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SAMENA TRENDS

FOR SAMENA TELECOMMUNICATIONS COUNCIL'S MEMBERS

BUILDING DIGITAL ECONOMIES

Featured

THIS MONTH

COLLABORATED ACTION AMIDST HEALTH CRISIS SITUATIONS IN THE ERA OF 5G

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Collaborated Action amidst Health Crisis Situations in the Era of 5G

SAMENA Council's decade-long practice of annually congregating leaders and the change-makers of the Industry was met with an unprecedented and debilitating challenge this year in the form COVID-19 contagion.

This, however, allowed the Council to focus on the then-defined agenda of the Leaders' Summit from a different angle, in order to stay connected with both regional decision-makers and global ICT movers and shakers, and to draw attention to opportunities in advancing the cause of fostering beneficial use of ICTs, particularly those powered by 5G.

The current health situation may just be the right to re-think collaboration and develop a new decision-making culture, centered on the imperative to accelerate 5G implementation. In the current crisis, ICT infrastructure has emerged among the most important reliability pillars for the society, with 5G technologies allowing for various applications to be deployed swiftly, using high bandwidths, supporting massive connections, and providing low-latency in data transmission for real-time services. To this effect, 5G requires stakeholder engagement, urgency, decision-making momentum, overcoming regulatory, policy, and investment sustainability hurdles and, release of resources to support 5G.

This edition of TRENDS gives a glimpse of how 5G is now in action within the healthcare sector, feeding SAMENA Council and Members' concept of "5G+X"; and how there is an ever-rising need to leverage broadband technologies to connect the unconnected. The Internet provides access to employment opportunities, education, healthcare, agriculture, financial services, entertainment — and, in the current health crisis, access to remote health monitoring.

The COVID-19 crisis has also prompted the UN Broadband Commission to adopt a new action plan. With the new Coronavirus continuing to ravage many nations around the globe and beginning to make in-roads in countries less well-equipped to handle a major health emergency, immediate action is the need of the hour, to ensure no one is left behind in humanity's collective response to the crisis, and to benefit from ICTs. Commissioners and their organizations are urgently collaborating to compile and disseminate a repository of tangible actions 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 and ease the immediate adverse impacts for economies and societies.

During the current challenging times, the Telecom Industry's current response to COVID-19 — by Telecom Operators, Digital Space Players, Tech Providers, and Policy Makers and Regulators alike — have been satisfactory, with steps taken steps in their common fight against the new pandemic, which include increasing network bandwidths, scaling customer relations resources by offering free upgrades, encouraging end-users to utilize internet bandwidth intelligently, and temporarily making additional spectrum resources available where most needed.

Unfortunately, however, as we deal with COVID-19, a major issue has also emerged in the shape of child online safety and exploitation risks. There have been numerous recent reports of the increased risk to children when they spend more unsupervised time on the internet as a result of the Corona crises, closed schools and millions of people social distancing or in quarantine.

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On March 23, the FBI warned that school closings due to COVID-19 present an increased risk of child exploitation. Similar warnings have come from many NGOs such as the Internet Watch Foundation (IWF) in the UK, the National Center for Missing and Exploited Children (NCMEC) in the US and UNICEF.

When life gets back to normal in the coming months, SAMENA Council will re-initiate its planning for the Leaders' Summit 2020, tentatively scheduled to be held later in June this year. Because what we now need is a 5G cultural shift, with numerous use-cases of 5G awaiting to be unearthed; in light of the current use of 5G and the proven benefits observed from its in some leading markets, it is critical that 5G be looked at with fresh perspectives and with an eye on its beneficial use in the future.

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Broadband, COVID-19 and Connecting the Unconnected

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> *The COVID-19 pandemic has shown both the importance of broadband connectivity and the deficiencies of current connectivity. The existing infrastructure has not been resilient enough to handle large quantities of data transfer due to high internet dependency associated with people's stay at home (private usage, remote work and e-learning).*

The world's population stands at 7.58 billion. Surprisingly, despite the increasing reach and scope of today's telecommunications industry, 49% of the global population remains unconnected. This translates into roughly 3.8 billion of the world's inhabitants without internet access.

COVID-19, Importance & Impact on Broadband Connectivity
The COVID-19 pandemic has shown both the importance of broadband connectivity and the deficiencies of current connectivity. The existing infrastructure has not been resilient enough to handle large quantities of data transfer due to high internet dependency associated with people's stay at home (private usage, remote work and e-learning).

With an increasing amount of global lockdowns, people are forced to remain indoors. As a result, this has increased the demand for bandwidth usage while people remotely work from home and spend their free time accessing the internet. According to OOKLA SpeedTest, the global test volume started to rapidly increase early March for both fixed and mobile platforms. Despite the 20% yoy increase in mobile platform volume, the fixed platform volumes growth has been significant with a global 60% yoy increase. Furthermore, mounting pressure on internet infrastructure usage is experienced worldwide. Global streaming giants such as Netflix, YouTube, Amazon and Apple TV have reduced their streaming quality in major parts of the world to prevent traffic overload in the face of the coronavirus pandemic. According to KASPR DataHaus research, internet latency patterns have been experiencing major difficulties as a result of travel lockdowns, remote work and business seizure.

Historic Development of Broadband

The epic development of the internet has created the most powerful and transforming platform on Earth. There has never been a technology that has reached mankind so quickly. Today's internet is the most important catalyst for economic and social development for generations to come. The ITU's State of Broadband 2019 report shows that global growth in household internet connectivity has declined and only risen by 1.7% from 53.1% in 2018 to 54.8% in 2019.

The internet is the universal platform that underpins all our lives: from access to employment opportunities, education, healthcare, agriculture, financial services, to entertainment - our communication is made possible due to enhanced connectivity and internet services. We can truthfully state that modern high capacity broadband technology is the core system of the digital economy. We ask ourselves the question, how has broadband reached 51% of the globe's population in such an unprecedented short amount of time? Like many new technological innovations, broadband's launch was extremely expensive and initial usage was low.

A significant and growing number of internet usage is attributed to mobile technology with many users now accessing the Internet via mobile devices. Mobile access allowed Google to utilize mobile tracking data to create Community Mobile Reports to assist public health officials and individuals with understanding the impact of restrictive measures in certain regions introduced along with the rise of the COVID-19 pandemic.

Commercializing internet, among many things, involved the development of competitive private network services and additionally involved the implementation of commercial products within internet technology.

Role of Vendors in Broadband Access

Historically, commercial efforts involved vendors providing basic networking products and service providers offering connectivity and standard internet services. Within less than two decades time, commercial internet has gone from innovative to indispensible, from fun to fundamental. The internet has changed significantly since it came into existence two decades ago. It was conceived in the era of time sharing, survived the era of personal computers, client server and peer to peer computing and finally the network computer.

Most importantly, the Internet started as the platform of a small group of dedicated researchers and has become the commercial success worth billions of dollars invested annually by telecom companies and internet vendors. According to a report by Mason Analysis, online service providers are becoming fastly the major investors in digital infrastructure, exceeding over 75 billion USD spent each year on data centers, submarine cables and other facilities between 2014-2017.

Role of Mobile in Broadband Access

The importance of mobile communication in terms of economic and social importance is unquestionable. Mobile networks have played a very major role in the rapidly evolving digital ecosystem enabling progress for society in many different dimensions.

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the COVID-19 pandemic.

According to GSMA's Mobile Internet Connectivity 2019 report, there are presently over 3.5 billion mobile internet subscribers globally.

Importance of Broadband Access

Digital technology and internet access is an essential part of everyone's life. It influences commerce, education, health and public safety, cultural awareness, government operations and eliminates everyday inconveniences, making our life efficient.

The global COVID-19 pandemic has made us aware and helped us understand how crucial broadband technology actually is.

The global COVID-19 pandemic has made us aware and helped us understand how crucial broadband technology actually is. Access to the internet has become an essential tool that protects our health and secures a wide range of human rights, including social and economic, while everyday life functioning has been restricted.

The internet empowers us, gives us access, shares vital information about the pandemic and the actions taken to challenge it. It provides answers on how our governments take action during the pandemic. With roughly 1.5 billion people, accounting for 20% of the world's population, practicing social distancing or living under quarantine conditions, broadband technology assists us with our work, our shopping, study and communication.

Barriers to Broadband Access

The Digital Divide, or digital split, is a social event which addresses information exchange and differences between those who have access to the Internet (particularly broadband access) and those without it.

The current pandemic has shown how it is imperative for countries, telecoms, mobile providers and ISPs to put various measures in place to ensure society's functional connectivity and access to the Internet

There are several factors that make it difficult for people to obtain access to the Internet. These include:
- Poverty
- High device, data, and telecommunications charges
- Infrastructure barriers
- Digital literacy challenges
- Policy and operational barriers

The above challenges represent a significant barrier to the widely unconnected population of the world.

The Future of Broadband Access
The current pandemic has shown how it is imperative for countries, telecoms, mobile providers and ISPs to put various measures in place to ensure society's functional connectivity and access to the Internet. According to IDATE's 2023 forecasts, the number of broadband subscribers will amount to 1.52 billion users and fixed broadband internet traffic will reach 20%. Still a number which is not enough.

The State of Broadband 2019 report recommends an acceleration of broadband adoption and meaningful universal connectivity. There is an urgency to go beyond "business as usual" policies and select an approach focused on more collaborative models based on resource sharing and a holistic approach.

Mobile technology is the key enabler of many fundamental services, that many of us take for granted, that can be transformational for others. Nevertheless, mobile operators have limited reach to the "unconnected". Connectivity is the global challenge requiring a global solution provided by the broad digital ecosystem, governments and NGOs agreeing to collaborate on the following four key areas:
- network coverage,
- affordability,
- digital skills, and
- locally relevant content.

Organizations such as Facebook, Google and SpaceX are aiming to make internet access universally ubiquitous.

Facebook's Express Wi-Fi is aimed at providing affordable internet access to rural areas of developing markets through partnerships with mobile operators and internet service providers (ISPs), while Google Station works with partners to provide free Wi-Fi connections at railroads, universities, and other public areas. SpaceX is also developing a low latency, broadband internet system to meet the needs of consumers across the globe. Enabled by a constellation of low Earth-orbit satellites, Starlink will provide fast, reliable internet to populations with little or no connectivity, including those in rural communities and places where existing services are too expensive or unreliable.

Despite the superiority of the broadband Internet model, the role of mobile access will be significant in safeguarding the Internet connections for users around the globe. In 2023, the penetration of mobile services will reach 112%. It means that there will be over 8.9 billion users (SIM cards). There is a promising future before true mobile broadband technology. In the near future, the role of 5G and current undertaken efforts for fast expansion of this technology will be crucial. 5G is not only vital for Industry 4.0, further development of IoT and autonomous vehicles but also for the average person. IDATE analytics estimates that 5G connections will amount to 20% of all mobile connections in 2025 and the technology will generate nearly 30% of the world telecom's revenues.

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Dealing With the Aftermath of COVID-19 Through Collaborated Acceleration of 5G Implementation Across the World

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Given the role ICTs play in our lives, SAMENA Council sees several reasons for accelerating urgency of overcoming bottlenecks in both broadband connectivity as well as in 5G implementation, in order to ensure that quick technology responses to crisis situations can be provided at present and in the future.

Ever since the New Year dawned upon us, a standstill prevails across our globalized human society. A few months ago, it'd have been unthinkable to concede that a formidable new foe in Coronavirus SARS-CoV-2 would have the ability to put our entire worldly activities to a halt. Although COVID-19 vaccine trials have now started, and while there is yet no slowing down of the adverse impact catalyzed by COVID-19, we can be certain that the innate human potential, which has taken us from surprise-to-solution in just a few months, our humanity, and our collaborative efforts remain our best anchors in tides.

Given the role ICTs play in our lives, SAMENA Council sees several reasons for accelerating urgency of overcoming bottlenecks in both broadband connectivity as well as in 5G implementation, in order to ensure that quick technology responses to crisis situations

can be provided at present and in the future. The enormity of the situation gone viral now demands multi-stakeholder collaboration and re-prioritization in both letter and spirit.

COVID-19's Socio-economic Impact
COVID-19 has caused unprecedented ripple effects across the health sector, manufacturing industries, retail and other travel services, trade and transportation, leisure, work and play. As a result, reductions in long-term growths across markets are being predicted. Supply chains have been disturbed. Stocks have tumbled. Investment plans for physical infrastructure development, including ICT, have come under review. Social and business activities are down. Important international meetings have been cancelled. What is most critical, however, is that livelihoods have come under immense stress. Equally

COVID-19 has drastically slowed down our progress on the Sustainable Development Goals (SDGs), which are significantly dependent on the utilization of ICTs. This then places a great responsibility on the shoulders of the Telecom Industry — Telecom Operators, Internet Companies, Technology Providers, niche-segment Digital Players, Policy-makers, and ICT Regulatory Bodies. We need to play our role in harnessing the power of ICTs to help mitigate the huge social costs that the world is now incurring due to a new microscopic challenge.

so, the entire world's education system and technology capability to assist in e-learning have come under pressure to perform, especially due to fear that some students may temporarily and some may permanently loose opportunity to complete education, causing direct family-level impact on future livelihoods and national-level impact on the economy.

On the lighter and brighter side, nonetheless, COVID-19 has optimized our online experience in both business and social interactions, while bringing families together; detaching us from the many complexities of modern-day life and re-instilling in our next generation a time-tested value system, which would be essential to thriving in the hyper-connected society of tomorrow. We are also re-learning hygiene; something that we now realize would be necessary for creating a healthy, sustainable, smart-city environment.

As a major pillar of national development and a carrier of digital innovation across industries and economic sectors, our Industry needs to deliver consolidated, collaborated responses to both current and future global crisis situations.

A Befitting Collective Response Needed from the Telecom & ICT Industry
The Telecom/ICT is the world's digital nervous system, fulfilling not only its connectivity and information needs, but revenue-generation as well. As a major pillar of national development and a carrier of digital innovation across industries and economic sectors, our Industry needs to deliver consolidated, collaborated responses to both current and future global crisis situations. Technological prowess, proactive readiness in making timely information available, mobile network capabilities and data analytics, accurate situational analysis, willingness to meaningfully collaborate with concerned cross-sector entities in urgency, and fostering emotional intelligence in our informationally-bombarded society are some necessary components of the responses, which the Industry and its leaders do need to demonstrate.

What has followed over the past several weeks within our Industry, including the cancellation of MWC in Barcelona, the postponement of the SAMENA Council Leaders' Summit 2020 in Dubai, imposed quarantine of employees or forced leaves, to say the least, serve both as a food for thought as well as an impetus for strongly and wisely reacting to the prevailing and future challenges.

Lest we forget, COVID-19 has drastically slowed down our progress on the

Sustainable Development Goals (SDGs), which are significantly dependent on the utilization of ICTs. This then places a great responsibility on the shoulders of the Telecom Industry — Telecom Operators, Internet Companies, Technology Providers, niche-segment Digital Players, Policy-makers, and ICT Regulatory Bodies. We need to play our role in harnessing the power of ICTs to help mitigate the huge social costs that the world is now incurring due to a new microscopic challenge. Given our globalization-driven world and highly interconnected and much interdependent lifestyles, pandemics of the modern era are much more powerful, speedier, and hold much larger damage footprints, both physically and psychologically.

The UN Broadband Commission, through its Working Group on Epidemic Preparedness's report two years ago, described how epidemics monitoring system based on fixed and mobile networks, epidemics data platform, and

remote training programs aimed at enhancing public awareness toward epidemics, should be used to augment approaches for managing widespread occurrences of infectious diseases. Considering the nature of COVID-19, which has already reached more than 166 countries, proving that it will not be tackled by regionally fragmented responses, there is a strong need for us to build a set of united technology-policy-collaboration fronts at a global level to fight infectious diseases and challenges of similar scale.

In the Broadband Commission's Work-ing Group's report, one of the Industry's most promising discussion areas, "Big Data analy-sis", was also empha-sized on as a potential means to help prevent the spread of infec-tious disease with ICT.

In the Broadband Commission's Working Group's report, one of the Industry's most promising discussion areas, "Big Data analysis", was also emphasized on as a potential means to help prevent the spread of infectious disease with ICT. There are multiple ways, including the use of traditional Call

Data Records or latest IoT generated data, through which new trends in citizen mobility and incidents of infection outbreaks can be identified in solutions that are expanding to include not only medical data from hospitals but also user-generated roaming and Social Media data as well internet search engine queries. Needless to say, any data aggregation and utilization remains in need of fulfilling cybersecurity and data protection requirements; an altogether different subject area of great breadth.

Taking the previous work done by the Broadband Commission, the ITU, and leading private sector associa-tions and technology companies on epidemic surveillance and control, the Industry's collective imagination — as well as availability of *Artificial Intelligence, Remote Sensing, IoT, Robotics, Image Processing, Aug-ment Reality, Virtual Reality, Cloud Computing and Communication*, and of course, extremely high and efficient connectivity characteristics inherent to 5G — may help explicate how we could have contained the adverse impact of COVID-19 earlier on, while maintaining the globaliza-tion spirit and ensuring continuity in communication; preventing a sense of dismay; and thwarting economic meltdown. This is so, because 5G's benefits extend far beyond end-user digital experience and into other ex-isting industries as well as emerging industry segments.

5G USE-CASE OF RELEVANCE: 5G Solutions and Capabilities Used to Contain COVID-19 Spread in China
Since the COVID-19 outbreak, it has put tremendous pressure on public healthcare systems and epidemic response mechanisms across the world. In China, telecommunications operators collaborated with technology providers to rapidly set up a specific 5G network dedicated to equipping hospitals to contain, test, and treat a high number of COVID-19 infections. To a considerable extent, China's ability to overcome COVID-19 spread has been powered by technological capability, such as that provided through 5G in collaboration with telecom operators and the national healthcare system. The ready availability of some systems that were immediately put in place was made possible through healthcare use-cases envisioned as a part of 5G solutions portfolio. Banking on inherent key advantages over 4G in terms of speed, latency, number of connection points and range, 5G, in tandem with innovative applications, was central to addressing the COVID-19 situation.

5G-equipped solutions allowed for accurate monitoring in public areas; thermal imaging for contagion monitoring; communication support with HD remote diagnosis through SMART ambulances during patient transfer and care; keeping hospitals connected to collaborate in real-time with large data bandwidths and stable transmission; remote 5G platforms for consultation effectiveness including with remote imaging and robotics.

Technology solutions made it easier to collect and transmit large information quickly to hospitals, so they could develop treatment and quarantine plans. To achieve this, the network needed to provide fast, stable data transmission. Similarly, remote medical consultation, which required real-time video conferencing and image transmission, via 5G-based teleconferencing was achieved, supporting 4k ultra HD conferencing and data transmission, which required network speeds of at least 50 Mbps to 100 Mbps.

After China's COVID-19 struggle, 5G network and 4K SMART ambulances have transformed the medical emergency response model, digitizing operation, mobilizing treatment to data collection and real-time communication, while improving treatment efficiency and effectiveness.

Picture Archiving and Communication Systems (PACS), which is at the core of the 5G SMART healthcare ecosystem, has also emerged as an important technology innovation area. In the battle against COVID-19 in China, remote imaging proved to be effective in a pilot program at Wuhan Leishenshan (Thunder God Mountain) Hospital, another temporary facility built exclusively for virus patients, via 5G platforms, achieving real time feedback, diagnosis, and reducing the burden of front-line workers.

Moreover, real-time collaboration reached another level of refinement. As case studies and medical data needed to be consolidated and shared promptly, providing valuable reference for other hospitals and scientific research institutions, 5G networks made this happen in a stable and efficient manner. While 4G can meet basic data transmission needs, with rapid increases in data volume and mounting demand for remote, HD-video based treatment, there is a substantial need for upgraded networks with faster connections and more bandwidth.

Isolation vs Connectivity: Fifth Generation Technology Response to Next-generation Challenges

For the Telecom Industry, given the central role that Telecom Operators have in spearheading this age of *meaningful connectivity* across geographical regions, our response to the COVID-19 pandemic should be equally pan-regional. Just as we established early February 2020 during SAMENA Council's Convergence to Bahrain 2020 conference that 5G Operators can no longer just sell connectivity but must proactively explore with vertical partners how 5G-enabled systems can be effectively leveraged beyond simple connectivity, it now merits emphasizing that 5G may have found its first, full-fledged real-life global use-case and it just may be the best technology response to SARS-CoV-2.

> *5G-enabled systems can be effectively leveraged beyond simple connectivity, it now merits emphasizing that 5G may have found its first, full-fledged real-life global use-case and it just may be the best technology response to SARS-CoV-2.*

Whereas COVID-19 has isolated us all, ICT infrastructure has emerged among the most important reliability pillars for the society, with 5G technologies allowing for various applications to be deployed swiftly,

using high bandwidths, supporting massive connections, and providing low-latency in data transmission for real-time services. Similar to how the spread of COVID-19 demands global cooperation among governments, international organizations and the private sector decision-makers, 5G too requires the same level of stakeholder engagement, urgency, decision-making momentum, overcoming regulatory, policy, and investment sustainability hurdles and, release of 5G development funds on war footings, as recently done by the World Bank Group and governments of several UN Member States to fight the new Coronovirus spread.

The country initially and most affected by COVID-19 was the first to use 5G to bring a sense of hope in a highly distressful situation. China, with its vast area, world's largest and highly mobile population,

complex socio-economic and demand and supply structure, timely put effective communication, data exchange, and all available 5G-based tools and technologies to use to deal with the health crisis. This is primarily so, because China was among the first nations to complete required policy, technology deployment and business use-case frameworks to adopt 5G last year. China has pushed for broadband (Mobile and Fiber) adoption for years, and had set clear strategic goals for 5G to boost next-generation digital infrastructure by 2025.

> *5G could have served as a much speedier mechanism for connecting medical scientists, virologists, mol-ecular geneticists, medical providers, pathologists, and remote specialists to find cure in even more record time than it has taken to develop and trial the current COVID-19 vaccination.*

At the pace in which patients are being admitted to hospitals for COVID-19 all around the world, with 5G we can realize innovative medical use-cases, such as Remote Collaboration, Remote Diagnosis, Remote Protection, and new services for the public during the pandemic.

Had we realized mass-scale 5G adoption, education would not have suffered to the extent it has. 5G networks, offering bandwidth, speed, and low-latency inherent to their design, combined with advanced HD video solutions could have allowed for the delivery of remote instruction, including immersive learning experiences through virtual reality (VR). The effectiveness of engaging students for problem-solving and collaborating to seek new solutions to problems is an area of instruction that is central to proper education, and 5G is able to make this happen.

> *The plethora of information created and propagated on Covid-19 speaks volumes about the necessity of truthful and timely information, trust-building, cybersecurity, and how relevant institutions and the Industry need to address crisis situations of the future.*

If we had 5G in place well in advance, many of the business activities, including high-priority multi-stakeholder meetings would still have taken place as 5G is the farthest we have come to realize remote collaboration and remote decision-making through communication technologies. While current audio and video conferencing and sharing technologies do allow remote professionals to participate, the essence of a meeting room lies in being able to communicate at a personal real-life level, which only 5G is able to achieve.

The plethora of information created and propagated on COVID-19 speaks volumes about the necessity of truthful and timely information, trust-building, cybersecurity, and how relevant institutions and the Industry need to address crisis situations of the future. Had 5G networks been operating, a culture of innovation would already have been catalyzed, with Telecom Operators having the ability to almost instantly launch their own specific COVID-19 mobile apps, providing accurate, real-time information in collaboration with hospitals and local community management, including on neighborhood traffic flows, nearest hospitals, smart ambulances nearby, and pertinent information which would be helpful for end-users.

If 5G was fully in place, autonomous vehicles or taxis may have made their way into the mainstream. This certainly would have helped reduce the number of taxi drivers who have been diagnosed with COVID-19 in many urban areas. 5G could have served as a much speedier mechanism for connecting medical scientists, virologists, molecular geneticists, medical providers, pathologists, and remote specialists to find cure in even more record time than it has taken to develop and trial the current COVID-19 vaccination. Granted the current search for cure is much speedier than it has ever been and while, historically, it has taken years to develop vaccines, computational capability we now have and the data transmission speeds in existence today offer a great promise of finding the solution, soon.

With international travel and tourism having suffered significantly, and airlines having lost some anticipated windows of financial opportunities for the current year, had we had 5G fully in place today, reality-based technologies and immersive experiences would have offered the next-best substitute to cancelled trips and sight-seeing, or more. Offering a fusion of net and computational power, 5G enables true immersive experiences, which require high data flows, very low delay, high reliability, and low costs.

CASE IN POINT: Implications for Telecom Operators

As a result of the COVID-19 outbreak, the traffic model of Telecom Operators has changed greatly, and applications such as online education and remote office activities have promoted the rapid growth of data traffic. Telecom Operators and vendors, among other partners, collaborated to provide 5G network coverage to 100+ key hospitals across China, including Leishen Shan and Huoshen Shan. Based on 5G all-weather "cloud supervisors", "5G + remote consultation" that flexibly mobilizes medical resources, and "5G + thermal imaging" in crowded areas, effective epidemic prevention and control systems were put in place.

In China, the backbone network grew by an average of 30%, the metro grew by an average of 33%, the metropolitan convergence BRAS grew by an average of 37%, and the IDC increased by an average of 25%. There are some opportunities for capacity expansion.

Mainly online education is now being carried out in the province. Remote offices are out of the metropolitan area network, and traffic growth is mainly in the metropolitan area. Most of newly developed services pass through CDN, and traffic is diverted to OTT CDN network. In response to the above changes, Operators needed to make targeted network optimizations to ensure stable and rapid transmission of information and user experience, while comply with privacy requirements and Cybersecurity.

This pandemic has compelled the promotion of digitization and collaborative engagement of related industries. For example, experts from the Remote Ultrasound Medical Center of the People's Hospital of Zhejiang Province of China, using China Telecom's 5G technology, remotely controlled the ultrasound robot in the Huangfang Stadium Fangcai Hospital through a handle, and performed ultrasound examinations of patients 700 kilometers away.
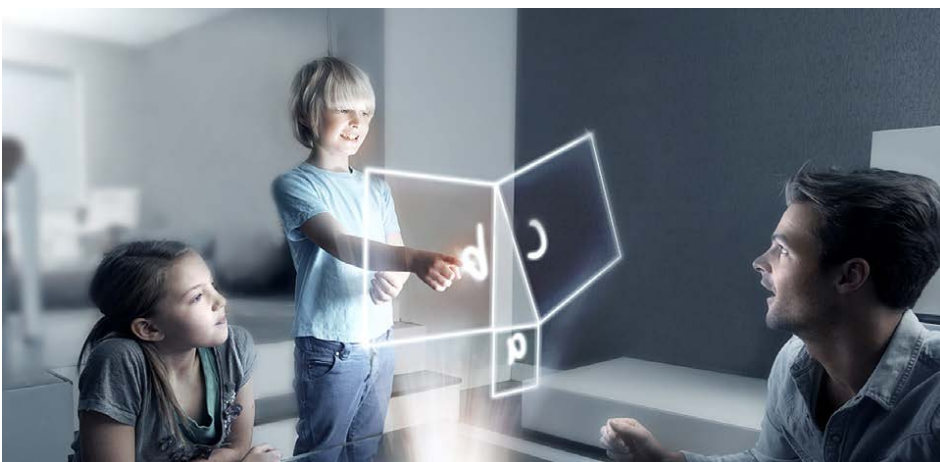
Due to COVID-19, some challenges in the continuity of the leadership have also been observed. Thus some countries have announced postponement of elections. Had we had 5G capabilities fully in place, remote balloting through a fully immersive experience, with integrity and confidentiality of the voting process ensured, could have been conducted, reducing uncertainty as well as time and administrative costs in electioneering.

Had we had 5G in place, our management models for the smart-city environment would have been well on their way to being tested for actual implementation by now. That is, data aggregation, processing, and transmission capability being demonstrated by 5G in the case of healthcare sector can very well be emulated in national or regional disaster management approaches, autonomous logistics and transportation of resources, urban development and management, and environmental protection. All of these areas are important to realizing the vision of sustainable smart cities, and are equally important globally, given their close correlation with SDGs.

Developing the 5G Culture and Moving Forward
As a source of inspiration and encouragement, at least one real field test on the 5G's promise of large bandwidths, high speeds, and low latency in making COVID-19 diagnosis and patient care efficient and safer for the medical practitioners as well as the surroundings, has been conducted — leveraging allied technologies, such as drones for carrying medical supplies and supporting policing efforts, robots equipped with AI capability and voice prompts, temperature detection, thermal imaging, disinfectants, among other features. This clearly demonstrates that the technology tools are ready for

standardized use in similar situations elsewhere.

However, the 5G approach transcends technology. What we need is a 5G culture, with all necessary mindsets, practices, capabilities, attitudes, swiftness in reaction and intervention, and a far-reaching vision for a smart, sustainable society.

Now is the time to revisit and re-energize our multi-stakeholder engagement approaches. 5G win-win scenarios now need to focus on how we can expedite 5G development rather than if we need it. Core issue areas in 5G investments remain centered on incentivization of infrastructure investments, including on spectrum and fiber deployment, and on creating relevant partnerships among terrestrial and satellite operators and other digital space players. Moreover, policy-makers and regulators should now categorically reconsider infrastructure regulations, spectrum policies, industry fees and taxation, incentives and competition policies to help accelerate

5G investments, while keeping current market sustainability needs and demands in check.

What the current COVID-19 crisis has brought to the surface is that, although after at least six long years of deliberations and speculations we may have started our journey toward 5G, we have yet not fully mastered our mindset for it. After the new Coronavirus, it is this need for cultural change that must now become viral. Clearly, no win-win technology deployment scenarios in the future will be complete without due consideration given to health management and epidemic control, among other considerations such as implementing cybersecurity, fixing security vulnerabilities in existing and future networks, and ensuring the safety of children and young people (CYP) online. COVID-19 must inspire acceleration of 5G update, and we need to develop a **technology *plus* collaboration culture** to deal with natural disasters and similar crisis situations in the future.

Call-for-action
To support the implementation of dozens of recommendations issued earlier by leading global bodies, such as the UN Broadband Commission, it is highly pertinent 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.

About the Author
Bocar BA is CEO & Board Member of SAMENA Telecommunications Council. He participates in leading platforms and global telecommunications development institutions, including the ITU, UN Broadband Commission, and World Economic Forum (WEF) Global Future Council, among others, as a representative of Telecom Operators and private sector, at large. He advocates on the need for effective policy-making and next-generation regulation.

Contributors
This thought piece draws inspiration from insights provided by the TRA-UAE.
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COVID-19 Crisis
Broadband Commission Agenda For Action

Never before have broadband networks and services been so vital to our health and safety and to keeping our economy and societies working. Digital is truly the hidden hero of this unprecedented global crisis.

With the new coronavirus continuing to ravage many nations around the globe and now beginning to make in-roads in countries less well-equipped to handle a major health emergency, immediate action is needed to ensure no one is left behind in humanity's collective response to the crisis.

The Broadband Commission for Sustainable Development, the UN's high-level public-private partnership, is committed to putting digital cooperation into action, to keep economies and societies working, and to support the world's vulnerable populations (the elderly, refugees and internally displaced populations, persons with disabilities, children, rural dwellers, indigenous communities, and those residing in the most vulnerable countries).

A global pandemic demands a global response. The stakes have never been higher. We believe that building, reinforcing and scaling digital cooperation around three key broadband pillars will help accelerate our collective response to COVID-19 and lay the groundwork for a better and faster recovery built on a broadband internet enabled world.

Commissioners and their organizations are urgently collaborating to compile and disseminate a repository of tangible actions 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 and ease the immediate adverse impacts for economies and societies.
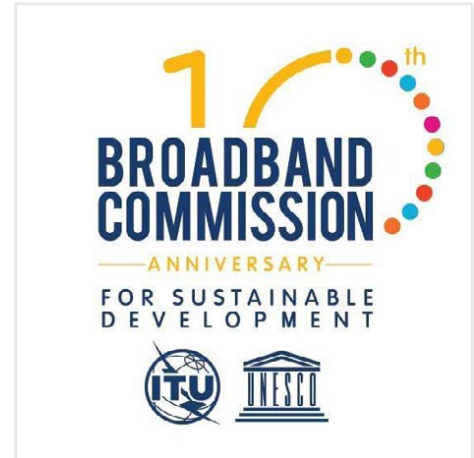
Commissioners commit to champion and implement this Agenda for Action and invite all parties – intergovernmental, regional, national, industry, civil society and technical and academic communities – to join with us to leverage the power of broadband for more effective emergency response and to promote faster and better recovery.

The 3 pillars of the Agenda for Action:

1 Resilient connectivity

Sustain and extend resilient, stable and secure infrastructure to support all populations, including emergency responders. Increase bandwidth, restore service access where this has been restricted, strengthen network resilience, manage network congestion, prioritize connections to critical government functions, vital services and strategic connectivity points (such as hospitals, pharmacies, emergency centres, transportation hubs…), and ensure continuity of public services, which may require temporary relaxation of regulations and other policy measures necessary to fast-track response.

2 Affordable Access

Increase affordability, availability and accessibility of services and devices to ensure business and service continuity, support digital connectivity to ensure access to information and to promote social cohesion during confinement, and to help with financial hardship and economic challenges, through measures like price reductions and discounts on capacity, airtime and devices. Support alternative funding models for complimentary access solutions.

3 Safe use of online services for informed and educated societies

Support safe use of online services by all, especially children and vulnerable population; respect the right to privacy; promote trust and security in the use of data; enable safe digital content sharing to support e-education, e-health, digital agriculture, e-financial services and mobile payments, and e-government platforms; empower youth, ensure and promote child safety online; promote the use of broadband to provide distance-learning programmes for all ages; empower people with quality journalism and evidence-based and scientific information about COVID-19; promote media and information literacy to detect disinformation and to advance understanding on the dangers of sharing false facts about COVID-19.

These proposed immediate actions to address the acute phase of the current pandemic and to save lives will need to be followed by mid- and longer-term strategies to ensure faster global recovery by minimizing the social and economic impact of COVID-19 and to prepare for future global challenges. Better recovery will depend on a commitment to our common responsibility to collaborate, partner and develop more inclusive and sustainable models for preventive and post-crisis development and preparedness for future crises.

Short-term agenda:
Proposed immediate actions for impact: **Commissioners' Commitments**

	Resilient and secure connectivity	Affordable access	Safe use of online services for informed and educated societies	
Industry / private sector	Ensure connectivity and network continuity, increase bandwidth capacity and network resilience and security, including for vulnerable populations in LDCs and in refugee camps Manage capacity to ensure rational use of the network Provide vital/emergency services to support general population as well as emergency responders Lease spare satellite transponder capacity at very nominal costs during emergency crisis Provide temporary royalty-free software licenses for capacity augmentation, and Intellectual Property rights for related vital service delivery	Provide in-kind support through donation of ICT services, cloud services, software, equipment and end user devices, and support working from home Identify solutions for liquidity and financial shortage to ensure service continuity Offer special tariffs for related health, education, humanitarian and emergency workers/services Offer free SMS and zero rating for access to health, educational content and government information services	Make available broadcasting capacity for education and health Make available safe and secured digital platforms and open source software for health, education, food security, financial and governmental services, including sharing open-source Digital Public Goods Promote quality education and information content and services; enhance policies against disinformation, increase transparency Provide online training and safe digital tools to parents and teachers to keep children safer online Share data on a voluntary basis and use AI to perform analytics for prevention and monitoring purposes, ensuring data anonymization Use AI to support medical institutions	**Cooperation**
Government / policy makers /regulators	Implement policy and regulatory actions to: - temporarily relieve network capacity constraints and keep networks running and operational (including decreasing taxes and fees, offering wholesale services, temporarily freeing up additional spectrum which can be immediately deployed, infrastructure sharing, using existing USF funds, promoting cross border roaming etc) - maintain internet access - support urgent requirements to expand bandwidth and connectivity, inclusive of marginalized groups and vulnerable populations, including refugees - streamline customs processes and classify network equipment as essential infrastructure to ensure supply chain continuity	Facilitate delivery of (and remove barriers to) industry commitments, and general provision of ICT services Use USF funding to support affordable access to health, education, humanitarian and emergency services and people and communities with special needs	Provide guidance to consumers and the general population in areas including child online safety, data protection and cybersecurity measures Increase proactive publishing to promote access to information, support learning institutions to conduct distance classes, take actions to foster media and information literacy	
UN /IGO / international financial institutions	Mobilize expertise, foster better coordination and international technical support	Finance national digital connectivity initiatives, and electricity generation, transmission and distribution vital for digital service provision Create pricing strategies and financing/investment documents to help finance national connectivity in schools, to be extended to health centres, emergency hubs, etc.	Promote and nurture innovative partnerships among organizations and with the private sector Support norms and provide resources to educational and media institutions	
Academia /NGOs / non profits / civil society	Provide support with expertise, research, innovation and thought leadership	Provide online educational content in local languages, training in health care and emergency services, and training for (non-IT) teleworkers	Provide digital skills training programmes, programmes to promote online safety Monitor and promote open educational Resources, enhance online capacity building around issues relating to information and disinformation	

These proposed actions will be selected by each interested party according to the development of corresponding information infrastructure in each country.

Broadband Commission responds to COVID-19
Agenda for Action

Medium term agenda

- Acceleration and implementation of digital cooperation and digital strategies and policies, including emergency health response, safer use policies, and strategies to promote greater digital inclusion, and identifying gaps for effective response and better preparedness.
- Elevation to the G20 level of resilient broadband networks as a basic right.

- Implementation of agile and flexible regulatory measures to support inclusive and competitive digital environment.
- Adoption of strategies aimed at promoting universal, affordable broadband connectivity by mobilizing public and private funding and investment, especially in Least Developed Countries, Landlocked Developing Countries and Small Island Developing States.
- Implementation of streamlined actions and partnerships to promote the expansion of, broadband connectivity, digital services and digital inclusiveness to unconnected communities and populations still lacking access.
- Emphasizing and promoting the ongoing importance of connectivity for education, access to information and online user empowerment through media and information literacy.
- Highlighting of areas where connectivity is playing a key role in the COVID-19 pandemic response and sharing of these stories to help build better and more resilient societies.
- Identifying major partners for public financing of connectivity of vital services including schools, and actions to attract institutional finance investors looking for a compelling market opportunity.

The current health emergency highlights the urgency of the Broadband Commission's core mandate and ongoing agenda, and the work of its various Working Groups. Current Working Groups are focused on a broad range of areas including identifying new 21st century financing models for broadband access and connectivity; expanding broadband connectivity in Africa; mapping, connecting and financing connectivity for all the world's schools; the use of AI to facilitate and accelerate better health care responses; and the deployment of broadband to facilitate public private partnerships to enhance epidemic preparedness.

The Telecom Industry's Current Response to COVID-19

With roughly 20 percent of the global population (1.5 billion people) now confined to homes, practicing social distancing, while the global economy faces recession and a countless number of lives remain in constant peril, the Telecom Industry has risen to the challenge to respond to the COVID-19 contagion. Over the past couple of months, it has been proven that the Information and Communication Technology (ICT/Telecom) community has a crucial part role to play in these times of emergency and in, due course, to help defeat this pandemic.

Both the Private Sector — Telecom Operators, Digital Space Players, Tech Providers — and the Public Sector — Policy Makers and Regulators — have taken a series of steps in their common fight against the new pandemic, which include increasing network bandwidths, scaling customer relations resources by offering free upgrades, encouraging end-users to utilize internet bandwidth intelligently, and temporarily making additional spectrum resources available where most needed.

"We are operating in a time that is both challenging and is rife with opportunities … a great chance for businesses and governments to enhance their smart solutions," says Bocar BA, CEO and Board Member of the South Asia, Middle East and North Africa (SAMENA) Telecommunications Council, which is a tri-regional industry advocacy body, representing a diverse community of telecommunications players, technology providers, specialist firms, and working closely with regional regulators as well as global bodies.

Operators need to "re-prioritise network resource utilisation and increase international broadband capacity", as they run 4G and 5G services to meet increasing data demands during these challenging times, BA says.

SAMENA Council has also advised regional governments to offer operators free access to extra spectrum on a provisional basis to permit MNOs to expand their networks.

"We also request to lower the cost of international bandwidth, particularly in markets where the international gateway is a monopoly… markets such as Kuwait and potentially Iraq are responding positively to grant operators lower international bandwidth costs," emphasizes BA.

We are operating in a time that is both challenging and is rife with opportunities … a great chance for businesses and governments to enhance their smart solutions

To support global operators, the International Telecommunication Union has also launched a Global Network Resiliency Platform.

"It will collect trustworthy information on actions that policymakers, regulators and other stakeholders can use to ensure that their networks and services serve the needs of their country," according to the ITU's secretary general Houlin Zhao.

"Time is of the essence … this platform will give those countries, which still have time to prepare, an opportunity to learn from what is being done elsewhere – from emergency spectrum reassignments to guidelines for consumers on responsible use".

In SAMENA Council's observations, Telecom Operators and Regulators are keenly ensuring access to digital healthcare, digital education, and other critical services, thus acting as frontline enablers in protecting the socio-economic fabric of the fledgling digital economy and the evolving global human society.

COVID-19 VS TELECOM INDUSTRY | SAMENA TRENDS

Measures Taken by Telecom Operators

- Free access to online educational platform: Mobile operators within the Middle East, Africa and Asia including Zain Group, stc Group, Orange, Telecom Egypt, Umniah, Ooredoo, Maroc Telecom, Inwi, Dialog and Mobitel have both launched and partnered with different education portals which offer free data access to ensure that students are able to study with ease without having to fear about bandwidth costs.
- Low tariffs & Free bundles: Entel (Bolivia's national state-owned service provider), Etisalat Pakistan, China Mobile Pakistan, are amongst those operators which have launched special low-priced tariffs for people to stay connected during the COVID-19 emergency. Similarly, multiple operators including Virgin UK, stc Group, Omantel and Ooredoo are offering customers with free bundle offers that include data and free calls.
- Free data & internet access: Telefonica (Spain), NBN (Australia), Batelco (Bahrain), the three mobile companies in Kuwait are offering free data to customers. Similarly, Etisalat and du provide mobile internet for families who have no home internet to enable distance learning.
- Increased capacity: Several global operators including Algar, Claro, Nextel, Oi, TIM and Vivo, from Brazil, Vodafone (UK), Tunisie Telecom, Ooredoo and Orange have boosted their network capacities and are providing customers with higher bandwidth speed to overcome network bottlenecks.
- Online Collaboration Platforms: Etisalat announced that it will provide free access for three months to businesses for using its online collaboration platform. Similarly, Dialog from Sri Lanka has launched an e-Working platform for people working from home to collaborate with ease.

Measures Taken by Telecom Regulators

- Ensuring connectivity: Regulators are taking actions to ensure that connectivity does not suffer in these testing times when data demands have risen by multiple folds, due to multiple reasons. Regulators including Subtel (Chile), PTA (Pakistan), Ofcom (UK), UKE (Poland), MinTic (Columbia), CRC (Columbia), BIPT (Belgium), TRA (Oman) and others have asked mobile operators to apply measures to ensure uninterrupted connectivity and to enable emergency services.
- Provision of additional frequencies: TRC Jordan, among others, has granted telecom companies additional frequencies to expand network capacities to ensure the provision of telecom and Internet services. Without any financials costs, some Regulators, such as TRA Oman, have allocated additional mobile spectrum to licensed network operators on a temporary basis.
- Removal of data caps: The pandemic has led to a huge surge in broadband and Ofcom (UK) has asked all providers to remove all data allowance caps on their current fixed broadband services

We can see that in mature telecom markets, Telecom Operators are working incessantly to enhance capacity to ease network related bottlenecks. However, network capacity issues may be less readily remedied in developing nations, including Afghanistan, Nigeria, Kenya and Ghana, which are still running on 2G or 3G networks.

While Operators have launched different initiatives to deal with the global pandemic, Regulators are also doing their best to facilitate their citizens, and are collaborating with the Private Sector during thee challenging times dictated by COVID-19.

Data sources: ITU, The National, Telecom Regulators, SAMENA Council Members

19 MARCH 2020

5G + Healthcare: Technology in Action

With the COVID-19 pandemic rampant across the world, there is a new meaning for digital connectivity for all of us now. Social distancing and near lockdowns in various countries have reminded us how dependent social welfare and even economic growth of a country is on digital transformation. In this time of difficulty, pioneers of connectivity and the telco operators across the world have stepped up to the challenge, and have come up with novel ways to utilize 5G— the latest generation in telecom infrastructure.

Of course there are various challenges faced by operators in these trying times, especially in the most affected country where the fight against COVID-19 is unprecedented. The pandemic presents telecom operators with new challenges on multiple fronts, which can be broadly classified into three areas: emergency communications, a surge in online services, and how to improve the network capabilities. The early lessons learned in each of these three areas can help companies and nations in the Middle East to better cope with the COVID-19 pandemic, bringing the true value of digital to local communities.

Emergency Communications Powered by 5G + AI + Cloud
There is an increasing demand on healthcare networks worldwide, and ICT is proving to be a vital component in addressing those requirements. A clear example of that can be seen in the Hubei province of China, where Wuhan is located.

At the onset of the outbreak, there were a total 48 hospitals designated for COVID-19 patients with the capacity of 26,911 bed spaces—which were clearly not enough with the amount of new cases coming in every day. So the government built two new hospitals with a combined capacity of 2,600 beds in a record time of ten days. Both of these hospital locations were required to have 5G connectivity for high speed and real-time communications. All three national operators— China Mobile,

China Unicom, and China Telecom—came together and covered both of the new hospital sites within 72 hours through the installation of pole 5G sites on location.

The initiative was so impactful that the next step was to interconnect other hospitals in major cities with 5G due to the spread of the virus. Again, the national operators stepped up and worked on a wartime scale to cover nine cities in seven provinces with 5G, comprising of 305 new sites within 72 hours, which was considered an important achievement of cooperation in technology deployment.

Furthermore, for the prevention of COVID-19, the combination of 5G + AI was used to detect face masks on medical professionals through cameras and potential patients through thermal cameras with zero touch. For detection, cloud computing supported by 5G was used for mobile test laboratories, where data from gene sequencers was uploaded to the cloud for enhanced virus identification.

With the high-bandwidth broadband connectivity and quick deployment, the combinations of using 5G, AI and cloud also enabled other key medical applications in the emergency. This included remote diagnosis, collaboration, consultations with high quality video communication

and low latency data transfer. This ensured timely action even in a situation where critical patients were increasing and there was a shortage of medical staff.

This technical synergy proved instrumental for China to control the pandemic as quickly as it did. Similar initiatives are now being rolled out in nations around the world as we learn from the early instances of COVID-19 response.

5G for surging online services
Many of us have been spending more time at home due to the COVID-19 pandemic. Home network usage was the most impacted category. This has resulted in a sharp increase in data consumption across the board, with the classic busy-hour model shifting and the data throughput hot spots changing locations.

In particular, we can see three key scenarios contributing to the spike of online services:

1. Remote Education: As schools have been suspended, this has created a need for hundreds of millions of students to shift to online education. Taking China as an early reference point, this caused usage time per person to increase by more than 80%. We also see the average speed required for these services is 6.8 Mbps in 90% of the cases for no buffering in online education

2. Remote Working: In China, with many workplaces affected by lockdown, it has brought 400 million users online to finish their daily tasks digitally where possible. In places like Italy, the number of remote workers grew by more than 300%, and again, the average speed required for those remote work scenarios is around 6 Mbps. Enterprise applications such as Skype, WeLink, and ZOOM have witnessed significantly higher downloads and usage.

3. Online Entertainment: This is an important category for operators to remember amidst the COVID-19 pandemic. For example, in Italy 30% of the data traffic increase was contributed to gaming. In China, a newly-released online streaming movie reached 120 million concurrent users and short video apps such as TikTok have over 2.5 billion views/day. The average required speed for enjoying short video applications is 5.3 Mbps.

In this context, operators in both Asia and Europe were successful in providing services with a fast time to market, especially in sub-urban and rural areas through 5G fixed wireless access (FWA). This provided the guaranteed network experience to meet the increasing public demands. For example, in Italy, the user accusation of TIM Italy has gone up 2.5 times by providing their customers much needed high bandwidth 5G service through FWA. Operators like AIS Thailand are also supporting work from home by bundling apps like ZOOM and Office 365 for free with their data packages. Many operators have given free data package and also made access to their entertainment apps free, to keep people at home and entertained.

On the application front, to support citizens, all three operators in China took many initiatives like:
• Collaboration with multiple online education platforms: China Telecom's e-Cloud Classroom serves 1.01M students. China Unicom's WO Learning service provides free courses for 47M users and 10M high-quality courses for free. Online distance education provided by China Mobile covers 60.7M individuals.

• Remote office services for enterprise: China Telecom e-Conference service has added 858,000 new users. China Unicom Cloud Video Conference is providing services for 15,900 enterprises and institutions. China Mobile Cloud Video Conferencing covers 31,000 enterprises and 4.532M users.

• Free Access to Video/Game Apps: China Telecom granted free access to four video/game apps. Mobile Data of ten video games of China Unicom is offered free of charge in Hubei to 229,000 users. China Mobile's Migu app live broadcasted the construction progress of the Huoshenshan and Leishenshan hospitals through 5G. By February 10, the total number of viewers has reached 490M.

Fight against COVID-19 by strengthened network
During the epidemic, the spike in data usage posed multiple challenges to the telecom operators like poor network experience and high latency. This also shifted the classic busy-hour model and highly loaded hot spots, which are used to design telecom networks as work from home and home education changed the peak time. To address the problems and find out the corresponding solutions, telecom operators worldwide have taken lots of actions to guarantee the users' experience.

For example, a lot of measures have been taken in many places in China successfully:
• Operators are playing catch up now by the network optimizations in highly loaded areas. Through end-to-end customer service experience management and deployment of network visualization tools, provide means for deterministic positioning of business and network faults, which can effectively guarantee the best QoS and good business experience in the target area.

• Over the years, the "Broadband China Strategy" was initiated by the Chinese government that clearly defines the fiber broadband networks as a national strategic public infrastructure. In this critical time, the massive FTTH and bearer network has demonstrated its high-elastic capability to cater to the traffic surge.

• The sharp increase in data consumption also resulted in a challenge to the system capacity. As Chinese operators usually reserve additional capacity for core nodes, this offered a good buffer time for necessary expansions, which made it easier to respond to the surging data throughput. Additionally, the massive launch of Voice over LTE network in China effectively increased the voice network capacity, resulting in no voice congestion during the whole pandemic.

• Most customer experience problems were attributed to last mile connectivity as usage hotspots shifted from CBD & recreational areas to residential areas and hospitals. 5G fixed wireless access acted as a quick and economic way to address these challenges, for ensuring a better home applications experience.

The advancement of 5G launches and the rapid deployment during medical emergencies have played an important role in fighting the pandemic in China. The experiences on ground have also brought the overall benefits of 5G to the forefront, while unleashing more innovative cases that have brought much more confidence to the public and to businesses for combating the pandemic.

In the Middle East, we hope to endure through this pandemic by learning from such experiences. We are encouraged to see that most of the ICT infrastructure leaders in the Middle East are executing or planning some positive measures to help governments and the public during this period. This will really benefit the public, along with obeying government regulations and staying at home, to instill confidence and to defeat COVID-19.

Moreover, these learnings clearly depict how crucial 5G is for tackling a pandemic like COVID-19 on multiple fronts in healthcare and at home. It's fast deployment, high bandwidth, and low latency is necessary for running critical applications required at this time. It's time the world realizes the importance of better connectivity, not only to improve lives, but to save them as well.

Thought leadership contributed by SAMENA Council Members.

With COVID-19, Child Online Safety Risks and Child Exploitation Rise

Cybersecurity and protection of business IT environment now must become a top priority. As the Corona virus has restricted our daily life and many employees now work from home, we risk seeing an increase in the consumption of child abuse materials online, leaving millions of children exposed to being exploited.

In 2018, NetClean conducted a study which showed that 1 in 500 work computers was used to handle (download, consume or share) child sexual abuse material. The study also showed that most of the alerts, triggered by detection software, occurred when the computer was away from the workplace. The study was conducted with a number of NetClean customers, who together had an installation base of nearly 270 000 work computers. The timing of the alerts was often outside of working hours (during evenings, holidays, leave and work trips), and also during down-time in the workplace, e.g., during lunch hours or early in the morning. The study also showed that it was not uncommon for individuals to turn off the Internet and network connection in an attempt to avoid detection.

In this unprecedented situation where the COVID-19 disease has changed our daily routines and has forced a large section of staff to work from home, it is not unreasonable to assume that the risk of child sexual abuse material being downloaded, consumed or shared via the work computer is increasing. By protecting the business IT environment, children will also be protected.

Reports of risk to children
There have been numerous recent reports of the increased risk to children when they spend more unsupervised time on the internet as a result of the Corona crises, closed schools and millions of people social distancing or in quarantine.

On March 23, the FBI warned that school closings due to COVID-19 present an increased risk of child exploitation. Similar warnings have come from many NGOs such as the Internet Watch Foundation

(IWF) in the UK, the National Center for Missing and Exploited Children (NCMEC) in the US and UNICEF.

Increase in circulation of child sexual abuse material
On 27 March, the Swedish National Police reported that they had seen increased offender activity in forums, where offenders openly expressed that there is easy access to children online at the moment. They also reported seeing an increase in the sharing of child sexual abuse material online following the Corona crises. We must act swiftly to combat this now and prepare for a future where our children might be more vulnerable online, whether this be due to another virus epidemic or because of developments in technology.

Stopping the spread of child exploitation online
The business survey from the NetClean Report 2018 showed that the majority (but not all) alerts triggered on work computers followed from the consumption of one or two illicit images. Still, just one image can

make all the difference. The interviewed businesses reported that in the majority of cases where they had further knowledge of the case (more than the alert itself), the police had found further material or catalogue structures that clearly contained online child sexual abuse material on the computer. When the police conducted house searches at the employee's home, more material had been found in a majority of cases.

Finding and stopping the spread of images is important to stop the re-victimization that occurs every time a child sexual abuse image is shared and viewed. By following the trail of a detected image, more images can be found and victims can be identified and rescued.

If all businesses and organisations in the world – billions of computers and networks – took appropriate action, the opportunity to find and disrupt the spread of online child sexual material would increase infinitely. With millions of people now working from home, this is as important as ever.

Courtesy: NetClean

Nexign Joins SAMENA Council to Enhance Its Presence in the MEA Region

Nexign (a part of ICS Holding), a leading Business Support System (BSS) and Internet of Things (IoT) solutions provider for communications service providers (CSPs),announced that it has joined SAMENA Telecommunications Council, the South Asia - Middle East - North Africa (SAMENA) region's premier industry association of telecom operators, service providers, telecoms technology providers, and digital space players. As a member of SAMENA Council, Nexign will be getting even more closely involved in local discussions and will gain more opportunities to share its outlook on global and regional telecommunication industry trends and developments. Nexign entered the Middle East and Africa (MEA) market in 2018, following the confirmation and official announcement of its new corporate business strategy focusing on international expansion. Since then, the company has been growing its regional forces and expanding its network of partners. Joining SAMENA Council will

support Nexign's regional expansion, providing the company with opportunities for executive networking and participation in working groups, access to exclusive industry-focused studies, and assistance in generating business leads. SAMENA Council's membership will also open up collaboration opportunities with the International Telecommunication Union (ITU), of which SAMENA Council is a Sector-D member. Commenting on Nexign's membership of SAMENA Council, Igor Gorkov, CEO at Nexign, said: "We are extremely proud and excited to join SAMENA Telecommunications Council, and look forward to working closely with this community of ICT industry players which is enabling telecom operators across the Middle East and Africa region to make the most of their infrastructure investments. SAMENA Council's mission is fully aligned with Nexign's vision, as we also emphasize the importance of collaboration in the telecommunications sector, believing it to be a key to success

in the era of the digital economy. We are confident that this membership will provide Nexign with a solid basis for enhancing the company's presence in MEA over the next few years and enable us to more effectively address the challenges regional CSPs face." Bocar BA, CEO & Member of the Board of SAMENA Council, congratulated Nexign on the decision to become a member of the Council. BA stated: "We warmly welcome Nexign as a new member of the SAMENA Council. With a cloud-ready, integrated BSS solution serving the needs of Tier 1 and smaller CSPs, MVNOs and niche requirements, and over 28 years of successful implementation experience in the Russian, CIS and MENA markets, Nexign is perfectly placed to support SAMENA Council in the region's digital transformation journey and in building a knowledge base as well as providing insights as a part of our sector-development advocacy efforts, especially in the current 5G environment." While representing telecom operators and the private sector, SAMENA Council closely engages with regional regulators as well as other relevant government bodies, in order to jointly create a flourishing and sustainable ICT environment that could aid sustainable growth, incentivize investments, and broaden value-creation via the adoption of new collaboration-driven approaches in the areas of digital services, data regulation, spectrum management, and industry fees and taxation.

