Gorkov. The commercial department will also benefit from the appointment of Maxim Nartov as Director of Business Development, reporting to Gulidin. "Nexign currently occupies a sustainable position on both the Russian and international

markets. Company revenue from new projects is increasing by an average of 40% year-on-year, and leading analysts such as Gartner, IDC, Global Data and Analysys Mason have noted how well the company's products perform," says Andrey Gulidin. "That said, the market for business support systems has always been highly competitive, so we will not be resting on our laurels. Instead, we will continue to fulfil all of our customers' requirements using the most effective approaches and cutting-edge tools." Andrey Gulidin joined Nexign in 2006 as a project manager working with one of the company's biggest customers, MegaFon. He was then appointed Account Management Director, a role which he combined with his work as Head of Nexign's Moscow branch. Andrey is well acquainted with telecom operators' needs, has experience of managing major projects in Russia and CIS, in the Middle East and Africa, as well as Asia and has an excellent understanding of industry trends. This experience will enable him to rapidly settle into the new role of CCO, in which he will focus on increasing new business in Nexign's target regions while also continuing to oversee the company's work with its key customers. Maxim Nartov will be engaged in Nexign's business development as well as responsible for

expanding and diversifying the company's customer portfolio. Maxim has more than 20 years' experience in the telecom industry. In recent years, he has served as Nexign's Customer Solutions Director. Prior to this, he held various management roles in companies such as Amdocs, Ericsson and MegaFon.
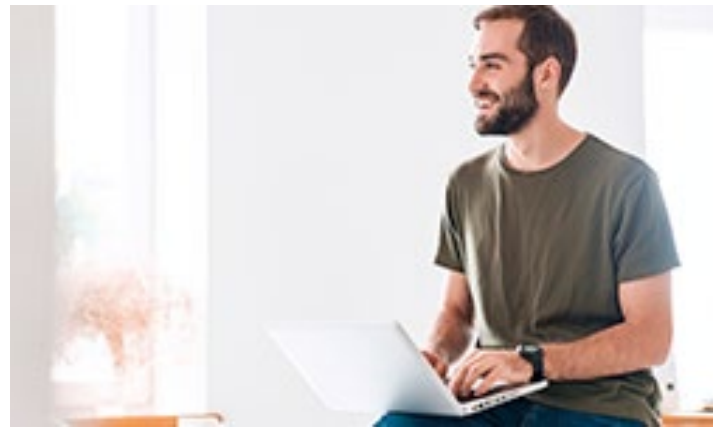
Nexign Launches FreeDom Program, Letting its Staff Choose Between Office and Remote Work

Nexign (a part of ICS Holding), a leading Business Support System (BSS) and Internet of Things (IoT) solutions provider for communications service providers (CSPs), today announced the launch of the comprehensive Nexign FreeDom program, which allows its staff to come into the office as and when they choose to do so. Nexign specialists will be able to decide how many days a week to go into the office, or they can opt to shift entirely to remote work. All staff will continue to work from home until July 31st, in line with the company's plans to ensure their safety.

In the meantime, Nexign will continue to implement new projects and support its customers' systems as normal. "We conducted a survey of Nexign staff which showed that 55% of our specialists enjoy working from home. Moreover, 86% of those surveyed felt that their productivity had remained the same or even improved," said Andrey Zakharov, HR Director at Nexign. "The overwhelming majority of Nexign specialists prefer to work remotely on a full- or part-time basis, with just 15% saying that they would rather come into the office four or five days per week. We

have taken this as a signal that we need to act." Currently, nearly 1,800 Nexign staff are working from home in Russia, Turkey, the UAE, and other countries. To make this a more pleasant as well as a more efficient process, the company is launching a comprehensive program, Nexign FreeDom. The aim is to strike a balance between the freedom to come into the office and accountability for performance. Every employee will now be able to organise their work as they wish, taking into account the opportunities offered by Nexign and the restrictions imposed by the pandemic.

Everyone will be able to choose the schedule that works best for them: five days a week in the office, part-time home working (between one and four days per week in the office) or full-time remote work. The scheme will be ready for launch on August 1st, 2020, but the processes involved will be piloted by several of the company's departments beforehand. In conjunction with the launch of Nexign FreeDom, the company is expanding its compensation package and reimbursing the employees for the cost of fitting out their home offices, including the purchase of desks and chairs as well as other equipment required for them to work from home."The health and safety of our employees, customers, and partners have always been and will continue to be an absolute priority for Nexign. For more than 28 years, we have been helping our customers, telecom operators around the world, to provide stable, 24/7 communications for over 200 million subscribers. And I'm proud to say that even now, regardless of the external circumstances, the quality of our services is as high as ever. This shows that the Nexign team works equally effectively in customers' offices and remotely," – commented Igor Gorkov, CEO of Nexign.

stc and Nokia Launch AgileWAN Services in Bahrain

STC Bahrain has announced that it will partner with Nokia to launch software defined Wide Area Network (SD-WAN) services across the country. STC AgileWAN is a service that will provide the required agility, flexibility, visibility, control and security to the way customers connect their network to the central or cloud resources. With STC AgileWAN, business customers will benefit from a multitude of features to have enhanced security, optimized network performance and efficient management of their applications, thereby ensuring end-to-end visibility and control. "In efforts to live up to our commitment by offering ICT managed services that will help business customers in enhancing and improving their experience, we are pleased to collaborate with Nokia Nuage Networks to offer the next-generation software defined network solutions. A remarkable milestone in investing towards Bahrain's digital future, our STC AgileWAN service provides a greater flexibility and control of customers' network operations, which allow businesses to focus on their core competencies while empowering them to move forward into the future," said Eng. Nezar Banabeela, CEO, STC Bahrain. STC

AgileWAN provides advanced features to businesses of all sizes across various industries such as financial, healthcare, retail and more. Thus, assisting business customers to increase their productivity, boost their user experience and reduce IT operating costs. "The Nuage Networks SD-WAN 2.0 solution will enable STC Bahrain to better manage the network by providing a consolidated view of the entire network including branches, data centres and public cloud on a single dashboard. This not only

helps in enhancing overall performance, but also significantly brings down the cost of network management. The solution allows STC Bahrain to use innovative features like automation, network segmentation and cloud connectivity to provide new-age digital services to their customers. This will allow STC Bahrain to play a crucial role in advancing the digital transformation of enterprises and organizations in the region," said Sunil Khandekar, CEO, Nuage Networks.

together, we elevate your business

with stc AgileWAN, gain valuable insights & better control to manage your network operations

Terms & conditions apply.

Tech Mahindra FY20 Revenue Up 4.3 Percent

Tech Mahindra Ltd., a specialist in digital transformation, consulting and business reengineering services announced the audited consolidated financial results for its fourth quarter and year ended March 31, 2020.

Financial highlights for the Year (USD)
- Revenue at USD 5,181.9 mn; up 4.3% YoY
  - Revenue growth up 5.6% YoY, in constant currency terms
- EBITDA at USD 803.4 mn; down11.3% YoY
- Consolidated PAT at USD 566.8 mn, down 7.8% YoY
  - PAT (excluding impairment) at USD 595.6 Mn; PAT margin of 11.5%, down 90 bps YoY
- Free Cash flow for FY20 at US$ ~523 mn

Financial highlights for the year (₹)
- Revenue at ₹ 36,868 crore; up 6.1% YoY
- EBITDA at ₹ 5,726 crore; down 9.6% YoY;
  - EBITDA margin at 15.5%; down 270bps
- Profit after tax (PAT) at ₹ 4,033 crore; down 6.2% YoY
  - PAT (excluding impairment) at ₹ 4,251 crore
- Earnings per share (EPS) was at ₹ 45.9 for the year ended March 31, 2020
- The Board has proposed a Final Dividend of ₹ 5 /- per share (100%) on the FV of ₹ 5 in addition to the Interim Dividend of ₹ 10 /- per share declared earlier
- Free Cash flow for FY20 at ₹ 3,735 Crore

Financial highlights for the quarter (USD)
- Revenue at USD 1,294.6 mn; down 4.3% QoQ

- o Revenue degrowth at 3.3% in constant currency terms
- o Digital revenues grew 2.0% QoQ, at 44% of Revenues
- EBITDA at USD 182.7 mn; down 16.5% QoQ
- Consolidated PAT at USD 109.0 mn, down32.1% QoQ;
  - PAT (excluding impairment) at USD 137.7 mn

Financial highlights for the quarter (₹)
- Revenue at ₹ 9,490 crore; down1.7% QoQ
- EBITDA at ₹ 1,348 crore; down13.8% QoQ;
  - Margins at 14.2%; down 200bps QoQ
- Profit after tax (PAT) at ₹ 804 crore; down29.9% QoQ
  - PAT (excluding impairment) at ₹ 1021 crore
- Earnings per share (EPS) was at ₹ 9.14

Other Highlights
- Total headcount at 125,236; up4154 YoY

- Active Clients stood at 973 in Q4'20, up by 35 YoY
- Cash Conversion to PAT for FY20 was 92.2%
- Cash and Cash Equivalent at USD 1,164 Mn as of March 31, 2020

CP Gurnani, Managing Director & Chief Executive Officer, Tech Mahindra, said, "COVID-19 has brought an unprecedented change in business model for the IT industry. Ensuring wellness of employees and contribution to society while maintaining business continuity under all circumstances continues to be our priority. While the demand traction seen through the first three quarters of Fiscal 19-20 has reversed in Q4, we expect that the focus on Digital Transformation, Remote Working, and Network Modernization will recover in the medium term. The company has shown a strong growth for Fiscal 20 and we remain committed to deliver sustainable solutions to our customers enabling them to adopt to New Normal."
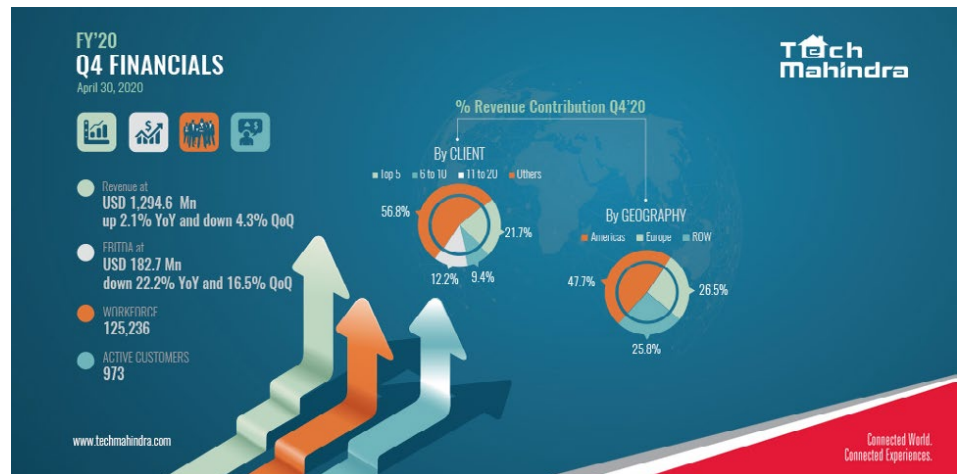
Tech Mahindra, Openet Ink Global Strategic Partnership to Enable Digital Transformation for CSPs

Tech Mahindra Ltd. a leading provider of digital transformation, consulting and business reengineering services and Openet, a leader in the supply of digital business support system (BSS) solutions, have announced a global strategic partnership to enable digital transformation for customers globally. This partnership will leverage 5G and cloud technologies to accelerate digital transformation for communication service providers (CSPs). As a global leader for CSP IT services, Tech Mahindra is the chosen transformation partner for many of the world's leading CSPs, helping them transform their Business and Operation models to "Run-Better", Change Faster and "Grow Greater". Tech Mahindra sees a huge need to transform customer management and monetization platforms across CSPs as they get ready to create application aware networks and build new revenue lines in 5G and the post COVID era. Tech Mahindra's transformation services coupled with

Openet's best in breed BSS capabilities provides market leading capabilities to solve the most difficult monetization, customer experience and commerce challenges that CSPs will encounter as they look to build profitability from 5G. Manish Vyas, President, Communications, Media and Entertainment Business, and the CEO, Network Services, Tech Mahindra, said, "We have always been committed to build a robust set of strategic partners to deliver an enhanced experience to our customers. Openet is an important member of our ecosystem, we have already delivered several innovative solutions with them to CSPs of the world. Their software and our delivery models ensure exceptional outcomes to our customers. We are looking forward to rolling out this strategic partnership on a global basis. As a part of our TechMNxt charter, our focus is on providing solutions that enable digital transformation and meet the customers' evolving and dynamic needs." 5G is driving change for CSPs to upgrade their BSS systems. According to Chantel Cary, Senior Analyst at Omdia, and author of recent report IT Investment Essentials for 5G Monetization, "The ability to charge for 5G

services is the single most important factor when it comes to monetizing 5G. However, existing charging systems are not up to par and must be upgraded to 5G-ready convergent charging systems." However, the system change is not limited just to charging as Cary explains, "As CSPs invest in areas such as revenue management and policy control in their efforts to monetize 5G, they should also remember the value of customer management and engagement tools. Investing in improving the omnichannel customer experience and the customer lifecycle and in incorporating analytics into front-end systems can allow CSPs to maximize monetization opportunities". The need for change is not just about having the ability to capitalize on new digital and 5G opportunities. John Abraham, Senior Analyst at Analysys Mason explained, "Upgrading BSS for digital and 5G services can help drive a lot of redundant costs out of a business. For example, around 65% to 70% of global revenue management system spend goes on support and maintenance of existing systems. Digital transformation and the introduction of 5G is a catalyst for systems change and as such presents a significant

opportunity for service providers to cut a lot of legacy overheads and costs.". Niall Norton, CEO, Openet, said "We are very pleased and excited to formalize a global partnership with Tech Mahindra who we have worked closely with over many years to provide our joint solutions and services to CSPs. At Openet we made the investment to re-write our software to be cloud-native, open and digital several years ago. With this partnership Openet and Tech Mahindra will be able to scale our collaboration, adding a few major CSPs to our client list as our solutions produce results that are driving change and growth in the telecoms industry. With this formal collaboration, we intend to add a lot more. I look forward to working with Tech Mahindra to accelerate this growth in our customers". As part of the TechMNxt charter, Tech Mahindra is committed towards creating a partner ecosystem to deliver enhanced cutting-edge, next-generation technologies like Cybersecurity, Artificial Intelligence, Blockchain, 5G, and Internet of Things, to disrupt and enable digital transformation for customers globally.

Tech Mahindra Leverages Artificial Intelligence to Research on Potential Therapeutic Drugs for COVID-19

Makers Lab, the research and development (R&D) arm of Tech Mahindra Ltd., a leading provider of digital transformation, consulting and business reengineering services and solutions, leveraged Artificial Intelligence to conduct research and find potential therapeutic drugs for treatment of COVID-19. Testimony of a strong synergy amongst academia, businesses and independent researchers to fight a global pandemic, Tech Mahindra is also collaborating with a renowned bio-scientist for plausible therapeutic drugs and research laboratories for synthesizing and testing these compounds. CP Gurnani, MD & CEO, Tech Mahindra, said, "The COVID-19 disease continues to disrupt the socio-economic order, impacting lives and livelihood globally. As a leading global digital transformation provider, Tech Mahindra is not only committed to ensure the well-being of our employees, customers and partner ecosystem; but we are also invested in finding a potential cure for COVID-19 by leveraging cutting edge and futuristic technologies like Artificial Intelligence." Tech Mahindra's Makers Lab aims to promote technology innovation and recognize transformative ideas that have a potential to make a difference and create disruptive solutions to solve real world problems. The R&D team has used Molecular docking approach because of high transmission rates of COVID-19. Nikhil Malhotra, Global Head of Makers Lab, Tech Mahindra, said, "Our objective

was to prevent the entry of virus into human host cells such as lung airway epithelial cells. This is important because the high transmission rates of COVID-19 is attributed partly to the high affinity binding and entry of the virus into host cells. Once the virus cannot enter the host cell, it is harmless. Our strategy included finding a GRAS (generally recognized as Safe) agent which can inhibit the virus and we have successfully utilized two areas of research, one is Molecular docking on approved FDA compounds and medicines. Use of Artificial Intelligence helped the research team to evaluate multiple scenarios with different parameters while finding how molecules dock with the main protease." The technique, Molecular docking, enables search for therapeutically potent drugs and molecules in real time, to find compounds which can act as inhibitors against a viral protein computationally. Tech Mahindra conducted molecular docking studies across 19 FDA (Food and Drug Administration) approved ligands and anti-viral drugs on the main protease of the virus. There is more work needed to be done to move the process from molecular docking to actual drug design, testing and drug development at scale. This is just the first step, where computational analysis can reduce the amount of time taken to narrow down the search amongst the vast array of molecules present in the process of finding a cure to COVID-19.

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Creating the Network You Need to Support New Ways of Working

Brian Lappin
Head of Product Management
BT

Running a business during lockdown can mean you need your network to work in different ways — some you'd planned to implement at some point before the pandemic anyway and some you hadn't foreseen.

For some businesses it's a case of imagining the network they'd ideally have in place to deal with working in a pandemic.

Networks have already proven themselves to be vital in the current situation across many sectors — from critical services, through to home working and out to logistics and manufacturing. However, in the scenario we find ourselves in just now, organisations are looking for ways to make changes at the edge of their networks quickly to support their business. But there may be barriers — supply chain issues in delivering hardware or issues around protecting the health of the people installing new services.

It's challenging us to think differently about how we deliver and manage endpoints that have the flexibility to respond to changes over time or to a sudden event. It raises questions around how we can use endpoints to deploy extra applications or capabilities quickly and remotely, without shipping hardware or sending engineers to site.

So, how can you make sure your network edge fully supports everything your business needs in this and any future crisis?

In search of a truly flexible network edge
I'm seeing fresh impetus to implement new network solutions which would help in times of crisis, with a lot of people looking at the flexibility and success of the hyperscale cloud model as a blueprint. It raises some questions, though, about how you extend this flexibility to the edge of the network in workable ways. In the current cloud world, you can deploy multiple applications

I'm seeing fresh impetus to implement new network solutions which would help in times of crisis, with a lot of people looking at the flexibility and success of the hyperscale cloud model as a blueprint.

easily onto a single hardware stack, and this can be delivered at a branch level. However, most edge deployments still tie an application to a specific appliance — maybe it's time to look at this again? Plus, an increased ability to scale up and down at a branch level would be very helpful to a lot of businesses. Perhaps customers, hardware vendors and service providers should look at how we can work together to provide capacity at the edge that can easily scale?

A platform to support a software-based world

Just as the app store we all rely on is underpinned by a platform that keeps every aspect of adding, downloading and updating apps so simple, we'll need a similarly effective, simple platform to make the move to a more virtualised, software-based world possible. The platform I'm imagining provides capacity at a site level to add new applications remotely and it offers a secure way of deploying and managing software — plus you can make changes without adversely affecting anything else in the operating ecosystem.

It also offers centralised control to manage multiple endpoints.

Using cost to leverage virtualised edge services

It's possible that meeting the working restrictions of a pandemic might affect how networks develop by changing the commercials. Currently, many organisations see no great cost benefit to moving to a virtualised service. But in the new normal, it might not be possible to visit sites to install and maintain boxes and this changes the commercial equation. We may see providers grasping this chance to shift the balance, reducing the cost of their virtualised solutions to make the leap more appealing.

Don't put off bringing flexibility to your network edge

Before the pandemic there was a real desire from businesses to develop a strategy for their network edge that makes the most of advances in analytics, machine learning and the Internet of Things. Now, the extra capabilities businesses need from networks are speeding up this focus on the edge and it's not something you should

ignore until things go back to 'normal'. With the right security safeguards in place, a flexible network edge can help your business thrive now, and into the future.

In the current cloud world, you can deploy multiple applications easily onto a single hardware stack, and this can be delivered at a branch level. However, most edge deployments still tie an application to a specific appliance — maybe it's time to look at this again?

If your organisation has any questions about creating a resilient network that's ready to cope with a future Coronavirus-scale event, please reach out to your account manager. Whether it's practical help or reassurance, we're here to help.

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REGIONAL NEWS

Mobile Wallets See Rapid Take Up in Jordan

Mobile Financial Services (MFS) in Jordan have witnessed growth with the number of mobile wallets reaching 760,000 wallets in April 2020. This represents around 10% of the total mobile subscription base, with a total transaction value of US$ 88.1 million up from US$ 26.7 million in Dec 2019. It also represents a 230% increase in transaction value in April 2020 vs Dec 2019, and a 25% increase in the number of wallets over the same period. There are several reasons behind the boost in the uptake and transaction values of mobile wallets. One of them is, the government's decision to support the daily workers whose jobs were affected in this pandemic by a weekly fund. The Government urged those workers to open mobile wallets to receive their funds, during the lockdown period and when the curfew was imposed as well. This initial phase of the workers' fund started in April 2020 and will last till the end of June 2020. Other phases may follow suite. Another driver is telcos provision of mobile wallets applications, to enable their
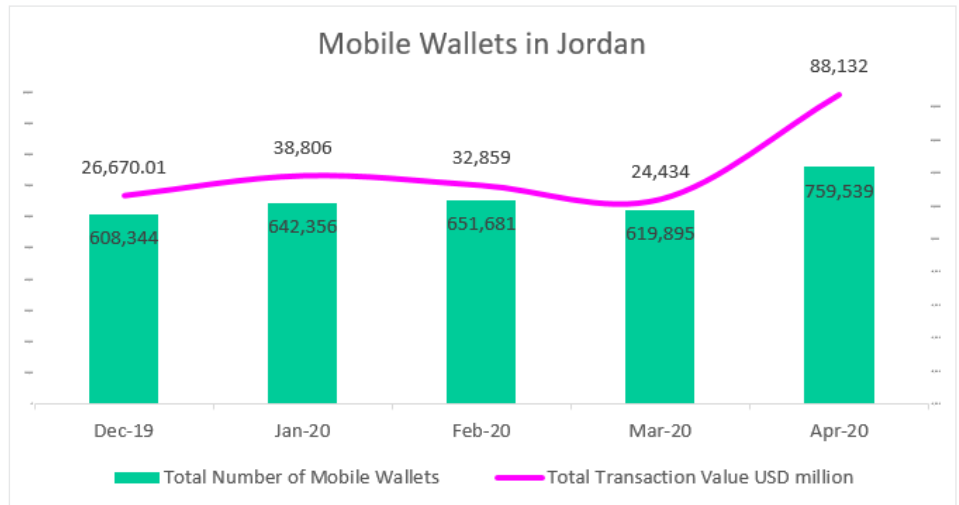

customers to make transactions such as top-ups and payments remotely, given a number of telco stores closures. Jordan is a prepaid mobile market with circa 80% of the customers on prepaid plans. The top-up transaction is, thus, vital to keep people connected. Telecom operators are important players in Jordan. Telco Orange

is present in this space with the Orange Money wallet, Zain with the Zain Cash wallet, and Umniah provides the Mahfazti wallet. Financial institutions also play a key role in the ecosystem with solutions including Dinark, National Wallet, Gadhaa, and other banks.

Saudi Arabia Climbs to 10th Position Globally in Internet Speed

internet speed, as it managed during the month of April to increase the average mobile internet speed to 55.71 MB per second. According to a report published by the international website Speed Test specialized in measuring mobile internet speeds, the internet services in the kingdom witnessed a growing demand from users recently after applying many precautions to prevent the spread of COVID-19, a SPA release said. The Saudi Communications Commission revealed earlier that the rate of data

to 600 MB of data per day which is twice the global average, while this rate has grown to 920 megabytes per day after starting precautionary measures, which is more than three times the global average. The kingdom had ranked 105 in the same classification in 2017 before achieving this qualitative leap that exceeds 500% in improving the speed of access to the internet through mobile networks in line with the plans for digital transformation in the kingdom.
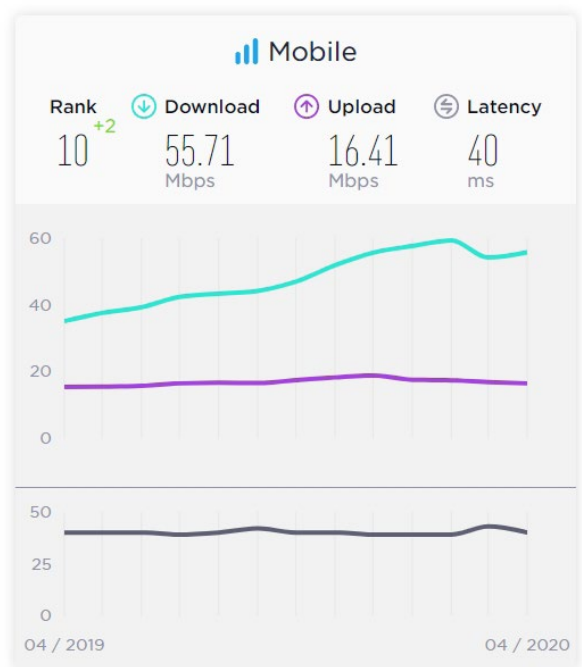
Morocco Launches Survey on E-education

The Moroccan ministry of education has launched a survey for students, parents and teachers to get their feedback on e-learning and assess this experience after it decided to close schools, universities… and shift courses online to curb the spread of COVID-19 pandemic. The opinion poll seeks to shed light on the positive and negative aspects of remote education and review the achievements accomplished

to improve further online learning in the country, says a press release issued by the ministry. Some 600,000 Moroccan primary and secondary schools students log on daily to TelmidTICE website, which is offering over 3000 courses covering a wide variety of subjects including science, mathematics… To enable students in rural zones continue their education during coronavirus lockdown, local TV channels

"Athaqafia" and "Laayoune TV" broadcast daily courses for pupils and students of various levels including the baccalaureate curriculum. According to some experts, online education can close the digital divide and open up greater opportunities for all learners who can easily access their courses from their homes.

Oman Demonstrates Exemplary ICT Usage

Oman has recently witnessed a noticeable increase in social media use and use of the Internet for research, doing business and obtaining information and services. The survey, 'Measuring the Access to and Use of ICT by Households and Individuals 2020', reveals that WhatsApp app came first (92%) in terms of usage, followed by YouTube with 81%, Facebook with 56%, Imo 47% and Instagram 44%, while the use of Twitter reached 25%, followed by Snapchat by 24%. The Ministry of Technology and Communications (MTC) and the National Center for Statistics and Information (NCSI) announced the results of the 2020 survey which was carried out during the period of February 9- 20 with the aim of providing the required data for decision makers to formulate the related policies and updating Oman indicators in the international databases, e.g. ITU, UNDESA and ESCWA.

Methodology

The survey was conducted by the NCSI Call Center through telephone interviews on a sample of 2,612 individuals 18 years and above, representing all governorates of the sultanate, as the Omanis comprised 44% and expats 56%.The survey questionnaire was designed according to the international standards and definitions related to ICT indicators. The survey questionnaire was divided into two main parts, the first part focused on measuring household access to information and communication technologies such as Internet, mobile and smart devices, while the second part focused on measuring individuals'

use of information and communication technologies during the past three months, such as the Internet, the type of activities carried out online, the skills of using information and communication technologies and social media, as well as finding the most important reasons for not using the Internet.

Access

The most important indicators of access to information and communication technologies by the household sector are household possession of smartphones, which reached 95%, in addition to household access to the Internet, which reached 94%, while household possession of computers (including smartphones) reached 96%. All these indicators witnessed a slight decrease by 1% compared to the results of 2019. This year, the survey included measuring new indicators that were not included in the previous survey in 2019,

namely: the possession of smart TV 47%, smart watches 18%, smart cameras 14% and smart printers 14%.

I**CT Use**

The results of the survey show that the percentage of individuals owning mobile phones reached 97%, and the percentage of people owning smartphones was 94%. With regard to the use of information and communication technologies by individuals during the three months prior to conducting the survey, some indicators witnessed an increase compared to the results of the survey conducted in 2019, as this year, the percentage of individuals using the Internet increased to 95% of the total population compared to 92% in 2019. In addition, the percentage of individuals using computers (including smartphone) increased to 95% in 2020 compared to 93% in 2019. The results of the 2020 survey indicated that there has been a noticeable

increase in the use of social media by individuals to reach 95% compared to 92% in 2019. The results of the survey also concluded that the percentage of Internet use among females was 97% compared to 94% among males. As for the age groups, the total age group of 18-54 years exceed the rate of Internet use by 90%, while the percentage of use by the age group 55 years and above is only 80%; however, the percentage of use among Omanis and expats is 95% equally.

ICT Activities

The results of the survey showed good levels of activities using information and communication technologies by any device, as it showed that about 92% of individuals aged 18 years and above have the ability to send messages, whether through e-mail, WhatsApp or SMS. The percentage of using cutting and pasting tools reached 84%, while the use of searching for, downloading or installing software, or adjusting the settings was 67%.

Social Media

The survey results indicated a noticeable increase in the percentage of social media users compared to the results of the 2019 survey; whereas the percentage of Imo app, forums, and blogs users decreased. Based on the results, WhatsApp app came first in terms of usage by 92%, followed by You-Tube with 81%, then Facebook with 56%, followed by Imo by 47%, then Instagram by 44%, while the use of Twitter reached 25%, followed by Snapchat by 24 %.

Internet Activities:

The activities on Internet have witnessed a rise in the areas of research, doing business and obtaining information and services. The results indicate that 77% of Internet users search and download files, videos, pictures, electronic games, and others. At the same rate (77%) of respondents use the Internet to search for information. While the lowest uses of the Internet were electronic services related to travel and hotel reservation by 25%.
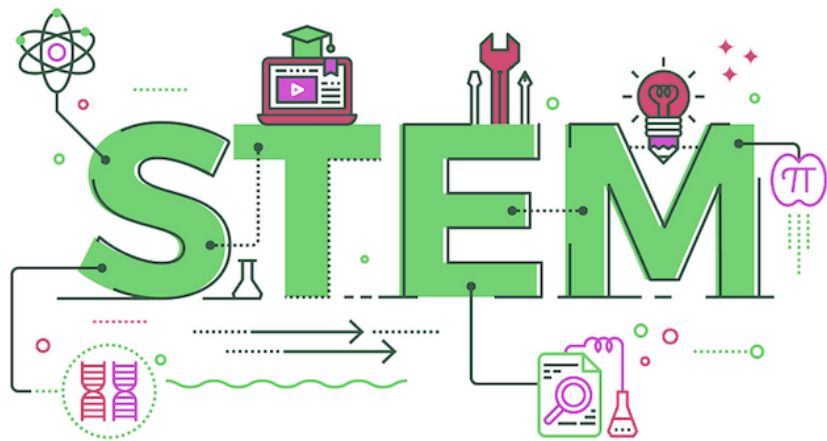
Reasons for not using the Internet:

In addition to identifying indicators of access to and use of technology, the survey sought to identify the reasons for not using the Internet in the past three months, as the results show that the most important of these reasons were inability to read and write by 38% of the total individuals who do not use the Internet, followed by inability to use the internet 31% and no need to use the internet at the same rate.

Respondents' notes:

The survey also came out with a number of respondents' observations, the most important of which were, weak Internet coverage in some residential areas in the various governorates of the sultanate, and the respondents expressed their opinion about the high prices of Internet packages and the lack of Internet in a number of the wilayats of the sultanate.

Pakistan Plans US$18.8 Million STEM Schools Project

Pakistan will be launching a Rs. 3 billion STEM schools project this year, aimed at promoting digital education in the country. Speaking at an international webinar "Future of (online) education in Pakistan", Federal Minister for Science and Technology Fawad Chaudhry said that the project aimed at bringing STEM schools for grades six, seven, and eight, adding that the project would be the first of its kind in Pakistan. "This year, we abstracted 464 schools at the federal level from all the provinces that we are turning into a STEM school," the minister for science and technology said. Chaudhry said digital education was the only way forward for securing a bright future for the country. "We want to take up about 5,000 government schools. We want to upgrade them as a STEM schools," he said. "Digital education is the future of Pakistan." The webinar was organized by Coded Minds Pakistan, a global iSTEAM and leadership company. Local and international education experts participated in the webinar to discuss the future of online education in Pakistan. According to Chaudhry, his ministry was already working on establishing digital education in the country way before the COVID-19 crisis. Speaking on the subject, Dr. Ahsan Feroz of Pakistan Science Foundation, currently working on the STEM school project, said the project was in the approval stage. "As soon as the budget is approved, we will immediately start working on the project," he added. Punjab Education Minister Murad Rass said access to internet was a major challenge in promoting online education. Concluding the discussion, Omar Farooqui, founder and the President of Coded Minds, said COVID-19 gave an excellent opportunity to strengthen public-private partnerships. He said that his company opted to start operations in Pakistan not just because there was a huge opportunity to work on education, but also because there was support from the government at every level.

