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FOR SAMENA TELECOMMUNICATIONS COUNCIL'S MEMBERS

BUILDING DIGITAL ECONOMIES



Featured

Eng. Nasser Al-Nasser
stc CEO

THIS MONTH

**ENABLING DIGITAL SERVICES TO OVERCOME
THE COVID-19 CRISIS**

Cloud Empowered connectivity for an agile Business



SAMENA TRENDS

Editor-in-Chief
Bocar A. BA

Contributing Editors
Izhar Ahmad
Javaid Akhtar Malik

Knowledge Contributions
Huawei
Syniverse
Tech Mahindra

Publisher
SAMENA Telecommunications
Council

Subscriptions
subscriptions@samenacouncil.org

Advertising
ads@samenacouncil.org

SAMENA TRENDS
trends@samenacouncil.org
Tel: +971.4.364.2700



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FEATURED



06 **Eng. Nasser Bin Sulaiman Al Nasser**
stc GCEO

Saudi Telecom Company (stc) Deploys Digitization as Antidote to Corona-virus Outbreak

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Enabling Digital Services to Overcome the COVID-19 Crisis

Digitization had been in progress for several years, but, in many ways, COVID-19 has accelerated it, with remote learning, remote health monitoring, remote financial activities, and business happening almost-as-usual, relying on extensive network capabilities and digital infrastructure. In efforts to keep pace with high data traffic, Telecom Operators, among other initiatives taken to improve customer experience and reduce financial burdens on customers via new data offerings and cost-savings, have also made software-powered network virtualization a priority step in mitigating high data influxes. This may well point to a new trend among Operators to extensively virtualize network functions to address data demands, and proceed ahead in building fifth-generation networks.

In the prevailing situation we are gradually learning to live through, the way we now access and use the Internet has dramatically changed. Streaming content services, the use of social media outlets to stay informed of changes in the environs, video conferencing to deliver academic instruction and to remain connected on business matters, have skyrocketed as we "stay home, to stay safe". Data traffic implications due to these trends are thus significant and vividly evidence the expectations that Telecom Operators are striving to fulfill. In a matter of months, the data-usage landscape as abruptly transformed, leaving lesser room for business-as-usual.

One thing is clear: the Coronavirus crisis has proven that not only do we have the

technology to make it possible to work but that businesses, and many functions of society and family life, can continue to remain active almost naturally and routinely as possible. This goes on to further prove that the presence of digital infrastructure and availability of digital services are critical to our operation as a society, and that data may just now be the sixth ocean of the world, full of resources and mysteries.

The COVID-19 crisis has reinforced the role of and the need for data centers and cross-border data flows; and *cloud* has become among the key defining variables in the current communication and flexibility equation. As our Industry and other industries, effectively exploiting the power of ICTs, reset themselves on paths of growth and sustainability, numerous shared challenges in the new journey into the world of digital connectivity and data will emerge. The pandemic currently in play will continue for some time, and its implications may sustain for even longer.

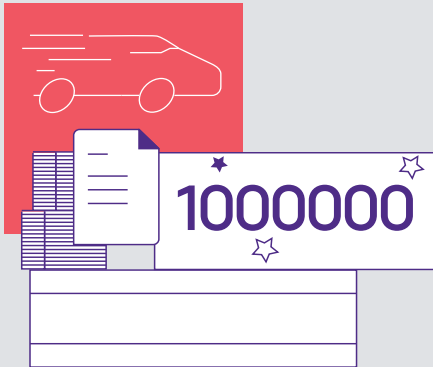
Therefore, the current health situation demands that new data-centric strategies be adopted to accommodate expected data influxes in the coming months. Aided by new collaboration-minded approaches and revamped decision-making cultures, from which objectives such as *Resilient Connectivity, Affordable Access, and Safe Use of Online Services* can be achieved, the Industry and Telecom Operators could be better-equipped to create a new digital renaissance post COVID-19. 🌱



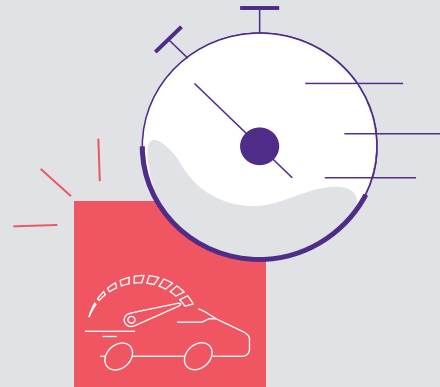
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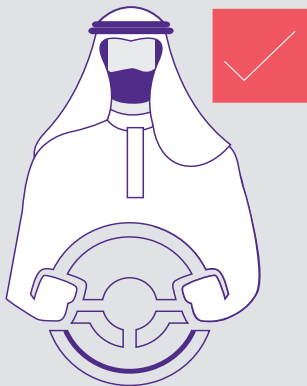
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stc Speaks to SAMENA Council

Saudi Telecom Company (stc) Deploys Digitization as Antidote to Corona-virus Outbreak



Eng. Nasser Bin Sulaiman Al Nasser
stc GCEO

stc

stc conducted a careful study of its potential impact and implications based on the cases of affected hotspots, and concluded that the faster and farther we capitalize on digitization, the more effective containment will be.

stc Group's response to coronavirus outbreak in Saudi Arabia has proven positively that digital transformation is not a luxury but a necessity in the era of the Fourth Industrial Revolution. "Technology can help to keep the curve flat. Until universal vaccine discovered, We rely primarily on extending digitization as antidote to virus outbreak" Said Eng Nasser Al-Nasser stc Group CEO.

"Our ambitious digital offerings and having them available to clients across sectors was our key differentiator during the COVID-19 situation. By doing so, we offered much-needed support to government initiatives, sustained business and encouraged households to stay at home," He added.

Al Nasser confirmed that before COVID-19's arrival into Saudi Arabia, stc conducted a careful study of its potential impact and implications based on the cases of affected hotspots, and concluded that the faster and farther we capitalize on digitization, the more effective containment will be.

When the government started enacting precautions, including lockdown and social distancing, stc saw an immediate 1000% surge in education portals traffic, 177% increase in visits to health portals, and 70% increase in mobile app downloads. Social media visits also grew by 73%, videogaming activity surged by 171%, and TV content consumption grew by 41%, said Al-Nasser.

"A rapid and carefully targeted response was required immediately. We took the decision to elevate our network's capacity to maximum levels by distributing

traffic, and by providing urgent support to government and businesses. Then we started the rollout of direct targeting messaging and efforts step by step."

stc worked closely with the concerned ministries on a series of initiatives. With the health ministry, for instance, we doubled operational efficiency at 22 stc-owned Health Care Centers that have served five million patients since their establishment by stc with a cost of a SAR 100 million, and offered free telephone and internet services to quarantined customers nationwide

To encourage households to stay at home, stc made all its services accessible via mystc mobile app; introduced the eSIM service for the first time in Saudi Arabia; offered 50% discount on optical fibers services; and accelerated the delivery of its products four-fold, said Al-Nasser. Besides, the company provided free access to education and health platforms; and doubled the data capacity for a large segment of its customers without extra fees.

The Company also offered 40,000 free data SIMs to support the 'Digital Giving Initiative', an initiative of Saudi Ministry of Communications aimed at promoting digital literacy among Arab communities; and joined forces with the ministry to organize the Hope Hackathon – an initiative steered toward the innovation community in Saudi Arabia.

On the awareness raising front, stc sent over 2.5 billion awareness messages (SMS) in 10 languages to millions of citizens and residents prompting them to follow safety procedures during the pandemic. The company also sponsored the Immunity Forum (Manaah), the first virtual forum regionwide to offer coronavirus awareness. And the company continues to engage

actively with the society to complement government's efforts.

Enabling Government at a Testing Time

The Saudi government has provided one of the most efficient responses to coronavirus worldwide; its proactive and professional measures ensured the outbreak remained at a minimum, said Al-Nasser adding "stc had a considerable role to play in this context as the country's principal digital enabler."

"stc worked closely with the concerned ministries on a series of initiatives. With the health ministry, for instance, we doubled operational efficiency at 22 stc-owned Health Care Centers that have served five million patients since their establishment by STC with a cost of a SAR 100 million, and offered free telephone and internet services to quarantined customers nationwide," noted the Chief Executive Officer.

In partnership with Ministry of Sport and the Federation for Electronic Sports, stc launched the Biggest Electronic Sports (FIFA, Fortnite, PUBG) Tournament to encourage youngsters and gaming fans to stay at home. stc allotted prizes of up to SAR 500,000 to winners.

stc was widely recognized for its role in the success of the first virtual G20 summit for which it served as the digital enabler.

Bolstering Business Continuity

stc's support to the business community was mainly aimed at keeping business as usual by ensuring that our enterprise-oriented offerings remain leveraged to meeting unprecedented demand for remote meetings and business doing, said Al-Nasser.

In this context, stc continued its digitization drive by digitizing seven million contracts that have saved 200,000 annual waiting hours, and introduced the Sign and Enterprise Mobility Management (EMM) digital solutions to enable businesses to sign and verify contracts remotely.

stc pledged continued support to SMEs and entrepreneurs, by waiving the cost of temporary service suspension of SME willing to temporarily suspend services

until the end of April. The company's startup incubator program, InspireU, continued to offer enablement to applicant entrepreneurs, where the value of the initiatives exceeded SAR 300 million in emerging technology apps.

"In the coming days, Batches Six and Seven of inspireU program will be announced with the goal of supporting local entrepreneurs... also continuing our local content program, Rawafed, that has contributed SAR 4 billion to local content thus far."

stc's Staff on the Frontline

stc's workforce played a crucial role at the forefront of the company's endeavors, said Al-Nasser.

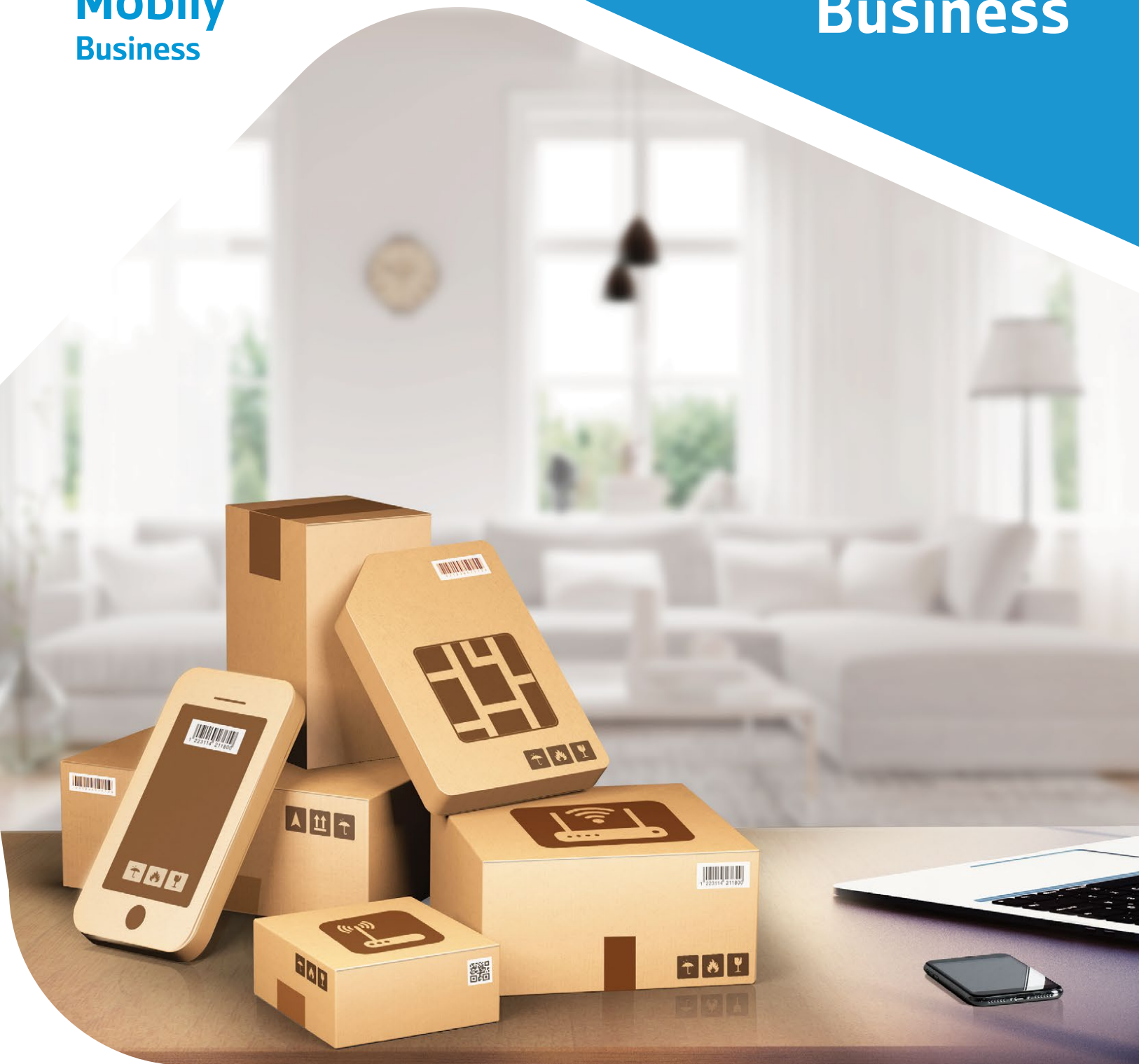
"Our 15,000-workforce (I believe we can say more than 20k as it is a group) did an impressive job enacting this new normal, a testimony to the Group's ambitious human development strategy and policies. As the lockdown started to take effect, stc advised over 96% of its workforce to do their jobs remotely.. yet continuing our legacy in maintaining the best service quality and customer satisfaction. The result was striking," he said.

stc's support to the business community was mainly aimed at keeping business as usual by ensuring that our enterprise-oriented offerings remain leveraged to meeting unprecedented demand for remote meetings and business doing

The Group continues to study other possible ways and areas where it can exert support to government COVID-19 containment efforts, business continuity plans, and households' connectivity needs. Going forward, stc will continue to step up its digitization drive, venture into new innovative areas to advance its business and social agenda, and continue to monitor and mitigate the impact of COVID-19 on its business, concluded Al-Nasser. 📍



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MEMBERS NEWS



stc's Net Income for Q1 of 2020 Increases by 5.93% Compared to the Corresponding Quarter Last Year

stc announced the company's preliminary financial results for the period ending at 31 March 2020:

- Revenues for the 1st quarter reached SR 13,935m with an increase of 4.10% compared to the corresponding quarter last year.
- Gross Profit for the for the 1st quarter reached to SR 8,196m with an increase of 3.71% compared to the corresponding quarter last year.
- Operating Profit for the 1st quarter reached to SR 3,004m with a decrease of (8.27%) compared to the corresponding quarter last year.
- Earnings before Interest, Taxes, Zakat, Depreciation and Amortization (EBITDA) for the 1st quarter reached to SR 5,330m with a decrease of (1.04%) compared to the corresponding quarter last year.
- Net Income for the 1st quarter reached to SR 2,913m with an increase of 5.93% compared to the corresponding quarter last year.

In accordance with the approved dividend policy for three years starting from the 4th quarter 2018, which was announced on 16 December 2018, and has been ratified during the Extra Ordinary General Assembly Meeting on April 24th 2019, stc will distribute a total of SR 2,000 million in cash dividend for Q1 2020, representing SR 1 per share. The eligibility of dividends shall be for the shareholders at the close of trading on Tuesday 28/04/2020 corresponding to 05/09/1441 H and as per the registered shareholders in the register of The Securities Depository Center Company at the end of the 2nd trading day following the eligibility date. Dividend distribution date will be on 19/05/2020 corresponding to 26/09/1441H. Commenting on these results, Eng. Nasser bin Sulaiman Al-Nasser, GCEO of Saudi Telecom Company (stc), indicated that the company, despite the emerging epidemic conditions of the Corona Virus (COVID-19), was able to grow its top line by 4.1%. As a result, stc's business units achieved distinct growth in revenue during the current quarter compared to the same quarter of the previous year. Where the increase of Enterprise Business Unit revenues were supported by innovative products in the field of Internet of Things, cloud computing and Cyber security in addition to other telecom products and services. Further, the Wholesale Business Unit revenue also increased supported by the growth witnessed in Hubbing services. As for Consumer Business unit, revenue has increased with the support of an increase in fiber optic subscribers by 23% and data revenue by 15.5%. As a testimony of KSA global leading position in communications infrastructure in general, and in digital communications in particular, KSA was successfully ranked

number 10 globally (coming from number 105) in the internet speed in 3 years only. On top of that, stc's internet speed has increased 7 times over the past 3 years. stc winning two Speedtest Awards for the fastest mobile network, and best mobile coverage in the kingdom in 2019, shows the company's commitment to provide the best services to its customers. In addition, stc won the Customer Experience Management Award for 2020 after competing with the largest global telecom operators. Part of our journey for digital transformation and enriching customer's experience, paper contracts had been dispensed and 7 million contracts on annual basis were digitized which in return will contribute to save around 200,000 hours of customers waiting time annually. In addition, stc is expanding in the telecom towers infrastructure by building new towers in the Kingdom while at the same time keeping-up



with the technological progress such as 5G and the requirements of improving the network and increasing its speed. Also, the Saudi digital payments company (stcPay) obtained the official license from the Saudi Arabia Agency (SAMA), as an electronic digital wallet in the field of financial technology (fintech), to be the first financial technological company licensed in the kingdom. stcPay is considered the largest financial digital wallet in the Middle East and North African region with 2 million customers. Lastly, what we are living nowadays under the unfortunate conditions to combat the COVID-19 virus, motivates us to continue our daily work proactively by taking the necessary actions and decisions to provide all our capabilities to actively handle the situation and reaffirm stc's position as a national operator and the first enabler for digital transformation.

As a result, stc has increased the network's capacity to its maximum levels by distributing traffic in accordance with the increasing demand. It has also enhanced the telecom services and their capacity, and provided urgent services to several entities to enable digital transformation for all sectors. On another side, stc provided 40,000 free internet SIM cards as part of its "Attaa Digital" initiative to support those who cannot access the Internet and educational platforms as well as enabling a free access to some educational and health platforms. Furthermore, recently stc has announced that it will bear the cost of the temporary service suspension fees for SMEs who wish to temporarily suspend their services as part of the company's efforts to mitigate the financial impacts that may affect this vital sector. In addition, stc extended the payment grace period for

customers and likewise doubled the data capacity without any additional charges for its existing and new customers to support the educational process and enable employees of government and private sectors to fulfil their work duties in light of the precautionary measures taken by the Kingdom of Saudi Arabia. Part of its social responsibility, stc sent more than 2 billion awareness COVID-19 messages in 10 different languages. Currently, we are conducting a comprehensive study on the potential effects on the company's business in the event that the Corona pandemic continues, based on the measures and decisions taken to combat it. Any expected impact after conducting the study will be announced through the official channels in due course.

SR 4 Billion to Support Local Content and Increased Telecommunications Traffic During the Corona Pandemic

In line with the additional government initiatives package approved by the Custodian of the Two Holy Mosques, King Salman bin Abdulaziz, to support institutions and individuals, Senior VP of Corporate Affairs at stc's Group, Abdullah Abdulrahman Alkanhl, said that stc is committed to continue extending its support to SMEs in the private sector to mitigate the impact on their business during the Corona pandemic through stc's support package that is extension of the urgent initiatives previously announced by the government to support the economic activities most affected by this pandemic. Alkanhl praised the package that supports local content in companies which are 51% owned by the state in order to minimize the impact of the Coronavirus (COVID-19) pandemic on economic activities and the private sector. Alkanhl reiterated stc's commitment to promote local content and SMEs in order to stimulate the economy in the local market and drive demand to local products and services in accordance with the Council of Ministers' decision in this regard. Stc announced

that it will continue to nurture start-ups and entrepreneurs through batches six and seven of its inspireU program which will be announced in the coming days as part of stc's strategy to promote local content through its Rawafed program which contributed SR 4 billion to promote local content in the past years. Alkanhl also nodded to stc's initiative to exempt SME's that wish to temporarily suspend services from the temporary suspension fees in line with the government's direction and to mitigate the financial burden that could impact this vital sector in light of the current circumstances. Alkanhl said that stc is proud of its role in the success of the first virtual G20 summit in which it acted as the digital enabler in partnership with the relevant government entities. stc sent over 2.5 billion messages in 10 languages to millions of citizens and residents to help prevent the spread of the Coronavirus, and doubled the operational capacity in 22 health centers as part of a SR 100 million community initiative that benefited about 5 million patients. In line with its constant support for entrepreneurs and innovation

to enable digital transformation and enrich the community in accordance with the Dare Strategy, stc supported a number of initiatives including the Hope Hackathon initiative in cooperation with the Ministry of Communications and Information Technology. The VP of Corporate Affairs said that the engagement included various community segments including individuals and the public and private sectors. Stc offered free access to education and health platforms and doubled the data capacity for its existing and new prepaid quicknet customers without additional cost, ensuring a quality experience for our children in using such platforms which led to a 1,000% increase in traffic for education platforms and 200% for health platforms. The Company also offered 40 thousand free data sims to support the Attaa "Digital Giving Initiative" and exempted customers in quarantine from paying their April bills. Alkanhl said that stc exempted its customers in quarantine from paying their April bills and offered a 50% discount for fiber optics services to reduce the cost for the network users during this period.

InspireU Continues to Support Startups after Its SR 300 Million Success in Developing Technology Applications

InspireU, a program launched by stc to support startups and entrepreneurship in the region, announced that despite the difficult conditions that countries all over the world are facing in light of the spread of the novel coronavirus (COVID - 19), it will continue to incubate many startup projects in its sixth and seventh intakes, whose agenda will be announced in the upcoming days. Since its establishment in 2015, the program has managed to launch 38 startup projects and offer them support through many services such as financing, training and consulting. The launched companies have obtained investments amounting to SR 60 million; the market value of these investments is SR 300 million. Around 16 million users benefit from InspireU projects, which contributed to the creation of 160 thousand job opportunities, including part-time jobs. Othman Dahash Aldahash, Corporate Development VP at stc Group, stated that among the program's many successful accomplishments, was the adoption by the Ministry of Communications and Information Technology of a number of projects supported by the program in the field of marketing and learning, in order to facilitate people's lives during the current period, since many precautionary measures have been taken by the Kingdom to limit the spread of the coronavirus and encourage all residents to stay at home and work remotely to maintain their safety. He added: "We are proud to see that InspireU's outputs are contributing to the Kingdom's digital economy and this is only a testament to our effective role in Digital Empowerment". Among the projects adopted within the initiative taken by the Communications and Information Technology Commission to optimize the technologies used in shopping and purchasing of necessities, or distance learning is the Mrsool application that provides delivery services, in addition to the Haseel application, a fresh fruits and vegetables e-commerce platform that contributes to the delivery of fresh vegetables and fruits to the customer in refrigerated cars after processing them in a private laboratory to maintain a high level of quality, with several distribution points available in Riyadh to ensure that customers are being served in a timely manner. Other projects adopted by the Commission include the Zid app, a mobile app for retailers that simplifies e-commerce and makes it accessible at a competitive cost. Another project is the Voxel project specializing in air and ground 3D digital scanning

software and services. The project carried out air thermal scans using the latest drone technologies to accurately and rapidly check and analyze body temperatures at crowded gatherings as part of the precautionary measures taken to address the threat of the coronavirus in cooperation with the Qassim Municipality. One more project is the Carwah platform, an electronic system that makes it easy for customers to search for cars to rent across the cities of the Kingdom via phone by facilitating the booking of cars and showing all nearby branches available offering customers a selection from thousand distinctive economic, sedan, or luxury vehicles. Customers can book a car to their name and have it delivered to their location at competitive daily rates. In the field of education, the Dhad application for audiobooks has been adopted, offering a large collection of Arabic books and novels that can be accessed at any time free of charge, especially during the current conditions that require everyone to stay at home for long periods.



stc Extends Timeframe for Completing Acquisition of Stake in Vodafone Egypt

Saudi Arabian telecoms operator Saudi Telecom Company (stc) has announced that it has extended the duration of a non-binding memorandum of understanding (MoU) with Vodafone Group under which it plans to acquire the latter's 55% stake in Vodafone Egypt. In an announcement to the Saudi Stock Exchange (Tadawul) stc confirmed that the parties involved in the proposed deal have agreed to extend the MoU for 90 days, starting from 13 April. In the filing, stc cited the 'logistical challenges caused by the COVID-19

pandemic', saying that these meant more time was needed to complete the processes related to the transaction, including due diligence. As previously reported by CommsUpdate, in January 2020 stc and UK-based Vodafone Group agreed on a cash consideration of USD2.392 billion for the latter's shareholding in Vodafone Egypt, equivalent to an enterprise value for 100% of Vodafone Egypt of USD4.350 billion; the final consideration will be determined upon signing of the definitive agreements.



Arabsat Announces Virtual General Assembly Meetings

Arab Satellite Communications Organization - Arabsat - holds the 43rd session of its General Assembly meetings with the presence of the Honorable Arab Ministers of Telecommunications and Information and Heads of Delegations. It was planned to have the General Assembly meetings of Arabsat in the Kingdom of Jordan under the kind patronage of His Majesty King Abdullah II, King of the Hashemite Kingdom of Jordan, but due to the global circumstances of Corona pandemic and the inability to travel, it was decided to hold the Board and the General assembly meetings virtually in coordination with the Jordanian administration. In his message to the Excellencies Ministers and Heads of Delegations, His Excellency Engineer / Muthanna Hamdan Al-Gharaibeh, Minister of Digital Economy and Entrepreneurship in Jordan, expressed his best wishes of safety to all Arab countries and the world, hoping to meet in the Hashemite Kingdom of Jordan in the coming years, God willing. Eng. Khaled bin Ahmed Balkheyour, President & CEO of Arabsat, said, "On behalf of all Arabsat employees, I extend my sincere thanks to His Majesty King Abdullah II, King of the Hashemite Kingdom of Jordan, for his gracious patronage to Arabsat General Assembly, where His Majesty used ,since Arabsat foundation, to support, host and sponsor many of its media & technical activities" "The most important item of the General Assembly meetings is to discuss the

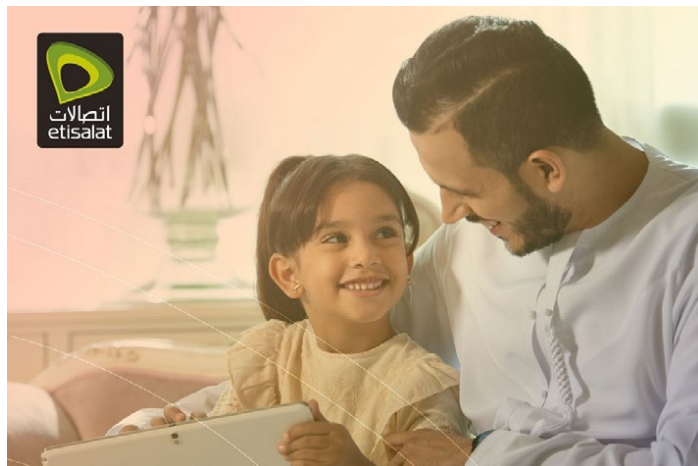


report of the board of directors, and to approve Arabsat financial final account in addition to its new projects " he added.



Etisalat Empowers 1 Million UAE Students to Support e-Learning

Etisalat announced that it enabled at least one million students in the UAE to access distance learning websites and platforms using its advanced network, with more than 10 million mobile subscribers enjoying free browsing to over 800 websites related to education, health and safety. To support and enable distance learning, free mobile data was made available - in coordination with the Ministry



of Education and Telecommunications Regulatory Authority (TRA) - to over 12,000 students whose families do not have Internet at home. Etisalat also provided access to 9 apps and platforms, allowing visual and audio communications: Google Hangouts, Microsoft Teams, Blackboard, Zoom, Skype for Business, Cisco Webex, Avaya Spaces, BlueJeans and Slack on Its fixed and mobile network in collaboration with the TRA. These are part of a bundle of Initiatives to support the education sector, ensuring a smooth functioning of remote learning processes. These initiatives stem from Etisalat's corporate social responsibility strategy to utilize its resources and capabilities, empower the educational sector with state-of-the-art technology, and ensure seamless and effective connectivity across all learning platforms. Keeping in line with its strategy 'Driving the digital future to empower societies', Etisalat is committed to support distance learning initiatives in the UAE following the ministry's decision to extend distance learning until the end of the current academic year. Etisalat will continue to offer all the connectivity tools and services students and teachers need, including the fastest fixed broadband and mobile network In the region, to ensure seamless continuity of the country's education curriculum.

Etisalat Group Reports Consolidated Revenues of AED 13.1 Billion in Q1 of 2020

Etisalat Group announced its consolidated financial statements for the three months ending 31st March 2020.

Financial Highlights and Key Developments of Q1

- As Part of its support and commitment towards the community and its shareholders, Etisalat board of Directors approves interim dividend payout of 25 fils per share
- Aggregate subscriber base reached 150 million, representing a year over year increase of 5%.
- Consolidated revenues amounted to AED 13.1 billion representing a year over year increase of 1% while consolidated net profit after Federal Royalty amounted to AED 2.2 billion and resulting in a net profit margin of 17%.
- Consolidated EBITDA totaled AED 6.7 billion, representing an increase of 1.5% year over year and resulting in EBITDA margin of 51%.
- Etisalat launched initiatives to support "Stay at Home" directive offering free mobile internet for families without home internet to facilitate their access to distance learning services, free applications to support work from home for businesses and government entities.
- Etisalat named 'The Most Valuable Consumer Brand' and 'The Most Valuable Telecom Brand' in MEA region.
- Etisalat completed the acquisition of Help AG, a privately held regional company specializing in the delivery of cyber security solutions and services.
- Etisalat successfully launched open virtual Radio Access Network (Open vRAN), becoming the first operator in MENA to achieve this technological feat
- Etisalat unveiled the 5G-enabled smart patrol for Dubai Police, a first in the Middle East and North Africa region
- Etisalat partnered with Microsoft to enhance its public cloud first strategy infused with automation and AI
- Etisalat introduced 'Cloudtalk', first-of-a-kind cloud-based platform enabling business unified communication

and collaboration service for small and medium businesses (SMB) and enterprise customers in the UAE

- Etisalat launched 'Business Edge', a new comprehensive platform offering a wide range of services and solutions that cater to Small and Medium Business (SMB) customers
- Etisalat partnered with Alef Education, to enable both entities to collaborate on a series of digital initiatives to empower the region's education sector
- Etisalat launched first-of-its-kind telehealth service in the private sector as a continuation of its mission to provide clinical excellence to patients in need
- Etisalat partnered with Department of Health, the regulator of the healthcare sector in Abu Dhabi to launch the 'Digital Healthcare' Centre

Chairman Message:

H.E. Obaid Humaid Al Tayer, Chairman, Etisalat Group said: "Today as we navigate through these challenging times, Etisalat has showed resilience and remained committed towards the communities it serves, ensuring business continuity and readiness, minimizing impact on our operations and uninterrupted services to our customers. Etisalat's performance in the first quarter reflects our agility in dealing with unprecedented market challenges and pressures facing the telecom sector globally. "We are also thankful to the vision of our wise leadership in the UAE in positioning the country among the most digitally advanced globally and inspiring us to realize our efforts in 'Driving the digital future to empower societies' by delivering world-class networks, infrastructure and innovative services. This has empowered Etisalat to address the current challenges and meet digital requirements facilitating businesses to work remotely and over a million students enjoying distance learning across the UAE. Through our dedicated teams, we were geared to fully support and serve the community showcasing

infrastructure preparedness to deliver access to vital telecom services during today's extraordinary times. "Moving ahead, we remain optimistic about the future as there are immense opportunities in the midst of the challenges and pressures faced by the telecom sector globally. With digital enablement and innovation making an impact on every sector, the world is moving in full force towards achieving digital transformation. 5G network is more important than ever as it will be a key enabler of remote business, education, entertainment and has the capability of addressing customer current and future needs. Etisalat's pioneering position in 5G will bring these futuristic solutions to governments, businesses and consumers alike reiterating our efforts in digital innovation and also our leadership as a telecom brand regionally and internationally. "Etisalat is grateful to the leaders of the UAE for their continuous support and also want to express our gratitude to all our loyal customers and shareholders for their confidence in driving us to accomplish our goals of driving digital innovations for a better future."

Subscribers

In the UAE the subscriber base grew to 12.7 million subscribers in Q1 of 2020, while aggregate subscriber base reached 150 million, representing a year over year increase of 5%.

Revenue & Net Profit

Consolidated revenues amounted to AED 13.1 billion representing a year over year increase of 1% while consolidated net profit after Federal Royalty amounted to AED 2.2 billion and resulting in a net profit margin of 17%.

EBITDA:

Group Consolidated EBITDA for the first quarter of 2020 increased by 1.5% to AED 6.7 billion while EBITDA margin remained stable year on year at 51%.

Etisalat's Initiatives during the Current Situation in the United Arab Emirates

In order to meet unprecedented service demands driven by life and work style changes in the United Arab Emirates due to COVID-19, Etisalat has implemented various measures to enhance the digital experience of millions of its customers and business partners.

Educational Sector

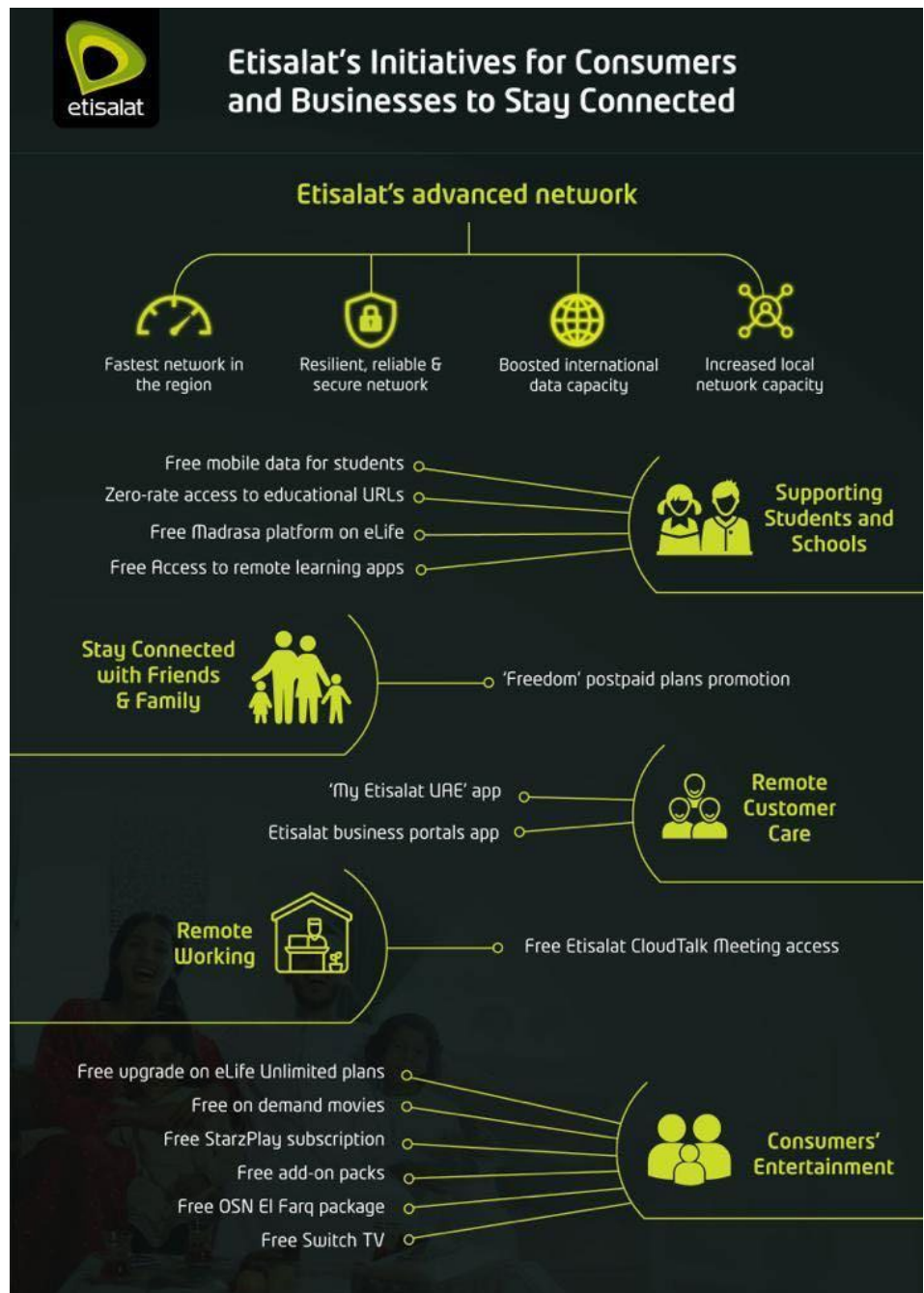
- Etisalat has enabled at least one million students in the UAE for free access of distance learning websites and platforms using its advanced network.
- More than 10 million Etisalat mobile subscribers enjoying free browsing to over 800 websites related to education, health and safety.
- Free mobile data was made available, in coordination with the Ministry of Education and Telecommunications Regulatory Authority (TRA), to over 12,000 students whose families do not have Internet at home to support and enable distance learning.
- Etisalat also provided access to 9 apps and platforms for distance learning, allowing visual and audio communications: Google Hangouts, Microsoft Teams, Blackboard, Zoom, Skype for Business, Cisco Webex, Avaya Spaces, BlueJeans and Slack on its fixed and mobile network in collaboration with the TRA.

Health & Safety

- Allocating extra network resources and services to the health sector.
- Providing connectivity to quarantined and other critical areas in the health sector.
- Ensuring maximum sterilisation, health and safety procedures for Etisalat's employees and technical teams during the provision of services and Internet installations for homes, businesses and government entities.
- Conducted Stay-At-Home awareness campaign across multiple channels (SMS, network ID, ring tones and social media).

Business Continuity

Etisalat contributions to business continuity covered various sectors of the industry. Complete network and resource



deployment were made through multiple initiatives:

- Introducing new applications and services to government entities and departments to ensure seamless business continuity during work from home period.
- Monitoring the performance of basic applications and ensuring smooth access to data locally and internationally.
- Establishing command centres

equipped with advanced tools to monitor the performance of services provided to government departments, businesses and customers 24/7.

- Etisalat's CloudTalk Meeting allows virtual meetings and facilitates work from home.
- Starting from 9th March, 2020 for a period of three months, government departments and businesses can access Etisalat' collaboration platform CloudTalk Meeting for free.

- CloudTalk Meeting enables 50 concurrent participants to join an online meeting and discussion, with a moderator feature.
- SMB segment was supported by a comprehensive platform from Etisalat, 'Business Edge' was launched to offer a wide range of services and solutions that cater to Small and Medium Business (SMB) customers.
- Collaboration and communication from Business Edge enables SMBs to connect to customers in a secure and scalable way, allowing employees and customers to talk, video-conference and share documents, using Etisalat's ultramodern, cloud-based unified communications service.
- Business Edge not only provides smart internet connectivity but also secures a customer's office environment by offering next generation cloud firewall, advanced endpoint security for PCs and Android devices and cloud-based video surveillance.
- Businesses can avail the online collaborations platforms through Etisalat such as: Microsoft Teams, Blackboard, Zoom, Skype for Business.

eLife High Speeds and Top-notch Entertainment

- Existing eLife TV and internet bundle (triple play) customers who chose to move to a new eLife unlimited plan will receive the upgraded benefits at no extra charge for three months.
- The eLife Unlimited plans offer speeds from an incredible 250Mbps more than enough to work-from home and keep everyone streaming their favourite content.
- Subscribers also have the option to downgrade back to their old plan if they wish for no penalty during this time.
- eLife viewers will be kept entertained with free on demand movies each week for the next six weeks.
- Free StarzPlay for three months with the latest Arabic, Western TV series and movies simply by subscribing on-screen.
- Premium add-on pack from "Arabia, Western, Asian or Pinoy" for free for three months.
- One month of free access to OSN's El

Farq package containing some of the biggest names in entertainment.