MEMBERS NEWS

stc Announces Localizing Platform for E-SIM for the First Time in Saudi Arabia

stc has announced localizing platform for E-SIM for the first time in Saudi Arabia, obtaining an international accreditation deemed requisite for rolling out eSIM technology, in a move that can transform the way consumers use smart phones and devices across Saudi Arabia. Now stc has the capability to provide eSIM services to all Mobile and Virtual Network Operators (MNOs/MVNOs) in the Kingdom as a National eSIM Platform. Also the service can be extended to any MNO in the Arabian Gulf region or internationally interested in obtaining the eSIM service from stc.

Hiatham Al-Faraj, stc SVP of Technology & Operations consider the adoption of eSIM in Saudi Arabia in cooperation with GSMA Certification is a step forward towards achieving the mandates of Saudi Vision 2030, by localizing eSIM technology and further enabling digital transformation". He added "We are excited about the possibility of introducing eSIM technology in Saudi Arabia. The SAS Certification process was a challenging one; but passing and holding the Certification stands as a testimony to stc's world-class security standards and operational excellence". The eSIM is a device-embedded card that eliminates the need for traditional plastic SIM cards; and enables subscribers to add and remove operators remotely without having to acquire a new SIM card. eSIM is widely acclaimed as the SIM for a next generation of connected devices, as it powers frontier futuristic applications such as the Internet of things (IoT), connected mobility, artificial intelligence, and video surveillance. Adopting and commercializing eSIM technology require the company hosting the eSIM Platform to undergo a series of stringent technical and security audits, namely SAS Certification, sponsored by the GSM Association, an international standard-setting body. stc has successfully passed the audits and scored the highest results worldwide following a long and rigorous process that asserted the company's technical and security readiness. Obtaining the GSMA Certification marks a key milestone for localizing the technology in Saudi Arabia, while an actual timeline for deployment remains to be announced.

A 100 Million Riyal Initiative from stc to Support Health Care in the Kingdom

As part of its partnership with the Ministry of Health aimed at increasing prevention from the coronavirus and limiting its spread, stc has doubled the operational efficiency and awareness outreach of 22 of its healthcare centers, established over the previous years across Saudi Arabia. These efforts also form part of the company's commitment to long lasting social initiatives as the centers offer healthcare support and participate in awareness campaigns, constituting an initiative valued at SAR 100 million. Having been constructed and equipped at stc's cost, the 22 healthcare centers have provided services to over 5 million beneficiaries and patients since the launch of their

operations. Today, stc is aiming to increase the efficiency of the centers' infrastructure and to enable digital services as part of the beneficiary journey. In related endeavors, advanced cloud computing-based health services also form part of the digital solutions stc provides to medical centers and hospitals affiliated with the Ministry of Health. Such solutions are of great medical value across the world, especially when it comes to 5G linked micro-procedures. They further support existing services, such as the medical imaging platform PAX and medical imaging technology EMI, as they connect the largest possible number of hospitals to the cloud. For instance, they make it possible for the closest available

expert to analyze images and provide a diagnosis. These solutions will be used in dozens of hospitals across the Kingdom to improve the efficiency of the services they provide to their patients. Additionally, stc and the Ministry of Health are working on raising awareness among the public on how to prevent the spread of coronavirus as part of a joint campaign launched across digital and traditional media outlets. Over 1.7 billion messages have been sent over the past six weeks in 10 languages. Similar campaigns have been simultaneously launched in Kuwait and Bahrain led by stc affiliates in the two countries.

stc Signs United Nations Women Empowerment Principles

As part of the Sustainable Stock Exchanges Initiative "Ring the Bell for Gender Equality", stc signed the United Nations Women Empowerment Principles. The event was held by the Saudi Stock Exchange, Tadawul, along with 90 financial markets around the world, in conjunction with International Women's Day. The

document was submitted in the presence of Maha AlNuhait, GM of Sustainability Program at stc and Janneke van der Graaff - Kukler Deputy Regional Director at UN Women. The Sustainable Stock Exchanges (SSE) initiative has five pillars of activity: Partnerships to achieve Goals, Climate Action, Responsible Consumption and Production, Decent Work and Economic Growth and Gender Equality. The stc's interaction with International Women's Day confirms the company's commitment to achieving sustainable development goals and implementing best sustainability practices in the company by supporting Saudi women and allowing them to hold executive positions. stc has previously launched the first board to empower women and enhance their participation in the business market. This stems from the company's belief in the importance of investing in its employees and providing them with the best opportunities to develop their skills and knowledge. This step comes in line with Saudi Arabia's Vision 2030, and stc's commitment to the national transformation program, which aims to enable the community categories to get into the market, making it more of a trend thus increasing Saudi women economic participation.

Batelco AGM Announces BD45.7M Cash Dividends for 2019

Batelco, the Kingdom's leading digital solutions provider, held its Annual General Meeting (AGM) for the twelve-months ended 31 December 2019 ("the year"). The meeting was held at Hamala headquarters, in the presence of the Chairman, Management and Shareholders utilizing video conferencing across two locations to limit numbers in any location and encourage social distancing. This was done in compliance with the guidelines for holding general assembly meetings, in accordance with the laws of the Kingdom of Bahrain. The 40th AGM saw shareholders approve the recommendation of the Board of Directors for a full year cash dividend of BD45.7M (US$121.2M), at a value of 27.5fils per share, of which 10fils per share was already paid during the third quarter of 2019 with the remaining 17.5fils announced during the meeting to be paid in the coming weeks. The meeting included the appointments and elections of Board Members for the next three year term 2020-2023. Mumtalakat Holding Company

appointed four members to the Board, Shaikh Abdulla bin Khalifa Al Khalifa, Mr. Raed Abdulla Fakhri, Mr. Abdulla Abdulhameed Alhammadi, and Mrs. Fatema Ghazi Al-Arayedh. Amber Holdings has appointed two members, Shaikh Ali

bin Khalifa Al Khalifa and will announce the name of the other representatives at a later time. The Social Insurance Organization (SIO) has appointed Mr. Khalid Hussain Taqi and Mr. Abdulla Abdulrazak Bokhowa. Two members were elected by the shareholders

in the AGM, Mr. Jean Christophe Durand and Mr. Ahmed Abdulwahed Abdulrahman. Batelco Chairman Shaikh Abdulla bin Khalifa Al Khalifa said, "We are delighted to announce strong performance for Batelco during the year, which in turn contributed to good dividends for shareholders as part of efforts to continuously deliver improved value for them. Achieving the best financial results for shareholders is Batelco's top priority." "Revenues for the full year 2019 were BD401.5M (US$1,065.0M), and revenues in the home market of Bahrain have increased by 5% year-over-year boosted by revenues from fixed broadband, data communications and mobile services. 2019 saw EBITDA decrease by 1% in comparison to 2018, impacted by BD11.1M (US$29.4M) voluntary employee retirement program cost. Adjusted EBITDA for the year without the voluntary employee

retirement cost is 7% higher year-on-year, driven by the 5% YoY reduction in operating expenses." "I am pleased to welcome the new Board for the next three year term and look forward to working with them and utilizing their expertise and knowledge in helping consolidate Batelco's position. I would also like to thank the Board members who have served in the previous term for their outstanding contributions in supporting the Company's plans and development," he added. Batelco CEO Mikkel Vinter said, "In 2019, we achieved key milestones to support the Company's digital transformation journey, such as the commercial launch of the 5G network for the first time in Bahrain, an important step in enabling the growth of the digital economy. This year, we plan to further increase the areas of 5G coverage around the Kingdom." "To position Batelco as

the leading provider of innovative digital services and connectivity in Bahrain, we have ambitious plans for 2020. We will be investing in adjacent businesses in Bahrain and the MEA region, focusing on specific clusters of FinTech, B2B solutions, e-government and e-commerce. As a result, this will diversify our revenue streams and create investment opportunities in different digital technologies," he added. Prior to the conclusion of the meeting, Shaikh Abdulla expressed his sincere appreciation for the outstanding efforts of the Board members, the executive management team and all the Company's staff members, who contributed to the positive results. "I would also like to extend my appreciation to our shareholders for their continued support and confidence in our strategic direction," Shaikh Abdulla concluded.

Batelco and Aptilo Networks Partner For First-Class Wi-Fi Services in Bahrain

Manama, Bahrain: Batelco, the leading digital solutions provider in the Kingdom of Bahrain, and Aptilo Networks have entered into a partnership to deliver business-to-business (B2B) or (B2B2C) Wi-Fi services in Bahrain. Batelco has selected the Aptilo Service Management Platform™ (SMP) with the Aptilo SMP Venue Wi-Fi Manager™ to deploy a nationwide managed Wi-Fi service. Batelco offers managed venue Wi-Fi services to enterprise customers, with the service deployed either on top of the customer's existing Wi-Fi equipment or as a fully managed service with the Wi-Fi infrastructure included. Batelco General Manager Enterprise Abderrahmane Mounir said, "We were looking for a vendor agnostic solution that could match our high ambitions in scaling our Wi-Fi business both in terms of volume and functionality, and at the same time have a platform that will allow Batelco and its enterprise customers to engage with the wifi users." "Aptilo's proven track-record

in innovation and stability makes them the right choice for us to support the growing demands of our enterprise customers," he added. Furthermore, Batelco will deploy an additional Wi-Fi connection (SSID) exclusively for Batelco subscribers at most public locations. When Batelco mobile subscribers switch on their Wi-Fi, they will instantaneously connect to the secure Wi-Fi network at these locations. It is the SIM authentication functionality of the Aptilo SMP that makes the Wi-Fi network

as secure and seamless as any mobile network. "Operator managed Wi-Fi is crucial not only as a profitable business but also to get indoor footprint for subscribers. This will become increasingly important in the 5G era," said Anders Emilsson, VP Sales Middle East & Africa, Aptilo Networks. "We are proud that Bahrain's leading operator has selected us. Their insights in the market and the dynamics of Wi-Fi will make them very successful," he added.

Etisalat AGM Approves Full-Year 2019 Dividends of 80 Fils per Share

At Etisalat's Annual General Meeting (AGM), held at the company's headquarters in Abu Dhabi, shareholders have backed the board's recommendation to pay full-year 2019 dividends of 80 fils per share. Etisalat Group consolidated revenues reached AED 52.2 billion while consolidated net profit after Federal Royalty reached AED 8.7 billion an increase of 1% compared to the same period last year.

H.E. Obaid Humaid Al Tayer, Chairman, Etisalat Group said: "As we begin our journey into the next decade, 2019 was a testimony to Etisalat Group leadership locally and internationally. Etisalat continued reinforcing its core business, explore new growth opportunities, while transitioning to the digital era and being well geared for the future. "Etisalat Group has led the digital transformation by proactively responding to technological advancements and bringing the latest global innovations to nurture creativity. Digital transformation is becoming present in more areas of life, and we have striven to be at the forefront leading it. Our current success is a result of understanding the need our customers have to rely on Etisalat to deliver. "Etisalat Group continued to achieve strong financial performance and maintained its high credit rating (AA-/Aa3) reflecting a proven long-term performance and efforts to provide value to shareholders, which was the drive behind proposing a final dividend of AED 0.8 representing a dividend yield of 5% and dividends payout ratio of 80%. "For more than four decades, Etisalat has been able to meet the needs and expectations of millions of customers across our footprint. Enhancing customer experience remains at the core of our strategy enabling us to launch innovative services and solutions making a positive impact on their daily lives. "This was only possible due to a decade of continuous support and vision of the UAE leadership, the loyalty of our customers and the trust of our shareholders. A special thanks to Etisalat management team for their commitment and dedicated work towards the realization of Etisalat's vision and

strategic goals." Eng. Saleh Abdullah Al Abdooli, GCEO, Etisalat Group said": "I am proud to announce another great year for Etisalat Group. Our results are driven by an ambitious vision, a focused strategy, and sheer determination. This also affirmed our technological leadership in a rapidly evolving ecosystem, and ensured value creation for our customers and shareholders. "With the acquisition of Tigo Chad, Etisalat Group is now operating in 16 markets while enriching the lives of over 149 million subscribers. Investing for growth, sustaining a superior infrastructure, possessing differentiated assets, platforms and capabilities were integral to building a network for a better future across our markets. Etisalat today is recognized as the most valuable consumer and telecom brand in the MEA region for the third and fourth consecutive year respectively, an illustration of our long-standing efforts and testament to building a successful telecom brand in the region". He underlined: "In 2019, Etisalat Group has delivered a balanced performance across its different aspects, along with solid financial results despite the challenging economical scene at global and regional scales.. Company consolidated

revenues stood at AED 52.2 billion, while consolidated net profits growth to AED 8.7 billion. We managed to confine the negative impact of various challenges with successful initiatives that aimed at maximizing synergy at group level, enhancing efficiency, and rationalizing costs. "5G is a game changer with Etisalat taking the lead in the launch of the network which will amplify the use of futuristic services, target new opportunities and implement 5G use cases across verticals. This has also set the roadmap for services based on emerging technologies such as IoT, cloud, big data, AI, robotics, autonomous, AR/VR, becoming a trusted partner that supports transformation in a digitally disrupted and fully connected world. Our continuous investments in the network also led Etisalat to be recognized as MENA's fastest mobile network and GCC, Africa, Arabian region's fastest fixed broadband network". "While we continue to deploy innovative 5G networks, Etisalat has also set global benchmarks in Fiber to the Home (FTTH) by maintaining the UAE's position as a global leader for the third consecutive year. "At the end, I am confident that Etisalat Group will deliver the ambitions and aspirations of our

customers and continue to support the communities we serve and add value to the markets where we operate. We are thankful to the wise leadership of the UAE and our shareholders for their steady support in this journey, our customers for their continued confidence and trust."

Etisalat Signs Agreement to Boost Digital Transformation at Arabtec

Etisalat announced that it has entered into a strategic partnership with Arabtec to provide fully digitalized solutions in a bid to accelerate its digital transformation journey. Etisalat will be digitalizing Arabtec's workforce, migrating its datacenter to the Microsoft cloud, all the way to automating its existing process with Etisalat's Robotic Process Automation (RPA) journey. RPA is the use of software with artificial intelligence (AI) tools to automate high-volume and repetitive manual tasks that previously required human input. Under the partnership, Etisalat will enable Arabtec to drive into the modern workplace by migrating its workforce to Office 365 and move its digital infrastructure to the Azure cloud. Utilizing Etisalat's IoT workforce management solution, Arabtec will digitalize time and labor processes, simplify absence management and enable strategic business insights at construction site. Etisalat will also digitalize Arabtec's

existing process by introducing robotics to the workplace, resulting in improved efficiency, higher productivity and greater project completion rates. Salvador Anglada, Group Chief Business Officer, Etisalat, said: "We are pleased to offer a wide range of digital solutions to Arabtec, one of the leading construction companies in the UAE, and set a benchmark in the construction sector. Through this strategic partnership, we, at Etisalat, look forward to empowering Arabtec with the latest digital technologies and smart solutions aimed at increasing operational efficiency, brand reputation and recognition." Peter Pollard, Group CEO, Arabtec, said: "We are excited to announce our strategic partnership with Etisalat. A partnership intended to drive forward our digital transformation journey by digitizing Arabtec's workflows and processes, introducing along the way Artificial Intelligence tools and smart solutions to further improve our

productivity, efficiency, and project delivery. This partnership aligns with Arabtec's core strategy in many fronts, accelerating our digital transformation, creating great experiences, and unlocking productivity." "With an ever-increasing requirement of cloud adoption, our very first Middle East datacenters launched in the UAE promises intelligent cloud technology to soar across industries and leverage a range of ground-breaking innovations which help in better customer engagement, empower employees, optimise operations and transform products and services," said Sayed Hashish, Regional General Manager, Microsoft UAE. "Microsoft and Etisalat shares a vision of enabling organizations like Arabtec to accelerate their digital endeavors and empowering them to be agile, lower service latency and ensure better performance."

Mobily Boosts Digital Economy with Nokia's Next-Generation ICT and AI Solutions

A new agreement has been signed by Etihad Etisalat Co. "Mobily" and Nokia, covering the provision of next-generation telecom technologies. The deal is in line with Saudi Vision 2030, which aims to benefit society by driving digital transformation and the digital economy. Nokia will support Mobily's infrastructure with a wide range of products and services from its 5G end-to-end portfolio, including radio access, IP routing, optical networking, and software, as well as the Nokia service delivery platform, in order to build an ultra-high bandwidth and low-latency network. In addition, the network capacity will be maximized using massive MIMO

antennas, whilst an expansion of Mobily's backhaul capabilities will prepare it for a rapid increase for the network capacity. The ultra-high bandwidth, low-latency network will enable numerous benefits to Mobily's subscribers as well as public and private sector customers, including manufacturing, oil and gas, healthcare, education, transport and entertainment, by enabling the use of Virtual Reality (VR), Augmented Reality (AR) and Artificial Intelligence (AI). Eng. Alaa Malki, Chief Technology Officer at Mobily, said: "Together with Nokia, we are working to achieve an advanced ICT infrastructure to boost digital economy across the

Kingdom, by taking the economy to the next level. The deployment is set to enable further innovation and digitalization with new applications and services." Amr K. El Leithy, Head of the Middle East and Africa Market at Nokia, said: "We are excited to be extending our partnership with Mobily, adding next-generation ICT technologies onto an already strong layer of 4G infrastructure to drive digitalization. This project will allow Mobily and its customers to reap the benefits of advanced ICT technologies and deliver on the aims of Saudi Vision 2030."

Mobily Partners with SAP to Digitally Transform Experiences for Millions of Customers

Mobily, one of the Middle East's largest communications companies, announced a digital transformation partnership with global technology company SAP to energize its sales force automation. In line with its digital transformation strategy, Mobily sought to enhance business competitiveness by enhancing customer experiences, optimizing costs and sales, and bringing innovations faster to market. "As Mobily grows, our digital transformation strategy calls for creating superior value for our B2B and B2C customers to foster digital business innovation to support Saudi Vision 2030," said Salman Al-Badran, CEO, Mobily. "Thanks to our partnership with SAP, we can understand and respond to our customers in real-time, further supporting our journey of being a progressive, passionate, and caring company." Mobily will deploy Sales Cloud, part of SAP C/4HANA customer experience suite, with five industry-leading cloud solution portfolios to foster business innovation, integration, and agility. Mobily will run these solutions on SAP's cloud data center in Saudi Arabia, with the project implemented by channel partner ITelligence. "This project will showcase how Saudi Arabia's Intelligent Enterprises can enhance overall customers' engagement and services by combining customer

experience data, 'x-data,' with operational data, 'o-data,' to listen, understand, and act on customer experiences," said Ahmed Al-Faifi, Senior Vice President and Managing Director, SAP Middle East North. "Running on SAP's Saudi Arabia cloud data center will enable Mobily to further scale up and drive customer-centric innovations and support seamless end-to-end customer journeys." NTT DATA is leveraging the expertise of its group company, ITelligence, which has over 30 years in digital transformation journeys. NTT Data believes this project will be a touchstone

and will serve as an inspiration in shaping the vision of the telecom industry. "As one of the leading SAP customer experience digital transformation projects in Saudi Arabia, Mobily is showing best practices in integrating sales capabilities for business innovation and agility," said Mohammad Amjad Ali, CEO, NTT DATA, Saudi Arabia, a joint venture company with Ali A.Tamimi Group. "Mobily has the secure, comprehensive, and flexible SAP customer experience solutions to deliver on its strategy and take Saudi Arabia's telco innovation to the next level."

Mobily Realizes First Voice Call (VoNR) Using 5G Standalone Network

Etihad Etisalat "Mobily" has successfully made the first 5G voice call (VoNR) in the Middle East, using 5G stand-alone (SA) network. Mobily also managed to achieve a 5G (SA) network capability for data services, which offers independent 5G technology without any reliance on 4G network. "We are keen to improve Mobily's network capabilities in order to cope with the latest trends in global telecom sector, and as part of the company's vision and the Kingdom's Vision 2030 to empower digital transformation for individuals, business and government sectors," said

Alaa Malki, Chief Technology Officer at Mobily. "VoNR call will allow Mobily's 5G users to make voice and video calls while on a 5G (SA) network without needing to fall back onto a 4G or 3G network. VoNR call has attributes such as quickest call set up time and wide range of CODECs supported, which improves the user experience while unlocking a whole new pack of opportunities for Mobily," added Malki. The test took place at Mobily's office in Al-Khobar using 5G (SA) network and 5G capable smartphones. After conducting multiple voice calls, all key KPIs met the

expected results and the voice was clear and uninterrupted during the call. This test exhibited how 5G new radio (NR) leverages the IP multimedia subsystem (IMS) to provide the best voice services (VoNR). The deployment of 5G (SA) network and the voice call (VoNR) have showcased Mobily's capabilities to utilize key cloud technologies such as service-based architecture, micro-services utilizing containers and a fully convergent core for 2G, 3G, 4G and 5G (NSA & SA) networks.

Omantel Partners with Ericsson to Manage Its Multi-Access Mobile Networks

Swedish tech giant, Ericsson, has renewed an agreement with Omantel to manage its multi-vendor 3G, 4G and 5G networks in Oman. The deal will see Ericsson manage Omantel's mobile networks for the next five years. As part of the deal, Ericsson will provide a fully managed end-to-end multivendor operations service to include nationwide network operations, field support and maintenance for Omantel's fixed-line access, 2G, 3G, 4G and future 5G access. "Expanding our long-term partnership with Ericsson with the implementation of its innovative solutions is in line with our strategy to focus on our core business of providing a convergence of communications, and information to our customers and to deliver the best possible service to our growing customer base. The deal covers network operations and field maintenance for Omantel's multivendor mobile networks, including access and core technologies. We at Omantel work with international companies such as Ericsson to bring extensive management Services expertise to our network," said Talal Said Al Mamari, Chief Executive Officer of Omantel. The project will allow Omantel to take advantage of Network Functions Virtualization (NFVI) solutions, which allow the highest levels of automation and maintenance capabilities. Ericsson will also deploy automation platforms to allow Omantel to increase operational network efficiency and further enhance customer experiences for its subscribers. "Today's agreement reinforces our long-standing partnership and commitment to Omantel. It will enable us to evolve Omantel's network from network-centric to user-experience-centric network leveraging Ericsson's automation use cases. This will create a differentiated experience for Omantel's subscribers," said Fadi Pharaon, President of Ericsson Middle East and Africa.

Omantel, NYC Ink MoU to Empower Youth in Telecom and ICT Sector

Omantel, the first and leading provider of integrated telecommunication solutions in the Sultanate, continues its efforts in paving the way for a thriving digital ecosystem in the country that can bring about successes to various industries and set Oman further ahead in achieving its 2040 vision. As part of these efforts, Omantel has signed a MoU with National Youth Commission (NYC) that aims to increase youth's contribution to the telecom and ICT sector through training programmes offered by reputable institutions. On the sidelines of the MoU signing event, Dr. Ghalib bin Saif Al Hosni, Chief People Officer at Omantel, said, "Omantel's contribution to the growth of the telecom and ICT sector goes beyond technology, expertise, smart solutions and university laboratories as it also includes preparing the youth to become an integral part of the technology advancement, and hence increase their contribution to achieving Oman 2040 vision." Al Hosni asserted that the MoU comes as part of a long-term vision to develop the capabilities of Omani youth in the telecom and ICT sector, and it is one among many similar collaborations which Omantel has built in order to support the nation's growth, "We will continue to boost our cooperation with the public and private entities in a way that helps fulfilling Oman's development requirements, particularly in areas related to the youth and developing a knowledge-based economy." One of the significant youth-related CSR initiatives that Omantel has launched is 'Upgrade' which aims to transform graduating students' class projects into financially viable information and communication technology (ICT) start-ups On his part, Dr. Sami bin Salim Al Kharousi, Chairman of NYC, commented, "We are glad about our deep cooperation with Omantel in supporting Omani youth to increase their contribution to the telecom and ICT sector. This collaboration is of a great significance as it comes at a time the sector is playing an ever-growing role in the path toward achieving Oman 2040 vision, particularly in enabling a knowledge-based economy." Al Kharousi also mentioned that the training programmes that the involved parties seek to offer are efficient and aligned with the market needs.

Orange Jordan, JOHUD Renew Long Standing Partnership

Orange Jordan has recently renewed its strategic partnership with the Jordanian Hashemite Fund for Human Development (JOHUD), commemorating over 15 year of cooperation. Orange Jordan's CEO, Thierry Marigny, and JOHUD's Executive Director, Farah Daghistani signed the agreement under which the company will continue providing annual support to the Goodwill Campaign which focuses on supporting underprivileged families and children in three main areas: healthcare, education, and winter aids. Speaking at the signing ceremony, Marigny said that "We are proud of our partnership with JOHUD, which dates to 2001, which has impacted the lives of many beneficiaries, empowered different segments of the society, and helped underprivileged individuals facing

hardships. Orange Jordan's is committed to the sustainable development of local communities, in light of its corporate social responsibility (CSR)," stressing that the company will continue to drive positive impact and change through civil society partners. On the other hand, Daghistani expressed the fund's pride in its partnership with Orange Jordan, which stands as a model for successful collaborations between national institutions to provide humanitarian aid, promote social solidarity and drive positive change. Daghistani praised Orange Jordan's role in bringing about the true meaning of social responsibility by supporting the fund's Goodwill campaign's initiatives as well as other programs and contributing to raising living standards of beneficiary

families. On the sidelines of the signing ceremony, Marigny met 15 students who Orange Jordan support academically via the fund's "Doroub Al Ilim" program, which offers scholarships to underprivileged students in public universities to help them pursue their degrees. Marigny stressed that these students will build the future and contribute to the country's socio-economic development. In 2019, Orange Jordan supported the fund's free medical days, which falls under "Lamset Shifa" program, helping more than 7,000 people across the Kingdom. The company also supported other initiatives such as the innovation and knowledge conference "Ibtikarthon," and JOHUD's radio, Farah Al Nas – a media platform dedicated for young content makers. Under this partnership, Orange Jordan continues to support Women Digital Centers program which is executed in JOHUD's offices around the kingdom under the company's Community Digital Centers program. The program, which is executed in: Queen Zein Al Sharaf Institute for Development, Social and Psychological Support Center in Amman, Princess Basma Development Centers in Madaba, Taibeh area Ma'an, and Khalidiya area in Mafraq, provides beneficiaries with the necessary training to help them start their businesses, use social media to sell their products and generate income to support their families and societies.

Zain and Huawei to Build Middle East's First SRv6 Based Intelligent IP Network

At a recent launch event themed "5G, Bring New Value", which was hosted by Huawei in London, Zain Group announced its cooperation with Huawei to build a 5G and cloud-oriented, intelligent SRv6-based IP transport network, which is the first of its kind in the Middle East. It features ultra-broadband, committed SLA, and autonomous driving function. Zain Group is a leading multinational mobile operator

in the Middle East and Africa, serving 49.5 million users. Processing an average of 10,500 TB data per day across its footprint that is ever-growing, reliable connectivity through 5G services is vital for Zain in ensuring a great mobile experience for its users. Therefore, it is vital for the transport network to support 5G services in three major scenarios, namely, enhanced Mobile Broadband (eMBB), ultra-reliable low-

latency communication (URLLC), and Massive Machine-Type Communications (mMTC). Furthermore, Zain plans to develop new services such as VR/AR and high quality private lines. This requires the transport network to support larger capacity and provide committed service level agreements (SLAs) to ensure the bandwidth and latency requirements of various services. Additionally, as

the number of IP connections keeps increasing, Zain also seeks quick network deployment and accurate fault locating to achieve autonomous-driving networks. In preparing for the launch of 5G services in Kuwait and Saudi Arabia as well as for other operations on Zain's roadmap to launch 5G services, Zain began re-planning and re-designing transport networks in early 2019. After an in-depth analysis of the existing network and long-term aims, Zain chose to apply Huawei's committed SLA IP solution. The network slicing function of the solution can ensure bandwidth for mission-critical services in vertical industries. The SRv6 intelligent routing function is at least one year ahead of competition and allows for deterministic paths and committed latency. The In-situ Flow Information Telemetry (iFIT) function can locate faults in minutes to ensure high availability. SRv6 features

simplified network protocols, flexible programmability, slicing, simplified inter-domain transmission, and seamless support for IPv4/IPv6 services. In this way, the best-effort IP network will become an intelligent 5G transport network that can support committed SLA, meeting the most demanding service scenarios such as URLLC and VIP private lines. Zain also regards the slicing technology as one of the key capabilities for building intelligent IP networks, and plans to, in cooperation with Huawei, start the SRv6-based E2E slicing POC test in the near future. The test will confirm the feasibility and business value of the solution from the aspects of planning, design, deployment, and maintenance of network slicing, laying a foundation for further usage. Mohammed Al Murshed, Core Networks Director, Zain Group, said "Ensuring that our users enjoy an excellent mobile experience on our

state-of-the-art networks is key for Zain. SRv6, as a next-generation IP network protocol, is simpler and more suitable for building intelligent IP networks. Zain plans to deploy SRv6 and slicing ready IP networks in multiple regions in 2020, and works with Huawei to build intelligent IP networks featuring ultra-broadband, committed SLA, and autonomous driving function." Daniel Tang, CTO of Huawei's Datacom Product Line, commented:" Huawei has launched the industry's first committed SLA IP solution to provide premium transmission services for a wide variety of vertical industries in the 5G era. The solution has been widely deployed in multiple leading operators around the world. Huawei anticipates making IP transport networks even more intelligent through our continued cooperation with Zain."

Zain Publishes Thought Leadership Report: 'The Circular Economy: Embedding Sustainable Solutions in a Bid to Save the Planet'

Zain Group, the leading mobile telecom innovator in eight markets across the Middle East and Africa, announces the publication of its annual thought leadership report, this year entitled, "The Circular Economy: Embedding Sustainable Solutions in a bid to Save the Planet." The report captures how the circular economy fits into helping address some of the devasting impacts of climate change. This type of economic model is essentially based on the principles of designing out waste and pollution; keeping products and materials in use; and regenerating natural systems. Current linear economic models utilize raw and non-renewable materials to create products and once the product is consumed it becomes waste, which is neither efficient nor sustainable. The negative impact of inefficient economic models is real and growing. Our planet is clearly at a point where it cannot withstand the waste generated from human activity. Today, people all over the world are producing an astounding 3.6 million tons of solid waste per day. It is estimated that by 2025, this amount will reach 6.1 million tons per day. This latest report explores the definition of the circular economy and its various dynamics; comparing it

to the linear economy model. The insight also highlights risks of the linear model, while providing views on the critical role technology plays in the circular economy and identifies initiatives undertaken by Zain. Bader Al-Kharafi, Zain Vice-Chairman and Group CEO commented, "Exploring the growth opportunities offered by the

circular economy is a progressive step in discovering the numerous opportunities for innovation. Such an evolution could potentially provide societies with mechanisms to successfully address environmental challenges. At Zain, we are partnering with organizations and governmental entities in creating

awareness and implementing digital technologies to minimize our negative impact on the environment and increase the sustainability of our activities." Al-Kharafi continued, "We hope that through our forward-looking thought leadership reports, the public will be inspired to act in a manner that benefits our planet and all those who inhabit it. We believe that by embracing the circular economy model, our region stands to benefit immensely as new jobs can be generated across sectors, while implementing sustainable solutions to help solve current issues. We encourage all our stakeholders to play a positive and transformational role with us in recalibrating the way in which we conduct our businesses, so that together we can achieve a progressive and sustainable future." Uncollected waste and waste directed to open landfills is extremely common across the region, though the current state of digitization offers compelling solutions to help address the negative impact of excess waste, with the emergence of nascent technologies such as Big Data, Artificial Intelligence, Robotics, Internet of Things (IoT). Jennifer Suleiman, Zain Group's Chief Sustainability Officer said, "The implementation of the circular economy is well suited for the MENA region, and it is therefore particularly relevant to be raising the model's benefits at this point in time when the twin forces of climate change and the growing populations across the region are in full effect." Suleiman continued, "Our latest report focuses on the various possibilities brought about by the widespread adoption

of the circular economy and the significant opportunities for growth that can and do materialize from the modification of production and consumption processes under the model. Transformation must occur, not just from an economic model perspective but from a mindset standpoint as well. Finite resources should not be exhausted and the only way to ensure that is to adopt new and progressive economic models that promote waste reduction and sustainable production." Given the current extreme weather conditions and the urgency for policymakers; businesses and governments to address climate change, Zain was compelled to focus this year's report on the circular economy. The flexibility and adaptability of the model also helps address multiple Sustainable Development Goals (6,8,11,12,13,14,15) as articulated by the United Nations. The circular economy can easily be embedded into the Information, Communication and Technology (ICT) sector. For businesses, it encourages greater innovation with respect to business models as it pushes such companies to develop innovations in the area of waste management. Technology-driven organizations can educate consumers and provide them with options on how to reuse and recycle digital products. This step can open doors by educating customers on how to save money, as well as shedding light on the presence and activities of waste management companies. With technological products, devices and services being used by so many people, most gadgets end up in landfills after use

with just 22% of used electronics being recycled. Moreover, with the introduction of 5G, numerous devices that are not compatible with the technology will be discarded. Recent studies reveal that 48 million tons of e-waste are produced every year. According to The World Economic Forum, e-waste is currently considered the fastest-growing source of waste today. On Zain's part, as part of the company's waste management program, Zain Kuwait installed filtered processed water coolers on all floors of its headquarter buildings, thus reducing the use of single-use plastic employees. Furthermore, the company provided each employee with reusable water tumblers. Plastic waste in general is a large issue in Kuwait as it has been estimated that 18% of solid waste in Kuwait is plastic which around 200,000 tons is. Moreover, in Bahrain, the operator recognized the negative impact of selling products that turn into e-waste and in a bid to mitigate this, partnered with the Supreme Council for the Environment and Crown Industries to introduce sustainable, long-term solutions in this area. Furthermore, Zain Bahrain launched school campaigns, competitions and conducting awareness sessions in schools also collecting e-waste from schools over a period of six months and conducted social media campaigns on the impact of e-waste. Additionally, it conducted a call to action for the public to collect e-waste and place it in bins located on Zain's premises and encouraged other corporations to participate in collecting e-waste.

Accenture and Microsoft Collaborate to help Entrepreneurs Amplify Social Impact

Microsoft Corp. and Accenture are teaming to help deepen the reach of entrepreneurs and start-ups that are focused on social impact and sustainability. The joint initiative will provide hands-on support and technologies to social enterprises, helping them to build scalable solutions and business models that can lead to more tangible and lasting benefits for a greater number of people around

the world. Microsoft and Accenture's collaboration is part of their shared vision to amplify the societal impact of emerging technology with the long-term goal of reaching a million lives globally. Through the program, Microsoft Research India and Accenture Labs will help social enterprise startups test and validate proof-of-concepts; conduct design thinking sessions to help them re-envision

the impact of their solutions; and provide support in exploring and using Microsoft technologies. "Startups in the social impact and sustainability space are among the world's most inspiring organizations," said Jean-Philippe Courtois, executive vice president and president, Microsoft Global Sales, Marketing and Operations. "It's important that their passion for meaningful innovation and creating positive change

is supported. Microsoft's collaboration with Accenture offers us an opportunity to empower these startups so they can use technology to make an even greater impact in addressing many of the world's most pressing challenges. By empowering them, our goal is to help change the lives of a million people." With a particular focus on the areas of agriculture, education and healthcare, the program will initially engage with startups in Africa, the Middle East and South Asia, leveraging the MSR India Center for Societal impact through Cloud and Artificial Intelligence (SCAI). Paul Daugherty, group chief executive — Technology and chief technology officer at Accenture, added, "Our experience shows that by applying emerging technologies to critical challenges facing society, we can accelerate social transformation. This collaboration is a great illustration of delivering on 'value' and 'values' — creating tangible business and social value while aligning with people's values. By providing social impact entrepreneurs with direct access to the combined power of Accenture and Microsoft's technology

expertise, we can help significantly improve access, equality, inclusion, education, health, sustainability, and the environment." Microsoft's involvement in this initiative is part of Microsoft's Global Social Entrepreneurship program designed to empower an ecosystem of tech-enabled startups globally, focused on addressing important social or environmental challenges. The Global Social Entrepreneurship program supports

startups with access to breakthrough technology in Microsoft AI, cloud expertise, go-to-market services, grants (in sustainability, accessibility, and skills & employability) and access to customers that facilitate connections on local and global levels. The involvement of Accenture Labs is part of its ongoing Tech4Good program, which is focused on applying emerging technologies in powerful ways to help solve complex social challenges.

Accenture and SAP Launch Upstream Oil and Gas Solution to Help Streamline Processes and Costs

Accenture and SAP have launched a co-developed solution for upstream oil and gas companies based on SAP S/4HANA® Cloud. Using intelligent technologies such as artificial intelligence (AI), the SAP S/4HANA Cloud solution for upstream oil and gas helps clients to further increase visibility into operations and cash flow. Now generally available globally, SAP

S/4HANA Cloud for upstream oil and gas is a scalable solution that can help oil and gas companies reduce total cost of ownership and operational costs, as well as create new revenue opportunities. Tools for pre-configured, integrated and user-friendly business processes are included so that companies can shrink implementation time while working to

reduce risk of business disruption. The solution delivers new industry standards that help simplify operations and free up resources to drive more business value. To define market-standard end-to-end processes that are preconfigured within the solution, Accenture and SAP are working with a consortium comprised of leading exploration and production companies – including BP, Chevron, ConocoPhillips, Equinor and Shell. "ConocoPhillips collaborated with SAP and Accenture for more than two years to launch this solution, based on a flexible cloud architecture that can scale and deliver real-time insights into oil and gas upstream processes" said Mike Pfister, CIO, Conoco Phillips. "This release represents an important milestone demonstrating the impact of our ongoing collaboration. We look forward to continuing to work together to deliver a mature solution that creates business value for the upstream oil and gas industry," added Scott Wahl, CIO Upstream, Shell. "Accenture and SAP

are delivering a solution that brings in innovative technologies like AI to deliver real-time insights, greater visibility and better decision-making," said Jan van den Bremen, senior managing director and lead for Accenture Intelligent Platform Services in Europe. "We are proud to be the only SAP co-development partner working side-by-side to deliver leading oil and gas industry solutions. We've worked with SAP and

leaders in the oil and gas industry to co-develop a solution that helps enable faster adoption of new technologies to better manage changing market conditions." "Working together with Accenture and a consortium of industry leaders, we have delivered an industry-defined intelligent solution that has the capabilities upstream oil and gas companies need to reduce complexity by using market standards,"

said Benjamin Beberness, SAP global vice president of the Oil and Gas Business Unit. "SAP S/4HANA Cloud for upstream oil and gas is a flexible and agile solution that can provide customers a 360-degree view of the intelligent enterprise — from operations to the boardroom, enabling operational excellence."

AT&T Declares Quarterly Dividend on Preferred Shares

The board of directors of AT&T Inc. declared quarterly dividends on the company's 5.000% Perpetual Preferred Stock, Series A and the company's 4.750% Perpetual Preferred Stock, Series C. The Series A dividend is $312.50 per preferred share, or $0.3125

per depositary share. The Series C dividend is $240.7986111 per preferred share, or $0.2407986111 per depositary share. The dividends are payable on May 1, 2020, to stockholders of record at the close of business on April 9, 2020.

AT&T 5G Footprint Reaches 80 Locations

AT&T Communications has extended its low band 5G network – which went live in ten markets on 13 December 2019 – to 22 new locations, taking its overall 5G footprint to 80 markets. New locations covered include Beaverhead County (Montana); Mono County (California) and Springfield (Ohio). The

network utilizes former 3G spectrum in the 850MHz band. AT&T's original millimeter wave (mmWave) 5G footprint remains unchanged, covering parts of 35 cities. This network – branded '5G+' – was launched in December 2018 using 39GHz frequencies.

AT&T, Palo Alto Networks and Broadcom Collaborate to Develop a Disaggregated Scalable Firewall (DSFW)

AT&T, Palo Alto Networks and Broadcom have collaborated to develop the Disaggregated Scalable Firewall (DSFW) framework. This is an expansion to the Distributed Disaggregated Chassis (DDC) recently contributed to the Open Compute Project (OCP). DSFW will enable network operators to deploy firewalls as software-based platforms rather than hardware appliances. The DSFW expansion will deliver the first dynamically programmable fabric with embedded security functions and services at the edge of the network. DSFW will also open the door to future Scalable Disaggregated

Application Services. AT&T and Palo Alto Networks look forward to input from other OCP members. The three organizations involved in the creation of DSFW each brought unique capabilities. Palo Alto Networks' technology supports security capabilities directly on the network edge. This allows for protection of the network with continuous security, automation and analytics. Palo Alto Networks enable DSFW to scale dynamically as network traffic increases even during peak demand. The release of Broadcom's Jericho 2 chip was fundamental in the OCP contribution of the DDC and is an essential part of the DSFW

solution. Broadcom provided expertise for the J2 functionality, coupled with a new development on the chip to retain Layer 4 session information, which allows for the hardware offload, improving the scalability of the solution. The session-aware application will determine what can be processed directly on the fabric silicon instead of having to go to the DSFW for further inspection. AT&T, which has been disaggregating its network components for several years, worked with Palo Alto Networks and Broadcom to define the requirements, including scalability and functionality, for network security services

in a carrier environment. The DSFW's open hardware and software design support flexible deployment models that align with AT&T's overall network strategy. This initiative focuses on using AI and machine learning to prevent attacks using actionable events, which is embedded in the network fabric and does not require separate hardware. "Security has always been at the forefront of AT&T's network initiatives," said Michael Satterlee, vice president, Network Infrastructure and Services, AT&T. "Traditionally, we have had to rely on centralized security platforms or co-located appliances which are either not directly in the path of the network or are not cost effective to meet the scaling requirements of a carrier. We now carry more than 335 petabytes of data traffic on our global network on an average day, with 5G poised to push that number even higher. Securing that cargo using traditional methods just won't work. This new design embeds security on the fabric of our network edge that allows control, visibility and advanced threat protection." "By teaming up with AT&T, we are further advancing the industry's OCP initiative in the area of Cybersecurity and helping our customers not only support today's market needs but also be ready for future demand," said Alex Zinin, vice president of Worldwide Service Provider Business, Palo Alto Networks. "Our collaboration brings together leading technology that will enhance AT&T's network initiatives by embedding Palo Alto Networks' best-of-breed security capabilities directly in the infrastructure." "We commend AT&T and Palo Alto Networks on the release of the DSFW framework," said Oozie Parizer, senior director of product marketing, Core Switching Group, Broadcom. "This approach enables pervasive security at terabit scale economically. Through our close technical collaboration, we have leveraged the extensive capabilities in Jericho2 and look forward to delivering additional solutions in the very near future, to secure and scale the network infrastructure."

BT to Sell French Operations to Computacenter

BT and Computacenter have announced that they have entered exclusive negotiations on the acquisition of BT's domestic operations in France by UK-based Computacenter. The transaction is subject to consultations with works councils over a minimum period of two months prior to regulatory approval, with completion expected to take place by the end of 2020. BT's domestic operations in France include management and maintenance of IT and network infrastructure, as well as networking and related professional services. Bas Burger, CEO of Global at BT, commented: 'With this agreement we are close to reaching another milestone in the execution of our strategy to make BT Global a more agile business focused on the growing requirements of our multinational customers. I believe this agreement will prove a key step forward for our customers, for our people and for BT. It also offers a positive future for our domestic customers and the people who support them.'

BT Brings Intelligent Connectivity to UK Businesses with New Cisco Managed SD-WAN Solutions

BT announced the launch of a new managed software defined wide area network (SD-WAN) service for UK business customers, as it continues to develop its portfolio of converged business networking products. Combining the best of BT's capabilities into a single customer solution, the new Managed SD-WAN offering enables secure, high-bandwidth connections across multiple sites using fixed and mobile networks. As part of the launch, BT is offering two different Managed SD-WAN options based on the requirements of a customer's network, including Cisco SD-WAN powered by Viptela, and Cisco SD-WAN powered by Meraki. BT's Managed SD-WAN simplifies complicated network infrastructures and provides customers with complete visibility across their networks, allowing them to optimise traffic to suit business needs — balancing performance and agility. It replaces the complexity of traditional networks with one, smart, secure network, enabling customers to mitigate network threats, make more informed decisions and boost efficiencies resulting in better business performance. "Every organization — whether big or small — is on a journey towards digital transformation. But their success depends on whether they have a solution that is robust, agile and intelligent enough to meet new business demands," says

Steve Best, MD, Customer Solutions, BT. "From today, our business customers can benefit from a fully converged software defined solution that brings together the very best of BT. This includes fixed line connectivity, mobile data, dedicated security expertise, access to best-of-breed SD-WAN vendors and our enhanced proactive Managed Services with a single point of contact." Today's launch builds on the global announcements made with Cisco in 2018 and further expands on BT's portfolio of Cisco based software defined networking (SDN) and network functions virtualization (NFV) solutions in the UK. "As more enterprises look to transform their networks in a secure, cost effective and seamless manner they often turn to leading managed service providers with expertise, experience, reach and a world-

class offering in SD-WAN," said JL Valente, vice president of product management, managed services for Cisco's Intent Based Networking Group. "BT combines all these attributes and offers customers a long-term partner that can efficiently implement and manage a fully-fledged, secure SD-WAN platform. With BT expanding its portfolio of Cisco-based managed services, enterprise customers now benefit from more Cisco options to power their network, simplify their operations, and securely connect their users and machines to any cloud, anywhere." BT Managed SD-WAN is tailored to suit each customer's needs and is underpinned by BT's leading UK fixed and mobile networks. The SD-WAN solution is monitored and managed end-to-end by BT's dedicated team with unrivalled security expertise, including

3, 000 cyber security experts across 15 operation centers worldwide. "Right now, we are on the cusp of a network revolution. Our customers are looking for the next generation of intelligent connectivity, but they often don't have the resources to implement this on their own. Our fully managed service capability with an SD-WAN solution removes these barriers and brings secure connectivity and control across all customer devices and applications, so they can react faster and work smarter. Organizations looking to take their first step in their digital transformation journey can be reassured that Cisco's technology and our professional services backed by our unmatched security credentials can deliver the very best of networking and security for their business," says Steve Best.

BT to Launch Gigabit Speed Broadband Plan

British fixed line incumbent BT has announced plans to launch a new home broadband service offering gigabit speed to consumers 'from later this month'. In a press release, the operator said this new service will be introduced as part of a range of next generation 'Full Fiber' plans, and BT noted that the gigabit-capable tariff will be made available in 'hundreds of cities, towns and villages across the UK', with notable rollout locations including Belfast, Birmingham, Bristol, Cardiff, Edinburgh, Liverpool, Leeds, London and Manchester. According to the telco, more than two million premises are expected to gain access to the top-end speeds later this month, a figure which it claimed will give it 'the biggest Full Fiber network reach

of any provider in the UK'. Looking further ahead, BT has said its ambition is to reach around half of all UK homes by the end of 2025. Meanwhile, BT has said that more

details on its 'Full Fiber' product range, including pricing and availability for both new and existing customers, will be made available 'in the coming weeks'.

BT Offloads LatAm Business to CIH Telecommunications Americas

BT Group has announced that it has reached an agreement for the sale of selected domestic operations and infrastructure in 16 countries in Latin America to CIH Telecommunications Americas, an affiliate of CIH Technology Holdings. Assets and operations in the scope of the transaction delivered revenue of GBP110 million (USD127 million) to BT in fiscal year 2018/19. They include two owned fiber networks with a total length of 650km, 2,000km of leased fiber lines, four data centers and five teleports.

The divested business is headquartered in Sao Paulo, Brazil. BT and CIH have also entered into wholesale and reseller agreements, under which CIH will act as a regional channel for BT's products and services and continue to supply domestic connectivity services to BT. BT says it will retain a 'strong presence' in the region after the sale, delivering next-generation networking, cloud and security services to multinational customers across 21 countries. The transaction is subject to regulatory approval and is expected to

complete during this calendar year. BT and CIH have agreed not to disclose the terms of the purchase, which were agreed to in March 2020. TeleGeography notes that industry insiders have previously valued the sprawling LatAm business at around GBP1 billion. The sale represents the latest component in the ongoing break-up of BT's Global Services unit, as the British company seeks to 'become a more agile and focused businesses.

BT Develops Ultra MIMO Radio, Taps O-RAN for Insights

BT belongs to the O-RAN Alliance, but the British operator is not yet all that enamored with solutions that use O-RAN. However, it is getting value from O-RAN for work that BT is doing in-house to develop an "Ultra MIMO" radio. Neil McRae, BT's Managing Director and chief architect, said its Ultra MIMO radio will leverage the capabilities of massive MIMO, but will take it to a new level, using custom algorithms, signal processing and interference management technologies that BT is developing with its own engineers. "We're doing a lot in ultra MIMO," said McRae, who cited this work as one of the primary reasons the operator is active in the O-RAN Alliance. "O-RAN for us is a way of getting access to some of the radio capabilities in MIMO so we can use some algorithms to get much more capacity from a MIMO platform." Asked if BT typically develops these kinds of radio technologies in-house, McRae said that ideally, the company would not do it, but the supply chain in the space is very challenged. He was referring to the fact that the U.S. has attacked China's Huawei to the point that the vendor has been shunned by many countries around the globe. And this has left the telecom ecosystem with just two major vendors in the RAN space: Ericsson and Nokia. Despite intense pressure from the U.S., the U.K. government decided in January that Huawei can supply gear for the country's 5G networks, but it will be restricted to non-core portions, considered less security sensitive. Of the telecom vendors available to BT, McRae said, "Ericsson and Nokia are fantastic partners. We also use Huawei, also a fantastic partner. But we feel like we need more choice and capability. Our goal is to work with those guys [O-RAN] and others to drive next requirements in radio technology to ultimately give us more capacity." The O-RAN Alliance is creating open APIs so operators can mix and match radios or write their own software for a radio. Sachin Katti, a professor at Stanford University and co-chair of the O-RAN Alliance technical steering committee, said in an interview with FierceWireless last year that the goal of RAN virtualization is to run software on top of x86 or Arm-based hardware, instead of proprietary hardware. "I think that's a worthy cause," said McRae. But he said BT isn't "religious" about virtualization for its own sake. "We think sometimes you're increasing the complexity of operations," he said. "Today I talk to my supplier and they resolve it. In a disaggregated network, I have to talk to more than one supplier. I have to have a programmer on my own staff to de-bug it. We've got a lot to learn in how to operate the infrastructure. We will use the best solution for customer experience and that allows us to make a return. When you look at O-RAN it's still not clear to me that's there's a really strong single direction for the parties involved." BT is also not concerned about virtualizing its mobile core network. McRae said the company was using cloud-native capabilities in its core from the usual telco vendors. But it didn't see a need to try to modernize to the level of what Rakuten's doing with its greenfield network. He said Rakuten doesn't have to worry about 20 years or more of legacy equipment. "In cost terms, do we see any benefits of disaggregation in the mobile core? No, we see the opposite," he said. "It's more costly to run and with greater likelihood of problems."

Cisco Expands Simple and Secure Portfolio to Help Small Businesses Thrive

Cisco is accelerating its focus on serving small businesses by announcing new offers tailored to the small business buyer. In November 2019, Cisco introduced the new Cisco 'Designed for Business' portfolio at Partner Summit. Now the portfolio is growing with the addition of Cisco technology that originally powered Fortune 100 organizations and can now bring the same innovation to meet the needs of small businesses. Small business is big business and accounts for 44 percent of all IT spending – as a segment it's faster growing than the enterprises segment. Now more than ever, small businesses need to be agile when digitizing their business models. Ultimately, technology is critical to helping them grow their revenue, optimize their customer experiences and differentiate themselves to remain competitive. Small businesses need to connect securely and focus on protecting their users, data and devices at all times. To help address these needs, and allow small businesses to focus on their core activities, Cisco is announcing brand new updates to the Cisco 'Designed for Business' portfolio bringing together the power of machine learning, AI and cloud-driven solutions, and created to make buying, installation and maintenance simple.

The simplified experience includes:

- New App to manage small business networks: IT systems can be complex and expensive to maintain, especially with the limited IT resources of a small business. The new Cisco Business Wireless Mobile App provides a simple way for an individual or company to configure and manage networks in any location, all from the convenience of their smartphone. Available in the Apple App Store (iOS) or on Google Play (Android).

- New user experience. Simpler to buy: We now have a new button to connect small business customers to a Cisco partner to buy directly on Cisco.com. Plus, faster access to technical and sales specialists is now available, in 24 languages, globally, through live chat or call back in 15 minutes or less.

- New bundles and offers scaled for small businesses: To further reduce cost and

complexity while improving operational efficiency, bundled solutions will be available that focus on key technology areas to support rapidly growing businesses.

- Secure connectivity via Meraki: Network downtime and security issues can impact revenue, customer loyalty and data security. Bringing together the high-speed and high-density capabilities of WiFi 6 to the cloud-managed Meraki portfolio of access points, the new Meraki Wi-Fi 6 Access points bring simple network management and help with improved network performance, reliability and security – without the need for more IT staff. Cisco's first WiFI6 access point for Small Businesses brings flexibility to growing businesses looking to digitize quickly. The technology will enable their network to scale to effectively manage more connected devices and richer content like video, as well as provide better performance as new applications emerge.
- Meraki Cloud-managed Smart Cameras: Not only can cameras help reduce inventory shrinkage and other risks, they are also powered to deliver valuable
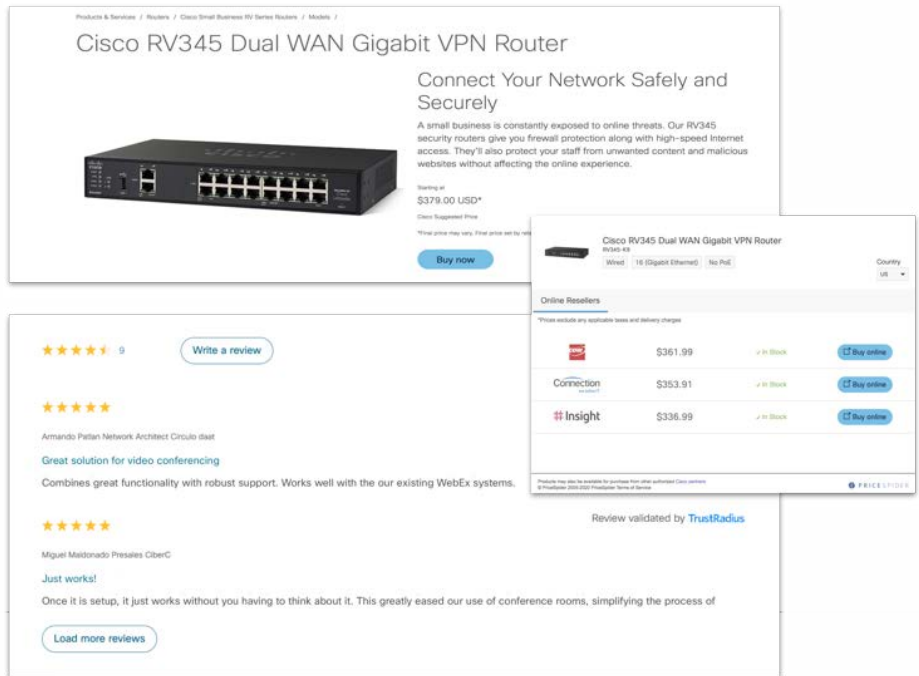
business insights on areas ranging from foot traffic to identifying which displays are attracting attention to parking utilization. These new cameras include high-quality video, wireless connectivity, on-appliance storage and built-in advanced analytics, eliminating

costs involved in sending traffic to a data center. They offer a 360-degree view through a fisheye camera, and one unit can cover an entire premise efficiently for small businesses.