Telemedicine Gaining in Popularity in Bahrain

Telemedicine is gaining in popularity in Bahrain as social distancing measures continue to be enforced due to the coronavirus (COVID-19) pandemic. However, challenges remain as regards the technology and adaptability of the workforce, said health experts. Telemedicine is the distribution of health-related services and information via electronic information and telecommunication technologies. It connects patients to healthcare services through two-way interactive video, remote monitoring or electronic consultations. Though optimistic about the practice, healthcare professionals in Bahrain underlined the need for doctor-patient interaction in emergency cases. "Telemedicine is legally allowed in Bahrain as per the National Health Regulatory Authority (NHRA) standards," said American Mission Hospital chief operating officer Arun Govind. "It connects a physician or care provider with a patient remotely and hence is in great demand during COVID-19 due to mobility restrictions. "This practice allows for a seamless provision of healthcare without facing the risk of being exposed to the current dangers in a healthcare facility. "However, technology acquisition, transformation and adaptability by the workforce are major challenges. "Wherever access to high-end or critical care is required, telemedicine is not the solution; a proper infrastructure with medical equipment and expertise of physicians and nurses are required to treat the patients." Shifa Al Jazeera Medical Centre ENT specialist Dr. Balagopal V said telemedicine was here to stay even post COVID-19. International experts said it will help reduce the burden on the secondary hospitals and improve documentation, data-collection, diagnosis and care without risking the safety of the patients or the health workers. "Telemedicine is the need of the hour and it is proving really helpful for many, especially with certain specialties; in the case of ENT the practice can be used to treat mainly allergic cases," said Dr. Balagopal. "Telemedicine has been adopted in many Western countries, and is gaining momentum in this part of the world as well. "Especially, where there is a fear or reluctance to visit the

hospital due to the pandemic, this method is helpful. "But there are limitations; for instance, finding out the actual cause of an ear pain could prove tedious over phone." "Besides, patients with chronic diseases may need psychological reassurance and that means asking them to report in person. "But I believe telemedicine is here to stay, being convenient and safe." Aster Clinic Gudaibiya paediatrician Dr. Anoob Stephen, who has been tele-consulting patients, echoed similar views. "When there are barriers such as COVID-19, a patient who lives far away from a medical facility or a patient reluctant to visit a medical facility out of fear can make use of the service," he said. "However, it will only work for any illness that does not require laboratory tests or a physical examination. "Telemedicine makes it easier and convenient for patients to engage with doctors from the comfort of their home. "Doctors need only very limited resources to engage with patients, but the traditional way of hands-on examination gives a better judgment for more accurate diagnosis." He said the relevance of a detailed study of the patient history cannot be underestimated, adding that telemedicine could occasionally contribute to a delay in treatment, especially with children.

Saudi Space Commission Gets UN Listing

The United Nations Office for Outer Space Affairs has posted the logo of the Saudi Space Commission on the official website of the Office, Saudi Press Agency reported on Tuesday. Based in Vienna, the United Nations body seeks to promote the peaceful use and exploration of space through international cooperation. The inclusion of the SSC in the UNOOSA's list marks an important milestone for the Kingdom's nascent space exploration agency. Commenting on the development, Dr. Abdulaziz Al-Sheikh, Chief Executive Officer of the SSC said the UNOOSA's move represents an important step to enable

the SSC to work at the international level to protect the interests of Saudi Arabia, enhance the Kingdom's presence in the international organization and expand its space industry globally. He said the establishment of the SSC reflected the importance of the space sector for the Kingdom. Saudi Arabia seeks to benefit from space sector by uniting local efforts in the field and enhancing international cooperation in a way that gives the Kingdom's economic, scientific and strategic benefits. Dr. Al-Sheikh also said that the Commission has completed the preparation of the national space strategy

and the Space Regulation draft as well as a study to establish the Saudi Space Company and they have been submitted for review and approval. On this occasion, Al-Sheikh congratulated Prince Sultan Bin Salman, the chairman of the SSC. Dr. Al-Sheikh also thanked the King Abdulaziz City for Science and Technology, which represented the Kingdom during the past years. He said that the SCC continues to work with the KACST and other relevant bodies, while taking advantage of Saudi research and development centers that have contributed to the growth of the sector and its related services and technologies.

5G Security Assurance is Key to Saudi Arabia's Economic Acceleration

As Saudi Arabia continues to advance its 5G infrastructure, Huawei's Chief Security Officer in the US recently joined the Saudi Federation for Cybersecurity, Programming, and Drones (SAFCSP) in a webinar discussion about how 5G and Cybersecurity assurance can help harness the value of digital transformation in the Kingdom. The webinar was part of the going Cyber Nights knowledge-sharing program being run by SAFCSP in cooperation with local and global technology experts. Industries across Saudi Arabia today — including healthcare, education, and banking — are already benefiting from the incredible leaps in bandwidth and network speeds provided by 5G. That connectivity has become especially valued now as demand for internet access has soared due to the COVID-19 pandemic, and with more people studying and working remotely. Muteb Alqany, President of SAFCSP, noted: "Today the Kingdom of Saudi Arabia is ascending the ranks of developed countries in terms of its technology infrastructure and innovation capabilities. 5G connectivity is a significant part of that transformation. By working with global experts like Huawei, we can ensure that such infrastructure is utilized fully and securely in the years ahead." "In today's digital era, public-private collaboration is essential in prioritizing the roll-out of 5G and to bring the greatest benefits to residents of the Kingdom. Such collaboration is particularly important in addressing the larger global challenges that exist around Cybersecurity. By providing strong guidelines and assurances to the public, there is an even greater opportunity to promote innovation across Saudi industries and the society at large," said Andy Purdy, Huawei's Chief Security Officer in the US. Purdy also referenced how COVID-19 has demonstrated the concrete benefits that can flow to citizens and organizations from 5G services, particularly in healthcare. Healthcare systems with access to 5G connectivity have benefited from improved response times, patient monitoring,

data collection and analytics, remote collaboration, and resource allocation. The success of 5G applications in the public health sector can also inspire businesses in other sectors to leverage 5G's benefits and explore new applications of the technology, according to Purdy. As new services emerge, Purdy recognized that security demands can vary significantly across industries, and bespoke requirements are needed. A cooperative approach to Cybersecurity risk mitigation in which governments, telecom service providers, and technology vendors collaborate on industry guidelines is now required—protecting consumers while harnessing the economic potential of digital transformation. Huawei has long committed to helping partners in Saudi Arabia to address Cybersecurity challenges while building cutting-edge networks. Huawei has been a partner of choice for telecom carriers globally for 5G network development, helping to launch 5G commercial networks in the Kingdom in 2019 through a broad range of end-to-end solutions.

Bangladesh Online ICT Training Campaign Targets Self-Employment for 70 Percent Youth

A total of 185,000 students have registered for the ICT Division's Learning and Earning campaign. The government has arranged training facilities at union level for about 40,000 students considering all of the youth cannot ACCESS the internet and computers. The government has launched an ambitious online ICT training campaign targeting self-employment for 70 percent

of the youth. A total of 185,000 students have registered for the ICT Division's Learning and Earning campaign. The government has arranged training facilities at union level for about 40,000 students considering all of the youth cannot ACCESS the internet and computers. State Minister for ICT Zunaid Ahmed Palak inaugurated the campaign via video conferencing on

Sunday. He said IT freelancers will play a vital role in the post-coronavirus pandemic economy and Bangladesh can be a part of it. The government has tasked 39 IT institutions with conducting three courses on web, graphics designing and digital marketing under the program.

TRA Released a User Experience (UX) Guidelines

The Telecommunications Regulatory Authority (TRA) launched the first of its kind User Experience (UX) Guidelines (Research and Design), which helps UX employees, user interface designers and others to use the best global tools and practices for a customer oriented research and design. The guidelines launch took place during a virtual workshop on "Key smart government enablers" held by TRA in the presence of more than 150 experts and interested parties from the UAE federal entities. At the beginning of the workshop, TRA thanked all federal entities for their great efforts in 2019 and the marked improvement in the results compared to previous years in achieving the of indicators standards of smart government enablers. In addition to the launch of the guidelines, the workshop reviewed the most important developments in the indicators of smart government enablers such as the launch of a new evaluation pillar for remote work, which measures the readiness of federal entities, their services and digital transformation employees for remote work system. Additionally, the workshop highlighted the launch of a special pillar to assess the quality of digital services via the smart application, the launch of standards for crises management, others related to service digital signature, and the extent to which entities develop their services using the UX methodology, facilitating and simplifying services and designing proactive services. On this workshop, H.E. Salem Al Housani, Acting Deputy Director General for Information and eGovernment Sector and Leader of the Online Service Index Executive Team, said: "We are living an important stage that forced an actual application of the strategies and plans that the UAE government followed in line with the directives of the wise leadership regarding enabling and enhancing the smart government in the country. The UAE has been able to deal decisively and effectively with the requirements of the stage, and to maintain the progress of work and production in all sectors, as well as continuing to provide the best services around the clock, adding to the many successes the UAE has achieved in the field of smart government, digital transformation and sustainable development" Al Housani indicated that this workshop is part of enabling smart government and developing smart government enablers indicators in line with the requirements of the current stage. He added: "The workshop discussed new topics that were added to the indicators of smart government enablers, such as remote work and readiness of the entity, Business continuity, digital signature, service simplification, and proactive services, as
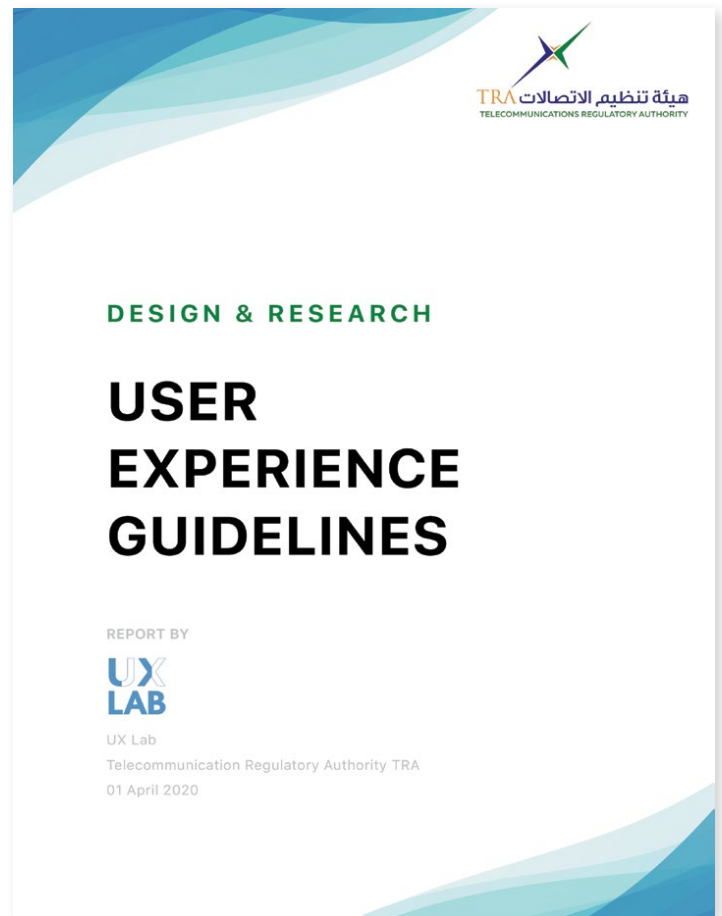
well as the standards added to the indicators of the seven smart government enablers, the most important challenges and how to overcome them." The launch of the UX Guideline aims to provide the federal government employees with an integrated guide that focuses on the user during the design of the user interface. It also provides standards and guidelines that achieve greater benefit to the users and increase customer happiness. The UAE has been ranked first in Government Electronic and Mobile Services (GEMS) maturity index, according to a report issued by the United Nations Economic and Social Commission for Western Asia (ESCWA), first in broadband subscriptions and mobile phone coverage, first regionally in switching to IPv6, and first in the Arab region and the fourth globally in launching 5G.

Telehealth Portal Scales Up Digital Health Solutions in Pakistan

Pakistan is the first country in the world to have launched a free of cost telehealth portal through Whatsapp. The initiative has been made possible by Digital Pakistan and the Ministry of National Health Services, Regulations and Coordination (NHSRC), and will help people to connect with domestic and overseas doctors on WhatsApp to address COVID-19 health concerns. One of the most challenging things about the Coronavirus pandemic is uncertainty: not knowing if you have contracted the virus, or if you need to see a doctor. The telehealth portal is helping people in every way. After adding the helpline number (+92-300-111-1166) in your contacts, you can message to connect with a chatbot, which can communicate in seven languages to answer your questions. After some screening questions, you can opt to speak to a doctor and will receive

either a Whatsapp or voice call. "There are less than 150,000 doctors for our 210 million population. The common people sometimes have to take a whole day out to travel from their village to a city to consult a doctor. When the Corona crisis happened, the Prime Minister advised us to use technology to address the problems. We wanted to reduce the burden and risk on our healthcare facilities and our doctors," said Special Assistant to the Prime Minister on Digital Pakistan. "Keeping this situation in mind, we built our solution with Whatsapp so Pakistanis would not have to learn a new app or website. They can simply message the Whatsapp number and receive a call from the doctor," advisor further. "Our doctors and healthcare professionals on the frontlines are doing and have already done so much. One outcome of the COVID-19 pandemic is the need to scale up digital health solutions. This Telehealth portal allows those doctors who are at home, or overseas Pakistani health professionals, to come to their support and lessen the

COVID-19 Telehealth Portal

Telehealth portal provides an easy, safe and secure way to connect with your doctor if you think you have COVID-19 symptoms.

Powered by: Digital Pakistan, VentureDive, Optcl

Supported by: E.OCEAN, infobip, NTC

burden," added Special Assistant to the Prime Minister on Health. The World Health Organization launched a similar service in partnership with WhatsApp. However, Pakistan's WhatsApp service is unique in connecting volunteer domestic and international doctors to citizens in need. Prime Minister urged the nation's doctors to register with the portal. He termed healthcare professionals of Pakistan as 'warriors,' fighting to protect their fellow citizens from harm. This initiative was completed with generous support from PTCL, VentureDive, Infobip, Eocean, Code for Pakistan, and NTC. Each of the partners provided essential technical support and free services to put the project together in record time.

Tech Mahindra

Before Covid

During Covid

After Covid
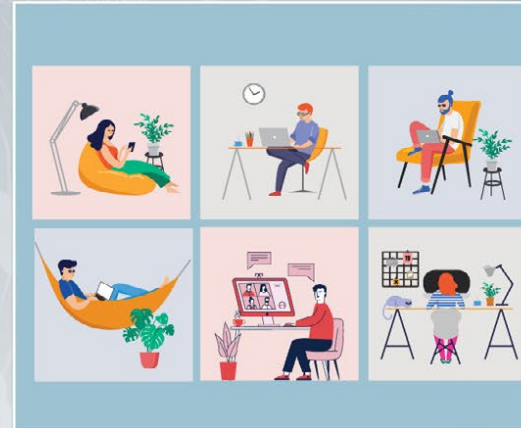
Getting back to the New Normal with **Tech Mahindra WaaS**
Smart & Secure Enterprise Scale Workspace as a Service Solution

**ANYTIME. ANYWHERE. ANY DEVICE.
SAFE. SECURE. AND PERSONAL.**

Device & OS agnostic

Collaboration
– store, share, sync

Identity & Access Management

Self Service portal

Tools & Automation
- Monitor

User Productivity

Compliance

Apps Delivery

User centric Design

Connected World.
Connected Experiences.

Digital Workspaces: Enabling the New Normal

> *The current situation has changed the way we operate forever & so have the enterprise demands. A few weeks back, the majority of discussions were focused on productivity & cost. But, the moment the COVID-19 wave struck, the conversation changed into accessibility, security & performance for the maximum workforce while WFH.*

The unprecedented spread of COVID-19 has taken the world by storm. Everyone has felt its effects, regardless of their position on the economic, political, or sociological plane. Amidst the chaos, there is a particular way in which businesses have been affected, and this includes coming to a grinding halt, in some cases. This situation has taught that agile companies need to plan for a range of exigencies to ensure business continuity.

The current situation has changed the way we operate forever & so have the enterprise demands. A few weeks back, the majority of discussions were focused on productivity & cost. But, the moment the COVID-19 wave struck, the conversation changed into accessibility, security & performance for the maximum workforce while WFH. Enterprises had tough times executing the BCP's because it was a first time experience and the scenario simulation had never been fathomed.

Though Organizations have scrambled all the resources at their disposal, it took quite some time to re-calibrate the IT systems and to provide desired access & performance. Businesses that were successful in ensuring little to no interruption were armed with a host of technology tools that allowed them to mobilize remote working models at breakneck speed.

C-Suite Challenges in ''The New Normal''
Work from home (WFH) was never experimented & implemented on this scale. And, this is going to be – *The New Normal.*

Ashish Chouksey
Delivery Head – Infrastructure & Cloud Services
Tech Mahindra

Tech Mahindra

There is no silver bullet to overcome the current challenges at one shot, and we would need to dissect the problem and manage it in parts. The market today has plethora of solutions around WFH / remote access etc. Standard build under pay-as-you-go Model, Or Custom-built on-premise solutions. Both having their own pros and cons.

As businesses juggle a range of new systems priorities and challenges under the immense pressure of the pandemic crisis, the teams at the frontline have also observed numerous grey areas around People, Process & Technology and therefore, the complex and business-critical services that are handled by global operations must be reassessed and restructured to achieve desired productivity.

Provisioning WFH for entire/partial workforce would need meticulous planning, a relook to our Business Processes, Workforce Productivity, real-time decision making, sudden change in the volume & IT Systems Resilience (Capacity & Performance, NW & Sec, Monitoring etc.) & all of this would undoubtedly need additional investment.

Enterprises are going through challenging times and are under financial pressure. Yet, the "CIO" office would be expected to achieve
- Near 100% WFH (Build vs Buy)
- CAPEX & TCO Reduction
- Data Security & Regulatory Compliance
- Enhanced User Experience
- Innovation & Digital Transformation (Intelligent Automation, Cloud Readiness etc)

Quest for Solution to Outmaneuver Uncertainty
There is no silver bullet to overcome the current challenges at one shot, and we would need to dissect the problem and manage it in parts. The market today has plethora of solutions around WFH / remote access etc. Standard build under pay-as-you-go Model, Or Custom-built on-premise solutions. Both having their own pros and cons.

Business Challenges:
- Higher CAPEX & TCO
- Vendor Lock-In issues
- Existing Investment ROI

Technical Challenges:
- Security threat & Compliance
- Inconsistent User Experience
- Performance Issue (Application, Data, Device)
- Expertise in a custom solution

To overcome the above challenges, we need the best of both worlds. Which means Flexible OPEX driven Virtual Workspace delivery, which is high of performance, secure, leverage existing investment, no vendor Lock-in, cloud-ready & achieve overall TCO reduction

Tech M Solution – WaaS NxT
Tech Mahindra R&D labs & CoE has envisaged this almost seven years back and launched its own Digital Workspace Platform "WaaS NxT". It is designed to deliver the highest level of security using hybrid workspace delivery model that leverages Virtualization, Enterprise Mobility and Context-Aware Security. It delivers all Workspace resources as a Universal Single URL to consolidate all end-user computing services. This model will bring all services under a single window to avoid duplication of investments and improve end-user experience.

Key Differentiators

IT STORE & AUTOMATION	NEXT-GEN APPLICATION DELIVERY	PRESCRIPTIVE ANALYTICS	UNIVERSAL PRINTING
USER ON-BOARDING ONBOARD USERS IN HOURS	**SELF SERVICE APP PROVISION** USER DRIVEN SELF SERVICE	**PROACTIVE MONITORING** SOLVE ISSUES BEFORE IMPACTING USERS	**ELIMINATE PRINT DRIVERS** SIMPLIFIED PRINTING
LICENSE MANAGEMENT LEASE | AUTO REMOVAL | CONCURRENT	**SPEED TO VALUE** REDUCE PAKCAING DELAYS	**ENHANCED EXPERIENCE** CONSISTENT USER EXPERIENCE	**SECURE PRINTING** INTEGRATION WITH TAP&GO
SELF SERVICE IT STORE REDUCE SERVICE DESK CALLS	APPLICATION LAYERING NO PACKAGING / STREAMING / INSTALL	COMPLETE VISIBILITY END TO END MONITORING	PRINT ANYWHERE PRINT ON ANY PRINTER
RUNBOOK AUTOMATION AUTOMATE KNOWS TASKS	INSTANT DELIVERY DELIVER APPS TO 1000s OF USER INSTANTLY	UNDERSTAND THE IMPACTS OF CHANGE CORRELATE SESSION AND PERFORMANCE	SESSION PRINTING SECURE SESSION PRINTING
PASSWORD RESETS SELF SERVICE SECURE PASSWORD RESETS	BETTER LICENSE CONTROL MAINTIAN BETTER LICENSE	USABILITY KPI MEASURE SLA IN USABILITY	OPRIMIZE NETWORK FASTER PRINTNG & LESS NETWORK OVERHEAD

50%	**100%**	**100%**	**40%**
INCREASE IN PRODUCTIVITY |	AGILITY & FLEXIBILITY |	SECURED & CENTRALIZED DATA |	CALL REDUCTION

Tech Mahindra's Workspace as a Service (WaaS NxT) offer a range of benefits including the Innovative pricing models & flexibility to provide an entire suite of WaaS NxT offerings through Private OR Public Cloud (MS Azure, AWS etc)

Success Stories
US based Healthcare Insurer
• Moved over 50,000 users to a Digital Workspace platform with WaaS NxT
• Enabled Context Aware computing with dynamic workspaces including collaboration suite enabling users to access their workspaces anytime securely, anywhere on any device
• Tech Mahindra owns the assets, delivery of all services and vendor management to deliver an outcome based end-to-end managed services model

Australia based banking major
• Moved over 42,000 users to a Digital Workspace platform with WaaS NxT
• On-demand desktops at short notice and faster on-boarding of new employees for the organization
• Standard desktop accessible anytime, anywhere globally even from low-end devices

WaaS NxT – Benefits

Workspace as a Service (WaaS) platform framework is built on the following end user computing building blocks to provide a simple digital workspace adoption.

Device & OS
Work from Any where,, using Any device, from Any Network

Self Service
Self Service Portal accelerates the routine tasks

Compliance
Platform meets international compliance requirements

Collaboration
Store, Share and Sync capabilities using cloud

Tools & Automation
Monitoring and Automation tools to measure User experience.

Application Delivery
Windows, Web and SAAS applications

Identity & Access Management
Role based access, Single Sign on, across EUC services

User Productivity
Reduced User tickets and Reduced MTTR

User Centric Design
Platform is designed keeping user at the center

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SATELLITE NEWS

Justice Department Requires CPI to Divest Antenna Business to Complete Acquisition

The U.S. Justice Department said that it is requiring Communications and Power Industries LLC (CPI) to divest its ASC Signal Division for the company to proceed with its planned acquisition of the satellite communications technologies business of General Dynamics. CPI's deal for General Dynamics SATCOM Technologies was announced last August and was expected to close during 2019. Terms of the deal weren't disclosed at the time

but Justice Department documents say that the agreed purchase price is $175 million. The Justice Department said that without CPI's divestiture of ASC Signal, there would be "substantially" less competition for large geostationary satellite antennas in the U.S. It says that the two companies are the only two "significant" domestic suppliers of the large antennas and that the U.S. Defense Department and other customers "prefer to avoid having foreign suppliers for components in the transmission chain for sensitive national security-related information." As structured, the deal would give CPI a monopoly on the antennas in the U.S., Justice Department said. "The merger, as originally structured, would have eliminated competition for large geostationary satellite antennas, an essential component of government, military, and commercial satellite communication networks," Makan Delrahim, assistant attorney general in the Justice Department's Antitrust Division, said in a statement. "Today's settlement will ensure that the Department of Defense and other purchasers of large geostationary satellite antennas continue to benefit from vigorous competition in the design, manufacture, and sale of these products." A spokeswoman for CPI told Defense Daily that the company "is taking the necessary steps to close expeditiously" on the acquisition of GD SATCOM Technologies. CPI had $500 million in sales in 2019 and GD's SATCOM Technologies had between $200 million and $300 million in revenue last year. CPI is a portfolio company of Odyssey Investment Partners.

India's Vestaspace Technology Plans for Constellation of 5G Satellites

Vestaspace Technology, an Indian small satellite manufacturing company, released plans on Tuesday to launch a constellation of 35 or more satellites across India with the intention of building 5G speed network connections and Internet of Things (IoT) functionalities. The company says it will release a beta version of the next-generation satellite constellations in September, in early 2021, launch its satellites into Low-Earth Orbit (LEO) and Geostationary Orbit (GEO). Vestaspace said it recently secured $10 million in funding from U.S.-based Next Capital

Tech. LLC. The company wants to replace traditional fiber networks with satellite constellations and to provide high-speed 5G network connections across India. To this end, it said it has installed eight ground stations and 31,000 data receptors across India. In the company's concept of services, any person can uplink and downlink data while browsing the internet by buying a token or directly partnering with Vestaspace. Vestaspace touts test results with accurate antenna, tracking, seamless beam and satellite handovers, which resulted in reflected in a live-streamed HD

video of with less than 34 ms latency with the speed of more than 400 Mbps. "Our Advanced AI-technology based unmanned satellites data will bring in-depth solutions to the telecom industry and the common people," Vestaspace Technology Founder and CEO Arun Kumar Sureban said. "We are on a mission to make space accessible to everyone who once thought satellites were rocket science. Not only this, through our secured connections a common person can also access to the satellites of their choice and to get immersed in the world of space."

ViaSat Confirms New LEO Constellation Plans, Record-Breaking Q4 Results

Satellite operator Viasat reported record-breaking revenue increases and subscriber growth, and dropped a surprise revelation that it was scrapping its planned Medium-Earth Orbit (MEO) constellation for a new Low-Earth Orbit (LEO) constellation that will launch in approximately five to six years — all during its Fourth Quarter (Q4) 2020 and full-year results call on May 26. Viasat executives on the call said they were confident that the LEO constellation will receive subsidy funding from the FCC's $16 billion Rural Digital Opportunity Fund (RDOF) for U.S. broadband services. Viasat's full-year 2020 revenues increased 11.7% Year-over-Year (YOY) to $2.3 billion and its Q4 2020 quarterly total revenues increased 6.2% YOY to $591.7 million — its ninth consecutive quarter of growth. While new contract awards had been declining due to the COVID-19 pandemic, the operator said its Satellite Services and Government Systems divisions drove the surge, backed by a sustained sales backlog. Service revenues rose 10.5% to $292.7 million, with revenues specifically from satellite services increasing 11.8% YOY to $212.4 million — a record for the California-based operator. Average revenues per user spiked 13.5% YOY to $93.06 primarily driven by the addition of new subscribers to premium broadband service plans due to increased COVID-19 shelter-in-place orders. Despite the uncertainties related to COVID-19 pandemic, Viasat's in-flight service revenues jumped 13% year

over year. Finally, Viasat reported that it added an impressive 590,000 U.S.-based fixed broadband subscribers as part of the FCC's "Keep Americans Connected" pledge. In regards to the operator's plans for LEO, Viasat CEO Mark Dankberg said that the company is paying close attention to FCC guidelines for rural broadband subsidiaries. "We had a purpose in mind for the MEO constellation, but the biggest factor in wanting to go [to LEO] is really the amount of funding that the FCC is aiming at low specifications," said Dankberg during the earnings call. "[A LEO constellation] does involve more satellites than we

would have used in MEO, but the satellites are a lot smaller and less expensive than they otherwise would be, but the main attraction is that things are evolving, but assuming that the FCC does allow LEO to be eligible in the Phase II part of the Rural Digital Opportunity Fund. The opportunity for funding is far in excess of the increase in what the constellation would cost. So that's the main reasoning behind it." Dankberg added that the constellation won't be in place until approximately 2026, and that the company is still continuing plans to build additional satellites beyond ViaSat-3 and ViaSat-4.

Satellite Player SES Signs On To FCC C-Band Plan

Satellite service provider SES laid out plans to invest $1.6 billion in new kit, as part of a commitment to free up C-Band (3.7GHz to 4.2GHz) spectrum for 5G on an accelerated timetable set by the US Federal Communications Commission (FCC). SES said in a press release the funds will go toward the procurement and launch of new satellites and other equipment and services, with the bulk of the money expected to be awarded to US suppliers. The move comes as the FCC prepares to auction 280 MHz of C-Band spectrum in December, and could help ensure satellite

service providers including SES receive incentive payments the agency is dangling in an effort to ensure a speedy repack. Under the FCC's C-Band reallocation plan, satellite companies collectively stand to receive up to $9.7 billion in incentive payments if they meet certain spectrum clearing deadlines. However, the FCC said it will only dole out those funds if "80 per cent of accelerated relocation payments" on offer are accepted, effectively requiring both SES and fellow satellite provider Intelsat to agree to its plan. Of the $9.7 billion in incentive payments, Intelsat and

SES are eligible to receive up to $4.87 and $3.97 billion, respectively. The remaining $866.5 million is set to be split between providers Eutelsat, Telesat and Star One. Telesat already signed on to the plan ahead of a 29 May commitment deadline. When Intelsat filed for bankruptcy earlier this month, CEO Stephen Spengler declared the company intended "to move forward with the accelerated clearing of C-band spectrum", but it has yet to make a formal commitment.

China-Funded Satellite Television Project Benefits 1,000 Villages in Mozambique

Mozambique announced the conclusion of a project to bring digital satellite television signal to 1,000 villages in the country, which is supposed to benefit over 20,000 families. The Minister of Transport and Communication Janfar Abdulai made the announcement after reviewing the project in the northern province of Cabo Delgado. "This project is included in the 100 days of governance and now it is totally concluded,

here today we are reviewing how the beneficiaries feel with the project and we are able to testify that they are happy, they have direct access to information and we share their satisfaction," said the Minister. He said the project generated about 2,000 jobs in total and trained work force particularly young people to be in charge of the maintenance and provide assistance to the beneficiaries. The project, covering

all the ten provinces and the capital city of Mozambique, was co-funded by China and implemented by the Chinese electronics and media company StarTimes. The project is part of the resolutions of the Johannesburg Summit of the Forum on China-Africa Cooperation in 2015, in which the Chinese government pledged to provide satellite television access for 10,000 villages in Africa.

ULA Launches X-37B Spaceplane for US Space Force

United Launch Alliance (ULA) launched the Atlas V 501 from Space Launch Complex-41 (SLC-41) at Cape Canaveral Air Force Station in Florida on Sunday, at 9:14 a.m. EDT, carrying the USSF-7 mission for the U.S. Space Force. The launch was delayed one day due to bad weather. It marked the sixth flight of the X-37B Orbital Test Vehicle (OTV-6) and ULA's second mission for the U.S. Space Force. The Boeing-built X-37B is an autonomous spaceplane. It was first launched in April 2010. According to Boeing, the X-37B was designed for missions of 270 days duration, but has set endurance records during each of its five previous flights. Most recently, X-37B spent 780 days on orbit before returning to Earth in October 2019. The mission also deployed FalconSat-8, a small satellite developed by the U.S. Air Force Academy and sponsored by the Air Force Research Laboratory (AFRL) to conduct experiments on orbit. Two NASA experiments and

an experiment sponsored by the Naval Research Laboratory were also on board. "The success of this mission resulted from collaboration with our customer while

working through challenging, and ever changing, health and safety conditions," said Gary Wentz, ULA vice president of Government and Commercial Programs.

Myanmar to Launch Its First Satellite in 2021

Myanmar plans to launch its first satellite in 2021, using Japanese technology, Nikkei Asian Review reported. Engineers and researchers in the country will develop an ultrasmall satellite and launch it into Earth

orbit with the help of Japan's Hokkaido University and Tohoku University. The satellite will be an earth observation satellite, which will be used to raise productivity in agriculture, as well as to

prevent and reduce damage from disasters and monitor environmental pollution, according to the report.

Roccor Completes Key Tests of Link 16 Satellite Antenna

Roccor has completed radio frequency testing of the antenna scheduled for launch later this year on the satellite housing Viasat's Link 16 military communications terminal. The firm known for deployable spacecraft structures, is working with BluFlux, an antenna technology specialist, to complete environmental testing of the helical L-band antenna for XVI, an Air Force Research Laboratory (AFRL) program to demonstrate communications relay with a Link 16 terminal on a small satellite. U.S. military and NATO allies share information through Link 16 terminals mounted on aircraft, ships and ground vehicles. Viasat won an AFRL contract last year to mount a Link 16 terminal on a small satellite. Viasat then selected Blue Canyon Technologies to manufacture the 12-unit XVI cubesat and Roccor to supply the antenna. Since the XVI satellite does not offer much room for a deployment mechanism, Roccor worked with BluFlux, both of Louisville, Colorado, to develop and test a two-meter-long helical antenna that stows inside the volume of a two-unit cubesat and extends on-orbit thanks to a slit-tube composite
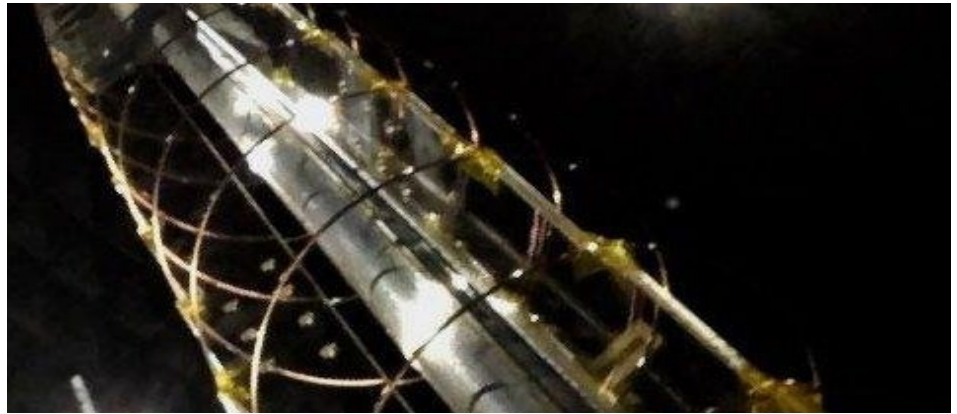

boom. Roccor developed the antenna boom under a 2017 AFRL Small Business Innovation Research (SBIR) contract. Since then, customers have deployed Roccor's carbon-fiber booms successfully on three satellites, including HSat1, Harris Corp.'s first smallsat, said Bruce Davis, Roccor director of space antenna and deorbit products. Roccor and BluFlux faced an array of challenges in developing and testing an antenna large enough to communicate in a range of frequencies with terrestrial receivers. "What it came down to was a fast turnaround time to develop a

challenging deployable antenna structure," Davis told SpaceNews. Testing was another hurdle. The antenna is both large and delicate. BluFlux found a commercial facility where the antenna can remain upright during tests of the deployment mechanism and antenna performance, said Ben Wilmhoff, BluFlux president and founder. Roccor plans to continue evolving its Link 16 antenna design to create a production-ready model under a $3 million SBIR contract awarded after Air Force Space Pitch Day in November.