- SwitchTV with 3 months free access to premium content such as movies, live TV and on demand movies. The app can be downloaded from the Apple App Store, Google Play or the new Huawei App Gallery and is available to all UAE residents regardless of provider.

For Staying Connected with Family and Friends

Existing 'Freedom' postpaid customers on 200GB and unlimited data activated in March 2019 will benefit from an extended double data promotion on their plans.

Safe, Convenient, Flexible and Easy-to-use International Remittance in UAE to 200 Countries

- eWallet customers can now make international money transfers in real-time at the most competitive rates free of charge from the safety of their homes, avoiding queues or visiting a public place.
- Money transfers can now be digitally made to over 350,000 locations consisting of banks, over the counter agents, and international mobile wallet operators in over 200 countries and territories worldwide. The offer is for a limited period only.
- eWallet customers, depending on the destination, will have the option to send funds either directly to a recipient's bank account or to a mobile wallet.
- Regulated and licensed by the Central Bank of the UAE, eWallet is a revolutionary digital payment service aimed at empowering the UAE residents with safe, convenient and flexible payment solutions through an easy-to-use mobile app.

Network Upgrade and Enhancement

In order to meet unprecedented service demands driven by life and work style changes, Etisalat has implemented the following network upgrades and enhancement measures:

- Local network upgrade and enhancement
- Implementing new fixed LTE stations inside cities as well as rural areas.
- Fixed LTE network capacity expanded

and upgraded to mitigate the traffic increase and maintain customer experience.

- Additional mobile sites deployed to cater for the increase on demand and strategic locations in alignment with authorities' requirements.
- Expansion of existing sites (new or expansion) to cope with the requirements supporting working from homes and eLearning.
- Transit network expanded enabling seamless traffic routing in and out from UAE towards other operators' networks.

Operations and Maintenance

Etisalat deployed all efforts to make their technical teams available across all locations to effectively manage the operation and maintenance process. Etisalat has implemented a group of technical procedures to maintain the highest quality in services provided, and to ensure that all subscribers and customers are connected during this unprecedented time:

- Doubling the number of technical teams, in order to cater for internet subscription and upgrade at homes around the clock.
- Allocation of extra working hours for technical teams to ensure quick response to service requests.
- Dedicated teams were deployed for maintenance across all critical sites and stations.
- Arrangement of spare parts and distributed to all stations.
- Spare parts ordered for the months ahead to manage future incidents.

Remote Customer Care

Etisalat is encouraging consumers and businesses to utilise mobile and online services including 'My Etisalat UAE' app, Etisalat business mobile apps and business portals.

With the 'My Etisalat UAE' app, customers have a 24/7 access to make payments in a safe and secure manner connecting instantly using live chat. The app enables access to bills and payments, share credit and data, check usage and shop.

Etisalat Launches International Remittance Service, eWallet

Etisalat and Noor Bank have announced the launch of eWallet – an international remittance service that will allow financial transactions between individuals in the UAE and 200 countries around the world. Digital Financial Services, a joint venture between telecoms giant, Etisalat and Noor Bank, today confirmed that eWallet customers will be able transfer money to relatives abroad in real time without the need to visit a branch or go outside during the Covid 19 pandemic. Users can make money transfers to over 350,000 around the world including to banks, over the counter agents and international mobile wallet operators in over 200 countries and territories worldwide. The offer is for a limited period only. “eWallet continues to be an innovative solution that uplifts the way UAE residents conduct financial transactions today. We understand that in light of the current global situation, people are increasingly choosing to send money digitally from the comfort and safety of their homes. As people work to support their family and loved ones across the globe, we aim to enable them to safely and

instantly remit money to over 200 countries and territories worldwide,” said Ahmed Al Awadi, chairman of eWallet. eWallet is licensed and regulated by the Central Bank of the UAE, and will help UAE residents with safe, convenient and flexible payment solutions through an easy-to-use mobile

app. The use of eWallet is not contingent upon having a bank account, unlike other mobile wallet services. Customers require only a valid Emirates ID and a working UAE mobile number to register for eWallet account.



Mobily Take another Step on Saudization Journey via Localization of High-quality Customer Support Experience

Saudi telecom operator Mobily and Ericsson have agreed on a new program to localize Mobily's IT Service Support Office and enable the telco to operate it from Saudi Arabia. To support the government's Saudization agenda, Ericsson will support Mobily's aim to recruit Saudi talent for Front Office and Technical Services Desk to facilitate high-quality customer experiences. In addition, Ericsson will also provide operator-specific courses taught by industry experts, ranging from installation to integration, deployment and site support. Commenting on the Saudization program, the Chief Technology Officer at Mobily, Alaa Malki said: "In alignment with the Kingdom's Saudization, Mobily has taken significant steps to

reinvent its processes, infrastructures and business models. Our partnership with Ericsson allows us to develop a highly-capable localized team to help us create unique experiences for end-users, manage costs and remain competitive." IT Service Support is moving to the forefront in managed services as service providers seek to enhance customer experience with more tightly integrated networks and business processes. Mobily's Saudi team will oversee all activities typically performed when running an IT environment with the support of Ericsson's cross-domain IT expertise and an in-depth understanding of the challenges and opportunities facing service providers today. Ekow Nelson, Vice President at

Ericsson Middle East and Africa, says: "Today's agreement will support Mobily's drive to empower Saudi Arabia's digital transformation through local talent, as well as accelerate the deployment of digital services. With this partnership, Ericsson will transform Mobily's IT landscape and support their ambition of providing superior customer experience with strong capabilities in the IT space." The new team will manage Operational and Business Support Systems. Its responsibilities will also include ensuring IT security compliance for Mobily's IT environment, as well as supporting the telco in all future IT infrastructure projects in order to deliver best-in-class services and overall experience to Mobily customers.

Mobily to Start Offering eSIM Service

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."



accenture

Accenture, Intel and Sulubaaï Environmental Foundation Use Artificial Intelligence to Save Coral Reefs

Accenture, Intel and the Philippines-based Sulubaaï Environmental Foundation have developed a new solution powered by artificial intelligence (AI) to monitor, characterize and analyze coral reef resiliency. The solution – the work product of Project: CORaiL, an initiative the three organizations created in 2019 – has been deployed in a reef in the Philippines since last year. Coral reefs are some of the world's most diverse ecosystems, with more than eight hundred species of corals building and providing habitats and shelter for approximately 25% of global marine life. The reefs also benefit humans – protecting coastlines from tropical storms, providing food and income for 1 billion people, and generating US\$9.6 billion in tourism and recreation annually.

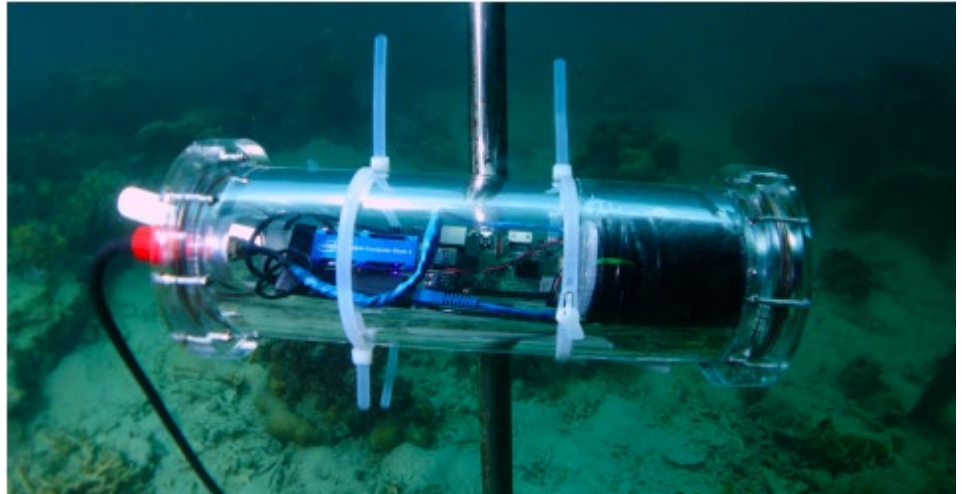
But reefs are being endangered and rapidly degraded by overfishing, bottom trawling, warming temperatures and unsustainable coastal development. "Project: CORaiL is an incredible example of how AI and edge computing can be used to help researchers monitor and restore the coral reef. We are very proud to partner with Accenture and the Sulubaaï Environmental Foundation on this important effort to protect our planet," said Rose Schooler, corporate vice president in Intel's sales and marketing group. A critical element of Project: CORaiL was to identify the number and variety of fish around a reef, which serve as an important indicator of overall reef health. Traditional coral reef monitoring efforts involve human divers manually capturing video footage and photos of the

reef. In addition to being dangerous and time-intensive, this approach can disrupt marine life, as divers might inadvertently frighten fish into hiding. Engineers from Accenture, Intel and Sulubaaï implemented an artificial, concrete reef – called a Sulu-Reef Prosthesis (SRP) – to provide support for unstable coral fragments underwater. The SRP was designed by Sulubaaï and placed in the reef surrounding the Pangatalan Island in the Philippines. Fragments of living coral were planted on it and will grow and expand, providing a hybrid habitat for fish and marine life. The engineers then strategically placed intelligent underwater video cameras, equipped with the Accenture Applied Intelligence Video Analytics Services Platform (VASP), to detect and photograph

fish as they pass by. VASP uses AI, powered by Intel Xeon, Intel FPGA Programmable Acceleration Cards and Intel Movidius VPU, to count and classify the marine life. The data is then sent to a surface dashboard, providing analytics and trends to researchers on the ground in real-time, enabling them to make data-driven decisions that will help the reef progress. "The value of your data depends on how quickly you can glean insights to make decisions from it," said Athina Kanioura, Accenture's chief analytics officer and Accenture Applied Intelligence lead. "With the ability to do real-time analysis on streaming video, VASP enables us to tap into a rich data source – in effect doing 'hands on' monitoring without disrupting the underwater environment." Since being deployed in May 2019, the solution has collected roughly 40,000 images, which researchers have used to gauge reef health in real-time. "Artificial intelligence provides unprecedented opportunities to solve some of society's most vexing problems," said Jason Mitchell, a managing director

in Accenture's Communications, Media & Technology practice and the company's client lead for Intel. "Our ecosystem of corporate and social partners for this 'AI for social good' project proves that strength in numbers can make a positive environmental impact." Engineers from Accenture and Intel are already at work on the next-gen Project: CORailL prototype, which will include an optimized

convolutional neural network and a backup power supply. They are also looking into infra-red cameras which will enable videos at night to create a complete picture of the coral ecosystem. Additional uses could include studying the migration rate of tropical fish to colder countries and monitoring intrusion in protected or restricted underwater areas.



Accenture and Springboard Enterprises Expand Collaboration to Increase Opportunities for Women Entrepreneurs

Accenture and Springboard Enterprises, a network of influencers, investors and innovators dedicated to building high growth companies led by women, are expanding their alliance to bring complementary people and capabilities together to increase opportunities for female entrepreneurs. Building on Accenture and Springboard's existing collaboration, this expanded alliance will focus on emerging market opportunities in women's health innovation, with the goal of connecting Springboard portfolio companies that offer digital health solutions with Accenture clients in the healthcare industry. Accenture Ventures – which serves as a bridge to the global innovation ecosystem by bringing clients together with best-in-class, enterprise relevant startups—will now tap into Springboard companies to help women innovators expand their industry network and effectively engage

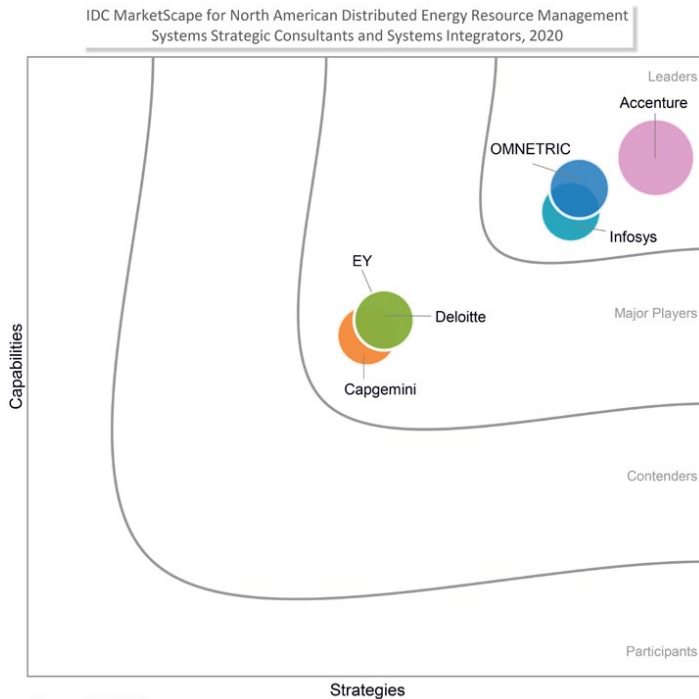
with large enterprises. "Continuing to bring our unique industry connections within the ventures ecosystem to the Springboard network enables us to promote women founders and innovators, connecting them with the right resources to secure funding and forge strategic business partnerships," said Annette Rippert, Group Chief Executive of Strategy & Consulting at Accenture. "Accenture and Springboard share a common commitment to gender parity and together we'll help propel the growth of women-led companies." As part of the expanded alliance, the two most impactful industry-transforming innovators in the Springboard network – a community of nearly 800 women founders and leaders of emerging growth companies spanning the globe and across all industries – will be named Accenture Springboard Innovator of the Year. One honor will recognize the most promising industry newcomer, and the other will recognize a more established company that is transforming the landscape of their industry. Honorees will be selected by a committee of Springboard and Accenture judges and announced at Springboard's 20th Anniversary Winners' Circle Honors Dinner in New York in October. Kay Koplovitz, Springboard Chairman and Co-founder, added, "Over the past 20 years, Springboard has a virtually unmatched record of recruiting and qualifying some of the most talented women-led technology and life science companies. Our expanded relationship with Accenture will help unlock untapped potential and economic value."

Announcing Springboard's Partnership with Accenture

ACCENTURE & SPRINGBOARD

Accenture Named a Leader in IDC MarketScape on North American Strategic Consultants and Systems Integrators for Distributed Energy Resource Management Systems

Accenture has been positioned again as a leader in the latest IDC MarketScape: North American Distributed Energy Resource Management Systems (DERMS) Strategic Consultants and Systems Integrators 2020 Vendor Assessment. As in the inaugural report, Accenture was recognized for its comprehensive DERMS offerings, which help electric utilities to effectively



manage and integrate solar and wind renewable energy, storage and other distributed energy resources. The report highlighted the breadth of Accenture's staff, its global reach and assets, depth of experience, robust partner ecosystem and regulatory expertise. Other strengths cited included its role as a trusted partner for many utilities as the industry tries to keep pace with constant technology and regulatory changes. Accenture also continues to invest in its resources and capabilities, the report stated, including its most recent acquisition of Bridge Energy in 2019, which strengthened its transmission and distribution consulting business. "We are excited to be a leader in this second IDC MarketScape report on DERMS, which highlighted our strategy and capability to help utilities plan for and capture the benefits of distributed energy resources," said Stephanie Jamison, a managing director and global lead of Accenture's Utilities practice. "Our talented team continues to bring deep industry insight and expertise, as we apply the best of every aspect of Accenture to help our clients lead in the energy transition to drive economic, environmental and grid benefits." John Villali, research director with IDC Energy Insights and the report's author, said, "As with our first report, Accenture remains best positioned to provide the wide variety of services and capabilities that utilities need to better manage DERMS. Innovation and creativity, for which Accenture is well known, are instrumental in driving flexible DERMS services." The report, which can be found here, covers vendors that have delivered DERMS work in at least three regional markets in North America, serving three or more utilities or major municipal or electric cooperatives. Vendors were evaluated based on detailed surveys and interviews, publicly available information and end-user experiences.

Accenture Acquires Revolutionary Security, Provider of Cybersecurity Services for Critical Infrastructure



Accenture has acquired Revolutionary Security, a privately held company specializing in enterprise Cybersecurity for information technology (IT) and operational technology (OT) environments. Financial terms were not disclosed. Revolutionary Security's portfolio of Cybersecurity services includes assessment and testing, design and build of security programs and functions as well as security operations across its clients' IT and OT systems. Revolutionary Security leverages proprietary technology and methods to help mature the security capabilities of its clients and manage risk. The company's breach and attack simulation testing

service, LiveFire®, utilizes real-world cyber threats to identify gaps in security processes and monitoring, as well as staff operations and technologies. The results help organizations prioritize actions to mitigate cyber risks within their enterprise. Headquartered in the greater Philadelphia area, Revolutionary Security employs 90 highly skilled Cybersecurity professionals throughout the United States. The company, founded in 2016, serves a variety of clients in the energy, manufacturing, healthcare, financial services and communications industries. "The acquisition of Revolutionary Security is another demonstration of our continued commitment to invest in areas to keep our clients safe from cyber threats," said Kelly Bissell, who leads Accenture Security globally. "Revolutionary Security's service offerings are a perfect complement to

Accenture's portfolio, and the acquisition furthers our mission of helping clients better protect and defend their organizations across their entire ecosystem." The acquisition will provide Accenture's clients with greater end to end solutions, particularly regarding more complex IT and OT Cybersecurity challenges. "High-profile and targeted Cyberattacks around the world are putting increased attention on critical IT and OT security risks, with potentially catastrophic consequences if systems are hijacked," said Jim Guinn II, who leads Accenture's Cybersecurity business for the energy, utilities, chemical and mining industries. "Companies often lack the necessary visibility to manage and measure OT cyber risk in the same way as IT risk. Revolutionary Security's extensive experience working with industrial companies and their specialized technical

skill set will be incredibly valuable to our clients." Rich Mahler, President and CEO of Revolutionary Security, said, "The opportunity to become part of Accenture Security will enable us to deliver more complete solutions to our clients and expand our services to even more clients globally. We're excited to be joining a leading provider in Cybersecurity services and look forward to working together to help clients solve their toughest challenges in IT and OT security." In March, Accenture agreed to acquire Context Information Security, which is the latest in a series of acquisitions – including those of Symantec's Cyber Security Services, Deja vu Security, iDefense, Maglan, Redcore, Arismore and FusionX – that demonstrate Accenture Security's commitment to investing in and innovating advanced Cybersecurity solutions.

Arthur D Little

Arthur D. Little Takes a Look at How Leading Businesses are Navigating Through the COVID-19 Crisis

At Arthur D. Little we want to play our part in helping the world through the COVID-19 crisis. We felt the best way to do this was to facilitate sharing of knowledge and insight across the business leaders in our network, especially those from critical infrastructure sectors, such as telecoms, utilities and transport, and in countries/regions furthest into the crisis, such as Hong Kong, Italy and Singapore. In this special report, we share insight "hot off the press" from 25 CEOs and business leaders, collected via a series of virtual best practice-sharing meetings. CEOs have shared with us frank and candid feedback on how their companies have gone about steering the response, safeguarding employees and

customers, maintaining business continuity, engaging with stakeholders, and planning for recovery. We think all business leaders should listen to what they have to say. Although most of us are still in the depths of the crisis and there is much uncertainty, we know that at some point it will end. Defeating the virus will require an unprecedented degree of global solidarity and universally shared dedication to pursuing the greater good at the expense of the comfort and convenience of the individual. If we succeed, the best-possible legacy of COVID-19 will be a new spirit of collaboration, connectedness and community that will benefit society, business and the economy alike





AT&T on a Path to Leadership Transition

After serving 13 years as AT&T's Chairman and CEO, Randall Stephenson, 60, will retire as CEO but will serve as Executive Chairman of the Board of Directors until January 2021 to ensure a smooth leadership transition. The AT&T Inc Board has elected AT&T President and Chief Operating Officer John Stankey as CEO effective July 1, 2020, and a member of the Board of Directors effective June 1, 2020. Stankey's selection as AT&T's next CEO completes the final phase of a succession planning process that AT&T's Board began in 2017, which included a thorough evaluation of internal and external candidates. Most recently, the HR Committee – led by AT&T Director Beth Mooney, comprised entirely of independent directors and supported by outside consultants – engaged in an extensive five-month search process to ensure that the company's next CEO possessed the vision, experience, talent and leadership qualities necessary to deliver on AT&T's strategic plans. Those qualities in our new CEO are important for our future and essential during these challenging economic times. "Leadership succession is one of the Board's most important responsibilities," Mooney said. "After an extensive evaluation, it was clear that John Stankey was the right person to lead AT&T into the future." Stankey, 57, has served as president and COO since October 2019. He joined AT&T in 1985 and has more than 30 years of accomplished leadership spanning nearly every area of AT&T's business, from corporate strategy and technology, to operations and media and entertainment. Stankey has served in a variety of roles, including: CEO of WarnerMedia; CEO of AT&T Entertainment Group; Chief Strategy Officer; Chief Technology Officer; CEO



of AT&T Operations; and CEO of AT&T Business Solutions. Stephenson said, "I congratulate John, and I look forward to partnering with him as the leadership team moves forward on our strategic initiatives while navigating the difficult economic and health challenges currently facing our country and the world. John has the right experiences and skills, and the unflinching determination every CEO needs to act on his convictions. He has a terrific leadership team onboard to ensure AT&T remains strong and continues to deliver for customers and shareholders for years to come." Matt Rose, AT&T's independent Lead Director, said, "Randall has done an outstanding job as CEO in transforming AT&T into a leader in communications, technology, and media and entertainment. His strong leadership and strategic investments during a period of unprecedented customer demand for mobile communications and premium entertainment have positioned the company extremely well for the

years ahead. We look forward to Randall continuing to lead the Board and working with John to ensure a smooth leadership transition." "I'm honored to be elected the next CEO of AT&T, a company with a rich history and a bright future," said Stankey. "My thanks go to Randall for his vision and outstanding leadership during a period of tremendous change and investment in the core capabilities needed to position AT&T well for the years ahead. And I appreciate the Board's confidence in me leading the company during our next chapter of growth and innovation in keeping people connected, informed and entertained. We have a strong company, leading brands and a great employee team, which I'm privileged to lead. I couldn't be more excited about the new opportunities we have to serve our customers and communities and create value for our shareholders." Later this year, AT&T's Board will elect an independent director to chair the Board of Directors when Stephenson retires as executive chairman in January 2021.

AT&T Appoints New Media Chief

AT&T tapped former Hulu chief Jason Kilar to lead its WarnerMedia unit starting 1 May, appointing him to take over the role from John Stankey as the company prepares to launch a key video streaming product. The move comes seven months after Stankey

was appointed to a newly created role of President and COO of AT&T alongside his WarnerMedia duties. Kilar served as CEO of Hulu from its founding in 2007 until 2013, when he moved on to co-found and lead video streaming service Vessel. He

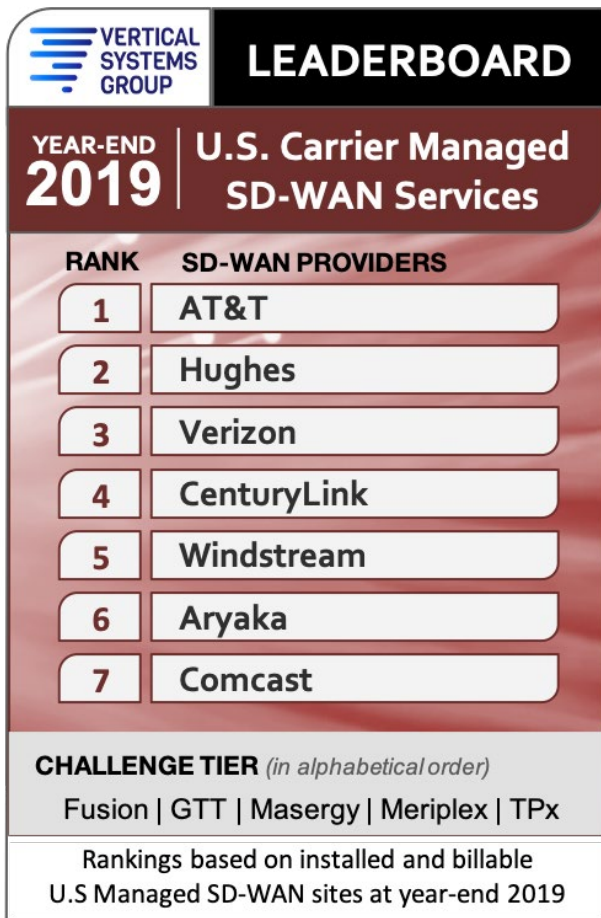
also brings experience gained in several leadership positions at Amazon, including SVP of worldwide application software. In a statement, Stankey said Kilar's appointment ahead of the planned launch of a new HBO Max streaming service

in May “gives us the right management team to strategically position our leading portfolio of brands, world-class talent and rich library of intellectual property for future growth.” Strategy CFO John Stephens, at an investor conference in March, tipped

HBO Max to be a “big positive for our wireless business,” allowing the operator to bundle popular content as an incentive for users to upgrade to its highest-priced unlimited tariff. “They may not pay for a separate line item for that HBO Max, but

their total monthly bill may be \$15 to \$20 higher than the base unlimited package... that ability to generate that additional revenue is significant”.

AT&T Tops US Carrier Managed SD-WAN Leaderboard



AT&T has achieved the top spot in the 2019 US carrier managed SD-WAN services leaderboard benchmark. The annual listing from Vertical Systems Group named AT&T, Hughes, Verizon, CenturyLink, Windstream, Aryaka and Comcast, as the top seven SD-WAN service providers in the US. Each company holds 2% or more of installed and billable carrier managed SD-WAN customer sites, which the ranking is based on. “The US managed SD-WAN market expanded rapidly in 2019 as backlogged orders from the prior year were fulfilled by key service providers,” said Rick Malone, principal of Vertical Systems Group. “While the duration and depth of the coronavirus economic collapse is unknown, we expect resiliency across bandwidth intensive VPN markets, but acute vulnerability for the SD-WAN networks supporting the retail and travel verticals.” Following the aforementioned top seven, the listing includes a further five companies that achieved a Challenge Tier citation, these are Fusion, GTT, Masergy, Meriplex and TPx – listed in alphabetical order. Service providers included in the Challenge Tier citation hold between a 1% and 2% share of US

carrier managed SD-WAN sites. All remaining service providers are grouped in the Market Players classification and have a site share below 1%, this includes global network providers that manage US customer sites. In alphabetical order, the 2019 list includes: AireSpring, Bigleaf, BT, CBTS, Cincinnati Bell, Cogent, Colt, Consolidated Communications, Cox, DQE Communications, FirstLight, Frontier, Intelsat, MetTel, Neutrona, NTT, Orange Business, PCCW Global, PS Lightwave, RCN Business, SES, SDN Communications, Segra, SingTel, Spectrum Enterprise, Sprint, Syringa, T-Systems, Tata, Telefonica, Telia Carrier, Veracity Networks, Virgin Media Business, Vodafone, Zayo among others. Key findings from the 2019 full year research show that billable US installations of carrier managed SD-WAN services increased 89% in 2019 as well a number of position changes from 2018. CenturyLink moved up to fourth position, which dropped Windstream from fourth to fifth position. Comcast moved up to seventh position from eighth in 2018, while Fusion dropped off the leaderboard into the Challenge Tier for 2019.

AT&T Talks Up 39GHz Spectrum Position

US telecoms giant AT&T Communications has confirmed that it now holds more than 1,040MHz of nationwide millimeter wave (mmWave) spectrum, after participating in the Federal Communications Commission’s (FCC’s) latest frequency sale. Prior to Auction 103, AT&T acquired 379MHz of 39GHz spectrum when it purchased FiberTower for USD207 million in early 2018. All 39GHz licenses held by AT&T prior to the auction were exchanged for vouchers. The company subsequently

spent around USD2.4 billion in the auction – or USD1.2 billion net of its vouchers. The value of the FCC-issued vouchers was determined by the auction price for the Partial Economic Areas (PEAs) in which the pre-auction licenses were held. The licenses AT&T won cover 411 PEAs and the voucher exchange process allowed AT&T to secure a ‘large, contiguous block of spectrum’. Indeed, AT&T improved its 39GHz spectrum position to 786MHz, an increase of 102%. When added to the

mmWave spectrum AT&T already holds in the 24GHz band, AT&T’s average spectrum depth in the mmWave range increased to more than 1,040MHz nationwide. TeleGeography notes that Auction 103, which comprised spectrum in the upper 37GHz, 39GHz and 47GHz bands, got underway on 10 December 2019 and concluded on 5 March 2020. The auction generated gross proceeds of USD7.6 billion.



BT Conducts Cloud Native Dual-Mode 5G Core Deployment

BT has inked a deal with Ericsson for the deployment of the Swedish vendor's dual-mode 5G Core (Evolved Packet Core and 5G Core), a fully container-based, cloud native Mobile Packet Core for 4G, 5G Non-standalone and 5G Standalone services as a single fully integrated core. In a press release Ericsson noted that the solution, delivered on BT's Network Cloud, will form a key component in the UK operator's move to a single converged IP network. The upgrade will incorporate network orchestration and automation, including continuous delivery and integration

processes (CI/CD), and be integrated into BT's existing customer experience management platforms using Ericsson Expert Analytics together with 'built-in software probes'. Ericsson also pointed out that its 5G Core should help BT create and deliver new services such as enhanced mobile broadband, network slicing, mobile edge computing, mission critical vertical industry support and advanced enterprise services. Claiming 'another milestone in the longstanding partnership between the two companies', Howard Watson, CTIO of BT, was cited as saying: 'Having evaluated

different 5G Core vendors, we have selected Ericsson as the best option on the basis of both lab performance and future roadmap. We are looking forward to working together as we build out our converged 4G and 5G core network across the UK. An agile, cloud-native core infrastructure is at the heart of our ambition to enable the next generation of exciting 5G services for our customers and give the UK the world-class digital infrastructure it needs to win in the future global economy.'

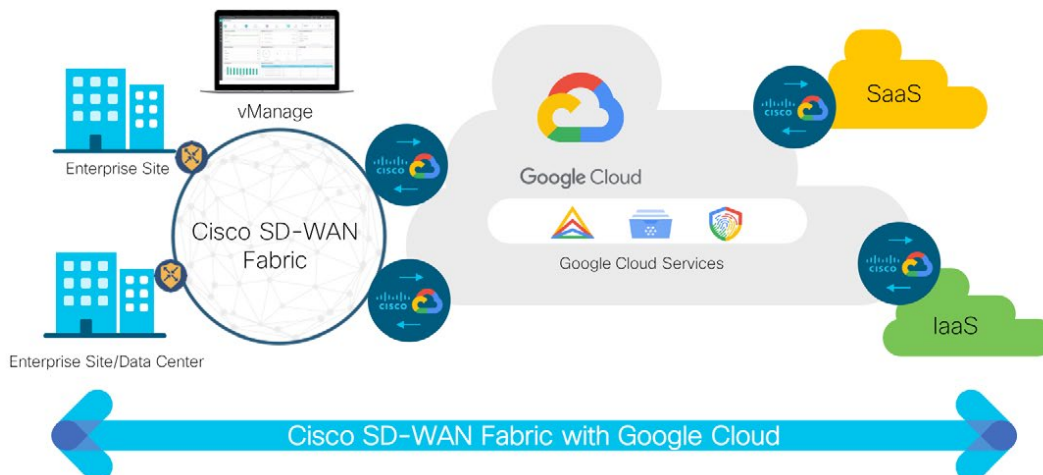


Cisco and Google Partner on SD-WAN Application Integration across Clouds

In order to truly integrate SD-WAN applications into multi-cloud environments, Cisco and Google announced on Tuesday they've partnered on a new platform. Cisco and Google, who first announced they were partnering last year, have created Cisco SD-WAN Cloud Hub with Google Cloud to extend applications into multi-cloud environments while also providing improved security, orchestration and service level agreements (SLAs.) To date, SD-WAN vendors and service providers have created multiple SD-WAN on ramps into the various clouds, but those solutions stop at the network edge. "Customers are

already adopting a hybrid multi-cloud strategy," said Cisco's Sachin Gupta, senior vice president of product development for the company's intent based networking group. "Now CIOs are asking how can they efficiently, and in an automated way, deliver the right security and the right application experience for all of their users." Cisco and Google eliminate the need for having an SD-WAN application going back to a data center, or into a colocation facility, before going into a cloud. The joint solution takes the SD-WAN overlay from campus and branch locations into Google Cloud while also extending

security, encryption and segmentation into multiple clouds via Google's Anthos. Using virtual routers, Cisco can create a virtual hub in the cloud to replicate all of the benefits of having SD-WAN on premise or in physical locations. Anthos is an open hybrid and multi-cloud application platform that offers telecommunications companies the flexibility to modernize existing applications, build new ones and securely run them on-premises and across multiple clouds. "Anthos allows Google to abstract any cloud environment and use the same tools and mechanisms that they use inside Google Cloud in any other



cloud environment," Gupta said. "What that allows is the application to register into the Google Cloud Service Directory, and then make the SLA requirements known and publish the APIs. Our Cisco Virtual Managed solution integrates with the Google Cloud Service Directory. We can dynamically learn about new applications and their SLA needs and react to those on the fly. "Those applications can be different types. It could be this application requires that all traffic, data in motion, must be encrypted. Every session we create must be an encrypted IPsec session. It could be that this application

requires that the lowest latency path always be used. Another application may just need something that has very high status availability at the lowest cost. That's something that can inform our Viptela SD-WAN solution on what path to take. So these are some examples of the dynamic automated integration we have from an application point of view." By using API connections between Cisco's Viptela-based SD-WAN and Google's cloud, information can be collected on each application's needs via integration with Google Cloud Service Directory. "Through that information, if an application

needs a lower latency or different kind of experience, we can automatically adjust the SD-WAN fabric to deliver that," Gupta said. "And then similarly, if the network sees issues in a particular task, we can automatically inform the Google Cloud Service Directory to move the workload to another location so that we can take a different path and still provide the best experience. "So it's a bi-directional approach that makes the network more application centric, and makes the cloud environments more network aware, and network experience aware."

Cisco Eyes IoT Gains with Fluidmesh Purchase

Cisco sought to strengthen its portfolio of industrial IoT products, announcing plans to acquire New York-based mobile backhaul provider Fluidmesh Networks for an undisclosed sum. The deal will give Cisco access to technology designed to

maintain uninterrupted data connections for objects moving at high speeds, which it said will provide an advantage as it looks to serve mission-critical "on-the-move" applications across the transportation, mining, manufacturing and industrial segments. In a blog, SVP and GM of cloud, compute and IoT Liz Centoni explained "while most wireless solutions work well for slow moving objects (less than 30km/h), Fluidmesh's leading technology is designed to provide zero loss of data transfer at speeds in excess of 300km/h." Fluidmesh Networks added in a statement the transaction would help accelerate its product roadmap, offering a "new level of operational scale, the ability to enter new verticals and geographies, and access to an impressive enterprise customer base". The deal is expected to close in the fourth quarter of Cisco's fiscal 2020 (running to 25 July), subject to regulatory approval. Cisco said Fluidmesh Network's employees will transfer to its IoT business as part of the deal.



Cisco Powers Rakuten Mobile's Inter-Network Roaming Service

Cisco announced another milestone in its innovative engagement with Rakuten Mobile, Inc. (hereinafter "Rakuten Mobile") with the successful launch of an inter-network roaming service between Rakuten Mobile and KDDI mobile networks across Japan. The LTE roaming service, defined by 3GPP and based on the S10 signaling interface standard, is being used within Cisco's Virtual Ultra Packet Core to connect to mobility management entities (MMEs) between Rakuten Mobile and KDDI. The MMEs track relevant user data sessions to ensure smooth handover from one operator's network to the next. The data path will be managed by connecting the KDDI network with Cisco's System Architecture Evolution Gateway VNF supporting a Control and User Plane

Separation architecture. Using this new technology, Rakuten Mobile can vastly improve the service experience for its customers by enabling service continuity for data and voice when moving between the networks. With improved service continuity, Rakuten Mobile can offer a superior, uninterrupted mobile broadband connection for increasing mobile video and app use, browsing experiences, gaming and more. "With the launch of our S10 roaming service, we are setting a new experience standard for service and device continuity over multiple networks," said Tareq Amin, Representative Director, Executive Vice President and CTO, Rakuten Mobile. "With KDDI's collaborative support, Rakuten Mobile and Cisco are showcasing new ways to combine our technology and

talent to bring big benefits to the people who rely on our networks to stay connected every day." "Adding S10 handover between Rakuten Mobile and KDDI offers Rakuten Mobile subscribers a seamless mobility experience with undetected transition as they move between networks," said Jonathan Davidson, Senior Vice President and General Manager, Mass Scale Infrastructure, Cisco. "This functionality is rare to activate between operators, and we are proud to have come together on the vision to build, test and make this happen in record timing. With the industry-leading cloud-delivered mobile packet core, Cisco continues to redesign mobile networks to support the internet of the future, today."