Cisco Hands OpenRoaming Over to WBA

Cisco's decision to donate its OpenRoaming technology to the Wireless Broadband Alliance (WBA) should lead to better Wi-Fi roaming in the future. Cisco had been working on OpenRoaming for more than two years. It's built on the foundation of Passpoint, also known as Hotspot 2.0, which allows people to automatically and securely connect to Wi-Fi networks, acting more like a cellular network in that regard. Specifically, OpenRoaming allows a Wi-Fi device to automatically and securely connect to any Wi-Fi access point that's supported by the OpenRoaming Federation, according to a blog by Cisco CTO of Wireless Matt

MacPherson. Federation members include wireless access providers, such as service providers, managed service providers and property owners with guest Wi-Fi services; identity providers like MVNOs, social networks, and consumer brand companies; and handset makers and networking companies such as Cisco. With OpenRoaming now becoming an open standard via WBA, it will create a world where Wi-Fi users will be able to move seamlessly from one Wi-Fi network to another without re-registering or signing in, which is a big impediment to getting people to use services. The process of handing the technology over to the WBA started before the coronavirus outbreak, but it will have future implications to improve communications when people need remote connectivity, according to WBA CEO Tiago Rodrigues. Cisco has already rolled out OpenRoaming to a number of its customers. However,

"we are at the early stages of adoption where WBA will take the leadership and drive to scale globally, working with our Roaming members," Rodrigues said via email. "So whilst OpenRoaming today will have limited impact on our current direct situation, in the future the ability to connect automatically to a Wi-Fi network will significantly enhance the ability to work remotely, connect with family and friends, wherever you are in the world," he said. "In addition, policies can be applied to give priority to emergency services in challenging situations. This will not only help offset some of the challenges of global or national emergencies but more generally enhance productivity of the global workforce and help to support a positive work/life balance." Some of the benefits for cities, enterprises and venues include extending relationships with customers beyond their own city, enterprise and venue; securing new

revenue streams not previously possible; and providing seamless and secure Wi-Fi roaming with other WBA OpenRoaming members, according to Rodrigues. Industry support for the OpenRoaming platform comes from a variety of players, including AT&T, Boingo Wireless, Cisco, Comcast Communications, GlobalReach,

Google, Intel and Samsung. Cisco said it will stay involved as a board member and workgroup contributor of the WBA, actively participating in the deployment and growth of the OpenRoaming Federation. The WBA suggested applications of the technology extend beyond just smartphones. Companies are already are conducting

trials with OpenRoaming for autonomous and connected vehicles, and commercial developers can use OpenRoaming and location analytics tools to better understand how shoppers, patrons or employees use their spaces.

Airtel Partners Cisco for Network Upgrade

Indian cellco Bharti Airtel has partnered with US vendor Cisco to overhaul its network to address growing demand for mobile data services and to enable new B2B and B2C services. Cisco describes the new system as 'IP over Ethernet over Fiber' and claims that the network upgrade will be 'the largest hyper-complex brownfield network transformation of its kind in India'. The solution will integrate Cisco IP and optical solutions along with segment routing to more easily extend services in rural communities, the vendor added. Commenting on the upgrade program, Airtel CTO Randeep Sekhon was quoted saying: 'Our ongoing collaboration with Cisco is critical in helping us to be

5G-ready, collapsing multiple legacy domains to build a flatter, simpler and automated network with more bandwidth

to support internet services and the endless growth in consumer and business applications people rely on every day.'

Comviva divests Its Stake in TerraPay to Prime Ventures, Partech Partners and International Finance Corporation (IFC)

Comviva, the global leader in mobility solutions, today announced its first strategic digital business management deal with Zain Jordan, a leading telecom company in the kingdom. As part of the

multi-layer deal, Comviva will provide its industry-leading Digital Business Management Suite which includes Digital Services Delivery Platform (DSDP 2.0) and its expertise in Business Operations

and digital content, which will help Zain to drive its growing digital ecosystem. Comviva's DSDP 2.0 platform, combined with its expertise in business operations and digital content will help Zain overcome these challenges, helping the operator to stay focused on creating winning digital experience for subscribers, while optimizing systems and processes for cost minimization and revenue gains.In a statement on the occasion, Ramy Moselhy, VP & Head of MENA Region at Comviva said, "This deal is of strategic advantage to Comviva, as it has given us a footing in the Jordanian market. We are extremely excited to extend our innovative value proposition to Zain, which will help the operator in overcoming the major hurdles in the digital service delivery." "We are glad to be partnering with Comviva as our digital business aggregator, and looking forward

to benefiting from their expertise to help us boost our content related revenue while maintaining utmost customer experience and cost optimization," commented Zain Jordan. With the rising demand for digital services bringing increasing complexity in the content partner ecosystem, Zain Jordan has always desired to make the latest technology tie-ups in storage, access, fraud prevention and customer experience, while bringing whole-scale process improvements for optimizing operations. Comviva's DSDP 2.0 platform provides a mediating layer between Zain Jordan and digital service providers, specializing in various content formats like caller ring-back tone (CRBT), video, games, music, live streaming and so on. Unlike earlier, when content providers (CPs) would be dealing with invoices, billing and customer-relationship-management (CRM) integration separately for every new service, now there's a single DSDP 2.0 layer for service integration, making it easier for CPs to integrate services in Zain's growing digital ecosystem. With the aim of broad-basing the ecosystem of digital services, DSDP 2.0 will enable Content Providers to create an end-to-end service, helping those who have a rich content catalogue but lack the means to monetize their content. It provides support to new and exciting content mediums like augmented reality (AR) and virtual reality (VR), live streaming, e-sports, catering to new digital customer. Data and analytics-driven technologies will help the Zain to automate certain transactions with a greater degree of certainty, adding to the robustness of the system. With a single repository for digital service, the customer's digital journey will be uniform on various channels like IVR, SMS, app and so on. Similarly, DSDP 2.0's single business view, will allow the operator to take faster and more informed decisions on matters affecting their business.

Eutelsat's Konnect Africa to Connect Schools in the Democratic Republic of Congo with High Speed Internet

Konnect Africa, a subsidiary of Eutelsat Communications, Schoolap and Flash Services has announced a Memorandum of Understanding to connect several thousand schools across the Democratic Republic of Congo (DRC) to the Internet as part of the Schoolap project. It aims to provide schools with high speed internet connectivity, giving them access to a digital platform of officially recognized educational content and high quality teaching materials. The first stage of the project aims to connect 3,600 private schools over the next 12 months, leveraging Konnect Africa's satellite capacity and technical expertise, notably in terms of installation. Each school will subscribe to a "Home Unlimited or plus" package, giving it access to a high speed internet service. At a later stage, it is planned to roll the project out to several tens of thousands more schools, thereby responding to the requirement for digital inclusion which is part of government policy. Konnect Africa has been operating for over a year in the DRC, bringing broadband connectivity to unserved or poorly served areas, by delivering a solution that is affordable, flexible and available everywhere. Currently operating with limited capacity, Konnect Africa will see its in-orbit resources increase tenfold with the entry into service of the EUTELSAT KONNECT satellite in the autumn of 2020. With a total capacity of 75 Gbps, EUTELSAT KONNECT will be able to provide speeds of up to 100 Mbps with total or partial coverage of 40 African countries. Konnect Africa CEO Jean-Claude Tshipama said: "This project highlights the major benefits of satellite internet in bridging the digital divide, as well as the efficiency of the solutions deployed by the Konnect Africa teams. The entry into service of EUTELSAT KONNECT in the coming months will be a milestone in our ability to better address the strong demand for connectivity from our customers, ranging from individuals to businesses and government agencies."

FACEBOOK

Facebook to Award US$100 Million in Cash Grants, Ad Credits to Small Businesses

Facebook Inc said that it plans to award $100 million in cash grants and ad credits for up to 30,000 small businesses in over 30 countries to address the economic impact of the coronavirus outbreak. The majority will be in cash grants and Facebook will disclose more details soon about how businesses will be able to apply for assistance. Facebook Chief Operating Officer Sheryl Sandberg said in a post that the economic disruption poses a severe risk to small businesses. "We've listened to small businesses to understand how we can best help them. We've heard loud and clear that financial support could enable them to keep the lights on and pay people who can't come to work," Sandberg said, adding that Facebook is also going to make it easier for small businesses to get training and support from its teams. Facebook said companies will be able use cash to pay rent, cover operational costs or run advertising on Facebook. Many tech firms are taking steps to help small businesses that are facing a dramatic economic fallout as restaurants are forced to stop eat-in service and hundreds of millions of people around the world remain in their homes. Uber Technologies Inc said Monday it would waive the delivery fee for the more than 100,000 independent restaurants across United States and Canada on Uber Eats and would launch daily dedicated, targeted marketing campaigns to promote delivery from local restaurants, especially those that are new to the app."

Facebook Mulls Reliance Jio Investment

Social media giant Facebook was tipped to take a significant stake in Indian operator Reliance Jio, as part of a bid to expand its presence in the country, Financial Times (FT) reported. Sources told the newspaper Facebook was nearing a deal to acquire a 10 per cent share of the company as part of a "multibillion-dollar" transaction. In its Q4 2019 earnings report, Reliance Jio said it had 370 million subscribers as of 31 December 2019. Analysts at financial company Bernstein pegged its worth at more than $60 billion. An agreement was originally expected to be announced sometime this month, but the global outbreak of COVID-19 (coronavirus) threw the timing into question, FT reported. The move comes as Facebook looks to establish a more secure foothold in a strategically important market. On earnings calls throughout 2019, executives pointed to India as a leading driver of growth in daily active users on Facebook's namesake app. In July 2019, TechCrunch reported the company's WhatsApp platform hit 400 million users in the country. But Facebook has long struggled with regulatory hurdles in India, most recently battling for approval to launch a WhatsApp payments feature there. And in 2016, authorities blocked Facebook's attempt to offer consumers in the country its Free Basics sponsored data program, which would have provided access to its platform at zero cost.

HUAWEI

Huawei, Turkcell Trial 800G WDM Transmission on Live Network

Turkish mobile and fiber broadband operator Turkcell has partnered Huawei to test 800Gbps WDM fiber transmission on a live network between two data centers in Istanbul. The trial also confirmed the 400G ultra-long-haul transmission capacity of the live network, which can implement 1,040km of un-regenerated transmission from Istanbul to Ankara. Huawei's technology supports programmable and flexible adjustment of multiple modulation formats ranging from 200G to 800G. Turkcell says its network traffic has increased by 35% year-on-year, and with the emergence of 5G, cloud computing, and Big Data, service traffic will triple in the next five years, making fiber technology evolution essential.

Huawei Releases Its 2019 Annual Report

Huawei released its 2019 Annual Report, detailing a solid business performance. The company's global sales revenue in 2019 rounded off at USD$123 billion, up 19.1% year-on-year; its net profit reached USD$9 billion; and its cash flow from operating activities topped USD$13.1 billion, up 22.4% year-on-year. As part of a long-term, ongoing investment in technological innovation and research, Huawei invested 15.3% of its 2019 revenue – or approximately USD$18.8 billion – back into R&D. Its total R&D spend over the past decade now exceeds USD$85.9 billion. "2019 was an extraordinary year for Huawei," said Eric Xu, Huawei's Rotating Chairman. "Despite enormous outside pressure, our team forged ahead with a singular focus on creating value for our customers. We worked hard to earn their respect and trust, as well as that of

our partners around the globe. Business remains solid." In 2019, Huawei's carrier business led the commercial rollout of 5G networks. To further commercial adoption and promote new innovation in 5G applications, the company established 5G joint innovation centers together with carriers worldwide. Huawei's RuralStar base station solutions can effectively address coverage problems in remote areas. These solutions are being used in over 50 countries and regions, bringing mobile Internet to more than 40 million people living in remote areas. In 2019, sales revenue from Huawei's carrier business reached USD$42.5 billion, up 3.8% year-on-year. Huawei's enterprise business continues to support the digital transformation of customers across industries as the company helps lay the foundations for the digital world. Globally,

more than 700 cities and 228 Fortune Global 500 companies have chosen Huawei as their digital transformation partner. In 2019, Huawei announced its computing strategy with the aim of cultivating fertile soil for the intelligent world to flourish. As part of this strategy, the company launched the world's fastest AI processor, the Ascend 910, and the AI training cluster Atlas 900. In 2019, sales revenue from Huawei's enterprise business reached USD$12.8 billion, up 8.6% year-on-year. Huawei's consumer business continues to see robust growth, with a total of 240 million smartphones shipped throughout the year. The company reports further progress in developing the Seamless AI Life ecosystem across all scenarios and devices, including personal computers, tablets, wearables, and smart screens. In 2019, sales revenue from Huawei's consumer business reached USD$66.9 billion, up 34% year-on-year. "The external environment will only get more complicated going forward," Xu cautioned. "We need to keep enhancing the competitiveness of our products and services, promoting open innovation, and creating greater value for our customers and society at large. This is the only way we can seize the historic opportunities presented by the digital and intelligent transformation of industries, and maintain robust growth in the long run." All financial statements in the 2019 Annual Report were independently audited by KPMG, an international Big Four accounting firm. To download the 2019 Annual Report, visit www.huawei.com/en/press-events/annual-report/2019

Huawei to Promote Digital Inclusion in Lanka

Huawei recently launched Tech4all in Sri Lanka, to promote the digital inclusion for people and small businesses by focusing on connectivity, applications and skills. Tech4all is Huawei's long-term, digital inclusion initiative for using technology, applications and skills to empower people and organizations everywhere. "Technology is changing the world so fast. But how can we make sure that all people and all organizations can benefit from

this change? It is vital that governments, industry organizations and business partners act together to promote digital inclusion for all," Vice President of Huawei Enterprise Business in Sri Lanka, Indika de Zoysa said. "We call it Tech4ALL and focus on the three priorities: Connectivity, Applications and Skills," he said, adding that in terms of connectivity Huawei will continue to lower the barriers in terms of cost and coverage through technological

innovation, and in terms of applications, Huawei will empower the ecosystem, and help developers create more applications for different communities and industries. Huawei will work with governments, local communities, and other industries to enhance awareness of digital skills and provide necessary help." Huawei is committed to work towards digital inclusion based priorities of TECH4ALL, and support partners to achieve island

wide Wireless Coverage through innovative and cost effective solutions such as RuralStar. TECH4ALL believes that for the world to grow, develop, and transform, everyone is entitled to four basic rights: education, environment, health and development. Huawei will also work on improving Digital Health and Smart Education initiatives in Sri Lanka. The RuralStar solution is all about change. This solution transforms microwave or satellite transmission in traditional rural network solutions into Relay Remote Node (RRN) wireless backhaul, towers into simple poles, and diesel generators into clean, green solar energy, reducing the cost by more than 50%. "Huawei will soon open a joint Innovation Lab with the University of Moratuwa and Colombo, apart from continuing with industry training of partners and Seeds for the Future program, that Huawei launched in 2016 and has continued for four years.We will continue to help bring in technology transfer to future generation of Sri Lanka through this initiative," de Zoysa said. Huawei recently unveiled its new addition to the Y series: the Huawei Y7P. It is the first device to be launched with Huawei AppGallery, Huawei's newly launched application store, in Sri Lanka. Huwawei considers Sri Lanka to be an important market and has been identified as an entry level platform to introduce and boost sales volume, Huawei Consumer Business Group Sri Lanka, Head of Products, David Xukai said.

Huawei Enterprise Business Group Unveils New Global Ecosystem Strategy

Ramping up its global technology ecosystem, Huawei's Enterprise Business Group (BG) recently announced a new partner development strategy named "Profitability, Simplicity, Enablement, and Ecosystem" under which it will cooperate with global partners in supporting digital transformation programs. By the end of 2019, Huawei had more than 22,000 Sales Partners, 1200 Solution Partners, 4200 Service Partners, 1000 Talent Alliance Partners, and 80 Investment & Operation and Financing partners. Frank Shen Surong, Vice President of Partners & Alliances, detailed how in 2020 the company's new enterprise partner ecosystem will increase support in several areas. In terms of partner profitability, in 2020 Huawei Enterprise BG will maintain the channel partner incentive framework's stability, and expand the scope of partner incentivized products to include standalone software as well. Diversified special incentives, such as capability rebates and Business Incentive Program (BIP) will be introduced to motivate partners to pursue more ambitious goals. Driving greater simplicity, Huawei Enterprise BG will release a list of products that partners can get rebated to improve policy transparency, and make incentive eligibility clearer. It will allow partners to independently apply for and accept Marketing Development Fund (MDF) to accelerate the execution of marketing activities, and make Huawei Enterprise BG's entire business process visible to partners. For enablement, Huawei will launch Huawei Certified Pre-sales Professional (HCPP) certification for IP and storage products to help partners gain in-depth knowledge about relevant products and acquire practical skills. Huawei Enterprise BG has also extended the availability of Marketing Development Fund (MDF) and Joint Marketing Fund (JMF) to support global partners, solution partners, and carrier partners in their business development. Hank Stokbroekx, Vice President of Enterprise Service at Huawei Enterprise BG, also announced the Huawei ICT Academy Program 2.0 to develop two million ICT professionals and popularize digital skills over the next five years by collaborating with universities. This is part of Huawei's digital inclusion initiative, TECH4ALL. Huawei will set up the Huawei ICT Academy Development Incentive Fund (ADIF), with a total investment of at least US$50 million over the next five years. Huawei's new partner and ecosystem programs will be supported by continued technology innovations. The company recently announced that it will build a new wireless communications product factory in France, for example, to specialize in 4G and 5G equipment. This past month Huawei also released its new Intelligent Data Center Service Solution to help customers design, build and operate high-reliability, green and intelligent data centers. With the aid of AI, the Power Usage Effectiveness (PUE) can be reduced by 8%-15%.

Huawei Releases Smart 8T8R for Flexible Multimode Multi-Sector Deployment

Huawei released the industry's leading Smart 8T8R solution. This solution incorporates software-defined antennas (SDA), FDD dual-band 8T8R RRUs, and innovative algorithms. It supports on-demand multi-sector deployments across 2G, 3G, and 4G based on software configuration to enable convenient capacity expansion based on current hardware while achieving smooth evolution to 5G. This places operators in an advantageous position to address capacity issues with less CAPEX and OPEX in urban areas. Innovative SDA Enables Flexible 4T4R Multi-Sector and 8T8R Three-Sector Configuration and Smooth Evolution to 5G SDA combines Huawei's unique adaptive power sharing and phase calibration technologies and innovative baseband beamforming mechanism, allowing antenna lobes to be adjusted through software configuration. This enables networks to provide outstanding performance by tapping into the huge bandwidth across the 1.8 GHz to 2.6 GHz bands. Three-sector and multi-sector coexistence is also supported across 2G, 3G, 4G, and 5G on a single antenna, helping increase LTE capacity by 1.7 times. Furthermore, antenna replacement is not required for capacity expansion and evolution to 5G, protecting operator investment. The dual-band 8T8R RRU

uses the integrated wideband power amplifier that supports both FDD 1.8 GHz and 2.1 GHz, saving the tower space and rental costs. Power sharing is also supported among the bands of different radio access technologies (RATs) deployed on the same module. This adds extraordinary capabilities for operators to improve experience for cell-edge subscribers. Adopting innovative RF cluster interfaces, the module significantly simplifies deployment by reducing the number of required cables while also making mobile network more robust. Additionally, the module supports evolution to 5G through one-clink software

upgrade. Power sharing between sectors automatically allocates power resources in line with user distribution, ensuring capacity improvement across a full range of scenarios. Adaptive switching between TM4 and TM9 takes full account of UE penetration rates, maximally balancing the capacity demands for TM4 UEs and experience requirements for TM9 UEs. Algorithm coordination among SDAs, RRUs, and baseband units supports beamforming adjustment, providing a new technique for operators to improve cell capacity and user experience. In addition, Huawei's innovative algorithm allows for cost-efficient reconstruction of

GSM and UMTS networks. Faced growing challenges associated with continued increase in LTE traffic and accelerated 5G commercial adoption, operators must take balanced approaches to achieving both LTE network expansion and quick, smooth evolution to 5G. Huawei's Smart 8T8R solution allows for one-time SDA and 8T8R RRU deployment to serve multi-sector deployments across 2G, 3G, and 4G while supporting smooth evolution to 5G through software-based configuration, providing better choices for operators to build mobile networks.

Huawei CloudEngine 16800 Wins Frost & Sullivan 2020 Global Data Center Switch Technology Leadership Award with Highest Score

Huawei's CloudEngine 16800 data center switch won Frost & Sullivan 2020 Global Data Center Switch Technology Leadership Award, receiving 9.6 points for its technology leverage and 9.2 points for customer impact (10 points in total). It is the first 400GE switch in the industry to win this award. This award is intended to research and evaluate flagship data center switches from mainstream suppliers in the industry. After 10 rounds of selection, Huawei CloudEngine 16800 ranked first in both technology leverage (9.6 points) and customer impact (9.2 points), surpassing competitors' products and showing its industry-leading strength. "5G and AI have attracted wide attention from both the industry and society, and network infrastructure, as an important part of the new infrastructure, is also gaining attention. Huawei CloudEngine 16800 has made breakthroughs in high-density 400GE switching, intelligent lossless network performance, and intelligent O&M. It is Huawei's flagship product in the AI era." said Leon Wang, President of Huawei's Data Center Network Domain, "I am delighted that Huawei has received this professional award in the industry. We are also confident that we will remain customer-centric, continuously invest

Huawei CloudEngine 16800
Wins Frost & Sullivan 2020 Global Data Center Switch
Technology Leadership Award with Highest Score

- Industry's highest-density 400GE data center switch
- Industry's only embedded AI chip, intelligent and lossless network with zero packet loss
- Intelligent O&M, detecting faults in 1 minute, locating faults in 3 minutes, and rectifying faults in 5 minutes

Building a Fully Connected, Intelligent World

CloudEngine 16800 data center switches

in innovation, and maintain our global leadership." In January 2019, Huawei launched the industry's first data center switch oriented to the AI era — CloudEngine 16800. The CloudEngine 16800 supports the industry's highest-density 400GE interfaces and provides a switching capability five times the industry average, meeting smooth evolution requirements for the next 10 years. The CloudEngine 16800 is used to build the intelligent and lossless Ethernet with zero packet loss, improving the computing efficiency and storage IOPS. In addition, Huawei CloudEngine

16800 uses AI technologies and works with iMaster NCE FabricInsight to detect faults within 1 minute, locate faults within 3 minutes, and rectify faults within 5 minutes, accelerating evolution to the autonomous driving network. Furthermore, Huawei CloudEngine 16800 series switches overcome multiple hardware engineering technical difficulties, such as ultra-high-speed signal transmission, super heat dissipation, and efficient power supply, reducing the per-bit power consumption by 26% and saving energy.

5G Super Uplink: World's First Commercial Adoption, Enabling Conch Group to Achieve Smart Factory 2.0

China Telecom Anhui has teamed up with Huawei to successfully provide 5G Super Uplink services to Conch Group, one of China's largest building material corporate groups. This is the first time the innovative 5G technology has been implemented into worldwide end-to-end (E2E) commercial operations. The solution has triumphed in the market, providing strong support for Conch Group to attain smart cement factory 2.0 upgrade and transformation. This was a trial adoption by Conch Group, where a miniature 5G customer-premises equipment (CPE) Pro 2 developed on HiSilicon's chipset was used, highlighting successful E2E commercialization of 5G super uplink. Super Uplink was first unveiled as a joint innovation by China Telecom and Huawei at the Mobile World Congress (MWC) Shanghai in 2019. The innovative solution allows for 5G networks to increase uplink bandwidth while further reducing latency through TDD/FDD coordination, complementation between high and low frequency bands, and time-domain/frequency-domain aggregation. This provides strong technological support for 5G industrial applications. The trial deployment covers a full scope of network scenarios, including the mining

areas, factories, and indoor and outdoor locations of a subsidiary cement factory of Conch Group. The verification results demonstrated a 20% to 60% increase in uplink data speed in the areas close to base stations and a maximum 300% improvement in the areas distant from the base stations after Super Uplink was used. This greatly improves uplink perceived rate and extends coverage areas for 5G networks. Such leading network capabilities provide effective support for continued safety operations, intelligent warning, and real-time surveillance in mobile scenarios. This is conducive to overall improving production efficiency, maintaining safe and healthy working environment, and promoting Conch Group's smart cement factory development. China Telecom Anhui boasts leading comprehensive information service capabilities. In close collaboration with Huawei, it has successfully explored a number of innovative 5G technologies and services. These include China's first 5G-showcase airport, 5G VR panoramic broadcast for Huangshan Scenic Resort, self-driving field tests, and 5G telemedicine. Conch Group is one of the world's leading cement production enterprises and one of China's largest building material corporate

groups. It has been proactive in leveraging intelligent technologies to transform and upgrade traditional industries. It has successfully constructed China's first full-process intelligent cement factory. In June 2019, Conch Group signed a strategic cooperation agreement with China Telecom Anhui to set up a 5G innovation lab for smart manufacturing. The two parties have jointly started 5G innovative application pilots in its cement factories in Wuhui and Quanjiao of Anhui province in close collaboration with Huawei, leading for 5G smart manufacturing in Anhui. The group's 5G project leader said: "Since the signing of the strategic cooperation agreement, China Telecom and Huawei have been deeply involved in the construction of our smart cement factories, with a multitude of achievements already implemented in our production. Based on 5G networks, we have already seen significant improvement in the operational efficiency across a full range of production processes in cement-related mining, transportation, and production. In particular, Super Uplink helps us meet the high-performance requirements in bandwidth, latency, and coverage of our key businesses on wireless networks."

Standard Bank SA Accelerates Journey to Digital Enterprise with Microsoft, SAP

Standard Bank South Africa is moving its core SAP Cloud Platform services to Microsoft Azure to significantly improve the experience customers have with the bank, while enabling it to introduce new solutions to market more efficiently. This accelerates the digital transformation of SAP customers to S/4HANA by partnering with Microsoft and using jointly developed reference architectures, roadmaps, and industry best practices. Many enterprises are looking to reduce their reliance on their own datacenters and moving more of their core workloads to the cloud. Sabelo Nkwanyana, Standard Bank's CIO

for Personal and Business Banking SA, says leveraging the computing power of Microsoft and the product innovation capability of SAP demonstrates how Standard Bank is embracing partnerships and ecosystems to develop customized solutions for its clients." SAP has a deep understanding of our business requirements and how we want to ensure our customers are happy with our service offering. This partnership continues our focus on innovation by leveraging the respective skills of SAP and Microsoft to transform the digitization and personalization journey for our customers,"

says Nkwanyana. Lillian Barnard, Managing Director, Microsoft South Africa says, "The Project Embrace initiative between Microsoft and SAP announced globally last year is centered around the customer journey to SAP S/4HANA and SAP Cloud Platform on Microsoft Azure. The work that we are doing with Standard Bank is the first local demonstration of this partnership, and another milestone in the journey Microsoft is on with Standard Bank, to bring innovation into every aspect of the bank's IT system and enable enriched interactions with the bank's customers." The partnership brings together SAP and

Microsoft, along with a global network of selected system integrators, to move on-premise SAP ERP and SAP S/4HANA customers to the cloud through industry-specific best practices, reference architectures and cloud-delivered services. Barnard continues, "Enterprises are migrating to cloud providers at an accelerated rate. This makes it critical for our customers to have the right cloud infrastructure in place, enabling them to unlock the power of innovation. Microsoft's significant investment on the African continent, with our first hyperscale datacenter regions in Johannesburg and Cape Town, means many more partners and customers are enjoying the benefits of our intelligent cloud platform." Speaking on the SAP partnership specifically, Barnard adds, "Project Embrace has three tenets at its heart: simplify, accelerate and innovate. By accelerating our customers' digital transformation journey, we are enabling them to become agile, efficient digital enterprises on Microsoft Azure – with a cloud platform optimized for SAP

– leveraging best practice and specialist expertise." "Today's announcement is the biggest partnership centered on SAP implementation in Africa. With client experience a key strategic pillar for Standard Bank, Project Embrace reflects the shared commitment of both SAP and Microsoft to accelerate our customers' journey to the cloud," says Cathy Smith, Managing Director at SAP Africa. This project will deliver a unified approach to how Standard Bank runs SAP S/4HANA in Microsoft Azure. Ultimately, this will help the bank deliver a faster time-to-market on products and services, while ensuring its IT infrastructure is optimized. By moving workloads to the cloud, Standard Bank will be able to access a range of features that it can deploy instantly and scale according to demand. This will result in cost reductions, improved system performance, and access to innovation. "This will empower the bank to create new business models and deliver more personalized outcomes in today's dynamic business environment. By providing Standard Bank with consistent

engagement and delivery models, SAP and Microsoft bring both industry-specific best practices and deep local insight to deliver a compelling value proposition for their clients," says Smith. "Through Project Embrace, we are now able to better identify our business pain points and effectively address them through technologies that deliver a demonstratable return on investment. Having the ability to more accurately predict where customer challenges and dissatisfaction will occur enables a more flexible enterprise environment. We can help our customers transform their businesses and their lives in a secure way. This is much more than SAP and Microsoft supplying us with products. This is about fundamentally enhancing our digital journey for the future," concludes Nkwanyana of Standard Bank SA. In addition to the work done with Standard Bank, the Microsoft and SAP initiative is assisting customers around the world, and in a variety of industries, accelerate their journey to becoming digital, intelligent enterprises.

Microsoft Brings FastTrack for Azure to the Middle East and Africa to Accelerate Customer Cloud Journeys

Microsoft announced its FastTrack for Azure program has arrived in the Middle East and Africa (MEA), accelerating organizations' digital transformation journeys by migrating to the cloud. "We're excited to bring our global FastTrack for Azure program to organizations across MEA, accelerating their digital transformation and supporting their cloud

journey with customized guidance directly from our engineering teams," says Onur Gorur, Azure product marketing director, MEA, Microsoft. "This program will help our customers bring innovations to market with agility, participate in the new global digital economy by leveraging the intelligent cloud – and better engage customers, empower employees, optimize operations and

reinvent products and services." FastTrack for Azure is a customer success program that enables the rapid, effective design and deployment of cloud solutions. With tailored guidance from Microsoft's Azure engineers, customers will now be able to migrate to the intelligent cloud quickly and easily, receiving support for Windows Server, SQL Server and SAP, as well as the modernization of enterprise apps and the delivery of advanced data analytics. The move comes less than a year after Microsoft launched datacenter regions in both the United Arab Emirates and South Africa, serving the market's increasing appetite for digital transformation. The availability of FastTrack for Azure signals Microsoft's ongoing commitment to the economic growth of the region. The Microsoft cloud is at the heart of the company's partnerships with private and public organizations to boost up skilling and job creation, enhancing healthcare, education and public safety, and driving societal change.

Dubai Silicon Oasis Authority Names Microsoft as Strategic Partner of Dubai Technology Entrepreneur Campus

Dubai Silicon Oasis Authority (DSOA) has signed a memorandum of understanding (MoU) with Microsoft. The year-long agreement appoints Microsoft as a strategic partner of Dubai Technology Entrepreneur Campus (Dtec), the largest tech hub in the Middle East, wholly owned by DSOA. The MoU outlines a framework to leverage Microsoft's technology and solutions to advance Dtec's objective of fostering high-potential UAE startups. The agreement also supports Microsoft's long-term goal of catalyzing promising B2B and B2C startups, to create an enabling environment for innovation and entrepreneurship. Startups operating from Dtec can benefit from the 'Selected Startups' prioritized application path to the Microsoft for Startups program, while exceptional startups in Microsoft's program may be considered for one of Dtec's acceleration programs. Select Dtec startups can also use Microsoft-supplied products, resources and facilities to strengthen their technological capabilities and accelerate business growth. The MoU also enables Microsoft to host expert-led workshops for Dtec's startups and creates opportunities for Microsoft executives to mentor them. Such efforts seek to develop local talent and, in turn, enrich the region's technological landscape. Dtec and Microsoft have also agreed to sponsor and participate in strategic events, such as Demo Days, as well as promote programs and initiatives that draw upon the natural synergy between the two organizations. Speaking on the MoU, William Chappell,

CFO and Executive Vice President for Technology and Entrepreneurship at DSOA, said: "DSOA and Microsoft have a shared vision of creating a vibrant ecosystem of startups and entrepreneurs that empowers them to break barriers and achieve success. We welcome this agreement that enhances our ability to invest in ambitious tech innovators. "Microsoft is a leader in the industry and a pioneer in innovative technologies. Its mission to empower businesses to achieve more makes the company an ideal mentor for Dtec's startups. We are confident that this MoU will significantly contribute to driving the growth of UAE startups, and look forward to a rewarding partnership."

The Dubai Silicon Oasis Authority has taken strides in creating and encouraging an environment for entrepreneurial spirits" said Roberto Croci, Managing Director Microsoft for Startups. "Our work with their DTEC Campus will ensure that startups get the strongest possible support as they join the economy, innovate and create jobs. Together, we will nurture them on the road to digital transformation – engaging customers, empowering employees, optimizing operations and reinventing products and services." Dubai Technology Entrepreneur Campus is the largest tech hub and coworking space in the MENA region and a base of operations for more than 800 startups from 72 countries.

Microsoft to Acquire Affirmed Networks

Microsoft has signed a definitive agreement to acquire Affirmed Networks, which sells virtualized, cloud-native mobile network solutions to operators. Terms were not revealed. The move makes a lot of sense given Microsoft's desire to help the telecom industry maintain 5G networks from the cloud. Upon the close of the transaction, Affirmed Networks will become part of Microsoft, but the companies didn't talk about specifics in terms of management

roles. Just yesterday, Affirmed Networks announced a new president and CEO, with Anand Krishnamurthy replacing Hassan Ahmed, who is retiring. "We founded Affirmed with a vision to help mobile operators fundamentally transform how they build and operate their networks and to create and deliver innovative new services at significantly lower cost than what was considered possible," Krishnamurthy said in his message

today. "We delivered on that vision by bringing market-leading innovation in virtual evolved packet core; a cloud-native platform for 5G; and a range of capabilities in automation and orchestration that made us a leader with over 100 customers across the globe."Krishnamurthy is a co-founder of the company, and previously served as president and COO. Microsoft said the acquisition will allow it to evolve its work with the telecom industry, building

on a secure and trusted cloud platform for operators. "With Affirmed Networks, we will be able to offer new and innovative solutions tailored to the unique needs of operators, including managing their network workloads in the cloud," wrote Yousef Khalidi, corporate vice president of Azure Networking, in a blog post. "Previous generations of wireless networks have been based on purpose-built hardware.

We believe that with innovation in software and by making use of broadly available cloud computing platforms like Microsoft Azure, operators can deploy and maintain 5G networks and services more efficiently, more cost effectively, more rapidly and more securely," he added. Affirmed Networks, which was named one of FierceTelecom's top disruptors of 2018, has been one of the leading vendors for

NFV, and got into the game before NFV was an industry buzzword. Its customers include AT&T, Vodafone and SoftBank. Last year, Affirmed Networks and Turkcell announced they had deployed one of the largest virtualized mobile networks in the EMEA region, supporting more than 35 million mobile broadband subscribers and carrying over a terabit per second of customer traffic across the region.

Microsoft to Open New Datacenter Region in Spain and Expand Strategic Partnership with Telefónica

Microsoft Corp. and Telefónica have announced plans to further expand their global strategic partnership to accelerate digital transformation for public and private entities of all sizes. Together, the two companies will help their mutual customers leverage the cloud to more quickly, securely and easily innovate and scale their operations to create new business opportunities and improve competitiveness. Microsoft will deliver intelligent Microsoft cloud services – including Microsoft Azure, Microsoft 365, Microsoft Dynamics 365 and Microsoft Power Platform – from new datacenter regions in Spain. Additionally, Telefónica will accelerate its own internal digital transformation by choosing Microsoft as its strategic cloud partner. "Telefonica and Microsoft share a commitment to helping Spanish organizations of all sizes, in every industry, thrive in a world of rapid technologic change," said Satya Nadella, CEO, Microsoft. "Together, we will deliver comprehensive, intelligent, secure and trusted cloud services – spanning Azure, Microsoft 365 and Dynamics 365 – from datacenters in Spain, helping our customers accelerate their digital transformations." "The opening of a Microsoft datacenter region in Spain is a game changer, a key milestone in our strategic partnership that will boost Spain's industrial fabric and digital economy", said José María Álvarez-Pallete, chairman and CEO of Telefónica. "Cloud is one of the key priorities in Telefónica, as we announced in November, with the launch of Telefónica Tech, the new unit to boost the solid growth of digital services. This global strategic partnership

with Microsoft will certainly help to achieve that objective."

Microsoft and Telefónica Partnership Momentum
The announcement builds on the partnership between both companies with new initiatives and joint plans across three key areas:

• With the expanded relationship, the two companies have identified the opportunity to collaborate to better serve the needs of organizations of all sizes, in critical sectors such as government, health, education, travel, manufacturing, retail, finance, insurance and more, all with significant social and economic impact. Joint capabilities, delivered from a Microsoft Azure datacenter region in Spain and leveraging Telefónica's infrastructure, will also allow Telefónica and Microsoft's joint customers to deliver new services that require low latency,

security and assured bandwidth, opening up new scenarios around 5G, edge computing and Industry 4.0.
• A new strategic collaboration framework between Telefónica and Microsoft will also provide joint go-to-market plans in Telefónica's footprint.
• As part of Telefónica's digital transformation, the company will use the Microsoft cloud for its own internal operations, pursuing efficiency, flexibility and scalability improvements, optimization of operations and cost reductions. Telefónica has also deployed Microsoft 365 to its global employee base to enable more seamless communication and collaboration across the 14 countries in which it operates. As a strategic partner for its multi-cloud strategy, Microsoft will train hundreds of Telefónica employees on Microsoft Cloud services.

Microsoft's TV White Space Proposal Moves Forward

The Federal Communications Commission (FCC) on Friday proposed updates to TV white space (TVWS) rules in the name of better broadband for rural areas of the country. It's a win for Microsoft, which last year had filed a petition seeking updates to the rules to advance its Airband Initiative. White spaces operate in portions of the broadcast television bands that are not used by television stations, and while Microsoft early on was met with resistance from the National Association of Broadcasters (NAB), the parties managed to come to terms on a number of items. Specifically, the FCC's Notice of Proposed Rulemaking (NPRM) seeks comment on a proposal to permit higher transmit power and antenna height above average terrain for fixed white space devices in less congested geographic areas. How leading manufacturing, infra and service providers are using edge computing to deploy innovative IoT solutions that drive business results. If adopted, the changes would allow white space devices to reach users at greater distances, resulting in better broadband coverage. It also would permit higher-power mobile operation within defined geographical areas, and

revise the rules to provide flexibility for these devices to more fully participate in the IoT. Microsoft President Brad Smith tweeted the company's response to the news. One of the criticisms with TVWS has been around the accuracy of the FCC's databases. Commissioner Mike O'Rielly in his statement said improvements have been made to ensure the accuracy of the databases, and "we are finally in a position where interested parties can determine whether there is usable spectrum in a specific area, providing them with the needed assurances to invest and deploy systems." Other industry stakeholders applauded the FCC's move as well. The FCC's TVWS order, through its increased power and tower height limits, makes the band more powerful and useful, adding an important new tool to unlicensed rural providers employing it to serve customers, according to Louis Peraertz, VP of Policy for the Wireless Internet Service Providers Association (WISPA). "This is a good move for services using TV White Space technologies, and will help more rural Americans get on the internet," he said in a statement. "A unanimous FCC correctly recognizes the potential to use vacant TV

channels to extend broadband in rural and remote areas," said Michael Calabrese, director of the Wireless Future Program at the Open Technology Institute at New America. "The proposal to allow the use of unlicensed TV white spaces to extend internet connectivity to vehicles, including school buses and farm equipment, meets critical needs. Opportunistic use of unused TV spectrum will bring enormous benefits to rural, tribal and unserved communities." Connect Americans Now (CAN) consists more than 270 members, including Microsoft and groups representing agriculture, education, veteran and telehealth organizations. In a statement, CAN Executive Director Richard Cullen said the action on TVWS can help more farmers and ranchers capitalize on advancements in precision agriculture and improve access to telehealth solutions for more seniors and veterans, among other things. "With so much at stake, we encourage the Commission to move swiftly to finalize and implement rules in 2020 that support greater utilization of TV white space to enhance the pace, scale and cost-effectiveness of rural broadband deployments," he said.

Nokia Completes Acquisition of Elenion Technologies

Nokia announced the successful completion of its acquisition of Elenion Technologies, a U.S.-based company focusing on silicon photonics technology. The planned acquisition was originally announced February 19, 2020. Elenion's technology expertise and unique design platform and services enable Nokia to expand its market footprint by addressing the critical and rapidly evolving optical connectivity requirements of 5G, cloud and enterprise networking. Ownership of these key assets brings time-to-market and cost advantages to Nokia's broad portfolio of networking solutions by applying the massive scale and economies of silicon design and manufacturing to the optical supply chain.

Pekka Lundmark Appointed President and CEO of Nokia
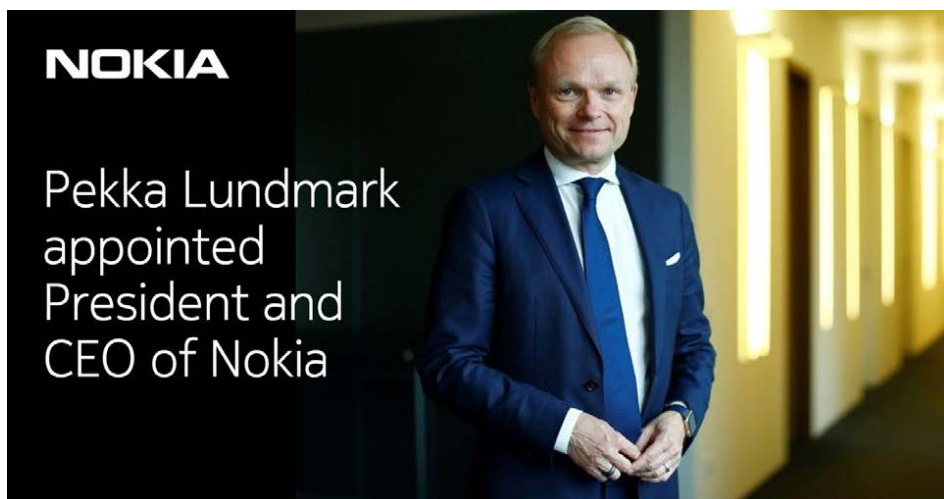
Nokia's Board of Directors has appointed Pekka Lundmark as President and Chief Executive Officer of Nokia. Lundmark is expected to start in his new role on September 1, 2020. Lundmark is currently President and CEO of Fortum, a leading energy company based in Espoo, Finland, where he consistently delivered robust total shareholder returns, successfully renewed the company's strategy, and positioned it to be a strong player in the transforming global energy sector. Prior to Fortum, Lundmark served as President and CEO of Konecranes, a global material-handling technology leader, and from 1990-2000 he held multiple executive positions at Nokia, including Vice President of Strategy and Business Development at Nokia Networks. Lundmark holds a Master of Science degree from Helsinki University of Technology. He will be based in Espoo, Finland. "With the acquisition of Alcatel-Lucent behind us and the world of 5G in front of us, I am pleased that Pekka has agreed to join Nokia," said Risto Siilasmaa, Nokia Board Chair. "He has a record of leadership and shareholder value creation at large business-to-business companies; deep experience in telecommunications networks, industrial digitization, and key markets such as the United States and China; and a focus on strategic clarity, operational excellence and strong financial performance." "I am honored to have the opportunity to lead Nokia, an extraordinary company that has so much potential and

so many talented people," said Lundmark. "Together we can create shareholder value by delivering on Nokia's mission to create the technology to connect the world. I am confident that the company is well-positioned for the 5G era and it is my goal to ensure that we meet our commitments to our customers, employees, shareholders and other stakeholders. Strong values, leading innovation and unflinching commitment to our customers have always been core to Nokia and I want to put this even more at our center as we move forward." Rajeev Suri, Nokia's current President and CEO, indicated earlier to the Board that he was considering stepping down from his role at some point in the future, provided a solid succession plan was in place. Nokia's Board of Directors has conducted a structured process for CEO succession and has been working closely with Suri to develop internal candidates and identify external candidates. That process culminated on March 2, 2020, when Nokia's Board of Directors made the decision to move forward with Lundmark's appointment. "After 25 years at Nokia, I have wanted to do something different," said Suri. "Nokia will always be part of me, and I want to thank everyone that I have worked with over the years for helping make Nokia a better place and me a better leader. I leave the company with a belief that a return to better performance is on the horizon and with pride for what we have accomplished

over time. Pekka is an excellent choice for Nokia. I look forward to working with him on a smooth transition and wish him the best success in his new role." "On behalf of the entire Board of Directors I would like to thank Rajeev for his many contributions to Nokia, where he has served with both honor and distinction," said Siilasmaa. "Rajeev's loyalty, commitment, and deep personal integrity have served as an example to all of Nokia. I know that Rajeev will, like myself, always have Nokia blue running through his veins." Suri will leave his current position on August 31, 2020 and continue to serve as an advisor to the Nokia Board until January 1, 2021. During his tenure as CEO of Nokia and Nokia Siemens Networks, Suri led a significant consolidation of the telecommunications infrastructure sector; a fundamental turnaround of Nokia Siemens Networks including the disposal of multiple non-core assets; massive growth in the company's highly profitable patent licensing business; the integration of Alcatel-Lucent; and successful diversification into new software and enterprise markets. Under his leadership, Nokia became one of the top two players in telecommunications infrastructure, rising from a number four position, with the scope and scale for long-term success. "Pekka is the right person to lead Nokia in the coming years," said Sari Baldauf, Nokia Board Vice Chair and Chair nominee. "I look forward to working closely with him and Nokia's leadership team to build an even stronger company, one well positioned for the future." "I would also like to extend my personal thanks to Rajeev," continued Baldauf. "He has been at the heart of a dramatic transformation of Nokia into one of the top players in the telecommunications infrastructure industry. His time at Nokia has been characterized by significant achievements, a relentless customer focus and a clear commitment to building a company culture based on both performance and respect. Rajeev leaves Nokia with my gratitude and appreciation for all he has done for the company."

Nokia and SBB Complete Next Generation FRMCS Frequency Trial for Smartrail 4.0 Project

Nokia and Swiss Federal Railways (SBB, CFF, FFS) have completed a proof of concept trial to help define radio frequency for the new Future Railway Mobile Communication System (FRMCS) standard. As part of the collaboration, Nokia carried out LTE 1900MHz TDD (Time Division Duplex) radio frequency testing with SBB in the cantons of Fribourg and Neuchâtel, Switzerland. Due to be introduced in 2025, FRMCS will bring a host of benefits to rail operators and passengers. These include cost containment through increased utilization of existing infrastructure, enhanced levels of safety and security, and improved rail network performance and reliability. Robert Badertscher, Head of Connectivity at smartrail 4.0, SBB said: "This proof of concept project is a major contribution to delivering FRMCS as essential enabler for smartrail 4.0, which is an industry-wide initiative to prepare Swiss railways to

modernize the rail system. The result sets an important direction in terms of FRMCS frequencies for the industry program's goal to exploit the potential of new, emerging technologies for the railways of the future." When fully deployed, FRMCS will be capable of handling the huge volumes of information that underpin new services such as improving the capacity of the existing tracks. Jochen Apel, Head of Global Transportation, Nokia said: "SBB is at the forefront of work to define the FRMCS standard, which will provide a gateway to a new generation of rail industry innovation. This proof of concept will also contribute to work that both SBB and Nokia are carrying out with other rail companies to ensure all the benefits of FRMCS are realized for operators and passengers." In this frequency proof of concept, Nokia deployed remote radio heads, with tests using rolling stock specially equipped with

measurement instruments. The global leader in GSM-R deployments, Nokia has worked with SBB for more than 20 years, delivering end-to-end communications solutions and services over multiple technologies including GSM-R, IP/MPLS and Optical networks. Currently, the industry standard for rail communications, GSM-R does not provide the necessary bandwidth to deliver all the benefits that FRMCS will offer. Apel added: "This work is essential to enable a smooth transition to international deployment of FRMCS and is fundamental to unleashing the potential that the new standard will deliver across security, safety and productivity. Nokia is also working with rail companies elsewhere in Europe as they explore how 5G and digital transformation can enhance customer services and operational efficiency."

Singtel and Nokia to Trial 5G Network Slicing

Singtel and Nokia yesterday (2 March) agreed to work together to develop and trial 5G network slicing capabilities, based on a Network as a Service (NaaS) approach that provides customers with 'highly customizable services for a variety of 5G use cases and applications'. The network slicing trials are the latest in a series of initiatives that the Singapore telco and its technology partners are working on to develop 5G use cases in areas such as cloud gaming, manufacturing, and maritime operations. In the joint press release, Singtel said the NaaS platform, enabled by the vendor's next generation operations suite and cloud management products which 'automate the creation and delivery of digital services', will give it improved 'control and visibility of services across the network while addressing specific 5G needs of enterprises with speed, efficiency and flexibility'. The 5G network slicing trials will be conducted and tested with organizations later this

year. TeleGeography notes that last month telecoms regulator the Info-communications Media Development Authority (IMDA) confirmed that at the closing of its '5G Call for Proposal' deadline on 17 February, it had received three bids from the city-state's MNOs, with Singtel and TPG Telecom (Singapore) each submitting separate bids, and the

second and third largest cellcos – StarHub and M1 – handing over a joint bid for a concession. IMDA is currently evaluating the submissions, and expects to award the spectrum by mid-2020. The regulator will assess, among other things, telcos' network security design and ability to achieve 50% island wide coverage by end-2022.

" Network slicing will open up a realm of exciting possibilities for our enterprise customers to go to market quicker with new and innovative 5G-powered services, such as virtual reality, IoT and smart factory applications. We are happy to be trialling network slicing capabilities with Nokia."

Mark Chong
Group Chief Technology Officer, Singtel

Nokia Bell Labs' World Records and Innovations in Fiber Optics to Enable Faster and Higher Capacity 5G Networks of the Future

Nokia Bell Labs announced that its researchers have set the world record for the highest single carrier bit rate at 1.52 Terabits per second (Tbit/s) over 80 km of standard single mode fiber -- the equivalent of simultaneously streaming 1.5 million YouTube videos – which is four times the market's current state-of-the-art of approximately 400 Gigabits per second. This world record, along with other optical networking innovations will further strengthen Nokia's ability to develop networks for the 5G era that meet the ever-growing data, capacity and latency demands of industrial Internet of Things and consumer applications. Several of these achievements were presented as part of Nokia Bell Labs' post deadline research papers at the Optical Fiber Communications Conference & Exhibition (OFC) being held this week in San Diego. Additionally, Nokia Bell Labs researcher Di Che was awarded the OFC Tingye Li Innovation Prize. Named after the late Tingye Li, a Bell Labs luminary in the field of optical communications, the prize is given to an early career professional who has demonstrated innovation in their research. Marcus Weldon, Nokia CTO and President of Nokia Bell Labs, said: "It has been fifty years since the inventions of the low-loss

fiber and the associated optics. From the original 45 Megabit-per-second systems to more than 1 Terabit-per-second systems of today – a more than 20,000-fold increase in 40 years – to create the fundamental underpinning of the internet and the digital societies as we know it. The role of Nokia Bell Labs has always been to push the envelope and redefine the limits of what's possible. Our latest world records in optical research are yet another proof point that we are inventing even faster and more robust networks that will underpin the next industrial revolution." The highest single-carrier bitrate at 1.52 Terabits per second was set by a Nokia Bell Labs optical research team led by Fred Buchali. This record was established by employing a new 128 Gigasample/second converter enabling the generation of signals at 128 Gbaud symbol rate and information rates of the individual symbols beyond 6.0 bits/symbol/polarization. This accomplishment breaks the team's own record of 1.3 Tbit/s set in September 2019 while supporting Nokia's record-breaking field trial with Etisalat. Nokia Bell Labs researcher Di Che and team also set a new data-rate world record for directly modulated lasers (DML), which are crucially important for low-cost, high-

speed applications such as datacenter connections. The DML team achieved a world record data rate beyond 400 Gbit/s for links up to 15 km. In addition to these world records, Nokia Bell Labs researchers have also recently achieved significant achievements in optical communications, including:

- The first field trial using spatial-division-multiplexed (SDM) cable over a 2,000km span of 4-core coupled-core fiber was achieved by researchers Roland Ryf and the SDM team. The experiments clearly show that coupled-core fibers are technically viable, offer high transmission performance, while maintaining an industry standard 125-um cladding diameter.
- A research team led by Rene-Jean Essiambre, Roland Ryf and Murali Kodialam introduced a novel new set of modulation formats that provide improved linear and nonlinear transmission performance at submarine distances of 10,000 km. The proposed transmission formats are generated by a neuronal network and can significantly outperform traditional formats (QPSK) used in today's submarine systems.
- Researcher Junho Cho and team experimentally demonstrated capacity gains of 23% for submarine cable systems that operate under electrical supply power constraints. The capacity gains were achieved by optimizing the gain shaping filters using neural networks.

The researchers that achieved the world record and research results are part of Nokia Bell Labs' Smart Optical Fabric & Devices Research Lab, which designs and builds the future of optical communications systems, pushing the state-of-the-art in physics, materials science, math, software and optics to create new networks that adapt to changing conditions and go far beyond today's limitations.

NOKIA

Nokia Bell Labs' world records and innovations in fiber optics to enable faster and higher capacity 5G networks of the future

Nokia Introduces New Wi-Fi 6 Mesh Router and Technology Innovations to Deliver Ultimate Gigabit Experience in a 5G World

Nokia announced it is adding a new Wi-Fi 6 Beacon to its whole-home WiFi portfolio, helping operators to deliver a powerful user experience. Providing a high-capacity, high-performance in-home solution, the new Beacon 6 uses Wi-Fi 6 to deliver 40 percent faster speeds than previous Wi-Fi generations. To further enhance the in-home experience, Nokia is also adding low-latency technology built on Nokia Bell Labs innovations to its Wi-Fi portfolio. Drastically improving residential Wi-Fi networks, the Nokia Beacon 6 provides operators with an easy to install solution that can support low-latency applications such as gaming and gigabit speeds essential for creating a seamless end-to-end 5G experience. Ben Wood, chief of research at CCS Insight said: "The benefits of 5G are going to change user experiences and customers' expectations. The blend of the latest Wi-Fi 6 technology, low latency performance and in-home Wi-Fi mesh solutions linked to 5G will allow operators to deliver a seamless communications platform for next generation applications and solutions." Currently more than 25 percent of homes globally are connected to a Wi-Fi network and there are about 5 billion Wi-Fi-connected devices in the home including home computing, smart TVs and smart home devices. To cope with this growth, operators and end-users are investing in devices that support Wi-Fi 6, a new Wi-Fi standard that improves

speed by at least four times in dense areas and reduces latency by 75 percent1. The Beacon 6 is the first Nokia WiFi device to showcase several new technologies working seamlessly together. This includes:

- Support for Wi-Fi 6 which improves the overall speed, performance and latency of a Wi-Fi network with OFDMA2, a modulation scheme used in 5G that allows the access point to talk to more devices at once.