Viasat to Consolidate and Standardize Broadband Services Billing Ops with Netcracker

Netcracker Technology has announced that global communications company Viasat will standardize and consolidate its broadband services billing operations onto a single, global billing platform using Netcracker's next-generation Digital Business Support System (BSS). The Waltham, Massachuisetts-based vendor's Digital BSS Solution is expected to streamline Viasat's business processes, reduce operational costs and improve customer service engagements ahead of the global ViaSat-3 constellation service launch. By moving to Netcracker's BSS, Viasat expects to achieve better billing management, operations and automation; reduce operational costs associated with enhanced BSS efficiency and consistency; and provide customers with optimized billing, sales and engagement experiences. As part of the BSS transformation, Netcracker will replace Viasat's current billing systems with Netcracker's next-generation Digital BSS solution. This will enable Viasat to reduce time-to-market for new products, centralize and consolidate core processes and systems and improve the customer experience. Viasat will also leverage Netcracker's Hosted, Managed and Professional Services to execute this transformation program. Kevin Harkenrider, president, Broadband Services at Viasat commented, "Viasat expects to expand its network capacity dramatically in the next several years. The

Netcracker Selected by Viasat to Consolidate and Standardize Its Broadband Services Billing Operations
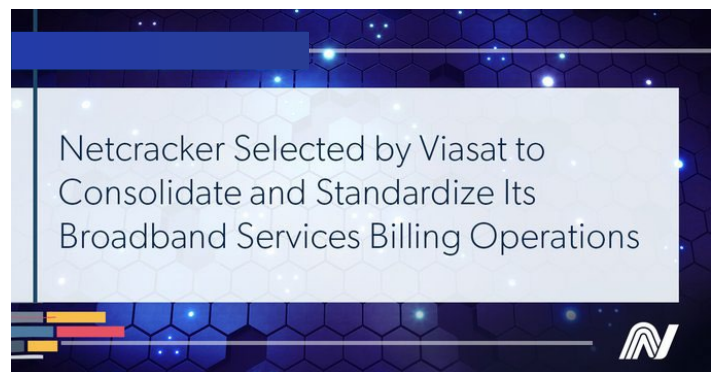
ability to offer new services and gain increased flexibility with the Netcracker rating and billing manager is a crucial part of implementing our international growth strategy." "This program demonstrates Netcracker's commitment to delivering an end-to-end global consolidation of multiple BSS solutions that will help Viasat meet its aggressive growth strategy worldwide," says Rohit Aggarwal, general manager North America at Netcracker. "We are pleased to expand our partnership with Viasat and support the organization's ongoing business and technology evolution."

SES to Recoup US$1.6 Billion to Launch New Satellites

SES has confirmed its intention to clear a portion of its C-band spectrum in the US, in line with the Federal Communications Commission's (FCC) order published in April. The accelerated clearing of the spectrum including the migration of existing customers, is an important and resource-intensive process for the current C-band users. SES' board of directors has approved investment of $1.6 billion, which includes the procurement and launch of new satellites and other equipment and services – expenses that are repaid through the program Clearinghouse. SES says that it intends to place the vast majority of this investment with US suppliers. In addition,

the company has arranged deferred payment terms with the vendors taking part in the satellite programs associated with the accelerated clearing. SES intends to meet the deadlines envisaged in the FCC order, which entitles SES to receive up to $3.97 billion in accelerated relocation payments. The company has supported the FCC's plan to clear C-band in order to drive up 5G leadership in the US, while also protecting the spectrum's current users. The accelerated clearing is based on operators and spectrum holders electing to clear the band, representing at least 80% of accelerated relocation payments. Despite SES' support of the FCC order,

the company opposes the potential sun setting of its 300MHz C-band rights by December 2025 in the unlikely event that accelerated clearing does not proceed as outlined in the order. The company says intends on filing a petition for review with the reviewing court to preserve its rights should the accelerated clearing option no longer be available. Earlier this year, Intelsat responded to comments by FCC chairman Ajit Pai about C-band spectrum, saying "we note with appreciation the hard work of all stakeholders to get to this juncture, and the work to come leading up to the Commission's vote on February 28, 2020".

ZDF Extends Partnership with Satellite Operator SES

German public broadcaster ZDF will continue to offer its TV channels in SD resolution via the Astra satellite system (19.2 degrees East). The agreement with satellite operator SES covers the distribution of ZDF, ZDFinfo and ZDFneo in SD-MPEG-2 format. The duration of the contract has not been specified. An SES spokeswoman declined to comment on details when approached by Broadband TV News. A ZDF spokesperson indicated that there was no fixed end date for the SD distribution: "A decision for a date for termination is currently not on the agenda." Also, no decision has been made yet on how to proceed with the SD distribution of joint public channels KI.KA, Phoenix and 3sat, according to ZDF. The extension of the SD distribution is surprising because fellow public broadcaster ARD and ARD's regional affiliates recently announced the termination of the SD distribution of their channels on Astra in January 2021 in favor of an HD-only distribution. "ZDF reaches the whole population and all age groups with its channel family. But only if it broadcasts in all transmission standards. After all, a total of 6 million viewers in Germany still receive their

programmes exclusively via SD signals," said Christoph Mühleib, managing director of Astra Deutschland. The figure refers to the SD households across all TV reception infrastructures. Among satellite households, there are just 2.63 million SD households. ZDF production director Dr. Michael Rombach added: "For ZDF, the reception of its channels in as many households as possible is of strategic importance. The extension of satellite

distribution in SD quality will continue to enable many viewers who have not yet switched to HD reception to access our public service program offer." However, license fee commission KEF has turned off the money tap for SD satellite distribution for ARD and ZDF. ZDF must therefore finance the costs for the extended SD distribution by using funds from other budgets.

Airbus Supplies EU with Satellite Communications

Airbus has won the new satellite communications framework contract for military and civil missions of the European Union and its member states. This four-year framework contract was awarded by the European Defence Agency (EDA) and is estimated to be worth tens of millions of euros. "With this satellite communications program, Airbus contributes to the construction of joint capabilities for European defence and to its missions to preserve civil and military peacekeeping", said Dirk Hoke, Chief Executive Officer of Airbus Defence and Space. The contract named 'EU SatCom Market' will allow EU member states to centralize their satellite communications requirements and obtain coordinated, more economical and effective access to these services. Some 32 contributing members, including 20 European defence ministries, can now swiftly and efficiently get access to satellite solutions and services through EDA, which has been supplying the members of the 'EU SatCom Market' project with satellite communications capabilities since 2012. These satellite communications solutions can be deployed worldwide. They play an essential role in European civil and military peacekeeping and security missions, as well as in technical and economic development and cooperation missions. This is already the case in several EU civilian and military missions and operations where EU SatCom Market services have been successfully implemented for several years. The armed forces of EU member states also use these solutions. The 'EU SatCom Market' contract covers the provision of satellite communications (in C, Ku, Ka and L frequency

bands), the sale and rental of terminals, as well as the provision of 'turnkey solutions', particularly in theatres of operations outside the EU. For this contract, Airbus has teamed up with Marlink, which will supply some of these terminals and specific L- and Ku-band services. A forerunner in telecommunications solutions for military and governmental users, Airbus has unique experience in supplying satellite communications on a global scale and in all commercial and military frequency bands (L, C, Ku, Ka, X and UHF). These services can also benefit European operators of essential services.

Intelsat Follows OneWeb into Chapter 11

Intelsat became the latest satellite service provider to file for Chapter 11 bankruptcy protection in the US, a move made as part of a broader financial restructure to see it through troubled waters around the release of C-band spectrum to the government. In a statement, Intelsat said the process will likely result in a "substantial reduction" of its legacy debt burden, while delivering an estimated $1 billion in funding needed to adhere to a Federal Communications Commission (FCC) order to free-up a total of 280MHz of spectrum in the 3.7GHz to 4.2GHz bands for 5G services. Intelsat said it had already secured a commitment around this financing as part of its restructure: it stands to to receive $4.87 billion in relocation payments from the FCC relating to the spectrum move. Stephen Spengler, Intelsat CEO, said: "At the end of this process, we will be on stronger financial footing for the future, further enhancing our industry-leading portfolio of space-based communications services and paving the way for our continued innovation and investments to benefit our customers". Rival OneWeb sought Chapter 11 protection in late March, a move GSMA Intelligence noted raised questions around the LEO sector.

Czech Satellite to Launch via SpaceX

Another Czech satellite will be sent into orbit this year, launched from a Falcon 9 rocket by the US company SpaceX of Elon Musk, the daily Mladá fronta Dnes reports.

The satellite, built at the Research and Testing Aviation Institute, will take detailed images of the earth's surface and test a system for accurately determining its position in the sky. It will provide farmers, foresters and water management experts, as well as those researching climate change, with detailed overviews.

Telia Norge Launches 5G Commercially

Norwegian mobile operator Telia Norge has switched on its 5G network in Lillestrom and parts of Grorddalen, in the greater Oslo region, and added that it aims to expand 5G coverage in Oslo in 2020, and add Trondheim and Bergen to the operational footprint during the course of the year. In a press release regarding the development published by vendor partner Ericsson – which is the sole radio access network (RAN) supplier to Telia Norge – it was also noted that the Norwegian operator is aiming to cover half of the population with 5G in 2021, before achieving nationwide coverage in 2023. Commenting, Telia Norge CEO Stein-Erik Vellan, said: 'this is an important day in Telia's and our customers' history. In a time when we really see the importance of our digital infrastructure for keeping the wheels spinning, we are incredibly

proud to be able to open our 5G network to customers with Lillestrom as the first place out. Through the partnership with Ericsson

we will enable new opportunities and we hope the Norwegian people will enjoy the new and pioneering mobile technology.'

Phone Tower Upgrades and Satellite Trucks to be Rolled Out for Future Bushfires

Mobile phone towers will be reinforced and internet satellite trucks deployed under a bushfire resilience package designed to prepare Australia's telecommunications networks for increasingly severe disasters. The federal government has announced the four-pronged, $37 million strategy after the unprecedented bushfire season exposed vulnerabilities in phone and internet networks. The crisis knocked out more than 1000 phone towers and other facilities across south-east Australia. Under the resilience package, the government will put $18 million towards strengthening mobile phone base stations to deal with loss of mains power, which was the main cause of outages. A total of $10 million will come from the existing mobile black spot program for regional areas and upgrades will include longer-lasting backup power such as batteries and generators. Another $10 million will be used to purchase portable facilities – including NBN Co's "Road Muster" satellite

trucks and "cells on wheels" to be operated by telcos – which can temporarily restore services in areas suffering outages. A further $7 million will go towards installing about 2000 NBN Co satellites at rural fire stations and evacuation centres and $2.1 million will be spent on improving access to information on telecommunications during emergencies. Communications Minister Paul Fletcher said Australia needed to learn the lessons of the 2019-20 bushfire season and ensure people could communicate with family and essential services during disasters. "These measures are an important step in further strengthening our telco networks," he said. Regional Communications Minister Mark Coulton said the measures supplemented funding already provided under the government's mobile black spot program and meant regional areas would be "much better prepared during future emergencies". A key goal of the package is to introduce more "redundancy" in networks

so people could continue to access services when infrastructure was knocked out. An Australian Communications and Media Authority review of the summer bushfires' impact on communications networks found a total 888 separate outage incidents of four hours or more, with some facilities going down multiple times. NSW accounted for most, with 681 incidents. The vast majority were caused by loss of power, with only 1 per cent caused by direct fire damage. The average length of an outage was 3.5 days and the issue peaked over the New Year because of the Currowan, Green Valley and East Gippsland fires. The telecommunications resilience measures are part of an overall $650 million rebuilding package for local councils and communities affected by the bushfires. The assistance is the last major element of the $2 billion bushfire recovery fund.

Kacific Reconnects ASTCA Network to Outer Island in American Samoa

American Samoa is an U.S territory with a population of just over 55,000 people, living across seven volcanic islands and coral atolls in the South Pacific. A recent fiber outage during the COVID-19 pandemic has shown the importance of satellite redundancy systems. The eastern island of Ofu, part of the Manu'a group, suffered a cable outage in March 2020. Although Ofu is connected with a subsea cable system to American Samoa's main island 100 km away, two of the three branches of the looping cable system serving the Manu'a group were damaged by rough seas in separate incidents two weeks and 90 kilometers apart. To restore service, ASTCA implemented a backup satellite option provided by Kacific. ASTCA purchased a small satellite dish (1.2m in size) from the neighboring country of Samoa. The disassembled dish was picked up in Samoa and transported to Ofu (200 kms away) by a small dive boat. After receiving the equipment on site at Ofu, it took only a few hours for ASTCA engineers to install the VSAT and establish a stable uplink and downlink connection at more than 90Mbps, communicating with Kacific's Singapore-based Network Operations Centre. "To have two very reliable links go down within weeks of each other for independent causes, we were really not ready for that," said Lewis Wolman, CEO of American Samoa Telecommunications Authority (ASTCA). "We never imagined that we could lose both legs of the subsea cable system and had neglected to provide satellite

redundancy." ASTCA had to act quickly to restore communications with Ofu Island. The drive for connectivity was made more urgent by the simultaneous public health danger of COVID-19. The deployment, however, was much more difficult both logistically because of reduced transport options, and due to additional border regulations of both the governments of American Samoa and the Independent State of Samoa. The light, compact and simple 1.2m high-speed Kacific VSAT was critical to allow fast transportation and installation of that system. "ASTCA is a public agency (state owned enterprise), so we have a fundamental commitment to universal access and full connectivity to all of our islands. The population of Ofu is approximately 500 people. We don't use the word "only", because our commitment is to everybody," continued Lewis. "The other reason is that we were then – and are now – in the middle of an emergency declaration. We could not communicate at a time we were having a public health emergency, that's obviously unacceptable." Fa'asala Augafa, ASTCA CTO, added, "Given the landscape and geolocation of the remote islands, we need satellite. Whether it is primary or secondary, we have yet to determine that. Our experience has taken away that thinking that cable is stable and will always be there." Kacific's Fiber Back Up solution is designed for large enterprises and businesses, government agencies and emergency services, who need access to broadband internet 24/7

for critical communications and internet-based applications. This service is highly scalable, giving you a secure, stable high-speed connectivity delivered over an easy-to-install satellite antenna. Kacific offer this service either as a standalone solution, or a value-added solution, which can be built into the existing network. Telecommunications connectivity is an essential service that underpins the health system and key government infrastructure. Satellite provides a valuable back up system to complement terrestrial infrastructure, when connectivity is critical.

China Unicom Entering Superfast Satellite Communications

China Unicom, one of China's leading telecom operators, has entered the satellite internet business to provide superfast internet access, remote-

sensing data services and emergency response solutions via satellite. UnicomAirNet, a mixed-ownership satellite telecommunications company in which China Unicom has a stake, held road shows demonstrating the company's services to potential customers from governmental and corporate sectors from April 27 to 30, industry portal c114.com.cn reported. UnicomAirNet could provide internet access, video and audio connections, data transmission and long-range monitoring services to land, sea and air-based

customers. Customers could include shipping vessels at sea, remote islands, offshore oil rigs, drones, emergency response vehicles, passenger planes and forest fire departments. The company also runs a mapping service using satellite data for airport operators. The National Development and Reform Commission, China's top economic planning agency, recently included satellite internet under the country's new infrastructure build-up project.

IEC Telecom Unveils Satellite-Based Networking Management Solution

Satellite communications specialist, IEC Telecom has introduced its latest satellite-based networking management solution, OneGate Aid Compact to improve the efficiency of first responders in regional communities across the Middle East and Africa amid the COVID-19 pandemic. OneGate Aid Compact is an agile and future-ready network management solution that operates from a virtual platform and is designed to keep mobile humanitarian teams connected at all times, enabling full control and visibility over active telecommunication links. Urban areas utilize GSM networks, while remote missions are heavily reliant on satellite communication. Moreover, mandatory social distancing prevents from staff reinforcement or rotation and as a result, field workers are heavily dependent on satellite networks to receive remote counselling and training. With an increase in data usage, it is not enough to simply have access to the satellite network, but be in a position to manage available resources and channel essential communications on mission-critical operations. "Successful operations during the COVID-19 pandemic are dependent on timely and proper communication in affected communities. This is especially critical to first response groups or mobile hospitals who need to act fast in areas with no infrastructure. Now more than ever, telecommunications in general and satellite communications, in particular, are critical to support our frontline workers. OneGate Aid Compact was developed as a solution to support continuous communication. It provides satellite link in remote areas and serves as GSM back-up under terrestrial network coverage," said Nabil Ben Soussia, managing director IEC Telecom Middle East, IEC Telcom Group. IEC Telecom's OneGate Aid Compact is powered by Thuraya IP+ for stationed use and Thuraya Voyager for vehicular use over Thuraya's L-Band network. It enables first response teams with optimized network traffic availing services such as big data transfer and live conferencing. In times of COVID it means that front line staff will be able to share operational reports in real time and have access to telemedicine. OneGate Aid Compact also provides the gateway for remote maintenance, enabling technical support teams to monitor and troubleshoot at any place and at any time. It may also be enhanced with an augmented reality toolkit, providing field workers with a 'virtual pair of hands' displayed on the screen of the device in use (smartphone or tablet). As such, limited staff onsite is exponentially expended via digitally present teams in the HQ and network support teams at IEC Telcom. "In addition to the critical communication to support the frontline, we've seen a drastic increase in the use of video calls, which is a natural response to prolonged isolation," added Ben Soussia. "In order to support front line staff and our communities, in cooperation with Thuraya we have doubled our data packages for April at no additional cost." With built-in Wi-Fi enablers, OneGate Aid Compact provide remote workers with a way to connect their own devices to the dedicated welfare network. This provides them with an added option to reach out to their families regardless of location. A dedicated welfare environment operates based on a voucher system. Credits are distributed among staff as a part of a social package. Should anyone prefer to surpass the limit, additional vouchers can be individually purchased online. As such filed workers are not limited in their communication and present no risk to overstretch corporate communication budget. According to the firm, with an option to install special apps on demand, OneGate Aid Compact can be termed as one of the most agile and future-ready satcom solutions for the humanitarian industry, enabling the organizations to better utilize the technology and make a difference to the affected communities.

U.S. Army Signs Deal with SpaceX to Assess Starlink Broadband

The U.S. Army will experiment using Starlink broadband to move data across military networks. An agreement signed with SpaceX on May 20 gives the Army three years to try out the service. The Army and SpaceX signed a Cooperative Research and Development Agreement known as a CRADA, an Army source told SpaceNews. The project will be overseen by the Combat Capabilities Development Command's C5ISR Center based at Aberdeen Proving Ground, Maryland. CRADAs are commonly used by the military to evaluate technologies and services from the private sector before it commits to buying them. The Army in this case wants to be able to assess the performance of the Starlink low Earth orbit internet service when connected to military systems. The Army will seek answers to key questions such as what ground equipment it will need to use Starlink and how much systems integration work could be required. According to the Army source, the three-year agreement will "allow the Army to understand potential applications of state-of-the art advancements in commercial RF SATCOM such as the new Starlink LEO constellation and modern SATCOM terminal developments capable of tracking LEO satellites." The deal with SpaceX follows other CRADAs the Army has signed with companies like Kratos

and SES to assess the use of commercial SATCOM. Joseph Welch, deputy program executive officer for command, control, communications tactical (C3T), said the Army is trying to fill a growing demand for connectivity in the field. "We have limited SATCOM today across our maneuver formations," he said at a conference last fall. One of the biggest challenges is integrating hardware and software apps into Army formations, he said. The Army's command operations centers access geostationary satellites via large dishes that are mounted on trailers and not very mobile. One of the problems is that satellite are oversubscribed, provide limited throughput and have high latency. "We liken that to a soda straw," Welch said of the Army's network capacity to support data flow. To use LEO broadband like Starlink the Army will need flat panel antennas to track thousands of satellites.

The cost of equipping Army units with new ground terminals will be one of the issues that the CRADA will investigate. Another concern is the security of the data piped down to ground stations. Starlink satellites currently are not connected in space via optical links so the data is sent to ground stations located around the world. The U.S. military prefers to use systems with inter-satellite links so data can be brought down to its desired point of entry.

Russia to Launch First Arktika-M Satellite for Monitoring Arctic Climate This Year

Russia will launch its first Arktika-M satellite for monitoring the Arctic climate and environment at the end of the year, General Director of the Lavochkin aerospace company Vladimir Kolmykov told Sputnik. "As of now, the number one Arktika-M spacecraft has been developed and is undergoing radio-electronic testing … the launch is planned for the end of 2020," Kolmykov said, adding that the second Arktika-M satellite is still under development and will be launched in 2023. In February, a space industry source told Sputnik that the launch of the first Arktika-M satellite from the Baikonur space center was planned for December 9, 2020. According to the source, the satellite will be launched using a Soyuz-2.1b carrier rocket with the Fregat booster. Russia's Arktika-M remote-sensing and emergency communications satellites will gather meteorological data in the polar regions of the Earth, which will allow to improve weather forecasts and will enable scientists to better study climate change.
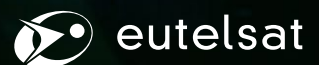
The Landscape of Data Sharing Regulations Amidst the COVID-19 Crisis

All around the world, telecom operators (Telcos) are sharing data with governments and other stakeholders, even in more protective jurisdictions such as the European Union (EU), to stop the spread of the virus. On the other hand, there are definitely compliance and reputational risks associated with such data sharing that can materialize in the time to come.

The COVID-19 crisis is considerably changing the way our societies balance public health against all other concerns. While lockdowns are the most characteristic symbol of this trade-off that societies have to make, contact and localization tracing are also redefining the way we understand data privacy. All around the world, telecom operators (Telcos) are sharing data with governments and other stakeholders, even in more protective jurisdictions such as the European Union (EU), to stop the spread of the virus. On the other hand, there are definitely compliance and reputational risks associated with such data sharing that can materialize in the time to come. While there is a clear shift of paradigm when it comes to data sharing, updating existing regulations will be a complex task as well. What can Telcos do to emerge clean post the crisis or even stronger with respect to their privacy protection actions and perception, and how can they prepare for the post-COVID-19 regulatory landscape, is a top of mind for most.

East-Asia has transformed data sharing into the new big conversation
The extent of data sharing already happening or planned varies for each country and jurisdiction. Contact tracing already started as early as late February this year in South Korea. South Korea's Centers for Disease Control and Prevention (KCDC) ran the contact tracing system that used data from 28 organizations covering police, credit card and smartphone companies, to trace the movement of individuals with COVID-19. Other East-Asian countries were also early movers in building their COVID-19 response based on shared data for example, Taiwan's "Digital Fence" that used Telcos' GPS data to monitor people in self-quarantine, and Singapore, where "TraceTogether" contact

Rohit Sethi
Principal
Arthur D. Little

Arthur D Little

tracing app was built upon Bluetooth connection data between devices. For hard-hit Western countries, technological responses have been much slower, primarily owing to stricter data protection laws and higher cultural aversion towards privacy infringements. However, in light of the success achieved by certain East Asian countries in containing the virus's spread, the overall view seems to be changing.

In line with the generally established principles around data protection as clearly delineated in the European General Data Protection Regulation (GDPR), in an ideal situation, any app/ mechanism built to combat COVID-19 should adhere to the principles of: Consent i.e. ensure that appropriate permission has been received from the data subject, Transparency i.e. inform data subjects as to how their data will be used, Purpose limitation i.e. ensure that the gathered data is used only for the purposes indicated, and Security standards i.e. ensure appropriate security measures will be undertaken to protect this personal data from getting leaked or shared outside of the original intent.

Several gaps exist with respect to an ideal state of data sharing

The existing and new types of information that organisations may collect to combat COVID-19 cover aspects such as effectiveness of self-isolation, body temperature, visitors to the premises, and device location data, all of which are personal data.

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In addition to commitment on the above principles by the entities gathering and managing the personal data, there should be a wider protection for individuals in terms of state-level or national-level data protection act(s). In most of the apps/ mechanisms launched so far, all measures required for an ideal state have not been observed.

For example, in South Korea and Taiwan, the data shared by Telcos with the government can serve to identify specific cases and is applicable to all the population, whether they provide consent or not. While these measures provide a pragmatic means for effective containing of the spread, they do raise serious privacy concerns. However, data sharing Telcos stand on robust legal grounds for example, in South Korea, a law drafted in the wake of 2015 MERS outbreak gives the Korea Centers for Disease Control & Prevention (KCDC) unwarranted powers to require data when there is a public health emergency.

In more protective Western countries, similar laws are mostly non-existing however, the GDPR does allow for such data processing if certain principles are met. In normal times, the GDPR prohibits any sharing of personal data without consent. However, exceptional provisions exist in case of epidemics to deal with personal health data and to allow EU member states to introduce specific legislations for other types of data such as mobile location. In the absence of such national legislation, any Telco sharing personal location data, even with governments, is therefore in non-compliance of the law. Questions were already being raised about data shared, or rumored to be shared by Telcos such as Vodafone in Italy, Telekom Austria A.G. in Austria, and BT and O2 in the UK.

Whereas Telcos have a central role in direct mobile data sharing, they are only facilitators in app-based approaches, where the two key types of players are governments and the large technology giants such as Apple and Google. Singapore spearheaded the government approach using systematic consent through an opt-in basis for their contact tracing app, TraceTogether. Rather than working with Telcos' data, this app used Bluetooth to make devices communicate with each other and, ultimately with public health authorities. Several European countries are trying to emulate similar apps for example, France's StopCovid app, which publicly claims to be "anonymous and voluntary". However, the consent component is already being blurred in some countries as governments, such as in India, made the app usage mandatory for specific parts of the population such as for people who work in public and private offices, for all train travelers and for the ones living in high-risk areas with respect to spread of the virus. Additionally, given that India does not have a national data privacy law, there are concerns over the app being used in a way that violates civil liberties, including as a state surveillance system that could be exploited after the app outlives its coronavirus-tracking purpose.

Whereas Telcos have a central role in direct mobile data sharing, they are only facilitators in app-based approaches, where the two key types of players are governments and the large technology giants such as Apple and Google.

Preparing for the future – players to take stances, governments to close gaps

The above mentioned apps/ mechanisms can be critical for privacy as they gather more data than Telcos ever did, and hence appropriate regulations are required for governments, smartphone manufacturers, app-store managers or whichever entity is developing and administering these apps/ mechanism, especially in countries where national data protection laws do not exist yet. Even when not directly involved with app development, Telcos have been solicited in several cases to give them privileged access (e.g. to Bluetooth communications) or to push them into smartphones on an opt-out

Countries are already drafting new regulations to address the gaps. In Armenia, the parliament on 31st March passed amendments giving the authorities broad surveillance powers that require Telcos to share phone records for customers, including phone numbers, location, time, and date of their calls and text messages.

basis. Arbitraging between cooperation, compliance and customer trust has been a conundrum in many cases, as illustrated by Apple's decisions. Apple has decided to develop its own contact-tracing platform with Google, enabling interoperable Bluetooth communication between devices for official apps without funneling to central governmental server for privacy reasons. In fact, it has embarked on a confrontational course with countries such as the UK and France, which have decided to develop their own top-down apps and have asked Apple to remove restrictions on Bluetooth usage. Apple has refused, provoking the ire of several legislators, that claim the firm is slowing down efforts to stop spread of the virus. Despite immediate reputational risk, Apple could benefit from its decision, as it did in 2016 when refusing to provide access to an iPhone as sought by Federal Bureau of Investigation (FBI), ended up reinforcing customer trust in the company. Learning from the above, taking a stance for privacy, when supported by firm regulatory and ethical grounds, can be a sound decision for Telcos as well.

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Such new individual laws, such as South Korea's provisions passed after the 2015 MERS outbreak, will undoubtedly redefine the regulatory landscape, however it is key that global alignment is maintained as the data sharing paradigm evolves, given that data protection regulations and measures are intertwined globally. For instance, EU authorities will have to adapt their cross-border data sharing rules as some countries update their former data protection mechanisms, prompting alterations to the multinational data transfer landscape. Such changes can bring new opportunities and risks for Telcos which will only become clear with time, however as a broad guidance to navigate this complex regulatory landscape, Telcos need to have their priorities right in order to ensure legal compliance, while also maintaining amenable relations with governments as well as trust of their customers.

As a broad guidance to navigate this complex regulatory landscape, Telcos need to have their priorities right in order to ensure legal compliance, while also maintaining amenable relations with governments as well as trust of their customers.

WHOLESALE NEWS

Belgian Regulators Publish New Wholesale Cable Network Access Tariffs

Belgium's Conference of Regulators for the Electronic Communications Sector (CRC) has published its final decisions on wholesale rates for access to the cable networks of Telenet, Brutele and Voo, which will take effect from 1 July. According to the CRC, which comprises the Belgian Institute for Postal Services and Telecommunications (BIPT) and regional regulators, these decisions 'enable wholesale cable access for alternative operators at fair prices, creating possibilities for competition on the retail market to the benefit of end-users, whilst remunerating the network operators correctly for the access'. In a press release, Orange Belgium said it regrets that the EC had cleared the regulation with only minor comments. The operator, which is one of the main customers for wholesale cable access, noted that wholesale tariffs, particularly in the case of ultra-high speed internet access services, will remain significantly above 'fair costs', to the detriment of consumers. Furthermore, Orange warned the significant increase in costs over time (up to 25%) will result in regular and unjustified price increases for Belgian consumers. The company is calling on regulators to closely monitor the consequences of the decision on retail prices and initiate a review as soon as any negative impact is identified.

Previous and new tariffs (2020) - 100 Mbps

Previous and new tariffs (2020) - 200 Mbps
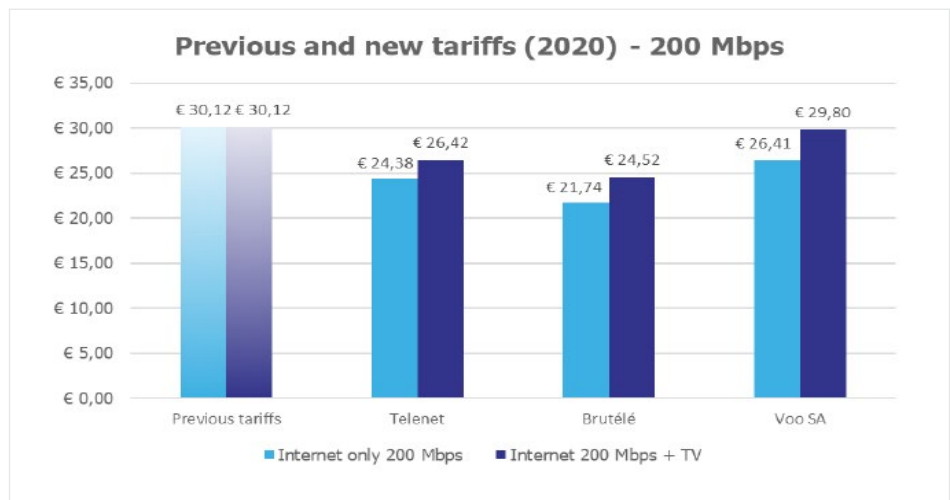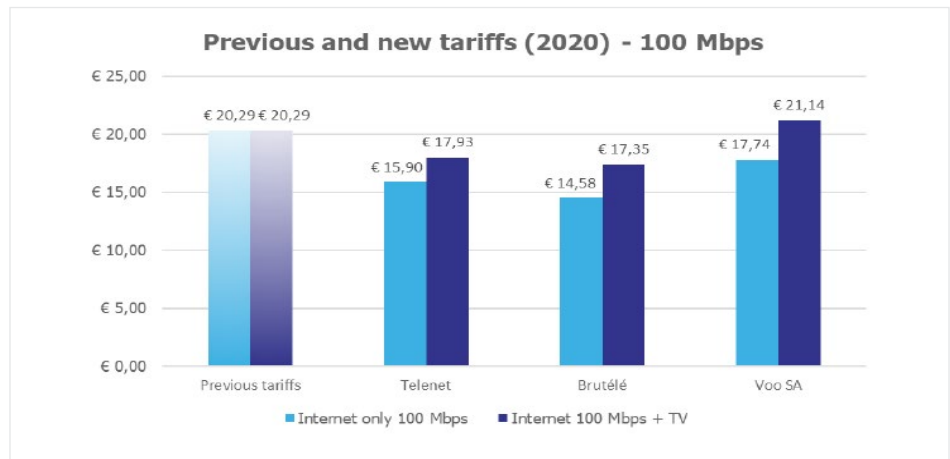
Greece to Lower Fiber Wholesale Charges

The National Telecommunications & Post Commission (Ethniki Epitropi Tilepikoinonion kai Tachydromeion, EETT) in Greece is looking to implement a reduction of wholesale prices for access to next generation networks. The regulator says the cuts will reduce end user costs for fiber-to-the-home (FTTH) and fiber-to-the-cabinet (FTTC) services. It is aiming to see the cost of a 500Mbps FTTH connection fall from over EUR70 (USD76.50) per month currently to below EUR40 a month by 2028, while the price of a 100Mbps FTTC service will drop from around EUR25 now to below EUR18 by 2028. A recent report commissioned by Greece's competition authority suggested that the country has some of the highest tariffs for communications services in Europe.

TRAI Publishes Consultation Paper on International Roaming

Sector watchdog the Telecom Regulatory Authority of India (TRAI) has published a consultation paper on international mobile roaming services, requesting feedback on potential regulatory changes. The paper primarily focuses on the reduction or elimination of bill shocks for subscribers by identifying their specific causes and evaluates the capacity of the current regulatory framework to address the issue as well as the possible need for a revision of that framework. Amongst the issues raised by the paper are: the activation of international roaming, whether the facility should be automatically enabled on every SIM sold or activated only at the user's request; tariff offerings available and the selection of applicable tariffs – the TRAI notes that some providers 'have the flexibility to apply [international roaming] packs even when the consumer has not specifically asked for the same before traveling abroad; and consumer protection measures such as SMS alerts for customers when they reach certain thresholds of their allowance or when they arrive in a country not covered by their international roaming pack. Regarding potential implementation of price regulations for international roaming services, the TRAI was reluctant to consider such an option, citing the ITU as saying that such measures, when carried out unilaterally at a national level, were not very effective. The regulator goes on to state that its preferred approach is to empower consumers by making information more readily available. Further, the TRAI points out that the current regulatory framework does not provide for price regulation of international mobile roaming services, as its forbearance regime instead aims to grant service providers 'the freedom to design the tariffs suited to the prevailing market conditions'. The watchdog has requested feedback from industry stakeholders by 23 June, with counter-comments to be submitted by 7 July.