Cisco Continues Commitment to Customers and Partners by Supporting Business Resiliency

Cisco is continuing its global commitment to help customers and partners navigate an evolving landscape with the introduction of a new Business Resiliency Program. Offered through Cisco Capital, the vendor financing business within Cisco, and designed to help mitigate financial challenges resulting from the COVID-19 pandemic, this program includes \$2.5 billion in financing to provide organizations with access to the solutions they need to keep their businesses running and productive, their employees safe and support their communities during these unprecedented times. "Cisco's customers and partners are under enormous pressure to keep their businesses connected while remaining productive and secure," said Chuck Robbins, Chairman and CEO of Cisco. "Whether it's technology, financing or helping those most in need, Cisco is committed to working together to fight this pandemic on every front." Cash flow is a top concern for Cisco customers and partners in the current environment. The new Business Resiliency Program offered by Cisco Capital includes an up-front 90-day payment holiday and allows a customer to defer 95 percent of the cost of a new product or solution until 2021, which in turn protects their business and increases their existing cash flow. Starting in January 2021, customers would then make a monthly payment based on the total financed amount and the remaining term of the financing. All Cisco solutions are eligible for this program, including hardware, software and services as well as up to five percent of partner provided services, such as installation. The program also offers support to Cisco's 60,000 partner ecosystem. The Business Resiliency Program will help partners provide an additional solution to better serve customers, without any change to their own financial situation, in this challenging business environment. It will accelerate their sales cycles and allow partners to offer their customers payment

solutions to better manage their cash flow. "Cisco Capital's goal is to make it easier for customers and partners to acquire the technology they need to keep their businesses running and productive. Their success is our priority," said Kristine A. Snow, SVP and President, Cisco Capital. "The new Business Resiliency Program is designed with this in mind and will help address some of our customer's most pressing concerns." In addition, Cisco Capital is supporting customers and partners through Cisco Refresh, the Cisco certified remanufactured product portfolio, to help with budget constraints. Cisco Refresh offers a wider range of products and further discounts and promotions to help customers and partners receive competitively priced, pre-owned products quickly and easily. Cisco Refresh solutions are also eligible for the Business Resiliency Program where 95 percent of the cost can be deferred until 2021. "This is a valuable offering by Cisco" said Will Townsend, Senior Analyst, Networking Infrastructure, Moor Insights and Strategy. "Through my countless discussions with organizations, balancing cash flow while maintaining robust network operations is critical given the impact of COVID-19. I continue to be impressed with Cisco's proactive strategy to enable its customers, partners,

employees and the community overall to maintain productivity in these trying times. The Business Resiliency Program is another example of the company's overall effort." The Business Resiliency Program from Cisco Capital is part of Cisco's overall commitment to supporting customers, partners and communities through the COVID-19 pandemic. Cisco recently committed \$225 million in cash, in-kind, and planned-giving to support both the global and local response. This includes technology and financial support for non-profits, first responders and governments. Cisco is also empowering customers and partners with its free Webex and Security offers enabling them to stay securely connected and productive during this time. For more information see:

- [Business Resiliency Program for Customers](#)
- [Business Resiliency Program for Partners](#)
- [Executive Blog from Chuck Robbins: Committing \\$225 million to global COVID-19 response](#)
- [Executive Blog from Oliver Tuszik: Helping Partners Support Customer Business Continuity](#)
- [Supporting Business Continuity During the COVID-19 Pandemic](#)



Cisco, Altiostar and WWT Team on Open vRAN

Cisco, Altiostar and World Wide Technology (WWT) are working together on an open, virtual radio access network (vRAN) blueprint for service provider networks. The joint solution will help carriers deploy cloud-based vRAN systems based on technologies from Cisco and Altiostar and that will be brought to market using the sales and integration capabilities of WWT. Their vRAN blueprint consists of infrastructure software and hardware from Cisco, including its Cisco virtual infrastructure manager (CVIM), packet core, and converged SDN transport. Also

included is Altiostar's 4G and 5G open vRAN software, which supports open interfaces and disaggregates the radio hardware from the radio software. "Most service providers need help accelerating the integration and adoption of open vRAN," said Bob Everson, senior director of 5G Architecture at Cisco, in a prepared statement. Cisco's former CEO John Chambers was one of a group of people who envisioned virtualizing the radio access network early on. In 2009 Cisco paid \$2.9 billion for Starent, a startup that decoupled the mobile packet core from the radio access network. Then

in 2011 Cisco also helped to fund some of the members of the Starent team to enable them to create a new company — Altiostar Networks. Of the combined blueprint announced today, Altiostar EVP of Strategy Thierry Maupile said in a statement, "This blueprint brings together leaders in all the areas needed to roll out a complete and open vRAN solution to both rural and urban networks." The Open vRAN blueprint will be validated in WWT's Advanced Technology Center in St Louis. Joe Wojtal, CTO for WWT's Global Service Provider business, recently told FierceWireless, "Given that mobile operators are focused on disaggregating mobile infrastructure, we're spending a lot of time with them." He said in addition to work with Altiostar and Cisco, WWT has also been working with Affirmed Networks for mobile packet core technology innovation. Affirmed was recently purchased by Microsoft. In addition to its Advanced Technology Center, WWT has global integration centers in Mumbai, Singapore, St. Louis, and Amsterdam. WWT will take the open vRAN blueprint to market as a fully integrated solution that will be available for customers to test and deploy in their networks with the support of services from WWT and Cisco.

Open vRAN Ecosystem Overview

Accelerate the viability and adoption of open virtualized RAN (vRAN) solutions and ensure their extension into a broader software-defined network architecture



NTT East Selects Cisco SD-WAN to Expand Its Managed SD-WAN Services for Enterprises

Cisco announced that NIPPON TELEGRAPH AND TELEPHONE EAST CORPORATION (NTT EAST) has selected Cisco SD-WAN powered by Viptela for its new managed SD-WAN services under NTT EAST's VPN service portfolio for enterprises. While the business environment is changing rapidly from increased use of cloud applications and growth of remote and mobile workers, organizations are challenged with a shortage of IT resources and increasing management costs. SD-WAN is helping address these challenges by efficiently linking applications, branch offices and mobile workers so organizations can securely deliver applications to users while achieving IT agility and reduced costs. The new SD-WAN solution components include the Cisco SD-WAN Controller, the Cisco

ISR 1100 series router as the customer premise equipment (CPE), the Cisco CSR 1000v as virtual CPE, and Cisco Network Functions Virtualization Infrastructure (NFVI) as the managed SD-WAN service foundation. Together, these products and technologies enable NTT EAST to build a virtualized platform to provide highly secure and flexible optimized network access with zero-touch provisioning. Cisco's Customer Experience team will provide customer support to adapt, deploy and manage this new managed SD-WAN service. Availability for the managed SD-WAN service is planned for July 2020. "We are constantly working to solve social issues through the use of ICT and to advance digital transformation in society," said Mr. Naoki Shibutani, Senior Executive

Vice President, Representative Director, NTT EAST. "We are very pleased to create this new service by collaborating with Cisco to deliver its SD-WAN solution to solve corporate challenges from workstyle reform, security measures, and labor shortage. With these enhancements, we are committed to continuing to provide secure, reliable and optimized network services to solve challenges that society faces." "We are pleased to collaborate with NTT East to offer new managed SD-WAN services that support business efficiency and advance digital transformation," said Ichiro Nakagawa, Vice President, Cisco Service Provider Business in Japan. "In today's business world where agility to respond quickly to market changes is critical, we realize that this managed

SD-WAN service can help Japanese companies adapt quickly while focusing on business strategies and critical

operations. Together with NTT East, Cisco will continue to expand high-reliability, high-quality network services for the

Japanese market."

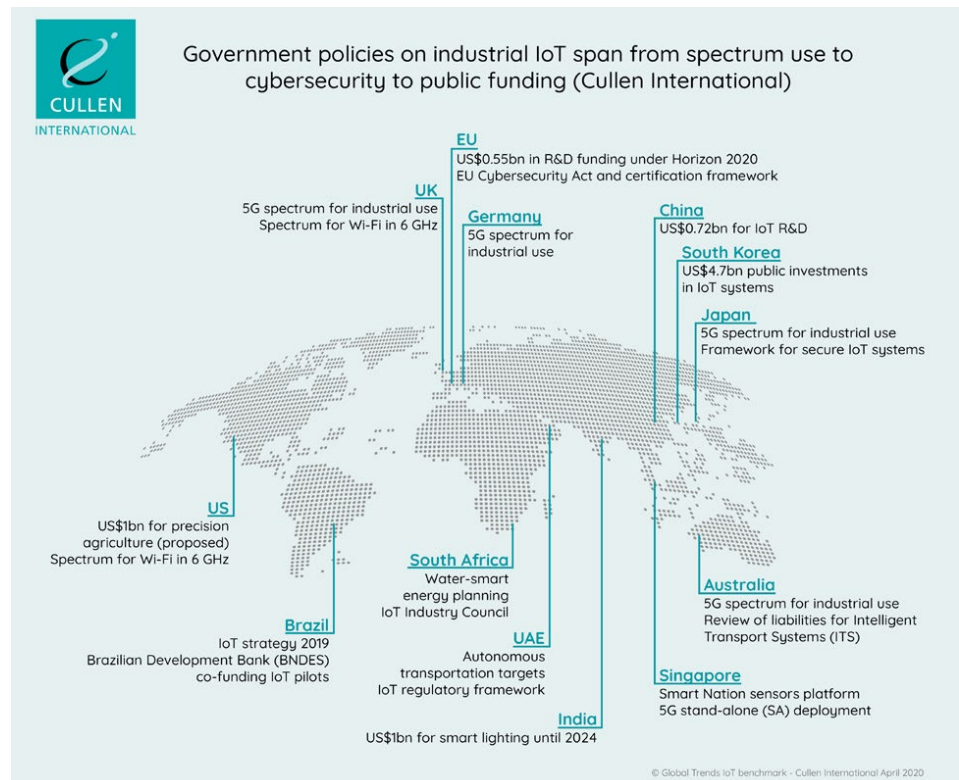


Industrial IoT Set to Grow Dramatically But Countries' Policy and Regulatory Approaches Vary Significantly, New Global Trends Research by Cullen International Finds

The use of internet of things (IoT) by industry verticals is expected to grow dramatically over the next five years but the underlying policy and regulatory frameworks remain diverse in terms of their approach and preparedness. New Cullen International research highlights that the development of the industrial IoT ecosystem worldwide could therefore follow quite different paths, across and within regions, and across different industry sectors. This research on IoT is part of a new service launched by Cullen International, the leading provider of regulatory intelligence. The Global Trends service monitors global tech trends and the related policy and regulatory responses. "The research looks at policies and regulatory environments for IoT use in specific industry verticals in countries and regional blocks as diverse as China, India, the United Arab Emirates, the EU, Brazil, and the US. The industry verticals covered include agriculture, automotive, health care, smart cities, and public utilities, such as gas or water," Elena Scaramuzzi, Head of Global Research at Cullen International said. According to the research, countries around the world show different levels of regulatory preparedness for the use of IoT in production environments. "Countries like South Korea have invested considerably in the use of IoT across key economic sectors. That was not just about funding pilot projects. The country had also to modernise parts of its regulatory environment, to enable the industrial use of IoT. And to do that, Korea had to start several years ago," Ms. Scaramuzzi pointed out. Cullen International's new global research addresses specific policy and regulatory issues related with IoT use.

One important issue is the use of radio spectrum for industry. According to the research, several countries, including the US, have recently increased the spectrum available for unlicensed Wi-Fi use, which is used for many industry applications. Some other countries, including Japan or Germany, have set aside 5G spectrum for industrial licensing on a local basis. "We tried to shed some light on this aspect because the approaches undertaken by national regulators may vary significantly even when addressing spectrum requirements in a specific vertical like the automotive sector. So, our research looked not only at the frequency bands and type

of licences offered for industrial uses but also at aspects such as who is applying for such spectrum, and why," Ms Scaramuzzi explained. Cullen International's new Global Trends service identifies a range of disruptive new tech trends – such as artificial intelligence (AI), cybersecurity, and 5G, as well as IoT – and compares how policy makers and regulators are setting the rules across the globe. Cullen researches each trend in detail, applying rigorous analysis to pinpoint the essential facts, and presenting the results in a simple visual format to provide decision makers with a clear strategic perspective.





Eutelsat Selected by RCS Ghana for DTH Broadcast

Eutelsat Communications (NYSE Euronext Paris: ETL) has secured a multi-year contract with RCS Ghana to provide capacity for the broadcast of its DTH bouquet bringing content to viewers in Ghana and beyond. RCS will use Ku-Band band capacity on EUTELSAT 7B to broadcast its fast growing free-to-air DTH bouquet comprising SD and HD channels to the Ghanaian market and over 40 other countries in Africa. The 7° East neighborhood is a key orbital position for regional TV channels. Over 500 TV channels already broadcast from 7° East

which has become a new DTH hotspot for Sub-Saharan Africa with some of the fastest growth rates in the region. Mr. Hamza Tanko, Chairman and CEO of RCS Ghana: "We are delighted to partner with Eutelsat for the broadcast of the RCS DTH bouquet, delivering exceptional content to viewers in Ghana and beyond, and enabling the broadcast of any channel in Ghana in high quality and at compelling rates. The 7° East position is ideal to serve the Ghanaian market and EUTELSAT 7B offers consistent coverage and signal power all over Ghana as well as complete

Sub-Saharan coverage of over 40 African countries." Nicolas Baravalle, Regional Vice President, Sub Saharan Africa of Eutelsat said: "We are proud to support RCS Ghana in rolling out this high quality content offering. This contract reflects the buoyancy of the Ghanaian broadcast market, the attraction of the unparalleled coverage of our 7° East neighborhood and Eutelsat's expertise in the African market. We look forward to a long and fruitful collaboration"

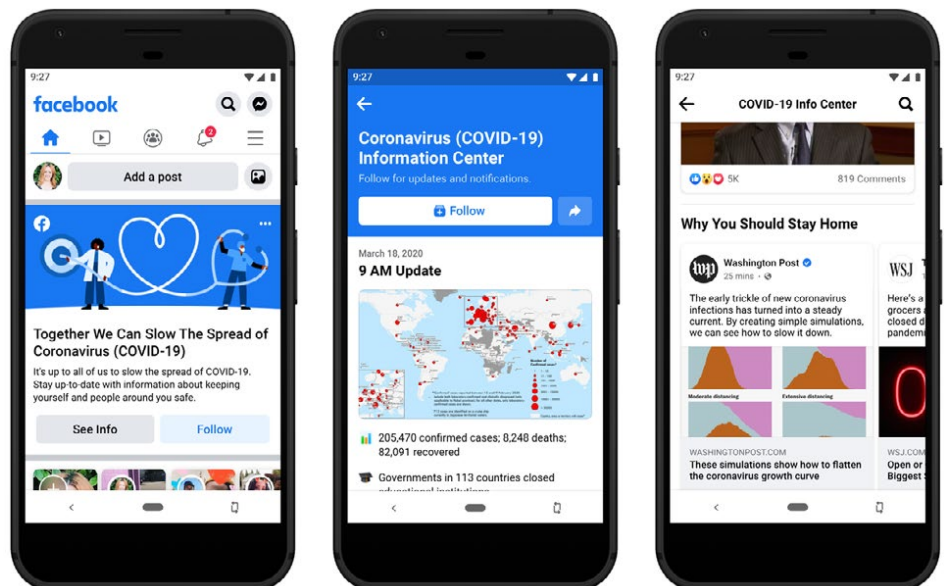
FACEBOOK

Facebook Pushing Coronavirus Information Centre Across Africa

Facebook is expanding its Coronavirus Information Centre to 24 more countries in Africa in a bid to deliver news from trusted health authorities. The Coronavirus (COVID-19) Information Centre is featured at the top of News Feed and provides a central place for people to keep informed about the Coronavirus. It includes real-time updates from national official sources, regional and global organizations such as the Africa Centre for Disease Control and the World Health Organization, as well as helpful resources - articles, videos and posts - and tips about social distancing and preventing the spread of COVID-19. Facebook users can opt-in to the Centre to get notifications and see updates in their News Feed from official government, regional or global health authorities. Facebook's Director of Public Policy, Africa, Kojo Boakye, says: "Facebook is supporting the public health community's work across the world to keep all communities informed during the coronavirus pandemic. We are happy to provide nearly every country in Sub-Saharan Africa with its own Information Centre so people across the continent have a central place to find authoritative information around

COVID-19." The new countries where Facebook is launching the Coronavirus Information Centre are: Botswana, Burundi, Central African Republic, Comoros, Congo, Djibouti, Equatorial Guinea, Eritrea, Eswatini, Gambia, Guinea-Bissau, Lesotho, Madagascar, Malawi, Mozambique, Namibia, Rwanda, Sao Tome and Principe, Sierra Leone, South Sudan, Tanzania,

Uganda, Zambia and Zimbabwe. The Coronavirus Information Centre is already in place in the following sub-Sahara African countries: Benin, Burkina Faso, Cameroon, Cape Verde, Chad, Côte d'Ivoire, Ethiopia, Gabon, Guinea, Kenya, Mali, Mauritania, Mauritius, Nigeria, Senegal, Seychelles, South Africa, The Democratic Republic of Congo (DRC) and Togo.



Facebook Makes Gargantuan \$5.7bn Investment in India's Biggest Telco; India Remains Facebook's Biggest Overseas Market

US social media giant, Facebook, has agreed to buy a 9.99 per cent stake in India's biggest mobile network operator, Reliance Jio, for \$5.7 billion (43,574 crore rupees), according to an official company statement. Reliance Jio exploded onto the scene when it launched in 2016, bringing unprecedented levels of disruption to the Indian telecoms market, with its series of ultra-cheap 4G data tariffs and handsets. The company has been a fundamental catalyst in India's digital revolution and has accrued over 330 million subscribers in just three years, to become the country's biggest mobile network operator. The deal will be seen as a major win for both companies, allowing Reliance Industries to pay down its significant debt pile, while simultaneously offering Facebook vital access to the world's second largest telecoms market. "This investment by Facebook values Jio Platforms at Rs4.62

lakh crore pre-money enterprise value (\$65.95 billion, assuming a conversion rate of Rs70 to a US Dollar). Facebook's investment will translate into a 9.99% equity stake in Jio Platforms on a fully diluted basis," Reliance Jio's parent company, Reliance Industries, said in a statement, originally sourced by The Economic Times of India. India is Facebook's largest market outside of the US and a potentially lucrative one, especially with Facebook believed to be considering launching a number of pay per play services across its mobile messaging subsidiaries, Whatsapp, Facebook Messenger and Instagram Messenger. "Facebook is teaming up with Jio Platforms -- we're making a financial investment, and more than that, we're committing to work together on some major projects that will open up commerce opportunities for people across India," said Facebook CEO, Mark Zuckerberg, in an

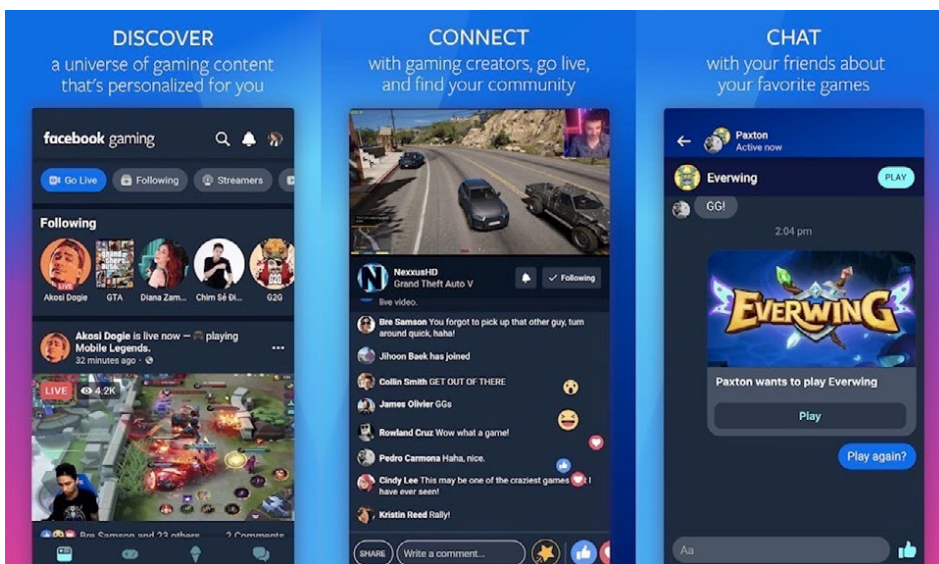
online post. "India is home to the largest communities on Facebook and WhatsApp, and a lot of talented entrepreneurs. The country is in the middle of a major digital transformation and organizations like Jio have played a big part in getting hundreds of millions of Indian people and small businesses online. "This is especially important right now, because small businesses are the core of every economy and they need our support. India has more than 60 million small businesses and millions of people rely on them for jobs. With communities around the world in lockdown, many of these entrepreneurs need digital tools they can rely on to find and communicate with customers and grow their businesses. This is something we can help with -- and that's why we're partnering with Jio to help people and businesses in India create new opportunities," he added.

Facebook Makes Mobile Gaming Play

Facebook fast-tracked the global launch of a standalone mobile gaming app, in an effort to tap into the increasingly popular segment during the COVID-19 (coronavirus) pandemic. A company representative told Mobile World Live the Facebook Gaming app will initially be

available only on Google Play, with an iOS version in the works for a later date. Prior to today's launch, the Gaming offering has been available within the main Facebook app for about a year, but the company claimed its move to introduce a dedicated app would allow people to easily "find

and connect around their favorite games, streamers, Groups, and more." Among the main features will be a personalized gaming feed and the option to live stream games to Facebook from a phone, a move the company stated would allow gamers worldwide to try streaming "in an approachable way," removing the need for using webcams or capture cards. Users will also be able to discover gaming creators and watch videos from leading e-sports and gaming publishers, play instant games without the need to install additional apps, and connect in gaming community groups. The app launch follows testing in Southeast Asia and Latin America, which has resulted in over 5 million installs on Google Play since late 2018. Live game streaming has experienced a significant increase during the COVID-19 outbreak, and leading platforms such as Twitch and Mixer recorded their best revenue generating month in March, data from Apptopia showed.



Facebook Details Path Forward for Libra Project

Facebook outlined a revamp for its planned Libra Cryptocurrency project, scaling-back its initial vision for initiative in a bid to appease global regulators. The move confirms a Bloomberg report last month, which speculated about an overhaul, in light of the regulatory backlash Facebook faced since unveiling Libra in June 2019. In a statement, Facebook specified a "path forward" for Libra, with an updated strategy which will see the play run more akin to a traditional payments network by offering digital versions of currencies already on the market, dubbed "stablecoins", backed by their cash value. It also plans to support

digital currencies launched by banks and it will marry blockchain technology with accepted regulatory frameworks. In light of its changes, Libra's governing body the Libra Association started a process to formally apply for a license with the Financial Markets Supervisory Authority in Switzerland. The licensing process will have input from central banks and other financial regulatory supervisors around the world. The company, which had originally aimed to launch the platform early this year, will now look to rollout at the back end. Backlash Facebook faced scrutiny US and European regulators about its initial

plans for Libra, which proposed using Cryptocurrency in place of traditional money transfers to slash remittance costs and promote global financial inclusion. Regulators argued digital currencies must be fully investigated before launching, due to concerns around money laundering and impact to monetary stability. To address money laundering concerns, Facebook added it would establish a financial intelligence unit to vet those using the system. Regulatory scrutiny led to high-profile backers, including Vodafone Group, Visa and Mastercard, among others, pulling their support for the project.



OSN Unveils Multi-Year Partnership with Intigral

OSN has signed a multi-year agreement with Intigral, the media arm of Saudi's STC, for its flagship home and OTT service, Jawwy TV. The partnership sees Intigral secure first access to OSN's new general entertainment channel 'OSN Mix'. This new initiative aims to offer viewers a window into OSN's world of entertainment featuring a curated selection of OSN's best series, movies, kids and factual

entertainment programs that will engage all members of a household. In addition Jawwy TV subscribers will have access as part of their telecom bundles to a host of channels ranging from Arabic with OSN's 'Yahala' and 'ART' channels that provide the most sought after Arabic productions in the region, to premium Turkish series and the best of kids entertainment with channels as well as documentaries and

factual entertainment. Patrick Tillieux, CEO of OSN said: "Intigral is a natural partner for OSN. We aim to bring entertainment and joy to a broad audience with quality content. This agreement is the result of a great relationship that has been built over many years. It is based on a common view of the future and confidence in each other." Hamoud Al Rumayan, CEO of Intigral said: "Jawwy TV is home to a richest selection of entertainment and we see a bigger collaboration happening with OSN. The addition of OSN to our large portfolio of content not only enhances the attractiveness of our proposition but also caters to the needs of our beloved clients in KSA and other regional markets. In a time where TV is the center of every household, we proud ourselves of this timely and unique enhancements." According to Zahra Zayat, SVP – digital, OTT and Telco of OSN, the partnership is "only phase one of a much bigger collaboration and partnership". OSN content is now available to Jawwy TV customers in KSA, whilst STC subscribers in Bahrain, Kuwait, Oman and Saudi Arabia can access OSN through a range of bundles and offers.





Huawei Appoints David Shi as Middle East Enterprise Business Group President

Driven by its commitment to help governments and industries with their digital transformation journeys across the Middle East, Huawei has announced the appointment of David Shi to the position of Regional Enterprise Business Group (EBG) President. The move is effective immediately and builds on the company's plans to help shape the future of digital infrastructure using advanced ICT solutions. Shi has more than a decade of experience working within the Middle East starting from 2007, and over 15 years of experience in the information and communications technology (ICT) sector, including technical sales, marketing, and business development. Having been with Huawei since 2005, he has held several roles for the company based in the region, helping the Huawei Enterprise Business Group to support the digital transformation plans of its customers across various industries. Prior to his current position,

Shi led Huawei's Enterprise Group in Saudi Arabia as General Manager starting in 2017, driving the company's continued success across the Kingdom. He has previously held the role of Marketing and Solution Sales Vice President for Huawei Middle East (2015-2017) and CTO of Huawei Saudi Arabia (2013-2015). Speaking on the announcement, Charles Yang, President of Huawei Middle East, said: "In the enterprise business, we continue to be fully committed to our 'Huawei Inside' strategy, collaborating with our partners and sharing the value of digitalization with our customers. Today our Enterprise Business Group serves a diverse range of public and private sector organizations and their requirements. Someone with as strong a background and solid experience in the region as David is ideal to head this division—leading the growth of not only our Enterprise Business Group, but helping businesses to lay the foundations

for a digital Middle East." "Now more than ever, organizations are looking at their ICT needs to help them to futureproof their operations, while also providing possibilities to keep things moving in the current challenging times," said Shi. "I am eager to step into this role at Huawei EBG and work with more of our customers across the Middle East to cultivate new opportunities. The trust of these partners and customers has been essential to our company's success, and will continue to be moving forward." As of 2019, more than 700 cities and 228 Fortune Global 500 companies have chosen Huawei as their digital transformation partner. In addition, Huawei's enterprise business has a network of more than 28,000 partners worldwide, which contribute up to 86% of the global revenue of the business group. Huawei has already established 13 OpenLabs worldwide to focus on the enterprise market. At these OpenLabs, Huawei supports partners in joint solution innovation, marketing, talent cultivation, finance, supply chains, and IT systems to continuously strengthen their capabilities and drive their digital transformation to achieve success. "In the enterprise business, Huawei follows a 'Platform + AI + Ecosystem' strategy where we fully leverage the potential of AI technology to build platforms while creating a thriving ICT ecosystem. I look forward to working with our customers and partners to embrace multiple new ICT technologies that can bring digital to every person, home and organization for a fully connected intelligent world," Shi added.



Huawei and China Telecom Deploy Book RRUs in Shenzhen

Huawei and China Telecom have completed the rollout of 'hundreds' of 5G C-Band Book Radio Relay Units (RRUs) in Shenzhen, providing 'significant improvements' to in-depth coverage and user experience in residential areas, the two companies announced in a joint statement. The lightweight Book RRUs enable rapid 5G deployment, the two companies explained, by utilizing walls and utility poles as sites,

reducing existing issues with rollouts in residential areas, where insufficient resources and site acquisition can be costly and time-consuming. The technology, which supplements macro-site base stations, also allows providers to deploy 5G quickly, patch-up holes in coverage and offload network traffic. Huawei and China Telecom's Shenzhen unit tested the technology in December 2019 using 4T4R

5G Book RRUs, achieving peak downlink speeds of 1.2Gbps on commercial mobile devices and using 100MHz of network spectrum. The deployment has allowed the cellco to meet capacity requirements in 'value hotspots' in the city, such as school campuses, office buildings and scenic parks.

China Unicom and Huawei Jointly Release Industry's First eAI-Accelerated Education Broadband

China Unicom and Huawei have released the first eAI-accelerated education broadband in China, providing gigabit high-speed broadband for students in Beijing. The embedded AI (eAI) technology reduces the latency of online education services by more than 50%, and ensures a smooth online learning experience in the fifth generation fixed network (F5G) era. Online education is increasingly popular as a convenient teaching method and high-quality teaching resource favored by parents. As the number of people receiving online education in China reaches 300 million, network quality is becoming the key to ensuring a premium education experience for teachers and students alike. Approximately 20% to 30% of online education participants experience frame freezing or disconnection, which severely affects the online learning experience. The major causes include low Wi-Fi bandwidth and high latency on the home network side, which cannot meet the resolution requirements of current 1K and future 2K/4K online education. As a leading operator in Beijing, China Unicom (Beijing) proactively communicates with the municipal education commission, public schools, and training institutions to understand the requirements of different education scenarios in this pandemic. Understanding that online education requires high bandwidth in both upstream and downstream directions, China Unicom (Beijing) chose Huawei's eAI-accelerated education broadband solution to provide students with convergent gigabit broadband in both wired and wireless modes, thereby reshaping the online education experience. Huawei's eAI-accelerated education broadband solution has four key advantages: zero frame freezing, Wi-Fi penetrating one more wall, instant fault recovery, and reduced carbon emissions equivalent to one tree planted.

- Zero frame freezing in online courses: Huawei's unique OptiXstar gigabit smart education gateway integrates eAI and can instantly identify online education services to perform targeted acceleration, reducing latency by more

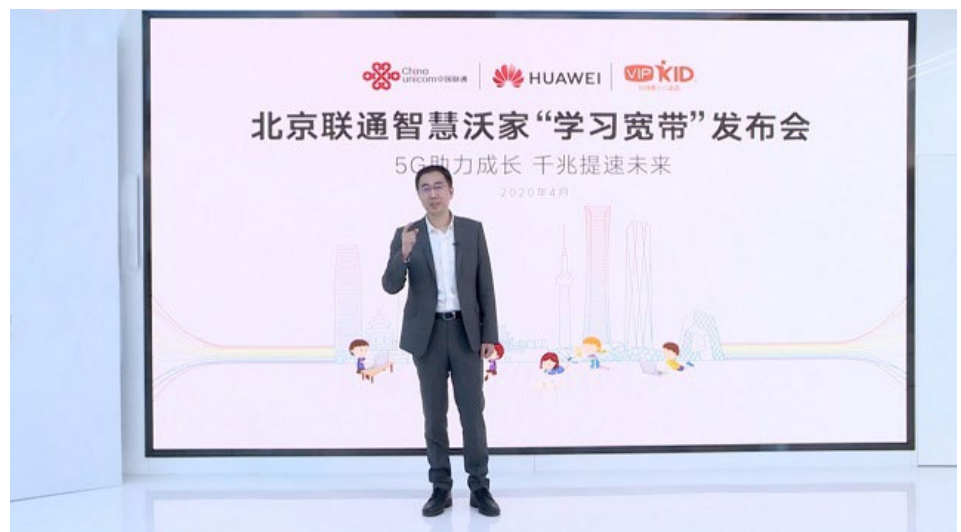
than 50% and ensuring smooth online education.

- Penetrating one more wall: Industry-leading high-gain antennas and intelligent anti-interference algorithms allow Wi-Fi signals to penetrate one more wall, ensuring zero frame freezing in online classes, even under severe interference.
- Instant fault recovery: The NCE intelligent O&M platform makes home Wi-Fi network visible and supports remote optimization to reduce home network faults, enable quick troubleshooting, as well as ensure students' online education experience.
- Reduced carbon emissions equivalent to one tree planted: The intelligent hibernation mechanism reduces power consumption by 20%. The carbon emission reduced for each user per year is equivalent to planting a tree.

Zhang Yunyong, General Manager of China Unicom's Product Center, said: "Today, we released the Education Broadband as a step to upgrade our products and services. Further innovative products will be released in future to meet personalized network requirements of various user groups. China Unicom is committed to promoting the prosperity and development of the telecom industry together with partners across the industry chain. The current education broadband will bring

a new service experience to the online education industry."

Qin Yang, Deputy General Manager of China Unicom (Beijing), said, "We are dedicated to providing users with a superior experience using innovative technologies. The education broadband released using Huawei's eAI and big data technologies will provide students in Beijing with the same smooth education without requiring them to be physically present in classrooms." Jeffrey Zhou, President of Huawei's Access Network Product Line, said: "The F5G gigabit era has come. High-quality online education experience requires zero frame freezing, zero disconnection, higher bandwidth, lower latency, and wider coverage. In the future, home network services also need to be more secure, agile, and energy efficient. The OptiXstar gigabit smart gateway launched by Huawei will reshape the online education experience and make online learning more efficient." The new education broadband product can be subscribed to at customer service centers and the online service app at China Unicom (Beijing). China Unicom is an official partner of the 2022 Olympic Winter Games in Beijing. Its education broadband product has attracted extensive attention from consumers, and has set a new benchmark for home network services, paving the way for a new round of online education. As a global leader in the optical



access industry, Huawei focuses on user experience and service requirements in the F5G era to continuously make innovations in key technologies. Huawei's ongoing

investment in product R&D provides industry-leading end-to-end solutions. In addition, Huawei cooperates with operators and other industry partners to explore new

service scenarios and business models to enable the entire industry to enter the gigabit all-optical era.

Huawei Maintains Steady Growth in the Enterprise Market in 2019

Huawei has confirmed steady growth in the enterprise market, achieving a global sales revenue of USD12.8 billion—up 8.6% year-on-year. Huawei's enterprise business has become one of the key drivers of the company's overall expansion. In the Middle East specifically, the company's enterprise business group achieved exceptional results with sales revenue growing 24% year-on-year, making the region one of the top performers for Huawei globally. As of 2019, more than 700 cities and 228 Fortune Global 500 companies have chosen Huawei as their digital transformation partner. In addition, Huawei's enterprise business has a network of more than 28,000 partners worldwide, which contribute up to 86% of the global revenue of the business group. According to Huawei, the trust of these partners and customers has been essential to the company's success, and Huawei will continue to partner with governments and enterprises to bring digital to every person, home and organization for a fully connected intelligent world. Through ongoing R&D and investment in new ICT technologies such as 5G, AI, and cloud, today Huawei fully leverages the collaborative advantages of new technologies to accelerate product

innovation, industry digitization, and intelligent development. Moreover, the principle of "Being Integrated" has been well adopted in its enterprise business, so that success is shared with partners through fair, transparent, and simple partner policies. Huawei also invested 15.3% of its 2019 revenue – or approximately USD18.8 billion – back into R&D in line with its long-term investment approach and commitment to provide technology innovations. Its total R&D spend over the past decade now exceeds USD\$85.9 billion. During 2019, Huawei leveraged the synergy among cloud, AI, and 5G to provide public cloud services and hybrid cloud solutions that are stable, reliable and sustainable. HUAWEI CLOUD has launched more than 200 cloud services and 190 solutions, while more than 3 million enterprise users and developers currently use HUAWEI CLOUD to develop products and solutions. Using Cloud as the base, Huawei has launched Huawei Horizon Digital Platform by integrating new ICT technologies including IoT, AI, big data, video, converged communications, and GIS to build a foundation for the future digital world. According to leading independent

market research firm Dell'Oro Group, Huawei ranked No. 1 in the share of the global Wi-Fi 6 indoor AP market, excluding North America between the third quarters of 2018 and 2019, through its provision of quality services for customers from various sectors such as education, retail, healthcare, and manufacturing. In addition, in 2019, Huawei launched CloudEngine 16800, the industry's first data center switch built for the AI era, which has been commercially deployed in more than 150 enterprise data centers around the world. The three OptiXs, namely OptiXtrans, OptiXaccess, and OptiXstar, have been adopted by over 3,800 companies across 158 countries and regions. According to a Gartner's report released in September 2019, Huawei's storage products took up the Leaders' zone of the Magic Quadrant. Huawei also released two flagship solutions for the enterprise market – HiCampus and HiDC— by relying on its cutting edge technologies in 5G, optical transmission, Internet Protocol (IP) networking, and AI technologies and making collaborative innovation across technological domains. Huawei has a wealth of experience in helping governments and enterprises go digital. In areas such as smart city, campus, transportation, energy, manufacturing, and education, Huawei works with global partners to roll out innovative solutions and business models to create new value. As of 2019, Huawei has partnered with more than 4,200 service providers serving over 50,000 customers around the world. The company has participated in smart city projects in more than 200 cities across over 40 countries and regions, as well as assisting more than 1,000 financial institutions with digital transformation in terms of inclusive finance, data-driven service innovation, and open banking. Huawei serves more than 170 urban rail lines in over 70 cities worldwide, striving to build integrated transportation systems for global cities. Building on the experience gained from its own digital transformation,



Huawei has successfully built intelligent campuses for more than 300 customers. Through innovative ICT technologies, Huawei helps various sectors including manufacturing and energy reshape their manufacturing and value chains while boosting upgrade of their intelligent systems. As part of powering enterprise partners and building a prosperous ecosystem, Huawei has established 13

OpenLabs worldwide to focus on the enterprise market. At these OpenLabs, partners receive support on the joint innovation of solutions, marketing, talent cultivation, finance, supply chains, and IT systems to continuously improve their capabilities and drive their transformation for shared success. Committed to sharing its experience, technology, and talent cultivation standards, Huawei has worked

with a huge number of educational authorities, universities, and other ecosystem players from around the world to build an open and favorable ecosystem to cultivate ICT talents and drive industry digitization. All financial statements in the 2019 Annual Report were independently audited by KPMG, an international Big Four accounting firm.



Microsoft, AT&T Create Edge Compute Zones

Microsoft is working with AT&T to bring ultra-low-latency edge compute to joint customers. Its Azure Edge Zones are local extensions of the Microsoft Azure cloud. They'll bring compute, storage and networking closer to end users. And Microsoft is planning to work with other operators soon, including Rogers, Telefonica, Vodafone Business, SK Telecom, Telstra, Etisalat and NTT Communications. Microsoft is also stressing a 5G angle with the edge compute announcement. It said that the Azure Edge Zones will connect Azure services directly to 5G networks in the carriers' data centers. "We were the first public cloud to announce 5G integration with AT&T in Dallas in 2019, and now we're announcing a close collaboration with AT&T on a new Edge Zone targeted to become available in Los Angeles in late spring," wrote Corporate Vice President for Azure Networking Yousef Khalidi, in a blog post. In July 2019, AT&T named Microsoft as its preferred cloud provider for non-network applications with a plan to move those applications to Microsoft Azure. Microsoft, in turn, threw its support behind AT&T's efforts to consolidate its data center infrastructure and operations. For its Azure Edge Zones, some of the first use cases that Microsoft plans are remote meetings and events, online gaming and the internet of things. In addition to

partnering with carriers, Microsoft will also deliver standalone Azure Edge Zones in select cities over the next 12 months. Azure Edge Zones will deliver consistent Azure services across cloud, on-premises, and edge using the same Azure Portal, APIs, development, and security tools. Microsoft says it will deliver a variety of virtual network functions (VNFs), including 5G software, SD-WAN and firewalls from some of its partners including Mavenir, Nuage Networks from Nokia, Metaswitch, Palo Alto Networks, and VeloCloud from VMware. Telcos and cloud providers have been creating symbiotic relationships for a while now. Carriers, including telco and cable, have thousands of last mile endpoints that the cloud providers lack. By partnering with telcos, the cloud providers can get their services closer to end users. From the service provider perspective, they can bring big cloud compute and applications to the edge, for the benefit of their enterprise customers. Recently, AT&T and Google said they were working together to blend AT&T's edge network, including 5G edge computing solutions for enterprises, with Google Cloud's expertise in Kubernetes, artificial intelligence, machine learning, and data analytics. The two companies intend to jointly-develop a portfolio of 5G edge compute solutions that can be delivered on a global scale, both on the edge and in the cloud. In addition to

announcing its partnership with Microsoft in July 2019, AT&T also announced an expanded two-way relationship with IBM at around that same time. IBM will continue to provide AT&T Business with open source systems, which IBM mostly inherited from its acquisition of Red Hat. And for its part, AT&T said it would provide IBM with software-defined networking (SDN) expertise. In addition, AT&T Business will move more of its applications to the IBM Cloud. In May 2018, Verizon named Amazon Web Services (AWS) as its preferred public cloud provider. Verizon said it planned to move 1,000 business applications and database systems over to AWS. And in December 2019 at AWS reinvent, Verizon and AWS announced a partnership for Verizon to bring cloud compute closer to its 5G network edge by teaming with AWS. Verizon will use AWS Wavelength, Amazon's new cloud platform designed for edge computing, to make it easier for developers to create and deploy low latency applications. At least one European operator has also announced a cloud partnership. In November 2019, the Vodafone Group said it had partnered with Google Cloud to host its big-data analytics platform. The Vodafone Neuron big-data analytics platform serves as a data lake for Vodafone's AI and business intelligence.