- The Beacon 6 introduces Wi-Fi Certified EasyMesh3 and is fully interoperable with 3rd party Wi-Fi Certified EasyMesh products for easy install. Nokia's new mesh controller capabilities ensure the best Wi-Fi performance is achieved in the home by managing channel selection and adding advanced interference capabilities that are unique in the market.

- Nokia Bell Labs low-latency innovations including PI24 algorithm (available 2H20) that consistently improves latency even in congested environments. With PI2, latency is reduced from hundreds of milliseconds to 20 milliseconds which can be further reduced to <5 milliseconds when paired with L4S in the core network. L4S is currently being standardized by the IETF5 and builds on Bell Labs innovations that eliminate jitters and delays that can impact the user

experience in low-latency applications like gaming and virtual reality.

The introduction of Nokia's Beacon 6 and new low-latency innovations will play an important role in helping operators deliver a powerful 5G user experience at home. With Nokia's Beacon 6, operators can leverage the speed and performance of Wi-Fi 6 to seamlessly off-load 5G mobile traffic to the Wi-Fi network, allowing end users connected to a 5G wireless network to go from the car into the home without any disruptions. This is critical for operators looking to free up expensive 5G spectrum for higher ARPU use cases like Industry 4.0 and IoT. "Nokia's new Beacon 6 will play a fundamental role in helping operators significantly enhance residential Wi-Fi and for the first time, deliver a true 5G experience across the network," said Sandra Motley, President of Fixed Networks at Nokia. "By leveraging the power of Wi-Fi 6, Nokia's new Beacon 6 can help establish a significantly faster and more powerful Wi-Fi network in the home that will forever change the game for operators and end users alike. Whether it's a home, work or public environment, the ability to seamlessly offload from mobile 5G to Wi-Fi 6 will enable operators to accelerate 5G rollouts, reduce costs and ultimately ensure a consistent, premium 5G end-users experience is achieved."

"New Zealand already has some of the fastest internet connectivity in the world thanks to the strong customer uptake of the FTTH Ultra-Fast Broadband (UFB) program," said JB Rousselot, Chorus New Zealand's Chief Executive Officer. "We are building on this fantastic progress with the launch of our 10G GPON services under the product banner of HyperFibre and are excited about the role that WiFi6 will play in enhancing the customers experience. Lab testing of the Beacon 6 on our fibre network has demonstrated that we can take wireless speeds beyond a gig. This new technology provides a way for our fantastic fibre asset to play a meaningful part in New Zealanders 5G wireless experiences."

Enter the world of Wi-Fi 6

NOKIA

Nokia Launches AVA 5G Cognitive Operations to Help Telcos Enter the 5G Era

Nokia has announced the launch of a complete AI as a service offering: Nokia AVA 5G Cognitive Operations. The framework and its underlying AI-based solutions enable CSPs to transform their network, service and business operations through the application of AI, automation and cloud scalability. The solution will provide CSPs with insights to assist with slice creation and assurance to meet committed SLAs. With 5G and the explosion of IoT devices unfolding, CSP operational teams are challenged with having to manage an ever-growing complexity through new use cases, service requirements, virtualization and network slicing. Traditional network and service management approaches are no longer sustainable, thus requiring AI and automation. Nokia AVA 5G Cognitive Operations is a complete AI as a service offering, combining data science, machine learning as well as telco and cloud expertise to bring AI to life. It anticipates network and service failures with a high level of precision and accuracy up to seven days in advance. If failures arise, Nokia 5G Cognitive Operations can solve them up to 50 percent faster and accurately assess the impact on customers and services. By taking pre-emptive, automated actions to resolve issues before they affect subscribers and enterprise applications, CSPs trialing the

service have seen a 20 percent reduction in customer complaints and a 10 percent reduction in costly site visits. The insights provided will help support CSPs with their slice creation, with an intelligent provisioning system identifying network resources, what SLAs can be committed and where new revenue opportunities can be found. Future capability will also enable CSPs to customize slice creation, providing different SLA levels based on unique user requirements. Nokia AVA 5G Cognitive Operations is underpinned by Microsoft Azure cloud technology - with other public and private cloud options possible. In addition, Nokia's Cognitive Collaboration Hubs will help CSPs to operationalize AI solutions through the work of cross-functional teams around the world, while the Digital Network Architecture provides common digital tools and proven landscape to ease data collection and enable digitized methods of procedures (DigiMoPs). This framework provides an end-to-end service view with near real-time impact correlation for better visibility and control, supported by Nokia's extensive library of AI use cases that have been proven to solve business challenges. The solution delivers intelligent fault diagnosis, failure localization and dynamic impact analysis. CSPs can leverage this functionality to shift away from incident-

driven operations to a more proactive data-driven maintenance approach. The "AI-as-a-service" commercial model means upfront costs are minimized, linking payments to usage and outcomes. A large part of this solution is already commercially available and expected to be completely available in the second quarter of 2020. Don Alusha, Senior Analyst at ABI Research, said: "AI and 5G network slicing will be fundamental for new value creation in the industry, particularly for enterprise verticals that need reliable, low-latency communication networks to support their business operations. Nokia AVA and Microsoft Azure capabilities present CSPs with an option to obtain the 'intelligence' they need to monitor and maintain their networks in a bid to ensure compliance with strict SLAs in an elegant and consistent fashion." Dennis Lorenzin, Head of Network Cognitive Service unit at Nokia, said: "Operators face a perfect storm of rising traffic and consumer expectations, so it is crucial to be able to predict and prevent service degradations at an earlier stage, while solving issues that arise significantly faster. Nokia AVA 5G Cognitive Operations enables CSPs to operate and assure latency for 5G use cases through AI, ultimately delivering an enhanced customer experience for consumers and enterprises."

Paltel Group Invests in Palestinian Startups weDeliver and Receet

Palestine Telecommunication Company, Paltel, is thrilled to announce its latest investments in two of the country's premier early-stage startups, WeDeliver, and Receet. The announcement was held at Paltel Group's Innovation Hub, Fikra, in the presence of CEO of Paltel Group Ammar Aker, Managing Director Laith Kassis, Founder and CEO of weDeliver Ahmad Ramahi, and Founder and CEO of Receet Omar Barkawi along with other executives from Paltel Group. This announcement follows Paltel Group's first

major investment in audiobook platform Kitab Sawti, as one of the contributors that helped the startup raise an impressive USD 6 million in Series A funding. On behalf of Paltel Group, Al-Aker expressed his support for Palestine's emerging startup scene, especially those innovating within the field of information technologies. Further, Al-Aker was pleased that Paltel Group has taken a leading stance on supporting the country's entrepreneurs, and providing them with a platform to incubate and accelerate their ideas and access the

resources needed to compete in regional and international markets. Established in 2018, WeDeliver has since become the region's first and foremost crowd sourced on the way delivery service for businesses in emerging markets. The relatively new startup was the first to be hosted by Fikra and has garnered considerable attention with the entrepreneurial scene across the region and has won the first place in the startup category at Startup Istanbul 2019. As one of Palestine's fastest-growing startups of all time, WeDeliver

is preparing to launch in the Kingdom of Saudi Arabia within the upcoming months. "Paltel Group's investment in WeDeliver is the next step for us to up our game by further optimizing our platform with new services, and most importantly, expand to new markets," says Ramahi. He further shared his gratitude to not only the team behind weDeliver, but to the invaluable customers who have helped propel the startup from its humble beginnings as a city-wide enterprise to one that is reaching cities across the world. Digital receipt startup, Receet, was established in late 2017 and is working to skip the slip and embrace the power of digitization. The mobile application connects with the point of sales of participating retailers and uses NFC and Bluetooth technology to push dynamic and personalized receipts onto customers' smartphones. The

platform also allows customers to find and customize their receipts, document taxes, and complete expense reports. With support from the region's premier accelerator program, Dubai Smart City, and as an Ibtikar portfolio company, the simple yet game-changing premise of Receet has boosted the startup's appeal across the region. Founder and CEO, Barkawi expressed his appreciation to the Paltel group for investing and supporting Palestinian startups to reach new markets. Paltel Group's latest foray into the world of entrepreneurship and venture capital is making the case for a more diversified startup ecosystem. One that attracts international investors and promotes long-term business opportunities needed for local startups to scale beyond Palestine. Ultimately, this deal comes at a crucial moment for Palestinian innovators, as

the country embraces entrepreneurship and works to support emerging startups looking to tap into the digital revolution and seize global opportunities.

Fikra: Since its establishment in 2018, Paltel Group's Innovation Hub is fast becoming the go-to destination for entrepreneurs looking to transform their ideas into viable startups, develop their minimum viable products, and to validate, adapt, and scale them. Fikra provides its entrepreneurs with a free workspace equipped with the latest technologies, along with exclusive training sessions, mentorship opportunities, and the ability to connect with leading business enablers and industry partners from across the globe. As Paltel Group's signature innovation hub, Fikra also operates as a corporate venture capital firm and provides equity-based funding to high-potential Palestinian startups.

PCCW Global

PCCW Global and Türk Telekom International Collaborate to Boost SD-WAN Services

Türk Telekom International (TTI), the international arm of Türk Telekom Group handling all international data, wholesale voice and roaming business functions, and PCCW Global, the international operating division of HKT, Hong Kong's premier telecommunications service provider, have signed a long-term master service agreement for TTI to provision Software-Defined Wide Area Network (SD-WAN) services in collaboration with PCCW Global for their enterprise customers, reducing unnecessary traffic over MPLS networks

and enabling the secure, efficient use of online cloud services while providing more capacity for mission-critical applications. Traditionally, an enterprise would connect its regional offices over an MPLS network infrastructure, bypassing the public Internet and only providing online applications from a centralized and typically company-managed server. However, the growth and demand for innovative online cloud services from a range of international service providers requires more advanced, flexible and intelligent networking options

provided by SD-WAN services. Under the collaboration, the SD-WAN service will leverage broadband Internet connectivity, dual-edge devices, distributed gateways and multiple connectivity options. An end-to-end management portal will provide complete control with zero-touch provisioning, safe in the confidence that mission-critical applications will be equipped with the security and bandwidth that is required. By providing SD-WAN services to its enterprise customers, TTI continues to expand its product lines,

taking advantage of the diversification trend and growing the company's service portfolio to provide a unique, market-leading service which is continually being optimized for performance, while leveraging cost-effective broadband connectivity over both the Internet and 4G LTE. Mr. Sameh Sobhy, Vice President, Middle East, Turkey & Africa, PCCW Global, said, "This collaboration will allow TTI to extend the reach and deployment of its services on a worldwide basis by making use of PCCW Global's SD-WAN capabilities, while at the same time PCCW Global can now extend the reach of its service portfolio to a greater geographic area across Turkey, Eastern and Central Europe where TTI has presence." Mr. Sükrü Kutlu, Group CEO of Türk Telekom International, said, "In our complex business environment, Türk Telekom International continually assesses the compatibility of its strategy for each product and service, so by adding the SD-WAN service in collaboration with PCCW Global to TTI's current product range, enterprise customers will experience cost effective, secure, policy-driven transport and improved performance."

PCCW Global and UniStrong Collaborate to Deliver New and Exciting Global Positioning Technologies to the Aviation and Telecommunications Industries

PCCW Global, the international operating division of HKT, Hong Kong's premier telecommunications service provider, and Beijing UniStrong Science and Technology Corporation Limited (UniStrong), a world leading spatial-temporal product and service provider, will collaborate in the rapidly growing field of Global Navigation Satellite System (GNSS) technologies, unlocking exciting new concepts and services especially suited to the telecommunications and aviation industries. There are currently four global navigation satellite systems, namely BDS, GPS, GLONASS and Galileo, which are capable of providing global positioning, navigation, and timing (PNT) services. The collaboration between PCCW Global and UniStrong will extend the value of this technology further, linking satellite positioning to 5G mobile networks to provide positioning data accurate to within centimeters, thereby creating advantages that will unlock a wealth of new services for telecommunications providers rolling out new networks to support Internet of Things (IoT), smart cities and the aviation industry. UniStrong's extensive experience in developing high-precision products, solutions and services will enable PCCW Global to integrate new services with 5G mobile infrastructure, providing High-Precision Positioning (HPP) accurate down to centimeter levels. This integration of precision positioning expertise and technologies has the potential to revolutionize industries such as commercial drone operations, autonomous vehicles and transportation, logistics, construction, agriculture and others. This integration of leading edge

technologies will also enable the provision of smart aviation solutions for airport authorities. Based on high-precision positioning and navigation technology, new airports will be able to leverage smart civil construction works that will facilitate safer and more efficient airport operations. These aviation technologies will also be able to integrate with a wide variety of IoT sensors, edge computing capabilities, machine vision and other AI technologies to create intelligent surveillance platforms capable of managing and enhancing many aspects of airport safety and efficiency. The installed base of GNSS devices in use globally is forecast to increase from 6.4 billion in 2019 to 9.6 billion in 2029, with Asia-Pacific continuing to account for more than half of the global GNSS market. In terms of global annual GNSS receiver shipments, the market is forecast to grow from 1.8 billion units in 2019 to 2.8 billion units in 2029, according to a 2019 market report by the European Global Navigation Satellite Systems Agency (GSA). Mr. Benney Cheng, Head of Strategic Project

and Development, PCCW Global, said, "As a global ICT service provider with extensive high speed fiber networks and cloud services coverage worldwide, we are delighted to cooperate with UniStrong with the aim to offer unique, game-changing solutions in Satellite High Precision Positioning (SHPP) and Continuous Operating Reference Station (CORS) solutions ideally suited to the new era of 5G, IoT and smart cities." Dr. Jun Shen, Corporate Vice President and Chief Scientist of UniStrong, said, "The cooperation between UniStrong and PCCW Global will further promote the development of professional solutions and applications that are oriented towards global users' needs. Based on GNSS technologies, and deeply integrated with communication technologies, Big Data, Industry 4.0, IoT, artificial intelligence and other technologies, these solutions will empower and influence more industries and countries, and promote BDS/GNSS global applications and international services worldwide."

Viu Deepens Partnership with GMM Grammy to Bring Highly Anticipated Premium Thai Content to Viu'ers in Asia

Viu, a leading pan-regional OTT video streaming service from PCCW Media Group with more than 41 million monthly active users (MAU), further deepens its partnership with Thai entertainment giant GMM Grammy to offer top-notch One31 Channel and GMM25 content on its platform to the region. With the partnership, Viu offers near real-time simulcast – within two hours – of One31 Channel's content in Thailand, giving Thai Viu'ers more choice about when and how they may watch their favorite shows. The same content will be available to all Viu'ers in Malaysia, Indonesia, Myanmar and Singapore, with local language subtitles in Bahasa Malaysia, Bahasa Indonesia, Burmese and English, soon after the initial broadcast in Thailand. The partnership brings over 300 hours of near real-time simulcast content from One31 Channel to these markets, with a significant 812 hours' worth of library content to Thailand. Furthermore, 290 hours of GMM25 content will now also be available to all Malaysia and Indonesia Viu'ers, complete with English and Bahasa Indonesia subtitles respectively. Into its third year, the collaboration has been extended to enable Viu to not only exclusively serve up near real-time simulcast of One31 Channel and provide fresh GMM25 content, but also allows Viu Premium users to download the content to watch at their leisure. Highly-anticipated titles include One31 Channel's Crowns of Grass (March, 2020), The Passbook (March, 2020), the Venom's Tale (February 2020) and GMM25"s The Mistress, Love Revenge, Club Friday the Series 11. Ms. Virginia Lim, Chief Content Officer, Viu said, "After our success with Korean content across the region, we see Thai content as the next regional content wave in Southeast Asia. With the GMM partnership, we are glad to provide another popular genre of quality content on our strong platform which serves millions of digital audiences across the region. Our video minutes have grown in billions over the years and this is a testimony of our content in deepening Viu'ers engagement. We

will continue to bring the best entertainment to our platform." Mr. Takonkiet Viravan, Chief Executive Officer of One31 Channel, said, "We are very happy to have Viu as a partner. Combining the strengths of Channel ONE31's prominent Thai dramas and Viu's international online platform, we will bring both of our audiences together and expand our audience base. As technology continues to advance, there are so many possibilities for our communities to grow and it is our pleasure to grow together with Viu." Mr. Sataporn Panichraksapong, Chief Executive Officer of GMM25, said, "GMM25 and Viu have been partners for three years, ever since Viu's entry into the Thai market. GMM25 series, The Mistress, Love Revenge and Club Friday the Series proved popular on Viu Thailand platform. From now on, Viu-GMM25 partnership will expand further as Viu will bring Viu Thailand's content to viewers in Malaysia and Indonesia. The collaboration will increase the audience base of Thai content in overseas markets."

The Internet Association of Australia Announces Interconnect via API with PCCW Global

PCCW Global, the international operating division of HKT, Hong Kong's premier telecommunications service provider, and the Internet Association of Australia (IAA), a leading non-profit

organization operating Australia's largest Internet exchange network, announced their API interconnect and bilateral collaboration. Under the new collaboration, customers of either PCCW Global's Console Connect SDI® platform or IAA's peering fabric IX Australia will be able to seamlessly access all network services on either carrier or fabric through their respective online portals. All IAA members on their national Internet exchange platform can now access Console Connect on-demand. PCCW Global has an extensive global network footprint, with points of presence worldwide and interconnections directly with key cloud, IX, IoT and SaaS partners worldwide, all of whom are accessible and available via the platform. The IAA is a member-based association providing technical services including peering through its IX Australia network, the largest non-profit, carrier-neutral Internet exchange in Australia. With a membership

comprising carriers, service providers, content providers, distributors, research and education, private enterprise and industry professionals, IAA is a vital nexus for the industry and driver of innovation. The Console Connect SDI® platform spans over 128 data centers in more than 40 countries, and the number is growing with more connections being added continuously. Customers can purchase on-demand connectivity between key data centers, partners and all major cloud on-ramp operators, including AWS Direct Connect, Microsoft Azure, IBM Cloud, Oracle Cloud, Google Cloud, Alibaba Cloud, Tencent Cloud and NAVER Business Platform. They can also directly connect with other key IX operators in Europe and the United States who are already on the platform, including players such as DE-CIX. Mr. David Hooton, IAA Chair, said, "IAA is committed to the development and growth of the industry, both within

Australia and internationally. Collaborating with PCCW Global on a project like this is beneficial to our members and the wider Internet community as it removes connection complexity, allowing opportunities to readily expand for global reach. This enables our members to deliver a tremendous expansion of services both into and out of Australia." Elaborating on the importance of the collaboration, Mr. Michael Glynn, Vice President of Digital Automated Innovation, PCCW Global, said, "Over the last six months, we have focused on building our core platform in Asia, North and South America, Europe, Africa and the Middle East. We have recently upgraded our backbone from Australia to Asia and the USA, and I am pleased that we can now welcome key partners to the platform in Australia."Mr. Glynn added, "Having a partner like the Internet Association of Australia enables its members to access our pay-as-you-go global uncontended

network and extend their reach between key data centers, cloud services / partners or other users across our global platform. The collaboration will also, in time, facilitate extended reach for our global customers to more data centers in Australia and New Zealand." "Our strategy is to facilitate on-demand platforms for our partners to self-provision services anywhere on our extensive uncontended global backbone which currently spans over 160 countries. With key SaaS, IoT, cloud, carrier and ICT partners, we are enabling a community of platforms to work together on one global real time ICT ecosystem," he said. Console Connect runs on top of the worldwide PCCW Global MPLS network, which spans over 160 countries and 3,000 cities and is physically separate to the public Internet, offering an uncontended, redundant core network with multiple diverse paths between countries.

Tech Mahindra and Ahlstrom-Munksjö Collaborate to Enable Digital Transformation with SAP's S/4HANA

Tech Mahindra Ltd. a leading provider of digital transformation, consulting and business reengineering services and solutions, announced a collaboration with Ahlstrom-Munksjö to enable digital transformation with SAP's S/4HANA. The collaboration will deepen strategic partnership to provide a digital roadmap for Ahlstrom-Munksjö's global business. The collaboration aims at a company-wide, multi-year business platform renewal program to power the future success of the company. It is the key enabler in Ahlstrom-Munksjö's growth strategy implementation and it will be aligned with many of the ongoing development programs. This is one of the largest programs for SAP's S/4HANA based ERP globally for business support and transformation. Kristiina Lammila, CIO, Ahlstrom-Munksjö, said, "Tech Mahindra has been our partner in the major IT transformation that we have been carrying out in Ahlstrom-Munksjö during the past almost 6 years. They are supporting us on many levels, from enabling strategy implementation to aligning business process management and securing business. They are a partner with an attitude to rapidly solve problems and develop things together with us. We have full confidence in them and are happy to further deepen our cooperation with our next major project of renewing our business platform. " The collaboration will also shape a long term success through business transformation with an efficient, agile and advanced business platforms leveraging SAP's HANA technology worldwide. Rajesh Chandiramani, Senior Vice President, Tech

Mahindra, said, "Tech Mahindra is proud to have been chosen as a strategic transformation partner for the Business platform renewal program. We have been a strategic technology partner of Ahlstrom-Munksjö for more than 5 years now and this new engagement will further strengthen our partnership. We strongly believe this transformation will result in, enhanced customer focus, higher growth and long-term profitability for Ahlstrom-Munksjö." This collaboration aligns with Tech Mahindra's TechMNxt charter, focused on leveraging next-generation technologies like Cybersecurity, Artificial Intelligence, Blockchain, 5G, and Internet of Things, to disrupt and enable digital transformation, and to build cutting-edge technology solutions and services for customers globally.

Tech Mahindra and Honeywell Announce Expanded Collaboration to Build Digitized "Factories of the Future"

Tech Mahindra and Honeywell have teamed up to build "Factories of the Future", leveraging industry-leading digital technologies. The two companies plan to capitalize on digital transformation, 5G, Industry 4.0, software capabilities and engineering expertise to enable customers in the manufacturing industry to scale-up even faster. "Tech Mahindra and Honeywell have enjoyed many years of successful collaboration, and this proposal is the next step as we continue pressing toward an autonomous manufacturing future for our customers,"

said Sunil Pandita, vice president and general manager, Honeywell Connected Industrial. "Together, we will accelerate solution adoption in the market, creating smarter, safer and more sustainable industries." Honeywell and Tech Mahindra will aim to deliver world-class operations and performance management to enable manufacturing customers to expedite their growth and realize the value of Industry 4.0 technologies and solutions. Both Tech Mahindra and Honeywell are focused on building an ecosystem that supports collaboration. "Tech Mahindra's

collaboration with Honeywell will enable us to empower manufacturers to accelerate their digital transformation journey and build factories of the future," said Nilesh Auti, global head, Manufacturing Industry unit, Tech Mahindra. "As part of our TechMNxt charter, we are focused on leveraging next generation technologies to address our customers' evolving and dynamic needs. Honeywell's domain knowledge, combined with Tech Mahindra's technology expertise and global customer base, will enable our customers to increase their profitability and enhance efficiency."

Telangana Government and Tech Mahindra Collaborate to Launch 'Blockchain District Accelerator Program'

Tech Mahindra, a leading provider of digital transformation, IT and business re-engineering services and solutions announced the launch of the T- Block Accelerator, the inaugural accelerator program for the Telangana Blockchain District in partnership with Government of Telangana and IBC Media, an innovation management company. The launch event was organized at Tech Mahindra Infocity Campus in Hyderabad and was well represented by government dignitaries, blockchain startups, educational institutes and members from the developer community. The event was graced by several dignitaries from the government including Hon'ble Shri Jayesh Ranjan (Principal Secretary of Industries & Commerce and IT Dept, Telangana Government), Hon'ble Smt Rama Devi (Officer on Special Duty (OSD), ITE&C Department, Government of Telangana) and other leading senior corporate executives from the industry. The launch of T-Block is a step in continuation of Telangana Government's endeavor to make Telangana as the 'Blockchain Capital of the World'. A Memorandum of Understanding (MoU) had been signed between the Government of Telangana and Tech Mahindra to this effect in 2018. This initiative is aimed at startups that have a strong blockchain use-case;

thereby accelerating the start-up growth and therein contributing to the growth of the overall industry. Jayesh Ranjan, Principal Secretary ITE&C Department, Government of Telangana, said, "The state of Telangana is committed to its vision of positioning Hyderabad as one of the leading Blockchain cities of the world. We are happy to set in motion the first edition of the T-Block Accelerator program. This accelerator will be a torch-bearer to multiple future blockchain accelerators in the country and we are excited to partner with Tech Mahindra to identify and promote innovative blockchain-based solutions to solve real-world problems." Through this initiative, Tech Mahindra, will enable creation of an ecosystem which will empower startups to solve tough business problems for clients across diverse industry verticals. The Telangana Government will help provide the required regulatory framework to enable and promote Blockchain growth. Rajesh Dhuddu, Global Practice Leader, Blockchain, Tech Mahindra, said, "As partof our TechMNxt charter, we at Tech Mahindra have been bullish in our efforts to expand blockchain adoption in India and globally. Our partnership with the state government for the Telangana Blockchain District stems from our desire to build a world-class support

infrastructure for blockchain startups and make Hyderabad a destination of choice among several new-age entrepreneurs and blockchain evangelists. We look forward to successfully running the T-Block Accelerator and building the public blockchain ecosystem in India." Raghu Mohan, CEO, IBC Media, mentioned, "We are very excited to partner with Tech Mahindra and run the T-Block Accelerator program for the Telangana Blockchain District. As a company driven by the potential of emerging technologies, sustainable growth and the entrepreneurial spirit, we, at IBC Media, strongly resonate with the vision of the Telangana government to foster innovation in India and are excited for the possibilities. On behalf of the startup fraternity of India, I am proud that an Indian State Government has taken such a progressive step" The registrations for the T-Block Accelerator will be open from February 3, 2020 with a one-week boot camp, followed by a four-week-long intensive training program. Participating startups will receive mentorship and guidance from leading experts in the startup and blockchain space. The program includes workshops, presentations, discussions, and assignments designed to impart the practical knowledge required to build relevant blockchain products with real-world applications.

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Securing your Digital Business with Innovation in a Connected World

Innovation and digital transformation was always at the core of our strategy to 'Drive the digital future to empower societies' putting our efforts on providing innovative solutions enabling connectivity and mobility.

Today we are able to play a greater role in the digital lives of consumers and enterprises with the backbone of a robust and one of the most advanced, fastest and widest network in the region.

With the move towards a digital economy, an increasing amount of consumer and citizen data will be stored digitally due to the large number of transactions carried out online by companies, individuals as well as government departments. The importance and impact of cyber security has increased with more and more businesses adopting digital services and platforms.

Every customer who interacts on the internet is in a way or another already using the cloud (i.e. infrastructure outside its office). While sending an email or browsing the web, they are accessing data on the cloud. Cloud-based security solutions or using intelligence from the cloud, which has become integral to protecting daily activities.

Therefore digital security spans across securing customers' assets, infrastructure, identity in a connected world. While most SMBs are aware of the cyber-security risks, the biggest challenge they face is the rising number of targeted attacks with increased complexity.

In this scenario, Etisalat plays a role of a trusted service partner that provides them access to the best-of-breed security technologies 'as a service'.

> *Etisalat considers security as an integral part of its service framework and has embedded fundamental security capabilities within each offering to comply with the highest security standards.*

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Digital security in a connected world

Digital security spans across securing customers' assets, infrastructure, identity in a connected world. With its SMB focused digital security propositions, Etisalat is helping its customers secure their networks and connectivity, data and applications, and user devices and platform with various type of solutions,

- **Cloud firewall:** Etisalat's Business Edge internet bundles come with an in-built cloud firewall that ensures your network is protected and users only have access to sites approved by the company's management.
- **Endpoint security:** All broadband services have one or several Windows/Mac endpoint security antiviruses bundled without extra fees.
- **Mobile security:** All business users can download the Etisalat application on Android where Etisalat has embedded mobile antivirus by default or free of cost.
- **Email security:** Etisalat has stand-alone email security for mail server owners or Office 365 subscribers to ensure there is no malware and users have less spam.

- **Web security** is another stand-alone cloud-based service which makes sure that users are safe and that they are following the company policies wherever they are.

> *Cybersecurity today is an essential part of the technology framework and a top priority for continued business success. With the changing threat landscape and the need for continuous investments, Etisalat's SMB security solutions enable customers to enjoy enterprise level protection with subscription based security solutions.*

Telco's increasing role in cyber security services

While most SMBs are aware of the cyber-security risks, the biggest challenge they face is the rising number of targeted attacks with increased complexity. Telco's play an important role as a trusted service partner that provides them access to the best-of-breed security technologies "as a service".

According to industry reports, 46 percent of SMBs have experienced cyber-security incidents in the past 12 months and about 50 percent of them are likely to consider purchasing cyber-security services from their telecom operators. (*1)

Etisalat considers security as an integral part of its service framework and has embedded fundamental security capabilities within each offering to comply with the highest security standards.

There are optional features available to our customers to enhance protection, like the new Business Edge offering including secured broadband connectivity due to Etisalat's in-country cloud next generation firewall capabilities. Customers can increase protection based on their business needs and opt for added security features, which are fully managed from our unified operations centres.

Subscriber-based solutions help manage investments

Cybersecurity today is an essential part of the technology framework and a top priority for continued business success. With the changing threat landscape and the need for continuous investments, Etisalat's SMB security solutions enable customers to enjoy enterprise level protection with subscription based security solutions. This monthly subscription does not require significant CAPEX investments and is in line with the current industry trend that is moving towards subscriber-based model.

A large number of the technology network providers require upfront investments therefore this solution is a relief for an SMB. In a typical scenario they would have to purchase a firewall which will include paying for the expensive hardware and deployment costs (capex), besides annual license subscriptions and maintenance.

Etisalat makes it easier for a customer to access these services in bundles where they pay only a monthly fee for internet connectivity and a cloud firewall. Even in the case of endpoint security, customers usually pay an annual amount for five to ten licenses whereas at Etisalat the plan is flexible offering upto one license for a month.

Moving towards cloud based security

Every customer who interacts on the internet is in a way or another already using the cloud (i.e. infrastructure outside its office). When an employee sends an email or browses the web, they are accessing data on the cloud. If companies do not apply cloud-based security solutions a large part of their critical daily activities are exposed and become vulnerable.

Etisalat aims to provide cloud-based security wherever there is reliable technology and market acceptance. Services that power Etisalat's cloud firewall, Web security, and DDOS protection, among others are testimony of services moving to the cloud. Solutions that are on devices (endpoint security), even have connection to the cloud from time to time for threat intelligence updates.

> *With a vast majority of SMBs looking at bringing business value by focusing on efficiency and affordability, we at Etisalat work closely with these customers by delivering customised services targeting their business requirements...*

Bringing business value for SMBs

With a vast majority of SMBs looking at bringing business value by focusing on efficiency and affordability, we at Etisalat work closely with these customers by delivering customised services targeting their business requirements fully managed from a state-of-the-art operation center managed by certified professionals with flexible financial models making it easier to configure business solutions that reflect on the smooth functioning of their business.

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*1-Understanding the cyber-security solutions market for SMBs

REGIONAL NEWS
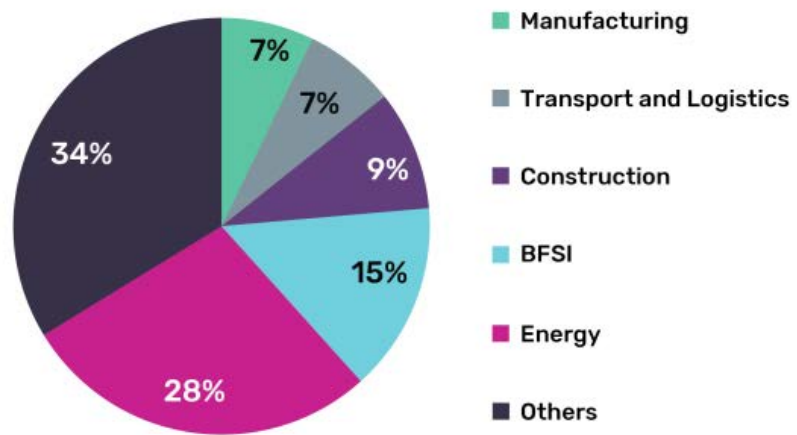
ICT Spending in UAE to Reach US$23 Billion by 2024

ICT spending in the United Arab Emirates (UAE) will reach US$23bn in 2024, according to new research from GlobalData. The figure represents a compound annual growth rate (CAGR) of 8% during the period 2019-2024. GlobalData says the results show that the UAE continues to be among the most attractive ICT markets in the Middle East, driven by digitalization initiatives and aided by the increased adoption of leading technologies such as cloud, big data analytics, internet of things (IoT) and artificial intelligence (AI). "Digitization of the UAE economy, economic diversification initiatives by the government, growing adoption of IoT technologies and rising demand from the enterprise, retail and construction sectors are the major factors driving the growth of the ICT market," says Rohit Sharma, senior analyst at Global Data. According to the research, the services segment accounted for around 58% of the overall ICT spending in 2019 and is forecast to retain the largest share by the end of 2024. However, the software/application segment is projected to record the highest CAGR of 11% during the forecast (2020-24) period. "Strong demand for PCs and servers by consumers and businesses, as well as continued investment by companies in IT infrastructure, will boost the sales of the hardware segment in the forecast period," says Sharma. "The overall revenue from hardware/infrastructure is estimated to reach US$6bn by 2024." The research shows ICT spending across the banking, financial services and insurance (BFSI) and energy verticals will account for a major share (43%) of the overall ICT spend in the country by 2024. "Financial services firms will continue to maintain spending on IT products related to banking such as mobile banking, payment

solutions, customer data analysis, stock trading and asset management platforms," Sharma says. "Demand for smart mining solutions is expected to rise as oil and gas companies strive to enhance their operational efficiency. On the other hand, the continued threat of security breaches will maintain demand for AI-based autonomous security technologies," he explains. According to GlobalData's research, ICT investments in the construction and travel & leisure sectors are also expected to increase significantly. The construction industry in the UAE continues to incline towards the adoption of advanced technologies such as building information modeling (BIM) software, drones, virtual reality and augmented

reality apps, as well as smart sensors and 3D printing, to enhance productivity, improve quality control and ensure safer workplaces. Similarly, the travel and leisure industry is expected to increase investments in big data technology to understand travelers preferences and track their real-time information. "High demand for data collection, analysis and automation services to monitor production and employee performance, as well as investments in cyber security are expected to significantly increase over the next few years," Sharma says. "Additionally, increased investments in emerging technologies such as AI and block-chain solutions will act as catalysts for the ICT spending market in the UAE."

ICT revenue market share (%) by verticals, 2024 — GlobalData.

- Manufacturing 7%
- Transport and Logistics 7%
- Construction 9%
- BFSI 15%
- Energy 28%
- Others 34%

Source: GlobalData Technology Intelligence Center

Bangladesh Reports Internet Usage Growth

Further evidence of the growing reliance on telecommunications during the Coronavirus pandemic comes from Bangladesh, where local news reports suggest that internet usage has shot up 15 per cent. Internet traffic surged soon after the government closed all educational institutions across the country on 16 March – and of course, many companies have switched to virtual working. In particular Bangladesh Submarine Cable Company (BSCCL), the country's only submarine cable company, has reported a bandwidth consumption increase of about 10 per cent. Bangladesh currently consumes about 1,600 Gbps bandwidth, up from 970 Gbps a year ago, and 300 Gbps in 2016. Of the total, BSCCL alone is supplying about 970 Gbps through its two undersea connections. In addition six international terrestrial cable operators are importing bandwidth from India, which, inevitably, is experiencing a demand spike of its own. Figures quoted from market research firm Nielsen on social media volume indicated a surge 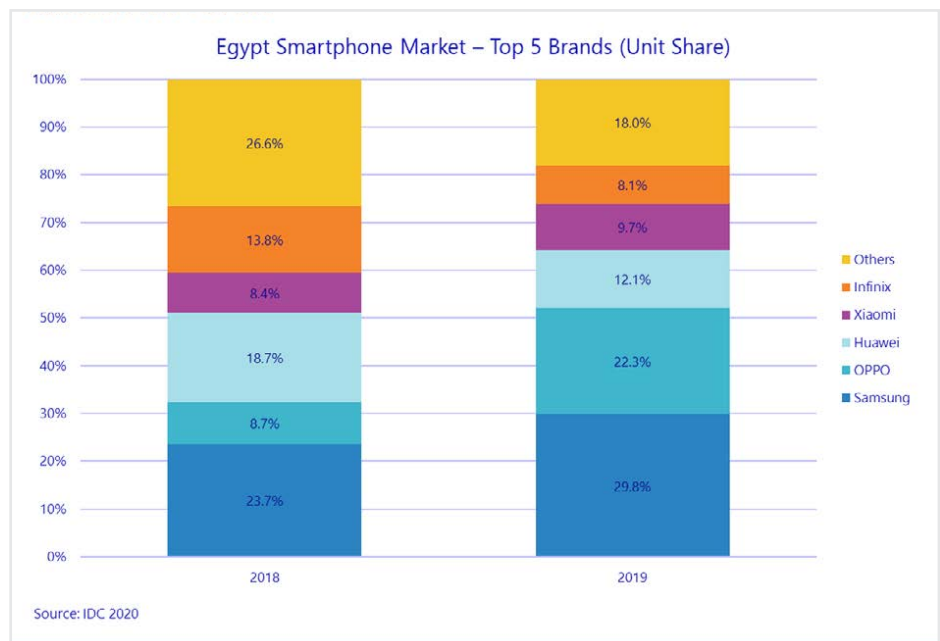of fifty times normal levels in the first week of March in India, driven by official online announcements (such as pandemic updates, advice and campaigns) as well as general use of social media. Meanwhile, India's ecommerce platforms are enjoying greater usage as people order staples online (delivery of essentials has not been stopped during the lockdown). Of course, the lockdown of the country is relatively recent, so a further boost in use of the internet generally and social media specifically is probably on the cards for the latter half of this month.

Egypt Smartphone Market Accelerates to 16.5% Growth in 2019

Egypt's smartphone phone market has fully recovered from the devastating decline that hit the market in 2017, according to IDC. Its research shows that smartphone shipments to the country increased 16.5 percent in 2019, accelerating from 3.4 percent growth in 2018. That represents a significant turnaround from the 14.4 percent decline seen in 2017, although the global fallout from the COVID-19 outbreak has caused IDC to revise its forecast for the Egyptian market downwards. Mobile phone shipments to Egypt totaled 14.9 million units in 2019, with smartphones accounting for 72.2 percent of this total and feature phones making up the remainder. Samsung maintained its position as the market's dominant player throughout the year. Together, Samsung, Oppo, and Xiaomi picked up the slack caused by the decline in Huawei and Honor shipments following US-led sanctions, with Oppo particularly focused on gaining market share in the country. Transsion's smartphone brands (such as Infinix, Tecno, and Itel) saw shipments decline 37.7 percent year on year in 2019 due to the new regulations introduced in Q1 and heightened competition in the price bands they operate in. The report says there was the sharp increase in shipments of smartphones in 2019 with screen of six inches and above. Such devices accounted for 81.1 percent of all smartphones shipped to Egypt in 2019, up from just 13.5 percent in 2018, thanks to strong demand for recently launched models with larger screen sizes. This change in screen size preferences has also shifted the market to higher price bands; for example, the USD 100−200 price band saw its share increase from 35.6 percent in 2018 to 60.0 percent in 2019, while the USD 100 band lost half of its volume. IDC expects Egypt's smartphone market to continue growing in 2020, although the market will soften in the first half of the year as a result of the COVID-19 outbreak. IDC forecasts that smartphone shipments to the Egyptian market will increase 3.7 percent in 2020, reaching 11.1 million units.

Egypt Smartphone Market – Top 5 Brands (Unit Share)

	2018	2019
Others	26.6%	18.0%
Infinix	13.8%	8.1%
Xiaomi	8.4%	9.7%
Huawei	18.7%	12.1%
OPPO	8.7%	22.3%
Samsung	23.7%	29.8%

Source: IDC 2020

Artificial Intelligence to Add More Than US$133 Billion to Saudi Arabia's GDP

Artificial intelligence (AI) is expected to contribute an estimated SR500 billion ($133 billion) to the Kingdom's gross domestic product by 2030, according to the Saudi Data and Artificial Intelligence Authority (SDAIA). The SDAIA was launched last August by royal decree and is responsible for overseeing the country's data and AI strategy through the National Data Management Office, the National Information Center, and the National Center for Artificial Intelligence. The SDAIA said the value of Saudi Arabia's data and AI economy was currently estimated at between SR15 - 20 billion, and that there was an opportunity to generate additional revenues and savings of over SR40 billion by harnessing data insights to help guide government decisions. "We have witnessed firsthand the early impact of AI and data-driven initiatives and their potential to propel Saudi Arabia's future economy, but we are still in the early stages with several untapped opportunities available," Dr. Abdullah bin Sharaf Al-Ghamdi, president of the SDAIA, said at a launch event for the authority's new logo. The SDAIA seeks to place the Kingdom among the world's leading economies by adopting AI. It is hosting a global AI summit at Riyadh's King Abdulaziz International Conference Center at the end of this month that will bring together stakeholders from the public sector, academia and the private sector. "We at the SDAIA have been tasked with defining the national data and AI strategy, and delivering on our nation's vision for the future by optimizing our national resources, improving efficiencies and enabling the creation of diversified economic sectors," Al-Ghamdi told people at the launch event. He said that the SDAIA had made a lot of progress in its first year of operations. The establishment of a national data bank had consolidated more than 80 government datasets, corresponding to 30 percent of government digital assets. The authority aims to build one of the largest clouds in the region by merging 83 data centers owned by over 40 government bodies, and utilizing AI-analyzed data to detect opportunities that could generate more than SR40 billion in government savings and additional revenues. Al-Ghamdi emphasized the importance of data, citing a global expert who described data as "oil of the 21st century" and a study from global research firm Gartner that said the value of data would reach $2.9 trillion by 2021 and generate around 3.4 million jobs in AI-based data and analysis. "Data is the single most important driver of our growth and reform in the 21st century, and we have a clear vision and roadmap for transforming Saudi Arabia into a leading AI and data-driven economy. The SDAIA is at the forefront of this transformation and is primed for national data and AI agenda definition, implementation and awareness," said Al-Ghamdi. Around 70 percent of 96 strategic goals under Saudi Arabia's Vision 2030 reform plan are closely related to data and AI.

TRA Puts on Hold Disconnection of Mobile Phone Service Due to ID Expiration

In support of "Stay Home" initiative, the Telecommunications Regulatory Authority, TRA, in the UAE issued a circular to the telecommunications companies to put on hold the suspension and disconnection of mobile services due to the expiry of the supporting documents and the Emirates ID.

Accordingly, mobile service of subscribers with expired ID documents will not be disconnected or suspended, and they will not have to go in person to the service centers, or provide those documents to proceed with renewal of identification documents. This step is part of the precautionary measures and procedures taken by the UAE as a response to the Corona virus, COVID-19 situation. TRA affirmed commitment to launching initiatives that support all sectors in the country to ensure the provision of the best services and achieve customer happiness.

Halalah and BayanPay Get Mobile Wallet License from Saudi Arabian Monetary Authority

Halalah and BayanPay have become the two latest startups to receive digital wallet license from the Saudi Arabian Monetary Authority (SAMA). The licensing of the two startups was announced last week after their successful graduation from SAMA's sandbox. With these two, SAMA has now issued (fintech) licenses to four non-banking financial institutions. STC Pay and Geidea were the first two companies to receive the license. STC Pay was licensed

as an electronic (digital) wallet company and Geidea as a payment services company last month. Halalah, launched in 2018 as one of the first mobile wallets has quickly gained a decent market share and has over 50,000 downloads for its Android app and probably even more for iOS app (given the fact that its iOS app has received more reviews and ratings than the Android app). It is only behind STC Pay that has over a million downloads for the Android app.

STC Pay is popular among the expatriates living in Saudi as it allows them to make cross-border money transfers. Halalah doesn't have that but it has a fairly large offline partner network, allowing users to pay at these stores with QR codes. It also allows users to top up their phone line and different other accounts (including Careem and PlayStore) with credit and send money to other users on Halalah. BayanPay, according to its website, operates multiple payment products including a wallet and payment gateway. The wallet allows users to transfer money to other BayanPay wallet users and bank accounts and pay at offline merchants that are part of BayanPay's network using QR codes. BayanPay Wallet also offers its users with spend analysis and reports. Interestingly, Finablr, the UAE-based payments company that went public last year by listing on the London Stock Exchange, had acquired a majority stake in BayanPay last year. Finablr now lists BayanPay as one of its brands on its website and announced its expansion to Saudi (through BayanPay) last week.

# Pakistan's Telecom Operators Provide Special Packages amid Coronavirus Pandemic

In light of the present COVID-19 pandemic, telecom operators in Pakistan have launched a number of packages to facilitate their customers across the country and to provide them with awareness about Coronavirus and uninterrupted services. Under Pakistan Telecommunication Authority (PTA)'s directions, SMS on precautionary measures against COVID-19 in national & regional languages are being sent to all mobile subscribers on a regular basis. Cellular Mobile Operators (CMOs) have replaced standard ring back tone (heard by caller when a call is being made) with messages about COVID-19 preventive measures. New packages/offers (by giving additional data and on-net voice minutes) at low prices have been

launched by all CMOs to facilitate people to stay and work from home (details are available at operators and PTA's websites). "Other initiatives include the abolishment of balance validity period by Jazz and extension in balance validity period by Zong, free Whatsapp and balance share promotions by Telenor. Zong has made COVID related webpages of WHO and NDMA as zero-rated i.e. free access to these websites. Jazz has also created a dedicated webpage/portal (https://jazz.com.pk/darna-nahin-bachna-hai) wherein awareness about coronavirus is being disseminated to the general public," read a PTA statement. Furthermore, all CMOs are offering free calls to emergency numbers (1166). Jazz has launched the "Assistance

for Free" service wherein free calls can be made to selected government offices/doctors/laboratories. Zong is also offering free calls to 4343 which offers access to local Government hospitals and doctors. Ufone has made Pakistan Red Crescent Society (PRCS) helpline 1030 free of cost for its subscribers across Pakistan. CMOs and PTCL are also doing CSR activities by providing relief packages containing rations, medicines and protective gear to virus hit families in different regions of Sindh. PTCL is offering free of cost internet to double play voice and TV customers till 30th April 2020 and has also extended deadline in billing dates for wireline customers.

TRA Publishes List of 22 Online Grocery Apps in UAE
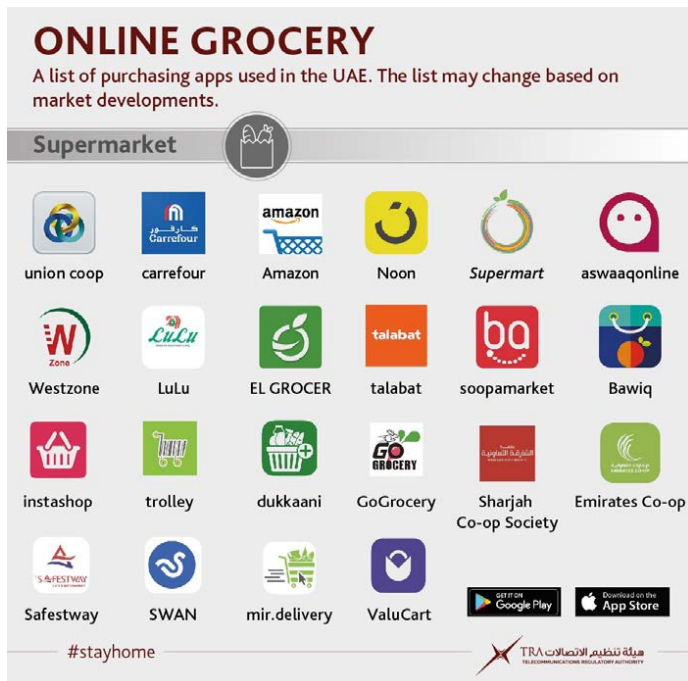
The Telecommunications Regulatory Authority, TRA, announced 'Online Grocery' that includes the purchasing application of 22 online stores in the UAE, noting that this is a preliminary list and will be subject to updates in the coming days. The online stores included in the list include large shopping centers and cooperatives, in addition to grocery stores, meat and vegetable shops, and other services. The start of the current year has seen solid activity in the online shopping sector, indicating a high demand from consumers to shop on the internet. This growth in online consumption is expected to surge in the coming months, which will raise the value of online commerce to over US$19.77 million in 2020, as per several specialist studies, including a report issued by the Ministry of Economy. The results of a survey carried out by the Department of Economic Development in Dubai last year showed that 66 percent of its participants trust online shopping while 70 percent trust online payments. The UAE is classified as one of the leading countries in terms of having developed communications and digital services infrastructure, and the majority of its official and private institutions are adopting solutions to provide services based on technological solutions, whether through smartphones or social media. Online food and beverage sales in the UAE recorded a cumulative annual growth of 21 percent from 2015 to 2018, according to data prepared by Wilson, the strategic market research company, which gathers and analyses sales data.

Pakistan's Telecoms Sector Generates US$3.34 Billion in Revenues for FY2019

Pakistan's telecoms sector accrued revenues of 552 billion rupees ($3.34 billion) last year, according to new figures released by the country's regulatory body. The Pakistan Telecommunications Authority released its annual report this week, showing that the telecoms sector contributed around 96 billion rupees ($581 million) to the economy in taxation revenues. With around 163 million mobile subscribers, Pakistan now has a mobile penetration rate of 76.4 per cent. The country is served by four large mobile network operators, namely Jazz, Telenor Pakistan, UFone and Zong. Of these four, Jazz is the largest, with 59 million subscribers, followed by Telenor Pakistan with 46 million, Ufone with 23.1 million and Zong 15.6 million. The country is also served by a number of mobile virtual network operators. All four major mobile network operators have now undertaken 5G trials, with a commercial launch expected by mid-2021. Recently, Telenor Pakistan's CEO, Ifran Wahab Khan, said that operators in the country must look to collaborate on 5G, sharing the financial burden through a series of network sharing agreements. "The world is moving ahead and the telecoms companies were sharing far more things but in Pakistan we are all still investing in basic structures, like towers," he said.

MTN Group Says Iran Investment Continues Despite Sanctions

South Africa's MTN Group says it is still pushing for sales growth at its 49%-owned subsidiary in Iran, MTN Irancell, despite the effect of US economic and trade sanctions. While the group has admitted having difficulty taking money out of Iran due to the sanctions, it says it is able to convert earnings to loans to MTN Irancell, which is allowing Iran's second largest mobile operator to continue investment in its fixed and wireless networks. The Group's Chief Financial Officer Ralph Mupita is quoted by Bloomberg as saying: 'This has placed MTN Irancell in a position where it has enough cash to continue funding its network expansion, even during these tough times'.

Sri Lanka Ranked Second Best Internet Inclusive Country in South Asia

Sri Lanka has been ranked 56th out of 100 countries on the inclusive internet index 2020 released by the Economist Intelligence Unit (EIU). It is the second highest ranking country in South Asian region after India, which is on the 46th spot. Looking at South Asia, Pakistan ranked the lowest, Bangladesh at 70th place. The EIU report says: Sri Lanka earns high marks for the availability of local Internet content and e-government services, resulting in a ranking of =25th globally (and 6th in Asia) in Relevance. Its performance is less impressive elsewhere, with glaring weakness in, among other areas, policy development and trust and safety. The 'Inclusive Internet Index' benchmarks countries on the internet's availability, affordability, relevance and the readiness of people to use it. The annual report is commissioned by Facebook. In its fourth year, the index covered 100 countries, representing 91pc of the world's population and 96pc of global GDP. On a scale of one (best) to 100 (worst), Pakistan stood at the 56th place out of the total countries

surveyed. The first country ranked in this year's index is Sweden, followed by New Zealand and the United States. Australia and Denmark both ranked fourth, followed by South Korea, Canada, the United Kingdom, France and Spain. Among the global worst are Burandi at 100th, Liberia, Madagascar, Malawi and Burkina Faso. This year's index is accompanied by the '2020 Value of the Internet Survey', to understand how the internet is used and perceived. The poll gathered views from 4,953 respondents in 99 countries across Asia-Pacific, the Americas, Europe, the Middle East, North Africa and Sub-Saharan Africa. According to Facebook, more than half of the world's population — 4.1 billion is connected to the internet. On the other hand, more than 3.5bn people are still deprived of the 'opportunities' brought by the internet. The social media giant noted that the rate of growth of internet access in low-income countries had slowed significantly. On average, only 9.9pc of households in low-income countries had access to the internet, compared with

88.5pc in rich countries. The report found that mobile data had been a game-changer for lower income groups, but access was still too expensive. On average across the indexed countries, the cost of a fixed-line broadband connection amounts to 18.6pc of monthly gross national income per-capita — a far cry from the 2pc target for entry-level broadband services set by the United Nations Broadband Commission for Sustainable Development. It also noted that 4G coverage had grown in 54 countries and now covered 31.2pc of low-income and 64.7pc of lower-middle income countries. Facebook said while progress had been made, women still had less access to the internet than men. Across indexed countries, men were 13pc more likely than women to have access to the internet (down 3pc from last year), and the gender gap was a remarkable 34.5pc in low-income countries. While the technology industry played a significant role in closing the digital divide, innovation in government policy could have an equally significant impact, Facebook noted.

60 Holding Companies to Undergo Digital Transformation in Egypt

Sixty major holding companies will undergo digital transformation at a cost of 50 million dollars to improve business atmosphere and raise the efficiency of companies in markets. Public Business Minister Hisham Tawfik attended the signing of 21 contracts in this regard. IT companies; SAB Egypt, Microsoft, Viber Egypt, Nile Valley and Atos, will take part for the first time in carrying out this huge digital transformation project. The companies were picked in an international tender held for this purpose in August of 2019. Holding companies operating in the insurance, maritime and land transport, metal and chemical industries, cotton, spinning and weaving, tourism and pharmaceuticals domains will undergo

the transformation process. The digital transformation process will take 18 months to be executed, the minister said,

adding that it will cover the management of companies' resources, development of infrastructure and honing skills of cadres.

RIPE NCC and TRA Oman Host Capacity-Building Workshop in Muscat

The Réseaux IP Européens Network Co-ordination Centre (RIPE NCC) and the Telecommunication Regulatory Authority (TRA) in Oman has joined forces to host a three-day training workshop as part of their collaboration on capacity development. Held in Oman's capital city, the event was organized to build the capacities of local stakeholders and assist them in the development of the Internet in the country. Local Internet Registries (LIRs), the RIPE Database and the fundamentals of Internet Protocol version 6 (IPv6) were the three main training courses. During the LIR training on the first day, the attendees learned about the administrative procedures and policies related to managing Internet number resources and operating an LIR. The course also included a basic introduction to the RIPE Database. On the second day, the purpose and objectives of the RIPE Database were expounded where participants were taught about the functions, scope and importance of the RIPE Database. They learned how it works and how to update it. They also took part in various exercises and demonstrations that allowed them to practice their newly learned skills. The last and final day saw the participants tackling the basics of IPv6. This training course elaborated on the imminent IPv4 run-out, the necessity to switch to IPv6, and how to prepare for the deployment of IPv6. Oman is the third

country in the region to have started the implementation of IPv6 following Saudi Arabia and the United Arab Emirates. Eng. Mohammed Al-Kindy, Vice President, TRA Oman, said: "Hosting the three-day workshop at our training center was critical to expanding Internet connectivity in the country. Efforts toward this direction have been in full swing in Oman and we seek to fast-track our initiatives further. "Capacity building is essential to our mission, making the training sessions even more imperative. We are happy with the results of the programmes and we look forward to holding similar initiatives in the future for continuous skills enhancement. We would like to thank the RIPE NCC for its commitment, assistance and support." Chafic Chaya, Regional Communications

Manager at the RIPE NCC, said: "At RIPE NCC, it is our privilege to partner with TRA Oman and jointly organise such training activities. We would like to extend our appreciation to them for helping make the sessions possible. The success of these activities in Oman shows that Oman's Telecom and Internet sector is fully committed to furthering their engagement in the nation's transition to IPv6". The RIPE NCC continues to develop training programmes and other initiatives to provide technical expertise related to the Internet's infrastructure, and to raise awareness about major challenges in the virtual world such as IPv6 deployment, security, peering and Internet governance issues.