Nkom Confirms New Wholesale Mobile Market Decision

Norway's National Communications Authority (Nasjonal kommunik-asjonsmyndighet, Nkom) has announced a new regulatory decision related to Market 15 (wholesale market for access and call origination on mobile networks), which will apply from 1 June 2020 and last for around three years. In a press release, the telecoms regulator confirmed that – having analyzed the local mobile market – it had determined that Telenor Norge still held significant market power (SMP) with regards to Market 15, and as such would continue to have special obligations imposed upon it. The regulator's decision is partly designed to facilitate the continued rollout of a third nationwide mobile network by ice, and with the operator now looking to extend coverage in more sparsely populated areas, the Nkom has suggested that detailed requirements related to co-location and the introduction of new pricing models for the purchase of data traffic should 'give ice better opportunities for efficient development'. Meanwhile, with Telenor also obliged under the ruling to provide access to its network to MVNOs on non-discriminatory terms, the Nkom said the cellco will be required to do so at prices that will allow virtual operators to achieve positive margins. Specifically, for MVNOs access prices will reportedly be based on a full margin squeeze test, which assumes
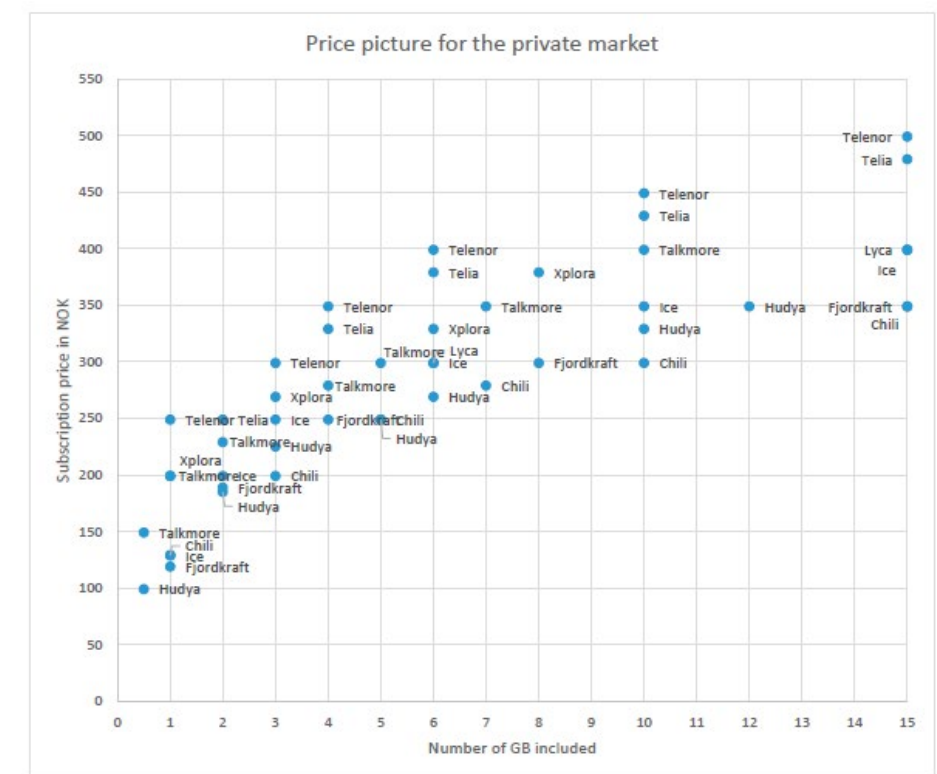
Figure 2 The price picture in the private market, February 2020. Source: Nkom

a 3% market share for the reference MVNO operator at the level of aggregation of the test. With the EFTA Surveillance Authority (EFTA) having examined the regulator's decision, it said it supported the Nkom's analysis of the Norwegian mobile market, but has encouraged the regulator to monitor the market closely in the coming years for any signs of 'sustainable tacit coordination' between Telenor and the market's other established MNO, Telia Norge.

Ukrainian Regulator Says Termination Rate Cut Will Benefit End Users

Ukraine's National Commission for State Regulation of Communications & Informatization (NCCIR/NKRZI) has issued a decision cutting the unified wholesale mobile termination rate (MTR) and long-distance voice call termination rate to UAH0.08 (USD0.00297) per-minute from UAH0.12, effective from 1 January 2021. The regulator based its decision on data from operators for 2019 showing the actual cost of terminating network traffic was UAH0.03-UAH0.06 a minute, and indicated that it will continue to reduce rates to gradually approach cost levels. The NCCIR claimed that interconnection rate reductions will enable operators to offer consumers more attractive off-net calling tariff plans, with benefits for end users including: increasing the volume of package minutes for all types of telecommunications services for the same cost; reducing the cost of long-distance calls; and reducing the demand for owning several mobile SIM cards for different operators (due to varying inter/intra-network rates).
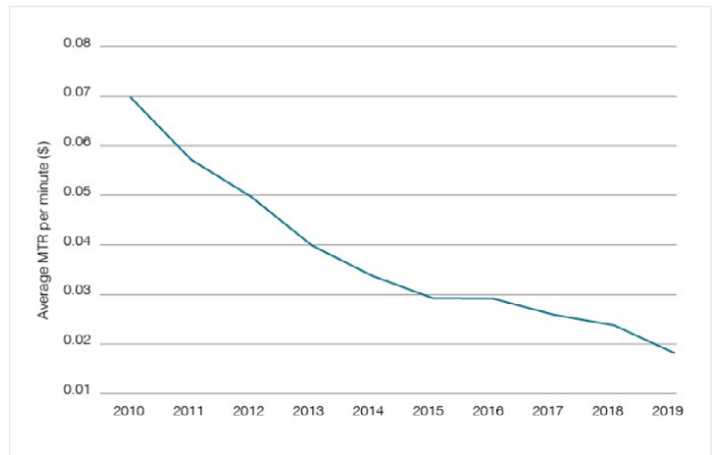
Big Drop in MTN South Africa Wholesale Revenue

MTN has published its quarterly trading update for the period ended 31 March 2020, showing a significant drop in wholesale revenue for the company's South African business. Wholesale revenue declined by 44% year-on-year, which MTN said was largely attributed to the loss of the Telkom roaming agreement and the effects of lower recognized revenue from Cell C. "This resulted from our roaming agreement with Telkom having concluded at the end of June 2019 as well as lower revenue recognized from Cell C due to the ongoing cash basis of accounting," MTN said. "For Cell C specifically, roaming revenue continued to be accounted for on a cash basis in line with IFRS 15 and MTN SA recognized approximately R292 million in revenue during the quarter." MTN said that as of 31 March 2020, R450 million in

Cell C revenue remained unrecognized. MTN added that it had commenced phase two of its expanded roaming agreement with Cell C, effective 1 May 2020. "MTN South Africa's (MTN SA) performance was negatively impacted by the wholesale business, as we continue to account for Cell C roaming revenue on a cash basis, as well as the loss of revenue from the Telkom roaming agreement which came to an end in June 2019," said MTN Group CEO Rob Shuter. MTN added that that the first-quarter performance of its South African business was impacted by the global outbreak of the COVID-19 pandemic, currency depreciation, and load-shedding. MTN South Africa noted that its prepaid business has begun to recover from recent regulation changes, and its postpaid customer base has seen an increase

despite the economic environment. The company recorded a quarterly increase of 75,000 subscribers in South Africa. Service revenue for its South African business declined by 6.2%, which the company attributed to the effects of its Cell C roaming agreement and the loss of the Telkom roaming agreement. The company said that if the effect of national roaming agreements was discounted, the quarterly service revenue for its South African operations would have remained flat. "We are encouraged by the stabilization of the consumer prepaid business which was affected by the implementation of the new out-of-bundle data usage rules," Shuter said. "Also pleasing was the continued progress in the enterprise business, which recorded 8.2% service revenue growth."

ANCOM Proposes 30% Cut to Fixed Termination Rate

Romania's telecoms regulator the National Authority for Management and Regulation in Communications (ANCOM) has launched a public consultation regarding its proposal to reduce the fixed termination rate (FTR) from EUR0.0014 (USD0.00153)

per minute to EUR0.00097 per minute with effect from 1 August 2020. The new rate would apply to wireline operators designated by ANCOM as having significant market power, including Telekom Romania, RCS&RDS, Orange and Vodafone, and
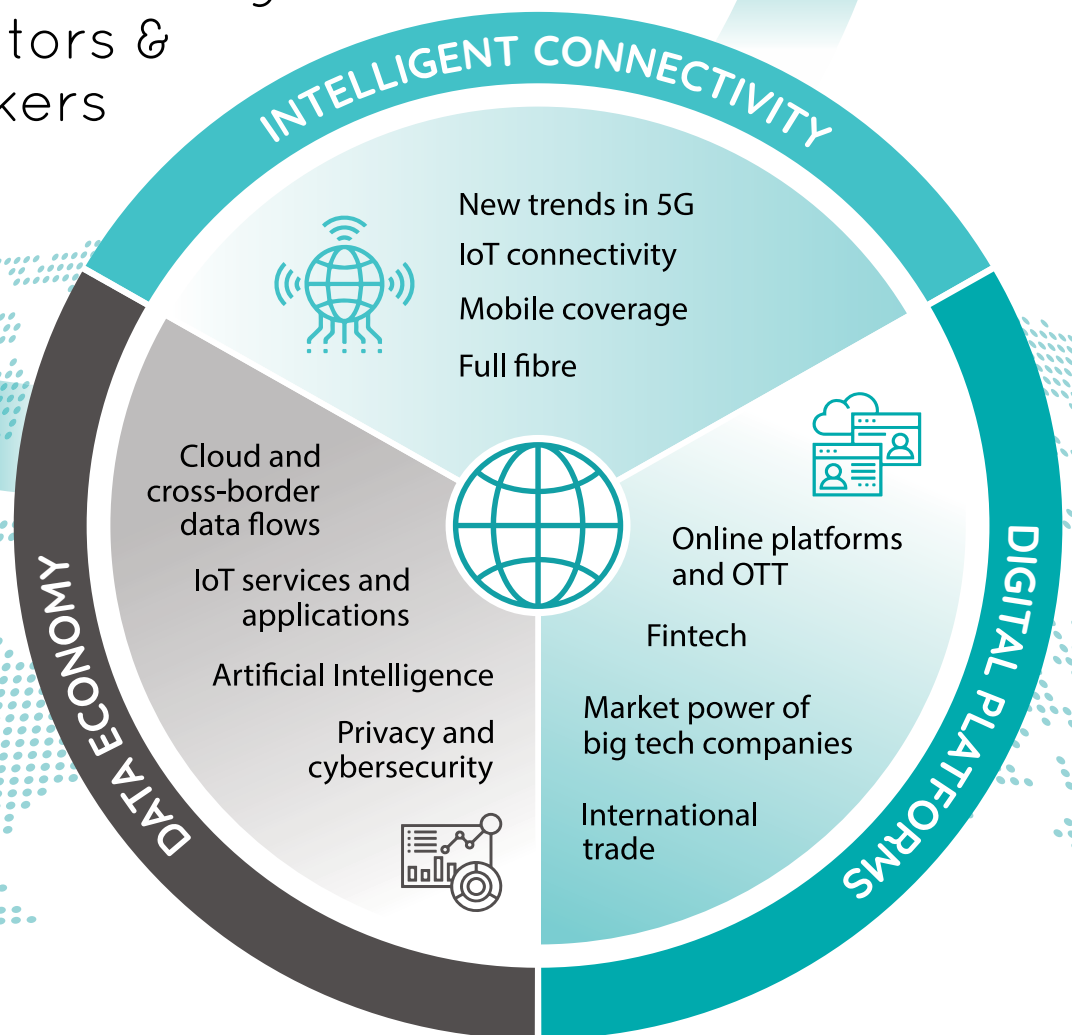
cover national calls and those made to and from the European Economic Area (EEA), unless existing international agreements allow different charges to be imposed. Interested parties are invited to submit comments and proposals by 18 June.

Global Trends

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ARTICLE

COVID-19: Contact Tracing Mobile Apps and Data Sharing Practices in MENA

Ali Hayajneh
Senior Analyst, Cullen International

Government authorities in MENA countries have developed mobile apps to help in tackling the COVID-19 pandemic. Five MENA countries have developed contact tracing apps but with different approaches and functionalities. Data sharing practices in the MENA countries also vary.

Many countries in the Middle East and North Africa (MENA) adopted technological solutions to halt the spread of COVID-19. Five MENA countries (Bahrain, Jordan, Qatar, Tunisia and UAE) have developed contact tracing apps to alert people who have been in recent contact with those who have tested positive for coronavirus.

During the pandemic, many telecoms operators around the world have announced that they are sharing specific information with government authorities. This includes the sharing of anonymised location data to enforce quarantine and to limit movement between specific areas. However, no such measures have been announced by a country in the MENA region.

Instead, many government authorities in MENA asked individuals to provide the data voluntarily, by installing mobile apps and to consent to sharing their location and contact information. Individuals were requested to volunteer to install COVID-19 related mobile apps in all the studied MENA countries, except in Bahrain and Qatar where installing the contact tracing app is mandatory in specific cases.

Data sharing by telecoms operators
None of the researched MENA countries officially required telecoms operators to share data with the government as a specific measure to mitigate the spread of COVID-19.

Four of the researched MENA countries have adopted a personal data protection law (Cullen International)

| BH | DZ | QA | TN | AE | EG | JO | OM | SA |

Muatasem Khair Ad-Deen
Senior Analyst, Cullen International

This article is an extract from recent research by Cullen International among nine countries across the MENA region.

In those countries that have a personal data protection law in place, data sharing can be required in certain circumstances either for the public interest (this is the case in Qatar and Tunisia) or to prevent a pandemic (Algeria and Bahrain).

In Jordan, Egypt, Oman and Saudi Arabia, telecoms operators have specific obligations to protect the personal data of their subscribers, which prevent sharing except in certain cases.

In the UAE, the consumer protection regulations of the Telecommunications Regulatory Authority allow providers to disclose subscriber data if the disclosure is made in response to a lawful request from any competent authority in relation to matters involving the public interest.

Apps developed by governments to fight COVID-19

Five MENA countries have developed contact tracing apps:

- The apps in three of the five countries use Bluetooth technology with GPS. In the UAE, only Bluetooth is used, while Jordan currently uses only GPS, with Bluetooth planned to be added at a later stage.
- In Bahrain, Qatar and UAE, users' health status is stored and managed centrally, and pushed onto users' devices automatically.
- In Jordan, the user's data is stored on the user's device, with no personal information being required during registration. In Tunisia, the user's data is stored in a central server and is accessible by health authorities.
- Jordan, Tunisia and UAE have made the use of the app voluntary for everyone. In Bahrain, the app is mandatory only for people in quarantine, while in Qatar the app is mandatory when anyone leaves their home.

Contact tracing apps in some MENA countries
(Cullen International)

Country & App logo	App name & developer	Installation on devices, is it voluntary or mandatory?	Underlying technology used for contact tracing	Data retention period	User' health status pushed to the app
Bahrain	BeAware developed by Ministry of Health and the eGovernment Authority	Mandatory for people in quarantine. Voluntary for others	Bluetooth / GPS	From two to six weeks	Yes But only for the people in quarantine to track active cases and provide contact tracing updates
Jordan	AMAN developed for the Ministry of Health by a group of tech volunteers " COVID-19 JOTECH COMMUNITY"	Voluntary	GPS / Bluetooth (in a second phase)	Two weeks	No App users are not identified by health authorities. No personal information required during registration procedure.
Qatar	EHTERAZ developed by Ministry of interior	Mandatory For all people when they leave their homes. Not having the app installed could lead to a fine of $55,000 or three years in jail, in maximum.	Bluetooth / GPS	Two months as a maximum	Yes Based on the registered users ID, health authorities push the users health status into the app. Each user will be linked to a QR code. Once scanned, it shows users health status according to the following categories: ● Healthy ● Suspected case ● Infected ● In quarantine
Tunisia	E7mi developed by Observatory of Emerging Diseases (ONME)	Voluntary	Bluetooth / GPS	Two weeks	No But users data such as mobile number are stored in a central location and it is accessible by health authorities. Health authorities may use the mobile number of the suspect cases to call them and advise them to test, self-isolation or quarantine
United Arab Emirates	Al Huson developed by National Emergency Crisis and Disaster Management	Voluntary	Bluetooth	Information not available	Yes The app changes it color to indicate the user status as registered by the health authorities: ● Not tested yet ● Tested Infected ● Tested and healthy ● Need to be tested or retested (suspicious case)

How Bluetooth contact tracing apps work

Contact tracing apps exchange anonymous unique identifiers using Bluetooth technology to collect information when users' devices come into proximity with other devices for a given duration, along with the geolocation information if the app also collects such data.

If the user confirms that he is infected with the virus, the app sends an alert to all other app users who have been in contact with that user. The app may also provide relevant information from health authorities on the steps to be taken, such as advising the user to get tested or to self-isolate, and which authorities to contact.

GPS information can additionally be used to perform specific functions, such as quarantine enforcement, mapping peoples' movement and concentration, and providing early warning to users to avoid infected areas.

Cullen International's infographic shows how people get notified by the contact tracing apps in Bahrain, Qatar and UAE.

Cullen Cheat Sheet
How people get notified by the contact tracing apps in Bahrain, Qatar and UAE

Person A and B have voluntary (UAE) or mandatory (Qatar and Bahrain) installed the contact tracing app

Person A meets Person B

Each person's phone exchanges an anonymous identifier (periodically changing encrypted ID) via the app

The identifiers can be stored on:

User's device (decentralised storage) OR Backend server (centralised storage)

After a few days health authorities confirmed Person A is infected with COVID-19

Person A

Automatically, the app uploads all identifiers of people whom Persona A has been in contact in the past days

Government authorities may quarantine Person A in a government quarantine facility or ask him to self-quarantine in a specific location he choose for 14 days

The app sends an anonymous alert to Person B and all others who have been in contact with Person A

Person B may be asked to isolate or take any further measures approved by health authorities.

Person B

For more information and access to the full research, please contact discover@cullen-international.com.

About the Authors

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Muatasem Khair Ad-Deen
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TECHNOLOGY NEWS

RAN Alliance Join Forces to Open Up 5G Networks

Two of the telecoms industry's biggest trade and research bodies have joined forces to fast track the adoption of Open Radio Access Network (RAN) products and solutions that take advantage of new open virtualized architectures, software and hardware. The GSMA and O-RAN Alliance will work together to harmonize the open networking ecosystem and agree on an industry roadmap for network solutions, thereby making access networks as open and flexible as possible for new market entrants. 5G will facilitate the opportunity to create even more agile, purpose-built networks tailored to the different needs of citizens, enterprises and society. For example, 5G is an essential ingredient of the European Commission's recently launched Industrial Strategy and will help shape its future. "When 5G reaches its potential, it will become the first generation of mobile networks to have a bigger impact on enterprises than consumers," said Alex

Sinclair, chief technology officer, GSMA. "In the enterprise sector alone, we forecast $700 billion worth of economic value to be created by the 5G opportunity. The growth of the open networking ecosystem will be essential to meeting enterprise coverage and services needs in the 5G era." In its latest Mobile Economy Report, the GSMA predicts that operators will invest more than a trillion dollars over the next five years globally to serve both consumer and enterprise customers, 80 per cent of which will be on 5G networks. "As the demand for data and vastly expanded mobile communications grow in the 5G era, a global, cross-border approach is needed to rethink the RAN," said Andre Fuetsch, chairman of the O-RAN Alliance, and executive vice president and chief technology officer, AT&T. "The GSMA collaboration with the O-RAN Alliance is exactly the sort of global effort that's needed for everyone, operators and

vendors alike, to succeed in this new generation." Mobile operators are re-evaluating the way that their networks are deployed. New virtualized architectures with open interfaces can drive cost efficiencies and allow operators to accelerate the deployment of 5G networks. Also, open interfaces can help diversify and reinvigorate the supply chain promoting competition and innovation - for example, by building and operating a RAN based on mix-and-match components from different vendors. The GSMA and O-RAN Alliance collaboration complements the recently announced interworking between the GSMA and Telecom Infra Project (TIP), and the O-RAN Alliance and TIP. The goal for these collaborations is to help avoid fragmentation and accelerate the successful evolution of the industry towards a more intelligent, open, virtualized and fully interoperable RAN.

SmarTone Launches 5G

Hong Kong cellco SmarTone has launched its 5G service, offering what it claims is 'the widest network coverage, both indoors and outdoors. The firm is using Ericsson Dynamic Spectrum Technology, which it says provides a seamless transition between 4G and 5G. SmarTone CEO Anna Yip said: 'We see limitless potential for 5G with its blazing-fast speed and super-low latency. 5G will benefit both consumers and enterprises and will be one of the key enablers for Hong Kong's smart city development.' Rival operators HKT, Hutchison 3 and China Mobile Hong Kong (CMHK) all introduced their own 5G services on 1 April.

Telia Launches Commercial 5G in Sweden

Telia Company recently inaugurated its commercial 5G network in Sweden, with service initially available in Stockholm powered by Ericsson Radio Access Network (RAN) products and solutions. Initial services on the 700 MHz band will cover most of central Stockholm by mid-June, including the Norrmalm, Östermalm and Vasastan districts. Telia aims to enhance and supplement its low-band 5G commercial services with additional nationwide 5G coverage, including mid- and high-bands, following the auction of the related spectrum by the Swedish government later this year. For this launch Telia is using its existing 700MHz spectrum, boosted by LTE and New Radio (NR) carrier aggregation. Allison Kirkby, CEO, Telia Company, says: "Our networks have never been more important to lives and livelihoods, than now. Telia's 5G launch lays the foundations for the next phase of digital transformation, with innovation, sustainability and security as three critical pillars, and we are proud to be doing this launch in partnership with Ericsson. As we roll-out 5G across Sweden, we will open up new user experiences and accelerated innovation in areas such as entertainment,

healthcare, manufacturing and transport that will collectively strengthen and protect everyone living and working in Sweden, and Swedish competitiveness in the world." Börje Ekholm, President and CEO, Ericsson, says: "This is a real milestone for us as a Swedish company as we partner with Telia Company to make commercial 5G a reality for its users in Stockholm. Whether through enhanced mobile broadband or innovative new business, societal and industrial applications, 5G is set to change

life and society for the better right across Sweden. We look forward to working with our strategic partner Telia Company to drive this change and ensure Sweden benefits from the competitive benefits of digitalization." With Telia's launch, Ericsson now has 39 live 5G networks in 22 countries. Ericsson's live networks are part of the 91 commercial 5G agreements or contracts the company has with unique operators globally, of which 48 are publicly announced 5G deals.

Vodacom Launches Mobile 5G in South Africa

South African operator Vodacom Group laid claim to activating Africa's first commercial mobile 5G network, speeding its launch using temporary spectrum released to help operators meet heightened demand during the COVID-19 (coronavirus) pandemic. In a statement, Vodacom said it lit 20 5G sites in Johannesburg, Pretoria and Cape Town, offering mobile and fixed wireless access (FWA) services. The operator used one block of 50MHz in the 3.5GHz band, temporary spectrum allocated by regulator ICASA, to "fast-track" it's 5G launch and further mitigate increased traffic during the COVID-19 outbreak. The operator reported a 40 per cent jump in mobile traffic after the country introduced lockdown measures in early April. Shameel Joosub, Vodacom CEO, said the launch in South Africa "comes at an important time as it will help us improve our network efficiency" during the state-of-emergency. "This is largely due to the allocation of temporary spectrum by ICASA, which has already mitigated the network congestion we have experienced since the start of the lockdown period", Joosub added. Vodacom said it will expand the service as more smartphones, Wi-Fi and FWA routers come to market.
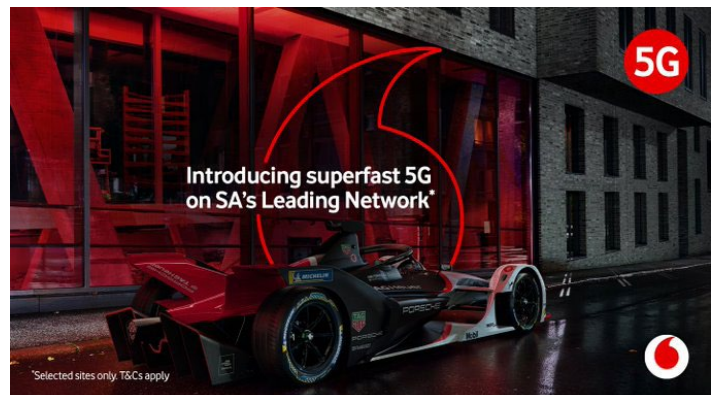
Vodacom is currently offering the LG V50 ThinQ 5G smartphone and Huawei 5G CPE Pro router. Joosub outlined ambitions to launch its 5G network earlier this year after signing a roaming agreement to use Liquid Telecom's 3.5GHz spectrum. In 2018, Vodacom claimed to have launched the first 5G service in Africa, with a FWA set-up in Lesotho.

T-Mobile Delivers Gigabit 5G Speeds Using Mid-Band Spectrum

T-Mobile achieved a significant milestone in New York, passing the gigabit speed threshold with mid-band 5G. This is significant because, generally, high-band mmWave is viewed as the flavor of 5G that offers the best speeds. Unfortunately, mmWave has notoriously short range, requiring towers, repeaters or base stations every couple of hundred meters. This makes it logistically impossible to widely deploy it across the country. In contrast, low-band 5G has the best range and penetration, even better than 4G LTE in some cases, but offers only modest speed improvements over the older technology. Mid-band spectrum, in the 2.5GHz range, is generally considered the sweet spot for 5G, offering the best blend of range, penetration and speed. According to Ookla Speedtest's Milan Milanovic, however, T-Mobile's mid-band may be giving mmWave a run for its money. The mid-band spectrum was one of the primary reasons T-Mobile worked so hard to merge with Sprint. Sprint had been sitting on a wealth of the spectrum for
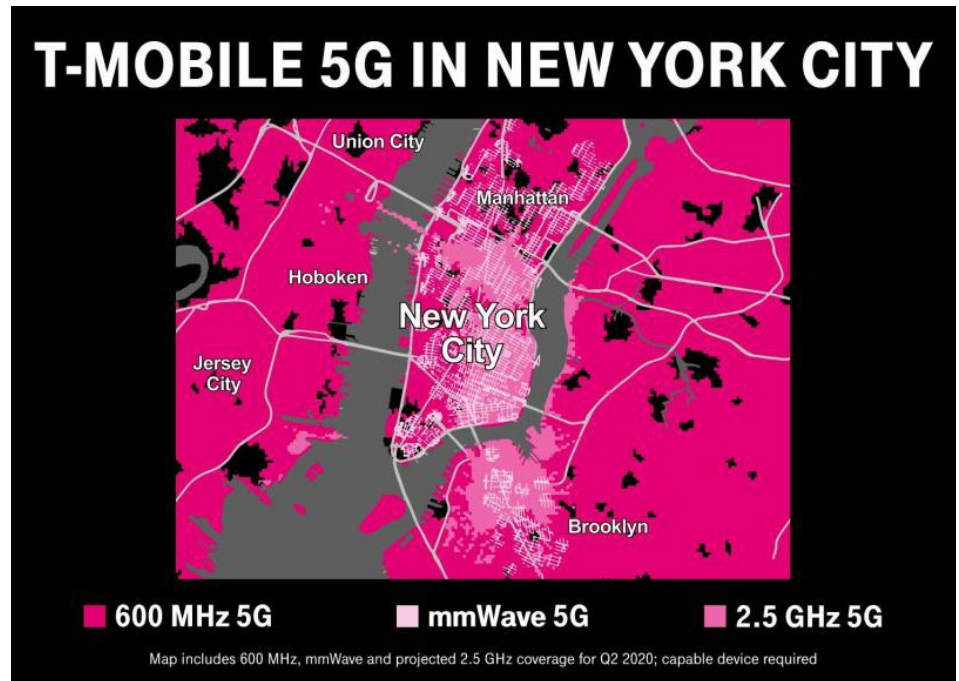
years, but had never been able to deploy it to maximum benefit. It appears T-Mobile's investment is paying off for the company and customers alike.

Nokia, KDDI Develop PoC on Fully Virtualized Cloud RAN to Support 5G

Nokia and KDDI (au) have embarked on a joint initiative aimed at delivering a fully virtualized Cloud RAN solution. In a press release the Finnish vendor confirmed the start of a lab-based proof of concept (PoC), using its AirScale All-in-Cloud BTS solution, to enable the Japanese cellco to research 'how flexible, virtualized radio network technology can support the diversifying network performance requirements in the 5G era'. Nokia claims its AirScale All-in-Cloud BTS is a 'fully cloudified 5G BTS, placing both the real-time and non-real-time baseband in the cloud'. With KDDI having launched commercial 5G services in March 2020, the PoC will be used to provide a flexible network configuration of a base station virtualization as KDDI strives to implement an 'optimal' 5G network. The statement also noted that the Japanese carrier has
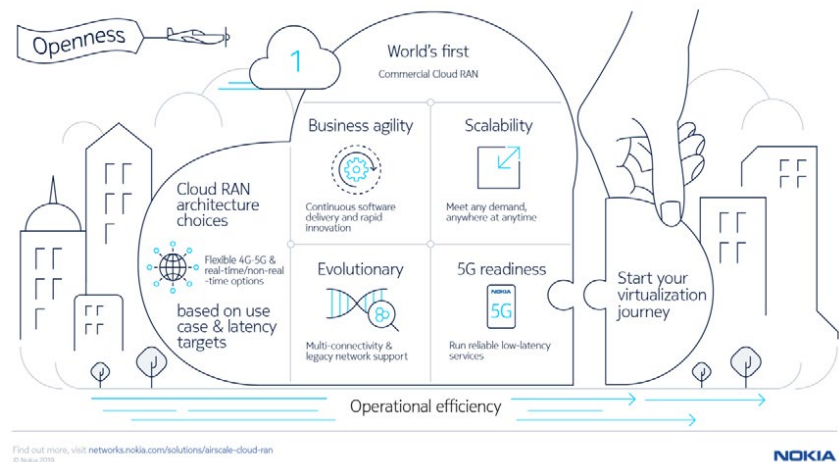
also been working closely with Nokia on 5G core standalone network trials.

Mitsubishi Electric Demos 'Local 5G System' in Japan

Japan's Mitsubishi Electric Corporation has revealed that it has kicked off a demonstration test of a local 5G system in Nagoya, Aichi Prefecture. The utility company is using spectrum at 28.2GHz-28.3GHz to conduct the tests – a different band than that currently employed by Japan's mobile network operators – via a limited area license granted by the Ministry of Internal Affairs and Communications (MIC). The tests are reportedly designed to verify wireless transmission between local 5G base stations and Mitsubishi Electric's Factory Automation products. Going forward, Mitsubishi Electric says it seeks to deploy local 5G systems 'to deliver new
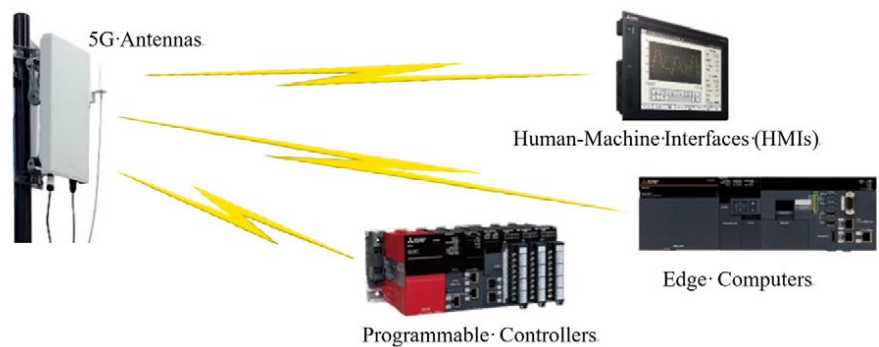
services and businesses incorporating a wide range of Factory Automation and other products'. In December 2019, MIC began accepting applications for local

5G systems to enable local governments and companies to meet diversifying communication needs.

Intertelecom Carries on Regardless with CDMA to LTE Switch

Ukrainian CDMA mobile network operator Intertelecom issued an update to its users on 20 May 2020 detailing its progress in switching to 4G LTE technology, involving refarming 850MHz band spectrum, despite having missed the payment deadline for its LTE license, with a court case pending on the matter. The update informs subscribers: 'Most Intertelecom base stations can operate simultaneously in CDMA-850 and LTE-850 without replacement of [end user] equipment; for others you need to buy a new [LTE user device and/or SIM card]. Following the refarming plan, we have already freed up

the radio frequency resource 9-11, 14-15 CDMA channels in Transcarpathian, Ivano-Frankivsk, Lviv, Volyn, Ternopol, Rivne, Chernivtsi, Khmelnytsky, Zhytomyr and Vinnitsa regions, and implemented 43% measures for refarming in six areas.' The company says it aims to finish spectrum refarming 'by the end of autumn 2020' while stressing that in most areas it will continue to provide services based on CDMA2000 1xEV-DO Rev A/Rev B standards alongside LTE until 2025. On 1 April 2020 Ukraine's National Commission for State Regulation of Communications & Informatization (NCCIR/NKRZI) cancelled the LTE license it

had allocated to Intertelecom in February, as the CDMA provider still owed UAH193.6 million (USD6.88 million) in license fees, having handed over just UAH1 million. However, the Kiev District Administrative Court suspended the decision, and all concessions remain valid until the court makes a final decision on a lawsuit filed by Intertelecom against the NCCIR. Intertelecom's latest announcement claims that the NCCIR will issue the LTE license under previously agreed conditions once the operator makes the final payment, although it did not disclose an expected payment date.