Microsoft Partners with the Industry to Unlock New 5G Scenarios with Azure Edge Zones

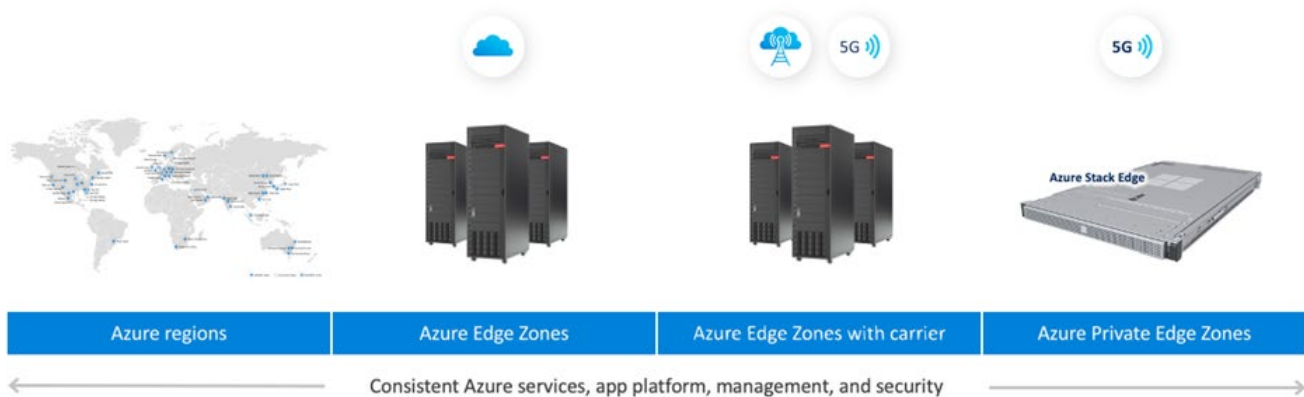
Cloud, edge computing, and IoT are making strides to transform whole industries and create opportunities that weren't possible just a few years ago. With the rise of 5G mobile connectivity, there are even more possibilities to deliver immersive, real-time experiences that have demanding,

ultra-low latency, and connectivity requirements. 5G opens new frontiers with enhanced mobile broadband up to 10x faster, reliable low-latency communication, and very high device density up to 1 million devices per square kilometer. Microsoft is announcing transformative advances to

combine the power of Azure, 5G, carriers, and technology partners around the world to enable new scenarios for developers, customers, and partners, with the preview of Azure Edge Zones.

Azure Edge Zones

Ultra-low latency compute—enabling new scenarios with Azure, 5G, and carrier partners



PCCW Global

Viu Releases Latest Original Series Pretty Little Liars

Viu, a leading pan-regional OTT video service from PCCW Media Group with more than 41 million monthly active users, announces the launch of Pretty Little Liars, a Viu Original series starring an ensemble of top stars from Indonesia and Malaysia. Adapted from the English-language teen mystery drama of the same name, this series follows Viu's success with adaptations of globally acclaimed properties such as Endemol Shine Group's The Bridge and CJ E&M's Black, as well as series based on Viu's original IP development. The Pretty Little Liars

series is released with all 10 episodes available for binge viewing and enjoyment by subscribers in the 16 markets where Viu is available. Viu's adaptation is set in the fictional town of Amerta, Bali, following the lives of four female students whose clique falls apart when their leader, Alissa (Yuki Kato), goes mysteriously missing. A year later, Hanna (Anya Geraldine), Ema (Eyka Farhana), Sabrina (Valerie Thomas) and Aria (Shindy Huang) find themselves reunited when they begin to receive messages from a mysterious figure known as "A", who threatens to expose their

darkest secrets. The series is directed by Emil Heradi, best known for his work on Night Bus, which won six Indonesian Film Festival Awards in 2017. In addition to the main ensemble cast, the series showcases a number of seasoned Indonesian actors such as Wulan Guritno, Tarra Budiman and Irgi Fahrezi, alongside young rising stars such as Jennifer Coppen and Marcell Darwin. Ms. Sahana Kamath, Head of Original Production for Viu Indonesia and Malaysia, said, "As part of our continuous commitment to bringing fresh Asian content to our Viu'ers, we are proud to

present the Asian version of Pretty Little Liars. With this adaptation, we set out to honor the iconic Warner Bros. series, while ensuring the core themes relate to the hearts and minds of our audience members. Importantly, this gripping and binge-worthy series will provide a platform

for critical discussions around friendship, empowerment and the consequences of cyber-bullying." Director Emil Heradi said, "The series was fully shot in Bali, with a brilliant cast and top-notch feature film crew that was focused on showcasing premium Asian cinematic values to the

world. The characters and relationships have been adapted for local appeal, while the strong twists and turns of the original series were given a Viu-style makeover. I appreciate Viu's expertise in taking international formats and making them locally relevant."

**Tech
Mahindra**

Tech Mahindra and IBM to Help Their Clients Modernize Operations Leveraging Cloud

Tech Mahindra Ltd. a leading provider of digital transformation, consulting and business reengineering services and solutions, is collaborating with IBM to help businesses transform their operations and accelerate their hybrid cloud strategies. Tech Mahindra will help clients migrate core business applications to the IBM public cloud using IBM Cloud Paks. As part of this relationship, IBM and Tech Mahindra will establish innovation centers designed to help address complex business problems across industries, including telecommunication, manufacturing, financial services, insurance, retail and healthcare. The first center is planned to open in Bengaluru, India, later this year and specialize in transformation solutions built with IBM Cloud Paks, enterprise-ready containerized software solutions running on Red Hat OpenShift. Tech Mahindra currently plans to open additional centers throughout North America and the United Kingdom in 2020. Pawan Sharma, President & Global Head of Strategic Initiatives at Tech Mahindra, said "The collaboration with IBM will help us accelerate the development of cloud-based applications for our customers and build multicloud data management solutions on the industry-leading hybrid platform. The commitment to building Innovation Centers aligns with our TechMNxt charter, an initiative that leverages emerging technology to solve real-world business problems for customers." Tech Mahindra is the latest company to join the IBM public cloud ecosystem, a new initiative

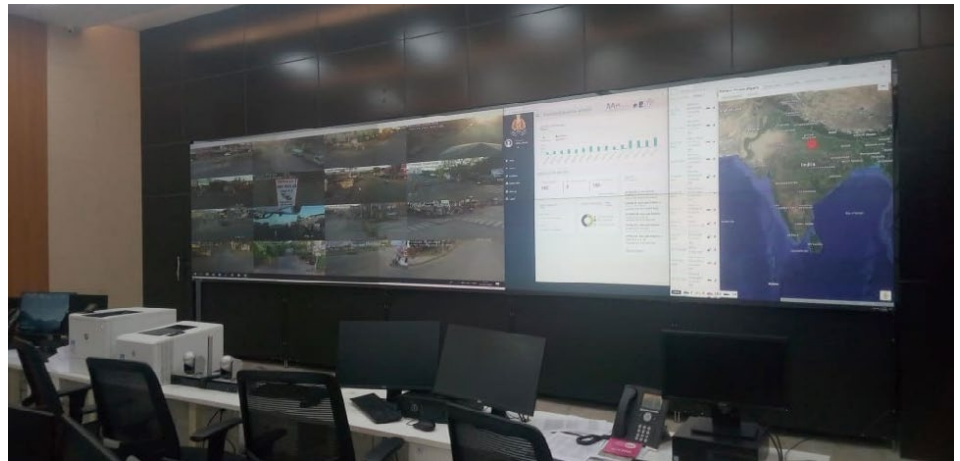
to support global system integrators and independent software vendors to help clients modernize and transform mission-critical workloads on the IBM public cloud. The IBM public cloud is the industry's most open and secure public cloud for business. With its security leadership, enterprise-grade capabilities and support for open source technologies, the IBM public cloud is designed to differentiate and extend on hybrid cloud capabilities for enterprise workloads. "This collaboration with Tech Mahindra is designed to help speed how businesses migrate critical enterprise workloads to the IBM public cloud and transform their operations using cloud-native technologies," said Bob Lord, SVP, Cognitive Applications, Blockchain and Ecosystems, IBM. "IBM Cloud Paks are designed to help businesses speed their journeys to the cloud by giving them the flexibility and choice they need to modernize their applications. Because

they are pre-integrated to deliver specific customer use cases, they can help quickly address pressing challenges for businesses across multiple industries." Tech Mahindra aims to help clients build scalable, cloud-native applications that can help address the most critical data and workload. Tech Mahindra's technologists can also assist Communication Service Providers (CSPs) to develop network automation solutions, IT infrastructure and application modernization, further helping clients shift complex and mission-critical enterprise workloads to the IBM public cloud. The collaboration is in line with Tech Mahindra's TechMNxt charter, which focuses on providing solutions that enable digital transformation and meet the customer's evolving and dynamic needs. The innovation centers will be driven by Tech Mahindra's spirit to deliver tangible business value and experiences to solve real business problems.



Kanpur Smart City Project Leveraged to Track COVID 19 Parameters

Tech Mahindra, a leading provider of digital transformation, consulting and business reengineering services and solutions, has leveraged its smart city project in Kanpur to assist the City administration with tracking of COVID 19 parameters. In addition to the other tools deployed, Kanpur Smart City Ltd (KSCL) has further established an artificial intelligence tool for administration work to be carried out during the ongoing nationwide lockdown. KSCL has secured the assistance of Tech Mahindra to set up a COVID-19 control room to manage tracking of coronavirus patients, lockdown violations, supply of essential items and health supplies, among others. "As the COVID-19 outbreak disrupts the socio-economic order of the country, city administrations and the private sector are collaborating to maximise their efforts towards fighting the pandemic," said KSCL CEO and Municipal Commissioner Akshay Tripathi. He added that with the help of Tech Mahindra, the COVID-19 War Room Contact Centre was made live in record time and is equipped with real-time and historical reporting. "Remote training sessions have also been provided to on-ground resources to minimise downtime." He said police, municipal and health departments are linked to the control room. "We have given a toll-free number. Officers are working round the clock at integrated command and control centres to handle grievances that people



convey to us over phone. We are providing e-pass through a WhatsApp number and manually as well," Tripathi said. He said 12 hotspots have been identified in Kanpur that are being controlled by 10 police stations and being monitored through CCTVs installed at various places in the city. We are facilitating home delivery of essentials. "UP is like a 10th largest country in the world in terms of population. Kanpur is the oldest city where we have deployed smart city solutions. In an old city like Kanpur, challenges are much more magnified. We were able to set up systems for the control room in 24 hours," Tech Mahindra Corporate Affairs and Business Head (Asia-Pacific) Sujit Baksi said. Tech Mahindra is also providing geo-fencing solutions to restrict COVID-19 patients. The company is taking similar measures

in other smart city projects in hand. Tech Mahindra has smart city projects across India – apart from Kanpur, others are in progress in Gandhinagar Gujrat, Pimpri Chinchawad and Nasik in Maharashtra. The basic functions of the projects:

1. Deployment of smart traffic systems which uses the latest radar based traffic control system to automatically adjust traffic counter based on number of vehicles at given point in time. This also helps us in creating green corridor in situation like medical emergency for ambulance movements or VIP movements. Also traffic system can detect red light violation or speed violation and issue fines automatically to the traffic offenders. The intelligent cameras installed at traffic junctions can read number plate and their details are fetched on the basis of registration number to send challans at their address
2. Intelligent CCTV cameras with artificial intelligence which are capable of detecting litter lying on roads or graffiti detection, crowd management.
3. Deployment of environmental sensors across the city to monitor various gases SO₂, NO₂, CO, humidity, temperature and particulate matter PM_{2.5}, PM₁₀. These details are shared with environmental dept for them to take appropriate actions on areas where pollutions are high.



Tech Mahindra and Innoevo Drive Digital Transformation to Enhance Customer Experience Globally in Insurance Banking and Wealth Management

Tech Mahindra Ltd. a leading provider of digital transformation, consulting and business reengineering services and solutions, with Innoevo, a Zurich based leading technology software provider, have announced that the enterprises will partner to drive digital transformation to enhance customer experience globally in Insurance, Banking and Wealth Management. Through this partnership, they will leverage No-Code Platforms to accelerate the launch of custom-built applications for their collective network of clients without software coding in real-time across all banking, wealth management and insurance sectors. Today's business models are faced with maturing markets combined with millennial demands for engaging experiences, scarcity of

technical talent with the necessary coding expertise, and the critical need to accelerate innovation and enable new business models in order to grow and succeed financially. Tech Mahindra and Innoevo will jointly offer innovative solutions to companies struggling with competitive market demands and critical antiquated legacy systems. Gautam Bhasin, Global Head Banking, Financial Services and Insurance, Tech Mahindra, said, "As part of our TechMNxt charter, we at Tech Mahindra are committed to enabling our customers to digitalize their journey and provide enhanced experiences to customers. Through our partnership with Innoevo, Tech Mahindra will enable digitalization of sales and distribution channels for enterprises to ensure launch

of new products in real time; help them trade financial and insurance products through multiple distribution channels, and improve efficiency of processes like risk assessment, insurance policies, banking products, policy lifecycle, customer advisory, servicing and claims resolution." Today's customers are demanding nimble, reliable and efficient technologies to deliver engaging customer experiences, mobile applications and digital channels. Innoevo Skye® empowers businesses with the ability to launch powerful applications up to ten times faster than the conventional development process. Innoevo Skye® is fast and flexible, enabling financial businesses and carriers to go to market with new products in a matter of weeks.



Thuraya MarineStar Becomes a Major Success Story

Thuraya, the mobile satellite services subsidiary of the UAE-based global satellite company, Yahsat, has announced that Thuraya MarineStar, its best in class, affordable maritime voice solution with advanced two-way tracking and monitoring capabilities is a bestseller, especially in the

Asian maritime markets. This versatile solution was sold out within a month after its launch and first installations have been made successfully. Due to robust demand from fisheries, Thuraya's Service Partners are now placing new bulk orders for the hardware units. "When we launched

Thuraya MarineStar in late 2019, we were sure we had a winner on our hands. For the cost-conscious user who has to abide by a tight budget, this feature-rich voice solution offers a wide range of value add-ons at an affordable price," said Shawkat Ahmed, Thuraya's Chief Commercial Officer. He continued, "We have seen products that had ambitious launches, but are still unfortunately out of reach due to total cost of ownership. Thuraya MarineStar is an unprecedented success, because it meets all the essential requirements in terms of connectivity, safety, flexibility and affordability." As an entry-level solution, Thuraya MarineStar is built on the same successful voice platform that has sold more than one million Thuraya satellite voice devices. Since it enables tracking and monitoring, in addition to voice communications, vessel operators do not have to invest more in their tracking systems or a brand new tracking application.



Ministry of Education Collaborates with Yahsat to Offer Free Satellite Broadband Services in Areas Lacking Internet Connectivity

The UAE Ministry of Education (MoE) has announced that it is collaborating with Al Yah Satellite Communications Company (Yahsat) to extend the reach of its Remote Schooling initiative for students seeking to access e-learning platforms during the current COVID-19 situation. As part of the collaboration, Yahsat will provide high-speed satellite broadband services for students and teachers in multiple locations across the UAE, where terrestrial broadband alternatives are unavailable. Yahsat's satellite links will provide remote users access to online libraries, educational applications and collaborative platforms, ensuring e-learning and knowledge sharing through this phase of home-based schooling. The company's services will be available to users free of charge. Her Excellency Jameela Al Muhairi, Cabinet Member and Minister of State for Public Education, stated, "Continuity of learning and the provision of educational tools and resources are key national priorities in the current conditions. The success of our mission depends on unifying nationwide efforts across institutions and individuals. After the launch of the Ministry's Remote Schooling initiative, we have witnessed a high level of responsibility, awareness and increased logistic and financial support that are helping us achieve the desired outcomes. We are grateful to all our strategic partners for their contributions." "The current educational phase is markedly different from the conventional approach. It is defined by technological capabilities and smart learning solutions that the UAE has built over the years and the Ministry endeavored to develop and adopt. We will continue to provide students quality education, despite obstacles. Our collaboration with Yahsat is a pioneering model that complements the Ministry's

long-term vision of employing high-tech competences for educational purposes." Her Excellency continued, "Yahsat is a leading global enterprise that possesses the required expertise and advanced capabilities to extend the reach of the Remote Schooling initiative to include areas lacking regular internet services. Yahsat will provide high-speed broadband connections and technical support, enabling effective communications and learning for virtual school communities through various digital platforms and the Ministry's smart learning portal. We thank Yahsat's leadership team for their steadfast commitment and support." Her Excellency also highlighted the importance of knowledge-sharing among youth, noting that it is vital for a bright prosperous future, enabling them to lead the development and growth of their country. Masood M. Sharif Mahmood, Chief Executive Officer of Yahsat said, "As the country's sole provider of advanced satellite communication solutions, Yahsat is committed to deploying our resources anywhere within the UAE to ensure normalcy of operations

during this critical time. We bridge the gap in regions that are beyond the reach of regular telecom networks. This new collaboration with the MOE will guarantee seamless continuity of the nation's education curriculum. Students and teachers can take full advantage of the remote learning platforms over our satellite broadband network and carry out their tasks and responsibilities within the safe confines of their homes." Serving more than 4 billion people in over 190 countries, Yahsat provides integrated fixed and mobile satellite communication solutions through its fleet of five satellites. By connecting rural and urban communities, the company has been playing a key role in the economic and social development of some of the world's poorest regions. It offers a wide range of high-performance satellite broadband solutions to address some of the biggest global challenges including education, quality healthcare, water scarcity, energy efficiency and effective governance.



SatADSL, YahClick Partner to Enhance Satellite Communications in Africa

Brussels-based satellite service provider, SatADSL has partnered with YahClick to enhance its connectivity offering across Sub-Saharan Africa. Through the partnership SatADSL is now a new

Virtual Network Operator (VNO) partner to YahClick, a UAE-based broadband satellite services provider owned by Yahsat and its partner Hughes Network Systems. As a result, SatADSL is able to combine the

capacity purchased from YahClick with its cloud-based service delivery platform (C-SDP) to deliver a full range of flexible satellite services across Africa. "Working closely with SatADSL enhances the quality

of our service delivery as we continue on our mission to unleash human potential through satellite broadband connectivity," said Farhad Khan, chief executive officer at YahClick. "The agreement will provide our customers with the best broadband solutions available, connecting them with the rest of the world through a fast and affordable service. In this uncertain period of enforced social distancing and self-isolation, we are delighted to help bring people together, supporting them to

work, learn, and stay informed remotely." For YahClick's part, it gains full access to the SatADSL's licensed partner network spanning 45 countries worldwide and boasting over 3,500 deployments, which gives YahClick opportunities to expand its distribution. "I am excited by the possibilities that present themselves ahead. Partnering with YahClick does more than just give us access to the company's service delivery platforms – it significantly increases our ability to make

a tangible and lasting difference in and across the communities from West to East Africa we serve as part of our global connectivity offering. "Our ability to offer high throughput Ka-band services will significantly impact the fate of some of the most underserved countries in the world, helping them to cross the digital divide and make the most of their considerable potential," said Michel Dothey, chief commercial officer at SatADSL.



Zain KSA Launches Electronic SIM

Zain KSA announced the launch of the electronic SIM card (eSIM) dubbed as the latest generation of chipset technology and most user-friendly, providing many unique high-efficiency features. Commenting on this achievement, Zain KSA's CEO Eng. Sultan Bin

AbdulAziz Al Deghaither reaffirmed that the new eSIM will add a new value proposition to many of Zain's customers, pointing out that the company is working abreast to keep pace with the latest topnotch global technologies, transferring these technologies with passion, diligence and quality to the local markets. Al Deghaither added that "in Zain KSA, we work to constantly fulfill the aspirations of our valued customers, recognizing fully that these aspirations have no limits, and this is why we are working diligently for them, and from here comes the company's keenness to provide the latest and best technologies," confirming that eSIM is available on Zain KSA's mobile application and website without the need for a visit to any branch. The eSIM is a built-in chip that is included within phones or smart devices in general and has the same functionality as the traditional SIM without the need to be replaced constantly, for the information stored on it is adjustable. One of the integrated eSIM features is that it does not consume a large space on the device, but rather, as it is within the motherboard of smartphones. This new feature is available on several devices, including the latest iPhone Xs, in addition to the latest devices by Samsung and Huawei, such as Samsung S20 and Huawei P40. Moreover, the eSIM is characterized by its ability to add an additional number to smart devices without the need for a traditional SIM, in addition to that it helps to improve battery performance as it consumes a very small percentage of the battery power and the random memory power. Also, in the event that the mobile device is changed, the user only needs to adjust the eSIM settings in the new device. 📱





Building a Fully Connected, Intelligent World

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Recommended by ESG
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OceanStor Dorado all-flash storage



Learn more

ARTICLE

A New Age of Transportation



Alaa Elshimy

MD & SVP

Huawei Enterprise Business Group, Middle East



Smart technology is essential in order to keep cities moving well into the future. Digital transformation of the transportation sector, via robust communications solutions and solid networks, will enable the sector to evolve in sync with the city around it.

A digitally-enabled world means more than connecting people via 5G; it means providing convenient new ways to enhance the world around us, such as by using technology to augment transportation systems and traffic networks to increase reliability, efficiency, safety, and environmental friendliness. Physical infrastructure stands to benefit from digital development as much as anything else, and society can only gain when transportation is empowered by smart technology.

Anyone who has lived in a major city will have likely experienced the ups and downs of commuting. Whether by road, bus, train, metro, or any other form of transportation, the fact is that urban residents need reliable, seamless ways to traverse the city – but there are nearly always pitfalls in today's congested environments. Picture city highways; the London Underground and New York City Subway at rush hour, or trying to hail a taxi cab during peak hours. Cities are crowded with people eager to get where they need to be, and with most of us working similar schedules, we're typically all trying to get places at the same times of day, leading to congestion, frustrations, and possibly even road accidents.

If it seems bad today, imagine what your commute will be like in 10 years or so, when the world's population has grown by around a billion people and an estimated seven billion people will live in cities around the world...

Smart technology is essential in order to keep cities moving well into the future. Digital transformation of the transportation sector, via robust communications solutions and solid networks, will enable the sector to evolve in sync with the city around it. After all, a smart city cannot fully thrive or realize its true potential if its

Studies have found that adding just 20 minutes to a daily commute has the same negative effect on job satisfaction as receiving a 19 per cent pay cut, so cutting down commute time should reflect positively on personal happiness as well as potentially boosting employee engagement.

transportation network remains unevolved. But even more than enabling people to move seamlessly from A to B, a smart transportation system has the potential to improve quality of life, too. For one, fewer traffic jams should lead to less road rage and lower stress levels amongst drivers and passengers. Studies have found that adding just 20 minutes to a daily commute has the same negative effect on job satisfaction as receiving a 19 per cent pay cut, so cutting down commute time should reflect positively on personal happiness as well as potentially boosting employee engagement.

And, of course, there is the environmental aspect to consider, as technology can certainly play a role in making transportation networks more green, with fewer emissions and a lower impact.

Today's transportation systems do take advantage of some offerings from the information and communications technology (ICT) sector – consider Dubai's driverless metro system, for example, or the smart cameras that are installed on roads across the region. There is considerably more that can be done, however, to enhance it further.

Take roads, for example. It isn't always possible to expand a frequently-used road to make room for more vehicles, and even if there is room to do so that will not necessarily solve the problem of congestion.

Intelligent video surveillance systems (IVS), however, can monitor troublesome areas and identify issues using real-time analytics and big data, which can then be communicated to drivers. This gives the opportunity for drivers to change course and avoid hotspots, thereby lessening the congestion. Connected cars and autonomous vehicles will be able to make automatic suggestions to drivers based on data sourced from the IVS cloud. Perhaps even more valuable here is the benefits of IVS for informing emergency services of any incidents that require urgent attention. Now, consider the benefits of smart parking. This is something that anyone who drives a car will understand the frustrations of, especially when visiting a popular area such as a shopping mall or commercial district. Parking availability can be in short supply in many cities around the world, which is why smart parking is gaining appeal. Smart parking improves the experience for everyone, by allocating drivers to parking spots, alleviating congestion, and helping to better utilize space – something that is at an absolute premium in urban environments. Connected parking lots and spaces are essential in order to make

Huawei has numerous solutions that can contribute to the development of smart transportation networks for cities, including cloud data centers, smart cameras, wired and wireless networks, and, of course, 5G. 5G will prove significant to the future of smart transportation, as it will enable stronger, faster connectivity with lower latency and the ability to support an increased number of connected devices, whether they be cars, cameras, road signals, metro trains or otherwise.

smart parking a reality, but there is still a considerable way to go in order to shift from the silos that they currently exist within. Various shopping malls around the region have implemented the beginnings of smart parking by installing sensors that inform drivers of availability, but in order for this to become a seamless network these carparks must be connected to publicly accessible cloud-based system.

Blockchain also has a role to play in smart transportation. Databases can be used to coordinate all aspects of vehicle ownership, such as insurance, registration, road taxes due, fines accumulated, vehicle reselling, servicing schedules, maintenance requirements as communicated by connected vehicles, and much more. Developing a system such as this will require collaboration between the public and private sector, but it will ultimately lead to a more efficient, safe, and convenient transportation network for any vehicle owners and traffic regulatory bodies as well.

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ICT frameworks will form the heart of smart transportation, just as they are at the center of smart city development. From 5G to AI, big data to cloud data centers, the more solid and robust the ICT framework is, the more advanced the world around it can become – and the more people can benefit from living in a smart city environment with seamless transportation powered by cutting-edge technology. 📍

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REGIONAL NEWS

Smart Dubai Department Launches New Data Sharing Toolkit

The Smart Dubai Department launched a Data Sharing Toolkit in partnership with globally renowned innovation foundation, Nesta, to help unlock the value of data by creating trusted and ethical mechanisms for individuals, as well as public and private sector organizations, to share data. The new initiative was launched on International Open Data Day on 7th March, 2020. Designed to be used by individuals or teams, the toolkit presents a flexible decision-making tool that provides useful guidance and resources for public or private sector organizations to prepare for and design data-sharing initiatives and helps define the correct set of options to the specific context of any circumstance. Younus Al Nasser, Assistant Director-General of Smart Dubai, CEO of Smart Dubai Data, said, "The Smart Dubai Department is steadily moving forward along its mission to harness the power of technology to make people's lives easier and happier, and we firmly believe that no smart transformation can be achieved without harnessing the power of data – the 'oil of the future'. Our progress will only continue if we work to ensure we are capable of efficiently opening and sharing our collective data." The toolkit was designed with four categories of users in mind: First, innovators interested in exploring data-sharing initiatives and looking for a tool to spark the right discussions, anticipate issues and find new collaborative approaches to data-sharing. Second, international organizations, public institutions, businesses and non-profits; third, individuals or entities that are familiar with data and/or have previously been involved in traditional data-sharing, and fourth, individuals and entities who are experiencing a slow or failed progress in activating data-sharing collaborations on a bigger scale or dealing with complex initiatives. The Smart Dubai Department conducted extensive research in the course of developing the Toolkit, which analyzed a wide range of data-sharing models to determine their basic common traits and components. The outcomes of the research served as the basis for developing the toolkit – a flexible decision-making instrument that underlines two components as the core of all data-sharing initiatives: First is the Decision Matrix, which identifies six key decision points, promoting a discussion about all key elements of a data-sharing arrangement. These six

decision points correspond to six questions that need to be asked ahead of making data-sharing decisions: Why share data? What data to share (private/public sector, individual, open data)? What is the overall governance structure (i.e. top-down or bottom-up)? Who to involve? What is the appropriate data infrastructure (centralized, decentralized, or federated)? And finally, how is data accessed (open, restricted, or no access)? The second element is the Project Foundation, which identifies the conditions required to move forward with a data-sharing project. Once the key decisions are made, a data-sharing model (or more) will emerge. The important question then becomes how to turn that vision into a reality. There are two sets of considerations in this phase: First, a checklist to go through the considerations that need to be addressed before initiating the partnership, and second, additional requirements, such as legal, financial, and technical conditions. The toolkit has been launched in English first, and the Arabic version is scheduled for release in mid-April 2020.



Salaam Launches 4G in Kabul

State-owned operator Afghan Telecom, which offers mobile services under the Salaam brand, has launched commercial 4G services at 15 locations in Kabul. Local news outlet Tolo writes that the company also intends to invest a further USD20 million in developing and promoting internet services. Deputy Head of Aftel Mohammad Sharif Sharifi was cautious about raising expectations for the new system, however, saying: 'We need some time to develop our system and to improve our services.'

Coverage is currently limited to parts of the capital but the operator plans to extend its 4G footprint to all provinces, albeit 'slowly' – no timeframe for the expansion was given, however. The launch makes Salaam the third of Afghanistan's mobile providers to launch the service after Afghan Wireless Communications Company (AWCC) in May 2017 and Etisalat in February last year. MTN Afghanistan and Roshan have each confirmed plans to introduce the technology but have yet to do so.

Egypt's PM Follows Up On Establishment of Telecom Networks in New Administrative Capital

Egypt's Prime Minister Mostafa Madbouly followed up on the latest developments in the establishment of telecommunication networks and digital transformation plans at the New Administrative capital. According to a statement by the cabinet on Sunday, Madbouly was briefed by telecommunications minister Amr Talaat on projects underway in the new capital, which includes digitizing and preserving government databases and developing human capabilities in the digital domain. He was also presented with the latest efforts regarding a project to establish infrastructure for the telecommunication networks in the new capital. Madbouly

stressed the importance of finalizing all under-construction projects in the New Administrative Capital on time, while taking all preventive measures against the coronavirus. Last year, Egypt said it would build an EGP 40 billion (\$2.53 billion) telecommunications network in the first phase of the new capital, located east of Cairo, the cabinet said in a statement on Wednesday. State-owned telecom operator Telecom Egypt signed a deal with the Administrative Capital for Urban Development (ACUD), the company building the mega city, to build the network. Construction on the new city, located approximately 45km east of Cairo,

began in 2015 as part of the government's plan to reduce pressure on the existing overpopulated capital, expand urban areas and develop the nation's infrastructure. It is being built over 714 square kilometers by tens of thousands of workers, and will be home to a government housing district, 29 ministries and other state institutions – including the cabinet and parliament buildings – and 20 residential neighborhoods that can accommodate 6.5 million people. The government was planning to relocate ministries to the new capital by mid-2020; however, the move was delayed to 2021 over the coronavirus outbreak.

Pakistani Fintech SadaPay Gets In-Principle Approval to Launch Mobile Wallet



SadaPay has announced that it has been granted the in-principle approval by the State Bank of Pakistan (SBP) for an Electronic Money Institution (EMI) license. This approval allows SadaPay to ready its operations for the pilot phase, during which the digital wallet will be available on a limited scale, under supervision of the regulator – the SBP. Though an official launch date has not yet been disclosed, SadaPay says they will be in beta testing mode for the coming months to make sure all their systems are ready for an official launch later this year. The startup is founded by American entrepreneur Brandon Timinsky, who ventured to Pakistan after his last startup in the US was acquired. Over the last year, Timinsky has assembled a team of banking veterans, liaised with the regulatory authorities, and built the foundation for a “digital first” financial institution in Pakistan. Pakistan's former finance secretary Dr Waqar Masood Khan has joined SadaPay as chairman of the board. Pakistan is now the 5th most populous country in the world, with over 76 million 3G/4G subscribers and

nearly 1 million new smartphones users coming online every month. In light of the COVID-19 pandemic, internet adoption is only accelerating and more people turn to digital solutions for everyday payments. This presents a tremendous opportunity for SadaPay not only in Pakistan, but also a number of other regional markets that the team hopes to expand to. “Sada” translates to “simple” in both Urdu and Arabic. SadaPay's mission is to do away with the cost and complexities of traditional banking through their simplified digital-first experience. SadaPay offers a smartphone-based digital wallet accompanied by a free Mastercard debit card. As soon as a SadaPay account is activated, a virtual debit card is provisioned for immediate use. Also, users can perform free and instant transfers to any bank in Pakistan, and withdraw cash from all of the 14,500+ domestic ATMs with no fees (3x per month). Furthermore, users can also load their account with cash at any of 30,000+ retail locations across the country. Speaking about the news on the approval, Brandon stated, “It's really amazing to see how committed the State Bank of Pakistan is to adapt to changes in consumer behavior and advances in technology. In the last few months alone, we've witnessed tremendous progress by SBP with the release of a number of new regulations that are certain to make an incredible impact on Pakistan's economy by catalyzing the digitization of its financial system. We are also very grateful for the support we've received from the Bank of Punjab and Mastercard, which will certainly spur our journey towards rapidly expanding financial inclusion in the country.” Speaking on the occasion, Dr Waqar said, “The role the central bank is playing in laying the foundations of a broad-based and user-friendly digital payment system in Pakistan is laudable. These efforts have gained momentum since last July. Pakistan would soon be a leading country in digitizing its payment system and SadaPay would play a prominent role to achieve this goal.”

Ten Digital Services Launched for People of Determination in UAE

The Zayed Higher Organization for People of Determination has announced the launch of ten digital services to be provided by the organization for People of Determination via the Abu Dhabi Government Services Ecosystem, 'TAMM' platform. The available services include ten out of the eleven major digital services currently provided by the organization, and are specifically designed for People of Determination, their families and partners, and are being provided on the organization's website and via its smartphone application. The services are: card applications, Mawaqif parking permits for visitors and tourists from outside the UAE, employment application, practical training requests for college students, sports club membership requests, requests for sign language interpreters for entities, requests for comprehensive evaluation appointments, student report requests, volunteer opportunities, and requests to provide educational materials in Braille for entities, which is in the final stages of preparation by the TAMM platform team. Dr. Mugheer Khamis Al Khaili, Chairman of the Department of Community Development, stated that the efforts ventured by Zayed Higher Organization derive from the leadership's devotion to provide a decent life for them and their families, and with that a digital service package has been launched to ensure

the comfort in obtaining services and avoiding any inconvenience. "Through this transformation, we seek to provide People of Determination with all their needs and services in an easy and innovative way, as they are an essential part of it. We also

seek to provide high quality, integrated services for Abu Dhabi Government, to raise the happiness and satisfaction index, which contributes in enhancing the quality of life in Abu Dhabi," he added.



TRA Oman Issues General Guidelines to Tackle Internet Issues

The Telecommunications Regulations Authority (TRA) has issued general guidelines for using networks to avoid poor network and to decrease the pressure on the network. The Guidelines issued by the (TRA) said, "Avoid as much as possible the use of the internet for entertainment purpose during peak hours from 9 am until 6 pm, to allow communication networks to meet the needs of the most important sectors such as the education sector,

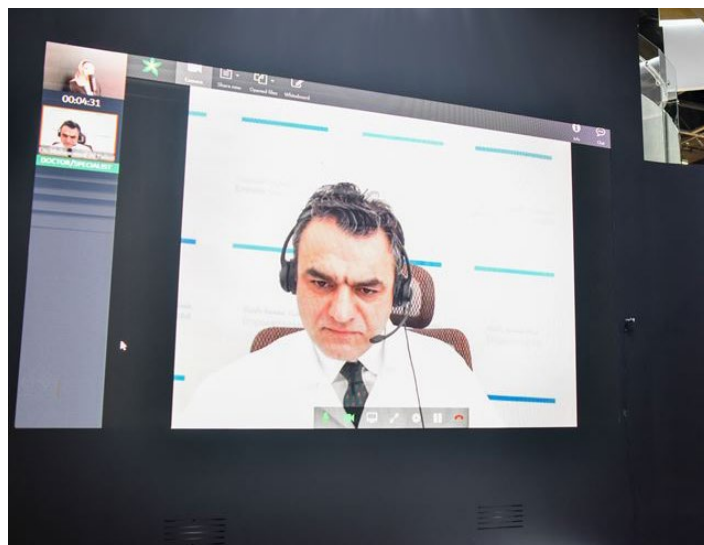
remote workers, medical communities, relief and accommodation teams. Avoid unnecessary video calls and send a large number of visual content via social media applications, which could constitute a great pressure on the network." The TRA guidelines also advise people to disconnect unnecessary devices from Wi-Fi because the more the connected devices, lower will be the internet speed. Further, in order to reduce the pressure

on mobile networks, they urged people to use office voice communications as much as possible. Some of the other guidelines include, encouraging children to do more creative tasks off the screen instead of letting them spend a long time watching videos on various platforms, and keeping electronic devices up to date with the latest versions from the manufacturers and updated antivirus software.

Telemedicine on the Rise in Saudi Arabia Amid Pandemic

In response to the elevated risk level from the coronavirus disease (COVID-19) pandemic, various hospitals in Saudi Arabia have accelerated telemedicine health services, offering secure and virtual face-to-face interactions with doctors. Patients can now easily access medical consultations from the comfort of their homes. The telemedicine services have come handy at a time when the Kingdom is fighting the COVID-19, and physical distancing is the norm to break the virus's spread. Individuals can book their appointments with their hospital's doctors using various communication channels, including their call center number, website, and mobile apps. Speaking to Arab News, Dr. Shaikh Abdullah said: "During this global pandemic, telemedicine is emerging as an effective and sustainable solution for prevention and treatment to contain the spread of COVID-19." Specialists speak to patients over an audio/video call and advise necessary courses of treatments or investigations required, and medicines can be collected or are delivered to homes. In response to the public health emergency, Johns Hopkins Aramco Healthcare, Dhahran (JHAH) has accelerated the launch of primary care and psychiatric video sessions. Since March, JHAH's primary care physician, Dr. Nisar Ul-Islam Yaseen, and Chief of Psychiatry and Mental Health Services Dr. Abdulsamad Al-Jishi, have been connecting with patients using MyChart, the patient portal that is part of the hospital's electronic medical record. Dr. Yaseen told Arab News: "I found that video visits, when compared to the alternative of a telephone appointment, offer a valuable extra communication modality. "By being able to see the patient, you can improve the quality of the clinical assessment. For example, when a patient complained their asthma symptoms were currently troublesome, without being able to see him, I would have asked him to come to the clinic for a fuller physical assessment. "But with the video visit, I could see that the patient wasn't in any respiratory distress, looked well and had no difficulty breathing, so I could make a better judgment and develop a more appropriate management plan, which did not require him to attend the hospital." Video calls have additional benefits for the patients, as

the restrictions in place to limit the spread of COVID-19, such as quarantine, can be stressful for some people. Patients feel more connected and reassured because they can see their doctors, who can pick up on non-verbal communication cues and are able to "express sympathy and empathy, unlike via telephone or email," Dr. Yaseen added. Dr. Al-Jishi told Arab News: "Tele-psychiatry began in the 1950s when teleconferencing was used for group therapy and consultation liaison psychiatry. In the 1990s, video visits spread further to provide psychiatric care in underserved areas around the world. In the decades since, studies have shown 'telehealth' options to be equivalent to in-person psychiatric care in diagnostic accuracy, treatment and effectiveness." Video visits provide a secure, safe, face-to-face, model of psychiatric intervention during the COVID-19 pandemic, he added. "Our personal experience so far is very positive, but we will need some time to fully assess the benefit in Saudi culture. With that said, I think it is very promising; I am optimistic that it will be an important option for our patient psychiatric care in the future," he said.