Free Tariff for Health and Education e-Portals

The Communications and Information Technology Commission (CITC) directed telecommunications companies to calculate free tariff for approved educational and health digital platforms as part of the measures taken in the backdrop of preventing the spread of corona. This aimed at facilitating the educational process and providing digital alternatives to benefit from health services in accordance with the social responsibility schemes of telecommunications companies, the Saudi Press Agency reported. CITC initiative follows the Saudi government's decision

to suspend studies at all educational institutions across the Kingdom as part of measures to stem the spread of corona. On Sunday, Minister of Education issued directives to activate virtual schools and distance education during the suspension period, ensuring that the educational process continues in an effective way with maintaining the quality. The educational platforms, which are listed in the free data tariff included the National Education Portal and the Unified Education System. The two platforms contain advanced digital solutions that provide advanced

digital educational contents and tools, the ability to perform homework and school tests, as well as providing effective channels of communication among students, school staff and parents. iEN is a strategic project that provides reliable e-educational services to all students, teachers, educational leaders and parents. The free data tariff also included the Seha App for online medical consultation service. This service aims to facilitate the use of free medical consulting services via smart devices, for the cases that may not need to visit the health centers.

PTA Directs Its Licensees to Provide Uninterrupted Telecom Services to Consumers

Pakistan Telecommunication Authority (PTA) has directed its licensees to remain fully prepared for the provision of uninterrupted telecom services to the consumers. It was also directed that necessary resources should remain available at all levels for smooth functioning of voice/data services and networks. The advisory also emphasizes on all support staff adopting necessary preventative measures against COVID-19. All Cellular mobile Operators (CMOs) and Local Loop operators should ensure that customers have access to their services. The CMOs should also coordinate with local authorities for functioning of franchises, top up outlets and communication networks in the affected areas. They should resolve consumer complaints efficiently, with fully equipped teams, and issue awareness messages in national and regional languages, in wake of Corona Virus spread threat. Moreover, the Federal and provincial government authorities have been requested t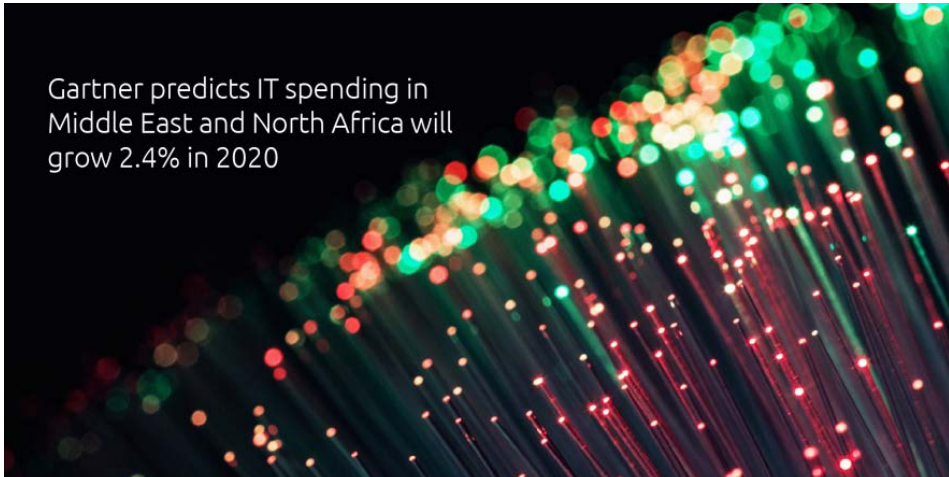o facilitate communication services providers by ensuring that support staff of all telecommunication companies be facilitated in providing logistics and maintenance services. Alongside this, customer support centers, franchises, retailers be allowed to remain open in case of a lock down for provision of uninterrupted services and support. This will not only facilitate local administrative and health services but also general public to maintain social distancing while performing their essential functions.

Mena IT Spending to Hit US$160 Billion in 2020

IT spending in the Middle East and North Africa (Mena) will total $160 billion in 2020, an increase of 2.4% from 2019, according to Gartner. "Non-oil economic initiatives such as the Dubai Expo 2020 in UAE; the Al Qiddiya entertainment, sports and arts complex; The Red Sea Project and the Neom living laboratory in Saudi Arabia are boosting business activity in Mena, which will heavily influence IT spending locally," said John-David Lovelock, distinguished research vice-president at Gartner. "In 2019, organizations in Mena disinvested in data center systems, devices and communication services, which led to a decline of 2.8% in the overall IT spending." In 2020, businesses in Mena are on pace to increase their IT budgets across all segments with spending on enterprise software expecting to achieve the highest growth. Spending on devices will achieve growth in 2020, following a double-digit decline in 2019. The currency effects that raised prices on hardware will abate and business spending on devices will grow 3.6% to $28.47 billion in 2020 locally. Enterprise spending on software continues to grow, achieving a growth of 12.3% to $7.425 billion from $6.612 billion in 2020. This trend is expected to continue for the next three years as more organizations move to cloud-based products and services. As local organizations continue to invest more resources and IT budget in their digital transformation initiatives, technology consulting will increase among local companies. In 2020, IT services spending is expected to total $13.1 billion, an 8.4% increase year over year. Compared to other regions, the levels of spending on IT services in Mena are among the highest four in the world (after Greater China, Emerging Asia/Pacific and Latin America). Gartner's IT spending forecast methodology relies heavily on rigorous analysis of sales by thousands of vendors across the entire range of IT products and services. Gartner uses primary research techniques, complemented by secondary research sources, to build a comprehensive database of market size data on which to base its forecast. The Gartner quarterly IT spending forecast delivers a unique perspective on IT spending across the hardware, software, IT services and telecommunications segments. These reports help Gartner clients understand market opportunities and challenges.


Gartner predicts IT spending in Middle East and North Africa will grow 2.4% in 2020

GCC Smartphone Shipments Rise 6.3% to 5.15 Mln Units in Q4

The UAE and Saudi Arabia have the biggest appetite for new devices in the Gulf Cooperation Council (GCC) region, with approximately 8 out of 10 smartphone shipments landing in the two countries, the latest data showed. Mobile phone makers, including Samsung, Apple and Huawei, among others, shipped a total of 5.15 million units to all GCC states during the fourth quarter of 2019, up 6.3 percent compared to the previous quarter, according to International Data Corporation (IDC). Out of the total number of phones shipped to the region, more than 75 percent landed in the UAE and Saudi Arabia, making the two countries the biggest consumers of smartphones. Total shipments to the UAE also increased by 9.9 percent, while Saudi Arabia posted a 6.7 percent growth. "Together, these two countries account for more than [three quarters] of the GCC smartphone market," the global technology research and consulting firm said in a released report. Demand for smartphones in most parts of the region also increased, with Bahrain posting a 9.6 percent jump in shipments, and Kuwait and Qatar registering a growth of 2.1 percent and 3 percent, respectively. Oman was the only Gulf market to suffer a decline in demand, with smartphone shipments falling 2.2 percent over the quarter. According to Akash Balachandran, senior analyst at IDC, the increase in shipments in some of the smaller Gulf markets is a positive sign for the region, "particularly as it comes after long periods of contraction." "Previously, shipments had been constrained in these markets by the introduction of new levies and taxes, shifting government policies and challenging job conditions brought about by nationalization programs," Balachandran added. Samsung continues to lead the pack during the last quarter of 2019, accounting for 40.6 percent of the devices shipped to the region. Samsung's share of the market, however, was down 5.1 percentage points on the previous quarter due to "supply chain shortages in the channel" and "exceptionally strong performance of Apple and Xiaomi. The American and Chinese brands saw their smartphone shipments to the GGC rise by 22.6 percent and 51.4 percent, respectively during the last quarter. "Demand for Apple's newly released iPhone 11 series exceeded all previous market predictions," said Ramazan Yavuz, senior research manager at IDC. Yavuz noted that Xiaomi increased its share of the GCC smartphone market to 6.8 percent after the Chinese phone maker expanded its distribution network in the region and the release of its latest products, including the Note 8, enjoyed positive consumer feedback. The total shipment of Huawei devices to the region posted a 1.7 percent decline over the previous quarter, a huge improvement compared to the 24.3 percent decline in the last quarter of 2018. "Given the challenges facing Huawei, the vendor performed exceptionally well in Q4 2019," said Balachandran. The region has one of the world's highest mobile phone penetration rates, where around 77 percent of the population on average are mobile subscribers as of mid-2018, according to a report by GSMA Intelligence.

GCC Smartphone Market – Top 4 Brands (Unit Share)

Source: IDC 2020
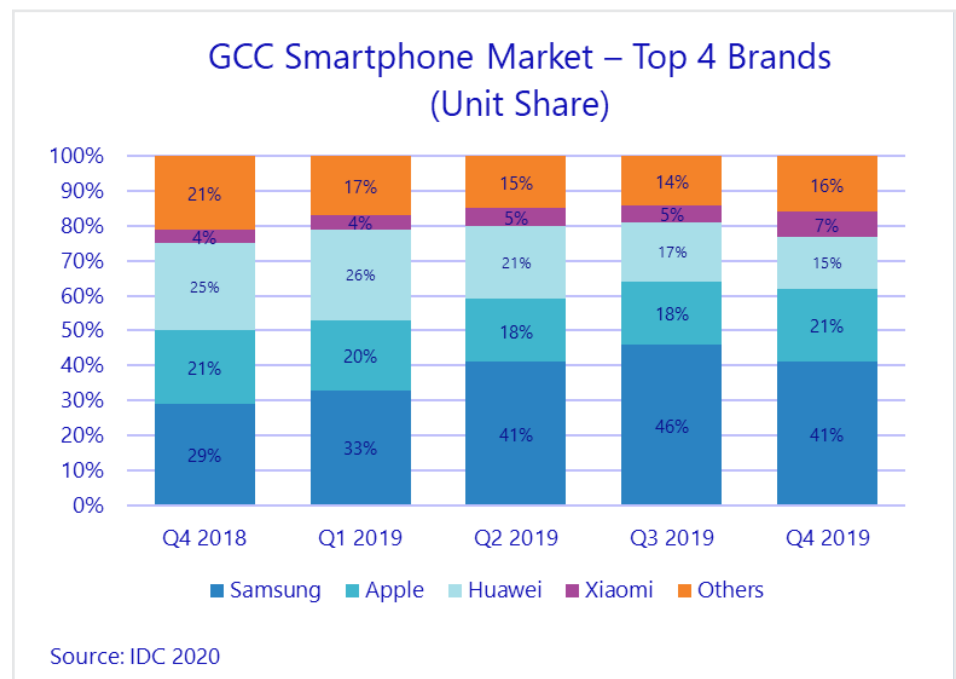
University to Promote Digital Transformation in Pakistan

Allama Iqbal Open University (AIOU) will enter into cooperative partnership with the world leading software company, the Oracle Corporation, USA to promote and strengthen its digital transformation system. The two sides are scheduled to sign an agreement to this effect here on Wednesday, said a press release on Tuesday. Under the proposed arrangement, the Oracle Corporation will provide three systems that are Oracle PeopleSoft Campus management system, enterprise resource planning system and enterprise planning and budgeting. The AIOU will formally incorporate these three systems in its operation and e-governance, following the signing of the agreement, said Tanwir Ahmed, head of Digital Transformation Project Management Office. The cooperative arrangement with the World's leading organizations is the part of University's new initiatives of the Vice Chancellor Professor Dr. Zia-Ul-Qayyum to digitalize its academic and management

network in order to provide best possible services to its 1.4 million students across the country. The introduction of the 'state-of-the art technology' will also help to bring about quality and transparency in the University's overall working. The AIOU has planned to switch over to digital automaton system by next semester (Autumn 2020) so as to enhance the effectiveness and efficiency of its operational network at various levels. The digital transformation, taking advantage of new technology was a big challenge, that was being achieved smoothly through a gradual process, by putting in place a strong and cost-effective IT's system and providing required training to the staff members.

HGC, Sri Lanka Telecom Sign MoU for SDN Interoperability

HGC Global Communications (HGC) has signed a Memorandum of Understanding (MoU) with Sri Lanka Telecom (SLT) on accelerated network integration and expansion using SDN technology. HGC and SLT will work together to enhance interoperability with the goal of accelerating their customers' digitalization journey through inter-carrier network orchestration between the ASEAN and global communities, as well as network integration on HGC international marketplace by SDN. "We are delighted to announce the start to collaborate on interoperability with HGC," said Mahinda Samarasinha, general manager of carrier business at SLT. "By leveraging both SLT's and HGC's ICT capabilities and global expertise, our corporate customers can enjoy innovative solutions, on-demand services and quick and easy flexible connectivity, giving them the edge in the digital transformation race in both ASEAN and global communities." The collaboration will enable HGC and SLT to leverage both companies' network resources and capabilities to expand their already-extensive network footprints while utilizing digital technology to provide customers with highly flexible connectivity. The partnership also enhances interoperability between service providers by riding on HGC's carrier-to-carrier API hub, which is built on SDN architecture. "The collaboration between HGC and SLT further strengthens HGC's dedication in cultivating SDN federation starting from the ASEAN region, as well as highlighting both companies' efforts to address the customers future connectivity requirements," said Ravindran Mahalingam, SVP of international business, HGC. "The robust marketplace not only creates a new business model for infrastructure providers to unite and strategically increase profitability through maximizing capability allocation, acting as a white-label platform, it also boosts competitiveness by providing increased agility throughout the telecommunications ecosystem while providing scalable network access for the ASEAN market."

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Building a Fully Connected,
Intelligent World

ARTICLE

Stimulating Industries + 5G in the Middle East Today

> *The power of 5G could bring the value of ultra-low latency, high bandwidth, and real-time communications, even combined with other capabilities like AI and Cloud, 5G will help make the campus more intelligent, more effective, and more secure, to assure a higher quality of deterministic networking experiences.*

There's enormous excitement for how 5G networks are now being trialed and deployed across the Middle East region—and for good reason. While the roll-out of 5G telecom networks has caught many of the recent headlines, we're now entering a critical inflection point of not just having 5G capabilities, but actually leveraging that massive potential for economic transformation.

In a world where we are seeing economic uncertainty and slowdown, 5G provides great opportunities to transform industries. New 5G technologies are set to create an extra USD$1.4 trillion in GDP for worldwide economies over the next decade, according to a recent report by Huawei and STL Partners[1]. By 2025, we further estimate that the market value of 5G consumer services will increase to USD$238 billion, and over the same period the value of 5G industry digital transformation will exceed USD$600 billion[2].

Establishing Common Ground
To truly realize the digital transformation of all industries, 5G is the essential element for market pioneers, and those of us in the ICT field must be working off the same playbook.

We already know that Release 16 will be 5G "phase 2" and will be completed in June 2020. This focuses on vertical industry applications and equips people with a common understanding of a network with deterministic capabilities – those that will propel the concept of "Industries +5G" on a global scale.

We are encouraged to see that in the Middle East, 5G is already being leveraged by industries at a significant pace. During the Chinese Spring Festival Celebration 2020 in Dubai, for example, the two major carriers in the UAE teamed up with Huawei and

An Jian
President of Carrier Networks Business Group
Huawei Middle East

China Media Group to realize the first live broadcast using a 5G commercial network abroad. With an average of 80 Mbps uplink capability, full HD and even 4K video streaming could be steadily transmitted from Dubai to Beijing. Compared with optical fibers, microwave transmission, or satellite broadcast, 5G makes live broadcast more convenient, flexible and cost-effective.

Meanwhile in markets like Saudi Arabia and Kuwait, operators have started to launch 5G leased lines for enterprise customers. Having the fast, reliable connection possible is now a basic requirement as enterprises seek to become more digital, and the service expectation is increasing exponentially. The ICT industry is responding with enterprise-class 5G outdoor CPE, and 5G base stations ready for guaranteed speed, latency control and guaranteed SLA. Telecom operators can thus provide affordable leased lines with high reliability and availability for enterprises. Compared with fixed access or microwave, 5G leased lines in general is quicker to deploy together with more affordable prices, inspiring new experiences amongst local enterprises and delivering quick wins for the telecom operators.

This is just the beginning. In the Middle East today, more and more new requirements of industry digital transformation using 5G are emerging, and that will speed up 5G

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network evolution. For instance, in some industry campus, they deal with more stringent operating requirements than almost any other industry, new applications are emerging such as mission-critical communications anywhere, real-time CCTV monitoring anywhere, AR surveys anywhere, remote control capabilities in extreme conditions, and so on. The power of 5G could bring the value of ultra-low latency, high bandwidth, and real-time communications, even combined with other capabilities like AI and Cloud, 5G will help make the campus more intelligent, more effective, and more secure, to assure a higher quality of deterministic networking experiences.

But how do we realize all of this? In a recent white paper launched by the 5G Deterministic Networking Alliance in February 2020, it was stated that 5G Deterministic Networking (5GDN) is able to leverage 5G network resources to build manageable, verifiable, and deterministic virtual private mobile networks, offering customers a predictable and differentiated service experience.

In the process of building a 5GDN, operators can start with the core network which can master the entire network topology and orchestrate, schedule, and manage network resources globally. 5GDN help operator evolution to extreme-simplified target core network with "CORE" principle, which involves Cloud native, One core, Real-time operation, and Edge computing. 5GDN runs on a cloud-native platform and supports 2G/3G/4G/5G full convergence, by leveraging super-performance MEC on

heterogeneous computing architecture, multi-dimensional dynamic slicing and automation engine in network deployment / provisioning / O&M, it can provide differentiated network capabilities and deterministic networking experience for any industry.

Technically, the 3GPP has defined the basic framework of 5GDN and functions related to deterministic capabilities. These functions will be further developed along with 3GPP R17. All parties need to further explore and gradually promote the "CORE" concept in actual deployment to form a differentiated, dedicated, and DIY 5GDN.

Considering operators' 5G deployments are still at an early stage far behind the extreme-simplified core network, we suggest that 5GDN is reviewed in these early days for appropriate industries and scenarios. As stated earlier, campuses, harbors, and ports could all be considered prior to more large-scale public 5G rollouts. In fact, current 5G leased lines can be considered as a preliminary application of 5GDN, which now offers guaranteed bandwidth and latency but with good tolerance. After 5GDN deployment, the performance, latency and reliability can be improved further.

In the end, we can clearly see that 5G is expanding at an exciting pace. It is creating value for operators and enterprises alike. In order for operators to better monetize the available markets, and for industries to benefit fully from 5G, it is imperative that we all do our part to support a collaboration model between all stakeholders.

SATELLITE NEWS

Viasat and Visiontec Expand Satellite Internet Partnership in Brazil

Viasat Inc. a global communications company, and Visiontec, a Brazilian-based satellite products distribution company, announced they have expanded their partnership to focus on bringing fast, reliable internet service to residential homes across Brazil. Upon completion of the launch rollout, Viasat will be able to reach 100 percent of the Brazilian continental territory, through Visiontec's in-market sales, fulfillment and technical support expertise. By partnering with Visiontec, Viasat has a dedicated, trusted, local Brazilian partner to help execute its residential service go-to-market strategy—from assisting in sales engagements to providing quick in-home installations and on-site technical support. Viasat's local field services teams will train Visiontec's vast network of distributors, dealers and installers to rapidly meet the demand for high-speed residential internet service in the country. Bruno Soares Henriques, Viasat's Brazil commercial director commented, "Now more than ever, the world is looking to stay connected to friends, family and colleagues. At Viasat, we made a commitment to invest and grow our Brazilian internet services business, and have partnered with Visiontec, to help us better understand the market's needs. We look forward to officially launching high-speed, high-quality residential internet service shortly—and delivering a premium internet service even to the hardest-to-reach locations." "Viasat's advanced technology and service capabilities will help Brazilians, located coast-to-coast, join the digital ecosystem—which is critically important in today's world," said Antonio Carlos de Moraes, business development director, Visiontec. "By broadening our relationship with Viasat, we can help more Brazilians get access to a premium internet service that will offer greater capabilities for people to be productive and entertained online. We see this expanded partnership as a win for everyone." The Viasat/Visiontec partnership was initially announced in June 2019. Since that time period, Visiontec has successfully installed Viasat's satellite broadband equipment in over 11,000 fully operational sites across Brazil, including at remote schools, hospitals and government facilities. Viasat's ground network and infrastructure uses bandwidth from the Telebras SGDC-1 satellite to deliver satellite internet services.

AXESS Networks Announces Joint Venture with Middle East Telecommunications Co.

AXESS Networks, a global leader of satellite-based communications solutions, will further strengthen its market presence in the Middle East and signed a joint venture agreement with the Saudi Arabian communications provider Middle East Telecommunications Co. (METelecom). The intention is to provide end-to-end managed satellite communications solutions that are designed to enhance performances of customers operating in Saudi Arabia. AXESS will provide global infrastructure, assets and long-term expertise to support the satellite-based communications networks for the new joint venture. METelecom will address the specific local requirements for corporations doing business in the Kingdom of Saudi Arabia. The management team of METelecom has more than seven decades of experience in providing remote communications to the harshest environments. METelecom brings the highest level of service and support through their experienced operations and engineering teams to the joint venture. The joint venture will be acting as AXESS Networks Solutions Saudi Arabia and will have its office in Dammam, the capital of the Eastern Province of Saudi Arabia at the Persian Gulf. AXESS Networks Solutions Saudi Arabia will operate its own Teleport facilities and Network Operation Center out of Dammam, Saudi Arabia and under the license of the Communications and Information Technology Commission (CITC). The main focus lies on supporting the increasing demand of communications needs in different verticals, such as oil and gas, mining, maritime, telco and others. Mauricio Segovia, CEO of AXESS Networks, states "The joint venture will further support our growth perspectives in the Middle East and especially in Saudi Arabia, where many corporations are in need of reliable partners providing state-of-the art connectivity networks to back and enhance their operations. With METelecom we have found our perfect match to pursue our goals in providing solutions that exceeds our customers' expectations."

Fourth Successful Launch in 2020 for Arianespace

Saturday's launch, Flight ST28, was the 28th Soyuz mission carried out by Arianespace and Starsem from Baikonur Cosmodrome in Kazakhstan. Performed on Saturday, March 21 at 10:06 p.m. local time at Baikonur Cosmodrome (17:06 UTC), Flight ST28 orbited 34 new OneWeb satellites – bringing the total in orbit to 74. "I am very proud of the teams at Arianespace, Starsem and their partners here in Baikonur and also in French Guiana for having performed four successful launches within a 10-week period, including two on behalf of OneWeb," said Stéphane Israël, Chief Executive Officer of Arianespace. The first 40 satellites in the OneWeb constellation were orbited by Arianespace in two missions: the first six in February 2019 from the Guiana Space Center in Kourou, French Guiana; and the next 34 in February 2020 from Baikonur Cosmodrome. Satellite operator OneWeb

aims to deliver high-speed internet through a next-generation satellite constellation that will be able to provide connectivity to everyone, everywhere. OneWeb's system will be comprised of an initial 650 satellites and will provide global coverage

in 2021. The satellite prime contractor is OneWeb Satellites, a joint venture between OneWeb and Airbus Defence and Space. The satellites are built in Florida, USA and Toulouse, France on dedicated assembly lines.

Russia Ready to Launch Multi-Satellite Orbital Groups

The launch of British OneWeb communications satellites by the Soyuz 2.1b carrier rocket showed that Russia is ready for deploying multi-satellite orbital groups, Head of Roscosmos Space Corporation Dmitry Rogozin said. "By this launch we proved that our equipment is ready for a swift deployment of multi-

satellite groups of complex orbital configuration," Rogozin wrote on his Twitter account. The Soyuz 2.1b rocket with the Fregat-M booster and 34 OneWeb satellites blasted off on March 21 from the Baikonur spaceport. Several hours later all satellites were delivered to the designated orbits. This launch expanded

OneWeb's constellation to 74 satellites in low Earth orbit. The first six OneWeb satellites were launched on February 28, 2019 from the Kourou spaceport in French Guiana by the Soyuz-ST carrier rocket. Another 34 satellites were sent to the orbit by the Soyuz 2.1b rocket from the Baikonur spaceport on February 7. Later in 2020, the UK-made communications satellites will be launched from the Vostochny spaceport in Russia's Far East for the first time. Overall, OneWeb plans to deploy some 600 satellites in low Earth orbit. By 2021, the British company expects to ensure full-time communication for users around the globe. Russia plans to create its own multi-satellite orbital group Sfera in the future. Earlier, Rogozin announced that Roscosmos would allocate funds in 2020 to launch the works on creating the layout of the Sfera orbital group. The Sfera program was highlighted by Russian President Vladimir Putin during his annual Q&A session on June 7, 2018. Russia plans to launch over 600 communications and Earth's remote sensing satellites in the next few years, he said.

Intelsat Selects SpaceX to Launch Intelsat 40e Satellite

Intelsat has selected SpaceX as its launch partner for Intelsat 40e (IS-40e). The launch is planned for 2022 on SpaceX's American-built Falcon 9 launch vehicle. "We look forward to working with SpaceX to launch Intelsat 40e in 2022," said Intelsat Chief Services Officer Mike DeMarco. "IS-40e will join the Intelsat Epic high-throughput satellite fleet and integrated IntelsatOne ground network to provide our customers with the managed hybrid-connectivity they need in today's ever-changing world." "We

are honored Intelsat, one of the world's premier satellite operators, has selected a flight-proven Falcon 9 to deliver its next geostationary communications satellite to orbit," said SpaceX Vice President of Commercial Sales Tom Ochinero. Intelsat 40e is an advanced geostationary satellite that will provide Intelsat's government and enterprise customers across North and Central America with high-throughput, "coast-to-coast" services. The satellite's capabilities will support the growing

number of customers that depend on Intelsat's managed services and solutions to easily integrate satellite into their overall networking and communications strategies. Intelsat announced in February that Maxar Technologies will manufacture IS-40e. This is the second launch for Intelsat and SpaceX. In 2017, SpaceX launched Intelsat 35e, a satellite currently providing high-throughput coverage for Intelsat customers in portions of North and South America, Europe and Africa.

Satellite Network with Fastest L-Band Speed Could Open Up Northern Sea Route

Passage through Northern shipping routes and Arctic waters has received a boost following the doubling of the connectivity speed of the Iridium CertusTM network, says maritime communications specialist IEC Telecom. As the shortest sea route between Europe and the Asia-Pacific region, the Northern Sea Route holds immense potential to compete with conventional trade lines. There has been a significant increase in maritime traffic across the main transport corridors in the Arctic, Northern Sea Route in the Russian Federation, the Northwest Passage in Canada as well as the Arctic Bridge from Canada to Europe. In fact in the Canadian Arctic, traffic has tripled between 1990 and 2015. Moreover, cargo volume in the Northern Sea Route has increased by 40% between 2016 and 2017. With the Iridium CertusTM 700 service becoming commercially available at speeds of 700 kbps – the fastest L-band speed in the industry, Iridium's network with pole-to-pole coverage can only serve to further unlock new opportunities for the fleets operating in the North. Fishing fleets, commercial ships, and other vessels transiting Arctic waters can benefit from enhanced connectivity in these remote and potentially hazardous waters. Many of IEC

Telecom's clients operating in the Northern Sea region have recently switched to the Iridium Certus service. "Vessels operating in this region require robust solutions that can be relied upon under harsh weather conditions. Iridium Certus is the only global network able to meet these requirements," explains Alf Stian Mauritz, Managing Director, IEC Telecom Norway. "With this new speed, Northern operators can share greater levels of data with their shore offices, avail VOIP calls, and access faster email exchange," he adds. Iridium

CertusTM 700 will also be beneficial to the oil and gas sector, which has been expanding in the Arctic region. With more than 40 billion barrels of oil produced over the past 40 years and 184 active rigs in 2018, the industry is increasingly focusing on innovative ways to reduce costs with sustainable practices. Satellite-based technologies are excellent drivers of operational efficiency with optimized navigation, decreased fuel consumption, and better crew welfare options.

Egypt Advances Space Program with 10-Year Plan

Egypt is advancing its goals in space, following approval last week of a 10-year development plan for the Egyptian Space Agency (EgSA) established in August. The agency launched its first communications satellite in November, as part of a plan to ensure mobile and Internet services for all of Egypt as well as parts of neighboring countries. It was one of four satellites launched successfully last year, according to Space in Africa. The agency has two satellite control centers, one in Cairo and another in Aswan, and is host to the African Space Agency established by the African Union. Dr. Mohamed ElKoosy, the EgSA CEO, says Egypt plans another two satellites in the next three years, and plans to build a NGEO constellation similar to the Starlink project in the coming years. SpaceX signed a deal in January with Egyptian operator NileSat to launch a four-ton satellite in 2022 to support communications. ElKoosy says Egypt's program is geared toward security, but also focuses on weather and climate change mitigation. Later this year, the Egyptian Space Agency plans training sessions for 20 participants from African nations who are part of a project to use space technology to better control greenhouse gas emissions. Egypt partners with nations including China and France to develop its space program, signing a new cooperation deal in January with France's Center National d'Etudes Spatiale (CNES). Jean-Yves Le Gal, head of CNES, said the partnership will include satellite manufacture and space exploration.

Rwanda Launches First-Ever Satellite to Connect Schools in Rural Area to the Internet

The government of Rwanda and a UK-based company OneWeb has launched the first-ever satellite that will connect remote schools in the country to the internet. According to Face 2 Face Africa, many schools in the rural parts of Rwanda are without proper road networks and electricity, making it difficult to acquire internet connectivity. The New Times reports that the satellite was sent into orbit on March 25, from a spaceport on the Atlantic coast of French Guiana. Ahead of the launch, Rwanda's ICT Minister, Paula Ingabire, had said: "Rwanda's choice to invest in space technologies is part of our broader mission to bridge the digital divide by providing equal digital opportunities to rural and remote communities. "We are delighted to partner with OneWeb in this transformative initiative which presents us a huge opportunity to leverage satellite connectivity, using OneWeb's constellation, providing low-latency and high-speed internet to schools in remote communities of Rwanda."

OneWeb Plans Satellite Launch from Kazakhstan

OneWeb plans to launch 34 communications satellites from Kazakhstan -- its third such launch of satellites made in Florida. The communications company based in London and Virginia has been mass-producing satellites near Kennedy Space Center since last year. The company previously launched 40 satellites from space centers in Kazakhstan and South America. Saturday's launch is planned for Russia's Baikonur Cosmodrome in Kazakhstan, using Soyuz rockets purchased through the French space firm Arianespace. OneWeb said the weather for the launch

time is expected to be favorable. "Rocket is now on the launch pad and we are continuing to prep for our third #OneWebLaunch," the company said on Twitter. OneWeb is one of several U.S. companies competing to launch huge new constellations of satellites to provide high-speed reliable Internet around the globe. Others include SpaceX's Starlink, Amazon and Telesat. SpaceX has the largest constellation so far, at 362 satellites, and plans for up to 42,000. But SpaceX and OneWeb appear to be aiming at different markets, said Shagun Sachdeva, a satellite analyst with Northern Sky Research. "SpaceX officials have indicated Starlink will be a premium product, that they aren't going super cheap," Sachdeva said. "With OneWeb, they are going more for rural areas, underserved parts of the planet, and cheaply." OneWeb is a relatively new company that announced its plans to build in Florida in 2016. OneWeb Satellites, a subsidiary and a joint venture with European aerospace company Airbus, opened a factory in 2019. Initially, OneWeb founder Greg Wyler said he would launch with Virgin Galactic, and then signed a deal with Jeff Bezos' Blue Origin rocket company. But neither of those companies has launched a payload into space. OneWeb said it is dedicating Saturday's launch to the late Russian cosmonaut Alexei Leonov, who became the first person to walk in space in 1965. The satellites will be headed to a near-polar orbit about 280 miles high, after which they will be raised to their final orbit of approximately 745 miles. OneWeb Satellites are about the size of a small refrigerator. By comparison, Starlink satellites orbit at a height of about 340 miles above the Earth, and feature a flat-panel design about the size of a large dinner table. Both companies' satellites have solar panels that extend after deployment. The Kármán line that defines space is 62 miles high, and the International Space Station is orbiting Earth at more than 250 miles high.

SpaceX to Launch Next 60 Starlink Internet Satellites

SpaceX will launch 60 new Starlink satellites to join its ever-growing broadband internet megaconstellation. A SpaceX Falcon 9 rocket will launch the Starlink mission at NASA's Kennedy Space Center in Florida. This is SpaceX's sixth launch of the year and the sixth Starlink launch to date. The mission will star a veteran Falcon 9 rocket that will do what no other Falcon has done before: launch and land five times. The booster, dubbed B1048.5, previously launched a bevy of satellites including part of the Iridium NEXT constellations, an Israeli lunar lander a communications satellites for Argentina and Indonesia, and a previous Starlink mission. This is a major milestone for SpaceX. The upgraded version of their workhorse was introduced in 2018, launching the first communications satellite for Bangladesh. Company founder and CEO, Elon Musk said that the souped up booster would be able to fly ten times with little refurbishment in between. Sunday's flight marks the first time a Falcon has reached the halfway point. To date, four Falcons have four successful flights under their belts, but this booster will be the first to launch five times. However, of those four, two were not recovered and will not fly again. One was intentionally destroyed during the company's in-flight abort test and the booster used in the latest Starlink mission before this one, it was lost after narrowly missing the drone ship.

AEHF-6 Satellite Ready for Launch

The sixth Lockheed Martin-built Advanced Extremely High Frequency (AEHF-6) protected communications satellite is encapsulated in its protective fairings and mounted atop its rocket in preparation for its planned March 26 launch. The AEHF-6 satellite will bring additional capabilities and resilience to the constellation which already ensures "always-on" communications and the ability to transmit data anywhere, anytime. Once on orbit, AEHF-6 will complete the constellation, as well as mark the first launch under U.S. Space Force control. AEHF-6 will launch from Cape Canaveral, Florida on a United Launch Alliance (ULA) rocket in an Atlas V 551 configuration. AEHF-6 is part of the AEHF system - a resilient satellite constellation providing global coverage and a sophisticated ground control system. Together the constellation provides survivable, protected communications capabilities for national leaders and tactical warfighters operating across ground, sea and air platforms. The anti-jam system also serves international allies to include Canada, the Netherlands, United Kingdom and now Australia.
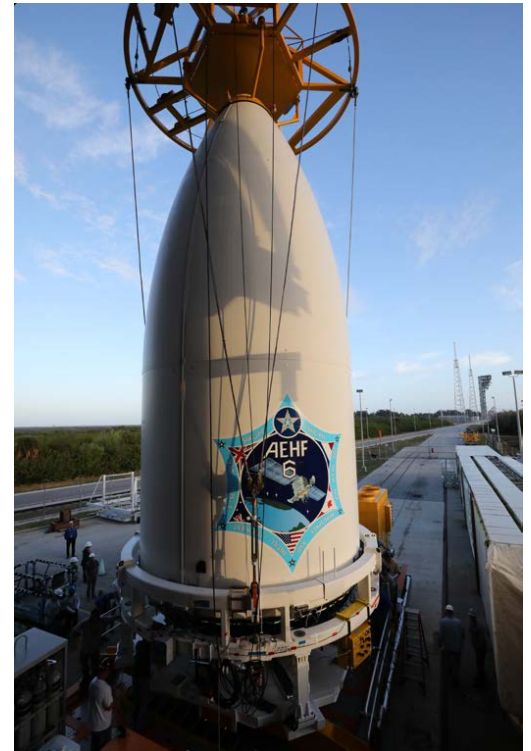
Second GPS III Satellite Declared Ready for Military Use

The U.S. Space Force's Space and Missile Systems Center (SMC) successfully transferred the second GPS III system to Space Operations Command on March 23, the center said March 24. The satellite, built by Lockheed Martin, is now officially under the control of the Second Space Operations Squadron located at Schriever Air Force Base in Colorado, SMC said. "This marks our second transfer of Satellite Control Authority for the GPS III program as we continue to modernize the GPS constellation with more capable and resilient systems." said Col. Edward Byrne, chief of Production Corps' Medium Earth Orbit Space Systems Division at SMC, in the release. "It's only through the hard work, professionalism, and dedication of our entire government and industry partner team that we can successfully transition GPS III SV02 to operations." The second GPS III space vehicle, dubbed "Magellan," was launched in August 2019 aboard a United Launch Alliance (ULA) Delta IV Medium+ launch vehicle from Cape Canaveral Air Force Station, Florida. ULA is a joint launch venture between Lockheed Martin and Boeing. Lockheed Martin shipped the third GPS III satellite "Columbus" to Cape Canaveral in February in anticipation of a launch aboard a Space X Falcon 9 Block 5 rocket in April. Space X is currently investigating an engine anomaly that took place during a Falcon 9 launch of 60 Starlink satellites on March 18. One of nine Merlin engines in the rocket's first stage shut down prematurely, but CEO Elon Musk said on Twitter that the anomaly did not prevent the company from getting the satellites to orbit. Col. Robert Bongiovi, director of SMC's launch enterprise directorate, said Tuesday that his team is closely engaged with Space X "on what they observed in that launch, and they are working to understand it to ensure that when we put a national security satellite on top of a launch vehicle, that it will achieve orbit." Bongiovi said on the media call that the Space Force works through test discoveries with all of its providers before a new launch. The ongoing work with Space X is not "a different process; it's just another set of data that we're working with to get to that launch," he said.

Satellite Investment Boosts Cruise Ship Connectivity

Owners of geostationary and medium-Earth orbit (MEO) constellations are investing in higher-power satellites to increase Ku-band and Ka-band capabilities and renew C-band capacity. Much of this capacity will be available for maritime VSAT users, but they will have to compete with other mobility markets including aviation. SES is investing around US$1.3Bn in a new constellation of MEO satellites and a high throughput satellite (HTS). Of this, around US$300M is for SES-17, a new HTS for maritime mobility and cruise ship connectivity in the Caribbean, Atlantic and the Americas. SES Vice President for Maritime Greg Martin says SES-17 is scheduled to be launched in 2021. This will be followed by the O3b mPower MEO constellation in H2 2021 and 2022. O3b mPower is due to be set into orbit on two Space X Falcon vehicles from Florida, US. "This constellation will have seven satellites on two launchers," says Mr. Martin. "It can be expanded as it is a scalable system." These satellites will augment Ka-band capacity provided to maritime and cruise ships from the existing O3b constellation, providing coverage from the Equator and latitudes of +/- 50° latitude. "This offers coverage in the main cruise markets of the Mediterranean, Caribbean and Asia-Pacific," says Mr Martin. "It can go higher, such as reaching the UK south coast and Germany's shipyards, and SES-17 will extend this coverage further." SES will control the coverage from O3b mPower as the satellites' beams will be software-defined and dynamically configurable.

"O3b mPower has adaptive resource control," Mr Martin continues, "so we can synchronize and configure dynamically elements to tie back to cruise ships' guest experiences." For example, a beam could be dedicated to a cruise ship around one specified area, perhaps in the Caribbean, the Mediterranean or in the South China Sea. Or it could be deployed to meet the broadband requirements of a naval fleet. "With O3b mPower, we will be able to scale up and down – to deliver 2 Gbps connectivity to ships," says Mr. Martin. To put this into context, many modern cruise ships have connectivity of 200-500 Mbps and merchant ships perhaps 10 Mbps if they have high-grade VSAT on board. Some of the world's largest cruise ships could have up to 1 Gbps up and down from the satellite. "By mid-2022, there will be ships passing 2 Gbps," says Mr. Martin. "Guests want similar services as they get on land," he adds. "The market trend is towards supporting the new generation of passengers that have grown up with everything on the cloud and applications on their devices." Cruise ship owners such as Carnival Corp and MSC Cruises use SES connectivity to provide passengers with internet services, access to social media, content streaming and video messaging. "2 Gbps will be reasonable in the next few years guaranteed for cloud applications," says Mr. Martin. "Guests and ships operators want this connectivity. Guests will use cloud services to store their images and applications, etc. They will synchronize these with their devices –

we want to help manage all of that." Mr. Martin does not expect these levels of connectivity will be met through just using geostationary satellites, but with satellites in multiple orbits and on board multi-band antennas. "We can support higher than 2 Gbps even with the antennas out there," he says.

Geostationary HTS

Intelsat intends to invest around US$800M in the next three years and probably another US$300M each year afterwards on new HTSs for its Epic constellation. This includes a rapid replacement for a recent satellite failure and for its second-generation constellation. Its Epic constellation started providing spot beams of high intensity Ku-band in 2016 when Intelsat-29e was commissioned, followed by five other satellites. The latest was Horizons 3e (H3e), which is co-shared with Sky Perfect JSAT, providing coverage over Asia/Pacific. After this, widebeam satellite Intelsat 39 entered service, replacing Intelsat 902 in October 2019 to provide maritime mobility services over Europe, Africa, the Middle East and Asia-Pacific regions. Last year, Intelsat encountered a catastrophic fuel leak on Intelsat 29e and lost this capacity. The lost capacity has been covered by the Hispasat-143W widebeam satellite and from leased capacity from competitors. In 2022, Intelsat expects to restart its own HTS coverage over the Americas from the Intelsat 40e satellite. Maxar Technologies is manufacturing this satellite. "When it is launched, Intelsat 40e will be the newest addition to our next-generation Intelsat Epic platform," says Intelsat chief executive Stephen Spengler. "We continue investing in new satellite and hybrid technologies to connect people, devices and networks." Future satellites will carry HTS software-defined payloads that could be reprogrammed to configure spot beam coverage. Intelsat expects to spend up to US$250M this year followed by US$225-300M in 2021. Its 2022 capital expenditure could be US$225-US$325M. Five satellites and ground infrastructure are in its expenditure plan to 2022 which includes plans to launch the Galaxy 30 satellite this year and Intelsat 40e in 2022. Intelsat has plans for three more satellites but has not

yet selected the manufacturer.

European coverage

Eutelsat intends to invest €400M (US$440M) per year on satellites, launching at least three satellites in the next three years for mobility services including Eutelsat Quantum and Eutelsat Konnect VHTS for services over Europe. Then, Eutelsat 10B is planned for launch in 2022 to provide maritime coverage from the Atlantic Ocean to the Indian Ocean. Thales Alenia Space is contracted to build Eutelsat 10B which will replace Eutelsat 10A, due to finish service in 2023. The 10B satellite will carry two widebeam C- and two multi-beam HTS Ku-band payloads. A high-capacity payload covering the North Atlantic corridor, Europe, the Mediterranean and the Middle East will be included. A second HTS payload extends coverage across the Atlantic Ocean, Africa and the Indian Ocean. The satellite's HTS payloads will be able to process more than 50 GHz of bandwidth, offering a throughput of around 35 Gbps. The entire satellite payload will

be digitally processed, offering capacity allocation flexibility. Eutelsat chief executive Rodolphe Belmer says another planned satellite, Konnect VHTS, will carry Ka-band payloads. "The procurement of Eutelsat 10B underpins our strategy of focusing our development in the field of connectivity," he says. "The selection of its Ku-band payload, in complement to the future Konnect VHTS operating in Ka-band, reflects our ability to serve our customers in both Ka- and Ku-band."

Future satellite launches and coverage

- SES-17 – 2021 – Caribbean, Atlantic and Americas
- O3b mPower – 2021-2022 – global MEO coverage
- Intelsat – Galaxy 30 – 2020 – Pacific
- Intelsat 40e – 2022 – North, central Americas
- Intelsat EpicNG Ph2 – 2022-2025
- Eutelsat Quantum – 2020 – to be determined
- Eutelsat Konnect VHTS – 2021 – Europe
- Eutelsat 10B – 2022 – Atlantic Ocean,

Mediterranean, the Middle East, Indian Ocean, Africa
- Amazonas Nexus – 2022 – South America

More satellite capacity additions

Sky Perfect JSAT is expanding its capacity by commissioning recently launched JCSAT-17. This followed the launch of JCSAT-1C satellite in December 2019, which came into service in January 2020. These increased the company's fleet to 19 satellites, covering from North America to the Indian Ocean and Pacific. Thales Alenia Space has been contracted by Hispasat to build the Amazonas Nexus satellite which will have a digital processor for flexible adaption of spot beam coverage for maritime mobility services. This satellite will provide Ku-band coverage across the Americas, Greenland and the North Atlantic. Amazonas Nexus is due to be launched in H2 2022 and represents the start of a new generation of satellites in Hispasat's fleet.

Satellite Traffic Management System to Ensure Reliability of Services to End Users

Atos, a global leader in digital transformation, has been chosen by Arabsat, one of the world's top satellite operators and leading satellite services provider across the Middle East and Africa, to provide a state-of-the-art satellite monitoring solution to mitigate interferences in Arabsat's satellite services and ensure the highest quality of service to its end-users. The Atos solution, the SkyMon carrier monitoring system (CMS), is now operational at Arabsat's ground stations throughout the region, including a main site in Riyadh, Saudi Arabia. It monitors all payload signals and traffic within Arabsat's satellite fleet, in different locations, 24 hours a day, 7 days a week – to detect interferences

in real time and help Arabsat eliminate service interruption. This is a key asset to deliver the optimal quality and ensure the reliability of Arabsat's satellite services to its customers. More specifically, the Atos solution performs spectral, radio frequency and quality of service (QoS) measurements to detect interferences, unwanted signals, transmission breaches or unknown satellite carriers – whether they are hidden or visible on the spectrum, continuous or intermittent. All of these can be identified on one single solution in order to take prompt counteractive measures. "Thanks to Atos' radio frequency traffic monitoring system, we make sure to quickly identify all irregularities and rapidly coordinate response actions when the

slightest problem occurs. This allows us to provide the highest quality of service to our customers, which is our most important objective." said [Khalid Balkheyour, President & CEO at Arabsat. "We are delighted to support Arabsat in its day-to-day mission to deliver satellite-based, public and private telecommunications services to tens of millions of homes in more than 80 countries across the Middle East, Africa and Europe." said Bruno Milard, VP, Head of Business Unit Aerospace & Defense Electronics at Atos. "To gain precious time in solving interference-related issues, Arabsat can rely on SkyMon's fully-integrated comprehensive geolocation system."

China Launches Beidou Satellite As It Aims For Completion of Navigation Network in May

A Chinese Long March 3B launcher carried a Beidou satellite into orbit, adding the penultimate satellite to China's independent navigation fleet before another mission in May completes the constellation to give it a global reach. The Beidou navigation payload rocketed into space at 1155 GMT (7:55 a.m. EDT; 7:55 p.m. Beijing time) Monday from the Xichang space center in southwestern China's Sichuan province, according to the state-run Xinhua news agency. A 184-foot-tall (56-meter) Long March 3B rocket delivered the Beidou navigation satellite into an elliptical, or egg-shaped, geosynchronous transfer orbit. China's government-owned media declared the launch a success. China has launched 54 Beidou satellites since 2000, but the launch date has ramped up in recent years. The initial generation of Beidou satellites were designed as prototypes or test platforms, but the Chinese network began limited service over the Asia-Pacific region in 2012. Chinese officials said the successful launch Monday and a follow-up launch in May will complete the deployment of the Beidou program's third-generation, or BDS-3, satellite network. All of the early Beidou satellites have ended their missions, and the Beidou fleet needs 30 satellites for operational global positioning and timing services. Until now, Chinese military forces have relied on the U.S. military's Global Positioning System for navigation support. China designed the Beidou network as an independent version of the GPS network, providing Chinese military and civilian users with a home-grown system in case GPS signals are interrupted during a conflict. Like the GPS network, Russia's Glonass fleet and Europe's Galileo navigation constellation, the Beidou system is designed for global service. The Beidou navigation satellite launched Monday will use its own propulsion system to maneuver into a circular geosynchronous orbit more than 22,000 miles (nearly 36,000 kilometers) over the equator. Chinese officials said engineers "have overcome difficulties during the novel coronavirus epidemic to ensure the success of the mission," according to state media. The Beidou network, named for the Chinese word for the Big Dipper constellation, includes satellites positioned in three different types of orbits. In December, China launched the last of 24 operational satellites into a medium-altitude orbit more than 13,000 miles above Earth, similar to the orbits used by GPS, Glonass and Galileo satellites. But unlike the other global navigation systems, the fully-operational Beidou network will include six spacecraft in geosynchronous orbits, with three permanently over the equator and three others in inclined orbits that swing north and south of the equator during each 24-hour orbit. China launched three satellites into inclined geosynchronous orbit last year, and the spacecraft deployed Monday is the second of three to be permanently stationed over the equator. The satellite launched Monday was built by the China Academy of Space Technology, part of China's government-owned aerospace industry, and is based on the DFH-3B satellite platform. The Beidou satellites "can provide services for the driverless vehicles, accurate berthing of ships, as well as takeoff and landing of airplanes," Xinhua said. "It will be widely used in the fields of communication, electric power, finance, mapping, transportation, fishery, agriculture and forestry." The Beidou satellites also have a communications replay ability. Chinese smartphones already have the ability to incorporate Beidou navigation data into mapping and tracking apps, and users in dozens of other countries are also using Beidou signals. China wants to expand usage of the Beidou network worldwide, especially in countries participating in China's Belt and Road Initiative, a global economic development program and a centerpiece of Beijing's foreign policy strategy. The Belt and Road Initiative has extended to nearly 70 countries in the Asia-Pacific region, Africa, Europe and the Americas, where China partners with local authorities to fund infrastructure and other drivers of economic growth. Pakistan's armed forces, which used to rely on U.S. GPS satellites, is the only military outside China to employ the Beidou network.

Lost in Space: Venezuela's Only Telecoms Satellite Stops Working

Venezuela's only telecoms satellite, VeneSat-1 (also known as the Simon Bolivar Satellite), has drifted away from its assigned orbital position and stopped functioning, the Associated Press reports. The satellite was helping to deliver internet services to rural areas that are not connected via fiber-optic networks, and was also being used to broadcast Venezuela's heavily politicized state-run television channels into poor or rural homes that have no access to cable TV.

The Chinese-built satellite was launched in October 2008 by former President Hugo Chavez but has ceased functioning three years before its planned 2023 expiration date.

Kacific1 Commercial Broadband Services Commence Across Asia-Pacific

Kacific Broadband's first communications satellite, Kacific1, has entered commercial service and is ready to support customers across the Asia-Pacific region, the company announced yesterday (9 March 2020). Since entering orbit in December, the high-throughput satellite has undergone tests and all its 56 spot beams are now operating at full capability, with over a hundred trial end-user sites deployed so far. Kacific engineers are training local engineers in the installation and maintenance of the satellite ground technology, and the company says that rapid rollout will continue in coming months connecting both new end users and those being transferred from provisional Ku-band services to Kacific1's Ka-band services. Its press release says that Kacific's high speed broadband services are available in the following countries via local telcos and ISPs: Pacific: American Samoa, Cook Islands, Fiji, French Polynesia, Guam, Kiribati, Micronesia, New Zealand, Niue, Northern Mariana, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu. Asia: Bangladesh, Bhutan, Brunei, Indonesia, Malaysia, Myanmar, Nepal, Philippines, Timor-Leste and southern Thailand.

Rakuten, Vodafone Fund Mobile Satellite Network

Japanese e-commerce giant Rakuten and Vodafone Group became lead investors backing a start-up project to launch the world's first satellite network beaming mobile connectivity directly to smartphones, in a move to boost coverage. Vodafone and Rakuten invested in SpaceMobile, a low-latency LEO satellite network configured to connect directly to standard smartphones. It is being constructed by start-up Avellan Space Technology & Science (AST & Science). In a joint statement, Vodafone CEO Nick Read said the satellite network will enhance coverage in core markets in Europe, Africa and rural areas, along with providing aid during natural disasters. Mickey Mikitani, Chairman and CEO of Rakuten, added the venture is part of plans for the company to become a leading MNO in Japan and global solutions provider. Rakuten Mobile is scheduled to launch commercial services next month. In an announcement video, Vodafone CTO Johan Wibergh said the network will be launched in a few years. He highlighted people will not have to buy satellite phones to use in remote areas and can use their 4G/5G smartphones in such places. Initially the satellites will provide 4G signal to partners with an upgrade to 5G in future. Other investors in the project include American Tower; Cisneros; Samsung NEXT; and AST & Science founder Abel Avellan. The new investment brings the total capital raised by AST & Science to $128 million. Vodafone also agreed a strategic partnership with AST & Science and will contribute technical, operational and regulatory expertise in support of the global deployment of SpaceMobile. Technology giants Amazon and Space X also announced plans to launch satellite networks into space to provide global internet access. Another start-up in this field is Lynk (formerly UbiquitiLink).

New Ukrainian Satellite Channels Set to Launch

The Ukrainian media group StarLightMedia plans to launch an unencrypted international satellite TV channel by March 16. Quoting the company's press service, Telekritika reports that the channel will carry content produced by its current proprietary channels ICTV, STB and New Channel. It adds that on March 3 StarLightMedia applied to the National Council for a license to operate the channel. The channel is a response to a request from the Ukrainian president, who StarLightMedia and the three other leading media groups met late last month to discuss calls for a moratorium on the encryption of satellite TV channels that took place in January. The four groups agreed to launch unencrypted satellite versions of their national TV channels and thereby make them available again to Ukrainian citizens by March 16.

Sen Selects NanoAvionics to Build Video Nano-Satellites

Sen, a British space company working to provide real-time Ultra-High Definition (UHD) video of Earth, has signed a multi-million euro contract with NanoAvionics to build the first five nano-satellites of its constellation. The companies plan to launch the first nano-satellite, EarthTV-1, by mid-2021, with the remaining four nano-satellites built for launch in 2022. Sen is developing an "EarthTV" constellation of nano-satellites to stream real-time videos from space. The company plans that the service, which will include a freely accessible app for individuals, will be used for monitoring environmental events, natural disasters and climate change. NanoAvionics plans to build the 16U nano-satellite buses and integrate Sen's payload at their European manufacturing and research facility in Vilnius, Lithuania. Sen said each satellite will be equipped with several UHD cameras, providing multiple perspectives of Earth, from wide angle imagery down to 1.5M resolution. "Our planet is constantly changing and Sen's satellites will provide a new and persistent way of seeing events unfolding, empowering humanity to witness the evolution of our planet in a unique way. We hope to increase awareness of environmental events and human movement with information that can educate, inspire and empower people to change and improve the outcome," said Charles Black, founder and CEO of Sen. "Our teams have worked extensively [with NanoAvionics] over the last six months to ensure the satellite bus will meet our specific requirements for streaming high definition videos from several cameras."