China 5G Subscriber Numbers Exceed 65M

China Mobile and China Telecom picked up more than 17 million 5G subscribers in April, taking their combined tally to 65.45 million six months after introducing the new service. Market leader China Mobile added 12.02 million, ending the month with 43.7 million. It had a net gain of 432,000 mobile subscribers in April for a total of 946.7 million. Deputy GM Jian Qin said it aims to have 100 million 5G subscribers by the end of the year and had deployed 124,000 compatible base stations in 56 cities as it targets a total of 300,000 by the year-end, C114.net reported. China Telecom added 5.09 million 5G subscribers in April, taking its total to 21.7 million: net additions of 1.97 million took its overall user base to 338.5 million. Third-ranked China Unicom has not released April subscriber figures and did not issue 5G numbers over the opening three months of 2020.

Deutsche Telekom Global Carrier Launches Europe's First 800G Network

Deutsche Telekom Global Carrier, the international wholesale unit of Deutsche Telekom, recently turned up the first European 800G network connecting its data centers in Vienna, Austria. The technology, provided in cooperation with Ciena will satisfy customers' demands for higher speeds and efficiency, which are especially important for applications such as IoT, cloud computing and video, said the Operator. Deutsche Telekom Global Carrier welcomes Ciena's WaveLogic 5 Extreme (WL5e) to satisfy surging traffic requirements across its pan-European network. 800Gb/s transmission was successfully implemented between data centers in Austria and validated for stability and error rates in a live environment. The technology innovation, which is based on higher spectrum efficiency, will allow Deutsche Telekom to transport eight 100G of data traffic in less than 100Ghz of spectrum and is optimized for high-capacity 100GE and 400GE customer interface connectivity. It is the industry's first solution that can transport 2x400GE across a single 800G wavelength. This next technology step supports the extension of the highly efficient Deutsche Telekom network by further reducing shelf demand and power consumption for deployments in Public Telehouse Exchange points. Deutsche Telekom intends to implement Ciena's WL5e with its 6500 and Waveserver 5 platforms, managed by

Ciena's Manage, Control and Plan (MCP) domain controller. Rolf Nafziger, SVP, Deutsche Telekom Global Carrier said, "With it, we will increase network capacity and efficiency, and create a more adaptive network that can meet our customer's needs now and into the future." Jamie Jefferies, VP and GM, EMEA, Ciena said, "We have many shared values with Deutsche Telekom Global Carrier and have enjoyed working with them to deploy innovations across their pan-European network, and we are especially proud to work with them on this first 800G deployment for Europe."

First European 800G Network

Netcracker Offers AI driven Ddigital BSS/OSS to Microsoft Azure

Netcracker Technology announced that it is working with Microsoft to offer its Digital BSS/OSS and Orchestration applications on Microsoft Azure. Netcracker is collaborating with Microsoft to integrate Azure Machine Learning (ML) and AI services with Netcracker's Advanced Analytics to add intelligent contextual decisioning and recommendations to enable more personalized customer engagements. Service Providers around the world will benefit from the ability to innovate faster with cloud scale and agility. Netcracker has also integrated a number of Microsoft business applications (such as Microsoft Office 365, Microsoft Dynamics 365 and Microsoft OneDrive) into its Digital Marketplace for service providers, including Bechtle, one of Europe's leading IT providers with 75 system integrators in Germany, Austria and Switzerland and 24

e-commerce subsidiaries in 14 European countries. From Netcracker Digital Marketplace, available from any cloud platform including Microsoft Azure, service providers and IT system integrators can create high-value digital service bundles for their customers though a unified and automated e-commerce platform. The Digital Marketplace combines service provider offerings, together with those from third parties such as Microsoft, into a streamlined digital user experience. "Bechtle welcomes the collaboration between Microsoft and Netcracker as we evolve our portfolio of digital cloud services," said Ulrich Baisch, CIO at Bechtle AG. "Both companies are key contributors to our cloud business, and we look forward to their continued support as we expand our digital B2B applications through Netcracker Digital Marketplace."

"By running Netcracker's Digital BSS/OSS on Microsoft Azure, telco service providers will gain a significant advantage in agility and cost efficiency to meet the demanding needs of new dynamic services," said Bob Titus, CTO at Netcracker. "We are delighted to be working with Microsoft to help our customers bring to market new and innovative services with a powerful AI-driven user experience." "As telco service providers transform their operations and business environments to the cloud, the public cloud can bring many advantages including speed to market," said Bob De Haven, GM Media and Communications Industry at Microsoft Corp. "By integrating Netcracker's cloud-native IT applications with Microsoft Azure, our mutual customers can deliver digital services faster with on-demand scaling and cloud economics."

Deutsche Telekom to Launch 5G in 14 New German Cities This Year

German operator Deutsche Telekom expects to deploy 5G technology in 14 additional cities this year to reach its goal of rolling out this technology in at least 20 of the largest German cities by the end of 2020. In a conference call with investors, the carrier's CEO Timotheus Höttges said Deutsche Telekom aims to cover half of the country with 5G during this year. "We will switch on 5G in 2.1GHz in at least half of Germany already this year. 2.1 GHz is excellent for 5G because this spectrum range combines speed with good propagation," the executive said. "We will have the top 20 cities covered with 3.6 GHz. Going forward, we will leverage other spectrum ranges, such as 700 MHz frequencies. So we have a mix of low band, mid band [and]high band, which is, compared to my competition, significantly better, and we will roll out faster than anybody else. So comparing the commitments of Vodafone with ours, we will have four times more coverage already by the end of the year with regard to 5G," Höttges added. In April, the operator said it was working to expand 5G coverage across the country, highlighting that the rapid deployment is made possible by a technical upgrade for existing antennas in the carrier's network. The telco said that it is currently carrying out field trials of dynamic spectrum sharing (DSS) technology. Deutsche Telekom kicked off the rollout of its 5G network in a limited number of cities across Germany at the beginning of July

2019. Currently, Telekom's 5G network is available in Berlin, Bonn, Darmstadt, Munich, Cologne, Hamburg, Frankfurt and Leipzig. Deutsche Telekom expected to end 2019 with a total of 450 5G base stations across the country, according to previous press reports. By the end of 2020, the number of 5G sites is expected to climb to nearly 1,500. The German carrier also said that Greek operator Cosmote is working to progressively upgrade its mobile network for the future launch of 5G. Cosmote, the mobile arm of Hellenic Telecommunications Organization (OTE), which is part of the Deutsche Telekom Group, is targeting 2021 for the commercial launch of 5G services. That will follow the expected auction of 5G spectrum by Greece's National Telecommunications and Post Commission (EETT) in the fourth quarter of 2020. T Mobile Polska is also focusing on the deployment of 5G

infrastructure, with 800 base stations in Warsaw ready. The 5G network is set to include 1,600 base stations in five Polish cities by the end of the first half of 2020. Deutsche Telekom also said that at the 5G auction in Hungary, Magyar Telekom was able to secure the usage rights for its preferred frequency blocks in the 700, 2,100, and 3,400 to 3,800 MHz bands, establishing the basis for offering commercial 5G services from the beginning of April 2020. Meanwhile, Magenta Telekom, also owned by Deutsche Telekom, is making 5G infrastructure available in Vienna for the first 5G applications. Magenta Telekom has upgraded 11 base stations in the Austrian capital and delivers 5G to parts of seven of the city's districts. To date, the 5G network across Austria is comprised of 58 antennas in 31 municipalities with new base stations.

VHA and Nokia Conducting Field Test of 700MHz-Based 5G

Vodafone Hutchison Australia (VHA) and Finnish vendor Nokia have announced that they are complementing the former's 3.5GHz 5G rollout with what they claim is 'the first deployment of low-band NR700MHz spectrum in a field test environment in a 5G network in Australia and the Asia-Pacific region'. In a press release, Nokia claimed that, once live, the use of 700MHz spectrum will enhance VHA's 5G network coverage and improve the indoor coverage experience. It was

noted that the solution which has been deployed utilizes Nokia's AirScale product range and is being tested on some of VHA's 5G sites in and around Parramatta in Western Sydney. It was also confirmed that 700MHz spectrum for 5G connectivity will initially be rolled out to 'selected areas' as part of VHA's 5G rollout. Nokia Global Services will reportedly play a 'crucial' role in the network development, providing project planning, installation, and network optimization services. Commenting, VHA's

chief executive Inaki Berroeta said: 'We are proud to be showcasing this innovative use of the lowest band spectrum available in Australia with the first live test deployment of 5G on low-band 700MHz spectrum in our region. Our partnership with Nokia has enabled us to deliver an innovative solution with our customers' experience front of mind. Incorporating 700MHz spectrum will complement our existing 5G network plans and help deliver the benefits of 5G's speed, capacity and coverage.'

Vodafone Enables Gigabit Speeds for 960,000 More German Homes

Vodafone Germany has rolled out gigabit cable speeds for an additional 960,000 homes in hundreds of towns in the three states of North Rhine-Westphalia, Baden-Wurttemberg and Hesse. The new deployments have increased its 1Gbps cable footprint to 18.7 million households across the country, and the firm is aiming to supply over 25 million homes with these speeds by 2022 through the rollout of DOCSIS 3.1. In addition, Vodafone says it has so far expanded its gigabit network to 280 industrial parks in 68 municipalities in North Rhine-Westphalia, Baden-Wurttemberg and Hesse, and to 442 industrial areas in 122 municipalities nationwide.

Taiwan Star Telecom Selects Nokia for Its 5G Rollout

Finnish vendor Nokia has announced details of a new 5G deal with Taiwan Star Telecom (TST), under which it will supply the latter with its end-to-end AirScale Radio Access network portfolio to assist its launch of a 5G non-standalone (NSA) network 'that will lay the foundations for 5G standalone (SA) in the future'. In a press release regarding the development, Nokia noted that it had previously installed TST's 4G LTE network, which will now be migrated to 5G services utilizing Nokia's AirScale BTS and AirScale Radio Access solutions. The vendor also confirmed, meanwhile that it will supply TST with its AirScale massive MIMO solution. Under the plan, Nokia Global Services will execute rollouts, network design and optimization along with technical software and hardware support using digital and automated services delivery. The deal is also said to include multiple Nokia Software products, such as: NetAct mobile network management system; and Smart Plan Suite, which is designed as a cloud-native solution for the needs of 5G and IoT, and will provide policy control and

converged charging capabilities. Further, TST will deploy Nokia's Subscriber Data Management (SDM). With TST having recently secured 40MHz of 5G-suitable bandwidth, the first phase of the mobile network operator's (MNO's) 5G network deployment is said to already be underway, with the initial deployment expected to see '126 commercial districts and retail zones' covered by Q3 2020. Looking to the future, the cellco is expected to have covered 80% of metropolitan areas with 5G by 2023. Commenting, TST's president, Cliff Lai, said: 'Everything that Taiwan Star has achieved in this dynamic market is the result of our company core values that outline what a unique mobile service provider could be. We are proud to continue working with Nokia who will support us and help us to realize our ambition and deliver 5G services to our subscribers country-wide.'

Movistar Stages 3.5GHz 5G Trial in Bogota

Telefonica Colombia (Movistar) has staged Colombia's first 5G trial, the Ministry of Information Technologies and Communications (Ministerio de Tecnologias de la Informacion y las Comunicaciones, MinTIC) has confirmed. The testing has taken place in conjunction with Chinese vendor Huawei and the Ministry of Health in Bogota and involved the installation of 5G nodes at the entrance of the Bogota District Health Secretariat and the Public Health Laboratory. These are connected to thermal cameras, allowing the real-time monitoring of the body temperature of more than 400 employees. According to El Tiempo, the watchdog has permitted Movistar to utilize 3.5GHz spectrum for 5G testing purposes.

Vodafone Germany to Switch Off 3G on 30 June 2021

Vodafone Germany has announced plans to shut down its 3G network on 30 June 2021, as it focuses on the rollout of faster LTE and 5G networks. Until that date, Vodafone will gradually refarm portions of the spectrum currently used for its 3G service to increase the capacity, speed and coverage of its 4G network, which currently reaches 98.6% of German homes. Vodafone states that only around 5% of its data traffic is carried over its 3G network, while its tariffs and plans all include LTE access at no extra charge. Existing 3G customers will be switched to the firm's 4G network and their old SIM cards exchanged for free.

Operators, Technical Companies Form Open RAN Lobby Group

A group of 31 big name operators and technology companies sought to bolster technical work on open RAN by teaming to promote government programmes favoring research and adoption of the approach. The Open RAN Policy Coalition includes AT&T, Amazon Web Services, Facebook, Google, IBM, Intel, Microsoft, Qualcomm, Rakuten Mobile, Samsung Electronics America, Telefonica, Verizon and Vodafone, among others. However, traditional equipment vendors including Nokia, Ericsson and Huawei were noticeably not on the membership list. Diane Rinaldo was appointed executive director: she previously headed the US National Telecommunications and Information Administration (NTIA), a role which involved advising President Donald Trump's administration. In a statement, Rinaldo explained the coalition aims to "ensure interoperability and security across different players and potentially lower the barrier to entry for new innovators", by advocating for policies which advance the development and standardization of open interfaces. She added in a blog the goal is to offer policy-focused backing to other open RAN groups (for instance, the O-RAN Alliance and Telecom Infra Project) which are working on technical standards. Though it will work to influence governments across the globe, the Open RAN Policy Coalition pointed to the US as a key focus, stating the country "has an important role to play" in advancing development of an open supply chain for 5G technologies. US officials could be the most receptive to the group's efforts, with the government recently exploring open RAN as a way to reduce reliance on kit from Chinese vendors Huawei and ZTE. The group noted the government might fund research, development and testing of networks, and incentivize supply chain diversity. IBM detailed potential steps in a blog, pressing the NTIA to help raise awareness of open 5G technologies, and calling on the US Department of Defence to use its equipment procurement processes to give preferred consideration to open architectures. It added the government could also accelerate open 5G R&D and deployment efforts through grants, tax credits and interest-free loans. Vodafone identified other global targets in a separate, related, statement, with external affairs director Joakim Reiter encouraging authorities in Europe to include open RAN as part of their future industrial strategies, and back research, pilots and deployments. He added the technology should also be a priority for international institutions aiming to bridge the digital divide in Africa.

TeraGo Bbegins 38GHz mmWave 5G Fixed-Wireless Trials

Canadian B2B connectivity/cloud provider TeraGo has begun 5G fixed-wireless trials at its headquarters in the Greater Toronto Area, utilizing the 38GHz millimeter wave (mmWave) frequency band with Nokia network equipment and end-user devices from Askey Computer Corp. Due to the impact of COVID-19, actual customer trials have been delayed until the second half of 2020, with the aim of bringing benefits to businesses including enhanced speed/throughput, low latency, and 'fiber-like' reliability. In Canada's largest six cities, TeraGo holds 14 out of 20 licenses issued

Fixed Wireless Access
Get closer to customers, by offering fixed gigabit broadband on 5G.
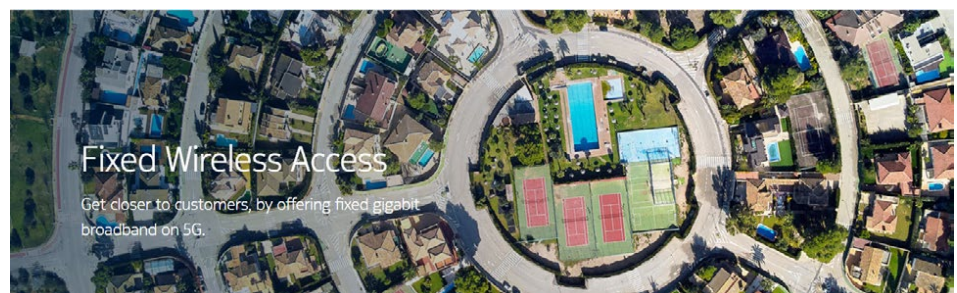
in the 24GHz band and 25 of 27 licenses issued in the 38GHz band, covering 2,210MHz in Toronto, Montreal, Vancouver, Ottawa, Calgary and Edmonton. The company provides businesses with cloud, colocation and connectivity services supported by its own fiber backbone and IP network, and operates five data centers.

ARTICLE

Securing the Internet's Routing System with MANRS

There are over 3,500 networks in the SAMENA region, but just 17 are currently participating in the MANRS initiative with Bangladesh having the highest number of MANRS conformant networks with 6. Nevertheless, networks in the region already show high levels of conformance with the MANRS Actions and we would therefore encourage them to lead by example by publicly demonstrating their commitment to routing security.

The Internet's foundation has cracks, and they're growing. Every single day, dozens of incidents affect the Internet's routing system, which can lead to DDoS attacks, traffic inspection, lost revenue, reputational damage, and more.

Mutually Agreed Norms for Routing Security, or MANRS, encourages network operators, Internet Exchange Points (IXPs), Cloud Providers, and Content Delivery Networks (CDNs) to adopt routing best practices in order to mitigate these issues and improve the security and resilience of the Internet.

Routing Basics and Security Issues
The Internet is made up of thousands of independently controlled, interconnected networks called Autonomous Systems (ASes). Networks connect to each other using Border Gateway Protocol (BGP), which directs traffic across the Internet. Networks use BGP to exchange "reachability information" – networks they know how to get to - to facilitate forwarding packets of information from router to router, typically using the most optimal path.

The problem is that BGP was designed before security was a consideration, and is entirely based on unverified trust between networks - namely that an AS will only advertise address space it legitimately holds, only announce routes that it can actually reach, and only send packets with correct source IP addresses.

Aftab Siddiqui
Technical Engagement Manager for Asia-Pacific
Internet Society

Internet Society

Routing Incidents Have Real World Consequences

Unfortunately, today's Internet is constantly under attack from criminals, activists, and state-level actors seeking opportunities to steal data, impose censorship, undertake espionage, conduct cyberwarfare, and otherwise cause disruption.

Because BGP has no built-in security mechanisms, it is both easy and common for ASes to announce incorrect information (whether accidentally or maliciously), and/or to send packets with forged (or "spoofed") IP source addresses. This can lead to large-scale Distributed Denial-of-Service (DDoS) attacks, service disruption, and traffic interception, redirection, or modification, which all pose significant and substantial security risks.

Routing incidents are increasing as more networks have joined the Internet, often with inexperienced staff, and as bad actors have learned to exploit BGP's limitations.

See the [SIDEBAR] to learn more about types of routing incidents and real-world examples.

How MANRS Can Help

Mutually Agreed Norms for Routing Security (MANRS) is a global initiative, supported by the Internet Society, that provides crucial fixes to reduce the most common routing threats. Network operators are taking collective responsibility for the resilience and security of a critical part of the Internet infrastructure by agreeing to implement four simple actions:

1. **Filtering** prevents propagation of incorrect routing information. Ensure the correctness of your own announcements and announcements from your customers to adjacent networks.
2. **Anti-spoofing** prevents traffic with false source IP addresses. Enable source address validation for at least single-homed stub customer networks, your own end-users, and infrastructure.
3. **Coordination** facilitates global operational communication between network operators. Maintain globally accessible up-to-date contact information in common routing databases, and respond in a timely fashion if incidents occur.
4. **Global Validation** verifies routing information on a global scale. Publish your routing policy so others can validate what information is correct.

How You Can Help

The MANRS Actions are well-established industry best practices, and are designed to be low-cost and non-controversial. However, many network operators still have not implemented them, and most enterprises have not yet fully realized

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the need to demand enhanced routing security. You can help in two ways:

1. Lead By Example: Implement the MANRS Actions and do your part for the security of the Internet. Network operators - including all organizations with ASes - can help make routing security a new norm and a baseline for other networks to follow. That will also

Following data from the MANRS Observatory shows the State of Routing Security in all the SAMENA member countries.

State of Routing Security

Number of incidents, networks involved and quality of published routing information in the IRR and RPKI in the selected region and time period

Incidents ⓘ

Total	Route misoriginations	11
59	Route leaks	6
	Bogon announcements	42

Route misoriginations ■ Route leaks
■ Bogon announcements

Culprits ⓘ

Total	Culprits	53
53		

■ Culprits

Routing completeness (IRR) ⓘ

Total	Unregistered	1%
100%	Registered	99%

■ Unregistered ■ Registered

Routing completeness (RPKI) ⓘ

Total	Valid	36%
100%	Unknown	63%
	Invalid	1%

■ Valid ■ Unknown ■ Invalid

MANRS Readiness ⓘ

Filtering ⓘ
100%
0.07% →

Anti-spoofing ⓘ
85%
-3.67% ↘

Coordination ⓘ
100%
0.04% →

Global Validation IRR ⓘ
96%
0.20% →

Global Validation RPKI ⓘ
42%
2.12% ↗

Learn more about MANRS by visiting the website at https://www.manrs.org.

improve your own network security posture and make it more resilient to routing incidents.

2. Leverage Market Power: Organizations can encourage - or even demand - their Internet Service Providers (ISPs) follow the best practices outlined in MANRS. Including MANRS participation in RFP, tender, and purchasing processes can help establish a security-forward posture and communicate a security investment to your customers.

As more networks adopt the MANRS Actions, it will become easier to identify these bad actors, and ultimately restrict or even completely drop traffic from those networks. Downtime costs money, and users need confidence that their data is safe and secure.

There's over 3,500 networks in the SAMENA region, but just 17 are currently participating in the MANRS initiative with Bangladesh having the highest number of MANRS conformant networks with 6. Nevertheless, networks in the region already show high levels of conformance with the MANRS Actions and we would therefore encourage them to lead by example by publicly demonstrating their commitment to routing security.

Types of Routing Incidents

Issue	Explanation	Repercussions	Example
Prefix/Route/BGP Hijacking	A network advertises IP addresses it doesn't hold, masquerades as another network by announcing a fake AS number, or falsely announces that it's able to forward traffic to another network.	Packets are forwarded to the wrong place, potentially causing Denial of Service (DoS) attacks or traffic interception.	A Bitcoin thief redirected a portion of online traffic from multiple ISPs to steal at least $83,000 in cryptocurrency. [1]
Route Leak	Similar to hijacks, but often the result of accidental misconfiguration by a network operator.	Packets are forwarded to the wrong place, potentially causing Denial of Service (DoS) attacks or traffic interception.	A small company in Pennsylvania became a preferred path of many Internet routes through Verizon, causing web traffic outages at Cloudflare, Facebook, Amazon, and others for three hours. [2]
IP Address Spoofing	A network generates traffic with false source IP addresses to hide the identity of the sender or to impersonate another computing system.	A root cause of reflection DDoS attacks, where a victim receives a large volume of response packets it never requested.	1.35 Terabits per second of traffic hit the developer platform GitHub all at once. It was the most powerful DDoS attack recorded to date. [3]

[1] https://www.wired.com/2014/08/isp-bitcoin-theft/
[2] https://www.theregister.co.uk/2019/06/24/verizon_bgp_misconfiguration_cloudflare/
[3] https://www.wired.com/story/github-ddos-memcached/

About the Author
Aftab Siddiqui joined the Internet Society (ISOC) as a Technical Engagement Manager in November 2016. Siddiqui has been a key contributor to the global, regional, and local efforts in the APNIC community and has been an active participant in SANOG, APNIC/APRICOT and MENOG for many years.

ARTICLE

A Digital Entertainment Leap into the Future Fueled by COVID-19

While the future of the pandemic remains uncertain, the outlook seems bright for digital entertainment. Accelerated by COVID-19, Intigral is ramping up efforts to pivot its operating model towards full digitalization.

Never has the vitality of the internet been highlighted as it is now, with the world experiencing an exceptional state of lockdowns and social distancing across most essential activities from education to business and entertainment. Most of these realms are moving almost exclusively to the online world, while the online world itself is reshaping as industries scramble to keep pace with emerging demands.

The World Economic Forum has identified digital entertainment as one of the top 10 key technology trends in 2020, resulting from a worldwide closure of cinemas, theatres, events, and sporting venues. Significant shifts have occurred in audience behavior as viewers turn to digital options to fill the void left by those closures. As a result, video streaming applications have topped global application spending in the first quarter of 2020, with overall worldwide content streaming consumption rising by 51% as of March.

Realizing the opportunity and significance of those shifts, MENA's leading digital entertainment entity "Intigral" has upped its game by continually expanding the library of its flagship OTT service Jawwy TV with new and interesting content including originals and exclusives, in an effort to keep pace with the skyrocketing demand,

all while fulfilling the diverse tastes, preferences, and needs of audiences in the region, whether entertainment, cultural, or educational.

Thanks to this strategy, the Saudi homegrown company highlighted a remarkable growth in overall consumption and viewership rates on Jawwy TV for the first quarter of the year. During March 22nd to April 5th, the Jawwy TV app saw a 47 percent spike in average weekly consumption hours as compared to the period extending from February 22nd to March 21st. In parallel, the number of unique viewers rose by 42 percent over the stated period.

During May, and corresponding with the month of Ramadan which usually witnesses a surge in viewership rates in MENA, even further growth has been achieved this year. Linear TV offerings on Jawwy TV saw a surge in consumption by 70% and an increase in playtime by 58% during the first two weeks of Ramadan.

The platform had prepared a rich array of content in collaboration with some of the region's top production companies, adding original and exclusive titles encompassing GCC, Egyptian, Levantine, and Bedouin culture productions, as well as modern and

appealing children's programs produced using world-class technological systems.

Moreover, "Intigral" extended its reach beyond digital entertainment and reiterated its social responsibility commitments during those difficult times by broadcasting iEN educational channels launched by the Saudi Ministry of Education for free on Jawwy TV for all existing and new subscribers. iEN offers twenty varied educational channels covering a wide range of school subjects that target primary, middle, and secondary academic stages. They offer a reliable alternative remote education solution and contribute to the preventive and precautionary measures set in place to safeguard the health and wellbeing of the Saudi society.

While the future of the pandemic remains uncertain, the outlook seems bright for digital entertainment. Accelerated by COVID-19, Intigral is ramping up efforts to pivot its operating model towards full digitalization. With that in place, it strives to become the #1 regional platform that enriches people's daily routine by bringing them the best of entertainment through world-class digital experiences.

REGULATORY NEWS

ITU Launches Innovation Challenges 2020

The International Telecoms Union (ITU, the UN agency for information and communication technology) has released details of its Innovation Challenges 2020, an open global competition platform for innovators and ecosystem builders to present their ideas and projects, empowering them to transform their communities into thriving digital societies. Adopting a COVID-19 theme for 2020, this year's competition seeks entries designed to nurture an inclusive digital world. The completion supports the ITU's drive for countries to have policies and strategies for ICT-centric innovation and calls on innovators, entrepreneurs, policy-makers, leaders and change makers to bridge the innovation divide

There are three challenges to choose from:

- The Digital Change-maker Challenge covers a wide range of topics from Cybersecurity and regulation, to digital inclusion and climate change, and calls for participants to provide innovative solutions to real-life problems faced by stakeholders in their communities, especially considering value chain competitiveness and global disruption

due to COVID-19.

- The Ecosystem Best Practice Challenge looks for ecosystem builders to identify best practices that allow innovators to develop sustainable and resilient solutions to navigate technological change and bridge the digital divide.
- The Women in Tech Challenge, in cooperation with the EQUALS Global Partnership, invites tech innovators to help and empower women in various

sectors, including agriculture, fashion, and health.

Applicants should submit their ideas and innovations via the Co-Create Portal by 31 July 2020.

The winners will be invited to an ITU event to pitch their proposals, connect with mentors and expert to scale-up their project and become member of a network of past winners.

Ethiopian Government to Sell Off 40% Stake in Ethio Telecom to International Investors

The Ethiopian government is set to sell off a 40 per cent stake in state owned Ethio Telecom to private, international investors, as the

country begins opening up its telecoms market. The government will also make 5 per cent of shares in the company available for purchase by the general public Ethiopia's State Minister of Finance, Eyob Tekalign Tolina, told journalists from the Reuters news agency. The Ethiopian government will retain ownership of the remaining 60 per cent of Ethio Telecom. In addition to selling off the stake in Ethio Telecom, the Ethiopian government is also set to auction off two 15 year licenses to prospective mobile network operators to provide services across the country. The licenses are expected to raise over $1 billion in revenues for the government. The opening up of the country's telecoms market is an enticing prospect for telcos around the world looking to secure a foothold in Africa's second most populous nation, and the wider region of East Africa. Vodacom Group, MTN Group Ltd, Orange SA and Helios Towers have all expressed an interest in acquiring a license in the country.

Prices for Telecommunication Services Continue to Decline But Do Not Translate Into Rapidly Increasing Internet Penetration Rates

On average, prices for mobile-voice, mobile-data and fixed-broadband services are decreasing steadily around the world, and in some countries even dramatically. The reduction in price relative to income is even more dramatic, suggesting that, globally, telecommunication and information and communication technology services are becoming more affordable. However, both trends do not translate into rapidly increasing Internet penetration rates which suggests that there are other barriers to Internet use, concludes ITU in its new statistical report, Measuring Digital Development: ICT Price Trends 2019. "Keeping telecommunication and digital services as affordable as possible has always been important to ensure broader Internet uptake, especially for lower-income households and consumers," said Houlin Zhao, ITU Secretary-General. "In the face of COVID-19, this is more vital than ever. People who do not have access to the Internet may not be able to access information about how to protect themselves from coronavirus, telework, learn remotely and connect with families and friends during quarantine." The latest statistics from ITU confirm that affordability may not be the only barrier to Internet uptake, and that other factors such as low level of education, lack of relevant content, lack of content in local languages, lack of digital skills, and a low-quality Internet connection may also prevent effective use. "The COVID-19 crisis has clearly shown us that nobody is safe until we are all safe. By the same token, we will not be able to use the full potential of digital technologies until we are all connected," said Doreen Bogdan-Martin, Director, ITU Telecommunication Development Bureau. "To connect all, we need to address all factors that may prevent meaningful connectivity."

Key results

- An entry-level mobile-voice basket remains broadly affordable in most countries. In 70 countries, a low-usage mobile-voice plan was available for less than 1 per cent of gross national income (GNI) per capita, and in a further 37 countries it stood below 2 per cent. Although causality is difficult to prove, price reductions have undoubtedly helped contribute to the rapid rise in the mobile-voice penetration rate, alongside growing competition and better price monitoring and evaluation by regulators.

- The expansion of bundled services has further reduced prices, as combined data-and-voice baskets are generally less expensive than the sum of the two separate baskets in most markets.

- Prices have decreased from 2013 to 2019 relative to GNI per capita The global average price of a mobile-data

basket of 1.5 GB shrank from 8.4 per cent of GNI per capita in 2013 to 3.2 per cent in 2019, at a compound annual growth rate of almost -15 per cent. When expressed in USD, the global average price of a mobile-data basket of at least 1.5 GB dropped by 7 per cent on average annually between 2013 and 2019.

- Good progress has been made towards the Broadband Commission for Sustainable Development's target of achieving affordable broadband costing 2-5 per cent of GNI per capita by 2025, but still more remains to be done. There are still nine developing countries and 31 LDCs that have yet to reach the 2 per cent target by 2025.

- Fixed-broadband packages remain generally more expensive than mobile-data packages (although data allowances are not always directly comparable). Over the past four years, the affordability of fixed broadband has not changed substantially, but advertised download speeds continue to increase.

ITUPublications

Measuring digital development
ICT Price Trends
2019

ACM To Be Given Increased Powers To Monitor Fixed Telecoms Competition

The Netherlands' Authority for Consumers & Markets (ACM) welcomed a new legislative bill passed by the House of Representatives designed to expand the regulator's capabilities in monitoring fixed telecoms network competition. Proposed amendments to the Telecommunications Act will give the watchdog new regulatory instruments which ACM said will help to 'ensure that parties wishing to become active in the telecom market have access to a fixed telecom network', adding that the development 'contributes to better functioning markets, lower prices, more innovation and better services for people and companies'. ACM board member Manon Leijten stated that 'the new legislation will give [ACM] more opportunities to give telecom providers without their own network access to a fixed network, if this is necessary for the market to function properly'' On 17 March 2020 the Netherlands' apex administrative law court the Trade & Industry Appeals Tribunal (College van Beroep voor het bedrijfsleven, CBb) overturned ACM's 2018 Wholesale Fixed Access market analysis which had mandated incumbent PSTN operator KPN and cableco VodafoneZiggo to provide wholesale access to their fixed networks. Due to the CBb's ruling VodafoneZiggo withdrew its wholesale network access offer, while KPN continued to provide a range of wholesale fibre and copper access options but has discontinued certain additional wholesale offers imposed in the annulled ACM decision. Consequently, ACM says it is examining 'whether the position of providers without their own network is sufficiently secured'. ACM's latest statement added that it 'sees risks to competition in the fixed telecom market if telecom providers without their own network do not gain access to the KPN and VodafoneZiggo networks on reasonable terms [and it] therefore closely follows the developments in the market and explores the various options in the Telecommunications Act and the Competition Act to intervene if services for consumers
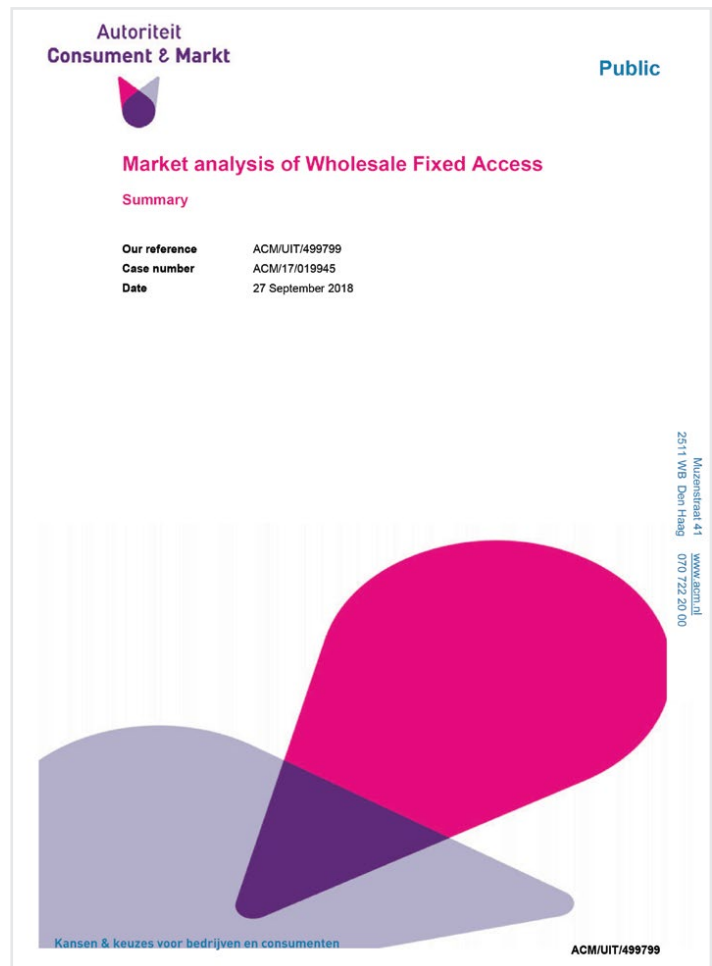
and companies deteriorate due to a lack of competition.'