3.9 Million Internet Users in Oman

The number of Internet users in Oman is around 3.9 million, according to the seventh report for the Internet in the Arab world. The report published by the Arabic Network for Human Rights Information (ANHRI) added that the number of Facebook users in the Sultanate is about 1.6 million people, and Twitter users are about 200,000. The report stated that more than half of the Arab world's population

uses the Internet and more than a third use Facebook. It said that among the 420 million Arab citizens, the number of Internet users exceeds 220 million, and about 159 million are Facebook users. It pointed out that the number of Internet users in the GCC is about 51.1 million people, including 3.9 million in Oman, 30 million in Saudi Arabia, 9.5 million in UAE, 4.1 million in Kuwait, and 2.1 million in Qatar. The report

explained that the number of Facebook users in GCC is 35.9 million, and Twitter users are about 16.55 million. It pointed out that the number of Internet users in Egypt is 55 million people, which is slightly more than half of the population, among them 46 million are using Facebook, and 7.5 million are using Twitter.

Saudi Arabia to See Increased Focus on Cloud and Security as COVID-19 Realities Set In

More than 25% of enterprises in Saudi Arabia have plans in place to deploy a mix of on-premises/dedicated private clouds, multiple public clouds, and legacy platforms to meet their infrastructure needs. That's according to the latest findings revealed by IDC's annual Saudi Arabia CIO Survey, which also found that the three main obstacles to cloud rollouts in the Kingdom are insufficient migration capabilities, multi-cloud management challenges, and security concerns. The use of legacy applications and infrastructure, a lack of skills, and difficulties finding the right partners were also identified as key issues. "As the reliance on multiple workloads hits a new high, accelerated by the global COVID-19 outbreak, IDC expects to see more and more organizations across the Kingdom embracing multi-cloud," says Hamza Naqshbandi, IDC's country manager for Saudi Arabia and Bahrain. "Uncertain market realities caused by the pandemic situation are forcing organizations to reevaluate their Cybersecurity exposure as they pivot from a 'cloud-last' to a 'cloud-also' mindset. The most important aspect of this paradigm shift is going to be around how to stay responsive to customer needs, how to scale in a safe and secure manner, and how to facilitate the transition of work from an office desk to the home." IDC also anticipates an increase in security spending as enforced working-from-home practices expose corporate networks and computing devices to new levels of Cybersecurity risk. Securing the cloud workloads used to perform work-related tasks has become extremely important and a failure to do so

poses a significant threat to the organization – operationally, financially, and reputationally. "IDC believes the fallout from the COVID-19 outbreak will expose new security loopholes that cyber miscreants will exploit," says Naqshbandi. "As a result, data breaches are expected to become more widespread, exacerbated by the notoriously unsecure habits of remote workers. As such, enterprises need to be prepared to respond to any cyberattack, data breach, or privacy violation that may arise as they grapple with these new market realities, particularly as the criticality of ensuring digital trust continues to rise."



Special Internet Rates Proposal Approved in Bahrain During COVID-19

An urgent proposal to introduce special Internet rates in light of the COVID-19 crisis was approved by Parliament. MPs want the Telecommunications Regulatory Authority (TRA) to make all telecom providers set special rates as people continue to work from home. In another proposal also approved unanimously, MPs also want the government, through the TRA, to develop a smartphone app to determine usage. It also calls for special mobile phone packages to be introduced due to heavy usage. The proposal is amongst eight Covid-related motions approved unanimously and referred to the Cabinet. "The threshold is reached within the first day of the month because all work, studies and other arrangements are done online," said Ebrahim Al Nefaei during Parliament's weekly session. "Instead of BD20, bills mount to BD80 a month and if not paid then the line is disconnected. "People, Bahrainis and expats alike, are

under financial pressure already and this is further punishment." Parliament foreign affairs, defence and national security committee chairman Mohammed Al Sissi said mobile phones have now become integral part of communication as well as home Internet. MP also approved a proposal to let Tamkeen extend by two weeks its deadline for small and medium companies to register for financial support, while also expanding the beneficiaries' list. Parliament also voted to have taxi drivers and driving instructors who own commercial registrations or receive pensions, currently excluded under the Cabinet decision to receive three-month wage support, to be eligible for payments. A proposal to have the government exempt businesses from the Commercial Registration fees and postpone fines on violators for three months was also approved. MPs also voted to deport undocumented migrant workers, based on

claims that around 61,000 illegal expats were "more dangerous" than the legal expat workforce when it comes to the spread of COVID-19. "There are 61,000 illegal workers and runaways who are more dangerous and could be positive and are not being reached," said Mohammed Buhamood. "There has to be a move to locate and deport them." MPs also voted on an urgent proposal and referred it to the Cabinet to have families waiting for three decades to get homes in Nabih Saleh as those eligible to get social housing in the new nearby East Sitra Town, which will see work start shortly. Parliament voted on urgent proposals to issue two statements on International Labor Day, which falls on Friday, and International Press Day which falls on Sunday, and deputized Parliament chairwoman Fouzia Zainal to write them up and issue them.

RIPE NCC Inaugurates New Era of Online Trainings in Collaboration with Telecommunications Regulatory Authority in United Arab Emirates

The emergence of the coronavirus (COVID-19) pandemic has forced people to stay at home while many facets of human life have moved online. In line with this sudden shift, the RIPE NCC and the UAE Telecommunications Regulatory Authority (TRA) have been looking for innovative ways to minimize the impact of the lockdown on important Internet development efforts – both within the UAE and at the regional level. In line with this, a virtual two-day workshop for government agencies was held recently. The workshop focused on using the RIPE Database, Internet measurements (including RIPE Atlas), and tools. It included presentations, exercises, live discussions and demos, and best practices. Mr. Abdulrhman Almarzouqi, Director of Cybersecurity at TRA, said: "The outbreak of Corona Virus has brought huge challenges across the globe. We are proud to have once again, partnered with RIPE NCC on this noteworthy initiative. Collaborating with them demonstrates our continuing commitment towards increasing and consolidating key engagement between the government and other stakeholders, especially across

topics related to Internet resources and development. The move shows the UAE government's keenness to drive in more Internet growth and development, the power of digital." The first day of online sessions focused on the crucial role of the RIPE Database in supporting Internet coordination by allowing network operators to quickly access relevant contacts and other information relating to specific IP resources. Participants learned about its functions and scope, and discovered how to access stats on network performance and resources in the country. The focus of the second day was on RIPEstat and RIPE Atlas, two free tools that are widely used by network operators today. The RIPEstat session focused on the various helpful widgets that can visualize BGP routing information and RIPE Database data (among other things). RIPE Atlas is a global network of over 10,000 probes that measure Internet connectivity and reachability, providing an unprecedented understanding of the state of the Internet in real time. Attendees learned how to create real-time measurements with the network, and how to make use of the

command line interface tool set. Special attention was also given to the RIPE Atlas' Routing Information Service (RIS), an initiative aimed at collecting and storing Internet routing data. Chafic Chaya, Regional Communications Manager at the RIPE NCC, commented: "The whole world has been taken aback by the sudden outbreak of COVID-19, with much of our daily activities now taking place online. Remote technologies will enable RIPE NCC to share resources over great distances, allowing it to provide training and support in real-time. We are grateful to the TRA for partnering with us in this endeavor. We remain steadfast in our commitment to support the infrastructure of the Internet through technical coordination in the GCC, especially during critical times like today." The online workshop was part of the RIPE NCC's continuing efforts to support its members and the wider Internet community. The RIPE NCC works for a more stable and resilient internet through the reliable allocation of Internet number resources, maintaining key Internet infrastructure, and supporting the security of the Internet's routing system.

TRA Announces Accessibility to 6 New Telemedicine Applications

The Telecommunications Regulatory Authority, TRA, announced that it launched accessibility six new applications, as part of its efforts to support hospitals and clinics in providing remote healthcare services. In a statement, the TRA noted that it has coordinated with telecom operators - Etisalat and du - to provide access to these applications on "an exceptional basis on all networks until further notice". The new applications are Mind Mina Telemedicine, NextGenGP Telehealth, vSee, OKADOC, doxy.me, and GetBEE.

Remote Health Care Services

As part of its efforts to support hospitals and clinics and to enable them to provide health care services remotely, **TRA announced the availability** of the following applications on an exceptional basis on all networks and until further notice:



- M MIND MINA
- nextgen
HEALTHCARE
- Okadoc
- VSee
- doxy.me
- GETBEE

In coordination with:






هيئة تنظيم الاتصالات
TELECOMMUNICATIONS REGULATORY AUTHORITY

UAE Banking, Education Sector Lead Digital Transformation

The UAE's banking and finance, education, and retail sectors are accelerating digital transformation to deliver business continuity, customer happiness, and smart services in the face of COVID-19 pandemic, industry experts said. The Dubai Department of Economic Development recently mandated 80 percent of private sector employees to work remotely. As a result, the BFSI, education, and retail sectors have led in innovation, argues Condo Protego, the leading UAE-based IT infrastructure and information management consultancy and solutions provider. "In the face of coronavirus, remote work, distance learning, and virtual malls are examples of the UAE's private sector supporting short-term business continuity, happy customers, and digital resiliency, and transforming industries and business competitiveness in the long-term," said Andrew Calthorpe, CEO, Condo

Protego. By 2022, KPMG predicts that 80 percent of revenue growth will depend on digital offerings and operations – meaning early adopters will have a competitive edge. The UAE's banking and financial sector has already been using Big Data, AI, and machine learning to personalize customer services. Now, the challenge is moving desk-bound employees to remote working. Firms have had to purchase hardware, secure access to data and applications, and adopt collaboration platforms. About 1.1 million public and private school students have moved from the classroom to e-learning platforms such as Google Classroom, ClassDojo, and Seesaw, with distance learning now through the entire Spring 2020 academic term. Supporting remote learning, over 42,000 educators received e-learning qualifications from the UAE Ministry of Education and Hamdan Bin Mohammed

Smart University. As UAE malls have closed for the foreseeable future, retailers and restaurants are re-orienting to deliveries and developing plans to launch virtual malls. Personalized customer shopping offers, geo-location services, and targeted marketing are delivering the goods and services that maintain business and society. "UAE organizations should turn to knowledgeable and experienced channel partners to align strategic business goals with information management tactics in hardware acquisition, IT infrastructure, and business software," added Andrew Calthorpe. Condo Protego (Latin for "to store and protect") is a leading regional consultative solutions provider. Serving enterprises of all sizes, it focuses on data storage, virtualization, data protection and security, providing 24/7 support in just 30 minutes.

Digital Payments Flourish in Pakistan

In light of the recent coronavirus outbreak, several companies have selflessly promoted online payments. Banks enabled this by waiving their charges from internet, mobile and ATM transactions to ensure the safety of their customers and employees during the outbreak. Essentially, these digital payments have received a big push; people are reducing the use of banknotes out of fear of contracting the virus. Pakistan's e-commerce index shows an increase in digital payments and a rise in demand for online shopping during the lockdown. Recently, Daraz launched Pakistan's first e-commerce index at an online event, hosted by Daraz, showing an increase in digital payments and growing demand for online shopping. Federal Secretary for IT and Telecommunication Shoaib Siddiqui attended the event. The purpose of the index is two-fold. Firstly, to provide insight about consumer behavior online amid the coronavirus pandemic; and secondly, to also help stakeholders linked with the e-commerce industry, understand the online shopper. Data on the platform showed that digital payments in the country started picking up in 2019. On Daraz, digital payments contributed 32% of the total consumer spending and the use of e-wallets increased 8.2 times in a year. According to the index, changes were witnessed in consumer demand almost reflectively; that is, during the second and third weeks of March 2020, following the outbreak of coronavirus in Pakistan. During this time, sales of fast-moving consumer goods (FMCG) doubled on Daraz. In fact, they were expected to rise further to 70% of total sales on the platform in the coming weeks. Pakistan's economy still majorly relies on cash. Hence, collecting reliable data on the



growth of e-commerce sector has largely remained a challenge. According to JS Bank Head of Digital Banking, Noman Azhar, payments through the JS wallet rose from 10 to 12% since the government and SBP encouraged the use of digital transactions amid the lockdown. "Traffic from branches has shifted to the JS wallet," he said. Carrefour Pakistan Country Manager Jean Marc Dumont pointed out that as a result of rising public health and safety concerns, a majority of Carrefour customers are now forced to adopt a cautious shopping behavior. "Conventional shoppers

now prefer making payments through debit or credit cards rather in cash," he said. "This has also augmented cashless transactions at all stores and online orders increased in March," he said. "During this period of uncertainty, we have witnessed a shift in customer behavior with demand for essential products growing rapidly, which is a strong indication that e-commerce

can serve as a solution," he remarked. Telenor Microfinance Bank's President and CEO Mudassar Aqil encouraged the public to adopt digital finance during the current crisis. "Digital payments are not only a great alternative to cash, but they also provide new opportunities to users such as digital credit, insurance and savings," he said. "It's time to turn this hardship into

opportunity and adopt digital payments by opening a mobile wallet account." An influx of online shopping companies in Pakistani market will appear soon. If so, this will help to reduce prices for the benefit of consumers and further prevent the spread of coronavirus.

4 Million Visits to UAE Government Portal during Q1 2020

The Telecommunications Regulatory Authority (TRA) announced that the number of visitors to the official portal of the UAE government (U.AE) exceeded 2.9 million visitors during the first quarter of 2020, an increase of 56.63% from the first quarter of 2019. There were 4 million visits to the portal in the first quarter of this year, while the number of new users reached 2.58 million. These results reflect, in part, the tremendous efforts by the portal team in content and service development. They also reflect the change in user behavior as a result of current circumstances where online activities witness a significant increase such as working remotely, distance learning, browsing, searching for information on websites and accessing government services remotely through the official portal, which provides many prompt government services accessible around the clock. Commenting on this milestone, Hamad Obaid Al Mansoori, TRA Director General, said: "These figures reflect UAE's electronic presence in the era of digital transformation, as the portal represents the official address of the UAE in the world wide web, and is visited by all who are interested in accessing information, services, projects, policies and laws in the United Arab Emirates. Today, the portal is a reliable information source for all residents of the country. With the announcement of launching the m-Government by the wise leadership, the role of the portal

has evolved to include e-participation, supporting the UN Online Service Index (OSI), which is one of the indicators of our country's national agenda. In light of UAE's international standing, the portal has become a reference for those wishing to learn information about the UAE from all over the world." This increase in the number of portal visitors comes as a result of measures taken by the portal team in keeping with the precautionary government efforts to combat Coronavirus, where the portal has incorporated a special section on Coronavirus in line with the directives of the UAE government aimed at promoting awareness about this disease and working to curb its spread. The section includes information on Coronavirus, the government's efforts to contain the virus, anti-Coronavirus legislation, the national sterilization program, FAQ and many other pages providing visitors with sufficient and reliable information about this pandemic and ways to protect against it. The portal's role in limiting the spread of Coronavirus has also been strengthened by launching the services platform, through which all online services of UAE's federal government entities can be accessed around the clock on a single platform be it through PC, mobile or any other smart device, where approximately 34 government entities provide their online services through the services platform: ([https://u.ae/](https://u.ae/services)

services). This platform allows customers to access services around the clock without the need to physically visit service centers or leave home, thereby serving government decisions to alleviate crowding and congestion while ensuring safety and health of the Emirati community. This significant spike in the number of users of the Official UAE Portal came less than a year after the UAE government launched a new domain name for its official portal making it be the world's first single-letter government domain (U), with the aim of facilitating public access to information, services, projects, strategies and laws in the country. The Official Portal of the UAE Government consists of four main sections, covering information and services, UAE, e-participation and media. The information and services section covers many topics such as employment, investment, tourism, infrastructure and visa systems, as well as a full list of all government services in the country. The second section covers the history of the UAE in its various eras, and covers UAE's plans and strategies for shaping the future and achieving overall development. This section also addresses UAE's efforts to achieve the Sustainable Development Goals set by the United Nations. In the e-participation section, there are many channels of communication with the UAE government, including advisory platforms, instant chat and others. 📍

ARTICLE

How Does Network Slicing Differ from QoS?

Network slicing should enable operators to be more agile, launch customized services more quickly (e.g., for a music festival or sports tournament), and target smaller opportunities. Slicing enables isolation during service deployment and reduces interoperability testing, thereby enabling faster launches.

Operators have had techniques to ensure QoS for particular traffic types for many years. Network slicing builds on existing technologies such as the following:

- Differentiated Services (DiffServ): IETF RFC 2475 published in 1998.
- eDecor: A 3GPP Release 14 feature (an enhanced version of Release 13's dedicated core network selection mechanism, Decor).

While these techniques can already be applied to 4G mobile networks, 5G will expand on them, enabling more automated, end-to-end network slicing. What distinguishes 5G network slicing is that it is not restricted to applying QoS solely in transport and the core, as with DiffServ. Rather, 5G network slicing has the ability to also apply QoS in the radio frequency (RF) domain. Unlike DiffServ, 5G slicing will be able to discriminate between the same types of traffic (Voice over Internet Protocol [VoIP], video, and Internet of Things [IoT]) coming from different tenants. 5G slicing will also, unlike DiffServ, be able to isolate specific traffic streams (e.g., for privacy and security reasons) to restrict them to certain areas of the network (e.g., a dedicated server).

In 4G, the basic granularity of QoS control is the Evolved Packet System (EPS) bearer. The service type is mapped to a specific EPS bearer, and all the data flows on that bearer are given a certain QoS guarantee. In 5G, the QoS model is based on QoS flows. A protocol data unit (PDU) session provides a connectivity service between a user equipment (UE) and the



Manish Mangal
CTO, Network Services
Tech Mahindra

**Tech
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data network. The QoS flow is the finest granularity of QoS differentiation in the PDU session. User plane traffic with the same QoS flow receives the same traffic forwarding treatment (e.g., scheduling, admission threshold, etc.). 3GPP's 5G QoS indicator defines for a given flow:

- Priority level: 11-66
- Packet delay budget: 5-300 ms • Packet error rate: 10⁻² to 10⁻⁶
- Maximum data burst: 160-1,358 bytes

Operators could offer network slices on a wholesale basis, allowing third parties to sell them on to enterprise users in addition to some value-added services. However, the risk here – like in the case of IoT – is that MNOs become relegated to dumb network slice vendors while the value-added services are captured by third parties.

For each PDU session, the Network Slice Selection Assistance Information (S-NSSAI) is carried from the core to the radio access network (RAN). The RAN will use the slice identity to ensure consistency between the QoS and network slice, including the resource allocation and scheduling policy, etc. As such, the key difference between QoS and network slicing is that traditional QoS is only applied in the core network whereas with network slicing, this flow-based quality differentiation is carried all the way through to the RAN.

Once mature, network slicing should have much greater automation thanks to orchestration platforms such as Open Networking Automation Platform (ONAP; see here). This should enable network slicing to be delivered more cost-

effectively, making it economic to provide network slicing-based services that today are limited to niche use cases.

In a recent Heavy Reading survey, we asked CSPs where they saw the value in network slicing. Surprisingly, the top response was cost reduction. Around 40% of respondents said it would positively affect revenue. Fifteen percent of respondents were sceptical that there was any quantifiable value.

Adopting network slicing rather than building dedicated networks for different service types would certainly generate a cost savings. But implementing network slicing is unlikely to lead to any significant cost savings compared with today's one-size-fits-all network. Dedicated slices for service types could increase overall network efficiency. For example, an IoT slice for smart meters would not need the mobility and IP Multimedia Subsystem (IMS) capabilities of the network. But the cost savings potential seems marginal.


So where is the new revenue going to come from? The idea is that rather than simply selling buckets of bytes with a few service-level agreements (SLAs – for enterprise customers), mobile network operators (MNOs) will be able to market highly differentiated "slices" of network capacity. These must be carefully priced and positioned to make them more attractive to the enterprise than basic connectivity plans – yet more profitable for the operator. Organizations that might benefit from a dedicated slice include emergency services, healthcare, and industrial plants. Another obvious opportunity for network slicing is in the wholesale/MVNO market. Operators could offer network slices on a wholesale basis, allowing these must be carefully priced and positioned to make them more attractive to the enterprise than basic connectivity plans – yet more profitable for the operator. Organizations that might benefit from a dedicated slice include emergency services, healthcare, and industrial plants. Another obvious opportunity for network slicing is in the wholesale/MVNO market. Operators could

offer network slices on a wholesale basis, allowing third parties to sell them on to enterprise users in addition to some value-added services. However, the risk here – like in the case of IoT – is that MNOs become relegated to dumb network slice vendors while the value-added services are captured by third parties.

Network slicing should enable operators to be more agile, launch customized services more quickly (e.g., for a music festival or sports tournament), and target smaller opportunities. Slicing enables isolation during service deployment and reduces interoperability testing, thereby enabling faster launches. However, the operator will need to develop an ecosystem of partners to exploit such short-lived or small opportunities.

In the initial phase of network slicing, operators are likely to launch a handful of slice types (e.g., eMBB, URLLC, and mMTC) with multiple tenants per slice. Over time, the number of slice types should increase and become more service specific (e.g., video gaming and smart meter connectivity). Eventually, we could see application-specific slicing (e.g., Netflix video streaming), although this could run into net neutrality restrictions in some countries. Vodafone UK's chief technology officer (CTO), Scott Petty, recently commented that, "If net neutrality is applied, the whole premise of network slicing will fall apart."

It is even feasible to have customer-specific slices that are fully configurable via a portal. Enterprise customers could specify their necessary data rate, latency, reliability, and security. An automotive manufacturer might want a URLLC slice for autonomous vehicles, an eMBB slice for in-car entertainment, and a mMTC slice for vehicle diagnostics.

By moving away from the one-size-fits-all approach of current networks, slicing should allow operators to be more creative in their service offerings. Slicing should maximize their revenue potential while still using the same underlying infrastructure. 



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SATELLITE NEWS

COMSAT Inks Deal with ABS to Enhance C- and Ku-Band US Connectivity Solutions on ABS-3A

COMSAT Inc., the global satellite connectivity solutions provider, has ratified an agreement with ABS, a global satellite operator, to enhance and strengthen the COMSAT global network. The addition of the ABS-3A satellite to the COMSAT Southbury, Connecticut teleport services bolsters its reach throughout the Americas, Europe, North Africa and the Middle East to provide more resilient and robust connectivity solutions through its terrestrial fiber pathways. A 14.2M antenna delivering C-band services and a 9M antenna, providing Ku-band services, have been allocated to support the new partnership. As demand for data transmission increases globally the agreement focuses on providing multiple service options and strengthened satellite connectivity to deliver increased amounts of data, video, mobility, and government applications between the U.S. and international markets. "Connecting with ABS-3A gives us augmented access to additional international markets from our east coast ground station to support a wider variety of data, content contribution, broadcast and distribution video services," says Director of Teleport Services, Chris Faletra. "Our mission is to enable partners

and customers to effectively maximize the capabilities of space-based assets to optimize essential mission communication systems and ensure on-time and seamless operations, no matter how complex. This new agreement with ABS ensures we continue to do that." COMSAT will participate in the ABSPlus program, which aggregates teleport infrastructures from around the world to seamlessly

integrate ground networks with satellites globally. "As an ABSPlus participant we will supplement an already impressive set of high standard technology companies in the ABSPlus family, and plan to add value to the collective efficiency and reliability of network delivery. We are extremely excited to be part of such a powerful offering," adds Faletra.



U.S. Space Force's TETRA-1 Satellite is Ready for Launch

Millennium Space Systems, a Boeing subsidiary, designed, manufactured, assembled, and integrated the U.S. Space Force TETRA-1 satellite in 15 months, which the company said is 60% faster than previous missions. TETRA-1 is a microsatellite created for various prototype missions in and around Geostationary Orbit (GEO). It was the first prototype award under the U.S. Space Force's Space and Missile Systems

Center's Space Enterprise Consortium Other Transaction Authority (OTA) charter. The satellite has successfully completed its environmental and full functional tests after integration, and is now manifested on a SpaceX Falcon Heavy rocket for scheduled launch in late 2020. Millennium said in an April 21 release that most of the TETRA-1 components were completed with in-house capabilities, demonstrating that organically developed capabilities are

a key enabler for executing programs on a tight schedule. "The pace set on TETRA-1 from contract award through readiness to launch represents what Boeing does best for our national security customers," said Mark Cherry, vice president and general manager of Boeing Phantom Works. "Our lean Millennium team was up to the task, building and delivering a fully tested and verified satellite in record time."

SpaceX Launches Seventh Starlink Mission

In its quest to deploy the world's most advanced broadband internet system, SpaceX has launched its seventh Starlink mission from NASA's Kennedy Space Center in Florida. Launched on 22 April, it was SpaceX's sixth of 2020 and takes the total number of Starlink satellites in orbit to 422, following earlier launches and two prototype launches in 2018. The launch is part of SpaceX's to build an interconnected network of around 12,000 small satellites to "deliver high speed broadband internet to locations where access has been unreliable, expensive, or

completely unavailable". It is estimated the entire constellation will cost around \$10 billion "or more" to complete. On the technology, SpaceX said: "Each Starlink satellite weights approximately 260 kg and features a compact, flat-panel design that minimizes volume, allowing for a dense launch stack to take full advantage of Falcon 9's launch capabilities. With four powerful phased array and two parabolic antennas on each satellite, an enormous amount of throughput can be placed and redirected in a short time, for an order of magnitude lower cost than traditional satellite-based

internet." The launch marked the 84th flight of SpaceX's own Falcon 9 rocket, which is now the most flown operational rocket in the US. Falcon 9's first stage previously supported Crew Dragon's first flight to the International Space Station, launch of the RADARSAT Constellation Mission, and the fourth Starlink mission. Following stage separation, SpaceX landed Falcon 9's first stage on the "Of Course I Still Love You" droneship, which was stationed in the Atlantic Ocean. Falcon 9's fairing previously supported the AMOS-17 mission. SpaceX was last year valued at \$33.3 billion, but a large share of that is from Starlink's activities – so much so, Musk is reportedly considering to spin off into its own business and take it public, meaning SpaceX would return to its core focus as a space transportation company. In a \$1 trillion internet connectivity market, the growth prospects for Starlink are strong and it already holds the largest market share in terms of commercial constellations. Over the last decade there were around 230 satellites launched every, but over the coming 10 years this will increase to a forecasted 990 launches a year, putting the market on course to reach values of \$292 billion by 2028, a decade-on-decade increase of 28%, according to figures published in January by Euroconsult.



NEC to Offer Satellite System to Vietnam

NEC Corp. will offer an earth observation satellite system to Vietnam in what will be the first export of its kind by the Japanese electronics and information technology company. In a project worth about 20 billion yen (\$186 million), the satellite will be launched around 2023 and contribute to measures against natural disasters and climate change in the Southeast Asian country. It is the first satellite project by a Japanese company using official development assistance funds from the

government-backed Japan International Cooperation Agency. According to NEC, the project also includes the development of a ground system comprising a 9 meter-diameter parabolic antenna and satellite control center, among others, as well as local human resources related to satellite operations and data analysis. Training of local personnel is expected to contribute to enhancing monitoring capabilities and the ability to forecast natural disasters. The ground system will be installed at

a space center in Hoa Lac, a high-tech park outside Hanoi, and operated by the Vietnam National Space Center. Modeled after NEC's radar observation satellite that is currently in operation, the "LOTUSat-1" Earth observation satellite is capable of capturing high-definition earth images under all climate conditions, both day and night. The new 580-kilogram satellite will be placed on Sun-synchronous sub-recurrent orbit.

USAF's Space Surveillance Telescope Move to Western Australia

In partnership with the Australian Ministry of Defense, the U.S. Space Force's (USSF) Space and Missile Systems Center's (SMC) Space Surveillance Telescope (SST) Program recently achieved "first light" on March 5, 2020, reaching a key milestone after it was moved from White Sands Missile Range, New Mexico, to Harold E. Holt Naval Communications Station in Western Australia. Moving the SST to Australia satisfied a critical objective to improve the broader USSF Space Surveillance Network's ground-based electro-optical coverage of the geosynchronous space

regime. First light is a significant milestone in meeting this objective. It means that course alignment of the telescope optics with the wide field of view camera has been completed to allow the first images of objects in orbit to be seen by the telescope. The collaboration and installation of the SST in Australia included the successful completion of an Australian purpose-built facility with mission-enabling site infrastructure and a 2-Megawatt Central Power Station for powering the telescope and the site. Moving forward, SST will undergo a comprehensive integration and

testing regime before officially entering service in 2022. Once operational, the SST will become part of the global Space Surveillance Network, providing Space Domain Awareness for the United States, Australia and their key allies. The Royal Australian Air Force will operate SST with oversight and management by the USSF 21st Space Wing once the telescope is operational. Gordon Kordyak, SMC Special Programs Directorate Space Domain Awareness Division Chief said this key Space Domain Awareness, or SDA, partnership builds on the long history of close defense space cooperation between the United States and Australia and has been a cornerstone of our continued alliance. Lani Smith, SMC Special Programs Directorate Deputy Director added that whether it is space traffic management or the protection and defense of critical space-based capabilities, delivering sensors that continuously improve our ability to maintain real-time awareness of the space domain is essential to facilitate the broader needs of both the U.S. and Australia. The SST program, which is a jointly operated program, represents delivery of our next iteration of sensing capability to meet this need.



FCC Approves Ligado's L-Band Network Plan

The FCC unanimously approved Ligado's application to deploy a low-power terrestrial nationwide network in the L-band to support 5G and Internet of Things services (IoT). The Commission's announcement came on Monday after Chairman Ajit Pai circulated a draft order last week to approve Ligado's proposal. Various stakeholders including the U.S. Department of Defense (DoD), the GPS Innovation Alliance (GPSIA), and Iridium opposed the FCC's draft order because such a network could negatively interfere with Global Positioning System (GPS) receivers, but the FCC said that conditions to its approval will ensure those operations are protected from interference. After the draft order was circulated, both Republican

and Democratic lawmakers and Pentagon officials came out against the proposal, as Defense Daily reported. The FCC said specifically that Ligado's downlink operations will be at a power level 99% reduced from what the company proposed in 2015. In addition, Ligado is required to protect adjacent band incumbents by reporting its base station locations and technical operating parameters to potentially affected government and industry stakeholders, monitor the transmit power of its base station sites, and respond to credible reports of interference. Ligado President and CEO Doug Smith thanked the FCC for "promptly" approving the order. "We greatly appreciate their unanimous support as well as the expert engineering analysis

determining that a terrestrial network can be deployed in the L-band to advance our country's economic and security interests while fully protecting GPS. Our spectrum can be very instrumental in the transition to 5G, and we look forward to utilizing satellite and terrestrial services to deploy customized private networks and deliver innovative, next-generation IoT solutions for the industrial sector," Smith said in a statement. GPSIA Executive Director J. David Grossman said in a Monday statement that the organization is "deeply disappointed" by the FCC's decision and will be reviewing the restrictions on Ligado to prevent interference.

One Satellite Services Another in Orbit for the First Time

The Intelsat 901 has returned to service less than two months after its historic docking with Northrop Grumman's first Mission Extension Vehicle (MEV-1). Intelsat announced that the 19-year-old communications satellite is now operating in its new orbit after MEV-1 took over attitude and orbital maintenance in March. When the MEV-1 docked with Intelsat 901 on February 25 it marked the opening of a new field of space services. Not only was it the first time two commercial spacecraft docked in geostationary orbit, but it was also introduced a new way of looking at the active lifespan of orbital satellites. Currently, satellites have depressingly short and expensive service lives. In most cases, this isn't due to the spacecraft experiencing a general breakdown of systems but rather the failure of one key component. Usually, this component is the craft running out of the propellants needed to keep it on station and pointing

its communications antenna and solar arrays in the right direction. The result of this is that many satellites that are still perfectly good in all other respects have to be sent into a disposal orbit and shutdown. This would have been the case with Intelsat 901 after 19 years of relaying data transmissions, but MEV has provided the satellite with a reprieve. In February, MEV-1 used a drogue mechanism to lock onto the satellite and pull itself in to dock over Intel 901's now-inoperative main thruster. After system checks and various tests, MEV-1 took over the navigation chores for the new spacecraft stack, shifting its orbit by 1.6 degrees and moving it into a new position. Intelsat then transferred 30 commercial and government customers to the reactivated satellite on April 9. It will remain attached to Intel 901 for five years before sending the communications satellite into its final disposal orbit. MEV-1 will then be available for servicing

other satellites by not only dealing with navigation but also providing inspections and maintenance. A second MEV, MEV-2, is scheduled to rendezvous with Intelsat 1002 later this year. "Our partnership with Intelsat was critical to delivering this innovative satellite technology into operation," says Tom Wilson, vice president, Northrop Grumman Space Systems and president, SpaceLogistics, LLC. "This historic event, highlighted by the first in-orbit rendezvous and docking of two commercial satellites and the subsequent repositioning of the two-spacecraft stack, demonstrates the business value that MEV offers to customers. Now that MEV-1 has successfully delivered on its mission to place the Intelsat 901 satellite back into operational service, we will continue to pioneer the future of on-orbit servicing through our multi-year technology roadmap leading to additional services such as inspection, assembly, and repair."

Inmarsat Supports Aid and NGO Sector During COVID-19 Crisis

Inmarsat, the world leader in global, mobile satellite communications, has announced that it will provide further enhanced support to the vital aid and NGO sector during the COVID-19 pandemic. These new initiatives will enable enhanced offerings across both platforms and come as a direct response to the additional challenges caused by the COVID-19 pandemic, ensuring emergency responders can continue delivering critical aid and relief. Inmarsat's Broadband Global Area Network (BGAN) and Isatphone 2 services are crucial connectivity tools for land-based organizations, especially for aid agencies and NGOs. The new initiatives include enabling Inmarsat's BGAN Link plan for usage globally. This means that the normally static, geo-specific service can offer organizations the capability to operate cost-effectively and without complexity within a wider geographic range as they carry out their vital operations. Inmarsat will also offer its BGAN Pro Plan, with a new discount of 50% on the cost of any data used over

the 30MB monthly allowance, delivering significant cost savings for the typical user. To support Isatphone 2 pre-paid users, Inmarsat will introduce a 'GSPS 00075 Emergency' voucher including 50% more airtime allowance and a validity of 90

days at the same cost as the 'GSPS 00050' voucher that has a 30 day validity period. Additionally for the Isatphone 2 GSPS Standard plan, a 50% discount on calls over the monthly limit will be applied.



Smallsat Launch Delays Prompt Push for Greater Standardization

A study that found that every small satellite launched commercially in the last five years suffered delays is evidence of the need of greater standardization in payload accommodations so that smallsats can easily switch vehicles, one company argues. The study, conducted by Bryce Space and Technology and released April 22, found that all 1,078 smallsats – defined as weighing less than 600 kilograms – launched commercially in the last five years suffered delays ranging from days to years for a variety of reasons. The median launch delay for the smallsats included in the study is 128 days. A little more than 150 smallsats had delays of no more than two weeks, but a similar number suffered delays of at least one and a half years. The fact that so many smallsats have suffered launch delays is not surprising. “We’ve always known anecdotally that launch moves to the right,” said Grant Bonin, vice president of business development at Spaceflight, which arranges launches of smallsats on a variety of rockets, in an April 28 interview. “What we hadn’t really done yet is attempt to quantify just how likely delays are.” Spaceflight commissioned the Bryce study to both quantify the delays and identify their causes. “I think some of that data was eye-opening as well, because it reflects a different distribution

of launch delay causes than what a lot of people might assume,” he said. The survey found that 40% of delays were due to payloads, including those of the primary payload on launches where smallsats were flying as secondary payloads. Issues related to launch vehicles accounted for 34% of delays, but most of those were caused by launch vehicle development and manufacturing delays, rather than delays caused by vehicle anomalies. Most of the rest of the delays were due to administrative or programmatic issues, or changes in the International Space Station manifest for those smallsats being launched from the station. Whatever the reason, delays can cause serious problems for many of Spaceflight’s customers. “The facts of life have always been that launches are delayed, and that can be extremely punishing on businesses who need satellites in space,” Bonin said. “A day of slip in launch is a day they’re not making money off the asset because it’s not in space.” He argued that the fact that many delays are caused by primary payload or launch vehicles issues underscores the importance of having more standardized approaches to accommodating smallsats, so that they can be easily remanifested from one launch vehicle to another. “That’s something we can do months before

launch, but we’re committed to the idea, with standardization, of decreasing that time significantly, to a matter of weeks,” he said. Such standardization already exists for cubesats, most of which use deployers that can be easily moved from one launch vehicle to another. Spaceflight wants to try to extend standardization to larger smallsats. “Locking in the electrical interfaces, standardizing the mechanical interfaces, and standardizing how a spacecraft needs to be processed is really key,” he said. One reason for delays that emerged since the Bryce report is linked to the ongoing coronavirus pandemic. Bonin said that several launch providers it works with, including Arianespace, the Indian Space Research Organization and Rocket Lab, are encountering delays because of lockdowns that have halted launch activities. It’s not clear when those launches will resume, although the New Zealand government backed down from its highest coronavirus alert level this week, allowing some increased business activity. He predicted a surge in launch activity once those providers can resume launches and address their backlog. Demand for future launches, though, may be depressed. “With the customer base right now, we’re seeing a lot of people taking a deep breath and putting themselves on pause,” he said.

Nanosatellite Initiative Planned for Mexico

Nanosatellite manufacturer and mission integrator NanoAvionics, together with the Mexican Space Agency (AEM), is planning to introduce a nanosatellite pilot project for future space missions. Working with students from the Polytechnic University of Atlacomulco, the first development planned by the project partners will be a nanosatellite for the State of Mexico, the most populous state in the country, which is located in South-Central Mexico. Building the nanosatellite – the AtlaCom-1 – is part of a pilot project to establish a nanosatellite infrastructure for future

space missions designed and built by Mexico’s youth. The project, starting in September 2020, is, says NanoAvionics, a testimony to the importance of space applications enabled by nanosatellites, which are rapidly becoming essential to national economies. NanoAvionics is a nano-satellite bus manufacturer and mission integrator. The company’s efforts are focused on enabling critical satellite functions and optimizing their launch, hardware and operation costs – ranging from single missions to constellations. Its core engineering team has implemented

over 75 successful satellite missions and commercial projects during the past several years. NanoAvionics’ engineers will share their space mission experience and help the students and faculty at the Polytechnic University of Atlacomulco to develop the AtlaCom-1. The company’s multi-purpose nanosatellite buses are pre-configured and pre-qualified, allowing mission teams to focus on their payloads. As a result, says NanoAvionics, technology development missions can produce results quicker and satellite constellations can enter commercial service much faster.

Inmarsat and APEX Join Forces to Connect Aviation Industry during Global Crisis with Online Broadcast Event

Inmarsat, the world leader in global, mobile satellite communications, has joined forces with APEX, the leading international airline association dedicated to advancing passenger experience, to connect the global aviation industry during the most challenging time in its history. A unique online broadcast event, to be held on 29th April, will bring together aviation leaders, experts and analysts to debate the critical questions facing the industry today and looking ahead to the challenges the entire aviation sector will face. Charting a Course

into the Future' will examine the current state of the aviation market and the latest predictions for recovery, while also driving debate on wider industry issues, from next generation passenger trends and the future of air travel technology to short and long-term solutions for tackling aviation sustainability. In addition, the livestreamed event will include global and regional news updates, as well as a state of the industry analysis. Keynotes featured at the event will include airlines leaders such as Avianca CEO Anko van der Werff,

Delta Air Lines CEO Ed Bastian, and Virgin Atlantic COO Juha Järvinen. Trade bodies speaking at the event include Air Transport Action Group (ATAG), Airline Passenger Experience Association (APEX), European Space Agency (ESA), and International Air Transport Association (IATA). Ecosystem partners featured include Airbus, Collins Aerospace, Deutsche Telekom, Honeywell, Panasonic Avionics, and Rolls Royce. Media partners include Air Transport World (ATW), APEX Media, Inflight Magazine, Paxex.aero, and Simple Flying. Philip Balaam, President of Inmarsat Aviation, said: "The global aviation industry is facing its darkest hour, with COVID-19 having far reaching implications for airlines, air travel infrastructure and the broad ecosystem that supports them. According to the latest guidance by IATA, passenger revenues and traffic are both expected to halve in 2020 compared to last year. Aviation leaders and experts will take part in FlightPlan to discuss pertinent topics such as the crisis, uncertainty around the timeframe for disruption and recovery, the long-term economic impact, and how we can improve resilience and accelerate recovery."