Capella, Rocket Lab to Launch SAR Satellite to Mid-Inclination

Capella Space has signed a deal with Rocket Lab to launch one of the Synthetic Aperture Radar (SAR) satellites in its Whitney Constellation, calling it the first-ever SAR satellite to deliver commercial data into a mid-inclination orbit. The mission will launch mid-2020 on an Electron launch vehicle from Rocket Lab's Launch Complex 1 on New Zealand's Māhia Peninsula. Capella Space will be the primary payload on the Electron launch vehicle, allowing Capella to select the specific orbit and launch timeline. Capella Space said the the satellite positioning to a 45 degree inclination will maximize coverage over the Middle East, Korea, Japan, South East Asia, Africa, and the U.S. Christian Lenz, Capella Space vice president of Engineering, said the mid-inclination orbit is in response to customer needs. "At Capella Space, we help our customers solve some of the world's biggest and most complex problems – from climate change to infrastructure monitoring – using on-demand, accurate Earth observation data," said Payam Banazadeh, CEO of Capella Space. "Launching our first Whitney satellite on a dedicated Rocket Lab mission allows us to stay in control of our orbit and focus on our goal to deliver customer-focused solutions in a timely manner." Capella Space, a San Francisco-based company, aims to offer hourly coverage of every point on Earth, rendered in sub-meter resolution, and to help customers interpret that data with an in-house platform. The company also plans to launch its first commercial satellite, named Sequoia, on a SpaceX Falcon 9 rocket in late March.
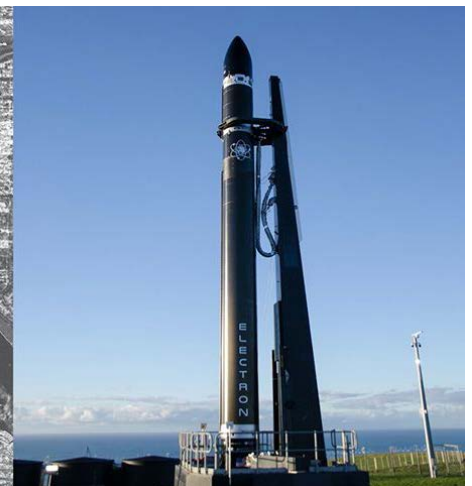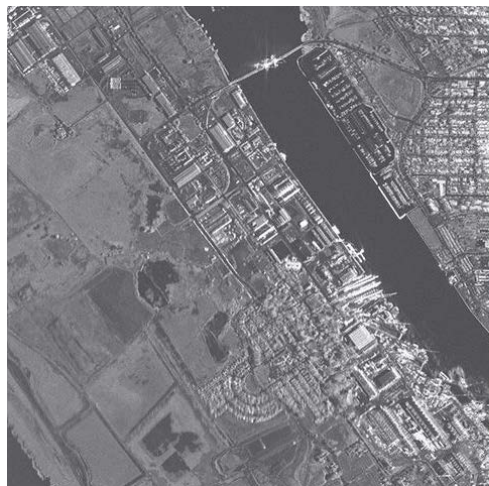
Kymeta Unveils Next-Gen Satellite Antenna for Hybrid Connectivity

Kymeta Corp., one of the high-tech ventures backed by Microsoft co-founder Bill Gates, has paired its next-generation satellite antenna with a new kind of hybrid connectivity service — reaching the next level in its quest to make buying satellite-based telecommunications as easy as buying cell service. Bill Marks, Kymeta's chief strategy officer, said the new combination of hardware and software builds on Kymeta's current service offerings, which hit the market two years ago. "When you start to try to penetrate markets that aren't used to buying satellite services, especially mobility in the platforms that we're on, the customers want you to provide something as simple as what they're used to when they buy handsets and cellular plans," he told GeekWire. The typical model involves buying the hardware, and then navigating your way through a patchwork of service plans. "It's very difficult to say, 'Hey, buy this satellite antenna … Now, good luck, go find your own capacity,' " Marks said. "People aren't used to that, and they don't know how to do it." To streamline the process, Redmond, Wash.-based Kymeta is gearing up to offer all-inclusive packages that combine its next-generation u8 antenna with a smorgasbord of Ku-band satellite connectivity and cellular service. Kymeta Connect packages will be priced on a per-gigabyte basis, just like cell service. Subscription rates start at $999 per month for 1 gigabyte of data. "For the satellite industry, that is pretty earth-shattering," Marks said. Kymeta plans to add to its offerings as new satellite constellations begin beaming broadband services from low Earth orbit. Those services should extend connectivity to virtually every place on the planet. "If you buy our u8 product, you can use it anywhere in the world at any frequency that Ku-band operates, seamlessly," Marks said. "That

means that you can roam around the world seamlessly as well, whereas the u7 didn't really allow for global roaming." Kymeta takes advantage of metamaterials technology to "steer" its antennas electronically, without any moving parts. Previous versions of Kymeta's flat-panel antennas looked like stop signs. The u8 antenna has been redesigned to have softer corners — and sharper electronics. "We continually innovate the science around metamaterials," Marks said. "What that means for the u8 is that we can scan and see satellites lower on the horizon than we used to, with higher performance. It's much more practical for mobile applications, because you can't predict where the antenna is going to be." The u8 is also designed to perform better than the u7 in extreme environments, ranging from a baking-hot desert to the chilly exterior of a high-flying airplane. It's available as an antenna, as a terminal or in a flyaway configuration, and it's tailor-made for Kymeta Connect. Kymeta is partnering

with a variety of connectivity providers — including Intelsat on the satellite side and Cubic Telecom on the cellular side — to offer a variety of satellite and hybrid satellite-cellular packages. The Kymeta Connect offerings build on the company's existing partnership with Intelsat on its Kalo connectivity service. Potential users include first responders, construction crews and the military as well as maritime vessels and ferries, trucks, trains, buses and vehicle fleets. Kymeta is turning up the spotlight on the u8 antenna and the Kymeta Connect service this week at the Satellite 2020 conference in Washington, D.C. It aims to roll out its offerings between now and the end of the year, initially focusing on the U.S., Europe, the Middle East, Asia-Pacific region, sub-Saharan Africa and Oceania. "We have beta units that will start seeing the market in early summer. … Before we call it general availability and turn up the production lines, we want to put a certain number of units out in the field with valued customers," Marks said.

Are We Mad Enough to Change the World?

> *Our company is focused on 5G-led innovation to enable digital transformation for our customers globally. We are enabling AT&T to modernize its IT network and shared systems and shift to the Cloud. Our technology-led transformation will help the telecom giant improve its agility in rolling out and supporting the networks of the future.*

When I heard Greta Thunberg's speech at the UN Climate Action Summit, I thought, how can someone be this mad for the environment? She exemplifies why you don't have to be in a position of power to bring about a change in the world; your will to bring change is your biggest power.

In August 2019, we banned all single-use plastics from our Tech Mahindra campuses overnight. In just 24 hours, we collected more than 200 kilogrammes (440 pounds) of disposable plastics. The overwhelming participation of our global teams in our #DontBePlastic campaign, makes me ask: are we mad enough to fall in love with our world?

Sustainability is not beyond business; it is the core of business. With a purpose to be sustainable, our company is focused on responsible business growth by enhancing operational eco-efficiency. We're committed to reducing our absolute scope 1 and 2 GHG (Greenhouse Gas) emissions by 22% by 2030 and 50% by 2050. Approved by the Science Based Targets initiative (SBTi), this gives us a clear roadmap to optimize our carbon footprint and enables us to move towards a low-carbon economy that will reduce future climate change risks. Are we mad enough to drive business profitability through sustainability?

CP Gurnani
Managing Director and Chief Executive Officer
Tech Mahindra

Tech Mahindra

Nature shows us that ecosystems can develop through collaboration and not competition; when we share the same goals, together is a wonderful place to be. With this mindset, we have collaborated with 400 corporate executives to launch the Efficacy Index. With our research partner WSJ Custom Studios, we created a unique survey to help enterprises benchmark their digital transformation. Are we mad enough to put collaboration before competition?

Nature shows us that ecosystems can develop through collaboration and not competition; when we share the same goals, together is a wonderful place to be. With this mindset, we have collaborated with 400 corporate executives to launch the Efficacy Index. With our research partner WSJ Custom Studios, we created a unique survey to help enterprises benchmark their digital transformation.

Our company is focused on 5G-led innovation to enable digital transformation for our customers globally. We are enabling AT&T to modernize its IT network and shared systems and shift to the Cloud. Our technology-led transformation will help the telecom giant improve its agility in rolling out and supporting the networks of the future. To make a 5G-enabled future a reality, we've also set up an innovation lab in Finland. Developed in partnership with Business Finland, the facility will foster research and development in 5G

and 6G technology. This technology is a real game-changer; it's not only aimed at the consumer but will also influence how enterprises will work. Are we mad enough to transform with technology?

The blatant reality is if we don't upskill or re-skill we will become irrelevant to our own future. Upskilling will enable growth for enterprises, individuals and even countries. Our #UaaS (Upskilling as a Service) platform is helping more than 65,000 associates learn and leap into the future. Are we mad enough to make our organization, industry and country's workforce fit for the future?

As technology continues to reshape traditional responsibilities across industries, the future will be powered by human empathy and robotic efficiency. The question is not about how dependent we are on technology; it is about how well we can use technology to create new opportunities for humans to perform tasks that are more valuable.

I believe the future will be far more human than we imagine. At its heart will be a beautiful convergence of physical and digital experiences. Consumers will buy from those with a purpose with which they can empathize. As such, we will need to be madly in love with the purpose we stand for. Tech Mahindra stands for being a sustainable enterprise that delivers meaningful connected experiences and if this means disrupting the status quo, so be it. Are we mad enough to disrupt?

As technology continues to reshape traditional responsibilities across industries, the future will be powered by human empathy and robotic efficiency. The question is not about how dependent we are on technology; it is about how well we can use technology to create new opportunities for humans to perform tasks that are more valuable. We are creating a humans-first future. With artificial intelligence (AI), we are making machines develop the human trait of empathy because that's what makes us feel connected. Are we mad enough to humanize AI?

The very essence of humanity is encapsulated in the idea of individual social responsibility (ISR). For us at Tech Mahindra, ISR is also a way of life.

Are we mad enough to be changemakers?

WHOLESALE NEWS

Operators Face $25B Roaming Hit – Report

Juniper Research predicted severe travel restrictions prompted by the COVID-19 (coronavirus) pandemic would lead to roaming revenue plunging by as much as $25 billion over the next nine months. After studying the possible outcomes, the research company believes a low-impact scenario is now not possible and stated there is no strategy available for mobile operators to mitigate the anticipated loss.

However, given roaming revenue accounts for about 6 per cent of their total revenue, after dropping sharply from a decade ago, the overall impact will be minimal. Its high-impact scenario assumes severe disruption to international travel will continue until the end of 2020, estimating more than 650 million passenger trips will be cancelled, some 80 per cent of the previously forecast international passenger bookings. The

company expects more than half of all operators' roaming revenue for 2020 will be affected, with a loss of up to $12 billion during the peak international travel period between June and August. It highlighted trips cancelled due to the outbreak are unlikely to be rebooked, so operators won't be able to recover the revenue after travel returns to normal.

Chorus Postpones Annual Wholesale Broadband Price Increase

New Zealand-based wholesale fixed line provider Chorus has announced the postponement of its annual regulated price increase for broadband products as it works to address the impact of the ongoing coronavirus pandemic. The company also indicated in a statement to shareholders that it will continue with plans to reduce the price of its gigabit connection from NZD60 (USD34) to NZD56 on 1 July 2020 as originally planned, to help support home working. Moreover, Chorus said it will work through additional options to provide support for customers, retailers and service companies to ensure as many end customers as possible can stay connected to essential infrastructure as the country enters lockdown conditions. The company

stressed that its network continues to have 'significant capacity headroom' to support widespread working from home,

as daytime consumption remains lower than the usual peak experienced at 9pm.

UPC Poland Signs Wholesale Deal with Nexera

Polish cableco UPC has signed an agreement which allows it to use fiber infrastructure deployed by wholesale network operator Nexera. The infrastructure has been deployed by Nexera under the government's Operational Program Digital Poland (Programu Operacyjnego Polska

Cyfrowa, POPC), which is partly funded by the EU under its Digital Agenda 2020 initiative. Nexera expects to cover 670,000 households by end-2021 as part of a PLN1.5 billion (USD396 million) rollout. The firm has previously signed wholesale deals with other Polish telcos, including

Orange and T-Mobile. The POPC project aims to give all households access to at least a 30Mbps internet connection by end-2020, while 50% of households should have access to networks with download speeds of at least 100Mbps by that date.

KPN Maintaining Wholesale Broadband Offers Despite Court Ruling

KPN Wholesale confirms on its website that, despite the recent court decision overturning the regulation of the Wholesale Fixed Access market, it continues to provide access to its networks, with existing wholesale agreements remaining in force. On 17 March 2020 the Dutch Trade & Industry Appeals Tribunal (CBb) – the highest administrative law court in the Netherlands – reversed the 2018 decision of telecoms regulator Authority for Consumers & Markets (ACM) which had ordered cableco VodafoneZiggo and incumbent PSTN operator KPN to provide wholesale access to their fixed networks. KPN Wholesale notes that as a result, the regulation of a number of its services has lapsed, but the offers will remain unchanged for the time being, regardless of the lack of legal obligations. In contrast, it is understood that VodafoneZiggo has ended talks with potential wholesale cable customers following the CBb ruling. In other announcements, KPN said that it has delayed the final decommissioning date for ISDN lines from 1 April to 1 June 2020, due to measures for combating coronavirus. Similarly, VodafoneZiggo has suspended the planned launch of DOCSIS 3.1 network upgrades in Rotterdam this month as all non-essential work has been put on hold due to the coronavirus outbreak.

ACM's Wholesale Fixed Access Ruling on VodafoneZiggo, KPN Scrapped

The Dutch Trade & Industry Appeals Tribunal (CBb) – the highest administrative law court in the Netherlands – has reversed the 2018 decision of telecoms regulator Authority for Consumers & Markets (ACM) which had ordered cableco VodafoneZiggo and incumbent PSTN operator KPN to provide wholesale access to their fixed networks. The CBb decision of 17 March 2020 sided with KPN and VodafoneZiggo – scrapping ACM's determination that the pair held joint significant market power – while rejecting appeals from rivals T-Mobile and Tele2 Netherlands. ACM issued a statement that it 'is disappointed with the ruling, and will now study the effects thereof'. ACM had previously asserted that both KPN and VodafoneZiggo should open up their fixed networks to other providers in its Wholesale Fixed Access market analysis decision which took effect in October 2018. ACM said both KPN and VodafoneZiggo had strong positions on this market and were able to use those positions to raise prices, adjust conditions to their advantage or to delay investments.

Riding the wave
of emerging technologies

Nexign is addressing telecommunications market providing Business Support Systems and solutions for Network Monetization and Internet of Things across the globe. With the advent of the 5G era, communication service providers need to look beyond the role of connectivity enablers, efficiently collaborate with the partners from adjacent markets and offer a richer set of digital services to their subscribers.

Nexign empowers service providers to build the new value chain in a constantly changing environment to benefit from the partner ecosystem and seize the opportunities of the evolving trends such as vaster 5G availability, IoT and eSIM adoption.

◢ 28 years in the global BSS
(Business Support Systems) market

◢ Tier 1 (75+ subscribers) CSP transformation experience

◢ 120+ successful projects in 16 countries

◢ Future-proof product portfolio

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ARTICLE

5G as a Driver for Collaboration

Maxim Nartov
Customer Solutions Director
Nexign

nexign

> *It will take more than just 'another, faster Internet' to achieve acceptable ROI for 5G rollouts, instead requiring active analysis of both sides of the equation: optimising costs as well as increasing the value of services (or telcos' position in value chains).*

Despite their revealing alternative name, 'LTE (Long-Term Evolution) networks', 4G networks created a major shift in both perceptions and adoption of communication services. This, in turn, led to the relatively early launch of the next evolutionary step: 5G networks.

Massive changes in data bandwidth provoked a tectonic shift in customer perceptions of what 'mobile' meant. I witnessed the revolution that was the 3G rollout, when, in rural areas, high (for the time) bandwidth together with competitive bundled pricing put mobile providers in direct competition with outdated fixed-line providers, effectively killing old-fashioned access networks. 4G development and wider smartphone adoption made this trend even more evident. 5G is now starting out in pretty much the same manner, with FWA driving its adoption.

At the same time, making the business case for network rollout is becoming ever more challenging, as new network generations emerge more rapidly and start to overlap with increasingly widespread OTT services and mature market penetration. It will take more than just 'another, faster Internet' to achieve acceptable ROI for 5G rollouts, instead requiring active analysis of both sides of the equation: optimising costs as well as increasing the value of services (or telcos' position in value chains).

Different ways of managing costs are already being widely discussed across the industry. The 5G technology stack comes well equipped in this respect, thanks to both internal optimisation (based on virtualisation and cloud technologies) and the potential for collaboration. Together with pressing spectrum issues, RAN and infrastructure sharing are becoming key topics in these discussions, opening the door to cross-operator collaboration on a particular area or tower, or even on radio equipment. This has already started to create additional requirements for inter-operator settlement, but wider adoption, together with dynamic spectrum capabilities, will take place once network slicing technology has truly come into play, leading to more dynamic schemes to manage those settlement streams.
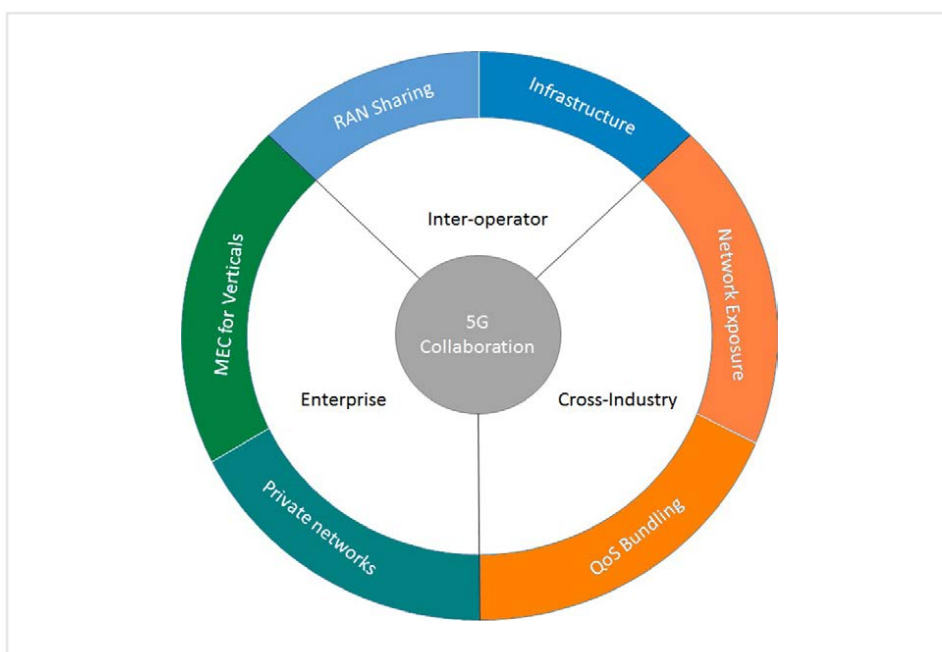
Another aspect to consider here is the growing interest in private networks. On the one hand, this approach will create local out-of-industry competition from large enterprises or vendors; on the other hand, a new niche will be created for CSPs, helping them to make their operations unit a profit centre as they collaborate with enterprises on spectrum and equipment leasing while launching managed services for these networks.

> *Industrial use of 5G requires not only fast connectivity and high-capacity conn-ected devices, but also extremely low latency and the capacity for fast and secure turnaround to local and specific apps.*

This approach is aligned with the next area for open collaboration with other industries: mobile edge computing, or MEC. Industrial use of 5G requires not only fast connectivity and high-capacity connected devices, but also extremely low latency and the capacity for fast and secure turnaround

to local and specific apps. Currently, the focus on MEC applications is still relatively operator-driven, but having the capacity available for third-party applications and industry verticals will create interesting capabilities both for servicing enterprises and for collaborating (and competing) with cloud providers.

Another area of focus should be growing consumer revenue streams as new use cases become available to end consumers. Clearly, FWA and eMBB will drive 5G adoption, but they are unlikely to function as new revenue generation tools. Just as in the case of 3G and 4G, competition and consumer willingness to pay for access will drive rates down to previously established levels. Consumers' focus is on end-to-end services, whereas data access is merely an enabling technology. It may get blamed for poor quality but will never be the centre of consumers' attention (unless it is interrupted). And the price tag for connectivity is already fixed and well-defined.

There are two obvious ways out of this trap. One has already been tested many times and has proved less than successful. Many attempts to develop and promote 'walled gardens' have failed under the

pressure of Internet services, both in pure communications and in entertainment services.

The other way looks more promising, and enjoyed proven success at earlier stages. Telcos are already monetising their access to end users by building alliances with key entertainment service providers as a retail channel. Direct carrier billing together with dedicated service-data bundles are becoming a relatively common feature. 5G architecture, along with the growing sensitivity of services to underlying infrastructure, will help CSPs to enrich this collaboration stream and acquire an additional role in value generation by opening up network quality management capabilities to their partners as a sellable asset. Building on the adoption of SCEF in the 4G era, 5G NEF – and proper monetisation of its capabilities – may become an additional factor that will help to keep these partnerships together. And as the ecosystem approach is spreading fast, making CSP assets available for ecosystem integration instead of just data transport or distribution may help CSPs to secure a more favourable position in the value chain.

To round things off, I would say that 5G architecture and the underlying technology open the door to many interesting collaboration streams with players inside and outside the industry. It is still early days for most of these use cases (and joint activities in cross-industry forums are helping to shape and test them), but the overall direction is clear and looks promising. From the BSS vendor perspective, these use cases generate new requirements and interesting challenges around monetisability and revenue generation. Nexign Digital BSS already incorporates capabilities to support most of these cases, but we are actively participating in industry forums and activities to make sure our customers get the most out of the opportunities opened up by 5G networks.

Maxim Nartov, Customer Solutions Director
A telecoms professional with a solid IT background, specialising in complex projects at the intersection of IT and telecommunications, Maxim joined Nexign in 2017 as BSS Product Director. In this role, he was responsible for heading the BSS product management division, and for defining and managing Nexign's BSS product suite.
Now Customer Solutions Director, Maxim leverages this experience and his deep understanding of CSPs' needs to further extend Nexign's presence in its target regions, with a focus on new customer wins.
Maxim brings to Nexign a strong knowledge of OSS/BSS and over 20 years of practical experience in a number of areas, including R&D, Sales, and implementation projects from both the vendor and the telecom operator perspective. Prior to joining Nexign, he held various sales management positions at Amdocs and Ericsson, and spent over 6 years at MegaFon, rising to become head of the company's Converged Product Management department.
Maxim is a graduate of the Faculty of Applied Mathematics, Lomonosov Moscow State University.

TECHNOLOGY NEWS

HKT Plans First 5G in Hong Kong

Hong Kong cellco HKT says it plans to launch the territory's first commercial 5G services on 1 April, just ahead of rival Hutchison 3, which has already announced an April launch date. Coverage will initially be available in districts including Causeway Bay, Wan Chai, Admiralty, Central, Sheung Wan, Tsim Sha Tsui, Jordan, Yau Ma Tei, Mong Kok, Hung Hom and To Kwa Wan, as well as key sites such as the international airport and major shopping malls. The network will eventually be extended to all districts and the main subway lines. HKT says its 5G base stations are connected to the core network via 10Gbps fiber-optic infrastructure. Fees for the service will begin at HKD198 (USD25.50) a month for 8GB of data transfer.

India to Launch Its First 5G Test Lab in Q3 2020

Cavli Wireless and Maker Village have announced that they will join together to launch India's first 5G test lab by the third quarter of 2020. A report in The Economic Times of India stated that the new lab will "enable IoT OEMs and ODMs to test their prototypes in real world settings", as they look to speed up the developments of their 5G products and services. "The launch of 5G technologies is expected to have a transformative effect on society, especially with the development of smart cities. Cavli, with its innovative suite of solutions, is here to ensure that IoT solution developers are able to experience the power of 5G technology, through the test platform that will be set up," said John Mathew, chief technology architect, Cavli Wireless. "Cavli Wireless is proud to collaborate with Maker Village and pioneer to bring the 5G test network lab for the IoT startups in India. We are confident this platform will inspire startups and companies across the globe to prepare their IoT products and prototypes for the latest 5G technology standards," added Mathew. The test facility will support 5G applications in the sub 6GHz band in both a standalone and non-standalone capacity. Vodafone Idea, Airtel, Reliance Jio and BSNL have all announced plans to undertake 5G trials with the Indian government later this year, as the country prepares for its first tentative 5G commercial launches in H2 2021.

Atlantic Broadband Introduces 10Gbps Speeds for Business Customers

Atlantic Broadband, the United States' eighth-largest cable operator, has announced the availability of symmetrical 10Gbps fibre connectivity for its business customers in Western Pennsylvania, Rochester, New Hampshire and Southern Maine. Additional deployments are planned this spring in the company's Belmont, New Hampshire, Connecticut, Maryland, Delaware and Florida service areas. The launch follows a major upgrade to the cableco's transport network. Heather McCallion, Vice President of Products and Programming at Atlantic Broadband, commented: 'The investment by Atlantic Broadband in our core network means these markets are now 10Gig ready, so businesses looking for the enterprise-class speed, reliability and scale of dedicated internet access (DIA) or Point-to-Point solutions can be installed quickly without the need for additional network configuration work.'

DOCOMO Announces 25 March 5G Launch Date

NTT DOCOMO announced that it will launch its fifth-generation mobile network on 25 March, pipping rival SoftBank Corp to the post by two days, with the new service initially available at 150 locations in Japan. The nation's largest mobile carrier confirmed in a press release that it aims to deploy at least one base station on each of Japan's 47 prefectures by the end of June, rising to 500 cities covered by March 2021. Further, by end-June 2021 it expects to have installed 10,000 5G base stations and 20,000 by 31 March 2022. NTT DOCOMO plans to offer the new 5G Gigaho plan for JPY5,480 (USD51) per month, excluding local taxes, and including 100GB of data. It also has a range of Gigalight plans that offer 7GB for JPY3,980, 5GB (JPY2,980), 3GB (JPY2,480), and 1GB (JPY1,980) per month, respectively. It notes, however, that for the time being there will be no upper limit on the data amount due to a promotional campaign. Some of the initial use cases DOCOMO will pitch to users are live virtual events in 8K resolution, multi-angle viewing of J League football matches, business solutions such as remote work assistance via VR, and facial recognition, it said. In terms of handsets, DOCOMO is offering the Samsung Galaxy S20 5G and Aquos R5G from launch, with the LG V60ThinQ and Xperia 1 II to follow in May, and Samsung Galaxy S20+ 5G to appear in

May. A personal Wi-Fi hotspot device is also due to be activated in May. As previously reported by CommsUpdate, earlier this month DOCOMO rival SoftBank unveiled plans to launch 5G commercial services on 27 March 2020, as the race to dominate the next generation of mobile technology gets underway. Newcomer Rakuten Mobile plans to kick off its commercial service on 8 April, while KDDI (au) has yet to announce its launch plans.

EE Adds 21 More Towns and Cities to Its 5G Network Footprint

British mobile network operator (MNO) EE has announced the switch-on of its 5G network in a further 21 towns and cities across the country, bringing the total number of locations covered by its next generation mobile broadband infrastructure to 71. In a press release outlining the development, the MNO confirmed that it has made 5G connectivity available in the following locations: Bath, Birkenhead, Bransholme, Bury, Chelmsford, Cheshunt, Clevedon, Clydebank, Dartford, Dinnington, Loughborough, Loughton, Motherwell, North Shields, Rotherham, Rochester, Rugeley, Swadlincote, South Shields, Staines and Waltham Cross. In addition, the cellco also highlighted that it had 'brought 5G to more high footfall places, including Bath's Royal Crescent and Pulteney Bridge, London Bridge and London's Thornton Heath railway station'. Commenting, Marc Allera, CEO of EE parent company BT's consumer division, said: 'We have 5G coverage in more places than any other operator, and remain focused on connecting even more towns and cities in 2020 and beyond to keep our customers connected in the busiest places.' As previously reported by CommsUpdate, EE launched its 5G network in May 2019, with initial coverage of London, Edinburgh, Belfast, Cardiff, Birmingham and Manchester. Seven months later, in December, it confirmed that it had achieved a self-imposed target of having rolled out 5G in at least 45 towns and cities, with 50 locations covered at that date.

Telenor Opens First Commercial 5G Network in Norway

Telenor's commercial 5G network opens today in nine different cities and villages across Norway, making Telenor the first mobile operator in the country to offer 5G to customers. "Telenor is proud to be the first mobile operator to launch a commercial 5G network in Norway, as we have worked tirelessly to stay at the forefront of the 5G development. By bringing Norway into a new technological age, today's opening marks another milestone in Telenor's 165-year-long history. We expect 5G to be the key driver of transformation in this decade, and we are very much looking forward to continuing the roll-out of 5G to our customers," says Sigve Brekke, President and CEO of Telenor Group. It was intended that the official opening of Norway's first commercial 5G network would take place in the country's tech capital of Trondheim. Due to the current situation with COVID-19, Telenor has decided to cancel the event and instead host the opening as a virtual video conference. "This is a day we have been looking forward to for a long time. We launched our first 5G pilot as early as 2018, and since then we have been experimenting and exploring, trying to learn as much as we possibly can. Today, we are not only opening our 5G network in the city of Trondheim, we are also opening the very first commercial 5G network in Norway. In addition, we are making 5G commercially available in all locations

where we, until now, have been running tests. As of today, Telenor customers with a 5G device will at these locations be able to connect to the mobile network of the future," says Petter-Børre Furberg, CEO of Telenor Norway. Linda Hofstad Helleland, Norway's Minister of Regional Development and Digitalization, is pleased that 5G, which is crucial for Norwegian value creation and digitization, is now commercially available. "Norway has some of the world's fastest mobile networks, and with 5G, they become faster and even more reliable. Given the current situation in Norway, we see how important the digital infrastructure is for those quarantined and those working from home. The new 5G network will provide better mobile coverage and gradually better access to broadband

across the country, which will reduce the vulnerability of an increasingly digitized society," says Helleland. For the past two years, Telenor has focused on learning as much as possible about the qualities of the new mobile network before making it available to the public. This is done to ensure that customers receive optimal 5G quality. Now that the 5G network has officially opened, Telenor is emphasizing that this is just the beginning of what is yet to come. "We have worked hard to become the first mobile operator in Norway to open the 5G network, and are now fully focused on our continued plans. During 2021, we will upgrade close to 2,000 base stations, while a total of 8,500 base stations will be upgraded within the next four to five years," Furberg concludes.
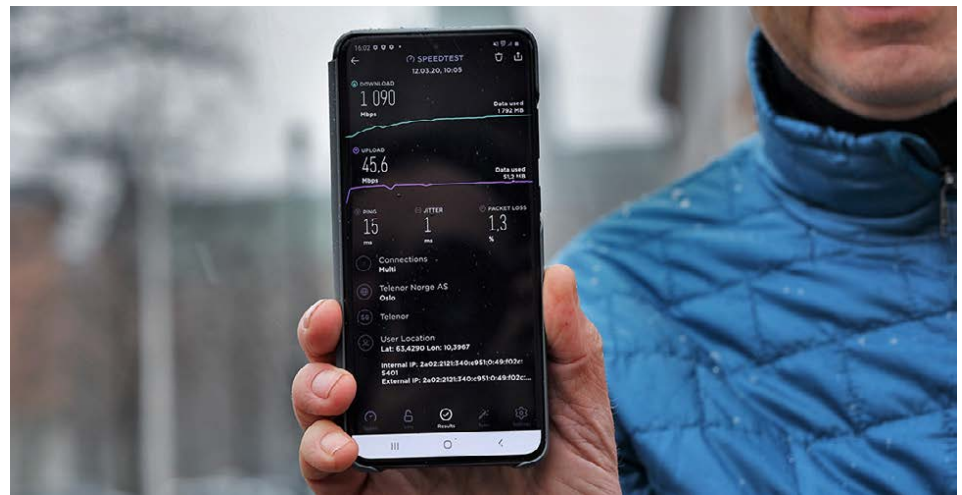
Mobileum's Integrated Fraud and Security Platform Selected by STC

Mobileum announced that Saudi Telecom Company (STC) has chosen its Active Intelligence Platform. The solution provides an integrated approach for detecting and reducing telecom fraud and security issues on STC's 5G network. STC was the first to launch a live 5G network in the Middle East, with commercial 5G services in Saudi Arabia, Kuwait, and Bahrain. While STC sees an exciting future with 5G, it also understands that with these advances come complexities that require a wireless network that is resilient, secure, and able to protect individual privacy. STC

required an innovative system that could secure its network and subscribers from fraud and security attacks due in part to the rapid growth and complexity brought on by 5G. Together, Mobileum and STC were able to significantly improve the rate in which telecom fraud cases are detected. This shared venture also opens new ground for a joint security and counter-fraud framework. The Mobileum solution expands the universe of identifiable fraud use cases by utilizing a new approach for detecting SIP and SS7 fraud that takes into consideration a wider range of data

feeds, real-time analytics, and automated actions. Through the use of these enhanced data sources, along with advanced AI/ML capabilities, STC is now able to more accurately and quickly detect instances of fraud, said Mobileum. Bassam Madi, SVP and GM, Middles East & Africa, Mobileum said,"Our work with STC has allowed us to analyze their market to better understand their needs. We then developed a solution to provide the real-time protection STC needs to address today's quickly evolving fraud and security threats."
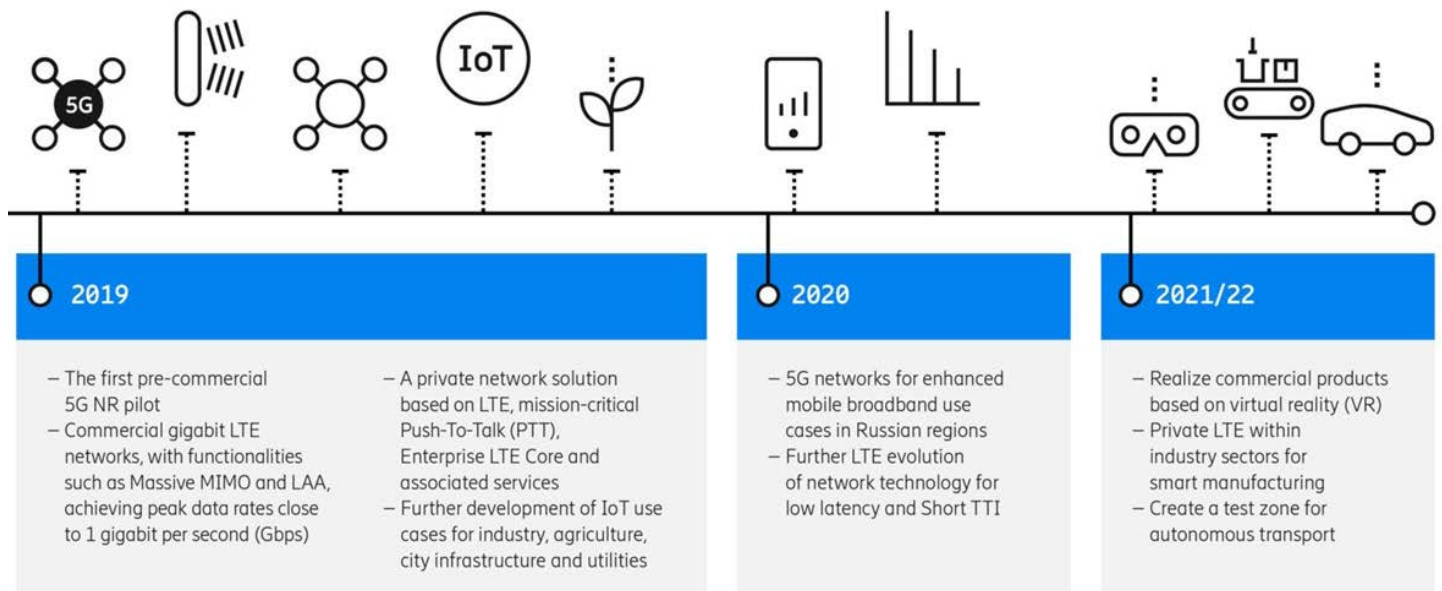
MTS Tests 5G Using LTE Spectrum, Although No State Permission yet for Refarming

Russia's largest cellco by users, Mobile TeleSystems (MTS), has partnered Ericsson to test dynamic redistribution of frequencies between 4G LTE and 5G NR networks, demonstrating methods for low-cost deployment of wide 5G coverage utilizing existing LTE infrastructure. The tests carried out at MTS' offices in Ufa used a commercial 5G non-standalone (NSA) 1800MHz/2100MHz base station with Ericsson Radio System equipment utilizing the Instant Ericsson Spectrum Sharing (Instant ESS) solution and 800MHz LTE anchor band. Test end-user terminals with MediaTek chipsets were used. MTS' VP of Technology Viktor Belov said: 'Until Russia has resolved the issue of providing frequencies for the development of 5G,

MTS considers the technology of dynamic spectrum reallocation as key in the evolution of networks from 4G to 5G. After the regulator decides on the technologically neutral LTE band, the use of this technology on existing networks can give users such benefits as reduced response [time], which is important when implementing 5G-ready services … To conduct further research, we plan to deploy the tested Ericsson solution on the MTS commercial LTE network and in other regions of Russia.' The ESS solution is supported on all radio equipment supplied by Ericsson for the MTS network since 2016, as well as by 5G NR chipset manufacturers. Russia's State Commission for Radio Frequencies (SCRF) is yet to permit operators to use

any of their existing 2G, 3G and 4G LTE frequencies to launch 5G services, with newspaper Vedomosti recently reporting that a paragraph permitting such spectrum refarming has been removed from an SCRF draft decision. The original draft envisaged the first commercial 5G base stations operating on a limited basis in spring 2020 with large-scale coverage appearing by the end of the year, whilst according to the Digital Economy federal program, 5G networks should cover ten major cities in 2022. Moves to free up the 3.5GHz band for 5G have stalled due to the range's usage by military/security forces whilst a decision on allocating mmWave 5G spectrum is pending.

Examples of MTS network evolution-related deployments 2019—2021/22

2019
- The first pre-commercial 5G NR pilot
- Commercial gigabit LTE networks, with functionalities such as Massive MIMO and LAA, achieving peak data rates close to 1 gigabit per second (Gbps)
- A private network solution based on LTE, mission-critical Push-To-Talk (PTT), Enterprise LTE Core and associated services
- Further development of IoT use cases for industry, agriculture, city infrastructure and utilities

2020
- 5G networks for enhanced mobile broadband use cases in Russian regions
- Further LTE evolution of network technology for low latency and Short TTI

2021/22
- Realize commercial products based on virtual reality (VR)
- Private LTE within industry sectors for smart manufacturing
- Create a test zone for autonomous transport

SBB Launches Gigabit Broadband in Sixth City

Serbia Broadband (SBB), Serbia's second-largest ISP by subscribers, has launched broadband plans with speeds of up to 1Gbps in Nis, making it the company's sixth 'GIGA city' following similar upgrades

in Belgrade, Novi Sad, Subotica, Gornji Milanovac and, most recently, Kragujevac. The overhaul is part of a five-year investment plan that will see the company spend around EUR300 million (USD333

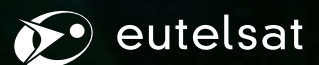million) on upgrading its infrastructure to improve its broadband and digital TV offerings.

ARTICLE

Transforming Lives With 5G

5G with its ultra-high bandwidth and low latency services enable new applications in areas such as e-learning, teleworking, virtual reality, augmented reality and artificial intelligence. This will enable various sectors such as education, energy, healthcare, transport, and entertainment to benefit from various Internet of Things (IoT) use cases enabled by 5G, enhancing operational efficiencies and user experiences in the Middle East and Africa.

With the COVID-19 pandemic, the world is facing an unprecedented situation. Countries across the globe are in lockdown, and people everywhere are being asked to stop or minimize their physical (social) interactions. Our broadband connections are becoming our lifelines – figuratively and literally: we are using them to get news, connect to our work environments (now all virtual), and for entertainment too.

The world is witnessing an increase in traffic in both wireless and wireline networks. Service providers are required to ensure that their internet infrastructures are up to these new tasks – with enough capacity and ability to deliver all services with high performance under the increased traffic demand.

A comforting thought is that we are at a safe place, technologically speaking, to enable bandwidth intensive applications for massive teleworking by big corporate companies and allow e-learning facilities for schools and so on. 5G network technology provides such bandwidth and capacity for these scenarios and much more for lifestyle as well as industries.

Aji Ed, Chief Technology Officer at Nokia Middle East and Africa, says, "5G with its ultra-high bandwidth and low latency services enable new applications in areas such as e-learning, teleworking, virtual reality, augmented reality and artificial intelligence. This will enable various sectors such as education, energy, healthcare, transport, and entertainment to benefit from various Internet of Things (IoT) use cases enabled by 5G, enhancing operational efficiencies and user experiences in the Middle East and Africa."

Aji Ed
Chief Technology Officer
Nokia Middle East and Africa

NOKIA

5G will play a key role in smart city projects, building on the past successes of 4G/LTE. It will more specifically drive the adoption of augmented reality (AR) and virtual reality (VR) to enable a wide range of government services to residents, tourists and drive industrial use cases among others.

Some operators in the Middle East were among the first ones globally to introduce 5G, while the US, China, and South Korea witnessed strong initial appetite for 5G. "We saw a strong acceleration of 5G launches in the Middle East region in 2019 and the momentum will continue through the year. Nokia continues to engage customers with 5G demos, trials, etc. across MEA to support bringing 5G," adds Aji.

As of March 23, Nokia had signed 69 5G commercial agreements, with 20 networks now live with 5G services. Nokia is the only 5G vendor with an end-to-end portfolio and a truly global presence. The company has 5G commercial agreements with customers such as Saudi Telecom Company (STC), Zain KSA, Mobily Saudi, du, Ooredoo Qatar, and more in MEA. Globally, we have 5G agreements with Orange France, NTT Docomo, SoftBank, SKT, KT, LGU+, Telia, Vodafone Italy, AT&T, Sprint and T-Mobile US, to name few. Today, Nokia 5G technology is used to provide live commercial services by operators across North America, Asia, Europe and the Middle East.

5G will play a key role in smart city projects, building on the past successes of 4G/LTE. It will more specifically drive the adoption

of augmented reality (AR) and virtual reality (VR) to enable a wide range of government services to residents, tourists and drive industrial use cases among others. The video processing capabilities of artificial intelligence (AI) and machine learning (ML) will also have a wide range of applications including public-safety, preventive maintenance and the ability to improve the reliability of complex systems.

Mitigating security concerns

As with any new technology, security has been raised as a concern since the dawn of 5G. Current network security has proven less than adequate due to the challenging nature of 5G networks to support unique and diverse business requirements of various sectors. Aji says, "When it comes to 5G networks, reliability does not only refer to the network infrastructure but also in ensuring high connectivity, infinite capacity and coverage anytime, anywhere. This requires a security makeover of how confidentiality, integrity, and availability will be managed and maintained in 5G networks. The complexity of securing a network has also increased due to the introduction of software-defined networking (SDN) and network function virtualization (NFV) in 5G networks."

Nokia's end-to-end security solutions help mitigate these security risks in a three-step process. The company collaborates with 3rd Generation Partnership Project and other specification bodies to influence the security requirements, which are then implemented into all its products by our DFSEC (design for security process). It also has a wide range of network security solutions and services that help operators to automate and orchestrate the security requirements by consolidating network security requirements into a single operations view via Nokia's SOAR (security, orchestration, analytics, and response) approach. It leverages its best-in-class global threat intelligence repository and automated workflow management to help

chief information security officers (CISOs) and chief information officers (CIOs) develop end-to-end visibility and control on their security operations which will become far more critical as the adoption of 5G accelerates.

When it comes to 5G networks, reliability does not only refer to the network infrastructure but also in ensuring high connectivity, infinite capacity and coverage anytime, anywhere. This requires a security makeover of how confidentiality, integrity, and availability will be managed and maintained in 5G networks. The complexity of securing a network has also increased due to the introduction of software-defined networking (SDN) and network function virtualization (NFV) in 5G networks.

Thus, during unprecedented scenarios such as COVID-19, telecom networks become critical and lifeline services -- like health and essential services – and it is important to maintain the network capacity and bandwidth to address exponentially increasing traffic demand in a secure way. So, in addition to continuing 5G and fiber access infrastructure rollouts, we may need even more investment in the networks (wireline, wireless, and converged) to make them better and readier for the future.

REGULATORY NEWS

TRA Extends the Validity of Wireless Authorizations of Hospitals

Telecommunications Regulatory Authority, TRA, stated that it has extended the validity of all wireless authorizations of hospitals and medical centers across the country, regardless of the expiry date of the authorization. In a statement, the announcement came as part of the TRA's efforts to support the precautionary measures taken by the UAE health sector in the current circumstances. The authority also announced that it has provided a package of backup radio frequencies to support the wireless communication system in the health sector in the UAE, so that it can be allocated immediately upon request without the need to pre-pay the fees required to complete the transaction. TRA assured that the spectrum monitoring system works around the clock to limit any harmful wireless interference that impedes the work of vital services. Also, hospitals and medical centers will be given priority in the event of jamming or interference affecting their devices or causing delay or disruption of their work, in order to strengthen and support the precautionary measures taken by the UAE to protect society and preserve the health of citizens and residents.


In support of the health sector

TRA extends all wireless authorizations of hospitals and medical centers regardless of the expiration date of the authorization

In addition to Providing a package of radio frequency backup to support the wireless communication system in the health sector in the UAE

هيئة تنظيم الاتصالات TRA
TELECOMMUNICATIONS REGULATORY AUTHORITY
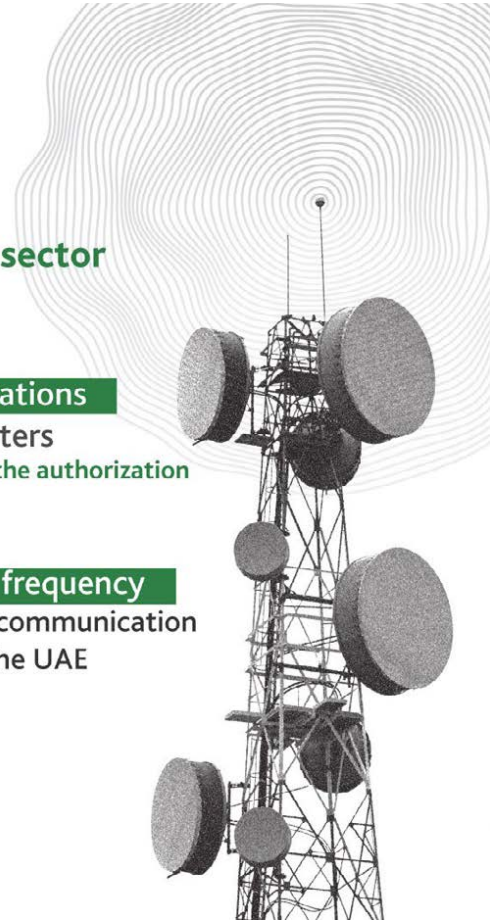
DoT Drafting Crisis Plan for Potential Collapse of Major Telco

India's Department of Telecommunications (DoT) is preparing a crisis plan to cater to the millions of customers and businesses that would be affected if any of the country's major providers collapses, the Economic Times writes. The development follows a decision by the Supreme Court earlier this week to reject potential relief measures that would have helped the already financially stressed industry cope with the burden of the roughly INR1.47 trillion (USD19.5 billion) in Adjusted Gross Revenue (AGR)-related dues imposed by the same court in October 2019. Vodafone Idea has consistently warned since the

October decision that it would be forced to shut down if there were no relief measures from the government. Vodafone Idea was able to scrape together a total of INR68.5 billion before the most recent Supreme Court hearing this week, but the DoT's estimates put the company's AGR bill at around INR530 billion. Bharti Airtel, meanwhile, has weathered the recent storm comparatively well but may nevertheless struggle to raise the rest of the approximately INR356 billion the government claims it is owed. Airtel has so far paid INR180 billion, which it claimed was the 'full and final' amount. Should either

player collapse, the sudden migration of their customers to the surviving players would overload the systems in place to port users. Vodafone Idea currently serves over 300 million mobile customers, whilst Airtel's subscriber count was 283 million at end-December 2019. Commenting on the situation an unnamed senior official was quoted as saying that 'none of the operators will have the capacity to suddenly handle such a large influx. There will be chaos if a contingency plan is not worked out.'

ITU Issues Emergency Telecoms Guidelines

The International Telecommunication Union (ITU) issued fresh guidelines for countries to develop emergency plans to maintain access to telecom networks and services during the COVID-19 (coronavirus) pandemic. In a statement, ITU Secretary General Houlin Zhao said the outbreak showed how "vital information and communication technology networks and services" are to pandemic and disaster management. Zhao detailed how national emergency telecommunication plans "can ensure there is effective and timely sharing of information across all levels of government, within affected communities and among humanitarian agencies to priorities response efforts and to save lives". The ITU explained guidelines highlight major areas of risk during a disaster, justify funding for vital gear and staff in an emergency, and advocates the need for day-to-day resources and procedures to keep national authorities prepared, "especially in relation to maintaining vital communications, the essential lifeline during emergencies". Doreen Bogdan-Martin, Director of the ITU telecommunication development bureau, said it was "crucial" stakeholders are ready to take action when an emergency situation arises. She recommended "mock exercises including tabletop, talk-through and walk-through exercises to full-scale drills, help to ensure smooth emergency response among those involved in disaster management and communications". The ITU added it had already worked with "several" countries to create national emergency telecommunication plans, set up early warning and monitoring systems, and on provision of equipment.

New Guatemalan Government Pledges to Auction 600MHz, 700MHz Bands This Year

Long delayed plans to stage a 4G-suitable spectrum auction in Guatemala have been reintroduced by the country's new government, which assumed power in January, led by Alejandro Giammattei of the Vamos party. Prensa Libre quotes Jose Edmundo Lemus, the official in charge of the Ministry of Communications, Infrastructure and Housing (Ministerio de Comunicaciones, Infraestructura y Vivienda, CIV) as saying that the sale process will include spectrum in the 600MHz and 700MHz bands; no mention has been made of the 1700MHz band, which was earmarked for auction by the previous administration.

Verizon is the Latest US Cellco to Receive Temporary Spectrum Boost

The Federal Communications Commission (FCC) has announced that its Wireless Telecommunications Bureau has granted Verizon's request for Special Temporary Authority (STA) to use additional spectrum to help meet increased customer demand for mobile broadband access during the COVID-19 (coronavirus) pandemic. The STA will allow the company to operate for 60 days using unused AWS-3 spectrum licensed to Northstar Wireless and SNR Wireless LicenseCo. TeleGeography notes that both Northstar and SNR are affiliated with satellite TV giant-turned-wireless market aspirant DISH Network. DISH paid USD9.995 billion for 702 AWS-3 licenses in Auction 97, which concluded in January 2015. As previously reported by CommsUpdate, the FCC has already issued STAs to T-Mobile US (600MHz band) and US Cellular (AWS-3 band); both permits last 60 days.

Government Advised to Partially Privatize Telecom Namibia

An advisory panel established by Namibian President Hage Geingob has recommended that Telecom Namibia (TN) should be partially privatized, reports The Namibian.

The potential sale is among the measures included in a report that considers the future of 22 state-owned companies as part of a strategy to revitalize the nation's economy. The panel also approved plans, first announced in May 2019, to list Mobile Telecommunications (MTC) on the Nambian Stock Exchange.

Supreme Court Rejects Self-Assessed AGR Dues

India's Supreme Court has criticized telcos and the Department of Telecommunications (DoT) for conducting self-assessments of Adjusted Gross Revenue (AGR)-related dues without permission from the apex court, calling the move tantamount to 'fraud', the Economic Times writes. The court ruled that operators must pay the full dues – including interest and penalties – in line with the government's initial estimate, which it described as 'full and final'. The court went on to say that 'exercise of self-assessment of AGR dues by telecom companies cannot be permitted even in wildest dreams'. Referring to the DoT's decision to ask companies to complete and submit self-assessments for the dues, which it would then use in its own calculations, the Supreme Court accused the ministry of attempting to override its ruling. Further, the bench reiterated further legal action against DoT officials and company executives with Justice Mishra quoted as saying 'We can call every managing director of the companies and send them to jail from here'. As previously reported by TeleGeography's CommsUpdate, Bharti Airtel and Tata Teleservices (TTSL) have paid what they claim is the full amount of their AGR dues based on their self-assessments, but the figures were substantially lower than the DoT's original estimates. For its part, Vodafone Idea paid what it said was the principal amount of its AGR bill earlier this week.

Mobile Operators Seek Help for Uninterrupted Service in Bangladesh

Mobile operators sought assistance from the government, especially from the law enforcement agencies, to continue providing uninterrupted services to the people during the holidays because of the coronavirus outbreak in the country. Telecom has been declared as an emergency service following the government's instructions, reports UNB. Mobile network operators have been providing uninterrupted services across the country, said a press release. According to notices circulated by the Cabinet Division and the Ministry of Public Administration on March 20, providers of emergency utility services such as electricity, water, gas, fire service, cleaning operations, telephone, and internet will continue providing services and keep their offices open during the holidays and shutdown. However, in some places, officials and or representatives of the mobile network operators faced challenges from the law enforcement agencies during their official works including network management, recharge and distribution and customer service. The Association of Mobile Telecom Operators of Bangladesh (AMTOB) has requested law enforcement agencies to communicate with their field officials so that mobile operators can provide their countrywide uninterrupted services and keep their offices open without any disruption, added the release. Bangladesh is currently going through a 10-day shutdown from March 26 to April 4 to battle the spread of coronavirus. Bangladesh recorded five deaths and 39 infections from the COVID-19 pandemic announced by the World Health Organization (WHO). The fast spreading coronavirus, which was first reported in China's Wuhan, has claimed more than 16,700 lives and infected over 386,000 people across the world till date, according to Worldometer. More than 102,000 people have recovered from the virus, which has now spread to 196 countries.

Intertelecom Unable to Pay 800MHz-900MHz Licensing Fee, Report Says

Ukraine's plan for an 800MHz-900MHz 4G LTE mobile network rollout has been delayed due to CDMA operator Intertelecom's lack of funds to pay its licensing fee, a report from Liga.Tech claims, citing unnamed market sources. GSM operators Kyivstar, Vodafone Ukraine and Lifecell are all expected to receive new technology-neutral 900MHz licences with redistributed frequency bands this month, allowing the launch of LTE-900 services

to augment coverage of their existing 4G networks, while Intertelecom is planning an LTE rollout using an 850MHz-900MHz spectrum allocation, and it had been hoped it would begin deployment before its three larger rivals. However, according to the report's sources Intertelecom is currently unable to pay a UAH180 million (USD6.75 million) licensing fee, with a shortfall of funds blamed on a recent failed attempt to sell a stake in the CDMA provider. Bohdan

Piven of Ukraine's National Commission for State Regulation of Communications & Informatization (NCCIR/ NKRZI) was quoted as saying simply: 'There is no confirmation of payment from Intertelecom. We are working on further solutions.' Kyivstar, Vodafone Ukraine and Lifecell are meanwhile expected to pay for their tech-neutral 900MHz concessions by the end of March.

Oman to Conduct Survey Measuring Access To and Use of ICT by Households and Individuals

The Ministry of Technology and Communications (MTC) and the National Centre for Statistics and Information (NCSI) in Oman have started to conduct a survey to measure the access to and use of ICT by households and individuals in 2020. The survey is part of a continuous practice for future improvement and planning. A random sample of individuals of 18-years-old and above will be interviewed through telephone calls representing Omani

and non-Omani in all the Sultanate governorates. The survey seeks to identify the percentage of the access to the Internet by households and individuals as well as the main reasons hindering them from accessing the Internet. It will also measure the extent to which individuals use social media platforms such as Facebook, Twitter, WhatsApp, Instagram, etc. The survey is expected to provide significant indicators about the

percentages of those who own and use computers, smartphones and its different applications, along with the levels of main skills in using ICT such as sending emails, using simple mathematical formulas in the computational programmes like Excel, in addition to measuring the level of advanced skills such as creating PowerPoints and using programming languages.