GSMA Warns on Grave Impact of Reserving Spectrum

Authorities which set aside core 5G spectrum assets for private use by vertical industries risk slowing operator deployments, reducing coverage and hampering performance of the new technology across their countries, the GSMA warned. In a paper outlining the mobile industry's position on use of 4G and 5G spectrum for vertical industries, the association noted in the 5G era regulators faced pressure for access to spectrum in key bands from a range of business sectors. It cautioned setting aside these assets would have wider consequences for national access, noting the situation would be "especially grave" in countries with a shortage of accessible mid-band

spectrum. Privately-licensed allocations, it added, risked being underused and compromised fair spectrum allocation processes. Instead, the GSMA urged authorities to allow mobile operators to meet the growing needs of industry. "Mobile operators already support verticals and can deliver private networks with dedicated spectrum where needed," it argued. "Regulators can also tailor their normal award approach to meet the needs of verticals without undermining 5G more widely." As an example, it cited a recent move in Finland where authorities assigned the whole of the 3.5GHz band to mobile operators, with a regulatory framework in place providing the base

for effective collaboration. Other viable options highlighted include carefully planned spectrum-sharing policies for those wanting to build private networks, or spectrum leasing. It also cited the importance of using unlicensed spectrum for numerous verticals. The process of allocating spectrum to industries varies from market to market. France, for example, is set to exclusively allocate to mobile operators, while German authorities were heavily criticized by incumbent Deutsche Telekom for creating an artificial shortage of 5G spectrum by reserving allocations for private business.

TRAI Dismisses Operator Demands for Price Floor

The Telecom Regulatory Authority of India (TRAI) has shot down demands from India's mobile operators to set a tariff floor, arguing that no action should be taken until the fallout from the COVID-19 pandemic has been contained. India's three largest mobile operators – Reliance Jio, Bharti Airtel and Vodafone Idea – argue that the measure would make tariffs affordable for consumers and sustainable for operators. Following the redefinition of adjusted gross revenue (AGR), operators in India now face substantial tax increases and claim the price floor would help to safeguard their profits in lieu of government relief. In a letter to TRAI, the Cellular Operators Association of India (COAI) – which represents Jio, Airtel and VIL – argued that "given the financial pressure on the sector and the fact that ARPU and tariffs of the Indian telecom sector are the lowest in the world, floor pricing is imperative to ensure that

the sector is sustainable, and is in a position to bear the deferred spectrum and AGR dues." COAI began pursuing a tariff floor in December 2019, prompting TRAI to open a public consultation on the matter. It would have marked the first time India's government intervened to set a minimum price across any sector, but the request was dropped in March 2020 after the CCI (Competition Commission of India) and the Policy Commission declared that it would likely have a negative impact on competition while ensuring operators continued to profit. Speaking to The Economic Times, COAI director general Rajan Mathews said that the body was now demanding that TRAI hold open house discussions online in order to address the issue so that this "critical avenue is not put at risk at this critical juncture". The body argues that COVID-19 crisis has amplified the need for healthy industry capable of investment, and that a price floor would aid this. However, TRAI chairman RS Sharma effectively dismissed this request, arguing that the current upheaval as a result of COVID-19 (coronavirus) meant that protecting consumers was paramount, saying: "it may be a better option that any further discussion on the issue is held after the lockdown is completely lifted and normalcy is restored." "TRAI is always open to discussion, and has initiated a consultation on the issue on the demand of industry before the pandemic engulfed the country and the whole world. With changed circumstances, most consumers are in severe distress", added Sharma. The regulator has noted that while operators are only demanding a floor tariff for data, it would be open to discussing a similar system for voice services as well as a price ceiling.

Dutch Multi-Band Auction Will Start 29 June

The Netherlands' radio frequency spectrum agency Agentschap Telecom (AT), under the Ministry of Economic Affairs & Climate Policy, announced that the country's multi-band mobile auction including 5G-suitable spectrum will start on 29 June 2020, in keeping with an EU deadline to allocate 700MHz mobile broadband frequencies by end-June. On offer is 2×30MHz in the 700MHz band (previously allocated mainly for digital TV), 1×40MHz in the 1400MHz 'L-band' (for 'supplemental downlink', useable only in conjunction with other frequencies) and 2×60MHz in the 2100MHz band (in existing mobile use, originally issued as 3G UMTS spectrum). AT stated that new licenses are expected to be issued 'in the summer period' (while the new 2100MHz licenses are effective from January 2021). All licenses will run until 2040. Incumbent

cellcos KPN, VodafoneZiggo and T-Mobile have all indicated that their license bidding applications have been accepted. A 40% individual spectrum cap applies across the total available frequencies, to ensure at least three providers of high speed mobile communications hold adequate spectrum resources to meet future demands, and to safeguard competitive pricing and quality for consumers and businesses. A day before AT's announcement, the Court of The Hague issued an interlocutory judgment rejecting a lawsuit from the Stop5GNL Foundation campaign group aimed at blocking 5G network rollout and spectrum auctioning. As reported by DutchNews.nl, the ruling of 25 May (see link below) found no reason to stop 5G deployment while concluding that the State of the Netherlands – represented by the Ministry of Economic Affairs & Climate

Policy – was not acting unlawfully by auctioning 5G frequencies. Stop5GNL had argued that existing research into potential health effects of 5G was insufficient. In January a report from public health institute RIVM and AT concluded that 5G network radiation was within European limits, agreeing with the International Commission on Non-Ionizing Radiation Protection, the organization determining exposure limits for electromagnetic fields used by devices such as mobile phones. AT has committed to ongoing monitoring of the situation, promising state intervention if future insights showed any health risks. Dutch police are meanwhile investigating a spate of arson attacks on mobile masts around the country, the 28th incident of which was reported in Limburg on 24 May.

World Bank Supports Gambian Telecoms Reform Plans

According to reports in the West African regional press, the World Bank has allocated $30 million to Gambia for use in telecommunications and energy. The funding, in the form of grants aimed at improving financial sustainability and the delivery of services, will support the implementation of reforms in the telecommunications and energy sectors, say press agencies. New procurement procedures will also be adopted to minimize what is called 'over-the-counter procurement'. Initiatives financed by the new funds will aim to ensure that public investments in projects fall within the framework of priorities defined by the country's National Development Plan – including economic stabilization, growth stimulation and structural transformation. Under the plan, the country's government says it intends to undertake major reforms in a bid to enhance macroeconomic management for sustainable and inclusive economic growth and poverty reduction. This, the plan states, will be achieved through prudent fiscal management, debt

sustainability measures, broadening the tax base and improving tax efficiency, as well as implementing public finance management reforms. It is partly in this context that the Gambian government committed last year to reforming state-backed fixed line operator Gamtel and its mobile subsidiary Gamcel, which trails well behind the country's private sector mobile

operators in terms of size. It was decided early in 2019 that the two firms should be restructured and that shares in Gamcel be divested, though this process does not appear to have been completed yet. In May last year Gamcel was reported to be calling for a government financial bailout to avoid the risk of its operations closing down altogether.

NCC Reviews Spectrum Trading Guidelines

The Nigerian Communications Commission (NCC) has revealed it is reviewing its 'Spectrum Trading Guidelines, 2018', in line with recommendations made in the new National Broadband Plan 2020-2025, which was published in March. Local

newspaper The Nation cites a statement from NCC Public Affairs Director Henry Nkamadu as saying that the regulator's board has decided to suspend the current guidelines until they can be updated to provide for the optimal use of spectrum.

The move is aimed at ensuring that unutilized spectrum can be fairly traded between operators to facilitate the rollout of broadband infrastructure across the country by industry players.

Telecoms Tax Troubles in Indonesia and Syria

Two news stories related to the ever-topical subject of taxation of service providers have recently emerged: in Indonesia a new tax is about to be imposed, while in Syria an unpaid tax is being pursued. The Indonesian finance ministry has been reported as instituting a new regulation taxing over-the-top (OTT) services. More precisely, the government of Indonesia seems to be ready to charge a 10 percent value-added tax on the sale of digital products and services from 1

July 2020. This, according to a report in Reuters, will apply to digital products sold by non-domiciled internet companies "with a significant presence in the Indonesian market, including streaming services, applications and digital games". How Spotify and Netflix, said to be among the companies targeted, will respond remains to be seen. By contrast, SyriaTel should perhaps not be surprised at the Syria Telecommunications Regulatory Authority's (SyTRA) warning that it will

take "all legal measures" to collect back taxes it claims the operator owes. The company has already missed a deadline for arranging a mechanism for the payment, and, along with rival provider MTN Syria is said to owe a total of $1.09 billion in back taxes related to license fees. MTN, however, is in the process of negotiating a mechanism for the payment of the owed amount; SyriaTel has yet to do so.

Telia Licenses Standalone OTT Rights to Discovery

The European Commission has given its approval to Telia Company's decision to license standalone OTT rights, in Sweden and Finland, to Discovery Networks. As part of the approvals process when Telia Company took control of TV4, C More and MTV Finland, Telia committed to license standalone OTT rights to one other market player in each of Sweden and Finland, respectively. It's a far cry from earlier this year when Discovery channels were dropped from Telia's networks in a carriage dispute. "We have run a process to license our OTT rights with several players, fully in line with the commitments. Monday's approval means that we can continue to move forward and realise the advantages for our customers of combining our leading mobile and fixed networks with the most successful commercial media house in the Nordics," says Allison Kirkby, President and CEO of Telia Company. The decision means that Discovery Networks will distribute TV4 Media's linear channels (TV4, Sjuan, TV 12, TV4 Fakta, TV4 Guld, TV4 Film, Sportkanalen, C More Hockey, C More Fotboll, C More Golf, C More Sport, C More Live 1-5), as well as MTV´s linear channels (MTV3, Sub, AVA, C More Juniori, C More Max, C More Sport 1, C More Sport 2) and Telia´s Liiga channel package over the internet, without the need for a traditional TV subscription.

US Urged To Take Reins On 6G

A US telecoms standards association called on the government to step-up action around development of technologies with potential to deliver 6G, arguing an early start would be crucial to securing a leading global position. The Alliance for Telecommunications Industry Solutions (ATIS) said the government should partner with the industry and academic experts, with research focused on key areas including AI-powered networks and services; advanced antenna and radio systems; multi-access network services; and healthcare and agriculture. ATIS urged US officials to offer funding and tax incentives for relevant R&D, and said a national spectrum policy was needed.

Local authorities have a part to play by creating regional innovation zones, it stated. The body noted "defining a core set of technologies" could deliver national benefits. Mike Nawrocki, VP of technology and solutions, added work on potential 6G technologies "must be amplified now" to ensure the US leads key areas including telehealth, smart agriculture, distance learning, digital commerce and AI. The call to action comes as momentum around a potential 6G technology grows. China Unicom and ZTE today (20 May) detailed plans to work together to steer development, while Japanese authorities in January also began making noise around the idea, The Japan Times reported. US
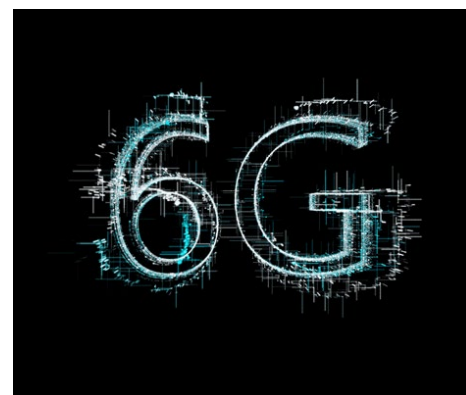
President Donald Trump also got in on the action, in February 2019 citing a notion of 6G as one element necessary to maintain the nation's future standing.

India to Proceed with 4G Spectrum Sale Later This Year but Will Delay 5G Auction until at Least 2021

India's Department of Telecoms will hold a spectrum auction before October to provide operators with much needed 4G spectrum to add capacity to their networks, according to reports in the press. The auction will make over 8,000 MHz of spectrum available to operators as they look to ramp up capacity and expand the reach of their existing networks. The Department of Telecoms will make spectrum available in the 700 MHz, 800 MHz, 900 MHz, 1,800 MHz, 2,100 MHz, 2,300 MHz and 2,500 MHz bands. It expects to raise around $3.9 billion (3 lakh crore rupees) from the auction. However, the auction will not include 5G airwaves, with the Department of Telecoms failing to secure interest from the country's major telcos at the proposed asking price. A report in The Economic Times of India claims that the government will go ahead with the auction of additional 4G spectrum as planned, later this year but will defer the 5G spectrum sale until 2021. Bharti Airtel and Vodafone Idea, who were both hit with multi-billion dollar AGR dues by the country's Supreme Court last October, have both called for the auction to be delayed, as they battle to rein in expenses. Sources familiar with the matter told journalists at The Economic Times of India that the country's Digital Communications Commission had met on Monday to discuss postponing the 5G auction. "Discussions are on to hold the 5G auctions later as some of the telcos need to buy spectrum but 5G may not be the priority now," a source told the ET.

Angola Picks Lebanese Group Africell as Fourth Telecoms Operator

Angola has awarded the license for its fourth telecoms network to Lebanese group Africell, as sub-Saharan Africa's second-biggest oil producer opens other economic sectors to foreign competition. Africell is already present in four African countries -- Gambia, Democratic Republic of Congo, Sierra Leone and Uganda. Angola had awarded the license last year to a domestic start-up called Telstar but President Joao Lourenco annulled the decision, saying the company failed to meet the bidding requirements. Angola's mobile phone market, with almost 14 million users, is currently dominated by two privately held companies -- Unitel and Movicel. A third operator, Angola Telecom, offers fixed and internet access but no mobile services. Isabel dos Santos, daughter of former President Jose Eduardo dos Santos, owns half of Unitel's share capital. She was recently indicted for a host of high-level financial crimes.

Angola is ranked 146 out of 180 countries on Transparency International's corruption perceptions index. Most of the country's

30 million people live in poverty, failing to benefit from the flood of dollars from crude oil and diamonds.

Indonesia to Levy VAT on 'Digital Products and Services'

Reuters reports that the government of Indonesia plans to charge a 10% value added tax on the sale of digital products and services from 1 July 2020. Southeast Asia's largest economy will reportedly impose the levy on digital products sold by non-domiciled internet companies 'with a significant presence in the Indonesian market, including streaming services, applications and digital games', according to a regulation published on the finance ministry's website. The Ministry of Communication and Information (MCI) is amongst those to have previously said that over-the-top (OTT) services provided by streaming platforms such as Spotify and Netflix would be among those subject to the new VAT. Neither company responded to requests for comment.

Zim Cellcos Get Temporary Spectrum to Boost Data Services

The Postal and Telecommunication Regulatory Authority of Zimbabwe (POTRAZ) has allocated the country's three mobile network operators – Econet, NetOne and Telecel – free wireless spectrum until the end of the year in order to help them cope with increased demand for bandwidth during the COVID-19 crisis.

The regulator says operators will be assigned additional 3G and 4G spectrum until December to enable them to improve their data offerings. Cellcos were heavily criticized recently for implementing sharp hikes to their mobile data pricing, with tariffs up by as much as 225% at Econet, though POTRAZ says the rises

still keep data prices within its guidelines. Zimbabwe has been hit by soaring inflation and devaluation of the local currency against the US dollar. According to TeleGeography's GlobalComms Database, the country was home to 13.2 million active mobile subscribers at the end of 2019, up from 12.9 million a year earlier.

Senate Asks Government to Suspend Deployment of 5G Network in Nigeria

The Senate directed the Federal Government to suspend the planned deployment of the Fifth Generation Network in Nigeria. The Senate resolution is sequel to a motion on the present status of 5G Network in Nigeria. The motion was sponsored by Sen. Uche Ekwunife (PDP Anambra), who in her lead debate said there were growing concerns on the on-going discussion about the current status of 5G network in Nigeria, especially in regards to the question, 'if Nigeria is presently connected to 5G.' She said there were further concerns by some scientists and medical experts that emission from 5G towers could adversely affect the health of citizens by causing symptoms like damage to the eyes and immune systems, among other adverse effects. She, however, said that 5G network has also been reported to hold a lot of promises for mobile broadband services because of its faster speed and better capacity. She expressed concern over the uncertainty surrounding whether or not the 5G network has been launched in Nigeria will continue to fuel the speculations and rumors concerning the deployment of 5G network and its faster effect on the citizen of Nigerian. She said that several countries, including Switzerland, one of

the world leaders in the roll out of 5G mobile technology has placed an indefinite moratorium on the use of 5G network because of the health concern. She said that it was important to investigate the status of 5G network in Nigeria to ensure that Nigerian citizens are not exposed to unreasonable risk of great bodily injury or harm. The Senate in its other resolution directed the concerned committees to

also investigate the technological impact of the network on Nigerians and report back to plenary within two weeks. The red chamber, however, asked the relevant federal agency supervising the ICT operations in the country to suspend the 5G deployment until a thorough probe to determine its suitability for human health had been achieved.

O2 Tipped to Challenge Latest UK 5G Spectrum Sale

Telefonica subsidiary O2 UK reportedly plans to challenge terms of a sale of 5G frequencies in the 700MHz and 3.6GHz to 3.8GHz bands, a move Financial Times (FT) stated could delay the process by up to a year-and-a-half. The newspaper reported O2 harbored concerns over the way the spectrum will be sold, demanding regulator Ofcom sell contiguous blocks rather than fragments and preparing a legal challenge to the process. O2 told Mobile World Live (MWL) only that it had written to the regulator to raise concerns about the sale, with FT noting this was part of a procedure enabling operators to flag concerns they

felt had not been "resolved during previous consultations". An Ofcom representative told MWL it was disappointed "one operator has threatened to launch a legal dispute". While the regulator didn't name O2, it warned any legal challenge "could slow things down for mobile users and the economy". FT explained the auction was scheduled to take place during the second half of the year, but had been put on ice due to the COVID-19 (coronavirus) outbreak. Sources told the newspaper any legal challenge could cause an 18-month delay to proceedings. Kester Mann, director, consumer and connectivity at CCS Insight,

told MWL any delay "threatens the UK's strong start in 5G" but conceded a legal challenge would be "understandable". "Owning contiguous blocks of spectrum is crucial to achieving many of the much-touted benefits of 5G, such as superfast speeds and high throughput. O2 has also been less motivated than rivals EE and Vodafone to quickly rollout its 5G network, so in this sense any delay may have more of an impact on its rivals". Rival 3 UK holds 100MHz of contiguous spectrum from prior acquisitions, which O2, EE and Vodafone UK had expressed competitive concerns about.

EU Publishes Handbook to Help New Rural Broadband Networks

The European Commission (EC) has published a "dedicated handbook" for rural policy makers and broadband project managers who plan to roll-out new ISP networks into remote areas, which uses examples from the UK (e.g. B4RN etc.) and other EU countries to show how the job can be done both "effectively and efficiently." The broadband handbook (PDF) itself is over 22MB (MegaBytes) in size and 46 pages long. The overview it provides is a fairly general one, although it should offer a useful starting off point for anybody who might be considering their own network. In fact it's definitely one of the more readable examples of such a guide. The first part of the handbook makes the case for rural and remote area broadband investment and outlines the technological solutions, the European broadband targets and progress, and sources of EU funding and support for broadband (it should be mentioned that funding for related projects has also come from communities, the private sector and other public funding sources etc.). Finally, the second part presents examples of good practices that rural and remote communities have used to solve the issue of broadband connectivity. It outlines the solutions implemented, taking into account social, territorial and economic aspects. It also addresses lessons learned from unsuccessful cases and defines a simple framework covering the key issues. The European Commission (EC) has published a "dedicated handbook" for rural policy makers and broadband project managers who plan to roll-out new ISP networks into remote areas, which uses examples from the UK (e.g. B4RN etc.) and other EU countries to show how the job can be done both "effectively and efficiently." The broadband handbook (PDF) itself is over 22MB (MegaBytes) in size and 46 pages long. The overview it provides is a fairly general one, although it should offer a useful starting off point for anybody who might be considering their own network. In fact it's definitely one of the more readable examples of such a guide. The first part of the handbook makes the case for rural and remote area broadband investment and outlines the technological solutions, the European broadband targets and progress, and sources of EU funding and support for broadband (it should be mentioned that funding for related projects has also come from communities, the private sector and other public funding sources etc.). Finally, the

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ARTICLE

How ICT Service Providers Can Turn Pandemic Threats into Opportunities

> *We are entering a critical period. Measures taken in the digital field in the next 12 to 18 months will determine whether businesses can succeed in the new environment. Companies that build the right digital capabilities can survive and prosper.*

Jad Hajj, Partner

Hani Zein, Principal

Strategy& Middle East, part of the PwC network

strategy&

The dual shock of the COVID-19 crisis and lower oil prices is forcing many governments and companies in the GCC to digitize their operations despite growing pressure on costs. Information and communications technology (ICT) providers are ideally placed to help these organizations secure effective and value for money solutions to this dilemma. To capture this opportunity, they must urgently develop plans incorporating new product development, marketing and operations.

The sudden economic decline will inevitably lead to severe financial restraints throughout the economy, and will affect expenditure on information technology (IT). All sectors, save health and education, will likely reduce IT spending. Cutbacks in the transport sector, for example, may even reach 10% according to IDC.

Despite the necessity for savings, the organizational world has had to make radical changes in the way it operates due to constraints on personal movement and face-to-face contact. Another problem is that the digital market on which it now depends is underdeveloped in the GCC. Technology infrastructure and business regulations have not assisted the development of digital platforms in the region. For example, digital finance is barely present in the region, which lags East Africa in the level of digital payments.

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ICT service providers in the GCC are best placed to support companies and governments during this critical phase. Most of them already have solid relationships with government entities due to their support on recent digital transformations. They have access to talent through contracts with third-party providers, and they specialize in products and services that are now especially relevant. ICT service providers must therefore act in four areas.

1. Implement a response plan across the lines of business

ICT service providers must move swiftly to implement their action plans and seize the opportunity. The main goals should be protecting and revitalizing their core business, alleviating any disruption in their own business, and then developing a strategy to excel once stability has returned.

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Plans need to include product development, sales and marketing, and operations. A COVID-19 response taskforce is critical for facilitating the exchange of information, accelerating decision making, and ensuring a consistent approach.

2. Shape product offerings to support urgent ICT needs

With respect to products, ICT service providers need to bolster their analytics and research capabilities to keep pace with rapidly changing demand. In the very short term, products should focus on societal support and urgent ICT needs, such as cyber security and applications to assist government responses to the crisis. New solutions, relating for example to enable remote offices or the digital supply chain, can be repackaged as easily installed versions to help troubled companies.

One pertinent, immediate offering is a remote "task-force-as-a-service." Through this offering, ICT service providers can put their development and operations teams to good use in helping companies manage their burgeoning reliance on technology while reducing IT costs.

Beyond assisting clients with short-term challenges, ICT service providers need to develop sector-specific solutions to help them succeed in the new environment. They can generate this innovation through exchanging ideas with clients, seeking partnerships with technology and telecom companies, and redirecting resources away from their current major projects.

3. Overhaul traditional sales approaches

To protect the core business, ICT service providers should immediately overhaul traditional sales approaches. They need to train their sales representatives in consultative selling, which involves helping the client understand their technology problems, not just selling technology solutions. They may also need to redeploy these sales representatives. There should be bold moves to retain troubled flagship customers. Potential measures to reduce their IT costs include innovative payment terms and mid-term rebates, offering additional services within existing contracts, and outcome-based fees. It is essential to use detailed projection of ICT demand to support effective sales pipeline management.

Marketing should make better use of digital channels, while focusing on the urgent ICT needs of distressed sectors. In particular, they can organize competitions, hackathons, that crack problems for use cases. These competitions can be done privately with clients or publicly. Marketing can publicize these hackathons digitally through campaigns as they highlight how ICT providers are seeking to help society during the pandemic.

4. Step up business agility and operational readiness

On the operations side, ICT service providers should use resources effectively, closely managing finances through real-time cash monitoring. They have been pioneers in agile workforce management, and now need to implement further flexible work arrangements internally and with contractors. Contractual agreements, such as shared risk-reward models and arrangements with experts to help with industry-specific solutions, will need to reflect uncertain demand.

ICT service providers should accelerate investment in emerging technologies, automation, and big data capabilities to serve clients more effectively. Technological readiness is critical. Elements of key infrastructure should be expanded early on. Operations teams should also be reorganized to serve urgent needs properly.

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With these plans for product development, marketing and operations in place, ICT service providers can emerge stronger from this crisis.

A SNAPSHOT OF REGULATORY ACTIVITIES IN SAMENA REGION

Algeria

Algeria's Authority for Regulation of Post & Electronic Communications (Autorite de Regulation de la Poste et des Communications Electroniques, ARPCE) has issued warnings to all three of the country's mobile operators, Mobilis, Djezzy and Ooredoo, for non-compliance with their 4G network coverage and quality of service (QoS) obligations. The ARPCE issued the cellcos with the compliance notice based on the results of network monitoring carried out in February-March this year in the provinces (wilayas) of Blida, Djelfa, Tlemcen, Adrar and Constantine. Regarding quality of network coverage criteria, VEON group-backed Djezzy scored the lowest, complying with requirements in only one out of five monitored provinces, while Mobilis – a subsidiary of state-owned Algerie Telecom – displayed the worst level of non-compliance in the QoS (voice, SMS, web browsing, FTP file transfer, video streaming) categories. TeleGeography's GlobalComms Database says that Mobilis and Ooredoo Algeria each have a commercial 4G LTE network presence in all 48 Algerian wilayas, while Djezzy currently offers LTE in 37 wilayas. All three cellcos launched 4G in selected provinces assigned to them under license conditions in October 2016 and were permitted to expand their LTE networks to additional wilayas in batches conditional on meeting QoS standards. (May 5, 2020) Agence Ecofin

Bangladesh

Md. Jahurul Haque, the Chairman of the Bangladesh Telecommunication Regulatory Commission (BTRC), has revealed that GrameenPhone (GP) will pay the outstanding BDT10 billion (USD115.4 million) claimed by the BTRC as unpaid dues in its 2019 audit of the telecoms firm. The company paid the first instalment of BDT10 billion in February 2020, following the Supreme Court's order to pay BDT20 billion to the regulator by 23 February; a GP petition filed that month resulted in the Appellate Division upholding the Supreme Court's order and giving the company until 31 May to cover the remaining dues. (May 19, 2020) commsupdate.com

Mobile phone operators in their budget proposals for the upcoming fiscal year have called upon the government to streamline the telecom tax regime, saying the existing policies encumber them and stand in their way to contributing more to the economy. The operators' contribution to the country's economy is 7 per cent now, but if proper tax reforms can be brought on board, the rate will rise further, the Association of Mobile Telecom Operators of Bangladesh (AMTOB) said in the proposals emailed to the National Board of Revenue. "Since the sector is already going through multiple issues regarding taxation, it's time to find solutions to them," said AMTOB President Mahtab Uddin Ahmed. As the whole country is facing unprecedented challenges due to the COVID-19 outbreak, the telecom sector has become the backbone of all sorts of communication, business and entertainment, he added. In the proposals, the operators requested the government to abolish SIM tax, bring down the corporate tax, lift turnover tax and eliminate double taxation. Mobile operators are currently paying Tk 200 tax per SIM, which they say is a major barrier to taking telecom services to low-income people, according to an AMTOB statement issued. "If the SIM tax is waived, mobile phone coverage will widen in the rural areas and it will bring greater benefit to the national economy," it said. The AMTOB called for bringing down their corporate tax from 45 per cent to 30 per cent, a rate currently applicable to other companies in Bangladesh. The corporate tax rate for mobile phone operators is 22 per cent in India, 30 per cent in Pakistan and Nepal, 28 per cent in Sri Lanka and 20 per cent in Afghanistan. The minimum threshold of the turnover tax creates a huge pressure on small carriers, which pay 2 per cent of their revenue regardless of whether they incur a loss or make a profit, the AMTOB said, adding that three lossmaking operators are paying this tax from the equity injected by shareholders. "Bringing down the turnover and corporate taxes is a prerequisite for the sustainability of the industry." The operators share 5.5 per cent of their gross revenue with the government, while contributing another 1 per cent to a "social obligation fund" of the regulator, the AMTOB said, stressing the need for eliminating double taxation. It also urged the NBR to clarify the Value Added Tax and Supplementary Duty Act, 2012, which they say does not provide specific guidelines with regards to VAT exemption for regulatory agencies. "The government agencies and regulators are not following the VAT regulations as they are demanding or collecting VAT without registration and are not issuing any VAT challan, which goes against the principle of the VAT law," the AMTOB said. It is

difficult to ascertain the consequences of COVID-19, but mobile phone services will face huge challenges soon if the regulatory, tax and VAT-related issues are not addressed immediately, said AMTOB Secretary General SM Farhad. "The coronavirus situation is negatively impacting the operators and wreaking havoc on their revenues. We request the government to consider our proposals so that the industry can help the country with its full potential," he said. (May 9, 2020) thedailystar.net

Egypt

An "Our Digital Opportunity" initiative has been launched to help small- and medium-sized enterprises (SMEs) overcome the coronavirus (COVID-19) pandemic, Amr Talaat, Minister of Communications and Information Technology, has announced. Talaat said work on the initiative had already begun before the global pandemic took hold. He added that his ministry has been interacting with civil society organizations and major international companies to ensure their cooperation in the initiative's implementation. Talaat said the initiative will assign at least 10% of Egypt's digital projects to SMEs, creating a practical framework for achieving partnerships with small and emerging companies. Talaat also emphasized that the ministry's initiative will also have a package of projects directly contracted with emerging companies. This comes in addition to a training program in data science and artificial intelligence, with a group of SMEs able to compete for a training opportunity at the ministry's expense. The winner will then join the projects implemented by the ministry. Talaat added that implementation will occur through a digital opportunity platform launched by the Information Technology Industry Development Agency (ITIDA). It will include all proposed projects, the scope of implementation and the required mandates, provided that the company submits their financial and technical offers to the main operators. The results of the competition will be announced via the platform. The initiative's first phase will include 33 projects with a budget of EGP 900m. (May 19, 2020) dailynewsegypt.com

In its keenness to improve the quality of telecommunication services and enhance the users' experience in obtaining high quality and affordable services, the National Telecom Regulatory Authority (NTRA) has issued a report on "Telecom Service Users Complaints Tracking and Follow-up System". This reflects the transparency that enables users to acquire adequate information on the services offered. The report comprises the indicators of following up on the users' complaints received on NTRA call center, on telephone number 155. It includes the number of complaints received, the percentage of complaints handled after escalation to NTRA during the measurement period, and the service providers' average complaint response time during the first quarter of 2020. The report comes within the framework of NTRA role to enhance communication and interaction with users and ensure transparency and data disclosure to provide users with adequate information, indicators of the service quality level and how responsive telecommunication operators and service providers are to different types of complaints. This positively reflects on the users' satisfaction and improves their experience in obtaining high quality services. NTRA received 52,038 complaints from telecommunication service users, including complaints on mobile fixed Internet services. The number of 50,549 complaints was resolved, exceeding 97% of the total number of complaints received. (May 17, 2020) mcit.gov.eg

Egypt, represented by the Ministry of Communications and Information Technology (MCIT), is chairing the virtual meeting of Study Group 5 (SG5): Environment, climate change and circular economy, of the International Telecommunication Union (ITU) Telecommunication Standardization Sector (ITU-T), on May 11-20. The purpose of the meeting is to progress on the current work and finalize the discussions related to the World Telecommunication Standardization Assembly (WTSA-20) preparations. SG5 is responsible for studies on methodologies for evaluating ICT effects on climate change and publishing guidelines for using ICTs in an eco-friendly way. Under its environmental mandate, SG5 is also responsible for studying design methodologies to reduce ICTs and e-waste's adverse environmental effects, for example, through recycling of ICT facilities and equipment. In addition to its climate-focused activities, the ITU-T Recommendations, Handbooks and other publications produced by SG5, have four main objectives. The first is to protect telecommunication equipment and installations against damage and malfunction due to electromagnetic disturbances, such as those from lightning. In this field, SG5 is one of the world's most experienced and respected standardization bodies. The second is to ensure safety of personnel and users of networks against current and voltages used in telecommunication networks. The third is to avoid health risks from electromagnetic fields (EMFs) produced by telecommunication devices and installations. The fourth is to guarantee a good quality of service (QoS) for high speed data services by providing requirements on characteristics of copper cables and on the coexistence of services delivered by different providers. (May 10, 2020) mcit.gov.eg

Jordan

Sector watchdog the Telecommunications Regulatory Commission (TRC) has issued a decision for the establishment of an internet exchange point (IXP) in Jordan. The decision explains the selection process for an entity to establish an IXP – which the regulator notes will also be used in the future for each new IXP to serve Jordanian territories – as well as the rules for the operation of the exchange, once operational. By setting up an IXP in Jordan, the TFC hopes to reduce operational costs for ISPs and improve access speeds by exchanging and caching traffic locally. In addition, TRC Chairman Dr Al-Jabour noted that a local exchange would prevent Jordanian internet services being affected by disruption to international cables, and would improve data protection. Under the terms of the regulations, interested parties have 30 days to submit their applications. If no applications are received within 90 days, however, the regulator will contact two or more prospective bidders and invite them to apply.