Comtech Achieves Key ISO 27001 Data Security Re-Certification for Public Safety

Comtech Telecommunications Corp., a world leader in secure and highly reliable communication technology, announced that its Safety & Security Technologies (SST) group, which is part of Comtech's Commercial Solutions segment, has obtained re-certification of its ISO 27001 designation. The ISO 27001 Data Security Standard is widely recognized as the blue-chip standard for protection of individual, customer, and company private and sensitive information. To meet ISO 27001 standards, a company must show it has a systematic and ongoing approach to managing sensitive company and customer information. Comtech has implemented

the prescribed ISO standards to ensure a secure environment and work processes that enable it to protect its intellectual property and assets, meet contractual security obligations and establish a robust risk assessment/treatment framework, which are critical to supporting its Public Safety customers. The certification is a key indicator of Comtech's program to protect vital customer data from a wide range of cyber threats and vulnerabilities that can lead to data loss. It provides third-party verification that the Company's Information Security Management System conforms to a standard that helps protect the integrity of customers' information

assets. ISO 27001 certification also gives Comtech, its customers, shareholders and partners added confidence that Comtech subscribes to the best information security practices in the industry. "This ISO 27001 re-certification is a reflection of Comtech's commitment to the quality of its Information Security Management System," said Fred Kornberg, Chairman of the Board and Chief Executive Officer of Comtech Telecommunications Corp. "Successfully completing the rigorous certification process demonstrates Comtech's effort to safeguard the information assets and intellectual property of our Company and our Public Safety clients."

Hong Kong Aerospace Technology to Launch Low-Orbit Satellite Golden Bauhinia

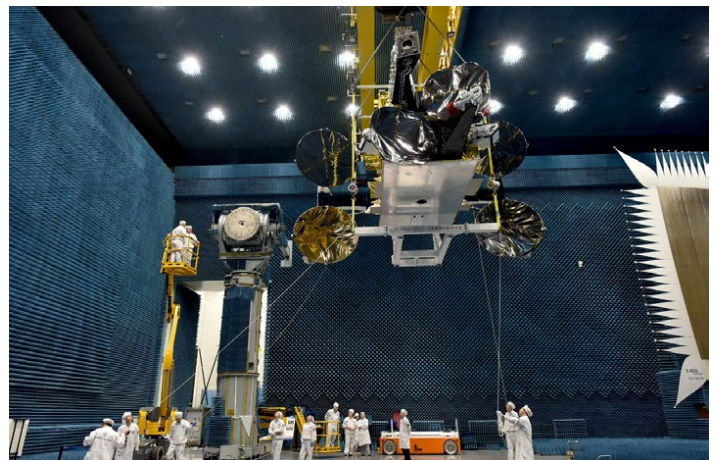
Hong Kong Aerospace Technology Group (HKATG) has announced it plans to launch its first satellite, Golden Bauhinia No. 1, a low-orbit, high frequency satellite, in June from China, the company said. The planned launch marks an important milestone in the company's Golden Bauhinia space remote sensing project. The development of international commercial aerospace makes it one of the most dynamic industries after the Internet, AI and 5G. According to the US Satellite Industry Association (SIA), commercial aerospace revenue was

USD 277.4 billion in 2018 and is expected to increase 10 percent per year. Using mobile target monitoring, space AI and dynamic change monitoring, the Golden Bauhinia Constellation aims to achieve commercial application and development of communications, navigation, and remote sensing systems with global 24-hour online tracking and the ability to revisit key areas in under 30 minutes. The Golden Bauhinia project aims to launch 165 low-orbit, high-frequency satellites in 2020 covering the Guangdong-Hong

Kong-Macao Greater Bay Area and serve the world's fastest-growing urban centers. The satellite to be launched in June was designed, manufactured and patented by HKATG. Hong Kong Aerospace Technology Group (HKATG) was established in July 2019 as the first aerospace business group in Hong Kong-based on the aerospace industry chain of satellite remote sensing, satellite manufacturing, satellite navigation, satellite communications and satellite remote sensing ground receiving stations.

PSN, Indosat Ooredoo, PNS Tee Up Palapa-D Satellite Replacement, Nusantara Dua

The Jakarta Post reports that satellite communication provider Pasifik Satelit Nusantara (PSN), working in partnership with Indonesian telcos Indosat Ooredoo and Pinar Nusantara Sejahtera (PNS), aim to launch a newly built communications satellite – named Nusantara Dua – from Xichang in China's Sichuan province later this month. Built by China Great Wall Industry Corporation, the new orbiter is set to replace the Palapa-D satellite to serve broadband internet access and high-quality broadcasting services, PSN confirmed. 'We hope Nusantara Dua will further strengthen the position of the PSN business group as a major and leading player in the Indonesian satellite industry,' PSN president Adi Rahman said in a statement. Under the plan, the three companies have set up a joint venture, Palapa Satelit Nusa Sejahtera (PSNS), to operate Nusantara Dua. The new satellite forms part of a long-term solution to replace the aging Palapa-D satellite located at 113 East Longitude, and will have a capacity of 20x36MHz C-band FSS transponders and 9.5Gbps high throughput satellite (HTS). The satellite, with a lifetime of



up to 15 years, can cover regions throughout Asia Pacific and to Australia for C-band transponders and throughout Indonesia for HTS. If all goes to plan it will be ready for service in June 2020.

Lockheed Martin Receives \$5.8M DARPA Blackjack Contract

Lockheed Martin has received a \$5.8 million contract from the Defense Advanced Research Projects Agency (DARPA) for the first phase of satellite integration on the Blackjack program, the company announced Monday. The program looks to leverage commercial advances in Low-Earth Orbit to develop and demonstrate the critical elements for a global high-speed network in LEO for the U.S. Department of

Defense (DoD). At this stage, Lockheed Martin will define and manage interfaces between Blackjack's bus, payload and Pit Boss – its autonomous, space-based command and data processor. The contract also includes testbed validation of internal and external vehicle interfaces. Future phases of Blackjack are expected to include build, test, and launch of a demonstration constellation in 2021-2022.

"Lockheed Martin has built and integrated a variety of payload types and sizes for every type of mission and we bring all of that experience to the Blackjack program," said Sarah Reeves, Lockheed Martin vice president of Missile Defense Programs. "This is an exciting new approach to plug-n-play design for LEO and we are up for the challenge."

Omnispace Selects Thales Alenia Space to Develop Satellite Infrastructure

Omnispace, the company that is reinventing mobile communications by building a global hybrid network, announced it has selected Thales Alenia Space, a joint venture between Thales (67%) and Leonardo (33%), to develop the initial component of its satellite-based Internet of Things (IoT) infrastructure. This will advance Omnispace's vision to deliver a global hybrid communications network based on 3GPP standards. Thales Alenia Space will design and build an initial set of two satellites for operation in non-geostationary orbit (NGSO). These initial satellites will support 3GPP-defined

(the 3rd Generation Partnership Project telecommunications specifications that unite standard development organizations) Narrow-Band IoT radio interface and will serve to advance the development and implementation of Omnispace's global hybrid network. This announcement marks a key milestone as Omnispace initiates the development of its new generation NGSO satellite constellation which will operate in the S-band. "Thales Alenia Space has a successful track record of developing NGSO satellite constellations and is well-qualified to support our vision of delivering the world's first global 5G

non terrestrial network (NTN)," said Ram Viswanathan, President and CEO of Omnispace LLC. "This investment in our next-generation satellite infrastructure allows us to progress the development of our technology and demonstrate our unique capabilities as we continue to work towards launching our broader vision of a global hybrid network." "Thales Alenia Space is pleased to be working with Omnispace, which is taking a holistic approach to the design, development and deployment of their next-generation, IoT-based satellite network infrastructure," said Hervé Derrey, CEO of Thales Alenia Space. "Omnispace's selection of Thales Alenia Space reinforces our leadership position as a major industrial partner and our expertise in space-based IoT communications. We look forward to collaborating with Omnispace in delivering this innovative project." The development of this initial set of satellites will begin immediately and they are scheduled for launch in 2021. Omnispace and Thales Alenia Space, along-side other industry stakeholders, will contribute to the development of the 3GPP NTN friendly standard for global implementation.



Spacecom Signs C-Band Contract With Czech Telco GiTy

Spacecom has signed a multi-year contract with Czech Republic-based telecom service provider GiTy for C-band capacity on the AMOS-17 communication satellite in order to deliver connectivity to embassies across Africa, the companies announced Tuesday. AMOS-17, which was launched by SpaceX in April 2019, is the Is-

raeli satellite operator's High-Throughput Satellite (HTS) satellite designed to meet Africa's fast-growing communication demands. It has C-Band HTS, Ka-Band and Ku-Band capabilities, and supports connectivity between Africa, the Middle East, Europe, India, and China. "AMOS-17's position over Africa and its unique perfor-

mance and capabilities provide us with an excellent solution for our very specific needs, GiTy Network Operations Director Radek Ondras said. "Partnering with Spacecom since as early as AMOS-3, we are confident they will provide us with high quality, personalized and reliable satellite communication services."

Five Countries Send Proposals to Make KazSat-2R Satellite to Kazakhstan

Spacecraft producers from Russia, France, Italy, the United States and Turkey sent technical proposals on making the Kazakh telecom satellite KazSat-2R, press service of the Kazakh Ministry of Digital Development, Innovations and Aerospace Industry told TASS. "The

order for the satellite will be placed with Ghalam company, which will develop it with a foreign producer of spacecraft, possessing required engineering solutions and competencies. Technical and commercial proposals were received from spacecraft producers from Russia, France,

Italy, the US and Turkey," the press service said. The planned budget for design, development and ground tests of the spacecraft amounted to 39.65 bln tenge (\$91.6 mln). As reported earlier, KazSat-2R development work is planned to start in 2020.

Intelsat 901 Satellite Returns to Service Using Northrop Grumman's Mission Extension Vehicle

Intelsat has announced that Intelsat 901 has returned to service following the successful docking with the first Mission Extension Vehicle (MEV-1) from Northrop Grumman Corporation and the company's wholly-owned subsidiary, SpaceLogistics LLC, on February 25 – the first time that two commercial spacecraft docked in geostationary orbit. Since the

February rendezvous, MEV-1 has assumed navigation of the combined spacecraft stack reducing its inclination by 1.6° and relocating IS-901 to its new orbital location. Intelsat then transitioned roughly 30 of its commercial and government customers to the satellite on April 2. The transition of service took approximately six hours. IS-901 is now operating at the 332.5°E

orbital slot and providing full service to Intelsat customers. Intelsat views life-extension services, like MEV technology, as a cost-effective and efficient way to minimize service disruptions, enhance the overall flexibility of its satellite fleet and better support the evolving needs of its customers.

CAT Keen to Operate Thaicom 4, 6

CAT Telecom has expressed its readiness to take control of satellites Thaicom 4 and 6 after Thaicom's satellite operating concession ends in September next year. The state telecom enterprise said it will assign 24 staff to attend a one-year satellite training course under the collaboration with Thaicom from September to ensure the seamless continuity of the two satellites' operation. The move follows a recent resolution by the National Digital Economy and Society Committee (NDESC) to approve CAT Telecom serving as the sole agency in handling the operations and assets in connection with the satellite concession due to expire next year. Previously, the Digital Economy and Society (DES) Ministry planned to draft terms of reference (ToR) to seek companies to operate and make use of the assets under the public-private partnership (PPP) model. But the move was later scrapped and the NDESC agreed that CAT Telecom would be the sole agency to handle the operation of the two satellites after the concession expires. Such a resolution would be

submitted to the cabinet for approval soon, said CAT Telecom President Sanpachai Huvanandana, adding: "We are waiting for the formal approval from the cabinet". "CAT is now ready to handle the task," Col Sanpachai said. The company would be responsible for asset management and operations of national orbital slots with efficient capability and security. He said CAT Telecom has drawn up a national satellite management plan, which was presented to the National Space Policy Board and the NDESC on April 10. The plan covers CAT's preparation for management of satellite-related business and services. Thaicom 4 has an engineering lifespan and fuel power until 2022, Col Sanpachai said. Its 119.5 orbital slot is location of high potential to support Thai and foreign customers. A drone will be deployed to refuel the satellite and in the future a new satellite may have to be acquired to replace it through a cooperation with partners, he said. Thaicom 6, which is at 78.5 East, is located in a so-called hot bird position with high potential and business value. It is operating in full

capacity to serve 16 million subscriptions of broadcasting services. Its lifespan runs until 2029. According to Col Sanpachai, CAT Telecom is in talks with three partners to run business in relation to satellites in low earth orbit (LEO). There are more than 600 LEO satellites to be leveraged globally. CAT would provide satellite gateway stations or earth stations to these LEO satellites as well as act as a marketing arm for the LEO satellites, he said. The LEO satellites can be used to support 5G network development, he said. Thaicom Chief Executive Anant Kaewruamvongs said the company is also waiting for the formal resolution from the cabinet about the two satellites' management. Thaicom earlier submitted a proposal to the DES Ministry, seeking a partnership with CAT under the PPP model to operate the satellites. When asked about the proposal by the Bangkok Post, he refused to discuss the matter. Thaicom adheres to its existing concession condition, including transferring related satellite assets to the state after the concession contract ends, Mr. Anant said.

Tricolor Launches Satellite Broadband Services in Siberia

Russia's leading pay-TV operator Tricolor and Eutelsat Networks have made their satellite internet service available in Siberia. According to Tricolor, residents of the region, including those in Novosibirsk, Omsk, Krasnoyarsk, Barnaul, Irkutsk, Tomsk and Kemerovo, can now purchase

reception equipment to receive unlimited internet with download speeds of up to 40Mbps. Through this they will also be able to access such services as Tricolor's online platform through the free Tricolor Cinema and TV application. Tricolor also says that the service breaks the

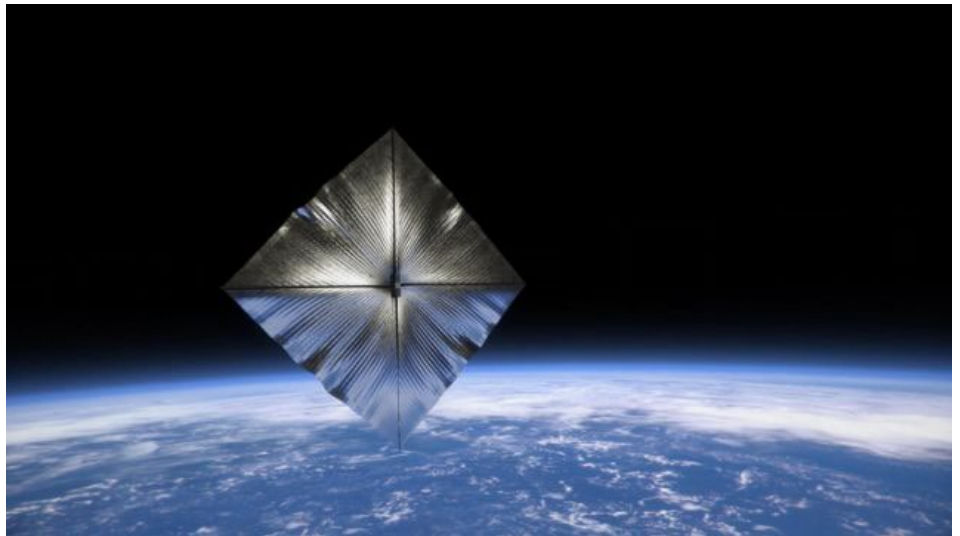
stereotype of satellite internet being slow and expensive. Reception equipment, for instance, is being offered at the special price of R9,990 (€123.7). Tricolor has operated a satellite internet service since September 2016.

NASA's New Solar Sail System to be Tested On-Board NanoAvionics' Satellite

NanoAvionics has been selected to build a 12U nanosatellite bus for an in-orbit demonstration of NASA's Advanced Composite Solar Sail System (ACS3). This a result of a contract between NASA Ames Research Center and AST for a 12U bus to carry NASA's payload into low Earth orbit (LEO) including an approximately 800 square foot (74 square meter) composite boom and solar sail system. The aim of the ACS3 mission is to replace conventional rocket propellants by developing and testing solar sails using sunlight beams to thrust the nanosatellite. These solar sail propulsion systems are designed for future small interplanetary spacecrafts destined for low-cost deep-space and science missions requiring long-duration, low-thrust propulsion. With already more than 75 successful satellite missions and satellite-related commercial projects, NanoAvionics will assemble the 12U bus at its new Columbia facility in Illinois, while the final integration of the payload will be carried out at NASA Ames facilities. Matching NASA Ames' mission requirements, the 12U bus shares the same flight-proven subsystems as NanoAvionics' flagship M6P bus but with up to 10U payload volume. The larger volume will be necessary to provide enough room for the 4.6 kg payload that includes the composite boom and solar sail system as well as cameras to monitor

the solar sail during and after deployment. "I'm tremendously proud and excited that NanoAvionics will be part of NASA's effort to validate a new beam-powered propulsion system, eventually leading to more marvelous deep-space missions following the first inter-planetary CubeSats MarCO-A and B (Mars Cube One)," said F. Brent Abbott, CEO of NanoAvionics North America. "The technology demonstration using NanoAvionics' 12U bus will be the first ever in-orbit trial of NASA's composite booms as well as sail packing and deployment systems for a solar sail. It will guide the development of a next generation nanosatellites with solar sail propulsion system for small inter-


planetary spacecraft." As part of this agreement the company will also supply a mechanical testbed model and a FlatSat model. In addition, a team of NanoAvionics engineers will provide the support required for testing, integration and operations of the nanosatellite. The FlaSat model has identical software functionality as the final 12U bus hardware, hosting the actual payload. It allows NASA Ames to run tests via remote network connectivity without having to ship equipment back and forth. The mechanical testbed model can be used for testing payload integration and other mechanical tests, such as the deployment of solar sails.



Public Trials of SpaceX Satellite Internet Service to Begin within 6 Months

If all goes according to plan, the public will have a chance to try out SpaceX's satellite internet service in six months. CEO Elon Musk mentioned the timetable in a tweet. "Private beta begins in ~3 months, public beta in ~6 months, starting with high latitudes," he said. In another tweet, Musk said the German market qualifies as high altitude. Dubbed Starlink, the upcoming service is promising to bring fast and affordable internet to any location in the world. It'll be particularly appealing for people who live in remote areas or underserved markets with few options for

home broadband. Expect download speeds of up to 1Gbps with a latency ranging between 25 to 35 milliseconds, on par with ground-based broadband services. Although satellite internet is nothing new, SpaceX's network is designed to achieve faster speeds by using low Earth orbit (LEO) satellites. The plan is to have them fly around the planet from a distance of 200 miles to 700 miles above the surface while they ferry data between ground stations and internet users below. To get the service up and running, the company has been securing approval from regulators

to launch as many as 40,000 satellites in the coming years. On Wednesday, the company successfully deployed another 60 Starlink satellites into space for a total of 420 currently in operation. According to its website, SpaceX's goal is to launch the broadband service for the US and Canada later this year. Starlink is then scheduled to go global in 2021. Cost has not been announced, but the company plans on supplying customers with a Starlink terminal you can easily place in your home. 

IoT SERVICES

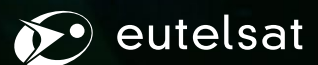
CONNECTING REMOTE ASSETS GLOBALLY

For assets and infrastructures in remote environments, a reliable connection beyond terrestrial network coverage is vital to ensure a resilient communication channel.

Connect remote assets, anywhere, inexpensively, with IoT FIRST. The simple, innovative satellite-based solution extends IoT networks, offering truly ubiquitous coverage for objects with limited or no access to terrestrial networks.

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Global connectivity,
Local delivery



ARTICLE

How You Can Protect Your Consumer amidst the Global Coronavirus Pandemic



Lisa Paccione

Vice President, Sales, Enterprise Services Group
Syniverse



While the world we're currently living in is full of complexities and bad actors seeking to take advantage of the terrible situation, companies can work with their consumers to keep them protected from fraud attacks.

In today's rapidly fluctuating world, many people are facing a great deal of uncertainty. The rise of the coronavirus crisis has not only spread the disease but also concerns about the future.

During these confusing times, people prey on this fear and seek to extort others. At Syniverse, we're working with our customers to prevent this fraud before it happens and resolve it in real-time.

Fraud is rampant. In the latest Nilson Report Annual Fraud Statistics, worldwide payment card fraud is expected to surpass \$35.5 billion in the next five years. In recent years, the United States has accounted for about a third of this fraud.

With this level of fraud only increasing due to the coronavirus, it's critical for companies to react quickly to protect their customers. There are several ways companies can help safeguard their consumers from fraud during this crisis.

Educate Your Consumer to React to Important Notifications

Building trust and understanding with your consumers is essential to minimizing fraud cases. Communicate your commitment to prevent fraud on your website, on social media as well as through traditional communication channels. Stress the importance of reacting quickly to fraud alerts you send. The sooner your consumers alert you to fraud, the more easily you can work to stop or prevent fraudulent charges.

Implement Identity Services

To determine how to best reach your consumer, you need to determine their mobile carrier and/or phone line type for the phone numbers you're seeking to reach. Scammers will try a variety of methods to steal consumers identities. If you notice mobile carrier changes, a bad actor could be trying to redirect the number to a different phone. In this case, use multiple forms of contact to identify your consumer.

Speed is everything when it comes to fraud detection and prevention. If a larger than normal charge occurs or one outside of your consumer's region, you need to act quickly to either remedy the issue or ensure the charge was in fact from your consumer.

In addition to checking for carrier changes, also look for phone line type. Is the phone number a landline or mobile? For mobile an SMS message to verify spending can be delivered quickly to consumers. For landline numbers, you'll need to call to verify transactions. By removing landlines numbers, you won't waste spend sending text messages that will bounce and not reach your consumer. You can learn more about identity and authentication capabilities here.

Send Timely Alerts

Speed is everything when it comes to fraud detection and prevention. If a larger than normal charge occurs or one outside of your consumer's region, you need to act quickly to either remedy the issue or ensure the charge was in fact from your consumer. Once you've pre-established line type for numbers, you can quickly react to potential fraud with text-to-voice capabilities for landlines and SMS messages for mobiles. These alerts need to happen in real-time,

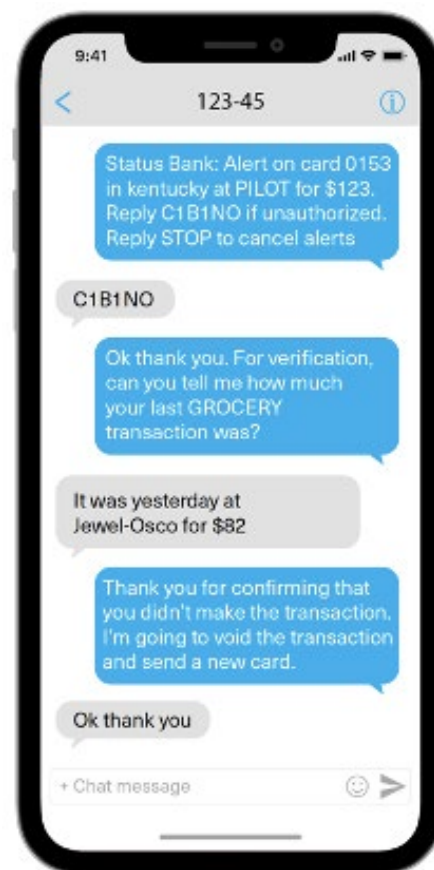
ideally while the customer is still at the register.

Allow for Fallback to Other Channels to Reach Consumers Quickly

One size does not fit all. If your consumer does not take action via one channel, such as SMS, reach out to them through a different channel, like voice. Having fallback solutions in place further cements your ability to prevent fraud.

Soon, consumers can look forward to receiving next generation messaging like rich communications services (RCS) to communicate with companies. With RCS, companies will be able to have richer, more engaging conversations with consumers while also leveraging artificial intelligent chatbots. Mobile messaging is a perfect way to reach consumers on any mobile

Soon, consumers can look forward to receiving next generation messaging like rich communications services (RCS) to communicate with companies. With RCS, companies will be able to have richer, more engaging conversations with consumers while also leveraging artificial intelligent chatbots.



channel with effective, personalized communication with consumers.

While the world we're currently living in is full of complexities and bad actors seeking to take advantage of the terrible situation, companies can work with their consumers to keep them protected from fraud attacks. If you'd like to discuss how to keep your consumers fraud-free, I invite you to leave a comment so we can connect to find a solution. 📞

About the Author

Lisa Paccione is responsible for leading the sales and revenue growth for Syniverse's full portfolio of Connect, Engage and Exchange solutions for enterprise customers across the Americas market. Previously, as Vice President, Sales, Global Sales Development, she managed global sales of Syniverse's roaming, messaging and real-time intelligence solutions for the enterprise market. Ms. Paccione has more than 20 years of experience in technology sales and served in a number of senior sales positions prior to joining Syniverse in 2009. Previously, for over six years, she led sales at VeriSign in positions that included Director of Sales, Strategic Account Director and Director of Enterprise Sales for Messaging and Mobile Media. Earlier, she was Regional Vice President of Sales for a startup named Exault (later acquired by VeriSign), and prior to that served in account manager positions at Netrex Secure Solutions (later acquired by IBM) and Ameritech (now AT&T). Ms. Paccione has completed executive management coursework at Kellogg School of Management and holds a Bachelor of Science in business administration and management from Providence College.

WHOLESALE NEWS

Altice Europe Unveils Fastfiber FTTH Wholesale Business

Altice Europe has announced the creation of Fastfiber (formerly known as Altice Portugal FTTH), which it says is the largest fiber-to-the-home (FTTH) wholesaler in Portugal, with roughly four million homes passed at end-2019. Fastfiber comprises all PT Portugal (MEO) fiber assets in Portugal, including FTTH and dark fiber infrastructure. The company aims to sell

wholesale services to all Portuguese operators at the same financial terms. MEO, meanwhile, will sell technical services to Fastfiber for the construction, maintenance and subscriber connection to the fiber network. The creation of Fastfiber follows the successful completion of Morgan Stanley Infrastructure Partners' acquisition of a 49.99% stake in Fastfiber

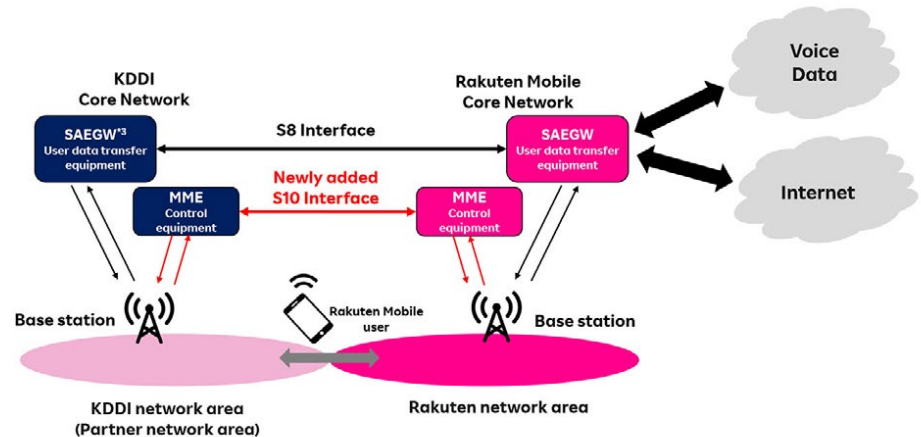
in December 2019. The final cash consideration received at closing was EUR1.57 billion (USD1.71 billion), while further payments have been scheduled as follows: EUR375 million in December 2021 and EUR375 million in December 2026, subject to some performance ratchets. Altice says that the overall transaction values Fastfiber at EUR4.63 billion.

Rakuten Mobile Taps Cisco to Establish Inter-Network Roaming with KDDI

Cisco and Japan's new fourth network operator Rakuten Mobile have announced the successful launch of an inter-network roaming service between the cellco and fellow operator KDDI's mobile networks across Japan. In a press release, the vendor noted that the LTE roaming service – which is reportedly defined by 3GPP and based on the S10 signaling interface standard – is being used within Cisco's Virtual Ultra Packet Core to link to mobility management entities (MMEs) between the two operators. 'The MMEs track relevant user data sessions to ensure smooth handover from one operator's network to the next. The data path will be managed by connecting the KDDI network with Cisco's System Architecture Evolution Gateway VNF supporting a Control and User Plane Separation architecture,' the statement read. The Virtual Ultra Packet Core is

designed to help Rakuten Mobile improve the end user experience by ensuring voice/data connectivity when moving between the respective networks. Given that the new fourth operator is reliant on other network

operators to achieve 'national' coverage, Rakuten hopes the Cisco solution will enable it to offer an uninterrupted mobile broadband connection while it builds out its own network infrastructure.



BIPT Opens Consultation On New Wholesale Cable Rates

The Belgian Institute for Post and Telecommunications (BIPT) has published its draft decisions regarding the reference offers proposed by Brutele, Voo and Telenet for wholesale cable access to their broadband and TV services. The reference offers follow a decision by the conference

of regulators (CRC) on 29 June 2018, which imposed a series of measures based on a new market analysis of broadband and TV broadcasting operators with significant market power. Comments on the three separate draft decisions can be submitted until 19 May. In a statement last week,

Orange Belgium complained the rates were substantially higher than those included in the draft proposal in July 2019, leading to 'wholesale charges that are clearly above and beyond the level of 'fair charges'.

Deutsche Telekom Pushes IoT Roaming in Europe

Deutsche Telekom struck NB-IoT roaming agreements with European operator partners Swisscom, Telia and Vodafone Group, in a move to expand availability to 18 countries in total. In a statement, Deutsche Telekom said the partnerships address customer demand for international coverage and service, as the number of IoT devices on the market increase. It expects to strike additional NB-IoT roaming agreements with further operator partners in the coming months. Deutsche Telekom will offer mobile IoT roaming in nine of its markets (Germany, the Netherlands, Austria, Czech Republic, Slovakia, Hungary, Greece, Poland and Croatia), in addition to Swisscom's networks in Switzerland and Lichtenstein; Telia's Danish, Finnish, Norwegian and Swedish operations; and Vodafone networks in Spain, Italy, Germany, the Netherlands and UK. "Our customers need a sustainable roaming environment for their mobile IoT deployments to deliver a consistent service across international borders," said Rami Avidan, SVP IoT at Deutsche Telekom. "This allows them to benefit from economies of scale as they continue to expand their business." Roaming across standardized LPWA networks is considered essential to drive the market, as manufacturers target seamless coverage when deploying mobile IoT devices



across multiple markets. The market received a further boost in June 2019, as major operators AT&T, Orange, Swisscom and KPN activated roaming on LTE-M, the other standardized LPWA IoT technology, on their respective networks, in a move to ensure better connectivity across Europe and North America. Deutsche Telekom added roaming will be very important for many industries, such as industrial asset tracking, smart metering or waste management industries, where solutions will need to work across many markets.

Free Mobile Seeks Extension to Orange Roaming Access

French regulator Arcep revealed it is mulling a request to extend a roaming deal between Free Mobile and Orange by two years, after the former expressed difficulty in meeting the coverage of its more well-established rivals. In a statement, Arcep said Free Mobile cited a changing competitive environment for the need to extend the agreement for 2G and 3G network access. The operator noted the market's standard for network coverage had "increased substantially" after rivals SFR and Bouygues Telecom struck their own network sharing deal, and the regulator introduced

new obligations under its New Deal. The operator requested an extension from 31 December 2020 to the same date in 2022. If approved, Free Mobile customers would have roaming download speeds capped at 384kb/s, and there would be no change to the interconnection capacity available between "core networks for the flow of total roaming traffic". Iliad-owned Free Mobile entered the French market in 2011, signing the roaming deal with Orange to enable it to launch commercial services in 2012 while constructing its own network.

Nkom Orders Telenor Norge to Introduce New Wholesale Fiber Product

Norway's National Communications Authority (Nasjonal kommunikasjonsmyndighet, Nkom) has directed fixed line incumbent Telenor Norge to offer alternative telecoms providers a new fiber-based wholesale service within six months. In a press release regarding the matter, the Nkom noted that Telenor Norge had previously been designated as a provider with significant market power (SMP) as per a December 2018 regulatory decision covering market 3a (wholesale local access provided at a

fixed location). Under that ruling the telco is required to offer virtual access to its fiber infrastructure, and following the decision the Nkom began discussions with local industry players regarding what requirements should apply to such a product. Now, having received feedback from interested parties, and following talks with Telenor regarding technical matters related to the Virtual Unbundled Local Access (VULA) fiber service, the Nkom has now finalized the technical specifications for the new offering, in a decision dated 31

March 2020. As per this regulatory ruling, the Nkom has said that Telenor Norge must be ready to actually deliver the new VULA fiber service within six months of the decision (i.e. by end-September 2020), while within three months (30 June 2020) it must have published standard offers for the service on its wholesale website. Telenor can, however, appeal the decision, and it has four weeks from the date of its publication to do so. [\[1\]](#)

A smart solution for mobile network congestion

Nexign is addressing the needs of the telecommunications market, providing **Business Support Systems** and **Solutions for Network Monetisation** and the **Internet of Things** across the globe. We **help** network operators **manage quality of service (QoS)**, enable application-based policies, and increase customer satisfaction. Nexign offers a timely response to the rapidly changing consumption model and empowers CSPs of any size to face today's challenges.

3GPP-compliant RAN congestion awareness function (RCAF)

Application-based charging and dynamic QoS

New revenue via ASP and OTT direct integration

Fast deployment and DevOps approach

TECHNOLOGY NEWS

VodafoneZiggo Activates 5G on Existing Spectrum

Dutch operator VodafoneZiggo has announced that it is activating its 5G mobile network using existing frequencies today across 'more than half of the Netherlands', under a plan to reach 'national' 5G coverage by the end of July 2020. New and existing mobile customers with a 5G-ready subscription and a suitable device can use the new non-standalone 5G services within initial coverage areas, with automatic fallback to 4G LTE when outside these zones. VodafoneZiggo disclosed that it has implemented 5G services via its existing antennas and Dynamic Spectrum Sharing technology utilizing existing LTE spectrum bands, in partnership with Ericsson. In early

March 2020 VodafoneZiggo pre-emptively added 5G access to a range of its mobile tariffs, with all 'Red' (consumer) and 'Red Pro' (business) subscribers receiving 5G at no extra costs – with service activation expected for all these users 'in the coming days' so that '5G will be fully active within a week' according to the company's press release. 'Start' tariff customers can also use 5G but only with an additional EUR2 (USD2.17) monthly fee. VodafoneZiggo currently offers four devices activated for 5G use on its network: Samsung Galaxy S20 5G, S20+, S20 Ultra and Oppo Find X2 Pro, with more devices to follow. VodafoneZiggo notes that the mobile data

download speeds that 5G can offer using its existing spectrum reach a maximum of 1Gbps, compared to the peak 350Mbps performance of its current commercial 4G offerings, although it adds that 'in practice' the 5G data rates experienced by initial service users 'will be on average 10% higher' than the 4G speeds they were previously getting. Network latency (response time) will improve by about 30%: from an average of around 30 milliseconds on 4G to below 20 milliseconds on 5G. Like its Dutch rivals, VodafoneZiggo is anticipating a multi-band auction for new 5G spectrum later this year.

DT Aims for 50% 5G Coverage in Germany by the End of the Year

Germany's biggest telecoms network provider, Deutsche Telekom, has said that it will aim to provide 5G coverage to 50 per cent of the German population, by the end of 2020. The announcement is being touted as one of Europe's most ambitious 5G aspiration targets. "We have big plans for 5G and will bring the latest mobile communications standard to large parts of Germany before the end of the year," said Telekom Deutschland CEO, Dirk Wössner. "I am delighted that the network will be even

better for our customers. Preparations in the network are in full swing to ensure that as many people as possible get the new technology quickly. In the city and in the countryside." Deutsche Telekom is set to use Dynamic Spectrum Sharing technology to simultaneously deploy LTE and 5G services in some of the country's more hard to reach rural locations, as well as in towns and cities. Deutsche Telekom has committed to provide 5G coverage to 99 per cent of the population by 2025. The

company has also committed to provide 90 per cent geographical coverage by that date. "With the current expansion offensive, we are taking a big step in this direction," says Walter Goldenits. "LTE and 5G - both technologies are gaining ground. While the 5G network continues to grow, LTE is also becoming even stronger. Already today, 98.1 percent of the population surfs with LTE and speeds of up to 300 Mbps," added Wössner.



South Korean Operators Eye mmWave 5G

Operators in South Korea targeted launch of 5G over mmWave frequencies to industry by the end of this year, The Korea Herald reported, though cost of delivery remains a stumbling block for the consumer sector. The newspaper's sources noted early use cases for the country's second wave of 5G was likely to be in smart factories, with consumer services unlikely to hit the market until 2021 or even 2022 due to the cost of installing the required number of additional base stations. Current commercial 5G services in the country use mid-band (3.5GHz) spectrum, providing lower peak speeds but wider propagation

than mmWave frequencies. The comments come less than a week after the country's network vendor Samsung talked-up the prospects for 5G over mmWave following a number of trials at its facility. Authorities and operators in South Korea have been among the most vocal supporters of 5G, having provided early demonstrations of applications of the technology at the Pyeongchang Winter Olympics in February 2018 and been one of the first countries to commercially launch the technology last year. At the country's spectrum auction in 2018 its three operators were also awarded assets in the 28GHz band,

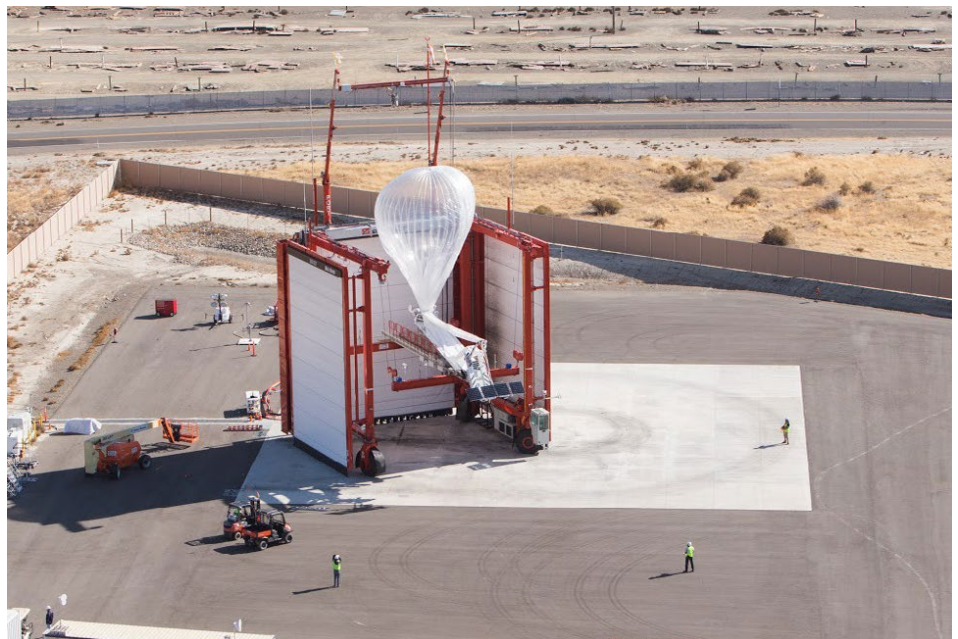
which will support mmWave 5G, though as of yet none have formally launched services using this spectrum. As in Korea, the majority of 5G launches across the world use mid-band frequency, providing what the GSMA defines as a good mixture of coverage and capacity. However, while mmWave frequencies provide higher peak speeds, they suffer from greater coverage limitations. The GSMA and other industry bodies promote the deployment of 5G using a combination of compatible frequencies in both ranges.