FCC Grants T-Mobile Special Temporary Authority to Access Additional 600MHz Spectrum

The US Federal Communications Commission (FCC) has granted T-Mobile US Special Temporary Authority (STA) to use additional spectrum in the 600MHz band to help it meet increased customer demand for broadband during the coronavirus pandemic. The company requested this authority to make it easier for Americans to participate in telehealth, distance learning and telework while practicing 'social distancing'. T-Mobile also indicated that this authority would enable it to be prepared to meet the needs of first responders. According to the watchdog, the STA will be valid for 60 days. FCC Chairman Ajit Pai commented: 'The FCC is dedicated to helping Americans work from home, learn at home, and connect remotely to health care professionals during this crisis. I would like to thank all of the companies that agreed to make their spectrum available for this important effort: DISH, Comcast, NewLevel, LB License Co, Channel 51, Omega, Bluewater and TStar License Holdings.' TeleGeography notes that the FCC's 600MHz Broadcast Television Spectrum Incentive Auction concluded in February 2017. The bidding process raised a net total of USD19.3 billion,

with 50 bidders placing winning bids for a total of 2,776 licenses. T-Mobile US comfortably dominated the bidding, agreeing to pay USD7.993 billion for a total of 1,525 regional licenses, edging out DISH Network, which bid a total of USD6.2 billion for 486 licenses. For its part, Comcast agreed to pay USD1.7 billion for 73 licenses, Channel 51 paid USD858.7 million for eight licenses and Bluewater Wireless bid USD568.3 million for 66 licenses.

ITU Launches Global Network Resiliency Platform

The International Telecommunications Union, (ITU) is launching a "Global Network Resiliency Platform" to help protect telecoms networks during the COVID-19 crisis. In a statement issued this morning the venerable organization's current Secretary General, Hulin Zhao, says the initiative is designed to help both national governments and the private sector to ensure that networks are "safer and stronger", "kept resilient" and are "more connected" to ensure that telecoms services remain "available to all." Hulin Zhao added, "I have instructed my team to leverage without any delay ITU's existing regulatory and policy-maker platform to help countries and industry cope with the increasing stress being put on global networks." The hope is that the dissemination of information and the sharing of expertise will give those countries that still have time to prepare for the full onslaught of the corona virus the opportunity to learn about and draw lessons from the telecoms solutions that have been deployed elsewhere around the globe. These, the ITU says, can range from emergency spectrum reassignments to guidelines for consumers on responsible use. Calling for worldwide industry solidarity from all ITU members in both the public and private sectors the secretary general said, "Never before have telecommunication networks been so vital to our health and safety, and to keep our economy and society working, as during the COVID-19 crisis we are living through today. At stake is our ability, as one human family, to give health workers everywhere the tools they need to carry out their duties, to allow all those that can to work from home, to trade online, to ensure that hundreds of millions of children and young people keep up with their studies, and to keep in touch with loved ones, wherever they are." The new platform will help national policy-makers, regulators and industry stakeholders to ensure "that network efficiency is maximised via the sharing of best practices and various initiatives put in place during the pandemic. This will be effected by the collection of "relevant and trustworthy information and expertise on actions that telecommunication policy-makers, regulators and others in the regulatory community can use to ensure that their telecommunication networks and services serve the needs of their country." The Global Network Resiliency Platform is currently a static information source but the ITU will will soon transmute it into a continuously-updated interactive platform for sharing "throughout this crisis and beyond".

Showing that the ITU is still relevant to world telecoms

For the advice offered to be effective the ITU needed to move fast and, to it's credit, it has done so. There can be no denying that the organization's influence has declined since the turn of the millennium but, while it no longer has the popular pulling power it had back in its glory days of the huge exhibitions that attracted the entire global industry to Geneva back in 1995 and 1999, today's announcement is evidence of its continued importance and relevance to world telecoms. Indeed, arguably it is even more relevant in this time of global crisis. The ITU is a special agency of the United Nations and was founded as long ago as 1865 to facilitate international connectivity in communications networks. The organization allocates global radio spectrum and satellite orbits, develops technical standards that ensure networks and technologies seamlessly interconnect. It should never be forgotten that the ITU is completely committed to connecting all the world's people, regardless of where they live or wherever they live or whatever their means. Today's ITU initiative was announced a matter of days after the organization published new recommendations to aid national governments and telcos in the development of national emergency communications plans and systems - something that is still conspicuously lacking in the UK. Back in 2013 the government here carried out successful trials of a nationwide emergency alert system. Under the now-abandoned decade-long austerity regime that saw successive conservative governments impose massive cuts across the UK's national and local health and social services the emergency alert system was "kicked into the long grass" and all but forgotten about as government departments squabbled over which of them would manage its development and deployment and which would pay for it. Seven years of inexcusable inaction later, we are all paying for now. Meanwhile, Michael O'Reilly, one of the board of commissioners of the US telecoms regulator the Federal Communications Commission (FCC) recently has publicly been questioning the continued existence and value of the ITU and has been calling for the establishment of a "G7-like" alternative composed of the world richest countries. Telecoms has always been a political issue as well as a technological one and the ITU has often been criticized for being overly bureaucratic and partial to the interests of smaller nations in general and the Third World in particular. Well, the ITU has 196 members, not seven. It isn't a spoiled rich boys club and, as it should, it takes input from both sides of the Digital Divide and operates on behalf of all its members not just a few. It continues its work, rather more quietly and with less flamboyance than it did in the 1990s and remains very important to the global telecoms community. There's room in the world for more than one telecoms regulation and technical standards organization. The ITU's voice should be heard and it has barked today. It's nice to be able to report today that there's life in the old dog yet.

FCC Grants AT&T Access to DISH AWS-4 Spectrum in Puerto Rico, USVI

The Federal Communications Commission (FCC) has announced that the Wireless Telecommunications Bureau has granted AT&T Communications Special Temporary Authority (STA) to use additional spectrum to serve Puerto Rico and US Virgin Islands during the COVID-19 pandemic. The FCC is granting AT&T access to a block of AWS-4 spectrum, currently licensed to DISH Network, for 60 days to expand its network capacity. FCC Chairman Ajit Pai commented: 'Staying connected while staying apart is the reality right now across America during this pandemic, and that is no less true for those living in Puerto Rico and US Virgin Islands. We have put a special emphasis on helping those on the islands stay connected following the terrible storms that hit them in recent years.'

FCC Delays 3.5GHz Auction

The US Federal Communications Commission (FCC) pushed back the start date for a planned auction of key mid-band spectrum in the 3.5GHz band by one month, citing business disruptions caused by the COVID-19 (coronavirus) outbreak. Applications for participation will now be due by 7 May rather than 9 April, with bidding set to begin 23 July. The sale was originally scheduled to begin on 25 June. Officials deemed the delay necessary to "protect the health and safety of Commission staff and to allow parties additional time to prepare". FCC Chairman Ajit Pai added in a statement it remains committed to moving ahead despite the setback, and looks forward to "beginning this important mid-band auction". The sale will be the first in the country to make mid-band spectrum available to operators for 5G, offering a total of 22,631 licences. Seven licences will be offered in each geographic zone. Spectrum will be sold in 10MHz chunks, with bidders permitted to hold up to four licenses in a given area. It is set to be the first of at least two mid-band auctions held by the FCC in 2020, with a sale of C-Band (3.7GHz to 4.2GHz) spectrum scheduled for December. Unlicensed airwaves in the 3.5GHz band, which is designated as shared spectrum in the US, were opened for commercial use in January. The US isn't the only country delaying spectrum sales due to COVID-19: French authorities earlier this month pushed back a 5G auction due to take place in April.

GSMA Expects $1T Impact from 5G

The GSMA hailed 5G for gaining significant traction since launch, with the technology maturing past its development stage, as it forecast significant operator investment in the coming years. In its latest Mobile Economy report, the GSMA predicted operators would outlay $1.1 trillion globally in capex between 2020 and 2025, 80 per cent of which will be on 5G networks. Mats Granryd, GSMA Director General, said hype surrounding 5G had given way to reality, as "millions of consumers are already migrating" to next generation networks and "enterprises are beginning to embrace" innovations including "network slicing, edge computing and low-latency services". The industry group predicted industries including manufacturing, utilities, professional and financial services would reap the greatest benefits from 5G, potentially adding $2.2 trillion to the global economy at the close of 2034. By end-January, it said commercial services had been commenced by 46 operators in 24 countries following a spate of launches in 2019. It forecast one-in-five mobile connections would be on 5G networks by end-2025. Despite the progress of 5G, 4G remained the most popular technology at the close of 2019, accounting for 52 per cent of global connections at that point and being tipped to increase its share to 56 per cent by end-2025. The industry group said mobile technologies and services contributed $4.1 trillion, or 4.7 per cent, of global GDP at end-2019. It tipped this to hit $4.9 trillion (4.9 per cent) by end-2024, as productivity and efficiency is boosted by increased take-up of mobile services. The mobile ecosystem supported more than 30 million jobs directly and indirectly in 2019, and made a substantial contribution to pubic sector funding with $490 billion raised through tax. GSMA's latest research also revealed global unique mobile subscribers stood at 5.2 billion by end-2019 (67 per cent of global population), forecasting this to grow to 5.8 billion by end-2025 (70 per cent). Almost half of the global population (3.8 billion people) were connected to mobile internet services: this is expected to reach 61 per cent (5 billion) by end-2025.

Mozambique Launches Universal Access Projects in Ten Areas

The Mozambique government's Universal Access Service Fund (Fundo do Servico de Acesso Universal, FSAU) has launched projects to improve connectivity in ten locations in the provinces of Maputo, Gaza, Inhambane, Sofala, Zambezia, Nampula and Niassa. The scheme will ensure broadband access at a speed of 20Mbps at 27 separate sites across the ten localities. The Communications Regulatory Authority (Autoridade Reguladora das Comunicacoes, ARECOM, previously INCM) says the deployment will benefit businesses, farmers, start-ups and other sectors of the community. The FSAU is financed by a 1% levy on operators' annual gross revenues.

Singapore Unveils Digital Initiatives to Prep for 5G

The Singapore government stepped-up efforts to become a leading digital economy, announcing a raft of initiatives aimed at preparing the city state to take full advantage of 5G networks when they roll out later this year or in early 2021. Measures from the Ministry of Communications and Information include the citywide launch of a parcel locker network to improve the efficiency of its e-commerce logistics sector; support for companies to hire and train mid-career professionals for technology jobs; and a program to help small- and medium-sized enterprises access overseas markets without the need for a physical presence. In addition, the government started the Cyber Talent Initiative, which aims to nurture talent to support its aim of being a Cybersecurity hub. The Infocomm Media Development Authority (IMDA) expects to award 5G spectrum licenses by mid-2020 after receiving proposals last month from Singtel, TPG Telecom and a joint-submission from StarHub and M1. The agency said it is evaluating the submissions. Two citywide standalone (SA) 5G licenses are being offered, but IMDA in October 2019 expanded its plans with a call for proposals covering localized networks for enterprise services. Despite its ambition to be a 5G leader, Singapore has waited to deploy the SA version from the start, pushing its schedule behind countries including South Korea and China. A key reason for the wait is the government believes the business models and use cases are far from clear. In May 2019, it earmarked SGD40 million ($28.9 million) to develop what it calls an open and inclusive 5G innovation ecosystem. IMDA plans to issue additional 5G spectrum in 2024 or 2025.

US Cellular Gets Spectrum Infusion from FCC

The Federal Communications Commission (FCC) gave US Cellular the green light to temporarily tap into spectrum held by a third party, as the operator looks to meet increased demand for mobile broadband in states hardest hit by COVID-19 (coronavirus). US Cellular was granted access to AWS-3 airwaves licensed to Advantage Spectrum for 60 days to provide additional capacity to customers in parts of California, Oregon, Washington and Wisconsin. The operator holds a majority stake in Advantage Spectrum through its subsidiary USCC Wireless Investment, but does not have sole control of the company. A US Cellular representative told Mobile World Live (MWL) the move is part of a "proactive" effort to "avoid network congestion in some of our markets". Washington and California are among the states with the highest number of confirmed cases of COVID-19, with 708 and 369 respectively, US Centers for Disease Control and Prevention data showed. Earlier this week, the FCC cleared T-Mobile US to tap into additional 600MHz spectrum licensed to several broadcast companies to boost the operator's capacity at a time of heightened demand. Larger rivals AT&T and Verizon separately told MWL they don't yet have plans to seek a similar arrangement, with a representative for the latter noting it was yet to experience capacity issues which would require it to seek access to additional spectrum. An AT&T representative said its network "continues to perform well," noting the operator had actually seen "fewer spikes in wireless usage around particular cell towers or particular times of day" in some locations, as more people work from home and avoid gathering in large crowds as a precaution against the virus.

UK Operators Finalize £1B Rural Network Plan

The UK government announced an agreement had been reached between the country's four major operators to push ahead with a £1 billion Shared Rural Network (SRN), despite a spat over payment terms which threatened to scupper the plan. In a statement, the government said bosses from the operators and ministers would meet to sign the agreement today (9 March) for SRN, which was first unveiled in October 2019 and aims to bring 4G coverage to 95 per cent of the UK by the end of 2025. EE, O2 UK, 3 UK and Vodafone UK will invest in new and existing phone masts to boost rural coverage, overseen by jointly-owned company Digital Mobile

Spectrum Limited, which they will all share, read the statement. As per the terms of the initiative outlined in October 2019, the UK's operators pledged to invest £530 million to address the country's coverage gaps, while the government would investment an additional £500 million. The plan forms part of the government's ambition to improve digital infrastructure, as well as implementing new legislation for telecoms operators to improve broadband services in commercial areas. Today's announcement suggests it is all systems go with the SRN, however there were some bumps in the road along the way. EE's parent BT submitted a cost proposal in January for sharing its telecoms infrastructure with the country's three other operators, arguing its prior investments must be accounted for and respected. In its proposal, it outlined the reciprocal costs it felt it should be paid to get access to one another's sites, based on the value of its mobile sites today and the investments it made to get the sites up and running. There was no mention of BT's pricing proposal in the government's statement, however UK newspaper CityAM reported the tie-up could now be a watered-down version of the original agreement. The newspaper's sources said the agreement will see only O2, Vodafone and 3 build new masts in some areas, with BT operating its own equipment.

Dish Lends Spectrum to AT&T during Crisis

AT&T became the third US operator to get a spectrum boost from Dish Network, as the Federal Communications Commission (FCC) cleared the broadcaster to loan a portion of its holdings to aid the operator's response to the COVID-19 (coronavirus) pandemic. The deal will give AT&T immediate access to 20MHz of spectrum in the AWS-4 band, along with all of Dish Network's 700MHz holdings for 60 days. Jeff Blum, Dish Network SVP of public policy and government affairs, stated the

company was "proud to join forces with AT&T to achieve a common, critical goal: supporting the connectivity needs of Americans during this challenging time". AT&T told Mobile World Live earlier this week its network was still performing well, but did not say at the time whether it would seek a spectrum boost. Late last week, Dish Network was one of several broadcast companies the FCC cleared T-Mobile US to tap for additional spectrum in the 600MHz band, a 60-day deal enabling the operator

to increase capacity to match higher demand for telehealth and homeworking services. Verizon will also temporarily benefit from spectrum connected to Dish Network, albeit indirectly, after partnering with Northstar Wireless and SNR Wireless License to gain access to the AWS-3 band. Dish Network holds an interest in both companies and formerly used them as designated entities to bid in an auction of AWS-3 spectrum in 2015.

K-Net and Liberian Regulator Delivering Rural Towers

The Liberia Telecommunications Authority (LTA) has partnered with tower firm K-Net to deliver connectivity to one of the country's more remote regions. Officials from the regulator and K-Net have signed a MoU (memorandum of understanding) detailing their commitments under the agreement. The Daily Observer reported that K-Net won the contract by delivering a compelling proof of concept. The LTA

has commenced the deployment of towers for mobile services in Parluken District #2, Grand Kru County. The infrastructure will eventually be used by both of Liberia's mobile network operators, Lonestar Cell-MTN and Orange Liberia. A release issued by the LTA read: "The issue about communication in the remotest part of Liberia is…alarming and disheartening but the case with Parluken, Grand Kru County

is gradually becoming an easy one as a team from the [regulator] and K-NET are now in Parluken to set up the first towers." LTA spokesperson Jarsea Burphy said that the initiative had made temporary Wi-Fi services available in the district for the first time, meaning that many residents were enjoying their first ever access to the internet.

Regulators Argue Against India Price Floor

Indian competition chiefs dismissed operators' call for minimum pricing on voice and data services, arguing it would deter tariff innovation and effectively guarantee a minimum level of profit for operators, The Economic Times (ET) reported. The Competition Commission of India (CCI) and the Policy Commission said imposing a price floor would likely reduce competition around cost efficiency, quality and charges, as well as discourage new entrants using disruptive technology.

It addressed its concerns to the Telecom Regulatory Authority of India (TRAI), ET reported. The competition agencies called for policy reforms to improve the health of the mobile sector, the newspaper said. Operators raised prices in early December 2019, after fierce price competition since Reliance Jio entered the market in 2016 eroded margins and profitability. At the time of the price increases, TRAI initiated a public consultation to explore tariff revisions, seeking views on setting a

minimum fee for voice and data in what would be the first move by the government to do so in any industry. The country's three major mobile players, Reliance Jio; Vodafone Idea; and Bharti Airtel, have pushed TRAI to consider setting a price floor, which they insist is necessary for voice and data fees to return to sustainable levels and ensure their long-term profitability.

VHA-TPG Union Moves Ahead as ACCC Drops Appeal

Australia's competition regulator decided not to appeal a court decision approving an AUD15 billion ($9.9 billion) merger between Vodafone Hutchison Australia (VHA) and TPG Telecom, clearing the way for the companies to take the next steps to finalize the deal. VHA CEO Inaki Berroeta welcomed the decision, which he said will allow it to quickly progress on a merger "we believe will allow us to be a stronger player which will bring more choice and value for Australian consumers and businesses". Berroeta said the deal should

be completed in mid-2020, subject to the remaining regulatory and shareholder approvals. In a statement, the Australian Competition and Consumer Commission (ACCC) acknowledged it does not have grounds for an appeal. The body opposed the proposed deal from the start, on the grounds it would likely substantially reduce competition, In mid-February, the Federal Court of Australia ruled the tie-up would not substantially lessen competition in mobile services. ACCC chair Rod Sims said the agency remains disappointed by the

outcome, which closes the door on what "we consider was a once in a generation chance for increased competition in the highly concentrated mobile telecoms market". He noted the future state of competition without a merger is uncertain, "but we know competition is lost when incumbents acquire innovative new competitors". Separately, VHA revealed it today (5 February) switched on its first 5G sites as part of a phased rollout across Australia's major cities in the coming months.

EC Green Lights Vodafone Italy, TIM Tower Merger

The European Commission (EC) conditionally approved the tower infrastructure merger of Vodafone Italy and Telecom Italia to accelerate the rollout of 5G in the country. Reuters reported the merger was on the verge of approval last week. In statements,

Vodafone and Telecom Italia said the merger will make Telecom Italia's tower company Inwit the second largest in Europe, with a portfolio of 22,000 masts. As concession to address competition concerns, the EC said Inwit will make available to rival operators 4,000 towers in cities with populations of more than 35,000. Inwit has the responsibility of making available towers known to rivals, respond to tower access in a timely manner and may only refuse to rent towers for technical reasons. The anti-trust body noted both companies scaled down a current network sharing agreement, to leave out densely populated areas. The merger was detailed in July 2019, under which Vodafone will transfer its mobile masts to Inwit, which Telecom Italia has a 60 per cent stake in, and receive €2.14 billion for its tower assets. Both operators will hold 37.5 per cent stakes in Inwit. EC competition commissioner Margrethe Vestager said the approval of the merger will enable "fast roll-out of 5G technology in Italy," which will "benefit Italian consumers and businesses and wholesale competition."

Vodafone Submits INR30Bn to Clear Spectrum Fees

Indian cellco Vodafone Idea has paid the Department of Telecommunications (DoT) spectrum dues totaling INR30.4 billion (USD418.6 million) relating to its purchase of frequencies auctioned in 2014, the Economic Times reports. According to the news outlet, which cites people familiar with the matter, the cellco is looking to avoid the government invoking its bank guarantees and to indicate to sector regulators that it is intent on honoring its financial commitments. At the same time, the operator has yet to pay dues related to the Supreme Court's ruling on Adjusted Gross Revenue (AGR), for which the DoT is understood to have demanded INR530 billion from the company. The company has previously warned that it would be forced to close down if the government invoked its bank guarantees to recover AGR dues, as it does not have the funds to pay banks – a message that was subsequently echoed by the company's creditors.

Cote d'Ivoire Aims to Expand Mobile Money Use

The government of Cote d'Ivoire plans to implement interoperability of financial services by the end of 2020. The move would enable customers to carry out transactions with users of any other financial service, rather than just those affiliated to the same provider as themselves. A report from Agence Ecofin says the government is hoping to improve the adoption of digital financial services; currently 44% of the adult population do not access such services.

ICT Industry to Reduce Greenhouse Gas Emissions By 45 Per Cent By 2030

A new ITU standard highlights that compliance with the Paris Agreement will require the information and communication technology (ICT) industry to reduce greenhouse gas (GHG) emissions by 45 per cent from 2020 to 2030. The standard will support ICT companies in reducing GHG emissions at the rate necessary to meet the United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement's goal of limiting global warming to 1.5°c above pre-industrial levels. The recommended emission-reduction targets are the first targets specific to the ICT industry to be approved by the Science Based Target Initiative (SBTi). The ITU standard – ITU L.1470 "GHG emissions trajectories for the ICT sector compatible with the UNFCCC Paris Agreement" – was developed in collaboration with the Global Enabling Sustainability Initiative (GeSI), GSMA and SBTi. It is supported by associated Guidance for ICT Companies setting Science-Based Targets. ITU L.1470 puts forward emission-reduction trajectories for operators of mobile networks, fixed networks and datacenters. The standard and associated guidance will support operators in setting targets aligned with the latest climate science, the 'science-based targets' recognized by SBTi. "This new ITU standard offers authoritative guidance on the pathway towards net zero emissions for the ICT industry," said ITU Secretary-General Houlin Zhao. "The standard is an example of what can be achieved with good collaboration between key partners. It represents a significant contribution to the international effort in pursuit of the United Nations Sustainable Development Goals." 29 operator groups representing 30 per cent of the mobile connections worldwide are already committed to science-based targets, reports GSMA. These groups include América Móvil, AT&T, BT, Bharti Airtel, Deutsche Telekom, Elisa, Far Eastone, KPN, Magyar Telekom, NTT DOCOMO, Orange, Proximus, Reliance Jio Infocomm, Safaricom, Singtel, SK Telecom, STC, Swisscom, T Mobile USA, Taiwan Mobile, TDC, Tele2, Telefónica, Telekom Austria, Telenor, Telia Company, Telstra, Verizon and Vodafone. ITU L.1470 will support many more operators in following suit. The shift to renewable and low-carbon energy is expected to account for the majority of the ICT industry's GHG emission reductions over the 2020-2030 timeframe. ICT companies will also continue to achieve greater energy efficiency, incentivized by associated cost savings as well as revenue-generation opportunities stemming from ICTs' increasing ability to improve energy efficiency in other industry sectors. ITU L.1470 is under the responsibility of the ITU-T standardization study group for 'environment, climate change and circular economy', ITU-T Study Group 5.

Croatia's Optima Telekom Attracts Two Bidders

The sale of shares in Croatian telco Optima Telekom has attracted interest from two potential investors, a local news report suggests. Vecernji writes that Amsterdam-based United Group and Austria's A1 Group are thought to have submitted bids for the 17.41% stake currently held by Hrvatski Telekom (HT) and the 36.90% interest owned by Zagrebacka Banka. If confirmed, both bids would attract the interest of local competition watchdog AZTN; A1 Group is already present in Croatia via fixed and mobile operator A1 Hrvatska, while United Group this week completed its buyout of cellular operator Tele2 Croatia. TeleGeography's GlobalComms Database notes that Optima Telekom offers a range of fixed internet and pay-TV services. It served 123,407 broadband subscribers and 55,084 pay-TV customers at the end of 2019.

TRAI Moves to Widen Scope for Tower Companies

The Telecom Regulatory Authority of India (TRAI) recommended allowing tower companies to share active infrastructure including RAN, but not licensed spectrum, in a move to encourage sharing

of network resources which can reduce capex and opex. In a statement, TRAI said it aims to enable active infrastructure sharing by enhancing the scope of providers and incentivizing the deployment of common sharable, passive and active, equipment. Currently, the country only permits passive sharing of wireless equipment. Active sharing means multiple operators can share RAN gear at base stations, leading to cost reductions and faster deployments. The recommendation would allow tower companies to own, set up and maintain all the infrastructure required for establishing RANs, wireline access networks and transmission links. But TRAI said they cannot own or deploy core network elements, or acquire licensed spectrum. TRAI opened a consultation seeking comments from stakeholders in August 2019: the regulator said it received 29 submissions. The regulator also recommended tower companies be barred from giving non-telecoms companies access to their infrastructure.

Verizon, AT&T Dominate Latest US 5G Auction

Verizon and AT&T emerged the winners in a key auction of 5G spectrum, with the pair committing to spend close to $3 billion in total to secure thousands of new licenses covering mmWave bands. Bidding in the auction of spectrum in the 37GHz, 39GHz and 47GHz bands officially closed 5 March, with winners revealed. The sale tallied $7.558 billion, nearly tripling the combined total raised by two prior mmWave auctions, which generated bids of $2 billion for 24GHz spectrum and $700 million for 28GHz. Officials said 28 participants claimed a total of 14,142 licenses in the latest auction. All told, 3,400MHz of spectrum was on offer, the largest amount ever sold at one time in the nation's history. Verizon and AT&T moved decisively to bolster their already substantial mmWave holdings, with the former shelling out $1.624 billion for 4,940 licenses. AT&T, bidding through its FiberTower Spectrum Holdings subsidiary, was close behind, spending $1.185 billion on 3,267 licenses. The operators similarly led in the earlier mmWave spectrum auctions, with AT&T emerging the winner in the sale of 24GHz licenses and Verizon in the 28GHz proceeding. T-Mobile US sought to close the gap in the latest proceeding, spending $872.7 million on 2,384 licenses to complement some 1,346 licenses it won in the 24GHz auction. Dish Network, which is poised to make its entrance in the US wireless market once a proposed merger between T-Mobile and Sprint is finalized, snagged 2,651 licenses for $202.5 million through subsidiary Window Wireless. US Cellular, the nation's fifth-largest operator, and Sprint (bidding as ATI Sub) also took part, with the former grabbing 237 licenses for $146.3 million and the latter taking 127 licenses for $113.9 million. The auction will allow operators to press ahead with targeted 5G deployments using mmWave spectrum in more locations while they wait for an auction of mid-band airwaves which will allow them to offer broader coverage. FCC chairman Ajit Pai in a statement called the auction a "tremendous success," adding "we look forward to building on this positive result" in upcoming mid-band spectrum sales scheduled for June and December.

5G Confirmed Safe by Radiation Watchdog

5G is safe, according to the international body in charge of setting limits on exposure to radiation, which has updated its advisory guidelines for the first time in more than 20 years. The International Commission on Non Ionizing Radiation Protection (ICNIRP), the Germany-based scientific body that assesses the health risks of radio broadcasts, called for new guidelines for millimeter-wave 5G, the most high-frequency version of the telecommunications standard. But in practice, that form of 5G, which is in use in the US and will be coming to Europe, still has output levels significantly below the new maximum. Dr. Eric van Rongen, the ICNIRP chair, said: "We know parts of the community are concerned about the safety of 5G and we hope the updated guidelines will help put people at ease. "The guidelines have been developed after a thorough review of all relevant scientific literature, scientific workshops and an extensive public consultation process. They provide protection against all scientifically substantiated adverse health effects due to [electromagnetic field] exposure in the 100 kHz to 300 GHz range." The radio frequencies 5G uses in the UK are similar to those that have been used for mobile telephones since 1998, when ICNIRP published its first set of guidelines for EMF exposure. But millimeter-wave 5G, and

other broadcast connections above the 6GHz band, "were not anticipated in 1998", according to Dr Jack Rowley, the senior director for research and sustainability at GSMA, the industry body for mobile network operators. Higher frequencies interact with organic tissue differently, dissipating more energy at the surface and penetrating less, which means the new standards take measurements across a smaller cross section, and specifically pay attention to the power absorbed by, rather than simply exposed to, a body. "The most important thing is that the fundamental health risk assessment is unchanged," Rowley said. "The limits that we had in 1998 are still protective now." In practice, both the old and new limits are unlikely to

be breached in the conventional operation of a mobile phone network. Exposures from base stations hit about 1% of the maximum, Rowley said, while the testing regime for mobile phone handsets ensured that, when running at the maximum possible power, they hit about 50% of the upper limit. "In our day-to-day usage, however, it's very similar to the base stations – about 1% of the maximum." Despite the overwhelming evidence that 5G, like earlier mobile standards, is safe for the public, a large community of skeptics fear it will cause – or already is causing – health problems, including, supposedly, causing coronavirus. There is no evidence to support a link between the two.

Caricel Executives Charged with Breaching Telecommunications Act

A number of executives at ill-fated Jamaican 4G start-up Symbiote Investment (Caricel) have reportedly been charged with breaches of the Telecommunications Act by the Office of the Director of Public Prosecutions. According to the Jamaica Gleaner, the personnel in question are Symbiote CEO Lowell Lawrence, his wife, Company Secretary, Minette Lawrence, Director Natalie Neil and Livingston Hinds of Xtrinet.

They have been charged with one count of conspiracy to use spectrum without a license and five counts of use of spectrum without a license. The accused are said to have acted in contravention of Section 63A (1) (b) of the Telecommunications Act. As previously reported by TeleGeography's CommsUpdate, Caricel placed all of its licensed facilities and operations under the immediate control of Xtrinet on 10 December 2018 – just days after

the Supreme Court cleared the way for the government to revoke its telecoms licenses. The start-up paid JMD2.65 billion (USD19.4 million) for a mobile license in May 2016, but attempted to sell its business to South Africa-based Involution Limited in October 2017 – setting the company on a collision course with the Jamaican authorities.

FCC Approves Bidding Procedures for 3.5GHz Auction

The US Federal Communications Commission (FCC) has established application and bidding procedures for the auction of over 22,000 county-sized Priority Access Licenses (PALs) in the 5G-suitable 3.5GHz band. The auction will offer up to seven PALs in each county-based license area, for a total of 22,631 PALs nationwide – the largest number of spectrum licenses ever made available for bidding in a single auction. Each PAL will consist of a 10MHz unpaired channel in the 3.55GHz-3.65GHz band. The bidding process, which has been designated as Auction 105, is scheduled to commence on 25 June 2020.

Ofcom Reveals 5G Spectrum Auction Rules

British telecom regulator Ofcom has outlined the rules that will apply to its forthcoming auction of 5G-suitable spectrum. The regulator plans to sell national licenses for 80MHz of spectrum in the 700MHz band and 120MHz in the 3.6GHz-3.8GHz bands, ahead of which it has confirmed there will be no coverage obligations attached to the concessions on offer. The watchdog said its decision to omit obligations comes after the nation's mobile network operators (MNOs) committed to achieving more comprehensive mobile coverage via the 'Shared Rural Network' program, measures – Ofcom considers – that would have been enforceable via coverage obligations. The commitments made by the cellcos under the Shared Rural Network program have been agreed with the government, are now included in cellco's existing spectrum licenses, and are legally binding. Meanwhile, Ofcom has also confirmed that there will be a cap of 416MHz on the total amount of spectrum designated for mobile services that any single MNO may hold. In terms of the sale process itself, the regulator has revealed that the auction will include a principal stage, using a simultaneous multiple round ascending (SMRA) format – in which bidding for frequency-generic lots will determine the amount of spectrum won by each bidder in each band – and a subsequent assignment stage to determine the precise frequencies of lots won in the principal stage. The latter phase will reportedly contain measures to defragment MNOs' holdings in the wider 3.4GHz-3.8GHz band, 'including a period for negotiation in which winners of lots in the 3.6GHz-3.8GHz band will be able to agree between them the precise frequencies of those lots'. In terms of the next steps toward conducting the auction, Ofcom noted that during the course of its consultation process a number of stakeholders had indicated that they might consider seeking a judicial review of its final decisions. To that end, the regulator has suggested that any claim for judicial review should be brought promptly – specifically within six weeks of its statement – with a request that the courts expedite the matter. Having also published a final draft of the Auction Regulations which will give effect to its decision, Ofcom said it intends to issue the final rules 'once [it is] certain that stakeholders will either not seek to challenge the decisions set out in this statement, or any such challenges have been disposed of'.
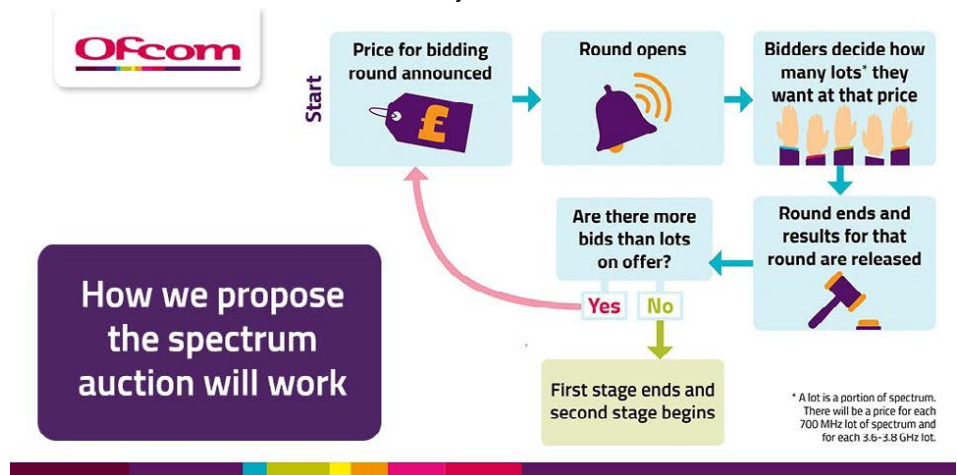
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A SNAPSHOT OF REGULATORY ACTIVITIES IN SAMENA REGION

Afghanistan

Sector watchdog the Afghanistan Telecoms Regulatory Authority (ATRA) has revealed that it has issued fines totaling AFN1.2 billion (USD15.7 million) to the nation's five major telcos – Afghan Telecom (Aftel), Roshan, Afghan Wireless Communications Company (AWCC), MTN Afghanistan and Etisalat Afghanistan – for failing to meet quality of service (QoS) standards. The watchdog did not detail a timeframe for when the fines were issued, however. The regulator revealed that the cellcos had deployed a combined total of 7,072 sites, covering around 90% of the country's population, whilst total investment in the sector reached AFN183 billion by the end of December 2019. Despite the financial penalties, the ATRA acknowledged that the operators were facing an uphill struggle to maintain and improve the

nation's mobile networks. The regulator pointed to the 'unlimited use of jammers by government authorities, foreign troops and individuals', the destruction of telecom sites and cutting of fiber by insurgent groups, limited fiber backbone infrastructure and restrictions on the distribution of additional spectrum resources as significant factors affecting QoS. Further, the ATRA recognized that operating costs were higher in Afghanistan than elsewhere, citing: security issues, high customs fees, no direct access to submarine cable networks for international bandwidth, and a reliance on generators at sites due to the nation's limited energy grid. Nevertheless, the regulator stressed that operators must adhere to the terms of their licenses or face punitive measures.

(March 11, 2020) commsupdate.com

Algeria

(March 24, 2020) ecofinagency.com

The Algerian President gave his approval to the Ministry of Microenterprise, Start-ups and the Knowledge Economy to implement the Initiative for Digital Transition. The project was presented on 22 March 2020 during the Council of Ministers. The Digital Transition Initiative will focus on the digitization of the central administration, documents and administrative forms, the generalization of databases based on the National Identification Number (NIN), the creation of a control panel for decision-making and monitoring government projects. The Initiative also incorporates the modernization of the government Internet network to ensure liaison between departments. The project also proposes several practical measures, including a digital service platform for citizens that will allow them to carry out several types of online transactions such as booking. This digital transformation will contribute to the collection of economic data that will help in the preparation of budget forecasts.

The Post and Electronic Communications Regulatory Authority has launched a campaign to measure the quality of service of the 4G networks of the three mobile operators, ATM (Mobilis), OTA (Djezzy) and WTA (Ooredoo). This campaign initially concerns five (5) wilayas among those which were the subject of the largest number of complaints from subscribers on the "Complaints" platform on the ARPCE website in particular on aspects related to network coverage and quality of service. The campaign will continue gradually as reports of breaches are made. The regulatory authority will communicate on the results of the campaign as soon as it is completed and will take the necessary measures towards the operators in order to correct any shortcomings noted.

(March 2, 2020) arpce.dz

Bahrain

According to the BuddeComm report released outlines the major developments and key aspects in the telecoms markets of Bahrain. The telecommunications sector in Bahrain is robust and

progressive and it contributes about 4% a year to the Kingdom's GDP. Bahrain is striving to drive further growth in the telecoms sector in 2020 by ensuring it is competitive and adaptable to

market dynamics. The major telecoms operators include Batelco, STC Bahrain and Zain Bahrain. The industry is regulated by Telecommunications Regulator (TRA) which has been working hard to resolve any regulatory or spectrum hurdles in readiness for 5G. This government support, along with proactive operators, resulted in Batelco launching the first commercial 5G network in Bahrain in mid-2019. Batelco also undertook a significant operational restructure in 2019 and launched Bahrain's National Broadband Network operated by BNET. Bahrain's telecommunications industry is guided by its Fourth National Telecommunications Plan which focuses on fiber-optic infrastructure deployment and

establishing affordable prices for high-speed access. Overall, the mobile broadband sector is poised for growth with 4G networks in place and a high mobile subscriber penetration paving the way for adoption. This BuddeComm report provides statistics and analysis on the key sectors of Bahrain's telecom market, presenting an overview of the regulatory environment, the fixed network operators and services, telecom infrastructure, mobile operators and mobile infrastructure, supported by statistics. The report includes a range of subscriber forecasts through to 2024. (March 31, 2020) globenewswire.com

Bangladesh

Bangladesh Telecommunication Regulatory Commission (BTRC) is apparently discouraging use and trade of second generation (2G) mobile phones, popularly known as basic or feature phones, as per letters it recently sent to listed handset importers, producers and vendors. Mobile operators welcomed the move but the letter recipients say it would not be a workable approach to popularizing smartphones. About 70 per cent of the mobile phone users are still using 2G devices as most have no demand for higher technology and the telecom regulator should not deprive them, they said. In the letter, the BTRC is said to be witnessing 2G devices dominating the market. "The 3G mobile network has flourished in the market and 4G services is also being offered and the government also has a promise to enroll 5G services by 2023, for which basic phones need to be discouraged," it read. The vendors are seeking clarity on the term "discourage". Currently the letter bears no meaning, said Rezwanul Haque, Chief Executive Officer of Transsion Bangladesh, which assembles 2G handsets of iTel brand and 4G ones of Techno brand. "We have a huge number of mobile phones users in the country who do not need smartphones at all as they are using mobile phones only for talking. They even cannot text or save phone numbers in their handsets so why will the regulator make them use smartphones?" A basic phone costs only Tk 750 but for smartphones at least Tk 3,000 is required and this extra spending will either be meaningless or unbearable for them, said Haque, a former general secretary of Bangladesh Mobile Phone Importers Association. There are also challenges regarding network quality across a huge part of the country. "This is why the youths who need or even want to use smartphones are not doing so," Haque added. Dismissing the analysis, mobile phone operators said it was a much-needed direction and true advancement towards the vision of a Digital Bangladesh. Shahed Alam, Chief Corporate and Rgulatory Officer at Robi, said their 4G network currently covers 75 per cent of the country's population, whereas 4G handset penetration had stalled at less than 30 per cent of mobile subscribers. "This clearly shows that a significant portion of our network capacity is remaining underutilized." Moreover, although Robi has become the country's first mobile carrier to introduce voice over long term evolution (VoLTE) technology, it does not have that much

customers with VoLTE-enabled handsets, he said. The VoLTE service will only benefit a small portion of the population, said the country's second largest carrier. "In the interest of implementing the vision of Digital Bangladesh, we need to make an all-out effort to create the eco-system for a full-fledged digital society by increasing the use of smartphones in the market," Alam added. Some 3.28 crore handsets were sold in the country in 2019, about 2.51 crore of which were basic phones, according to local manufacturers and importers. About 54 lakh smart devices were locally manufactured last year, while another 24 lakh were imported via the legal and grey channels, according to industry insiders. "This picture actually tells the real truth of Bangladesh, that the smartphone market has immense potential to grow," Haque said. For that the industry needs to work together though. "We never think that the market will be corrected only by issuing directives or orders." Mobile carriers need to improve their quality and at the same time more and more of the digital services need to be on board so that customers feel the need for smartphones, Haque said. Bangladesh witnessed the launch of 3G services in October 2012 and 4G in February 2018. The regulator is now formulating the 5G guidelines. (March 11, 2020) thedailystar.net

Bangladesh ended January 2020 with 165.61 million mobile phone subscribers, up from 165.57 million in December 2019, according to data from the Bangladesh Telecommunication Regulatory Commission (BTRC). Grameenphone maintained its customer base at 76.46 million, followed by Robi Axiata with 49.32 million, up from 49 million the previous month. Banglalink had 34.94 million mobile customers, down from 35.23 million, while Teletalk ended January 2020 with 4.87 million mobile customers, which represents a slight increase from 4.86 million mobile customers in the previous month. The report also shows that there were 99.24 million internet subscribers at 31 January 2020, down from 99.42 million in December 2019. The fixed-line internet user base was little changed at 5.74 million, while mobile internet users totaled 93.49 million, down from 93.68 million the previous month. Internet subscribers are defined as people who have used the internet at least once in the past 90 days. (March 2, 2020) telecompaper.com

Egypt

Egypt, represented by the Ministry of Communications and Information Technology (MCIT), is remotely participating in the three Web Dialogues organized by the International Telecommunication Union (ITU) in preparation of the 25th meeting of the Telecommunication Development Advisory Group (TDAG), on March 24-26. This includes TDAG Web Dialogue on the World Telecommunication Development Conference (WTDC), TDAG Web Dialogue on the new ITU index, and TDAG Web Dialogue on the Regional Presence. This first provides the opportunity to delve into four main topics revolving around the WTDC. The second presents progress in the development of the new ITU composite index and provides an opportunity for ITU Member States to raise questions and receive clarifications. Council-19 instructed the Secretary-General to recruit an independent external management consultancy to perform a comprehensive programmatic, strategic and financial assessment and review of ITU's regional presence. The third Web Dialogue provides an overview of the work done up until now and summarizes some key findings. It is worth mentioning that TDAG reviews priorities, strategies, operations and financial matters of the ITU Telecommunication Development Sector (ITU-D). It convenes in the interval between the WTDCs to advise the Director of the Telecommunication Development Bureau (BDT) on the implementation of the WTDC Action Plan, including issues relating to the budget and the operational plan of the Sector. TDAG meets once every year.

(March 24, 2020) mcit.gov.eg

The Prime Minister, has appointed Eng. Hossam El-Gamal Executive President of the National Telecom Regulatory Authority (NTRA) for a term of two years in succession of Eng. Mostafa Abdel Wahed, who has been Acting NTRA Executive President since July 2015. For his over 20 years of experience in ICT, management, integrated future technologies, innovation and entrepreneurship areas, Eng. El-Gamal was appointed Assistant Minister for Networks and ICT Infrastructure at the Ministry of Communications and Information Technology (MCIT) in January 2019. He has a proven track record in planning, implementing and following up on infrastructure and digital transformation projects in the Middle East and North Africa (MENA). Previously, El-Gamal held different leading positions in major international companies, among which was Huawei Vice President for Strategy, Marketing and Solution Sales-Egypt; the Regional Director of Business and Network Consulting Department at Huawei Technologies, North Africa. Prior to joining Huawei, Eng. Hossam El-Gamal served as the Acting CTO and Capital Project Management Officer at MTN-Yemen, and was a member of MTN Strategic Development Team-MENA, where he managed to develop overall strategies for the technology sections, to be aligned with the organization strategic objectives. Before MTN, he served as a telecom engineer in the United Nations - Egypt. Eng. Hossam El-Gamal obtained a B.Sc. in Engineering from Alexandria University, in 1998. He received his MBA degree from Robert Kennedy College (RKC), Switzerland, in 2014. He completed the Global Advancement Program (GAP) at University of Pretoria, GIBS Institute, in South Africa in 2010. In 2009, he received a PMP® certification from the Project Management Institute (PMI) in USA. (March 8, 2020) tra.gov.eg

Jordan

The meeting of the Crisis Cell that was formed by the Authority to follow developments in the telecommunications sector during the exceptional circumstances of the Kingdom and in the presence of representatives of telecommunications companies Zain, Orange, security, was held to discuss all matters or problems facing telecommunications companies during this stage. The Chairman of the Board of Commissioners, Dr. Eng. Ghazi Al Jabour, said that the Authority had held this meeting to review all the problems and difficulties facing telecommunications companies during this crisis and work to solve them, and we mention from them the need of companies to obtain permits for a number of their employees so that they can complete the expansion and increase the capacity of The companies after the authority granted them new frequency capacities to improve the performance of networks during the crisis, in addition to repairing any malfunctions that may occur in the infrastructure and mechanisms of companies, as the authority coordinated with the crisis center and immediately to issue permits for 20 workers per company to 24 hours, when needed, to ensure that the telecommunications networks are fully functional. Jabour also indicated that companies have called for the necessity of exploring an appropriate mechanism that enables citizens to pay their financial dues, as Jabour promised that this issue be discussed with all parties concerned to reach logical solutions in a way that guarantees everyone's interest. Jabour also confirmed that the technical reports submitted by the companies to the authority reflected the absence of problems in the communication networks in general, and these reports were consistent with the results of the automated systems of monitoring the communication networks, and the citizens focused on their use of mobile communication networks on Facebook videos, which ranged from 11.23% to 28%, YouTube has ranged from 20% to 22.27%, WhatsApp has ranged between 4.08% to 6%, and Netflix has increased by between 1.93% and 2% during this crisis. (March 28, 2020) trc.gov.jo

Morocco

Morocco's National Telecommunications Regulatory Agency (ANRT) announced that the number of internet subscribers in Morocco amounted to 25.38 million in 2019. ANRT released the figures on its official website on March 6, with the report illustrating a significant jump in the number of users of different services. The agency recorded an 11.43% increase in internet subscriptions in 2019, representing a 2.6% growth from 2018. In terms of mobile data subscriptions, ANRT recorded an increase of 11.22% in 2019, a growth of 2.21% compared to 2018. 1.48 million Moroccans subscribed to DSL broadband connections in 2019, a 4.07% increase from 2018. Meanwhile, the fiber-optic network, a new development in Morocco, accumulated 121,237 subscriptions in 2019 against 37,169 the previous year. The International Communication Union (ITU) reported that Morocco had more than 20.5 million internet users in 2017, constituting a 58.3% penetration rate and including 12 million Facebook users. The same body reported statistics about individual internet usage in 2018 in Morocco. 64% of the population used the internet in 2018; more specifically, 61.1% of Moroccan women used the internet compared to 68.5% of men. The US-based NGO Freedom House classified internet use in Morocco as "partly free" in its latest Freedom on the Net report. In assessing online freedoms, the NGO relies on a research package based on democracy and international human rights laws. Morocco ranked in the same category as Tunisia, Libya, Nigeria, Jordan, Lebanon, and Ukraine, while the report classified Egypt, Sudan, Syria, Saudi Arabia, the UAE, and Bahrain as "non-free" countries.

(March 14, 2020) moroccoworldnews.com

Nepal

Nepal's telecoms regulator, the Nepal Telecommunications Authority (NTA), has reallocated frequencies in the 1800MHz band in order to provide Ncell with a 20MHz block of contiguous spectrum and ensure efficient use of spectrum resources, reports Nepalitelecom.com. The move enables Ncell, Nepal's second largest mobile network operator (MNO), to implement the additional 9MHz of 1800MHz frequencies acquired in the country's first spectrum auction held in December 2019, which increased its total holding in the band to 20MHz. Following the reallocation process, Ncell has been assigned spectrum in the 1732MHz-1752MHz range, Nepal Telecom (NT) 1710MHz-1725MHz, Smart Telecom 1761MHz-1773MHz, United Telecom Limited (UTL) 1773MHz-1785MHz, and Nepal Satellite Telecom (Hello Nepal GSM) 1752MHz-1761MHz. (March 17, 2020) commsupdate.com

Nepal Telecommunications Authority (NTA) has launched two mobile applications – Call Test and Speed Test – that allow consumers to check their call quality and Internet speed. Minister for Communication and Information Technology (MoCIT) Yuba Raj Khatiwada launched the applications amid a function organized on the occasion of 22nd anniversary of NTA in Kathmandu. According to NTA Spokesperson Min Prasad Aryal both the apps will be available in Android and iOS platforms within few days. Consumers have long been complaining about the quality of voice call and Internet speed, among others. NTA officials say that the apps have been developed and launched to address concerns raised by the consumers. Now, consumers can check quality of their calls and Internet speed from their phone itself, they added. The NTA Call Test app allows users to examine quality of a call and even complain about it from the app itself. "By using the app, consumers can also examine quality of call at various places. They can also rate the quality of service provider from the app itself," an official of NTA told Republica. Similarly, subscribers can test the speed of their data service by using Speed Test app. It can test the speed of Internet of both mobile and fixed line. NTA has designed this app based on web. With the help of this app, users can check their Internet speed, as well as know about the service provider, location of installation of internet, download and upload speed and information regarding delay in browsing, among others. "We have received a lot of complaints regarding the quality of call and Internet speed through emails, phone calls and letters. The main motive behind launching these apps was to create a platform where users can test Internet speed and test the quality of call from their own phones, and even file a complaint," said Aryal. According to NTA officials, NTA will take needful action against the operator if they receive a lot of complaints from the user and if the service provider is proven guilty. "We are hopeful that this app will solve the problem of quality and speed of Internet as users can easily file complaint against the service provider. Now that the app has been launched, telecom operators will also take the issue seriously," he added.

(March 4, 2020) myrepublica.nagariknetwork.com

Oman

In line with the efforts taken by the Sultanate to prevent the spread of Coronavirus (COVID-19), the following important measures were taken to ensure the continuity of the telecom services and avoid network congestion due to increased demand:

1. To coordinate with the licensees to ensure the business continuity for the provision of telecommunications services and maintain its quality during the current circumstances and apply succession planning if required.

2. To provide free distance learning facility in cooperation with the Ministry of Education to all educational institutions with websites ending with (edu.om) in order to spare parents and students from any extra financial burdens.

3. To urge the licensed telecom operators to review the prices of their packages and to introduce incentive offers to enable nationals and residents to achieve the maximum possible benefits from the telecommunications services during this emergency case.

4. To ensure an easy access to networks from multiple points through several access points from different areas.

5. To allow the licensees to provide telecommunications services by activating the wireless broadband service through WFBB-LTE-FDD using the 4G frequencies that were temporarily licensed for the mobile telecommunications services.

6. To instruct the licensees to take all the preventative measures within the environment of business companies to curb the spread of the Coronavirus and protect their employees against infection.

7. To allow the use of certain VoIP applications such as Skype for Business, Google Meet, Zoom and WebEX.

8. To encourage the licensees to operate the National Roaming Facility whenever necessary.

9. To offer an opportunity for the licensees to use additional frequency bands without obtaining radio license during this period if necessary and allow them to use the planned frequencies required for delivering services or connect the base stations.

10. Offer to the licensed companies to assign them additional spectrum, especially in the C-band, to improve the quality of service and mitigate the pressure on the telecommunication networks if they wish.

11. To Guide Telecom companies to find mechanisms and means to ensure the continuity of service and avoid termination of service to any services or small businesses in case of inability to pay due to COVID-19 disruption and communicate alternatives and available payment mechanisms.

12. To forbear the approval requirements for such offers for the existing customers of licensees during this emergency period.

(March 29, 2020) tra.gov.om

The Telecommunications Regulatory Authority (TRA) has allocated additional mobile spectrum to the Sultanate's licensed network operators on a temporary basis and at no financial cost. The move is aimed at enabling mobile operators to continue to provide quality telecoms services to customers as usage surges due to the COVID-19 pandemic. Last week the TRA unblocked access to VoIP apps including Skype, Google Meet and Zoom to facilitate business continuity and communication for organizations, private and educational institutions, and government bodies. The regulator has also directed service providers to avoid disconnecting customers if they fail to pay bills.

(March 26, 2020) commsupdate.com

The Telecommunications Regulatory Authority (TRA) has decided to unblock access to VoIP apps including Skype, Google Meet and Zoom. The move is aimed at facilitating business continuity and communication for organizations, private and educational institutions, and government bodies during the COVID-19 pandemic.

(March 18, 2020) commsupdate.com

Oman's total internet subscriptions, excluding active mobile subscriptions, fell by 0.02% to touch 475,013 until the end of January 2020 up from 475,097 until end of December 2019. Of this, fixed broadband internet Subscription that have more than 256 kilobytes speed, fell by 0.02% to 472,986 until end of January 2020, according to the latest data released by National Centre for Statistics and Information (NCSI). The number of active mobile broadband subscribers fall by 0.9% to 4.56 million until end of January 2020, from 4.60 million subscribers until end of December 2019. Total fixed telephone lines rose by 0.2% to 593,459 by the end of January 2020, from 592,196 subscribers until end of December 2019. According to the NCSI report, the number of (VoIP) lines surged by 1.3% to 216,110 from 213,320 subscribers until end of December 2019. Further, analogue fixed Telephones line fell by 0.6% to 319,574 from 321,501 subscribers during the period under review. Public payphone connections remained unchanged at 6,801, whereas ISDN channels rose by 0.8% to 49,405. Total number of mobile subscribers increased by 0.6% to 6.42 million until end of January 2020, from 6.38 million subscribers by the end of December 2019. Out of this, postpaid mobile subscribers increased by 0.5% to 785,585 from 781,658 until end of December 2019. Pre-paid mobile subscribers also rose by 0.6% to 5.63 million from 5.60 million until end of December 2019. In addition, the number of subscribers of resellers rose by 2.9% to 998,654 from 970,396 until end of December 2019.

(March 9, 2020) omannews.gov.om

Pakistan

Ministry of IT and Telecommunication, through Universal Service Fund (USF), has made landmark achievements in the first six months of FY 2019-20 (July-December). During this period, six Next Generation Broadband for Sustainable Development (NGBSD) projects worth Rs. 2.8 billion were awarded for the socio-economic uplift of the people. Through these projects, hi-speed mobile broadband access is being provided to over 9 million (approximately) citizens in total, residing in 4333 mauzas spread across 13 districts. The contracts of these projects were awarded for hi-speed broadband services to the following areas according to the performance report of USF, an organization under Ministry of IT and Telecommunication.

- Hyderabad (districts of Matiari, Tando Allahyar, Hyderabad, Tando Muhammad Khan, Badin & Sujawal)
- Bahawalpur (district of Bahawalpur)
- Rahimyarkhan (district of Rahimyar Khan)
- Bahawalnagar (Bahawalnagar)
- DG Khan (DG Khan & Layyah)
- Tharparkar (Tharparkar & Mirpurkhas)

The contracts of these projects were awarded to Telenor and PMCL (Jazz). Through the implementation of all these projects, the Ministry of IT & Telecom through USF is enabling citizens of Pakistan to harness dividends of the 4th industrial revolution. All these programs are acting as a catalyst to stimulate economic growth, create jobs, trigger financial inclusion, decrease disparities, reduce social inclusion and enable improvements in education, health care, and other social services. They are also helping Pakistan achieve the Sustainable Development Goals (SDGs) and also creating a favorable environment for implementation of the Prime Minister's Digital Pakistan Program, as broadband coverage has been identified as a primary pillar of the program. In order to further spread the benefits of these projects, USF plans to award contracts for the projects in the following areas in the second half of the FY 2019-20.