(May 5, 2020) commsupdate.com

Lebanon

The Lebanese government resumed management of state-owned operators Alfa and Touch after operating contracts held by Orascom Telecom Media and Technology (OTMT) and Zain Group, respectively, expired. The Minister of Telecommunications Talal Hawat said an international tender for new contracts would be readied within three months, covering management and operation of the businesses. Lebanon's official media outlet National News Agency reported in December 2019 the country's Information and Communications Parliamentary Committee decided not to extend OTMT and Zain's deals. The committee also called for measures to restore the management of the telecoms sector to the state within two months after the meeting. GSMA Intelligence figures showed Touch held a 50.6 per cent market share by connections at end-2019, with Alfa accounting for the remaining 49.3 per cent.

(May 6, 2020) mobileworldlive.com

Oman

The Telecommunication Regulatory Authority (TRA) has clarified the reason for the technical problem on the services of the fifth-generation provided by the operators in the Sultanate. A statement issued online by TRA said, "The Authority would like to inform users in the Sultanate that the 5G networks belonging to Oman Telecommunications Company, Omantel, and the Omani Qatari company, Ooredo Oman are currently suffering from external radio interference affecting the performance of some stations in these networks." The statement pointed out that, "The authority coordinated with several parties in the region to find the source of interference and are working to fix it as soon as possible." "The authority would like to apologies to the generous public for this issue on the fifth-generation network provided by the operators," the statement added. The statement confirmed, "The Authority is in constant contact with the operators and other parties that some of its uses may be a reason for this interference."

(May 24, 2020) timesofoman.com

The Sultanate, in coordination with the Telecommunication and Information Society (ITU), plans a number of initiatives and projects, including providing more than 600 villages in the country with satellite Internet in 2020. The project will be implemented in cooperation with the Ministry of Technology and Communications, the Telecommunications Regulatory Authority (TRA) and telecommunications companies operating in the Sultanate, said Azza bint Suleiman Al-Ismaili, Minister of Technology and Communications. The Ministry organized a virtual event to mark this occasion. The event included a speech by Azza bint Suleiman Al-Ismaili, in which she touched on the importance of this day, which falls on May 17. She said that this year, the day is characterized by its focus on the "Connect 2030" program of the International Telecommunication Union(ITU), which is a common international vision to bridge the digital divide and harness information and communications technology in support of sustainable development plans in member countries. She said that in line with the efforts being exerted by the world at large of the countries to curb the spread of COVID-19, the Ministry of Technology and Communications announced the formation of a major committee for technical innovation in coordination with the COVID-19 Supreme Committee in the Sultanate. She added that this committee is concerned with supervising national initiatives and guiding specialized cadres to provide innovative technical solutions to address this global pandemic. Dr. Hamad bin Salem Al-Rawahi, CEO of the Telecommunications Regulatory

Authority (TRA) stated that the participation of TRA in marking this occasion came this year under exceptional circumstances, during which efforts were made to ensure the continuity of communication services by the Internet protocol through visual

communication applications in addition to providing online education, in cooperation with the Ministry of Education.

(May 18, 2020) timesofoman.com

Pakistan

Pakistan Telecommunication Authority (PTA) has extended the deadline for mobile devices to 3rd June, 2020 for all un-registered devices. IMEI number presents on mobile devices helps in the recognition of devices. The extension has been given to the public to facilitate in difficult time of COVID-19 and ensure social distancing during this difficult time. It would ensure social distancing during lockdown. The blocking of such mobile devices will start from 4th June 2020 and will be communicated via SMS well in time. As per terms and conditions, all mobile devices being linked to local networks using local SIM are subject to registration within 60 days from first use of device on local mobile networks in Pakistan. However due to unexpected circumstances, unregistered device IMEIs which were to be blocked between 18th March to 3rd June 2020 will now start getting blocked from 4th June 2020. In line with the Telecom Policy 2015, Pakistan Telecommunication Authority (PTA) launched Device Identification, Registration, and Blocking System (DIRBS) in collaboration with 3G Technologies. PTA is aware of telecom consumer's needs and is taking number of steps to help them in resolving their problems. Launch of this new service is yet another proof of PTA's sincerity towards its vision of protection of telecom consumers and their rights. He said that this system will be implemented to automatically Identify sub-standard, fake, and illegally imported mobile phones, register and block non-compliant devices on mobile phone networks. This unique system will restrain illegal imports, helps legitimate device importers, and mobile device users, and improve overall security situation. PTA has always been involved in facilitating telecom consumers with the best telecom services along with legal protection of their rights. The statistics of telecom growth in Pakistan are proof of the satisfaction level of telecom consumers with the quality of telecom services provided to them. Today the mobile operators have enhanced this coverage to over 65% of the population. Broadband subscribers that stood on 1.3 million till 2014 with limited speed offerings today has crossed a milestone of 50 million (2018) with mobile broadband speed crossing 20 Mbs. (May 16, 2020) technologytimes.pk

On the direction of the Federal Minister for IT and Telecommunication, Ministry of Information Technology and Telecommunication is making special efforts to promote IT exports and encourage IT companies. IT & IT enabled services (ITes) export remittances comprising of computer services and call center services have surged to US $901.486 million at growth rate of 23.94 % over the first 9 months of FY 2019-20 (July-March), in comparison to US $727.353 million during the same period in FY 2018-19, according to performance report of

Pakistan Software Export Board (PSEB), an organization under Ministry of IT and Telecommunication. (May 14, 2020) moitt.gov.pk

Federal Secretary Ministry of IT and Telecommunication Shoaib Ahmad Siddiqui has directed the management of Pakistan Software Export Board (PSEB) to ensure close coordination with the IT industry to minimize the impact of COVID-19 pandemic on it and take all possible steps for providing maximum facilitation and assistance to the industry during these challenging times. Federal Secretary Ministry of Information Technology and Telecommunication chaired a meeting to review steps being taken to minimize the COVID-19 pandemic related impact on Pakistan's information technology industry. The meeting was attended by senior Ministry officials, Managing Director - Pakistan Software Export Board (PSEB) and Chairman - Pakistan Software Houses Association (P@SHA). The chair was apprised that in order to ensure business continuity of BPO-Call Centers, a working group was created to handle associated issues in a rapid and effective manner. The said working group includes senior representatives from the Ministry of Information Technology and Telecommunication, Pakistan Telecom Authority, Pakistan Software Houses Association and Pakistan Software Export Board. The task force has managed to mitigate or minimize urgent issues pertaining to BPO-Call Center Industry such as whitelisting of call centers and enabling work from home for call center agents. Efforts are being made to enable usage of soft phones which would facilitate smaller companies and freelancers.

(May 8, 2020) moitt.gov.pk

The Universal Service Fund (USF) has awarded contract worth PKR 588 Million to Telenor Pakistan for providing hi-speed broadband in Sanghar Lot (Sindh). Federal Minister IT & Telecom, Syed Amin ul Haque inaugurated the Next Generation Broadband for Sustainable Development project in Sanghar (Districts of Sanghar and Umerkot) at a ceremony held at Ministry of IT & Telecom on Thursday. The contract was signed by Haaris Mahmood Chaudhry, CEO USF and Irfan Wahab Khan, CEO Telenor Pakistan. Secretary IT, Shoaib Ahmad Siddiqui was also present at the ceremony. Chief Guest of the ceremony, Syed Amin ul Haque stated that under the vision of Digital Pakistan, the Ministry of IT & Telecom is taking concrete steps to spread the benefits of digitalization to the masses. He said that during the spread of Coronavirus, Ministry of IT & Telecom will keep on making efforts to ensure that broadband connectivity helps us overcome this crisis. He added that the key stakeholders in IT & Telecom sector should work together vigorously to come up with innovative ways for

fighting against COVID 19 through technology. He congratulated the teams of USF and Telenor Pakistan and also hoped that they will continue to achieve these milestones in future as well. While sharing his views at the ceremony, Shoaib Ahmad Siddiqui said that the main objective of USF is to facilitate the masses through broadband technology in the country. He added that during the Corona Virus pandemic, Ministry of IT & Telecom is making sure that broadband connectivity plays an integral part in creating ease for people. He further said that USF projects are already making a huge difference in lives of people and with the new challenging scenario during the spread of Corona virus, these projects have become more crucial for socio-economic benefit. Also speaking at the ceremony, Haaris Mahmood Chaudhry, CEO USF informed that Federal Minister, Syed Amin ul Haque, Secretary IT, Shoaib Ahmad Siddiqui and USF Board of Directors have been giving constant guidance and support to USF for making rapid progress.

He also added that all these projects are playing an integral role in enabling people of Pakistan to carry on their activities through broadband technology during the COVID 19 pandemic. Through the project in Sanghar lot, broadband coverage will be provided in 500 mauzas in Sanghar, covering an approximate unserved area of 12,000 sq. km and benefitting a population of 1.47 million people. Sharing his views on the development, Irfan Wahab Khan, CEO Telenor Pakistan said, "We are more committed than ever before to strengthen the pillar of connectivity as part of our purpose of connecting people to what matters most to them. At Telenor Pakistan we are driven to empower the country through enhanced connectivity, creating opportunities and uplifting the lives of millions and stand firm in our commitment to break socio-economic barriers through the use of mobile technology."

(May 7, 2020) moitt.gov.pk

Saudi Arabia

The International Telecommunication Union (ITU) celebrated World Telecommunication and Information Society Day with the participation of the Saudi Communications and Information Technology Commission (CITC) to raise awareness about the impact of telecommunications and IT on societies and their economies. CITC held a dialogue session and discussed the best ways to harness technology to achieve sustainable development goals at a local community and international level to show the effective role of telecommunications and the importance of IT for the future of the Kingdom. Under the slogan, "ICTs for Sustainable Development Goals," the virtual session was held with the participation of prominent Saudi figures. Several themes were covered, including an historic overview of the concept of sustainable development and the role of the private sector in promoting sustainable development goals chaired by Al-Nuhait, general manager of the sustainability program at Saudi Telecom Co. Director General of the Secretariat of the National Digital Transformation Committee Norah Al-Zaid discussed the importance of an enabling environment to help government bodies and encourage partnership with the private sector to achieve these goals. Al-Zaid noted the recent virtual G20 meeting of trade and investment ministers presided over by the Kingdom, highlighting the recommendations and digital policies outlined to promote and accelerate responses to the COVID-19 pandemic. The session also established a link between the sustainability that societies are seeking and the exceptional circumstances

that the world is witnessing during the coronavirus pandemic. It highlighted the importance of adopting sustainability principles to overcome difficult times as well as the efforts exerted by the Kingdom on the digital transformation level to mitigate the potential effects of the virus on businesses' continuity and service delivery. (May 18, 2020) arabnews.com

The Ministry of Communications and Information Technology (MCIT) confirmed that the emitted electromagnetic waves and the effects of modern radio communication waves, including fifth-generation networks, do not adversely affect the human body, health and environment and are safe. The ministry, after summarizing the results of medical studies and research collected until the time of preparing the report, indicated that there is no correlation or scientific evidence to prove adverse health effects or general risks to human health and the environment by radio-electromagnetic waves. The ministry added that more studies are being conducted around the world by relevant organizations, and a more conclusive outcome could then be detailed. The ministry pointed out that the electromagnetic radiation emitted by radio waves used in wireless communications for the fifth generation technology will not exceed the levels of electromagnetic radiation of the current fourth generation technology. The fifth generation networks aim to provide high speed and low latency factor to support the increasing demand for communication services.

(May 1, 2020) saudigazette.com.sa

Sri Lanka

Microsoft and the Ministry of Education in Sri Lanka have signed a memorandum of understanding (MOU) to advance

remote pedagogy during a time when the health and safety of educators and students is paramount. The agreement will

enable educators to embrace Microsoft Office 365 tools and build their IT competence, while efficiently engage students in virtual classrooms. Under the MOU, Microsoft will support the Ministry by providing Students, Teachers, Pirivena, Teacher Training Schools and ministry officials with free access to Microsoft Office 365 tools, such as OneNote, Word, Excel, PowerPoint and Microsoft Teams, across PCs, tablets and smartphones to compliment a "distance learning" initiative for students and teachers. The MOU was signed under the recommendation of the Presidential Task

Force – Education to look into the continuation of the education sector during and after the COVID-19 pandemic. The agreement was signed by Secretary to the Ministry of Education N. H. M. Chithrananda and Country Manager for Microsoft Sri Lanka and Maldives Hasitha Abeywardena on behalf of their respective organizations. Microsoft General Manager for Southeast Asia New Markets in Asia Pacific Sook Hoon Cheah also joined the signing via Microsoft Teams.

(May 30, 2020) colombopage.com

Syria

The Syria Telecommunications Regulatory Authority (SyTRA) has warned that it will take 'all legal measures' to collect back taxes it claims are owed by mobile provider SyriaTel, after the company missed a deadline for arranging a mechanism for the payment. The watchdog notified SyriaTel and rival provider MTN Syria late last month that they owed the government SYP233.8 billion (USD1.09 billion) in back-taxes related to their license fees. SyTRA confirmed that whilst MTN had complied with the order and had contacted the regulator to negotiate a mechanism for the payment of the owed amount and to 'rebalance' the license, SyriaTel had yet to do so. Consequently, the authority warned that

it would collect the funds from the telco and that the company 'bears all legal and operational consequences as a result of its refusal to return the state's dues.' The majority owner of SyriaTel Rami Makhlouf, a cousin of President Bashar Al Assad and a former member of the president's inner circle, also claimed that he had been threatened with the revocation of the company's license and the seizure of its assets if it failed to comply with SyTRA's order. Al Jazeera quotes the official saying that he was threatened with arrest if he did not hand over the company's profits.

(May 18, 2020) SANA News Agency

United Arab Emirates

The Telecommunications Regulatory Authority (TRA) announced achieving two certificates from the Emirates International Accreditation Centre (EIAC), as it obtained ISO (17025) certification in accredited laboratory for the National Laboratory for Communication Equipment and Technologies, and ISO (17020) for inspection and monitoring the telecom market. Achieving these two international certifications comes as a result of TRA's commitment to applying the technical standards for the approval of materials and devices and the standards of inspection and testing launched by the International Laboratory Accreditation Cooperation (ILAC), in line with TRA's leadership keenness to apply and adopt the best international standards in operations and services provided to customers. Commenting on this achievement, Eng. Saif Bin Ghelaita, CEO of Technology Development Affairs in TRA said: "TRA strives to achieve excellence in all its procedures and services. Progressively, excellence has become a culture, a professional behavior and a general approach that prevails in the workplace as per the wise Government's directives and to achieve the UAE goals in all fields. In this context, we are keen to adopt the latest plans, strategies and work systems, and we are committed to providing the best ICT services, in order to achieve the happiness of all members of the UAE society. TRA applies the highest international standards

in its work, and as a result, it achieved several certificates by the International Organization for Standardization, including the International Accreditation Certificate for the National Laboratory for Communication Equipment and Technologies and a Certificate for Standards for Inspection and Control of the Communications Equipment Market. This achievement is the result of TRA's excellence in providing type approval services for telecommunications devices and technologies, and its constant concern that all communications devices in the country conform to international specifications and standards, without causing any kind of harm to users, or interference or damage to communication networks." The Type Approval team at TRA has applied the standard of ISO 17025 on testing, which is concerned with laboratory management operations in general, and technical topics for testing communications devices in accordance with internationally approved technical standards in particular, and also is concerned with ensuring that the specialized technical human cadres are capable of performing these tests. Furthermore, the inspection standard ISO 17020 focuses in particular on the inspection of communications devices that have been approved by TRA in accordance with the procedures approved in the standard. The inspection process is conducted accurately and systematically, ensuring the quality of the process, and ensuring

the human abilities to conduct inspections. These standards also include ensuring information privacy and clarity, enabling and assessing human capabilities, managing operations and documents periodically, and constant auditing and development. TRA provides many Type Approval services, including registering and approving telecommunications devices, registering suppliers of telecommunications devices in the UAE, and custom clearance of telecommunications devices. The TRA system of type approval includes determining and registering telecom devices that can be used in the UAE without causing damage for users, interference or damage to communication networks. It also includes supervising and participating in the approval and registration of telecommunications devices in the UAE before import to ensure their compatibility with laws and regulations. Type Approval also contributes to the custom release process for devices intended for non-commercial use in addition to regulating the import and sale of telecommunications devices in the UAE, ensuring that manufacturers and suppliers are registered and approved by TRA, as well as issuing type approval certificates for devices that comply with the specifications required by the TRA.
(May 31, 2020) tra.gov.ae

The Telecommunications Regulatory Authority, TRA, has highlighted an increase in e-commerce activities in the UAE over the past months. This increase also coincides with an increase in the use of social media on the internet, under the framework the social distancing rules and health measures adopted during the current crisis. During the previous period, the TRA also supported institutions and individuals in the telecommunications sector, contributing to the continuity of business of all national sectors. The authority has coordinated with services providers to offer many of their services for free, to support the country's efforts to promote remote learning, telemedicine and e-commerce, as well as raise the public's general awareness during the current circumstances. The TRA pointed out that the e-commerce sector has witnessed a recent increase in activities, coinciding with the government's decision to reduce unnecessary social gatherings.
(May 19, 2020) sharjah24.ae

The Telecommunications Regulatory Authority, TRA, has announced that 42,000 trainees from 83 countries had taken advantage of the free training courses available on the TRA Academy (previously Virtual Academy) during the last week of March, achieving a significant increase in the number of trainees. This demonstrates the success of the Academy as a modern solution for those wishing to develop their capabilities and their personal and professional knowledge, especially in light of the exceptional circumstances the world is witnessing today, the Authority said in a statement. Commenting on this milestone, Hamad Obaid Al Mansouri, TRA Director General, said, "In line with the directives of the wise leadership to shape and prepare

for the future, the TRA has developed innovative solutions that contribute to strengthening development and upgrading human cadres by relying on the advanced infrastructure that characterizes the ICT sector in the country. In this regard, the TRA has launched and developed the Academy, which offers a wide range of advanced training programmes, free of charge, to all who wish to develop their practical, professional and personal skills. Al Mansouri stressed that the TRA Academy has proven UAE's readiness to face challenges, adding, "We in the UAE believe that the development and training of human resources must continue under all circumstances, being the most valuable asset and the most important force. In light of the conditions the world is witnessing, and the near-full halt of training and educational centers in most countries of the world, the TRA Academy has been a solution accessible to thousands of those wishing to train. The figures achieved by the Academy in recent days confirm the human community need for such solutions within the context of digital transformation and achieving sustainable development." The training programmes launched by the Academy focus on developing technical, professional and entrepreneurial skills. The Academy has launched a large number of programmes that meet the requirements of the current situation such as time management and productivity programs. The TRA Academy is an integrated training platform providing online and traditional courses. It was created as a key initiative of the government service mTransformation program. It Academy offers free online interactive training courses in business, technology and special skills. Since its launch, the platform has received thousands of trainees from across the world, offering latest training programmes in Arabic and English conducted by international instructors and experts in training. (May 6, 2020) wam.ae

The Telecommunications Regulatory Authority (TRA) has published the monthly report on Cybersecurity developments in the Federal Government of the United Arab Emirates for the month of April 2020, on its website. The report reviewed the efforts made by the National Computer Emergency Response Team (aeCERT) to prevent and address cyber-attacks that were experienced by the UAE federal entities only. The team responded to approximately 34 thousand cyber-attacks, during the month of April, varied between malware (46%), vulnerabilities (47%) and phishing attacks (7%), the team also dealt with 197 cyber incidents. Malware: Software created for the purpose of destroying, influencing, or illegally obtaining systems and programs. Malware includes viruses, ransomware, spyware, and others. Vulnerabilities: Software errors in the systems that can be exploited by criminals to interfere with the systems and influence them. Phishing: A process in which the criminal impersonates reliable companies or entities to trick the users into submitting their private data such as the password and bank information, through fake messages or websites.
(May 6, 2020) tra.gov.ae

ARTICLE

COVID-19 Lockdowns Accelerate the Uptake of Digital Cross-border Transactions

Telcos from Europe to the Middle East have seen a notable increase in customers making use of cross-border mobile top-up products using the DT One network

The global impact of the COVID-19 pandemic has radically changed the way the world functions in a very short space of time. From the sudden shift to remote working for millions to national lockdowns across the globe, COVID-19 is changing consumer attitudes, behaviours and purchasing habits. According to an Accenture report, many of these new ways will remain post-pandemic as consumers embrace digital commerce and online tools to learn and connect with others.

One of DT One's key product offerings is phone-to-phone (P2P) cross-border top-ups - which give telco customers the option to buy data, call time or text time for anyone in any country instantly as a value-added service.

DT One, the world's leading B2B network for mobile top-up solutions, bill payments and mobile rewards, has seen the impact of COVID-19 as telcos around the world observe dramatic increases in the number and value of international mobile data and airtime credit top-ups.

One of DT One's key product offerings is phone-to-phone (P2P) cross-border top-ups - which give telco customers the option to buy data, call time or text time for anyone in any country instantly as a value-added service.

For telcos offering international top-ups to countries like the Philippines, Nigeria, Ghana and Senegal, digital channels have seen more than 100% growth on some corridors while smaller point-of-sale networks have lost more than 50% of traffic as a result of the stay-at-home orders and restrictions in movement.

For the millions of migrant workers who live and work abroad, staying connected to their loved ones back home is more important than ever, as worries and fears around health and job safety increase. Telcos have seen an increase in the value of transactions, with people sending higher amounts of credit than usual to their friends and family back home, underpinning the importance of human connection during difficult times.

"During times of crisis being able to talk to your family and loved ones is vitally important. At DT One we are committed to finding ways that we can help to support our partners, customers and people relying on our network to cope with the hardships that COVID-19 brings. Through a variety of promotions and added-value offers, we have been working closely with our partners to help people stay connected and online," says Thierry Siminger, Chief Commercial Officer at DT One.

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REGULATORY ACTIVITIES BEYOND THE SAMENA REGION

Angola

Angola's government added a third mobile operator to the mix with the award of an operating license to Africell. The move comes after President Joao Lourenco revoked a decision from April 2019 giving operating rights to domestic company Telstar Telecomunicacoes, due to concerns around its ability to meet bidding conditions. In March, the country's Ministry of Finance said MTN Group, Africell and Banco Angolano de Investimentos (BAI) had acquired tender documents, but only Africell submitted its application.

Africell's head Ziad Dalloul in 2019 revealed the company had $300 million at its disposal to fund an entry into Angola, The newly awarded license brings the number of Africell markets to five, adding to its current operations in Democratic Republic of the Congo (DRC), Sierra Leone, The Gambia and Uganda. Angola's mobile market is currently dominated by Unitel and Movicel, which GSMA Intelligence figures show had 10.9 million and 3.7 million connections respectively at end-Q1. (May 20, 2020) Agence France-Presse (AFP)

Australia

The Department of Infrastructure, Transport, Regional Development and Communications (DITRDC) has published policy objectives which it said are intended to 'help guide decision making for the proposed allocation of the [850MHz and 900MHz] bands, which are pivotal to the delivery of mobile services across Australia'. With the Australian Communications and Media Authority (ACMA) having previously proposed to optimize and allocate frequencies in the aforementioned bands using a 'market-based process' in Q4 2021, the DITRDC has listed five policy objectives, noting: 'In some cases, different objectives may need to be balanced against each other, or require trade-offs to be made.' Of the five policy objectives, the most notable is 'supporting the deployment of 4G and 5G technologies', with the DITRDC highlighting the fact that, at present, the 850MHz and 900MHz bands are not properly optimized for 4G or 5G services. As

such, it said that a reconfiguration of the bands would support the deployment of 4G and 5G networks and enable more efficient use of the spectrum, while it also pointed to the fact that lower-band spectrum 'is important for broader 4G and 5G coverage, including in regional Australia, and will complement holdings of 5G-suitable mid and high-band spectrum'. Meanwhile, the other four communications policy objectives were listed as: promoting competitive market outcomes for the long-term benefit of consumers; encouraging investment in telecommunications infrastructure, including in regional Australia; supporting continuity of services, and; supporting a national Public Safety Mobile Broadband (PSMB) capability. For its part, the ACMA is expected to begin consulting on its plans for the 850MHz and 900MHz bands 'soon'. (May 11, 2020) commsupdate.com

Austria

The Telecom Control Commission (TKK) has announced it plans to hold the country's second 5G auction in August, after the process was postponed in March by the COVID-19 pandemic. The regulator said it will 'take all necessary precautions to ensure that the auction can be carried out properly'. Last year the

TKK and the Regulatory Authority for Broadcasting and Telecommunications (RTR) concluded a 5G auction for regional spectrum in the 3400MHz-3800MHz range, with the allocation of licenses for frequencies in the 700MHz, 1500MHz and 2100MHz bands originally expected to take place in April. (May 14, 2020) commsupdate.com

Belgium

Telecoms regulator the Belgian Institute for Postal Services and Telecommunications (BIPT) has announced that only Citymesh has submitted an application for the remaining free spectrum in the 2600MHz band. In February, the BIPT invited interested parties to sign up for an auction before 23 March, although the deadline was later extended to 15 May following the COVID-19 outbreak. Only one license is available, comprising 2×15MHz of spectrum valid for a period of 15 years from 2020 to 2035

and covering the entire country. The minimum price per license, which is not subject to specific coverage conditions, is EUR15.01 million (USD16.4 million). A spectrum cap of 2×20MHz meant Orange Belgium, Proximus and Telenet, which already hold licenses in the band, were excluded from the auction. Citymesh already has user rights in the 3.4GHz-3.6GHz band and has been mainly active in the B2B sector, some industrial areas of Flanders and wind farms in the North Sea. (May 20, 2020) commsupdate.com

Brazil

The National Telecommunications Agency (Agencia Nacional de Telecomunicacoes, Anatel) has announced that it has approved a plan to convert financial penalties imposed on domestic operators into 4G coverage expansion obligations. In doing so, the watchdog seeks to compel cellcos 'to make investments in regions of low economic attractiveness and great social interest'. In addition, impacted providers must ensure 'adequate maintenance and operation' of the new facilities for a minimum period of three years. (May 5, 2020) commsupdate.com

Colombia

The Colombian Ministry of Information Technologies and Communications (MinTIC) has now issued all of the 2.5GHz spectrum licenses won during the country's multi-band spectrum auction in December 2019.

The two winning bidders were Claro Colombia and Partners. The latter company was set up as a bidding vehicle for Icelandic firm Novator Partners, which owns the Chilean newcomer WOM. Partners' entry into the Colombian market was not without its stumbles. After obtaining 20MHz of 700MHz spectrum, Partners bid on 30MHz of 2.5GHz spectrum but then realized that it had accidentally overbid by a factor of ten, prompting a request to cancel this offer. Alongside the Ministry's announcement, Claro Colombia confirmed that its 2.5GHz spectrum is now active across all state capitals and over 800 municipalities, in addition to its existing 2.6GHz network and LTE-A service, which respectively cover 1016 and 779 locations. Claro obtained 20MHz of 700MHz spectrum and 30MHz of 2500MHz spectrum in the December auction. ICT Minister Karen Abudinen said: "Our objective is to provide the same opportunities to all citizens. It does not matter if they are in Bogota or in Choco, they should have the same opportunities to enjoy technology." (May 16, 2020) developingtelecoms.com

The Ministry of Information Technologies and Communications (Ministerio de Tecnologias de la Informacion y las Comunicaciones, MinTIC) has confirmed that it has issued all of the 2.5GHz spectrum permits that were won in December 2019's multi-band spectrum auction. ICT Minister Karen Abudinen commented: 'Our objective is to provide the same opportunities to all citizens. It does not matter if they are in Bogota or in Choco, they should have the same opportunities to enjoy technology.' The frequencies in question were won by Claro Colombia and Partners, a bidding vehicle for Novator Partners, the Icelandic-owned, London-based owner of Chilean upstart operator WOM. Partners acquired 20MHz in the 700MHz band and 30MHz in the 2500MHz band, but later asked for its 2.5GHz bid to be retracted after an administrative gaffe saw it accidentally enter a bid ten times higher than the going rate. In related news, Claro Colombia has announced that it has activated the 2.5GHz band in all state capitals and more than 800 other municipalities. In addition, the cellco notes that its original 2.6GHz network covers 1,016 municipalities, while its LTE-A service is available in 779 locations. Claro won 20MHz in the 700MHz band and 30MHz in the 2500MHz band in December's spectrum auction. (May 14, 2020) commsupdate.com

Denmark

The Danish Energy Agency (DEA, or Energistyrelsen) is planning to hold an auction for spectrum in the 450MHz frequency band on 23 June 2020. The regulator is offering one licence up for sale, with specific terms and conditions aiming to ensure that the spectrum is used effectively throughout the country. The permit will come into force on 24 January 2022 and expire on 31 December 2037. The DEA said that the frequencies are suitable, among other things, for the provision of IoT services as well as M2M communication and wireless broadband, but with restricted capacity (speeds) due to the limited frequencies available. Interested parties are invited to register for the auction on 9 June 2020. (May 22, 2020) commsupdate.com

Ecuador

The Ministry of Telecommunications & Information Society (Mintel) has announced several measures intended to improve internet access in 369 underserved parishes during the COVID-19 pandemic. The eight resolutions included in Ministerial Agreement 012-2020, promulgated on 26 May, include plans to temporarily allocate mobile spectrum for twelve months to 'improve service capacity and quality', following a 40% increase in data traffic since the start of the health crisis. Telecoms regulator ARCOTEL has been tasked with ensuring telcos accessing these additional frequencies improve service coverage. Other measures include simplifying procedures for granting licenses to small ISPs, implementing cheaper tariffs, enabling the installation of shared infrastructure on government property, and steps to facilitate the importation and approval of telecoms equipment. Additional free Wi-Fi hotspots powered by the networks of universities, government offices and other public sector institutions will also be established. (May 28, 2020) commsupdate.com

Ethiopia

A request for Expressions of Interest (EoI) for two new telecommunications licenses in Ethiopia has been launched by the local telecoms regulator, the Ethiopian Communications Authority (ECA). In a press release regarding the development the ECA confirmed that it plans to award two nationwide licenses to 'qualified telecommunications companies', with these to be selected through a competitive bidding process in accordance with the Communications Service Proclamation No. 1148/2019. It said interested parties have until 22 June 2020 to submit an EoI. In a supporting document, the ECA noted that the two licenses on offer will: be technology neutral; offer 'a range of spectrum across multiple frequency bands'; and be valid for at least 15 years with the possibility of renewal. Further, it noted that among the basic terms and conditions of the concessions on offer, there will be a requirement to meet or exceed specified population and geographic coverage targets, as well as a requirement to commit to 'reasonable' tariffs, universal accessibility and teledensity targets. Finally, the ECA said that both new and existing licensees will be expected to enter into infrastructure and facilities sharing arrangements 'in order to achieve rapid and cost-efficient network deployment'. With the ECA saying that, following a public consultation related to the awarding of new licenses in November 2019, it had undertaken a number of important activities, it noted that this included both its hiring of the International Finance Corporation (IFC) as a transaction advisor, and the drafting of 'numerous directives that will shape a robust legal and regulatory framework'. (May 22, 2020) commsupdate.com

Ethiopia has moved closer to liberalizing one of the world's final frontiers for telecommunications by publishing the final draft of directives that mention spectrum permits will be valid for 15 years. The Ethiopian Communications Authority will hold consultations on the proposed rules for 14 days ending May 11, the agency said in a statement on its website. It will review and "consider the comments in adopting the directives" on issues including licensing, consumer rights and dispute resolution. Prime Minister Abiy Ahmed's administration wants to offer two new licenses and sell part of the state-controlled monopoly, Ethio Telecom, to help liberalize the economy and attract more foreign capital. Vodacom Group Ltd., MTN Group Ltd., Orange SA and Helios Towers have expressed interest in investing in Africa's second-most populous nation of more than 100 million people. The issuance of licenses for operations including mobile-network services will be by auction, beauty contest or a hybrid. The communications regulator would need to approve a proposed transfer of stake to an investor already holding, or will get from the deal, 10% shareholding or more in a business, according to the statement. Ethiopia's initial plans to issue licenses by March 2020 were delayed by elections, which the government later postponed because of the coronavirus pandemic.

(May 2, 2020) bnnbloomberg.ca

Greece

The head of Greece's National Telecommunications & Post Commission (EETT) says the authority expects to complete its auction of 5G-capable wireless spectrum by the end of this year. In an interview with Naftemporiki, Professor Konstantinos Masselos said that the planning of the auction is in progress and there are possibilities for the creation of a 'friendly framework' for telco investment, in terms of the starting price for licenses and the method of repayment. The watchdog has previously noted that it is looking to award 2×30MHz in the 700MHz band, 65MHz in the 1500MHz range, 2×15MHz in the 2100MHz band (plus 2×45MHz in the same band which is already allocated but licenses expire in 2021), 280MHz at 3.6GHz, and up to 2,500MHz in the 24GHz-28GHz range, depending on demand. TeleGeography notes that a number of 5G spectrum auctions have been delayed this year due to the COVID-19 crisis. (May 28, 2020) commsupdate.com

The National Telecommunications & Post Commission (Ethniki Epitropi Tilepikoinonion kai Tachydromeion, EETT) has responded to a report which says there is a greater need for competition regulation in the telecoms sector. The head of the Hellenic Competition Commission (HCC), Yiannis Lianos, has written to ministers, according to a report from Kathimerini, stating that responsibility for the oversight of the telecoms market should be switched from the EETT to the HCC, adding that Greece is the only EU member state where the competition regulator is not charged with oversight of the communications sector. The letter has been accompanied by a report from the HCC which says Greece has low levels of competition and the highest mobile data costs of any EU or OECD country. The EETT has responded by criticizing the HCC's report, saying it presents 'contradictory' data and uses flawed methodologies, making comparisons between products from various countries which do not offer equal levels of service. The regulator says that since 2000 it has issued over 100 decisions relating to competition law. Its statement ends by declaring: 'In the spirit of mobilizing all of us in the collective effort for the future of our telecommunications infrastructure and services, we remain open to a meaningful and constructive dialogue with both the political leadership and any involved body or authority in order to achieve a critical national goal for 21st century Greece.'