Loon's Balloons Arrive in Kenya to Deliver 4G Services

Google's sister company Loon is testing balloons that will provide 4G services across Kenya. Loon, owned by Alphabet, which also owns Google, is working with Telkom Kenya to deliver the service. It launched the balloons from Puerto Rico (see map) and Nevada on a long journey to Kenya. According to Loon CTO Salvatore Candido, one balloon from Puerto Rico "flew into Kenyan airspace to begin network testing two weeks ago". The balloons will operate from 20km above the ground in a trial approved by the Kenyan government a month ago. Kenya is around 11,000km from the launch site in Puerto Rico, "but our balloons do not fly in a straight line", says Candido. "Instead, they fly the fastest route that drifting on the stratospheric winds allows." He notes: "Other balloons heading for Kenya will fly over central Africa, and still others will fly west out of Puerto Rico and reach their destination after a trans-Pacific flight. The balloons optimize for safety first, and travel time second." The Loon balloons will not stop moving once they get to Kenyan airspace. "Once we arrive in Kenya, our flights follow a carefully choreographed dance, again, with our fleet management system's machine learning-

driven navigation algorithms coordinating all the movements," writes Candido in a post on Medium. "The balloons perform a variety of maneuvers to maximize the number of people they are able to connect throughout the day." Telkom Kenya will integrate the Loon-delivered service with its own infrastructure. Loon CEO Alastair Westgarth wrote on Medium in

March: "Following that, we will be able to begin providing service to Kenyans." In February 11 executives from across the telecommunications, technology, aviation and aerospace sectors said they had joined forces to establish an alliance to promote the use of high-altitude vehicles in the Earth's stratosphere.



Vodafone Rolls Out 700MHz 5G in Rural Germany

Vodafone Germany has announced it has started using its 700MHz frequencies for the deployment of 5G in rural areas of the country. The first locations to be served by the network include Berge (Meschede), Brilon, Olsberg, Bad Wunnenberg and Bad Fredeburg (all in the Hochsauerland), Ulm, Blaustein, Buch and Heroldstatt (all Baden-Wurttemberg), and Muncheberg (Brandenburg). Customers in these locations can access mobile data speeds of up to 200Mbps, with the 700MHz frequencies able to serve a wider area than higher band spectrum and also provide deeper coverage inside buildings. Work has been carried out in cooperation with Swedish equipment partner Ericsson. The new network also utilizes Dynamic Spectrum Sharing (DSS) technology, allowing for the rollout of 4G LTE on the same antenna. Vodafone plans to activate more than 8,000 700MHz 5G antennas at 2,800 locations this year. Alongside

its existing 3.5GHz 5G network, which serves urban areas, Vodafone is aiming to

increase 5G coverage to ten million people by the end of the year.



Deutsche Telekom and Ericsson Switch on Private Standalone 5G Network

Deutsche Telekom has announced that it has turned on its first private standalone 5G network at its Centre for Connected Industry (CCI) at its RWTH Aachen Campus. In partnership with Swedish

tech giant, Ericsson, Deutsche Telekom's private standalone 5G network will help to fast track a range of Industry 4.0 and connected infrastructure initiatives that could significantly boost revenue streams

for Europe's second biggest telecoms group. "5G networks are particularly suited to industrial uses with demanding performance requirements," says Antje Williams, SVP 5G campus networks, Deutsche Telekom. "To prepare a complete solution around 5G private networks, it is essential now to have test fields where our ecosystems partners, customers and device builders, can test their critical applications to ensure their success." The groundbreaking network utilizes Ericsson's 5G standalone technology running on Deutsche Telekom's 5G spectrum. The network is built as an indoor solution, integrated with an autonomous logistics device to demonstrate possible industry use cases, such as connected factory and autonomous production facilities. Deutsche Telekom's Centre for Connected Industry works in collaboration with many scientific and industrial companies to develop real world use cases for next generation connectivity. Last year, Ericsson and Deutsche Telekom set up a dual slice campus network based on LTE connectivity. 



REGULATORY NEWS

ITU Launches the 'G5 Benchmark', a 'Gold Standard' for Collaboration among Regulators and Policy-Makers

Information and communication technology (ICT) is becoming more prevalent, embedded in many sectors and systems beyond the ICT sector itself. In response, the International Telecommunication Union (ITU) has launched the 2020 Global ICT Regulatory Outlook which includes the Benchmark of Fifth Generation Collaborative Regulation, a new tool for policy-makers and regulators to leverage digital transformation for all through stronger collaboration across sectors. "Collaboration across sectors proves increasingly successful in piloting regulators and policy-makers towards broad and inclusive digital transformation," said Houlin Zhao, ITU Secretary-General. "Indeed, digital technologies and services are transforming lives across society - from agriculture to smart water management systems. ITU stands ready to support regulators and policy-makers around the world. The 'G5 Benchmark' serves as a compass for regulators on their journey towards digital transformation for all."

G5 Benchmark

The Benchmark of Fifth Generation Collaborative Regulation, also referred to as the 'G5 Benchmark', helps fast-track collaboration among regulators

and policy-makers from the information and communication technology (ICT) sector and other sectors to drive digital transformation for all. As the ICT landscape is complex and fast moving, the 'G5 Benchmark' offers metrics to assess gaps, proposes smart roadmaps through shifting regulatory landscapes, tracks progress and proposes solutions where concrete progress towards the Sustainable Development Goals has proved challenging. The concept of 'regulation generations' helps stakeholders analyze the maturity of modern regulatory frameworks – from the command and control of first generation (G1) regulation, to a collaborative and harmonized approach in fifth generation (G5) regulation.

2020 Global ICT Regulatory Outlook

The 2020 Global ICT Regulatory Outlook benchmarks regulatory across 193 countries worldwide and offers an objective perspective on the latest trends driving ICT policy and regulation. It also highlights six golden rules that accelerate the take-up of mobile broadband and seven rules that boost fixed broadband adoption.

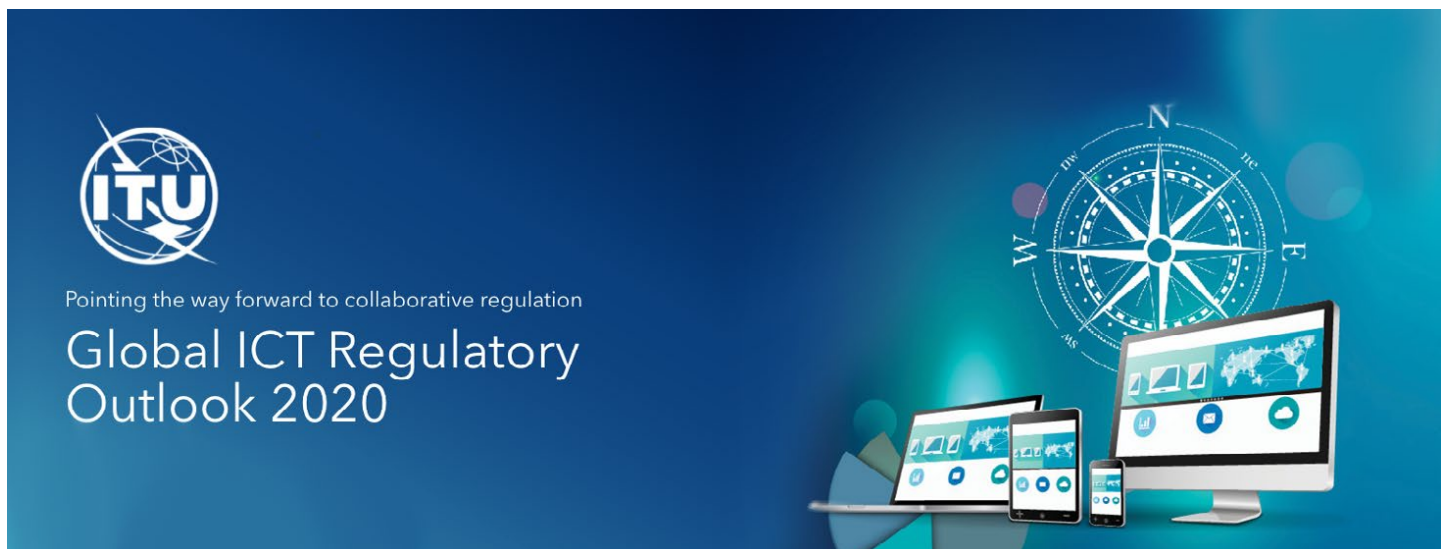
Key findings include:

- A vanguard of 16 G5 countries now have

holistic, forward-looking regulatory frameworks in place set to enable digital transformation across their economies.

- More than half of world's population is concentrated in G2 and G3 countries, with potential to leapfrog to near universal digital inclusion. Meanwhile, a quarter of countries remain in the G3 category, making progress on stronger policy and regulation, but as yet are unable to unlock the full potential of ICT markets.
- In just one decade, G4 has become the established standard for every ICT regulator, with more than 50 countries in this category; however, 40 per cent of countries languish in G1 or G2 categories, missing development opportunities and increasingly adrift from global digitization and economic transformation.

"The Global ICT Regulatory Outlook 2020 is as a rich, powerful and practical tool to all of us seeking to build a world of meaningful connectivity through regulation that is open, cross-sector, and above all, collaborative," said Doreen Bogdan-Martin, Director of the ITU Telecommunication Development Bureau." It lays out clearly the trends, the challenges and the opportunities before



the regulatory community in 2020 and continues to set out the decades-long ICT regulation story as our industry develops and responds to major world crises like the 2008 financial crash and COVID-19."

The Global ICT Regulatory Outlook 2020 also offers an overview of the state of regulation in all ITU regions:

Regulatory frameworks in Africa have evolved the most over the past ten years; as of 2018, only two African nations remain in the G1 category. Africa's score has kept pace with the rise in world averages, and has exceeded averages of the Arab States, Asia-Pacific and CIS.

In the Americas, over a third of countries have now achieved the highest G4 and G5 generations of regulation. Between 2007

and 2018, the region increased its average score more than all other regions, with thirteen countries now having attained G4 status.

The Arab States have seen slow progress in moving up the 'generation ladder', although pace will likely accelerate over the next two years with major reforms expected in some States. Major movement in the region has come through G2 countries progressing to the G3 category. Three States are now classified as G4 countries and one Arab country has reached G5 collaborative regulation category.

Asia-Pacific presents a very diverse range of countries in terms of regulatory maturity. Across the region, only four countries have attained G4 status and no countries have

succeeded in attaining G4 status since 2012, while two are in the G5 category.

Though progress has been made in the CIS region, regulatory frameworks are moving at a slower pace, with average annual scores since 2007 consistently below the world average.

Europe leads other regions, with 28 countries placing in G4 and no fewer than ten in the G5 category. While annual average scores of Europe have consistently been the highest since 2007, the gap between European annual average scores and world averages has greatly narrowed from 45 per cent in 2007 to 21 per cent in 2018.

EC Approves United Group's Acquisition of Vivacom

The EC has approved the acquisition of Bulgarian telecoms operator Vivacom by Netherlands-based telecoms and media firm United Group, owned by BC Partners. The EC concluded that a lack of competition was unlikely considering the 'very limited increase in the merged entity's market position and the presence of several other players in the market of retail supply of pay-TV services.' With the EC satisfied that the deal will not create issues around competition in the market, United Group will become the sole controller of Vivacom's parent firm, Viva Telecom Bulgaria. United Group agreed to purchase the Bulgarian operator in November 2019. As previously reported by TeleGeography's CommsUpdate, in mid-2019 Vivacom majority owner Spas Roussev confirmed that the telco was up for sale, with Lazard appointed to sell the business, valued at around EUR1.2 billion (USD1.35 billion). Vivacom is currently owned by holding company Viva Telecom Bulgaria, itself a subsidiary of Luxembourg-based InterV Investment, which in turn is wholly owned by Viva Telecom (Luxembourg), whose main shareholder



(46%) is listed as Spas Roussev (via Viva Edge Telecom). Other minority investors are listed as follows: VTB Bank, Delta Capital Investments (controlled by Milen Velchev, Georgi Velchev and Krasimir Katev), Michael Tennenbaum and companies managed by Mezzanine Management Central Europe II. The telco was sold to its current owners in late 2015, following an auction triggered by a default on a loan repayment to VTB Capital by a Luxembourg holding company.

Court Suspends Regulator's Decision to Cancel Intertelecom's 4G License

The Kiev District Administrative Court has suspended a decision of the National Commission for State Regulation of Communications & Informatization (NCCIR/NKRZI) which cancelled CDMA operator Intertelecom's 4G LTE license, reports Liga.Tech. The court also suspended the NCCIR's decision to revoke

CDMA-800 licenses which Intertelecom was ordered to give up in certain regions under spectrum reframing agreements between Ukraine's main cellcos and the regulator. All licenses remain valid until the court makes a final decision on the lawsuit filed by Intertelecom against the NCCIR. The NCCIR announced on 1 April 2020 that

it was cancelling the LTE license it had allocated to Intertelecom in February, as the CDMA provider still owed UAH193.6 million (USD6.88 million) in license fees, having handed over just UAH1 million. Intertelecom's pleas for further extensions were refused by the watchdog.

EU Stands by Its Data Privacy Rules in Response to COVID-19

Europe cannot win the fight against the coronavirus without digital technologies, the European Commission said in a video call with EU-27 Health Ministers. But this must not come at the expense of EU data protection rules, which must remain a "global gold standard". Health Commissioner Stella Kyriakides invited Ministers, representatives from EU health agencies and her colleagues Thierry Breton and Didier Reynders to discuss the potential of e-health in limiting the spread of the virus, including contact tracing apps, remote consultations and telemedicine. During the debate behind closed doors, these tools were widely recognized as crucial in helping to protect EU citizens as restrictive measures are being relaxed and economies re-started safely and sustainably, an EU source informed EURACTIV.com. According to Kyriakides, the potential of digital data in healthcare has never been more evident than it is today, as aggregated and anonymised data on population movements can help predict the spread of COVID-19, evaluate the effectiveness of public health policies and support the delivery of critical services. However, she also stressed that these digital devices must comply with EU fundamental rights and data protection rules. "These rules are a global gold standard, and they

are also flexible enough to allow us to make use of digital technologies in our response to the pandemic while protecting fundamental rights and freedoms," she said. On 8 April, the Commission adopted a recommendation to support de-escalation strategies using mobile data and applications and a week after a common EU toolbox on mobile applications to support contact tracing was also published. Kyriakides urged Ministers to follow this guidance as it sets the foundations for a pan-European approach, which will also be regularly updated with new findings and developments. The EU should establish its own "pan-European COVID-19 mobile application" due to divergences in current app developments across the bloc, the EU's data watchdog has suggested. For the Commission, mobile apps can play a crucial role in breaking transmission chains allowing for easier, quicker and more efficient contact tracing than traditional systems based on interviews with infected patients. Warning apps too can alert citizens of infection risks and inform them if they have been in contact with a person infected with COVID-19, helping facilitate the organization of medical follow-ups. However, representatives from the EU agency for infectious diseases (ECDC), emphasized that digital applications are always a support tool and cannot replace

the core of the medical work, which is made up of normal investigations and testing. According to sources, EU Justice Commissioner Didier Reynders focused his intervention on building public trust in digital tools. Industry Commissioner Thierry Breton updated the Ministers on ongoing talks with businesses to coordinate the development and the use of these tools but he also urged the member states to work together on digital and traditional tracing methods. Many member states said they are either developing or thinking of introducing digital tools in their fight against the pandemic. Those include Bulgaria, Croatia, France, Germany, Spain, Sweden, Portugal, Finland, Hungary, Italy, Estonia and Austria, but also non-EU countries such as Switzerland and Norway which were invited to the meeting. Some Ministers underlined the importance of interoperability of the apps, particularly when citizens are travelling abroad. Croatia, Poland, Finland and Spain said they are using a COVID-19 self-assessment application that helps citizens evaluate their state of health and which advises them on what to do. Austria is using a tracing app developed by the Red Cross that allows people to track who they have been in contact with, which sends a notification if one of their contacts has contracted the virus.

Ethiopia Moves Closer to Liberalization of Telecoms Market, as Regulator Enters Consultation Phase

Ethiopia's telecoms regulator, The Ethiopian Communications Authority, has said that it will enter into a consultation period with would be licensees, as it looks to finalize the rules that will eventually govern the liberalization of the country's telecoms sector. The Ethiopian government is set to issue two new licenses for mobile network operators in the country, while simultaneously selling

off an as yet unspecified stake in state run telco, Ethio Telecom. The consultative phase will last for 14 days and will conclude on the 11th May, according to a report by international news agency, Bloomberg. The opening up of Ethiopia's telecoms market is an enticing prospect for telcos around the world looking to secure a foothold in Africa's second most populous nation, and the wider region of

East Africa. Vodacom Group, MTN Group Ltd, Orange SA and Helios Towers have all expressed an interest in acquiring a license in the country. The Ethiopian government has confirmed that the licenses issued to international telcos will be valid for a 15 year term. The process for issuing licenses is expected to be completed in the coming months, however the global Covid 19 pandemic has delayed the process.

RAB Receives License Applications from Three Would-Be Entrants

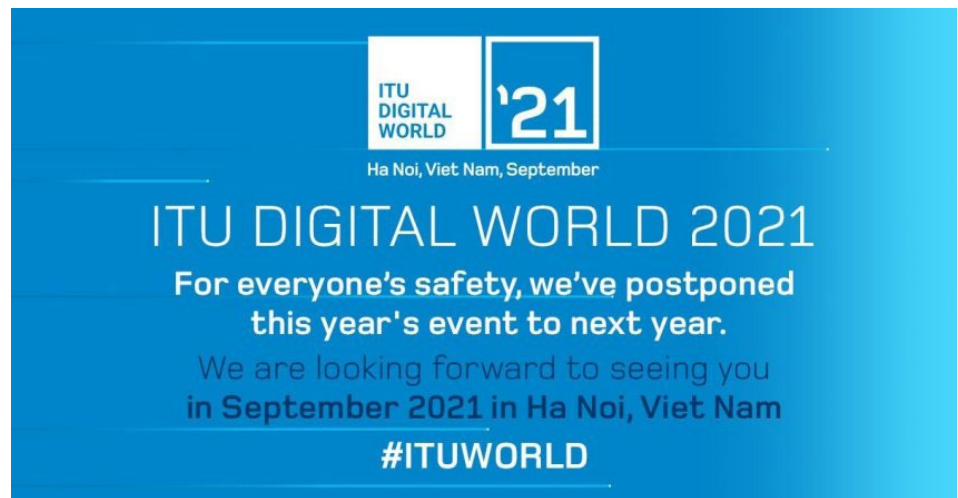
The Regulatory Authority of Bermuda (RAB) has received license applications from three companies seeking to launch services in the local market, The Royal Gazette reports. Two firms, Horizon Communications and Paradise Mobile, have applied for an Integrated Communications Operating License (ICOL), allowing them to offer integrated telecoms services, while Cable & Wireless Network Services (C&W) has applied for a new type of sub-license – a SubCol – which would enable it to provide capacity from submarine cables to the island. It is understood that all three applicants have qualified 'according to its criteria' and the RAB is now inviting comments from the

public and other industry players on or before 29 May 2020. 'The RA proposes to grant ICOL's to both Horizon and Paradise. In light of C&W's request, the RA also proposes to grant a more limited COL, in the form of a SubCOL, to C&W,' it confirmed in a statement. The regulator hopes to publish its final report and issue licenses by 8 July 2020. Horizon Communications, which will operate under the banner Wave Bermuda, is a start-up fronted by Gilbert Darrell which claims to have 'built a highly detailed technical plan with a team that has extensive experience in technology and telecommunications'. With Darrell looking for a fast-track from the RAB it aims to provide broadband internet

services, IPTV and VoIP to residential and business customers via a fixed-wireless and mobile network. Meanwhile Paradise Mobile – whose directors are listed as Ontario, Canada-based entrepreneurs Kareem Bikhit, Houssam Tabbara and Zlatko Zahirovic – seeks to establish a mobile network offering a range of pre-paid and monthly contract service plans. Finally, C&W – which as part of a group operates an extensive fiber-optic submarine cable network in the Caribbean – is looking to provide Bermudan ICOL licensees with high-bandwidth leased services, IP capacity and Ethernet.

Postponement of ITU Digital World 2020

As a result of the ongoing COVID-19 crisis, the International Telecommunication Union (ITU) and the Ministry of Information and Communications, Vietnam have taken the difficult decision to postpone ITU Digital World 2020, the global tech event for government, industry and SMEs. The event will now take place as ITU Digital World 2021 in September 2021 in the same venue in Ha Noi, Viet Nam. We believe this is the best and safest course of action to ensure the well-being and safety of all event participants and guarantee a successful event. The world is facing an unprecedented threat from COVID-19 and ICT has become a key ally in combatting this threat and helping to prevent, detect and diagnose disease. It has taken on a new importance in connecting us for health, work, education, entertainment, news, public announcements and to our friends and families. For the first time, digital solutions and platforms are being used on a massive scale to help cope with and respond to a pandemic. The COVID-19 crisis has also, however, highlighted its own digital divide, where many families, workers, businesses and populations are not able to access or afford the benefits of digital technology. Action is urgently needed to ensure a fair access to ICTs, for the benefit of all. Now, more than



ever, governments, industry, international organizations, NGOs, academia and other stakeholders must work together to find mutually beneficial solutions. We must set ambitious, measurable goals for ensuring an equitable transition to the digital age. The SDGs offer an ideal framework for this, and ICTs themselves are essential tools for the achievement of these goals. The Government of Viet Nam and ITU call upon global leaders, governments and the tech industry to ensure they are present and fully engaged, to rise to the challenge and strengthen the multilateral, collective digital response to this crisis. International events such as ITU Digital

World 2021 are more important than ever as a platform bringing together the global ICT community to learn, share knowledge, debate and network. We must work together to highlight the critical importance of ICT in the wake of COVID-19, address the stark inequalities of access and adopt concrete, urgent measures to accelerate digital transformation across all sectors and to connect all global citizens to digital services. Only by international cooperation and collaborative action will we be able to combat these types of threat, close the digital divide and build strong foundations for the future wellbeing of all.

PTA Pakistan Ranked 4th Generation Regulator by ITU

Pakistan has been ranked as 4th Generation Regulator (G4) by the International Telecommunication Union (ITU) and has become the only country in South Asia to have achieved this goalpost. Out of 38 economies in Asia-Pacific, only 8% states have managed to achieve G4 status. According to ITU's report "Global ICT Regulatory Outlook 2020 (GIRO)", Pakistan scored 88 out of 100 which means that Pakistan's ICT regulations are led by economic and social policy goals. Pakistan is also among the top 5 regulators in the entire Asia-Pacific region with a global rank of 48. GIRO is built on high-quality data provided by 193 countries worldwide that forms the basis of 'ICT Regulatory Tracker'. The Tracker, developed by ITU, is an evidence-based tool that helps decision-makers and regulators monitor the rapid evolution of ICT regulation. The report further reveals that Pakistan has scored full marks (20/20) for Regulatory Authority, 19/22 for regulatory mandate, 22/30 for regulatory regime and 27/28 for competition framework. Pakistan's journey towards collaborative regulation has also been highlighted as a special feature in the report. Pakistan Telecommunication Authority (PTA) is continuously



striving to achieve new international benchmarks by showing its commitment to protect consumer interests and enhance public-private collaborations for the digital transformation & socio-economic benefit of Pakistan.

Belgian Greens Call for Suspension of 5G Licensing Process

The Belgian Greens and Ecolo parties have tabled a resolution calling on the Belgian Institute for Post and Telecommunications (BIPT) to suspend plans to allocate provisional 5G licenses until the COVID-19 crisis has eased, arguing more time is needed for a wider public debate, Dataneers reports. The BIPT revealed on 24 March that five companies – Proximus, Orange Belgium, Telenet, Cegeka and Entropia

– had applied for temporary rights in the 3.6GHz-3.8GHz band, but Green MP Stefaan Van Hecke argues publishing such decisions on the regulator's website is not conducive to wider public debate. 'We should not give the impression that people cannot fully participate in the debate or that the government is forcing something down their throats,' he said. Proximus launched Belgium's first 5G mobile services on 1

April, using its existing spectrum holdings and infrastructure to provide coverage in more than 30 communes across the country. It has since been forced to suspend the service in some areas, however, after local authorities and anti-5G groups complained the company had deployed the technology without adequate opportunity for public consultation during the coronavirus crisis.

Court Rejects Vodafone's \$629M Appeal for Tax Refund



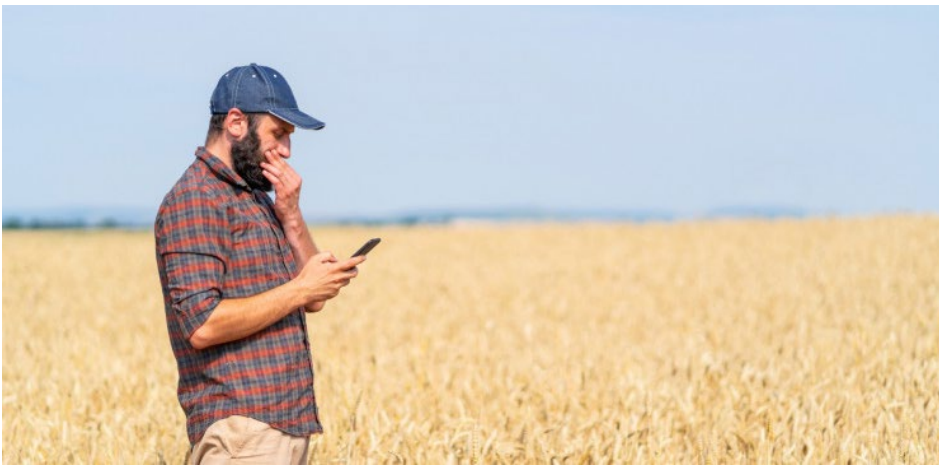
India's Supreme Court has dealt another hammer blow to Vodafone Idea, rejecting the beleaguered telco's request for a \$629 million (4,760 crore rupee) tax refund. Instead, the two man panel allowed refund of just \$96 million (730 crore rupees) and closed the matter. The ruling is another significant blow to the finances of the struggling telco's finances, following a Supreme Court ruling last October that forced telcos to revise the way they calculate their adjusted growth revenues – a crucial metric used by the Department of Telecoms to calculate dues and charges regarding spectrum usage. The Supreme Court's AGR ruling saddled the industry with tens of billions of dollars of debt, of which Vodafone Idea was responsible for around \$7.2 billion. Vodafone Idea has repeatedly called on the Indian government to devise a financial aid package, including allowing it to repay its debts over a 20 year period. However, the government has so far largely rejected these pleas. Last week, Vodafone Group infused an extra \$200 million into its Indian joint venture. To enable the company to remain solvent.

FCC Outlines Details of Planned US\$9 Billion Fund for Rural 5G Rollouts

Details of plans under which up to US\$9 billion would be distributed via the Universal Service Fund to support the deployment of 5G connectivity across rural America have been published by the Federal Communications Commission (FCC). With the regulatory body having adopted a Notice of Proposed Rulemaking seeking comment on establishing the '5G Fund for Rural America', it said that this fund would 'help ensure that rural Americans enjoy the same benefits from [the US'] increasingly digital economy as their urban counterparts – more than 200

million of whom already have access to major providers' 5G networks – and would include a special focus on deployments that support precision agriculture'. As per the FCC's proposals it confirms it intends to make up to USD8 billion available in Phase I, with this funding to support the rollout of 5G networks in rural areas that are unlikely to see a 'timely' deployment without such support or as benefit from deployment commitments that were conditions of its approval for the T-Mobile/Sprint merger. The proposed 5G Fund budget also includes USD680

million reserved to support 5G networks serving Tribal lands as part of Phase I. Meanwhile, a second phase would target at least USD1 billion in support to bring wireless connectivity to 'harder to serve and higher cost areas, including farms and ranches', with a view to helping facilitate the adoption of connected precision agriculture technologies. According to the FCC, the 5G Fund for Rural America will use a competitive reverse auction format to award funding for wireless broadband services, and it is seeking comments on two different possible approaches to identifying eligible areas for the Phase I reverse auction. The first approach would see an auction held in 2021 by defining eligible areas based on current data sources that identify areas as particularly rural and thus in the greatest need of universal service support; funding would prioritize areas that have historically lacked 3G or 4G connectivity. Alternatively, the FCC is considering the option of delaying the 5G Fund Phase I auction until at least 2023, after collecting and processing improved mobile broadband coverage data through the Commission's new Digital Opportunity Data Collection.



FCC Adopts New Rules Approving Use of 6GHz Band for Unlicensed Use

Having earlier this month published draft rules permitting unlicensed devices to operate in the 6GHz (5.925GHz-7.125GHz) band, the US Federal Communications Commission (FCC) has now confirmed their adoption. In a press release, the regulator claimed that the new regulations – which make 1,200MHz of spectrum in the 6GHz band available for unlicensed use – will 'usher in Wi-Fi 6, the next generation of Wi-Fi, and play a major role in the growth of the Internet of Things'. Further, the FCC claims that opening the 6GHz band for unlicensed use will also increase the amount of spectrum available for Wi-Fi by nearly a factor of five and help improve rural connectivity. With the 6GHz

band currently populated by, among other things, microwave services that are used to support utilities, public safety, and wireless backhaul, the FCC notes that unlicensed devices will share this spectrum with incumbent licensed services under rules crafted to protect those licensed services and enable both unlicensed and licensed operations to thrive throughout the band. The regulator noted that the regulatory decision authorizes indoor low-power operations over the full 1,200MHz, while standard-power devices can operate over 850MHz in the 6GHz band. Meanwhile, a further Notice of Proposed Rulemaking is now seeking comment on a proposal to permit very low-power devices to operate



across the 6GHz band to support high data rate applications including high-performance, wearable, augmented-reality and virtual-reality devices. This notice also seeks comment on increasing the power at which low-power indoor access points may operate.

Somalia Launches Coordination Committee on ICT Policy and Strategy

The Ministry of Post, Telecom and Technology (MPTT) has launched the National Coordination Committee (NCC) on the implementation of the ICT Policy and Strategy that was approved by the Cabinet. The NCC consisting of representatives from the federal ministries of Posts & Telecom (Chair); Planning; Finance; Interior and Federal Affairs; Information; Central Bank; National Communications Authority; and Office of Prime Minister; was set up to assist in the successful implementation of the Policy that is aimed at advancing the use of ICT as a social and economic development tool. Ministry representatives highlighted the importance of the Policy for the socio-economic

development goals of Somalia. They also noted that after the inaugural meeting, the NCC would develop a work plan that can be implemented despite the COVID-19 lockdown. The Committee has finally approved their terms of reference. Abdi Ashur Hassan, Minister for Post, Telecom and Technology, urged the Committee members to take this responsibility seriously and work hard to coordinate the initiatives of all stakeholders, both in the public and private sectors, to help our country move fast in ICT. "One of the lessons COVID-19 taught us is to use ICT more than ever before. We were forced to use virtual meetings and learning to help life continue smoothly. It is expected

this trend will be maintained to some extent even if the negative impact of the pandemic is overcome," said the minister adding that "the plans outlined in the Policy, such as e-health, e-education, and e-government are more important today than they were when we developed the Policy in 2019". The Policy implementation comes at a time when every sector is trying to automate to maintain social distancing. The Policy's main areas of priority include: e-health, e-education, e-skills, e-agriculture, e-commerce, digital transformation in government, and local content development.

California Public Utilities Commission Approves T-Mobile-Sprint Merger, Applies 'Extensive' Conditions

The California Public Utilities Commission (CPUC) has belatedly approved the merger of Sprint and T-Mobile US, after applying an 'extensive' list of conditions. Although the transaction closed on 1 April – T-Mobile did not want to risk losing its in-place financing – the CPUC warned the mobile giants to refrain from merging their Californian operations until a decision had been made, as per Section 854 of the Public Utilities Code. The CPUC has now voted to approve the merger, after applying a number of conditions to 'mitigate the potential adverse impacts on competition and to

ensure that T-Mobile delivers on its promises to consumers', including requirements for faster speeds, broader coverage, job creation and offerings for low-income customers. Going forward, the merged company must:

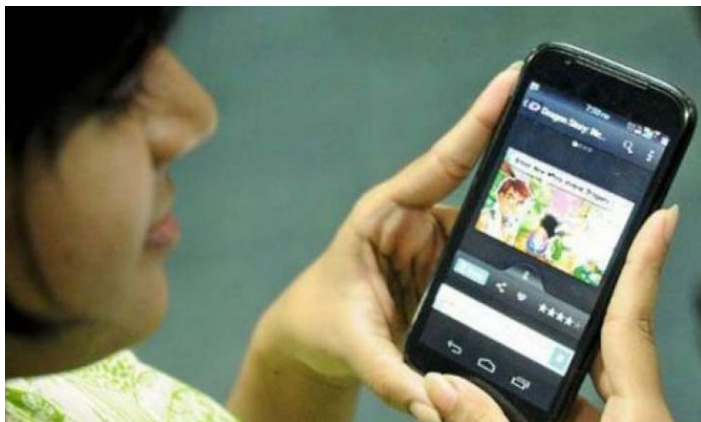
- Provide 5G wireless service with speeds of at least 100Mbps to 99% of California's population by the end of 2026, and 300Mbps to 93% by the end of 2024.
- Provide 5G wireless service with speeds of at least 100Mbps to 85% of California's rural population, and speeds of at least 50Mbps available to 94% of California's rural population, by the end of 2026.
- Make fixed home internet access available to at least 2.3 million California households, of which at least 123,000 are rural households, within six years.
- Maintain or improve current 4G LTE service quality and coverage for existing customers during the transition to 5G.
- Offer the low-income California Lifeline program – a service not currently supported by T-Mobile – for as long as it operates in California and enroll at least 300,000 new Lifeline customers.
- Increase jobs in California by at least 1,000 compared to the total number of current Sprint and T-Mobile employees.

TeleGeography notes that the US Federal Communications Commission (FCC) and Department of Justice (DoJ) approved the transaction last year with conditions, including the divestiture of Boost Mobile and a portion of 800MHz spectrum to DISH Network, to allow the latter to establish itself as a national mobile operator. A coalition of states, including California and New York, filed a lawsuit to block the deal, but US District Judge Victor Marrero ultimately ruled in favor of the deal in February.



TRAI Demands Prepaid Data as Lockdown Extended

India's regulator pressed operators for details of prepaid subscribers' usage during a COVID-19 (coronavirus) lockdown, seeking to determine what benefits should continue to be offered



after the government extended the stay-home period, The Times of India reported. The Telecom Regulatory Authority of India (TRAI) wants the data to establish usage patterns during the three-week lockdown period, which was due to expire tomorrow (17 April) but has since been kept in place until 3 May. There are concerns some prepaid users had been unable to top-up prior to the implementation of the lockdown, with TRAI also seeking data on how many ran out of credit during the period along with the number receiving free credit under operator schemes to keep people connected. The newspaper said TRAI had contacted Reliance Jio, Vodafone Idea and Bharti Airtel, along with state-run operators BNSL and MTNL. After reviewing the data, TRAI will work out the measures required to ensure prepaid subscribers can stay connected during the latest lockdown, it stated. TRAI also asked the companies to extend the validity of all prepaid accounts until at least 3 May. Reliance Jio, Vodafone Idea and Bharti Airtel made such moves when the original stay-home order was issued.

Macau SIM Registration Ends

Macau's Post and Telecommunications Bureau (Correios e Telecomunicacoes, CTT) has reminded pre-paid SIM card users that they have until Sunday 19 April to register their accounts or face suspension of services. Under the Cyber Security Law No. 13/2019 which was implemented in December, pre-paid users were given 120 days to register their

details. Any accounts suspended after Sunday can be re-activated if registration is then completed before 16 October, at which date all SIM cards not verified will be deactivated permanently. Macau has seen a sharp rise in mobile subscriber numbers in recent months due to the growing popularity of cross-border tariffs which allow users based in Hong Kong or

mainland China to sign up for services in Macau and benefit from cheaper calling rates between all three territories. As a result, Macau now has the highest cellular penetration rate in the world, with the territory being home to more than four times as many wireless accounts as there are permanent residents.

DIGI Continues Its Protest against 5G Auction Exclusion

Digi Communications, the Romanian-owned parent group of Hungarian fixed and mobile operator DIGI, has issued a statement decrying the recent decision of Hungary's telecoms regulator to complete the country's 5G mobile auction while excluding DIGI from the proceedings. The National Media & Infocommunications Authority (Nemzeti Media- és Hírközlési Hatóság, NMHH) awarded Magyar Telekom, Telenor Hungary and Vodafone Hungary 15-year licenses including 5G spectrum in the 700MHz and 3600MHz bands on 26 March despite a pending legal action from DIGI, which had its licence

bidding application rejected by the NMHH in September 2019 for failing to meet eligibility criteria. Serghei Bulgac, CEO of Digi Communications, said the group was 'deeply disappointed by the decision of the NMHH' and highlighted that a final court verdict was awaited regarding Digi's petition to suspend the auction procedure, adding that the group considers that 'by discouraging competition and blocking access to a fourth mobile operator on the spectrum, the Authority drastically reduces the chances of consumers purchasing basic services at competitive prices'. The statement furthermore asserted that the

group is now 'even more determined to continue the legal steps to challenge the unfair exclusion from this auction' and that it 'requests the Authority to annul the decision announced on Thursday, to resume the procedure and to assume the role of an equal arbitrator in the communications market'. Meanwhile, DIGI (Hungary) is continuing its 4G mobile network rollout, having reported recently on its website that it made its DIGIMobil services available in 42 additional settlements, taking the total on-net footprint to 529 cities and municipalities.

Intertelecom Suing Regulator for Cancelling LTE License

Ukrainian CDMA mobile operator Intertelecom is launching a legal case against the National Commission for State Regulation of Communications & Informatization (NCCIR/NKRZI) for cancelling its 4G spectrum license, while the company will be forced to give up certain regional 3G CDMA frequencies under spectrum refarming agreements between the country's main cellcos and the regulator, reports Liga.Tech. Intertelecom must now disconnect 9-15 channels in the Transcarpathian, Ivano-Frankivsk, Lviv and Volyn regions and will have to

deactivate base stations in these areas due to losing frequency rights, or else face regulatory sanctions for illegally operating equipment. The NCCIR announced on 1 April 2020 that it would cancel the LTE license it had allocated to Intertelecom due to non-payment of the license fees. On 7 February 2020 Intertelecom was given the green light from the NCCIR to receive a 4G operating license and begin a national LTE network rollout using refarmed 800MHz-850MHz spectrum whilst continuing to support existing CDMA users. However, by the 1 April payment deadline the NCCIR

confirmed that Intertelecom was yet to pay UAH193.6 million (USD6.88 million) in licensing fees, having handed over just UAH1 million. The launch of LTE by Intertelecom was intended to form part of the program of 800MHz-900MHz frequency redistribution/refarming between four operators including GSM players Kyivstar, Vodafone and Lifecell alongside the CDMA provider. The GSM trio paid for their newly reallocated technology-neutral 900MHz spectrum licenses last month, gaining permission to launch LTE-900 services from 1 July 2020.