- Sanghar (Umerkot & Sanghar)
- Muzaffargarh (Muzaffargarh & Rajanpur)
- Kurram (Kurram)
- Bolan (Kacchi-Bolan & Jhal Magsi)
- Jaffarabad (Jaffarabad, Sohbatpur and Nasirabad)

(March 18, 2020) propakistani.pk

On behalf of the Consultation Committee, Chairman Pakistan Telecom Authority (PTA) Amir Azeem Bajwa has invited Asia Internet Coalition (AIC) for the ongoing consultation process over Citizens Protection (Against Online Harm) Rules, 2020. In a formal letter written to the Managing Director of AIC, Chairman Pakistan Telecom Authority invited Asia Internet Coalition and its members for a consultative face-to-face or video conferencing meeting with the Committee during the coming week.

(March 14, 2020) pakobserver.net

The first meeting of the Advisory Committee for 5G Planning in Pakistan (5G Pakistan Plan Committee) discussed the way forward, roadmap with timelines and key challenges for the introduction of 5G technology in the country. The meeting was held under the Chairmanship of Ministry of IT and Telecommunication Additional Secretary at Ministry of IT. The meeting discussed the way forward, roadmap with timelines, and key challenges including current 4G networks, spectrum availability & pricing, infrastructure related issues like Right of Way, 5G device ecosystem, market need of relevant use cases and telecom taxation. The meeting also decided to form five sub working groups including National Broadband Plan, WG-1 on Spectrum, WG-2 on Regulations, WG-3 on Use cases & Applications and WG-4 on Infrastructure. Earlier, the ministry said in a statement that the competition over the test trial of fifth generation (5G) mobile technology is heating up between Jazz and Zong, the Ministry of Information Technology and Telecommunication has formed a committee for the auction of 5G spectrum in the country on the directives of Minister for Information Technology Dr Khalid Maqbool Siddiqui. The 5G test by Jazz and Zong has triggered a war on social media between the supporters of both telecom companies. Though the 5G test was launched by Zong in August 2019, the company showcased its 5G performance again in January after Jazz demonstrated its `fifth generation` (5G) mobile technology. Jazz said that an average download speed of 1,452Mbps and upload speed of 68Mbps had been achieved along with successful HD voice and video calls. In a statement, Jazz CEO Aamir Ibrahim had said that the launch of 5G would meet the evolving needs of tomorrow`s customers. `We are pleased with the initial 5G trials and are ready to fast-track the technology across Pakistan, whenever the process gets initiated by the government. These trials showcase our commitment towards a digital Pakistan, which is why we have been the front-runners in deploying the latest mobile technology, Ibrahim said. He said that Jazz was ready to offer 5G`s game-changing potential whenever the government allowed for its commercial launch. With the approval from the telecom regulator Pakistan Telecommunication Authority (PTA), Jazz is showcasing its 5G capacity to ordinary customers for 20 days at its offices in F8, G7, E7 and Blue Area, where citizens with 5G compatible devices can experience the next generation high speed internet. Zong had also successfully completed its first 5G video call and reached the speed of over 1.5GB per second during testing. `We will be showcasing more technologically advanced and groundbreaking use-cases to enable Pakistan to become one of the most digitally connected countries in the world, Zong Chairman and CEO Wang Hua said. (March 10, 2020) nation.com.pk

Formed under the directions of the Prime Minister of Pakistan, the first meeting of the Consultation Committee on Citizen Protection (against online harm) Rules 2020 was held today at PTA Headquarters. In the meeting the Committee decided to immediately initiate a broad-based, open consultation process with all stakeholders including civil society, human and digital rights groups, social media platforms (technology companies) and media etc. to solicit constructive input to address the concerns

expressed by different forums. A questionnaire seeking input from all stakeholders will be posted on Pakistan Telecommunication Authority (PTA) website. A tentative schedule for consultation process will also be posted on PTA website, accordingly. The Committee encourages and solicits feedback from all stakeholders including general public during the consultation process. (March 3, 2020) pta.gov.pk

Saudi Arabia

Mohammed Al-Tamimi, Governor of Saudi Arabia's Communications and Information Technology Commission (CITC) handed over the license for Internet of Things Virtual Network Operator (IoT-VNO) to Dawiyat Integrated Telecommunications & Information Technology Co. and MachinesTalk Co., on the sidelines of the 3rd Saudi International Exhibition & Conference for Internet of Things in Riyadh on March 8-10, 2020. The license allows leasing or acquiring the data bandwidth from the mobile telecom operator on a whole sale basis from the infrastructure service provider, with no need for frequency spectrum or wireless networks, according to a CITC statement. The statement added that the license will enable companies to offer IoT services, as well other services including smart meters services within the power grid, and IoT solutions in transport, logistics services, and smart cities. It also noted that it will help service providers adopt top-notch global technologies, upgrade the telecommunications market and lure investments. In 2018, the Saudi telecom regulator offered licenses for IoT-VNO services for public and private service providers, Argaam reported. (March 9, 2020) argaam.com

The Communications and Information Technology Commission (CITC) announced the extension of the competition to license new mobile virtual network operators (MVNOs) to provide services in Saudi Arabia. The competition was initially launched in January 14, 2020 with a deadline in May, which has now been extended to August 10, 2020. According to CITC, the licensing of new MVNOs aims to further enhance the business environment, promote competition in the market, and foster the adoption of international best practices across the industry. "The licensing of new MVNOs will enhance innovation in the services provision and make more options available to telecommunications and information technology end users in Saudi Arabia. In addition, the licenses are expected to generate new jobs in this vital sector of the Kingdom's economy," CITC said in a statement. CITC further emphasized that the competition follows the findings of a public consultation released earlier this year, as well as market studies. (March 21, 2020) developingtelecoms.com

Turkey

BTK delegation participated under the chairmanship of its Chairman Ömer Abdullah Karagözoğlu in the BEREC first meeting of 2020, where Turkey has the observer status. Speaking at the Independent Regulator Group (IRG) General Assembly BTK Chairman shared his opinions and evaluations regarding the financial situation of IRG and its financial plans for 2021-2025 and the activities to be carried out in 2020. In the BEREC General Assembly, where the agenda of Europe in this field is discussed in the light of the EU's electronic communications sector regulations and perspective, BEREC expert working groups interconnection, 5G, end user, roaming, communication services within the EU, geographical surveys and network setup, open internet Guidelines (BEREC Guidelines), which are prepared by discussing reports on issues such as the management of number resources and "Very High Capacity Networks-VHCNs", were introduced. In the meeting, evaluations were also made about BEREC's 2021 business plan and strategy. The meeting also discussed on the contributions and duties of BEREC and regulatory authorities under the Digital Services Act (DSA), whose work is being carried out by the Commission. BTK President shared his evaluations during the discussions on the "Digital Future of Europe", which was announced by the Commission on February 19, 2020, and revealed the European approach and strategies regarding digital sectors and services, in order to make the most of the opportunities offered by the digital economy, He stated that digital markets should be subject to appropriate competition rules and effective control. BTK President noted that if the competition is not established, some major platforms can reach a dominant market position, and this will be an obstacle to both the well-being of consumers and the entry of new players, and it is critical to make preliminary arrangements for ensuring market justice in this framework. On the second day of the meeting, within the scope of the agenda item on the sharing of experience on topics of strategic importance of the BEREC General Assembly, the RTR President of the Austrian Administration made a presentation about the 5G tender that will be held in the country at 700/1500/2100 MHz bands, and the experiences were shared with the participants. During the meetings, contacts with the European counterparts were made by BTK President and evaluations were made on the agenda. (March 6, 2020) btk.gov.tr

United Arab Emirates

The Telecommunications Regulatory Authority (TRA) has announced it has received the CIPS corporate ethics mark from the Chartered Institute of Procurement & Supply (CIPS), becoming the first federal entity in the UAE to achieve such recognition. This achievement comes in light of TRA's efforts on continuous development, contributing to achieving global leadership, excellence and developing functional competencies in ethical procurement and supply management. This mark is highly regarded as an indicator of key global practice in the procurement and supply profession, especially in dealing with suppliers and partners while ensuring transparency and professional ethics. Commenting on this milestone, H.E. Saeed Al Suwaidi, Deputy Director General of TRA's Support Services Sector, said: "The TRA is actively working to reach the first place in the Telecommunications Infrastructure Index (TII), a global competitive index issued by the United Nations. To this end, the TRA had to develop the procurement and supply function and system, as well as prepare a highly qualified team. TRA's international certification reflects the tireless efforts of the Procurement and Contracts Team in bringing about a major transformation in the TRA, and the fruitful cooperation between the TRA and specialized international organizations such as CIPS." Mr. Al Suwaidi stressed that TRA's goals and visions can only be achieved by providing the best performance in the various sections and departments of the TRA, adding: "We at the TRA work as a team towards achieving a smooth and swift entry into the era of the Fourth Industrial Revolution (4IR) and Artificial Intelligence (AI). Our success depends mainly on providing advanced infrastructures, hence the role of the procurement and supply profession, which we have sought to develop in the past years by developing the capabilities and skills of employees working in this domain, especially since we are living in a transitional period characterized by the automation of procurement processes, which is in line with the UAE's trends towards digital transformation." The TRA continuously promotes the smart business method and adopts digital technology in all tasks while implementing online systems for procurement, contracting and supplier management, thereby leading to reduced administrative effort, faster decision-making, reduced cost and increased competitiveness among suppliers to offer the best deals. (March 15, 2020) tra.gov.ae

The Human Capital Department at the General Authority for Regulating the Telecommunications Sector was certified in three standard specifications: ISO 10015 - Guidelines for training, ISO 30408 - Human resource governance and ISO 30405 - Recruitment management. This achievement is the culmination of TRA's HR plans and initiatives and TRA's implementation of an internal audit process and a comprehensive management review. Commenting on this milestone, H.E. Saeed Sultan Al-Suwaidi, Deputy Director General of TRA's Support Services Sector, said: "We in the UAE believe that humans are the most important factor in achieving the goals and future visions of the country. Our wise leaders have underlined the importance of developing human resources and national competencies to contribute to enhancing the UAE's position and achieving leadership in various fields. Accordingly, the TRA has been keen to adopt best practices in human resource management so as to ensure having a highly efficient and qualified human capital that is capable of accommodating the rapid changes taking place in the world today, and achieving the TRA's vision to be a leading entity in sponsoring the ICT sector of the UAE." His Excellency also stressed that empowering employees to make decisions and participate in achieving goals within a stimulating work environment is one of the corporate values adopted by the TRA, adding: "At the TRA, we are keen to provide all resources that would help our employees perform their tasks very effectively, whether through training or by providing a stimulating work environment with the latest technologies and equipment required. Therefore, the TRA deserved these international certificates, underscoring the success of HR plans and solutions followed by the TRA." The human resources governance in the TRA is based on a number of principles, the most important of which are clarity and transparency in the design and output of regulatory processes and practices; openness in processes, practices and outputs; and accountability to auditing officials, legal authorities and stakeholders. Effective human resources governance requires coordination, commitment and engagement at all levels of the TRA to reflect full compliance through integration between strategic action planning and implementation. Given the importance of human resources governance, the TRA has been keen to apply ISO 30408 specifications and guidelines on tools, processes and practices to be put in place in order to establish, maintain and continually improve effective human governance. TRA's certification in ISO 30405 reflects the success of its plans to attract, recruit, evaluate and hire talents, focusing on key processes and practices including the development of recruitment policy, from identifying potential applicants and onboarding to evaluation and measurement. ISO 10015 is part of the ISO 9000 set of standards, which gives guidelines for an organization to identify, establish and maintain a robust system for quality assurance and gauging training effectiveness, where organizations are able to optimally invest in training and maintaining their competitive edge.

(March 10, 2020) zawya.com

REGULATORY ACTIVITIES BEYOND THE SAMENA REGION

Angola

Lebanese-backed telecoms group Africell Holding has been invited by the government of Angola to submit a formal technical and financial proposal in its bid for the country's fourth Unified Global operating license, permitting infrastructure-based mobile, internet, fixed telephony and pay-TV services. The Interministerial Working Group overseeing the bidding process disclosed that two other companies registered an interest in the fourth license, namely South Africa's MTN Group and Angola's BAI Investments, but only Africell chose to formalize a bid, news agency Lusa reported. In the preliminary stages of Angola's fourth license tender, twelve companies had made approaches, including Bharti Airtel, Maroc Telecom, Telkom South Africa, Orange Group, Vodafone Group and others. Angola's mobile market is currently a duopoly of Unitel and Movicel, while state-backed fixed line operator Angola Telecom holds the third Unified Global license and is planning a mobile launch in partnership with Egyptian-backed Angorascom. The Africell group operates mobile networks in Gambia, Sierra Leone, Democratic Republic of Congo and Uganda, and also provides internet, pay-TV and mobile money services. (March 4, 2020) commsupdate.com

Australia

The Australian Competition and Consumer Commission (ACCC) has confirmed that it will not appeal the Federal Court's recent decision that the proposed merger between TPG Telecom and Vodafone Hutchison Australia can move forward on the grounds that it would not substantially lessen competition. In a press release regarding the matter, the ACCC said that, having examined the court's ruling, it has concluded that it does not have grounds for appeal, which it noted would have required that it establish an error of law by the judge. Commenting, ACCC Chairman Rod Sims said: 'The ACCC remains disappointed by this outcome, which has closed the door on what we consider was a once in a generation chance for increased competition in the highly concentrated mobile telecommunications market … The future state of competition without a merger is uncertain. But we know that competition is lost when incumbents acquire innovative new competitors.' (March 5, 2020) commsupdate.com

Austria

The Regulatory Authority for Broadcasting and Telecommunications (Rundfunk und Telekom Regulierungs, RTR) has delayed its upcoming second 5G auction due to the COVID-19 pandemic, Der Standard reports. The allocation of licenses for frequencies in the 700MHz, 1500MHz and 2100MHz bands was expected to take place in April but will now be rescheduled for a later date. Last year the regulator concluded a 5G auction for regional spectrum in the 3400MHz-3800MHz range. (March 27, 2020) commsupdate.com

Belgium

Telecoms regulator the Belgian Institute for Postal Services and Telecommunications (BIPT) has extended the deadline for applications for the remaining spectrum in the 2600MHz frequency band until 10am on 15 May 2020. The decision has been taken in response to recent measures to prevent the spread of the coronavirus. The BIPT announced plans in February to auction 2×15MHz of unassigned 2600MHz spectrum (2520MHz-2535MHz/2640MHz-2655MHz) in response to a request for a license in the band from an unnamed company (later identified as Citymesh), as well as increasing market demand for spectrum. The minimum price for the 15-year license, which will be valid from 2020 to 2035 and enable the holder to deploy a national network, has been set at EUR15.01 million (USD16.2 million). Existing license holders in the band are excluded due to the spectrum cap of 2×20MHz. (March 20, 2020) commsupdate.com

Telecoms regulator the Belgian Institute for Postal Services and Telecommunications (BIPT) has announced the five applicants being considered for temporary 5G licenses available in the 3.6GHz-3.8GHz band. With 200MHz of frequencies available in the 3.4GHz-3.6GHz band, the BIPT proposes assigning 40MHz each to Telenet, Proximus, Orange Belgium, Flemish IT services provider Cegeka and B2B telecoms network operator Entropia, which would hold the

management rights valid until a traditional spectrum auction can be organized for the 3.4GHz-3.8GHz band. The BIPT will now hold a public consultation on its proposal until 21 April 2020 and then make a final decision on each license award.

(March 24, 2020) commsupdate.com

Belgium's three main mobile network operators (MNOs) – Telenet, Orange Belgium and Proximus – have confirmed they applied to the telecoms regulator, the Belgian Institute for Postal Services and Telecommunications (BIPT), for a preliminary

5G license before the 28 February deadline. With plans for a 5G spectrum auction at an impasse due to a disagreement between federal and regional governments, the BIPT announced in early February proposals to grant temporary licenses for the 3.5GHz band to enable an initial deployment of 5G services. It is not known whether other candidates applied for the temporary licenses. The BIPT will now examine the applications and decide how to allocate the frequencies. A public consultation will then be held, during which the regulator will publicly announce all the applicants. (March 2, 2020) Data News

Brazil

The Federal Government, through the Ministry of Science, Technology, Innovations and Communications, developed a series of initiatives to stimulate the expansion of the telecommunications infrastructure in Brazil. Among the measures, the auction of 5G-related radiofrequency bands will be held in the last quarter of 2020 by Anatel and is considered to be the largest spectrum auction in the world so far. Licenses for the 700 MHz, 2.3 GHz, 3.5 GHz and 26 GHz bands will be made available. To facilitate telecommunications infrastructure deployment, the Federal Government is preparing the regulation of the Antennas Law, which will be published in 2020. Among other measures, the new regulation will provide for a "deemed granted" rule for municipal infrastructure deployment permit requests that are not answered after a pre-established period of time, as well as establish a permit waiver for small-sized equipment. There was a recent reform of the Brazilian General Telecommunications Law that is set to allow the migration of the current fixed telephony concessions to the authorization regime, which has a lighter institutional framework. This will allow the current fixed telephony infrastructure, which has been maintained by contractual force, to be replaced by modern broadband networks. Secretary

of Telecommunications of Brazil, Vitor Menezes said that the investments must occur by ten years. The Brazilian Ministry of Science, Technology, Innovations and Communications coordinated an inter-ministerial project that aims to bring fiber optics to underserved cities and towns in the Northern Region. This is the Integrated and Sustainable Amazon Project (PAIS). PAIS' goal is to launch 5,000 km of sub-fluvial cables across the Amazon River and its main tributaries, according to government official. "The project is carried out by the National Education and Research Network and, in addition to providing an unprecedented capacity to the private initiative in the region, benefiting a population of 9.5 million people; it will provide services to 2,200 urban public schools (1.7 million students) and 9,400 basic health units or hospitals," added Menezes. "The first segment to be implemented will be between Macapá (AP) and Santarém (PA), at a cost of roughly $9 million, and will have 570 km. "Riverbed studies have already started and the implementation should be completed by November 2020. The next stretches will reach the states of Amazonas, Porto Velho, Roraima and Acre, covering numerous small towns and cities."

(March 8, 2020) capacitymedia.com

Cameroon

The telecoms operator CamTel has received three licenses from the Telecommunications Regulatory Board (ART), following a restructuring of the state-owned firm last year. One of the concession agreements allows CamTel to operate a nationwide public GSM network. The firm's fixed telecommunications network license has been renewed, while a new license for the establishment and operation of a nationwide transport

network, including submarine cable landing stations, has also been issued. Commenting on the license awards, Minister of Posts and Telecommunications Minette Libom Li Likeng said: 'The granting of these concession agreements to CamTel aims to enhance the productivity of the national operator, in order to increase the supply of quality electronic telecommunications services at affordable prices.' (March 16, 2020) ITWeb Africa

Canada

Canada's Minister of Innovation, Science & Economic Development, Navdeep Bains, has issued a directive to the country's three large national mobile network operators (MNOs) – Rogers, Bell and Telus – to lower their prices by 25% in the next two years for mobile

phone packages that include 2GB to 6GB of monthly data. If the big MNOs do not comply, the government 'will take action with other regulatory tools to further increase competition and help reduce prices,' the minister stated, adding that the aim was to increase

competition and give users more affordable options by reducing the cost of 'mid-range' wireless packages. To track progress of reductions, the government will release a quarterly price benchmarking report. Supporting the directive, Minister Bains announced the release of the 2019 Price Comparison Study, which showed that average prices from regional providers (smaller MNOs including Freedom Mobile, Videotron, Sasktel, Eastlink and Ice Wireless) were 'up to 45%' lower than the big three's plans, but prices for mid-range plans had 'not moved'. The study also claimed that Canadians have been paying more overall compared to consumers in other G7 countries and Australia. TeleGeography notes

that Prime Minister Justin Trudeau's Liberal Party ran for re-election in October 2019 with a pledge to lower wireless tariffs by 25%, claiming this move would save the average family of four almost CAD1,000 (USD752) a year. One of the big three, Telus recently responded by introducing its 'True North Affordability' pledge to cut prices to below government targets. In another measure to promote greater regional competition and lower prices, Minister Bains has also confirmed rules for the upcoming (Q4 2020) 3500MHz 5G spectrum auction, reserving 50MHz for small and regional telecom companies within the 3450MHz-3650MHz range. (March 6, 2020) commsupdate.com

Chile

Chile is implementing a new tax law that obliges overseas providers of OTT and e-commerce services to pay VAT. The 19% VAT rate will apply to all multinational companies that deliver services within Chile without having a physical presence in the country. This includes firms such as Airbnb, Amazon, HBO Go, Netflix and Spotify. Payments will be made on a quarterly basis. The tax change is part of Chile's Tax Modernization bill which has been signed into law by the country's President, Sebastian Pinera. The president noted that the bill is aimed at boosting tax revenues by US$2.2 billion, equating to around 0.6% of Chile's GDP. The

legislation specifies that companies will be required to pay VAT for "the delivery of digital entertainment content, such as videos, music, games and similar, via download, streaming or other technology, including texts, magazines, newspapers and books". Additionally, VAT will apply to overseas firms providing advertising services, data storage and software services. Transport services are a notable exception; while companies such as Uber will not yet be required to pay VAT, this is because Chile's parliament is currently debating a separate bill exclusively focused on the transport sector. (March 3, 2020) developingtelecoms.com

Colombia

The Ministry of Information Technologies and Communications (Ministerio de Tecnologias de la Informacion y las Comunicaciones, MinTIC) has invited interested parties to register their willingness to participate in the development of 5G pilot projects before 17 March. In its announcement, the request namechecks the health, education, entertainment, industrial and tourism sectors; businesses active in these fields are expected to work alongside the country's mobile operators to test proto-5G applications. While 5G activity has been quiet in Colombia to date, TeleGeography notes that the National Spectrum Agency (Agencia Nacional de Espectro, ANE) did stage a public 5G consultation in April 2019, after identifying the bands under consideration for 5G as follows:

- 614MHz-698MHz ('600MHz'), which has been authorized for mobile use following the country's analogue switchover, which commenced on 31 December 2019
- 698MHz-806MHz ('700MHz'), which was

successfully auctioned in December 2019 as part of a multi-band spectrum auction
- 3.3GHz-3.8GHz ('3.5GHz')
- Various millimeter wave (mmWave) bands, starting with 24.25GHz-27.5GHz.

(March 110, 2020) commsupdate.com

The Communications Regulation Commission (Comision de Regulacion de Comunicaciones, CRC) has announced that it is reducing the window within which number portability (NP) requests must be processed from three days to one day from 1 July 2020. The new watchdog – which was launched on 3 February this year – reduced the portability window with Resolucion CRC 5929 de 2020. According to CRC data, a total of 22 million fixed and mobile numbers have been ported since the process was introduced in 2011, with 4.3 million requests processed in 2019 alone.

(March 10, 2020) commsupdate.com

Congo

Congolese telecoms watchdog the Regulatory Authority of Post and Telecommunications (Autorite de Regulation des Postes et Telecom, ARPTC) has issued a license to Liquid Telecom for the construction of a second submarine cable landing station. The move is expected to end the Congolese Society of Post and Telecommunication's (Societe Congolaise des Postes et Telecommunications, SCPT's) monopoly on the sector and provide redundancy after damage to the West Africa Cable System (WACS) – the only submarine cable that currently lands in the Democratic Republic of Congo (DRC) – earlier this year caused a nationwide internet slowdown. Liquid is expected to connect the DRC to Google's Equiano cable. Liquid Telecom currently operates an terrestrial fiber backbone network in the DRC, and announced in November 2019 that it had completed construction of the first overland fiber link connecting East and West Africa, spanning from Muanda on the west coast of the DRC to Dar es Salaam in Tanzania, via Zambia. In a related development, meanwhile, Agence Ecofin reports that the DRC's telecoms ministry met this week with the Regional African Satellite Communication Organization (Rascom) regarding potential measures to improve the nation's access to international connectivity. Rascom DG Mamadou Sarr noted that the DRC currently only uses Rascom for satellite TV, adding that the organization could offer more and 'support it in its digital transition'.

(March 11, 2020) commsupdate.com

France

French telecoms regulator Arcep put plans for a 5G spectrum auction on hold, noting the COVID-19 (coronavirus) outbreak made it impossible to press ahead with the sale, scheduled to take place in April. An Arcep representative told Mobile World Live "logistical reasons" around virus containment measures in France had caused the process to be put on ice for the time being. The regulator must now "study different postponement scenarios and be ready to organize the auctions when we know more." The decision comes after French president Emmanuel Macron on 16 March ordered residents to abstain from non-essential travel and gatherings for 15 days to help stem the spread of the virus. Spectrum in the 3.4GHz to 3.8GHz bands was due to be auctioned in blocks of 10MHz, with the regulator last month stating all four major French operators had also qualified for a fixed-price sale of 50MHz blocks, which was due to be allocated at the same time as spectrum won in the bidding process. Seeking to encourage commercial 5G launches this year, Arcep originally aimed to issue the spectrum by June at the latest. The nation expected the sum raised by the auction and fixed-price allocation to raise at least €2.2 billion. (March 17, 2020) mobileworldlive.com

Hungary

The National Media & Infocommunications Authority (Nemzeti Media- es Hirkozlesi Hatosag, NMHH) completed the country's 5G spectrum auction, with Magyar Telekom, Telenor Hungary and Vodafone Hungary spending a total of HUF128.49 billion (USD397 million) on 700MHz, 2100MHz and 3600MHz licenses in a highly competitive bidding contest. A preliminary bid stage on 11 March showed that demand outstripped availability for the frequencies on offer, particularly regarding the 700MHz band, prompting the NMHH to proceed to a secondary auction. Magyar Telekom won 2×10MHz in the 700MHz band, 2×10MHz in the 2100MHz band and 1×120MHz in the 3600MHz band. Telenor Hungary acquired 2×5MHz in the 700MHz band and 1×140MHz in the 3600MHz band. Vodafone Hungary received 2×10MHz in the 700MHz band, 2×5MHz in the 2100MHz band and 1×50MHz in the 3600MHz band. There were no bidders for a 2600MHz (1×15MHz) block also on offer. The usage rights of the acquired frequencies will expire uniformly in 2035. Licenses in the 3600MHz and 2100MHz bands have immediate validity – with Hungary aiming to support 3.5GHz-3.6GHz 5G launches and capacity increases for existing mobile networks. 700MHz concessions will not become valid until 6 September 2020, due to the ongoing process of transferring the 700MHz range – the 'second digital dividend' – from digital terrestrial television (DTT) to mobile broadband usage to support 5G development, TeleGeography notes. Licenses will be extendable for a further five years without any additional one-off payment.

(March 27, 2020) commsupdate.com

Iceland

Telecoms watchdog the Post and Telecom Administration (PTA, or Post-og Fjarskiptastofnun [PFS]) has concluded its public consultation on the award of 5G spectrum in the country, revealing its plans to award 5G frequencies to three operators – Siminn, Nova and Vodafone Iceland (Syn) – currently in possession of 4G permits. The planned 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 will be distributed at a later stage, as the PTA would first monitor the development of 5G networks and the supply of 5G services in the near-term. The PTA will now prepare the terms and conditions for the draft authorizations and open a new public consultation on the licenses before their formal award.

(March 11, 2020) commsupdate.com

India

The Indian government, telecom industry stakeholders and regulatory authorities have proposed a series of measures to adapt to new challenges presented by the COVID-19 pandemic, although communication and cooperation between agencies remains somewhat strained. Following a request from sector lobby group the Cellular Operators Association of India (COAI) for the allocation of additional spectrum to wireless providers to ensure continued connectivity and service quality, the Department of Telecommunications (DoT) has directed companies to submit details of their requirements to the DoT's spectrum arm the Wireless Planning Commission (WPC). According to unnamed industry sources, the DoT has asked operators to provide details of their requirements for access and backhaul spectrum on a circle-by-circle basis. The regulator has yet to confirm whether additional frequencies would be made available or on what terms such permissions would be awarded, however. Operators had asked for the additional spectrum to guarantee that their systems could cope with the strain of the surging demand as India went into lockdown from 24 March, requiring many of the country's workers to telecommute and work remotely; in some cases providers said they had seen data use double since the lockdown order. Similarly, the COAI and fellow industry group the Tower and Infrastructure Providers Association (TAIPA) have sought permission from local authorities to use mobile towers that had been sealed prior to the outbreak. The DoT has asked senior state and Union Territory authorities to designate officers to ensure the maintenance of telecom infrastructure for the duration of the lockdown. Measures introduced by The Reserve Bank of India (RBI), meanwhile, have given the nation's cash-strapped telcos some relief, most notably by implementing a three-month moratorium on certain loan repayments and cutting interest rates for new borrowing. A spokesperson for the COAI said that the pause would help cellcos maintain cash flow and dismissed fears of a potential tariff hike saying that operators would keep tariffs stable for now. Elsewhere, Indian lawmakers have asked telcos to waive call charges for migrant workers for a month as 'hundreds of thousands' attempt to leave cities and return home by foot or by bus after long-haul train services were closed down last week. Major cities are seeing an 'exodus' of day laborers and other workers that have been left without an income as a result of the shutdown of non-essential services. COAI head Rajan Matthews was quoted as saying: 'No business can hope to succeed without this focus on the interest of their customers first … I am sure they will consider the request carefully and work with the government to take appropriate action.' In a similar move, the Telecom Regulatory Authority of India (TRAI) has asked operators to extend the validity of pre-paid services, as users may struggle to extend their plan or get top-ups during the shutdown.

(March 30, 2020) The Economic Times

India's cellcos have been instructed to pay Adjusted Gross Revenue (AGR)-related dues based on their own assessments, with the Department of Telecommunications (DoT) to issue revised notices at a later date, report citing Minister of State for Communications Sanjay Dhotre. Operators would be required to submit documentation with their self-assessments, and the DoT would base its revised demands notices on those documents, the official explained. The minister made the statement in response to questions in parliament regarding the DoT's progress in finalizing AGR dues after the gulf between the DoT's estimates and providers' self-assessments became apparent. As previously reported by TeleGeography's CommsUpdate, Bharti Airtel submitted INR130 billion (USD1.75 billion) in AGR dues plus a further INR50 billion to cover potential discrepancies between its calculations and those of the regulator. Airtel noted the payment represented the 'full and final amount' due to the government form AGR issues, but the figure was around half of the DoT's estimate of roughly INR354 billion. Similarly, Tata Teleservices (TTSL) has paid its full amount of INR22 billion, whereas the DoT had estimated dues of around INR148 billion from the cellco. The AGR dues relate to a decision by the Supreme Court in October 2019, which ruled that revenue from non-telecom sources should be included in the calculation for AGR, upon which providers' license fees are based. The court's decision was initially expected to cost the industry INR1.47 trillion, with payment due by late January – a deadline which was missed by all but Reliance Jio Infocomm (Jio) – and the Supreme Court has dismissed appeals by providers for extensions or further clarity on the matter.

(March 13, 2020) The Economic Times

Luxembourg

Sector watchdog the Luxembourg Institute of Regulation (Institut Luxembourgeois de Regulation, ILR) has opened a public consultation on the procedure for the auction of frequencies in the 700MHz and 3600MHz bands. The consultation will close on 10 April and candidates must register to take part in the auction by 25 May. The available frequencies being auctioned comprise 2×30MHz in the 700MHz band (703MHz-733MHz), divided into six lots of 2×5MHz, and 330MHz in the 3600MHz band (3420MHz-3750MHz), divided into 13 lots of 10MHz each. Candidates will be limited to 2×10MHz in the 700MHz band and 1×120MHz in the 3600MHz band, of which at most 80MHz can be in the form of large blocks. A reserve price of EUR2.81 million (USD3.12 million) has been set for each lot of 2×5MHz spectrum in the 700MHz band and EUR300,000 for each 10MHz of 3600MHz frequencies. The frequency management rights will be for an initial period of 15 years with the possibility of a renewal for a further five years. Winning 700MHz bidders will be required to use the assigned spectrum to ensure outdoor coverage of at least 50% of territory by 31 December 2022 and 90% by 31 December 2024. Operators awarded 3600MHz spectrum will need to deploy ten sites in the Luxembourg commune by the end of 2020, and at least 20 sites nationally by 30 June 2021, increasing to 40 by the end of 2022 and 80 by 31 December 2024. The auction will consist of two stages. The first stage will determine the total bandwidth to be assigned to each bidder in each band by means of a SMRA-Clock-Hybrid auction format. The second stage will determine the specific frequencies within each band to be assigned to each winner of lots. The winning bidders will initially be given the opportunity to agree specific frequency assignments between themselves, on the condition ever winner receives contiguous frequencies in each band, and any potentially unsold spectrum will be retained as a contiguous block within the band. Should the winners fail to reach an agreement within a timeframe specified by the ILR, spectrum winners will be able to bid for their referred position in each band in a single round of bids. (March 16, 2020) commsupdate.com

Mexico

Mexican conglomerate Grupo Salinas has announced that the Federal Telecommunications Institute (Instituto Federal de Telecomunicaciones, IFT) has extended the concession held by its fiber-to-the-home (FTTH) ISP business, TotalPlay Telecomunicaciones (TotalPlay). The 30-year license renewal will run from 17 October 2025 until October 2055. Confirming the development, Grupo Salinas stated: 'TotalPlay will continue investing in Mexico, to generate greater economic, social and environmental value and promote well-being and progress in the communities where it has a presence.' TotalPlay was launched in November 2010 by Ricardo Salinas, Mexico's second-richest man, and was initially operated as a subsidiary of the subsequently divested mobile operator Iusacell. The company has aggressively expanded its FTTH networks in recent years, and now has a presence in more than 40 major cities across Mexico. (March 31, 2020) commsupdate.com

The Federal Telecommunications Institute (Instituto Federal de Telecomunicaciones, IFT) has indicated that it is considering postponing its planned auction of 5G-suitable spectrum in the 600MHz band, as a result of the coronavirus (COVID-19) pandemic. The frequency sale was expected to be held in the second half of 2020. BNAmericas quotes IFT commissioner Arturo Robles as telling reporters that: 'the auction dates would have to be evaluated [because] spectrum auctions do not take place during pandemics'. TeleGeography notes that Mexico successfully cleared the 600MHz band by October 2018, claiming that its migration timeline made it the first country in the world to fully release the 600MHz band for mobile broadband use. Other frequencies under consideration to support the introduction of Mexican 5G services include the 1900MHz, 2.3GHz and 3.3GHz bands. (March 26, 2020) commsupdate.com

The Netherlands

The government of the Netherlands has invited applications from domestic and foreign companies to participate in the 5G auction expected to take place in June this year. Government agency Agentschap Telecom, part of the Ministry of Economic Affairs & Climate Policy, announced on 6 March that operators have until 6 April to submit their applications for the multi-round auction for mobile frequencies in the 700MHz, 1400MHz and 2100MHz spectrum bands, while State Secretary for Economic Affairs Mona Keijzer published the final auction regulations (see link below for full details). Reserve spectrum bid prices are set at a total of EUR900 million (USD1.016 billion), and 700MHz licenses carry a network coverage requirement of 98% of the surface area of each Dutch municipality within two years alongside specific minimum speed standards (including minimum 8Mbps at the 'worst points' of networks) aimed at a national average mobile data speed above 100Mbps. An individual spectrum cap of 40% of total available frequencies will be applied; this cap includes current licenses held by incumbent Dutch cellcos, a measure aimed at ensuring at least three 5G providers. During the auction, the Ministry will inform participants about the total

number of frequencies requested per band to allow bidders to better determine what they want to offer themselves. Initial applications must be accompanied by a bank guarantee/deposit of EUR35.28 million. In

line with EU agreements, the Netherlands intends to carry out the multi-band auction before 30 June 2020. The government is targeting a 3.5GHz 5G frequency auction in early 2022. (March 9, 2020) commsupdate.com

Nigeria

The Nigerian Communications Commission (NCC) has deactivated around 2.2 million partially or incorrectly registered SIM cards, reports This Day. 'By our records, all improperly registered SIM cards across mobile network operators in Nigeria have been completely deactivated,' commented the NCC's Executive Vice Chairman, Umar Danbatta, adding: 'The

commission's effort in this regard is in line with one of the key agendas of President Muhammadu Buhari to strengthen the security of lives and property for all Nigerians.' The move followed an audit of SIM cards and the implementation of a ministerial directive on SIM registration in September last year, aimed at improving security in the country. (March 9, 2020) commsupdate.com

Norway

The National Communications Authority (Nasjonal kommunikasjonsmyndighet, Nkom) has disclosed the identities of those companies that have been approved to take part in its forthcoming spectrum auction scheduled to start on 6 May 2020. In a press release, Nkom revealed that, while it would not ordinarily disclose the identities of companies that have registered to take part in one of its spectrum auctions, it was doing so on this occasion as some would-be participants had received an automatically generated e-mail which showed some contact details of all those that had applied. As such, and to ensure that all companies

considering taking part in the sale process have the same information, the regulator said it had opted to make public the identities of all registered participants. To that end, the Nkom has revealed that a total of six companies have qualified to take part in the auction, in which it will offer spectrum in the following bands: low 10GHz, high 10GHz, 13GHz, 18GHz, 23GHz, 28GHz, 32GHz and 38GHz. The companies set to take part in the sale are: Ceragon Networks, Funn, GlobalConnect, Ice Communication Norge, Telenor Norge and Telia Norge.

(March 31, 2020) commsupdate.com

Poland

Poland's Office of Electronic Communications (Urzad Komunikacji Elektronicznej, UKE) has kicked off its auction of 5G-capable wireless spectrum in the 3.4GHz-3.8GHz range. Under pre-announced plans, UKE will offer four nationwide licenses which each include 80MHz of frequencies and are valid for 15

years. The reserve price for each block has been set at PLN450 million (USD118 million). Winning bidders will be required to launch 5G in at least one city by the end of this year and deploy at least 700 5G base stations by 2025 to ensure coverage in every large urban area.

(March 9, 2020) commsupdate.com

Portugal

Portugal's National Communications Authority (Autoridade Nacional de Comunicacoes, ANACOM) has announced that it has suspended the digital terrestrial television (DTT) migration process to ensure that no one is left without access to a functioning TV signal during the ongoing COVID-19 pandemic. The watchdog says that the process will resume 'as soon as conditions associated with the pandemic permit', but the release

of the 700MHz band will no longer take place on 30 June 2020, as planned. TeleGeography notes that six 2×5MHz blocks of 700MHz spectrum were scheduled to be included in ANACOM's multi-band 5G spectrum auction in 2Q20, alongside frequencies in the 900MHz, 1800MHz, 2100MHz, 2600MHz and 3.6GHz bands.

(March 17, 2020) commsupdate.com

Romania

In an eleventh hour decision ahead of the expiry of 3G spectrum licenses on 31 March, the Romanian government has approved plans to charge Orange and Vodafone EUR30 million (USD32.9 million) each, payable before the end of the month, to extend their existing spectrum management rights in the 2100MHz band until 31 December 2031, reports Profit.ro. RCS&RDS

and Telekom Romania Mobile Communications, the licenses of which expire in January 2022, will have to pay a fee of EUR25 million before 30 November 2021 to extend their rights until the end of 2031. The renewal prices were first proposed by Romania's National Authority for Management and Regulation in Communications (ANCOM) in December 2019. Orange,

Vodafone and Telekom Romania currently use the 2100MHz band to provide 3G networks and services, while RCS&RDS uses it for both 3G and 4G.

(March 27, 2020) commsupdate.com

The National Authority for Management and Regulation in Communications (ANCOM) intends to organize an auction of spectrum in the 700MHz, 800MHz, 1500MHz, 2600MHz and 3400MHz-3600MHz bands in the final quarter of 2020, according to the body's newly adopted annual action plan. ANCOM aims to finalize the tender documentation by the end of the third quarter and will also organize a market consultation to determine interest in acquiring the frequencies. The auction, which the authority had previously indicated would take place in early 2020, has been delayed by a security memorandum signed in 2019 between Romania and the US, and new EU network security guidelines released in January.

ANCOM's action plan also provides for the drafting of a normative act to transpose into national law the directive on the establishment of the European Code of Electronic Communications, in order to submit it for adoption in Q1. As part of the ongoing implementation of Infrastructure Law No. 159/2016, the regulator will also establish orientative tariffs for accessing network operators' poles and approve conditions for accessing physical infrastructure developed by local public authorities. Furthermore, it intends to review the wholesale market for infrastructure access services and the market for broadband access services, as well as revise the authorization regime regarding the provision of electronic communications networks and services. It will also seek to modify ANCOM decision No. 333/2013 regarding the collection of statistical data in the field of electronic communications.

(March 4, 2020) commsupdate.com

Russia

Russia's State Commission for Radio Frequencies (SCRF) has made a draft proposal to issue Mobile TeleSystems (MTS) with 5G test frequencies in the key 3.4GHz-3.8GHz spectrum range in Moscow, and is expected to finalize the decision at its next meeting on 10 March. The 3.4GHz-3.8GHz test frequencies, alongside 37GHz-40GHz spectrum, will be allocated only for three specific locations in the capital (in the vicinity of the Radio Research Institute and two scientific/medical institutions) for assessment of the impact of 5G on the environment, according to a document obtained by RBC. The planned tests come under the ongoing agreement between MTS and Moscow's Department of IT. Note that to date, proposals to free up the 3.4GHz-3.8GHz band for 5G have been blocked because of security/military usage of the range. In 2018 – when Russia hosted the FIFA men's World Cup – MegaFon and Rostelecom were permitted to carry out 3.4GHz-3.8GHz 5G tests at pilot zones in Moscow, St. Petersburg and Kazan until the end of that year, but all subsequent applications for new test permits have been refused by the authorities.

(March 2, 2010) RBC

Russia's State Commission for Radio Frequencies

(SCRF) has allocated a 400MHz block of mmWave 5G spectrum in the 24.25GHz-24.65GHz band for an indefinite number of users which may include industrial enterprises alongside telecoms operators. The decision, made at a meeting of the State Committee for Emergencies on 17 March 2020, was in response to 5G development interest from large companies gauged via a survey from the Ministry of Digital Development, Communications & Mass Media, whilst the ministry also received expressions of interest from regional governors regarding deployment of 5G pilot zones in Tomsk, Novosibirsk, Chelyabinsk, Krasnoyarsk and Primorsky. The meeting also confirmed that a previous proposal for an auction of frequencies in the 25.25GHz-25.9GHz band is now officially cancelled. The proposed auction format had involved two regional lots in each region of the Russian Federation (with a total of 170 lots), but the process had been criticized as inefficient. The meeting participants also decided to award a block of test 5G mmWave spectrum in the 24.65GHz-27.5GHz band to New Digital Solutions, a joint venture of MegaFon and Rostelecom, for studying 5G capabilities using domestically-manufactured equipment/systems in partnership with state corporation Roscosmos.

(March 20, 2020) ComNews

South Africa

The Independent Communications Authority of South Africa (ICASA) will extend the validity of existing frequency spectrum licenses by three months, due to South Africa's COVID-19 lockdown. The communications authority said: 'In terms of the regulations, the due date for the renewal of radio frequency spectrum licenses is 31 March annually. The regulations further provide that failure to pay the prescribed license renewal fee by the due date will result in expiry of the radio frequency spectrum license immediately on the next calendar day that marks the beginning of the new financial year. In this regard, ICASA has resolved to grant all radio frequency spectrum license holders an extension to renew their licenses by no later than 30 June 2020.' (March 31, 2020) commsupdate.com

Spain

The Spanish government postponed a planned auction for 5G-suitable 700MHz spectrum, blaming exceptional circumstances caused by the COVID-19 (coronavirus) outbreak. In a statement, the Ministry of Economic Affairs and Digital Transformation said it had informed the European Commission of its need to defer the process, which was scheduled to be completed by 30 June. Spain plans to reallocate frequencies currently assigned to television channels in the 700MHz band for use in future 5G networks, which will then be auctioned to operators once conditions improve. The ministry explained the decision to stay the process is intended to free operators to focus on "maintaining the connectivity of companies and people in this time of health emergency". It added it would announce a new date for the auction once the containment measures adopted by the country to contain the virus end. The nation is the latest in Europe to suspend 5G auction processes due to the pandemic, with France, Austria and Portugal also delaying sales. Spain held its first auction for 5G-suitable spectrum in July 2018, with

operators splashing a total €438 million for 200MHz frequencies.

(March 31, 2020) commsupdate.com

The Spanish government has delayed plans to auction spectrum in the 694MHz-790MHz (700MHz) spectrum – referred to as the 'second digital dividend band' – after concerns were raised by telecoms operators and Digital Terrestrial Television (DTT) service providers. Telcos have expressed 'operational and financial' concerns, while free-to-air television broadcasts are viewed as essential as a result of the ongoing COVID-19 (Coronavirus) pandemic. A Royal Decree was signed in March 2019, kick-starting the release of the 700MHz band, which was scheduled to be freed up by the end of this month. The European Commission timetable expected 700MHz services to be made available for mobile broadband across Europe by 30 June 2020, although this deadline is now expected to be postponed in light of current events.

(March 20, 2020) commsupdate.com

Uganda

MTN Uganda has agreed to pay USD100 million to renew its license for a further ten years. The decision follows more than a year of negotiations, during which the South African-owned cellco has been forced to operate under a series of temporary permits. It was reported last year that the government was pushing for

a USD118 million price tag on the ten-year license, or USD150 million for a 15-year concession. According to TeleGeography's GlobalComms Database, market leader MTN controls around 43% of all mobile subscribers in Uganda.

(March 13, 2020) commsupdate.com

Ukraine

Ukraine's regulator has issued the country's three major players with 900MHz licenses. Kyivstar, Lifecell and Vodafone Ukraine have each received a technology-neutral license from the NCCIR (National Commission for State Regulation of Communications & Informatization), allowing them to begin offering 4G LTE-900 services from 1st July 2020. Under the terms of the licenses, the operators must extend LTE-900 services to all areas of the country with a population of over 2000 people across the next two years. By 2024, their 4G coverage must reach 90% of the country's population. The 900MHz frequency was previously used exclusively for GSM services, and each provider held a different amount. Redistributing their respective ranges meant

that each operator paid a different fee for their license, with Kyivstar paying UAH260 million (US$9.33 million), Lifecell UAH121 million, and Vodafone UAH230 million. Kyivstar is the market leader by subscribers. The operator stated that the new LTE-900 license would allow it to "begin technical work to launch high speed mobile internet in the remotest corners of Ukraine", noting that it had returned some of its GSM spectrum to allow equal access to next-generation frequencies for all operators. In addition to the main three operators, CDMA provider Intertelecom is also looking to obtain an LTE-900 license. While it missed the initial payment deadline of 10th March, the NCCIR has given it until 1st April to come up with the fee. (March 22, 2020) developingtelecoms.com

United Kingdom

UK regulator Ofcom finalized rules for an upcoming auction of spectrum in the 700MHz and 3.6GHz to 3.8GHz bands, in an effort to boost the rollout of 5G networks and enhance mobile broadband in the country. Ofcom announced it will release 80MHz of spectrum in the 700MHz band, and 120MHz in the 3.6GHz to 3.8GHz range, increasing the total amount of available mobile airwaves in the UK by 18 per cent. The auction will involve two stages: a principal one

which will see operators placing offers for airwaves separately to determine the amount of spectrum they get; and an assignment phase involving a round of bidding to decide on the specific frequencies which will be allocated. Ofcom said it will let winners of 3.6GHz to 3.8GHz spectrum negotiate their placements within the band between themselves, to "give mobile operators the opportunity to create more continuous blocks of 5G-ready spectrum". The regulator stated it was

looking to maintain strong competition in the market by imposing a 37 per cent cap on the overall spectrum available to any one company. Spectrum Group Director at Ofcom Philip Marnick said the move would bring "a much-needed capacity boost", as demand for data was continuously soaring, and argued the step would help "cement the UK's place as a world leader in 5G". The authority's initial plan from December 2018 was to impose binding coverage obligations, which would have forced up to two UK operators to increase coverage in rural areas. However, Ofcom decided to cancel this as the four major operators in the country reached an agreement earlier this month over a £1 billion Shared Rural Network (SRN) plan for sealing coverage gaps across the UK.

(March 13, 2020) commsupdate.com

Three community radio groups in England have been awarded a broadcasting license, along with one in Scotland. The new stations will serve communities in Melksham in Wiltshire, Thornbury in Gloucestershire, Wimborne Minster in East Dorset and Edinburgh in Scotland. Radio Melksham will be a local radio service for the community of Melksham and the surrounding area. Radio Wimborne will provide local news and content for the people of Wimborne Minster and neighboring towns and villages. Thornbury Radio will provide a radio service for the residents of Thornbury with local information and news and opportunities to reduce social isolation and make new friends. And Sam Radio will serve Edinburgh's Asian community with an interactive service of entertaining, informative and educational programmes, broadcasting in Hindustani, Punjabi and Arabic. Meanwhile, three further services have been turned down – East Coast Radio in Grimsby and LCR in Lutterworth were refused without a published reason whilst Bux FM in South Bucks was not awarded a license as Ofcom says there are no suitable FM frequency available for the proposed service. The licenses are awarded for a five-year period and will start within the next two years as each station starts broadcasting. (March 3, 2020) radiotoday.co.uk

United States

The Federal Communications Commission (FCC) has announced that its Wireless Telecommunications Bureau has granted temporary spectrum access to 33 wireless internet service providers (WISPs) serving 330 counties in 29 states to help them serve rural communities during the COVID-19 pandemic. The Special Temporary Authority (STA) allows these companies to use the lower 45MHz of spectrum in the 5.9GHz band (5850MHz-5895MHz) for a period of 60 days. The STAs will help serve communities in Arizona, California, Colorado, Florida, Idaho, Illinois, Indiana, Kansas, Kentucky, Massachusetts, Maryland, Maine, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Mexico, Ohio, Oklahoma, Oregon, Pennsylvania, Texas, Virginia, Vermont, Washington, Wisconsin, and West Virginia. An additional ISP, Broadband VI, which covers Saint Croix, Saint John and Saint Thomas in the US Virgin Islands, is also included in the FCC documentation. (March 31, 2020) commsupdate.com

AT&T and Verizon have gone back to the FCC for additional special temporary authorities (STAs) for added spectrum as they deal with the increased broadband load of a pandemic-sequestered populace trying to work and learn and get medical treatment and play online. The FCC said it has granted three more STAs, bringing the total to six. AT&T got access to some spectrum licensed to Dish for the next 60 days as well as access to some AWS-3 spectrum in the FCC's inventory. Verizon also got access to some of that AWS-3 spectrum. The FCC has been agreeing to sharing arrangements, among usual competitors, for both wired and wireless spectrum. "The FCC has been coordinating closely with network operators to ensure those networks remain up and running," said FCC chairman Ajit Pai. "We have been encouraged by the feedback we have received so far both regarding the ability of their networks to handle changes in usage patterns caused by the coronavirus outbreak and how networks are performing so far." The Justice Department, Defense Department CIO, and NTIA's Office of Spectrum Management all pitched in to speed the applications. (March 21, 2020) broadcastingcable.com

The Federal Communications Commission (FCC) has announced the conclusion of Auction 103, its third auction of 5G suitable millimeter wave (mmWave) spectrum to date. The process got underway on 10 December 2019 and comprised spectrum in the upper 37GHz, 39GHz and 47GHz bands. According to FCC data, the auction generated gross proceeds of USD7.57 billion. A total of 35 qualified bidders successfully bid on 14,142 of the available 14,144 available 100MHz Partial Economic Area (PEA) licenses. The watchdog noted: 'Bidding in Auction 103 has concluded. The FCC will release the Closing Public Notice in the next few days that provides official notification to winning bidders, specifies the deadlines for payments and long-form applications, and gives details for other post-auction procedures.' (March 9, 2020) commsupdate.com

The Federal Communications Commission (FCC) voted unanimously to establish application and bidding procedures for the auction of the 3.5 GHz band, which starts June 25. FCC Chairman Ajit Pai noted that the auction, known as Auction 105, will offer more than 22,000 licenses, the most ever offered in a single auction. The 3.5 GHz Priority Access Licenses (PALs) up

for auction also represent the earliest opportunity for most U.S. wireless operators to get mid-band spectrum expressly for 5G. It hasn't always been a straight line in getting to this point, something commissioners alluded to in their statements. "It's an impressive testament to the speed of technological development in the wireless sector that 5G was barely on the radar when the Commission began re-imagining the way we use this band," Pai said. "But now, because the FCC made necessary mid-course corrections to reflect changes in the marketplace, the 3.5 GHz auction will help make this band a primary avenue for deploying 5G services." Those mid-course corrections came after Pai became chairman. Under the previous administration's FCC Chairman, Tom Wheeler, the commission had voted to pursue a different path, of which the biggest wireless operators weren't the biggest fans. When Pai took over the Chairman's role, he appointed fellow Republican Commissioner Mike O'Rielly as the point person to re-configure how the band would go to market. O'Rielly said he's proud of the structure that emerged, with the auction to include 10 MHz, county-sized licenses with standard license terms (10 years instead of the initial three), providing potential bidders with confidence that, if they invest and follow the rules, they won't be at risk of losing their licenses and investments. Wireless operators have expressed interest in both the General Authorized Access (GAA) unlicensed portion of the Citizens Broadband Radio Service (CBRS) band and PAL licenses. Cable operators also have been active participants in the proceeding, with Charter Communications recently urging the FCC to address potential harmful

interference between future C-band licensees and CBRS users, something O'Rielly seemed to acknowledge in his statement. Democratic Commissioner Jessica Rosenworcel, who was on the commission during the earlier vote under the Obama administration, said Friday's vote was bittersweet. "It never should have taken us this long to get here," she said in a statement. "We started down this road five years ago … During the intervening years we hemmed and hawed and revisited some of the fundamentals of our new framework. We lost our nerve and in key ways retreated back to the old. Then we claimed that these changes made this portion of our airwaves more 5G friendly. But the honest truth is that these changes exposed our lack of imagination and a misunderstanding of what 5G is, what it needs and what it can do." Commissioner Geoffrey Starks, who was appointed to the commission last year, said this summer's auction sets the stage for consumers to begin to realize the benefits of the spectrum and noted that consumers already have access to smartphones from Apple, Google and Samsung that have the capability of using 3.5 GHz spectrum. AT&T's Executive Vice President of Regulatory & State External Affairs Joan Marsh applauded the FCC for continuing to move forward with making this mid-band spectrum available for commercial use. "The Commission is to be commended for working collaboratively across government agencies and the wireless industry to develop a unique spectrum sharing solution that accommodates government incumbents while permitting new licensed and unlicensed users," she stated.

(March 2, 2020) fiercewireless.com

Zimbabwe

The Postal and Telecommunications Regulatory Authority of Zimbabwe (Potraz) has with immediate effect approved a 57 percent upward review for voice, data and SMS tariffs to catch up with the "constantly rising operating costs" affecting the telecoms sector. Potraz said the current prices have become sub economic due to the continual deterioration of the country's economy, hence the increase intends to maintain sustainable operations within the company's telecommunications' business, according to a circular to operators seen by The Herald Finance & Business. "Tariff thresholds for telecommunication services were last adjusted in October last year using the August 2019 Telecommunication Price Index (TPI) figures. "The current tariff thresholds have been rendered unsustainable as the operating environment continues to deteriorate due to constantly rising operating costs. "Accordingly, the authority has found it necessary to review tariff thresholds for telecommunication services by up to 56,64 percent based on the TPI, for the period

October to December 2019 that was computed in consultation with operators," said Potraz Director General Gift Machengete in a statement. Prices for on net calls per minute, SMS per message and mobile data per megabyte moved up from $0,75, $0,19 and $0,15 to $1,17, $0,30 and $0,23 respectively. Meanwhile, Econet Wireless Zimbabwe (EWZ) recently made an average of 20 percent upward review for its SMS and data bundle prices aligning them with the prevailing inflation rate. Econet Group Media and Corporate Affairs Executive Fungai Mandiveyi confirmed the data bundle and SMS price increment. "The review is on average, a 20 percent adjustment to try and catch up with inflation and other rising costs – including electricity and diesel and it is well within the authorized threshold." The new data tariffs, which came into effect on Wednesday, come as a result of the significant weakening of local currency which has lost 93 percent of its value from 1: 2,5 when the interbank rate was introduced in February to the current 1:40. (March 15, 2020) herald.co.zw

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