(May 12, 2020) commsupdate.com

Hong Kong

The Office of the Communications Authority (OFCA) in Hong Kong has launched a subsidy scheme aimed at promoting new 5G projects across the territory. Under the scheme, the government will subsidies 50% of the actual cost directly relevant to the deployment of 5G technology in an approved project, subject to a cap of HKD500,000 (USD64,500). Around 100 qualified projects will be subsidized, with the scheme aiming to promote projects such as smart city applications. An OFCA spokesperson commented: 'Public and private entities/bodies are welcome to submit applications for projects which are able to bring substantive benefits to the business/sector concerned through the deployment of 5G as well as demonstrate innovation or cross-sectoral synergy.' TeleGeography's GlobalComms Database notes that three of Hong Kong's four mobile network operators (MNOs) launched commercial 5G services on 1 April, with the fourth – SmarTone – still pushing ahead with its own 5G network rollout.

(May 11, 2020) commsupdate.com

Iceland

Iceland's telecoms watchdog the Post and Telecom Administration (PTA, or Post-og Fjarskiptastofnun [PFS]) has awarded 5G spectrum to three operators – Siminn, Nova and Vodafone Iceland (Syn) – with the concessions valid until 31 December 2021. The allocations in the 3.6GHz band are as follows:
• Siminn: block B3600 (3500MHz-3600MHz)
• Nova: block C3600 (3600MHz-3700MHz)
• Vodafone Iceland (Syn): block D3600 (3700MHz-3800MHz).

The regulator highlighted that the remaining 100MHz in the band would be distributed at a later stage, as the PTA will first monitor the development of 5G networks and the supply of 5G services in the near-term. The PTA said that the renewal of the three concessions will depend on whether the companies have used the assigned frequencies in accordance with the PTA's criteria. According to PTA's terms and conditions, 5G services should be available to 25% of the population (via at least 30 mobile sites) by the end of 2021. In particular, Siminn is required to provide 5G services with minimum downlink of 200Mbps to 90% of the population in Blonduos, Thorlakshofn and Egilsstadir; Nova (Hellu, Sandgerdi and Vestmannaeyjum); and Vodafone Iceland (Hvolsvelli, Siglufirdi and Grindavik).

(May 3, 2020) commsupdate.com

India

The Telecoms Regulatory Authority of India (TRAI) has proposed adding an extra digit to Indian mobile numbers to cope with surging demand for mobile connectivity. The move would see the standard Indian mobile number increase from 10 digits to 11 "Switching from 10 to 11 digits with first digit for mobile number as '9' would give a total capacity of 10 billion numbers," TRAI said in its recommendations to the telecom department. "With the current policy of allotment after 70 per cent utilization, this would suffice till India has seven billion connections," TRAI added. According to a report in The Economic Times of India, also claimed that machine to machine SIM cards, as well as portable internet dongles would be reallocated a 13 digit number, to prevent over use of the net 11 digit numbers. India currently has around 1.2 billion active mobile subscriptions, making it the world's second largest telecoms market place, after China.

(May 30, 2020) commsmea.com

Key players in India's beleaguered telecoms sector have banded together to request that the Telecoms Regulatory Authority of India (TRAI) implements a minimum pricing rule that would present operators from offering services below a certain price. India's telecoms sector has seen its average revenue per user (ARPU) plummet in recent years, as operators engage in a race to the bottom on price. The situation has been exacerbated by the launch of Reliance Jio in 2016, who has bought a range of ultra-low cost data tariffs and handsets to the market, attracting over 330 million subscribers and becoming India's biggest telco in the process. However, with ARPU in the mobile sector hovering around $1.50, Reliance's competitors are struggling to break even. The Cellular Association of India has written to the TRAI seeking discussions on the viability of introducing minimum pricing legislation "at the earliest". "Given the financial pressure on the sector and the fact that ARPU and tariffs of the Indian telecoms sector are the lowest in the world, floor pricing is imperative to ensure that the sector is sustainable, and is in a position to bear the deferred spectrum and AGR (Adjusted Gross Revenues) dues, while continuing to invest in world class networks and services," the letter from the COAI read. Earlier this year, Vodafone Idea, Bharti Airtel and Reliance Jio agreed to unilaterally kill off their very cheapest tariffs in an attempt to raise ARPU. (May 24, 2020) The Times of India

A long delayed WhatsApp move to launch a mobile payment service in India potentially faced a further hurdle, with the Competition Commission of India (CCI) reportedly probing claims the company was abusing its market position. Sources told Reuters the CCI initiated an investigation following a complaint filed in March stating WhatsApp was bundling its payments

and messaging offerings, a move which could violate competition law. The complaint, which reportedly could lead to a wider examination of the claims, stated WhatsApp was forcing the payments service on its 400 million Indian users. WhatsApp initiated a move to enter the payments market in India in February 2018, but hit problems relating to rules around data storage. Moneycontrol recently reported the WhatsApp service could launch by the end of this month. The company faces stiff competition in the sector from rivals including Google, Hike, Amazon and Paytm. WhatsApp previously assured the Supreme Court of India it would comply with necessary legislation related to data storage rules prior launching its payment feature, Reuters reported. (May 18, 2020) mobileworldlive.com

The Indian government is to push back its proposed 5G spectrum auction until at least next year, due to the significant disruption caused by the Coronavirus pandemic and operator concerns over pricing. A report in The Economic Times of India claims that the government will go ahead with the auction of additional 4G spectrum as planned, later this year but will defer the 5G spectrum sale until 2021. Bharti Airtel and Vodafone Idea, who were both hit with multi-billion dollar AGR dues by the country's Supreme Court last October, have both called for the auction to be delayed, as they battle to rein in expenses. Sources familiar with the matter told journalists at The Economic Times of India that the country's Digital Communications Commission had met on Monday to discuss postponing the 5G auction. "Discussions are on to hold the 5G auctions later as some of the telcos need to buy spectrum but 5G may not be the priority now," a source told the ET. India will proceed with its 4G spectrum auction, however, as mobile network operators struggle to meet the gargantuan surge in demand for bandwidth. Additional 4G spectrum will help operators provide higher network availability and extend the reach of their networks into underserved rural areas of the country. (May 13, 2020) commsmea.com

A Finance Ministry taskforce has recommended rationalizing the prices of the upcoming 5G spectrum auction to ensure that next generation services can be made affordable to the public, arguing that the current price level is too high. A report from the taskforce acknowledged the level of financial stress in the sector, noting that some operators were in a 'precarious position' due to the Supreme Court's decision on Adjusted Gross Revenue (AGR) in October last year, which handed the industry a bill for around INR1.5 trillion (USD19.9 billion), and just three months to find the funds. The finance ministry's report also pointed out that 'demand for spectrum is likely to be subdued as consolidation has reduced the number of players in the sector to effectively only four,' adding that 'robust' participation in the auction from private industry would be needed to achieve the government's communications and digital policy goals. The report also touched on the substantial financial burden of deploying the necessary infrastructure to fully implement 5G services and to satisfy growing demand for mobile services, estimating that an additional one million new towers need to be established by 2025, with around three million kilometers of fiber-optic infrastructure by the same date. The setup of each tower requires investment of around INR50 million, the report added. The Department of Telecommunications (DoT) has defended the pricing on the basis that it has adopted the figure recommended by the Telecommunications Regulatory Authority of India (TRAI), and that the terms must be approved by the cabinet. The TRAI published its recommendations on the spectrum auction back in August 2018, suggesting the sale of frequencies in the 700MHz, 800MHz, 900MHz, 1800MHz, 2100MHz, 2300MHz, 2500MHz and 3300MHz-3600MHz bands. For the 700MHz band – which had been auctioned in 2016 but attracted no bidders due to the high price – the TRAI suggested a price tag of INR62.7 billion per MHz of pan-India frequencies. (May 4, 2020) The Economic Times

Italy

The Italian government has launched a EUR400 million (USD434 million) fund to provide fiber connectivity to schools across the country. The Ministry of Economic Development (Ministero dello Sviluppo Economico, MiSE) is looking to equip over 32,000 buildings – or more than 81% of schools – with fiber access which guarantees download speeds of 100Mbps, and up to 1Gbps within the next two years. Vouchers worth up to EUR500 will also be made available to qualifying low-income families to install broadband connections and acquire IT equipment for children. The first activations on the new school network are expected from September this year. (May 6, 2020) MondoMobileWeb

Latvia

Telecoms watchdog the Public Utilities Commission (Sabiedrisko Pakalpojumu Regulesanas Komisija, SPRK), has revoked spectrum rights held by state-owned fixed operator Tet (previously known as Lattelecom) at 1427MHz-1452MHz and 1492MHz-1517MHz ahead of schedule. In a statement from the watchdog, the SPRK explained that rights were previously set to be released by 31 December 2020, so that the band could be re-planned from fixed radio systems for the provision of mobile communication services. As previously reported by TeleGeography's CommsUpdate, the SPRK had issued a decision on the matter in January 2019, adding at the time that it could: 'now start to plan the granting of rights of use and redistribute the entire range so that, from 1 January 2021 onwards, operators who have received the rights of use can fully utilize the range'. Tet has not issued a statement on the matter. (May 28, 2020) commsupdate.com

Lithuania

The government has approved a draft plan for the development of 5G mobile communications services across the country, LRT cites a report by BNS as saying. Under the provisional guidelines, a 5G network should be launched in at least one of Lithuania's largest cities – Vilnius, Kaunas, Klaipeda, Siauliai or Panevezys – by 2022 and should be available in all five by 2023. 5G services should cover all urban areas and main transport routes and hubs, such as motorways, rail routes and airports, by 2025. Rollout is expected to begin next year, following a 5G spectrum auction carried out by the Communications Regulatory Authority (RRT) later this year, although this depends on the outcome of talks with Russia about spectrum interference issues in border areas. (May 29, 2020) commsupdate.com

Malta

The Malta Communications Authority (MCA) has opened a consultation on the provision of wholesale fixed broadband access based on its preliminary findings. The regulator has ruled that the island's two main fixed network operators – GO and Melita – have significant market power in both the retail and wholesale broadband markets. It says other providers have had difficulty entering the sector and it is proposing a number of regulatory obligations relating to access, non-discrimination, transparency, price control and accounting separation. Responses to its proposals are being accepted until 24 July. (May 26, 2020) commsupdate.com

The Netherlands

The Senate, the upper house (Eerste Kamer) of the Netherlands' parliament, has passed without vote a bill amending telecoms legislation to allow the government to block 'undesirable' investors from acquiring stakes in Dutch operators. The Senate website notes that the bill was passed on 19 May as a 'hamerstuk' ('hammer document') which does not require further debate or voting. The lower House of Representatives had unanimously adopted the bill – 'Undesirable Controls Telecommunications Act, 35153' – on 7 May. The amendments will enter into force via Royal Decree, giving powers to the Ministry of Economic Affairs to actively monitor and intervene in ownership relationships in the telecoms sector. (May 21, 2020) commsupdate.com

The Netherlands' House of Representatives has adopted a bill amending telecoms legislation to allow the government to block 'undesirable' investors from acquiring stakes in Dutch operators. Following the unanimous vote on 7 May, the Senate Committee for Economic Affairs will discuss the bill – 'Amendments to the Telecommunications Act with regard to Undesirable Control in Telecommunications Parties' (Undesirable Controls Telecommunications Act, 35153). The Dutch Senate website summarizes the amendments thus: 'This bill provides for a new chapter (14a) in the Telecommunications Act. This chapter prevents a party acting on the basis of geopolitical motives from gaining control of the telecommunications infrastructure and services that can be abused. The Minister of Economic Affairs and Climate (EZK) is empowered to prohibit the acquisition or retention of predominant control in a telecommunications party if, in his opinion, obtaining or retaining such control threatens the public interest. In order to maintain an overview of relevant acquisitions in the telecommunications sector, a reporting obligation is provided. The person who intends to acquire predominant control in a telecommunications party must report this intention to the Minister of EZK if this control leads to relevant influence in the telecommunications sector. After receiving notification of an intended acquisition of predominant control, the minister will start an investigation. This investigation aims to determine whether there are grounds for a ban. In addition, the Minister of EZK will actively monitor the control relationships in the telecommunications sector.' The bill was submitted to parliament back in March 2019 by State Secretary for EZK Mona Keijzer following original government proposals in April 2018 to enforce takeover controls applicable to fixed/mobile

telephony, internet and data center companies, citing national security interests. Once approved by the Senate, the amendments will enter into force at a date to be determined by Royal Decree. (May 12, 2020) commsupdate.com

New Zealand

New Zealand, after postponing a 5G spectrum auction, announced the direct allocation of airwaves in the 3.5GHz band, with Spark and 2degrees each to be offered the rights to 60MHz and Dense Air 40MHz. The government put the sale of an unused portion of 3.5GHz band on ice last week due to the COVID-19 (coronavirus) pandemic. Prices of the allocations were not disclosed, but the reserve price had previously been set at NZD250,000 ($152,279) per 10MHz lot. In a statement, Spark CEO Jolie Hodson said the allocation will enable significant investment in 5G infrastructure across the country over the coming year, noting securing the spectrum was critical for the rollout of a full suite of services and will enable the operator to swiftly proceed. She said it plans to switch on 5G sites in a number of major centers and regions across the North and South islands. "To maintain this momentum, we are keen to work with government to accelerate the timeline for the longer-term spectrum auction, which is currently scheduled for November 2022," she added. Hodson said the new spectrum will play a critical role in the country's response to COVID-19, noting "it has never been more important to improve our productivity as a country and ensure we are well positioned to adapt to new ways of working". Spark turned on 5G service in Alexandra for a limited number of enterprise and consumer customers in September 2019, later expanding to five additional South Island towns and communities, using the 2.6GHz band. The recent sale was planned after the government agreed to free up additional 5G spectrum, after operators called for early access to 160MHz in the 3.5GHz band. Vodafone

Zealand did not apply to participate in the auction, so wasn't allocated spectrum. Dense Air is a provider of small cell services with spectrum assets in New Zealand. In April it loaned Spark its 2.6GHz spectrum for three months. (May 12, 2020) mobileworldlive.com

New Zealand postponed an auction of 5G spectrum due to the COVID-19 (coronavirus) pandemic, pushing back the allocation of short-term rights to an unused portion of the 3.5GHz band, with no new date set. In a statement, Radio Spectrum Management (RSM), a business unit of the Ministry of Business, Innovation and Employment, said the decision was taken after consulting with the registered bidders, adding updates will be given when decisions are made. In December 2019, the government agreed to free up additional 5G spectrum, heeding operators' calls for the early release of 160MHz in the 3.5GHz band. In early January, RSM announced the reserve price for the 5G spectrum auction. Operator Spark in September 2019 turned on 5G service in Alexandra for a limited number of enterprise and consumer customers, expanding it in November to five additional South Island towns and communities, using the 2.6GHz band. A month later, technology director Mark Beder said it would prefer to use 3.5GHz spectrum as it believes it will be the primary spectrum band for mass deployment of 5G. Vodafone New Zealand switched 5G on in parts of Auckland, Wellington, Christchurch and Queenstown on the 3.5GHz band in December 2019, offering existing customers the faster service at no additional cost. (May 4, 2020) commsupdate.com

Nigeria

The Nigerian Communications Commission (NCC) has revealed it is reviewing its 'Spectrum Trading Guidelines, 2018', in line with recommendations made in the new National Broadband Plan 2020-2025, which was published in March. Local newspaper The Nation cites a statement from NCC Public Affairs Director Henry Nkamadu as saying that the regulator's board has decided to suspend the current guidelines until they can be updated to provide for the optimal use of spectrum. The move is aimed at ensuring that unutilized spectrum can be fairly traded between operators to facilitate the rollout of broadband infrastructure across the country by industry players. (May 30, 2020) commsupdate.com

Mobile network operators in the country added a total of 3.3 million internet customers in February, data released by the Nigerian Communications Commission

(NCC) has revealed. The new additions to the country's internet users' database brought the total mobile internet subscription to 131.6 million. While data subscriptions had been on a steady increase in the last one year as the telcos aggressively push for the deployment of 4G infrastructure, the current COVID-19 outbreak has forced many Nigerians to depend heavily on the internet for several needs. Hence, the mobile internet subscription figure is anticipated to skyrocket in the coming months. According to NCC's data, MTN Nigeria, which is the largest network operator by subscriber number, added 960,814 new internet customers in the month. The telco, which had the largest subscriber both for voice and internet, had a total of 56.4 million internet customers as of February this year. Airtel Nigeria came second in terms of internet customers as it added 670, 474 new

subscriptions, which brought its customer base to 36.1 million. Globacom, though the third in terms of the number of internet customers, emerged as the biggest gainer for the month as it added 1.7 million new internet subscriptions in the month. This brought the number of the telco's total internet customers to 30.9 million However, 9mobile maintained its fourth position with a further decline in the number of its internet customers. The telco lost 96,220 customers in February, which reduced its total subscription number to 7.9 million. While data subscription currently plays second fiddle to voice in terms of revenue for the telcos, it is gradually becoming the main source of income as voice declines. For instance, MTN, which recently released its Q1 2020 financial result disclosed that it recorded a sharp increase in data revenue, while voice revenue only increased marginally. The telco's data revenue jumped by 59.2 per cent to N74 billion in Q1 2020, while voice revenue only grew by 7.4 per cent in the same quarter.

(May 17, 2020) guardian.ng

The Nigerian Communications Commission (NCC)

corrected reports 5G services were up and running in the nation, stating licenses for the next-generation networks were yet to be issued. It said a "mischievous statement" appearing on Facebook, WhatsApp, Twitter, LinkedIn and other social media sites "cannot be further from the truth". NCC vice chairman Umar Garba Danbatta noted with no licenses issued, MNOs "cannot switch on such technology". The reports appeared on 10 May, claiming operators were on the brink of launching 5G services in Lagos. Danbatta explained the NCC was "technology neutral" and so doesn't license technology. Rather, the regulator assigns spectrum to operators once this is allocated by the National Frequency Management Council. The NCC pledged to keep encouraging operators to deploy "the best technology that will meet the needs of the society in a secured [sic] and friendly manner". A three-month 5G test was approved by the NCC in November 2019, but the trial has since concluded and equipment decommissioned, the authority noted.

(May 12, 2020) mobileworldlive.com

Norway

Norway's National Communications Authority (Nkom) has announced the winning bidders of its multi-band spectrum auction that got underway earlier this month. In the event, five of the six bidders walked away with new frequencies, with Ceragon Networks being the only company not to do so, and in total the spectrum sale raised NOK34.26 million (USD3.4 million). Telenor Norge emerged as the biggest spender, agreeing to pay NOK21.98 million for spectrum in the 13GHz, 18GHz, 23GHz, 28GHz, 32GHz and 38GHz bands. Telia Norge was the next highest bidder, meanwhile, offering NOK9.28 million for frequencies in the low 10GHz, high 10GHz, and 23GHz bands. Rounding out the country's mobile network operators, ice offered a total of NOK1.58 million on new frequencies in the low 10GHz and 38GHz bands. Turning to other winning bidders, Funn and GlobalConnect offered to pay NOK872,077 and NOK547,000, respectively, with the former acquiring spectrum in the high 10GHz range, and the latter in the high 10GHz, 23GHz and 38GHz bands. In confirming the outcome of the auction, the Nkom noted that all of the winning bidders have the option of postponing payment for their new spectrum until November 2020 – due to the ongoing COVID-19 pandemic.

(May 26, 2020) commsupdate.com

Norway's National Communications Authority (Nkom) has set national minimum requirements for any wireless broadband networks that are partly financed from state funds. In a press release the telecoms regulator confirmed that such networks will be required

to provide 'stable' speeds of 30Mbps downlink and 5Mbps uplink. Such speeds, it claimed, would ensure that households have a wireless broadband service that can be used for voice and video conferencing. Other requirements include: that subscribers on plans with a monthly data usage cap are given the opportunity to buy additional data at 'a reasonable price' once their allowance is used up; and that service providers should monitor traffic on both radio access and core networks, and take measures to avoid any reduction in service quality. Counties and municipalities are now obliged to include these requirements in contracts with providers that roll out infrastructure on their behalf, the Nkom added. (May 19, 2020) commsupdate.com

Norway's National Communications Authority (Nkom) has announced that the Broadband Development Act was passed by the government last week and will enter into force on 1 July 2020. In a press release confirming the development, the regulator noted that the new Act implements EU Directive 2014/61 ('on measures to reduce the cost of deploying high speed electronic communications networks') into Norwegian law. On the back of the new regulations, Nkom has confirmed it will establish a central information service designed to oversee and resolve any disputes that may arise between service providers over access to physical infrastructure. According to the Nkom, work is already underway in this regard, with it noting that it is working on the establishment of a map-based web portal that will provide an overview of owners

of existing physical infrastructure suitable for the transmission of broadband. This portal, which is expected to become available by the start of 2021, will also contain information on planned construction work by geographical area. (May 12, 2020) commsupdate.com

The National Communications Authority (Nasjonal kommunikasjonsmyndighet, Nkom) has confirmed that a multi-band spectrum auction, in which it is offering a total of 4,379MHz, kicked off on 6 May. With the regulator claiming that the frequencies on offer will 'contribute to further development of 5G and make … mobile networks more robust', the available spectrum has been split into a total of 65 blocks across several bands – low, 10GHz and high, 10GHz, 13GHz, 18GHz, 23GHz, 28GHz, 32GHz and 38GHz – with pre-block reserve prices ranging from NOK14,000 (USD1,361) to

NOK197,000. Meanwhile, there are two spectrum caps that will apply, with the first setting a 370MHz limit on the amount of spectrum that each operator may hold across the low 10GHz, high 10GHz and 13GHz bands. A second cap means each operator may hold no more than 2,545MHz across all eight of the bands in which frequencies are being made available. In March 2020 the regulator publicly identified the six companies that had qualified to bid, namely: Ceragon Networks, Funn, GlobalConnect, Ice Communication Norge, Telenor Norge and Telia Norge. According to the Nkom, it has continuously assessed whether to proceed with the auction, given the ongoing COVID-19 pandemic, but decided to do so in part after considering input from the companies that had registered to take part. (May 6, 2020) commsupdate.com

Poland

Poland's Minister of Digitisation Marek Zagorski says he still expects 5G spectrum to be auctioned this year, despite the recent postponement of the sale of licenses in the 3.4GHz-3.8GHz range. The government began the auction process in March but halted it last month, saying that it would be re-run once the COVID-19 crisis has passed. The Minister says that licenses will be

made available to winning bidders to enable them to launch commercial services this year. Some operators are pushing ahead with 5G rollouts in other bands, with Polkomtel (Plus) having recently launched services in seven cities using 2.6GHz frequencies.

(May 13, 2020) commsupdate.com

Slovenia

The telecom regulator has confirmed that it will open a consultation on the country's delayed auction of new spectrum frequencies. The Agency for Communications Networks & Services originally planned to hold bidding for frequencies in the 700MHz, 1400/1500MHz, 2100MHz, 2300MHz, 3600MHz and 26GHz bands before the end of June this year. However, issues with implementing an updated Radio Frequency Spectrum

Management Strategy forced the regulator to revise this plan, and it is now targeting an auction before the end of the year. The consultation meanwhile will open by July or August, with the regulator also set to publish documents covering the use and sale of 700MHz spectrum for M2M services. A separate consultation covering Slovenia's spectrum management strategy for 2021-2023 is also planned. (May 27, 2020) developingtelecoms.com

South Korea

South Korea's three mobile network operators (MNOs) – SK Telecom, KT Corp and LG Uplus – are reportedly calling on the government to revise the methodology for calculating the cost of extending their respective 2G/3G/4G concessions. The three cellcos are set to clash with the authorities over the costs of renewing concessions that are set to expire in June 2021, with a renegotiation for an extension of these licenses expected to get underway next month. The report claims that a conflict has arisen over the government's price assessment procedures, which sets the cost of spectrum license renewals in consideration of operator's expected total sales. However, the trio of

cellular providers are understood to be pressing for a more concrete calculation standard, arguing that it is difficult for them to estimate total sales figures for a license period that can run for between five and ten years. Regarding this matter, KT CEO Ku Hyeon-mo was cited as saying to ICT Minister Choi Ki-young at a meeting last month: 'We are investing heavily in the 5G network to revitalize the economy from COVID-19, but if the frequency band reassignment cost is excessive it would become a heavier burden … Please revise price-setting procedures so it would become more reasonable.'

(May 11, 2020) The Korea Times

Spain

The competition authority told operators to remove all limits on consumers switching providers within five days of the end of a state of emergency in the country, having suspended rules as part of lockdown measures. The National Commission of Markets and Competition said once an end to emergency measures related to COVID-19 (coronavirus) had been declared, operators must increase capacity for number portability by at least 15 per cent per day until they reached levels available before the crisis. Spain's state of emergency is scheduled to expire on 10 May, but has already been extended twice from its original period and so this date is subject to change. As part of restrictions imposed on 17 March operators suspended all new number portability requests for both fixed and mobile services. This allowed reallocation of resources to maintaining network operation as demand for connectivity increased. For fixed lines, suspension of switching also removed a need to send engineers to physically change providers at people's homes. The complete ban on porting to new service providers was eased in April, replaced by specific limits placed on the types of transfers allowed and number of switches operators could perform per day. (May 1, 2020) mobileworldlive.com

United Kingdom

Ofcom are proposing to enable greater access to Extremely High Frequency (EHF) spectrum in the 100-200 GHz frequency range, given the potential to support a range of new wireless services in the future. Other countries are also looking to use these spectrum bands, including the recent decision of the Federal Communications Commission to make them available in the USA. By increasing access to this spectrum, UK innovators – and, in future, consumers – could benefit from international research collaboration, as well as economies of scale as new internationally compatible devices are likely to emerge. Ofcom believe these proposals would help position the UK at the forefront of developing new services to use this spectrum and in doing so help deliver benefits to people and businesses. In light of responses to the consultation on supporting innovation in the 100-200 GHz range, published on 17 January 2020 and updated on 7 February, Ofcom have published a further consultation on additional details about the technical analysis underlying our proposals and are inviting any comments that stakeholders might have. The main content of this consultation is as follows:

- Section 2 provides an updated version of our Coexistence analysis with Earth Exploration-Satellite Services (passive) (Annex 6 to the January 2020 consultation), containing further clarifying information about the assumptions underlying our technical analysis. All material in Section 2 which is additional to that which was published in our January 2020 consultation (as Annex 6) is presented in grey boxes.
- Section 3 sets out further details of the coexistence analysis which informed our January proposals.

For the avoidance of doubt, this information does not modify the proposals that Ofcom made in the January 2020 consultation nor our underlying analysis. Ofcom welcome comments on the further information we are releasing by 17 June 2020. (May 20, 2020) techuk.org

UK communications regulator, Ofcom, has published its Plan of Work 2020/21, which contains a number of amendments to the original draft, published in January, due to the COVID-19 pandemic. The Plan of Work is designed to set out the watchdog's priorities and work program for the new financial year. In a statement, the company said: 'Since consulting on our draft plan in January, the coronavirus pandemic has brought significant challenges to the sectors we regulate. Much of the nation is working, learning and keeping in touch with family using vital communications services from home. So reliable phone and broadband, post and parcel deliveries and high-quality TV and radio programmes have never been more important.' The plan has been adapted to take account of the 'exceptional circumstances' that have unfolded since the original consultation. Ofcom's work, it says, will be guided by the following strategic themes this year (this has been modified to include only those points pertinent to the Fiber Systems audience): better broadband and mobile – wherever you are; fairness for customers; supporting UK broadcasting; ensuring online communications work for people and businesses; enabling strong, secure networks. The organization said that its focus will be on delivering the work planned in-full over the course of the year. But it will monitor the COVID-19 situation closely and keep plans flexible. In addition, an updated plan will be published in September, alongside quarterly updates on its progress. Amongst the work to be carried out this year, Ofcom will focus on supporting continued investment and competition in gigabit-capable fixed and wireless services including fiber and 5G to meet continually growing demand. The organization said that it is actively supporting investment in fiber networks, and will conclude its Wholesale Telecoms Fixed Access market review by April next year. From a wireless perspective, the regulator pledged to help new wireless services launch, for people and industry, including 5G. This is to ensure that the market has the spectrum it needs to enable consumers to benefit from an improved experience and to market players to deploy innovative services and deliver economic benefits for the UK. In addition to these areas, Ofcom

promised it will support the delivery of universal, decent broadband services, setting out funding rules in Q1 and further assessing the reach of services in Q3. It will work with the government to bring fiber to the

hardest to reach parts of the country. It also pledged to work with industry to support a managed retirement of services that rely on older copper networks.

(May 4, 2020) fibre-systems.com

United States

The FCC is voting June 9 on final auction procedures for handing out billions in rural broadband funding ASAP, with FCC Chair Ajit Pai signaling that is one reason that the FCC needs to push money out before it completes a separate proceeding for better identifying where broadband is and isn't. Pai said he has circulated a draft for those final procedures to his colleagues. In August 2019, the FCC voted to propose handing out over $20 billion in Universal Service Fund (USF) subsidies for rural broadband over the next decade, money that could go to cable broadband providers as well as telecoms. The first phase of the program will hand out $16 billion for census tracks where there is no service. In the second, $4.4 billion, plus whatever money is left over from phase one, will be available for building out partially served census tracts. The FCC has taken some criticism for handing out the $16 billion before it collects better broadband availability data, but Pai has pointed out that while the FCC concedes it needs better data that is generally for areas that might show service where there is none not where the data shows there is no service. He also points out that, in the wake of COVID-19, getting that broadband out to unserved rural areas ASAP is a priority. The Rural Digital Opportunity Fund (RDOF) will be allocated via a two-phase, reverse, descending clock, auction. That means carriers will bid on the right to use the funds to build out broadband and voice to unserved high-cost areas, which are generally rural areas, low bid wins. The auction is scheduled to begin Oct. 29. "Closing the digital divide is my top priority as Chairman, and this auction is our boldest step yet to ensure that broadband is available to all Americans," said Pai in announcing the item's circulation. "We've designed this auction to ensure robust participation, with incentives for bidders to build high-performance networks so we get fast broadband to as many as six million American homes and business that aren't currently connected. The COVID-19 pandemic highlights the need for the Commission to continue its work to ensure that all Americans have access to high-speed broadband as

soon as possible. That's one reason why we're moving full speed ahead with the Rural Digital Opportunity Fund." (May 18, 2020) multichannel.com

The US' telecoms regulatory body, the Federal Communications Commission (FCC), has extended its Keep America Connected initiative through to the end of June, according to a statement by its chairman. A central pillar of the Keep America Connected initiative is the idea that telcos should not disconnect any customers from services due to nonpayment of bills during the Coronavirus outbreak. FCC Chairman Ajit Pai said that the move was necessary to ensure that millions of Americans retained access to connectivity during the current COVID 19 pandemic. As part of the initiative, US telcos agreed not to terminate service to any residential or small business customers because of their inability to pay their bills due to the disruptions caused by the coronavirus pandemic; to waive any late fees that any residential or small business customers incur because of their economic circumstances related to the coronavirus pandemic; and to open their Wi-Fi hotspots to any American who needs them. "Hundreds of providers have stepped up to the plate to keep Americans connected to communications services in this time of need," said Chairman Pai. "This includes the largest and some of the smallest providers across the country. I salute them for making broadband available to Americans who increasingly rely on it for work, school, healthcare, and communicating with loved ones. And given our nation's current situation, I'm urging these companies to extend these important offerings—uninterrupted service, waiving of late fees, and continued availability of Wi-Fi hotspots—until June 30. Companies representing the vast majority of broadband and telephone subscriptions have already agreed to this extension. I thank them for stepping up to the plate once again during this national emergency, and I encourage others to do so as well," said Chairman Pai.

(May 3, 2020) commsmea.com

Vietnam

Fitch Solutions predicted operators in Vietnam would quickly move to 5G, because the government had prioritized the technology and the nation sports mature handset manufacturing capabilities which offers advantages around device costs. In a report, the company stated commercial services could be

introduced as early as the middle of this year, after trials which commenced in May 2019. It expects the government to boost backing for the technology by creating test beds or through enterprise grants. Fitch Solutions noted potential delays to launches due to COVID-19 (coronavirus), as operators reduce 5G

investments to focus on increasing capacity of their 4G networks, but added the government could pressure the state-owned companies to accelerate next-generation deployments. To cope with rising usage during a lockdown, Viettel, Vinaphone and Mobifone introduced larger mobile data allocations. While the government hasn't assigned 5G spectrum or licenses, Fitch Solutions noted it could convert the trial licenses. Viettel, which received its trial license in January 2019, demonstrated the first 5G connection in Vietnam in May 2019. In March, Mobifone said it completed tests on a pilot 5G network in four cities and was prepared to launch commercial service. Market leader Viettel, which

claims be developing its own 5G gear, is partnering with Ericsson and Nokia, Mobifone is working with Samsung and Vinaphone is using Nokia gear. Conglomerate Vingroup signed a deal with Fujitsu and Qualcomm in June 2019 to manufacture 5G smartphones in the country. The group started making 4G handsets in December 2018, after acquiring a majority stake in Spain-based device maker BQ. Fitch Solutions believes the impact of 5G deployments will be greatest in the enterprise segment, particularly in the manufacturing sector, with government initiatives supporting industry uptake. (May 15, 2020) mobileworldlive.com

Zambia

Dark Fiber Africa (DFA) has become the first company in ten years to be awarded a new telecoms operating concession in Zimbabwe. The firm has been granted an Internet Access Provider Class B license by the Postal and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ). The firm is looking to deploy a nationwide fiber backbone network which will be used to provide capacity to third-party access service

providers. DFA Group CEO Thinus Mulder commented: 'From the beginning, we have favored a measured approach in our expansion to nations outside of South Africa. We believe in the potential of Zimbabwe's telecommunications industry, and therefore, we have identified it as a good place to invest in.'

(May 6, 2020) ITWebAfrica

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