Italian Cellcos Seek to Extend Licenses

A trio of Italian operators are looking to extend their rights to use wireless frequencies in the 900MHz and 2100MHz bands. The country's newest cellco Iliad, which launched in May 2018, wants to extend its 900MHz license which is due to expire on 31 December 2021 for a further

eight years. Meanwhile, rival operators Telecom Italia (TIM) and Vodafone have asked to extend licenses for 2100MHz frequencies, again from end-2021 to end-2029. Telecoms regulator Agcom is in favor of lengthening Iliad's concession under the same terms already offered to

other operators for extensions of their own 900MHz licenses, while it says it would back the extensions for TIM and Vodafone with certain conditions relating to the transition to 5G technology.


PTA Sends 811.97 Million Messages to Create Awareness about COVID-19

Pakistan Telecommunication Authority (PTA), under its current ongoing campaign, has sent 811.97 million messages to mobile phone users aimed at creating awareness about preventive measures against the coronavirus (COVID-19). Messages had been sent in Urdu, English and regional languages for comfort of the PTA subscribers across the country since March 19. Awareness SMSs in Urdu and English have also been sent to the travelers/suspected persons who may have come into contact with coronavirus patients during travelling. Similarly, Corona Awareness Ring Back Tones (RBTs) have been initiated on 131.75 million subscribers' mobile devices. During the period, PTA has allocated 12 different short codes and 6 UAN (Toll Free) numbers to government entities working on controlling the pandemic. PTA has also facilitated in arranging donations by Mobile users in 'Prime Minister's

COVID-19 Pandemic Relief Fund-2020'. Mobile subscribers can donate Rs 20/ SMS by sending a text message on code 6677. PTA is also closely monitoring the measures taken by all telecom operators amid COVID-19 pandemic in Pakistan. The telecom operators have launched many offers/initiatives for their subscribers. Some are offering discounts or temporary upgrades at low or no cost during the crisis

to help their subscribers stay connected. Details of these offers/packages are being regularly updated on PTA website. Prime Minister announced another two-week extension in an ongoing lockdown. Now it will continue until April 30 due to rising numbers of coronavirus cases in the country. The number of coronavirus cases, and deaths are way lesser than our projections due to the lockdown.

PTA Supporting Efforts to Combat COVID-19

-  811.97 million Corona Virus awareness SMSs sent in Urdu, English & regional languages to mobile users across Pakistan.
-  131.75 million Corona Awareness Ring Back Tones (RBTs) initiated on users' mobile devices.
-  0.53 million precautionary SMSs sent to travelers and suspected persons
-  72 IPs whitelisted to facilitate educational institutions & online businesses
-  18 Short codes & UAN (toll free) numbers allocated by PTA to Government entities working on controlling the pandemic

Channel Islands' Pan Island Regulatory Body to Demerge

From July 2020 the Channel Islands Competition and Regulatory Authorities (CICRA) will revert to being separate authorities, the body has announced. As noted in TeleGeography's GlobalComms Database, the CICRA was formed in December 2010, after the Jersey

Competition Regulatory Authority (JCRA) and the Guernsey Competition and Regulatory Authority (GCRA) inked a memorandum of understanding (MoU) designed to facilitate closer working between them. Now, however, in a press release revealing that the joint entity is to

demerge, the CICRA noted that a decision to withdraw from the model of a pan island body had been made by the Jersey Minister for Economic Development, Tourism, Sport & Culture, with the Guernsey Committee for Economic Development having accepted that decision.

Montenegro Eyeing 5G Rollout in 2022

Montenegro is likely to see 5G launches by the end of 2022, with the regulator looking to outline a roadmap this year. Local news outlet Vijesti reports that the Agency for Electronic Communications and Postal Services (EKIP) will publish its strategy

this year with an eye on holding auctions in the second half of 2021. EKIP executive director Darko Grgurovic confirmed that the government is planning to auction frequencies in the 700MHz, 3.5GHz and 26GHz bands. He noted that operators

have expressed interest in conducting 5G trials this year. The regulator hopes that operator trials will demonstrate potential applications of the technology for both consumers and businesses.

Spain Informs EC of Plan to Postpone 700MHz Release

The Ministry of Economic Affairs and Digital Transformation (Ministerio de Asuntos Economicos y Transformacion Digital, MINECO) has communicated to the European Commission (EC) that – due to the exceptional situation derived from the COVID-19 pandemic – it has decided to postpone the 30 June 2020 release date for the 694MHz-790MHz (700MHz) band,

a process known as the Second Digital Dividend. The process involves changing the frequencies assigned to television channels in the 700MHz band, in order for the country's mobile operators to use the spectrum to deploy future 5G networks. The Ministry notes: 'The communication to the European Commission explains that the new date will be determined based on

when the containment measures adopted to deal with COVID-19 end. In any case, it is stated that it will be the minimum time required to complete the process.' Fellow EU countries such as France, Austria and Portugal have all postponed 700MHz 5G auctions in recent weeks, as a result of the pandemic.

China Operators Make Major RCS Commitment

China Mobile, China Telecom and China Unicom today (8 April) released a 5G messaging white paper outlining their commitment to mandate all compatible handsets sold in the country support Rich Communication Services (RCS). The move to adopt the GSMA's Universal Profile specification is backed by more than 12 major hardware vendors including Huawei; Xiaomi; Vivo; Oppo; ZTE; Lenovo; and Samsung. However, the operators did not set out a timeframe for adding RCS,

revealing in a joint statement only the service would be included in future 5G smartphones. Users will be able to switch seamlessly between RCS and traditional SMS functions. "Together with ecosystem partners, we will start a new chapter in 5G messaging and further promote RCS applications in China," the trio said. They added RCS is necessary to support new 5G-enabled services: the platform can also offer features including messaging over Wi-Fi, rich media sharing and

group chats. In addition to clarifying the relevant business functions and technical requirements, the operators' white paper suggests ideas for developing the 5G messaging ecosystem. RCS is a GSMA-backed messaging platform combining the capabilities of SMS with OTT services. GSMAi figures state 88 operators had launched RCS services as of this month, with 403 million active monthly users. It forecast the market value would hit \$74 billion by 2021.

African Telecommunications Union Calls for Harmonized Action by Telecommunications Regulators and Operators in Africa

The African Telecommunications Union (ATU), a specialized agency of the African Union in the field of telecommunications, has put together a set of guidelines to assist in combating the Coronavirus disease (COVID-19) pandemic that every Member State should consider. Africa has so far recorded relatively few coronavirus cases compared to the rest of the world. Twenty-seven African countries have recorded over 357 coronavirus cases, according to the World Health Organization on Thursday 19th March 2020. Egypt leads in cumulated confirmed cases at 196, South Africa 116, Algeria 72, Morocco 49, and Senegal 36. Other countries with over ten cases include Tunisia, Burkina Faso, D.R. Congo, Rwanda and Cameroon. However, Heads of States and Governments across the continent are taking no chances as they race to stop the spread of the virus by sensitizing their citizens about the pandemic and the various ways to combat the disease. Globally, telecoms/ICTs have become a pillar in the prevention, preparedness and response to the COVID-19 pandemic. The ATU, through the Secretary-General, Mr. John Omo, is urging the Ministries of ICT, through the telecommunications regulators and operators in the Member States, to consider implementing the following recommendations/guidelines to fight COVID-19 pandemic:

1. Activation of the Common Alerting Protocol (CAP)

Regulators should implement the Common Alerting Protocol (CAP) to enable authorities to effectively prevent and mitigate the spread of COVID-19. The CAP involves the use of multiple modes of communication to educate Members of the public including vulnerable groups about the disease as well as the preventive measures. The CAP will make it possible for members of the public to receive CAP-originated information in many ways, such as through mobile and landline telephones, Internet (e-mail, Google, Facebook, Twitter, WhatsApp, smartphone apps, online advertising, Internet of Things (IoT) devices, in-home smart speakers, etc.), sirens (in-building or outdoor), broadcast

radio and television, cable television, emergency radio, amateur radio, satellite direct broadcast, and digital signage networks (highway signs, billboards, automobile and rail traffic control), among others.

2. Collaborative Practical Measures Regulators should adopt the following:

(a) Network Capacity

Fixed and mobile telephony providers should reserve some dedicated network capacity which should be made available free of charge to the authorities handling COVID-19.

(b) Emergency Numbers

Fixed and mobile telephony providers should implement and enable the emergency numbers, for example 119, for voice messaging and promote short message service (SMS) as an alternative to telephony communications during this period. Emergency agencies – such as police, ministries of health and hospitals should adequately size their network capacity, e.g. lines and access trunks, to offer an efficient service when call demand is high. Also, telecommunication providers and amateur radio operators need to perform periodic emergency drills together. The public should adequately be informed of the availability of the service free of charge.

© Guidelines for action during emergencies

Calls to emergency numbers should be free. Local and long-distance backbone

providers must have redundancy networks to handle traffic from other providers that experience difficulties. Broadcasters should support communication and messaging strategies to the public in coordination with all the other agencies that are involved.

(d) Amateur radio operators and simplification of type-approval processes

Radio amateurs are community based and should be involved in the information dissemination mitigation processes for COVID-19. Any type-approval acceptance could be waived during the period of emergency for equipment to be used by amateur radio operators or those processes simplified in order to gain time, for example, not subjecting such equipment to taxation at all. Regulatory authorities should recognize foreign type approvals to expedite the process and rely on the guidelines of the ITU Telecommunication Standardization Sector (ITU-T).

3. Streamlined Regulation Processes

Rapid response in the wake of a disaster is critical. Consequently, regulators should streamline the process to allow telecom/ICT services to be available as soon as possible. The following strategies should be considered by regulators:

(a) Telecom/ICT services licensing

As the continents fight the COVID-19 pandemic, the telecom/ICT regulatory authority should urgently grant telecom/ICT service licenses necessary to



support emergency telecom/ICT efforts. Therefore, exceptional expedited licensing procedures should be in place, free of charge, for use. These licenses should be temporary and valid only during this period of emergency response and recovery until the government has determined that there is no further need for the service being provided.

(b) Frequency allocation

Frequency planning and allocation are critical at this time for mitigation, preparedness, response and recovery. Governments should make the necessary spectrum available on a national basis to allow for multiple types of applications and services, from narrowband voice services up to broadband-intensive applications. A combination of spectrum bands should be available free of charge for emergency communications, allowing both terrestrial and satellite systems to be quickly deployed with limited interference.

(c) Priority call routing

During such times, networks could fail to provide service for different reasons, one of them being overload thus delaying or altogether preventing critical communication. Regulators should

establish priority call routing on both mobile and fixed networks for people engaged in COVID-19 response as well as other entities and institutions involved in such activities.

(d) Network redundancy

Network redundancy is a critical element of a robust network that will minimize telecom/ICT outages during this period. Disaster networks need to consider redundancy and resilience in their design, as well as increase the number of terminals. Regulators need to ensure that telecom/ICT providers have networks with adequate redundancy and multiple connectivity options for the authorities involved in combating COVID-19.

(e) Importing telecom/ICT equipment

Major delays during the importation of telecom/ICT critical equipment have a negative impact on the response time to a disaster, and even impact the likely loss of lives. Delays can occur for several reasons, including duties or tariffs, restrictions based on local standards, extensive paperwork, disorganized processes, etc. Rules should be in place to expedite the importation process of critical telecom/ICT equipment that might be used for response

and recovery: e.g. exemptions from duties and tariffs, clear expedited processes and streamlined paperwork. In addition, once the equipment needs to be returned to the place of origin, expedited processes should be in place to help streamline the return process.¹

4. Multi-stakeholder collaboration

There should be coordinated efforts during this period and clearly defined functions for different government institutions, e.g. ministries of foreign affairs, ICT and communications, customs, regulatory agencies and first responders such as hospitals among others. Also, there should be a collaboration with the private sector, including telecom/ICT operators, private networks, and amateur radio among others to give support and insights to the government on the collection of data and dissemination of information to the public. Regulators should, therefore, carry out a set of activities and procedures to connect all actors in the ecosystem at the local, national and international levels and ensure effective flow of information as the continent fights COVID-19.

FCC to Implement Executive Order on Foreign Ownership in Telecoms Sector

Commissioner Michael O'Rielly of the US Federal Communications Commission (FCC) issued a statement backing President Trump's Executive Order on foreign ownership in the communications sector, which establishes a new committee and new procedures to review applications involving foreign investment. The Commissioner stated: 'I will request that [FCC] Chairman Pai move expeditiously to integrate the new Executive Order into our review process.' The Order establishes the Committee for the Assessment of Foreign Participation in the United States Telecommunications Services Sector, the primary objective of which is to 'assist the FCC in its public interest review of national security and law enforcement concerns that may be raised by foreign participation' in the US telecoms sector. The functions of the Committee shall be:

(i) to review applications and licenses for risks to national security and law

enforcement interests posed by such applications or licenses

(ii) to respond to any risks presented by applications or licenses by recommending to the FCC, as appropriate, that it dismiss an application, deny an application, condition the grant of an application upon compliance with mitigation measures, modify a license with a condition of compliance with mitigation measures, or revoke a license.

The Committee is composed of the following members:

- i. the Secretary of Defence
- ii. the Attorney General (the Chair of the Committee)
- iii. the Secretary of Homeland Security
- iv. the head of any other executive department or agency, or any Assistant to the President, as the President determines appropriate.
- v. The following officials shall be advisors to the Committee:
 - i. the Secretary of State
 - ii. the Secretary of the Treasury
 - iii. the Secretary of Commerce
 - iv. the Director of the Office of Management and Budget
 - v. the United States Trade Representative
 - vi. the Director of National Intelligence
 - vii. the Administrator of General Services
 - viii. the Assistant to the President for National Security Affairs
 - ix. the Assistant to the President for Economic Policy
 - x. the Director of the Office of Science and Technology Policy
 - xi. the Chair of the Council of Economic Advisers
 - xii. any other Assistant to the President, as the President determines appropriate.

5G Standards Groups Tweak Process Amid COVID-19 Outbreak

3GPP, the main global body that prepares specifications for new wireless technologies, is experiencing first-hand the pitfalls of having to take what historically were productive face-to-face meetings and do them in an electronic format. The organization, whose participants hail from all corners of the world, started going electronic back when the COVID-19 shutdown was primarily confined to China. Chinese contributors, including Huawei, are a big part of the work that 3GPP conducts. In February, the 3GPP leadership announced that second-quarter meetings, originally scheduled to be in China, were being relocated to other locations. That was before meetings for the foreseeable future went electronic. The impact of going mostly virtual? A meeting that originally was to last one week stretched into two as it required a mix of email discussions – hundreds of them – followed by conference calls, according to Diana Pani, senior director of 5G Standards and Research at Interdigital. Pani chronicled the situation in a blog. There are plenty of online tools that they and everyone else can use to accommodate meetings with a large audience, but they aren't doing video calls because it takes up so much bandwidth and they experienced a lot of connection issues during earlier attempts to connect folks all over the globe. Suffice it to say, getting hundreds of engineers to

agree on specific technical parameters is a challenge, and when you remove the ability to meet face-to-face, the time it takes to reach consensus gets longer. Signals Research Group (SRG) opined in a report in March that from its perspective, there are a few pros and cons associated with e-meetings. 3GPP delegates seem more willing to compromise on non-controversial agenda items, and frivolous comments are reduced because it takes a lot more effort to write an email than to stand up, grab a mic and start talking. However, "the downside, and it is huge, is that e-meetings are very inefficient overall, and it is virtually impossible to reach agreement on controversial agenda items," wrote SRG CEO Michael Thelander. Pani said face-to-face meetings are a great way to keep things moving along and eventually reach consensus. "It's a lot simpler for people to converge when they're face to face. By email, I can continue to say no, no, no, no all the time. It's a lot easier to say no if you don't see the person face to face," she said. If you see a person face to face, you're more prone to find ways to compromise. During regular meetings – before the novel coronavirus swept over the world – 3GPP delegates would hold regular coffee breaks, one in the morning and one in the afternoon, and that's where a lot of the side discussions took place. There might be a few or up to

10 or 15 people gathered around to argue or discuss a topic at a faster pace than in the bigger meeting, where a chairperson oversees the flow and delegates raise their hands for a chance at the mic. The typical plenary meeting nowadays includes about 300 people, where the scope of the work and timeline get discussed. Then there are working group meetings where the actual technical discussions take place. Some group meetings, like the RAN 1 for example, host 500-600 people. The size of these groups has been increasing with 5G, due in part to all the new verticals looking for new business opportunities and the emergence of more companies in the supply chain. 3GPP leadership in March announced a shift in the timeline for some of their releases. The Release 16 Stage 3 freeze was pushed back three months to June. They had already decided that the RAN1 working group meeting in May will primarily focus on Release 16 maintenance items rather than spending time on new Release 17 study items, which were on the docket, according to SRG. The important thing is that the Release 16 ASN.1 freeze date in June remains unchanged, according to Pani. Some of the items to be considered for Release 17 are related to V2X; satellite communications to extend coverage to remote areas; AR/VR for things like gaming; and operations at higher frequencies, she said.

Switzerland Plans 5G Emissions Monitoring



Switzerland's Federal Council decided to keep current 5G radiation exposure limits, while unveiling plans to further monitor the effects of the next-generation mobile technology. In a statement, the cabinet explained it aimed to protect the

population from non-ionizing radiation by maintaining its limits. While noting 5G can play an important role in digitalization, it said it had taken concerns raised by some citizens about the technology into consideration. Going forward, the Federal Department of Environment, Transport, Energy and Communications (DETEC) will develop an enforcement aid based on test measurements on adaptive antennas. Until completion, such antennas will need to be assessed as conventional. The government also decided to implement a range of measures including further development of radiation exposure monitoring and creation of a

new environmental medical advice center for non-ionizing radiation. It also plans to simplify and harmonize enforcement, provide better information for the population, and intensify research on the health effects of mobile communications and radiation. The council tasked DETEC with submitting a report providing options for the sustainable design of mobile radio networks by the end of 2021. In February, officials denied claims the country had implemented a national ban on 5G deployments. Swisscom, Sunrise and Salt Mobile won 5G radio frequencies in February 2019, in an auction which netted CHF380 million (\$389 million).

AT&T Slams FCC's Plans for 6 GHz Band

A lot of people praised the FCC for demonstrating its boldness in voting unanimously Thursday to open up the 6 GHz band for unlicensed devices. AT&T's public policy team was not among them, accusing the agency of putting critical incumbent services at risk. "While we support use of this band for Wi-Fi expansion, any new use must protect incumbent services, which in this case includes tens of thousands of microwave links critical to maintaining network infrastructure. This order does not do that," said Joan Marsh, AT&T EVP of Regulatory & State External Affairs, in a statement. "By failing to require that new Wi-Fi devices using this band include smart technology that avoids interference, the FCC's order will allow the introduction of devices that can impair, or even knock out, links in the networks that monitor our electric grid, enable first responders to communicate and provide mobile broadband services to millions of Americans, particularly in rural areas," she said. "Even more troubling is the fact that the FCC has no plan to mitigate the interference when it inevitably occurs. Once millions of these new unlicensed devices are released and in use, it will be impracticable, if not impossible, for the FCC to identify and remove specific

devices causing interference. Ultimately, it will be public safety, our nation's critical infrastructure and consumers that will pay the price," she added. Up until the vote, AT&T had been steadily submitting comments and telling the FCC about its concerns (PDF). The company disclosed (PDF) that it holds 8,138 licenses in the 6 GHz fixed service (FS) bands supporting backhaul for its mobile networks, as well as telecom links for its landline assets. On the flip side, it's worth noting that JR Wilson, Vice President of tower strategy and roaming at AT&T, is Chairman of the Wireless Broadband Alliance (WBA), which cheered the FCC's decision on 6 GHz. AT&T also happens to be one of the nation's largest users of Wi-Fi, and Wi-Fi came to the rescue when AT&T held the exclusive on the first iPhone that crushed its network's ability to handle all that traffic way back then. The FCC's 6 GHz order puts a lot of emphasis on Wi-Fi in the beginning, as that's what a lot of the low-powered indoor devices will use. But nothing prohibits AT&T and other licensed operators from using the 6 GHz band as well, either for Wi-Fi offload or technologies like LTE, which they fought hard for via Licensed Assisted Access (LAA) in 5 GHz. AT&T already uses the 5 GHz band to connect small cells with

iPhones in places like New York City and getting 100 Mbps to those phones over unlicensed. "I can see that over time, they might well do the same over 6 GHz" to the extent it's in areas where there won't be interference with small cells and incumbent microwave services, said analyst Chris DePuy, founder of the 650 Group. "I imagine they'll take advantage of it." There's also a good case to be made for mobile operators eventually to use the spectrum for offering fixed wireless access (FWA), according to DePuy. Verizon, for example, already offers a FWA service using the millimeter wave (mmWave) spectrum. "The 6 GHz spectrum is a good opportunity for the mobile operators to reinvigorate their FWA aspirations, especially in suburban and rural areas where there are few microwave links that are active, so they will be able to use that spectrum," DePuy said, suggesting that could happen in the next couple years. It's not unlike Project Angel, which was an initiative that AT&T Wireless undertook before the company was acquired by Cingular Wireless in 2004. "This is very similar," DePuy said, where the new 6 GHz spectrum could effectively deliver gigabit class service to residential areas.

China Telecom Fights for US License

China Telecom's US subsidiary argued any move to terminate an interconnection license in the country would be unlawful, after officials pressed the Federal Communications Commission (FCC) to block the company on security grounds. In a filing, China Telecom Americas' (CTA) lawyers said any move to withdraw its permit without the opportunity to put its case to a judge would contravene its "constitutionally protected liberties," and damage its reputation. The lawyers asked the FCC to confirm no action will be taken until CTA is notified of the allegations against it and given a chance to respond. Its request comes after the Departments of Justice, Homeland Security, Defence, State and Commerce on 9 April jointly urged the FCC to withdraw CTA's authorization,



which it held since 2007. In a statement, the agencies cited "substantial and unacceptable national security and law enforcement risks" associated with the company's operations. They pointed to concerns it is vulnerable to Chinese government influence, and alleged the company made inaccurate statements about its Cybersecurity practices

and where it stored US records. The recommendation came less than a week after US President Donald Trump ordered the creation of a special committee to review telecoms licenses and applications to pinpoint potential national security threats. While the committee provides recommendations, the FCC has the final say. 📍



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A SNAPSHOT OF REGULATORY ACTIVITIES IN SAMENA REGION



Bahrain

The Telecommunications Regulatory Authority of Bahrain announced the publication of their latest Quality of Service Report, shedding light on the progress of 5G Networks. A comparison between 4G and 5G performance shows average speeds of approximately 80 megabits per second compared to 5G's average of approximately 600 megabits per second, though records higher than 1 GB per second were observed. According to the report, the availability of modern telecommunications services and ensuring their quality are critical elements for the success of the Kingdom of Bahrain's digital economy. Such services are heavily used and will be used even further with the growth of IOT by consumers in the Kingdom of Bahrain. The report included some important observations about the coverage of 5G Networks. It showed the coverage areas on the map of Bahrain to enable the consumer to know the current coverage areas, which is expected to increase in the near future. Commenting on the report, Eng. Mohamed Alnoaimi, TRA's Director of Technical & Operations, stated that "This report and audit is something we carry out regularly in the interest of monitoring the current state of mobile coverage in the kingdom, giving consumers insight into decisions on which operator covers their area best, and serves their needs." He further added that "This time around, we've covered the latest results on how 5G adoption is progressing and developing, and the information we've gathered will be important to consumers and businesses deciding whether it's time to transfer wireless internet services from 4G to 5G technologies, and the data speaks for itself." (April 21, 2020) tra.org.bh

According to the Telecommunications Regulatory Authority's latest statistics, 1,597 consumer disputes out of 1,604 were resolved by the TRA in 2019, an 89% increase in number of disputes from 2018. The TRA's Consumer Affairs arm determined

that 60% of all disputes received last year were related to Mobile services, whereas Broadband disputes made up 24%, Fixed Line services made up 11%, and 5% to other disputes such as calling cards. TRA Director of Consumer Affair & Media Shaikh Abdulla Bin Humood Al Khalifa stated that "Consumer Protection and Awareness, as well as ensuring compliance among service providers is a main pillar of the TRA's Mission, and we take every precaution to ensure that consumers are represented fairly." Shaikh Abdulla further added that, "We have consistently been spreading awareness among consumers to enable them to make informed decisions and depend on the TRA to handle consumer disputes in the sector. These efforts have been successful thus far, as the rise in the number of complaints reflects that more and more consumers are becoming aware of our role." TRA also continued its efforts to enhance communication channels between TRA and all consumer segments and improve the level of services provided to them, as it launched the video call service to subscribers with special needs to facilitate the communication process and educate them of their rights as consumers in the telecom sector. TRA's Consumer Call Center (81188) has received more than 31,000 calls since its inception, with an average of 96% success rate of responses to the calls. "Mobile services represent the largest segment of disputes on a consistent basis, year on year." Says Amna Al Ghatam, TRA Manager of Consumer Affairs. "Statistically, Mobile subscriptions outnumber every other service in the sector, thus this is expected, paired with the fact that mobile service disputes comprise of mobile data, calls, coverage, billing and roaming, among other factors. We expect dispute cases to continue rising as our awareness efforts continue. We welcome and urge consumers to approach us with any issues they face with their telecom services by escalating their disputes through our channels." (April 1, 2020) tra.org.bh



Bangladesh

Mobile phone operators have asked the telecom regulator to allocate some spectrum for free for the time being, reasoning that their network had become busier for a surge in data use amid the novel coronavirus-induced ongoing lockdown. The carriers also requested Bangladesh Telecommunication Regulatory Commission (BTRC) to exempt them from sharing revenue with

the government at least for a couple of months so that they can tackle the fallout of the coronavirus. Mobile carriers share 6.5 per cent of their gross revenue with the government. The telecom sector is experiencing challenges similar to what all other areas of the economy are going through due to the coronavirus pandemic, according to the Association of Mobile Telecom Operators of

Bangladesh (AMTOB). Mobile carriers are already observing trends in usage patterns that may leave a dent on their overall revenue, it said. Last week carriers slashed data pack tariffs by up to 50 per cent following a request from the telecom regulator, which has resulted in data usage growth of around 20 per cent. Although data usage is growing rapidly, data monetization is still low for carriers, said SM Farhad, secretary-general of the association. Over the last couple of days, voice calls have dropped by up to 20 per cent. This is particularly worrying, Farhad said. "Mobile operators have discussed the matter with the commission but we have said that the BTRC does not have the authority to come up with a decision like it," said Md Jahurul Haque, chairman of the regulatory body, regarding the demand on revenue sharing waiver request. "Their expectations are not unrealistic," he told The Daily Star. Haque suggested that the carriers discuss the matter with policymakers. "In my personal view, only the prime minister can give a decision about it." The BTRC, according to Haque, can do two things -- give some time to the operators to share the revenue and allow the revenue to be paid in installments. Operators have sought 5 megahertz of spectrum from the 2100 band as customers are consuming at least 20 per cent more data

in recent times. The commission has the authority to allocate spectrum on credit but the operators will have to pay the price in line with the rate that has been determined by auction, the BTRC chief said. "It is true that spectrum price is higher in Bangladesh but we have nothing to do with it. Only the government has the authority to revise it or give it to someone for free," Haque added. The total number of mobile phone top-ups through retail channels has declined by around 20 per cent due to people limiting their movements, Farhad said. Although telecom has been declared an emergency service during this crisis period, law enforcement agencies are imposing restrictions on top-up shops in some places as part of the nationwide lockdown and this is maybe due to the ignorance about the government directives, he said. "These obstacles are hampering our retail operations, especially the top-up or recharge services." The operators urged the law enforcers to extend their cooperation for the smooth functioning of the top-up stores and other recharge outlets. Mobile operators are encouraging customers to avail top-ups through other options such as mobile financial services, electronic money transfers and mobile applications. (April 5, 2020) thedailystar.net



Egypt

The National Communications Regulatory Authority issued a report showing high indicators of the use of telecommunications services, in light of the precautionary measures and the application of the curfew during the month of March and April, and the completion of the educational process for school and university students with the distance learning system; where the report shows a significant increase in internet consumption and its applications during the period of the ban and heavy loading on communication networks, it will increase peak hours as a result of the application of the curfew and the subscribers stay longer in the home. The comparison of the telecom services indicators in the second week of April with the second week of March shows the following:

Voice calls:

- Increase in international voice calls by 15%
- Increase in local voice calls by 3%

Internet:

- Increase in home internet consumption by 87%.
- Yads in mobile internet consumption by 18%

Peak time:

The number of peak time hours for using Internet services and applications has doubled to 15 hours per day from 12 noon to 3 am during the second week of April compared to only 7 hours during the second week of March.

The increase in internet consumption was as follows:

- Web Browsing increased by 131%.
- The significant increase in the use of Internet applications and the rates of increase in their use, the most important of which are:

1. Tik Tok: It is an application that is a favorite destination for videos for users on mobile phones, and the percentage of using this application increased by 194%.
2. Games: Online gaming applications have increased their usage rate by 96%.
3. Netflix: The global platform for watching movies; the use of this app has increased by 69%.
4. YouTube: a site to watch and download free videos and videos, watch, share and comment on them, and this application has increased by 41%.
5. Witness: An Arab platform that provides video and watching movies and series services in the Middle East, and this application has increased by 40%.
6. Applications of social networking sites and networks:
 - Facebook: 151% increase in application usage.
 - Instagram: The application has increased by 59%.
 - WhatsApp: Increase application usage by 34%.

The rate of browsing the educational sites of the ministries of Education and Technical Education, Higher Education and Scientific Research increased to 376.4% in the second week of April compared to the second week of March. The National Communications Regulatory Authority confirms that it is in constant coordination with the four companies, telecommunications service providers, to monitor the increases in the usage indicators on a daily basis and to absorb any emergency increases that do not affect the quality of services provided to citizens. It is worth noting that the Ministry of Communications and Information Technology had launched a number of initiatives to support the distance learning system, in coordination between

the National Communications Regulatory Authority and the four companies providing telecommunications services in Egypt and in coordination with the ministries of education and higher education; where 20% monthly download capacities were added with home internet subscriptions For individuals at a cost of 200 million pounds, free access was also made to the websites of the Ministry of Education and the Ministry of Higher Education and

Scientific Research, and the provision of free digital platforms to host scientific materials and lectures for students Schools and universities, in addition to offering incentive offers to citizens by giving 30 times the balance charged minutes and free units for citizens when charging with electronic payment methods.

(April 20, 2020) tra.gov.eg



Iran's state-run TV broadcaster is reportedly refusing to cooperate with authorities to release spectrum for future 5G services. A report from Radio Farda says that Islamic Republic of Iran Broadcasting (IRIB) has permits for 5G-capable 700MHz and 800MHz frequencies which are not being used, but it is not cooperating with the Ministry of Information and Communication Technology (MICT) to free the spectrum for reallocation to cellcos. ICT Minister Mohammad Javad Jahromi is quoted as saying: 'We've been trying to get hold of the frequencies for three

years ... but they have not cooperated.' The Iranian government has imposed severe restrictions on internet use in the past, encouraging users to instead access a state-controlled national intranet service which carries sanctioned content and is separate from the World Wide Web. For many years, internet connectivity was throttled to narrowband speeds for most users, while the main cellcos MCI and MTN Irancell had to wait until September 2015 before being permitted to launch 4G wireless networks.

(April 24, 2020) commsupdate.com



Jordan improves its remote learning infrastructure fast, taking into account the current situation with coronavirus in the region. King Abdullah who chaired the recent National Policies Council (NPC) meeting hailed the remote approach to the learning and urged to enhance the whole system. In Jordan, the distance learning procedures at universities and schools become the common practice under the nationwide lockdown, Petra news agency reported. To curb the coronavirus spreading, the students across the kingdom have the brilliant opportunity to study from home. No need to worry because the technical and methodological base from the government is a must, said King Abdullah. Jordanian ruler called for assisting exporters to meet their obligations in terms of exports without negatively affecting the needs of the local market, the Royal Court statement said. The NPC meeting, attended by HRH Crown Prince Hussein, covered the need for the government and concerned stakeholders to enhance remote learning infrastructure and content for university students. The Jordanian authorities should ensure an easy access through reliable telecom network coverage, according to a Royal Court statement. During Sunday's meeting, King Abdullah reiterated the need for a dedicated team to follow up on distance learning for university students to continuously improve it based on feedback from students and university professors. In addition, the monarch urged Cabinet to work on meeting the basic needs of daily labourers during the crisis caused by the COVID-19 infection. Prime Minister Omar Razzaz said that the Ministry of Higher Education and Scientific Research has prepared the ad

hoc plan to ensure the continuity of public and private university education. To summarize NPC meeting, Jordan formed three main teams to safeguard the national economy; oversee basic services, including education, higher education, health, water and electricity; and provide legal, administrative, field and media support to all sectors and task forces. (April 13, 2020) politicallore.com

In a fourth meeting of the Crisis Cell for the Telecommunications Sector in the presence of representatives from the telecommunications companies Zain, Orange, Umniah to discuss all developments related to the telecommunications sector in light of the circumstances the Kingdom is going through, and the reports and technical data issued by the authority showed a remarkable improvement in The performance and quality of licensed cellular networks and with the testimony of major companies of global telecommunications system providers, and these results come as a result of the Authority's implementation of several proactive measures to ensure the permanence of cellular networks to function fully during the exceptional circumstances experienced by the Kingdom .The Chairman of the Board of Commissioners of the Telecommunications Regulatory Authority, Dr. Eng. Ghazi Al-Jabour stressed the ability of the network system in the Kingdom to resist the pressures of use that occurred during the last period, where daily data traffic increased by (1260) terabytes, or by (31%) over the cellular networks for the fourth generation On its own, the improvement in the rate of increase in download speeds ranged between 36% and 73% between cellular companies, which

Iran

Jordan

indicates the readiness of the infrastructure in the Kingdom for the communications system and the ability to maintain its sustainability under any pressures or unforeseen circumstances. Dr. Jabour indicated that the authority is constantly monitoring the performance of the licensed communication networks system through the reports of technical networks presented by the three cellular companies to the authority every 12 hours and working to match the indicators through the performance monitoring systems of automated networks with the authority and applied since 2018, as the results have shown increased use of messaging applications, WhatsApp and Instagram by 40%, and social media applications for visual flow such as Facebook video, YouTube and Tuk Tok accounted for 52% of the total data flow. It is noteworthy that the Telecommunications Regulatory Authority was the first to grant temporary and emergency frequencies at the global level for cellular companies in response to the growing demand for the expected use of data in the current circumstances that the Kingdom is going through in response to the visions of the country's master in the efforts of all state institutions to overcome the consequences of this crisis. (April 7, 2020) [trc.gov.jo](#)

The Chairman of the Board of Commissioners, Dr. Eng. Ghazi Al-Jabour, held a press conference for delegates of daily newspapers and the Jordanian News Agency (Petra), in the presence of Commissioners and a number of concerned managers. During the press conference, Dr. Al-Jabbour presented a number of specialized cases that the authority has followed during the past period, such as the arbitration case between the authority and the

American company (DRS ICAS LLC) related to the purchase of a mobile system to check and monitor the frequency spectrum in the Kingdom. Dr. Jabour also discussed the role played by the authority with regard to measuring the quality of communication services provided by the concerned companies and the projects implemented by the authority in this regard, in addition to clarifying the measures taken by the authority with regard to technical and quality approvals, and those related to developing services provided to its auditors such as the creation of the auditor service room and the opening of a permanent office for the authority at the airport, the authority's projects related to communications markets, and the authority's role in controlling violations related to the postal sector during the last period, in addition to dealing with the preparations made by the authority to host social activities XIV sector of the Arab Network for Arab Telecommunications Regulatory bodies and information technology to be held later this month (April) and recognizes the authority of the presidency of the network in 2016. On the other hand, Dr. Jabour reviewed the most important projects and future plans of the authority with regard to quality control, granting quality approvals and introducing communications devices to the Kingdom, in addition to projects related to telecommunications markets and spectrum affairs and protecting the interests of beneficiaries, and the authority directed towards launching the award for the best operator in accordance with specialized standards represented in The quality of technical services, the extent of dealing with complaints and the quality of services as perceived by the citizen. (April 3, 2020) [trc.gov.jo](#)



Ncell, Nepal's second largest mobile network operator (MNO) in terms of subscribers, has settled in full the NPR22.44 billion (USD182 million) capital gains tax (CGT) bill levied by the country's Large Taxpayers' Office (LTO), as well as an additional sum of NPR990.25 million in interest. In a statement, parent company Axiata Group noted 'Ncell's payment of the total amount was made under protest and expressly without prejudice to Ncell and Axiata UK's position in the international arbitration proceedings commenced by Ncell and Axiata UK against the

Federal Democratic Republic of Nepal.' The LTO ordered Ncell to pay the disputed CGT bill in full in December 2019, following a Supreme Court ruling that determined the firm's outstanding liability in connection with Axiata's acquisition of an 80% stake in the Nepalese operator from Sweden's Telia in 2016. Axiata referred the issue to the International Centre for Settlement of Investment Disputes, arguing the imposition of the tax contravenes Nepal's international legal obligations under the bilateral investment treaty (BIT). (April 14, 2020) [commsupdate.com](#)



The Telecommunications Regulatory Authority (TRA) has unveiled a plan to provide telecom services to 500 rural villages at a cost of R015 million. Yousef bin Abdullah al Balushi, First Deputy Chairman of TRA, said in a statement to Oman News Agency that the project got the approval of the Ministry of Finance to set up telecom infrastructure in the selected villages. He explained that the initiative is the second of its kind after an earlier move

to set up 23 stations to cover 450 villages, most of which got telecom service in cooperation with licensed operators, Omantel and Ooredoo. Oman Broadband Company will implement the new project, either through fiber optic or satellite as part of the National Broadband Strategy, said al Balushi.

(April 19, 2020) [omannews.gov.om](#)

Nepal

Oman



Pakistan

The Pakistan Telecommunication Authority (PTA) is investigating the reported data breach of some 115 million Pakistani mobile users, which is being sold on the dark web for millions of dollars. "It is still a claim that data of 115 million Pakistani users has been breached but we are trying to verify the authenticity of the claim by someone on the dark web," stated Chairman PTA Major General (R) Amir Azeem Bajwa, quoted Arab News. "There are multiple reports we are receiving during our investigation as few claims are surfacing that it is old data," he added. The chairman said that they have contacted all mobile operators and will be able to verify the report in a week. Meanwhile, Minister for Telecom, Syed Aminul Haque, has said that the government is taking steps to ensure the safety of cyber data and working on new legislation for the country's Cybersecurity. The development comes after a Pakistani Cybersecurity company discovered a data dump of 115 million Pakistani mobile users' data, which have been put up for sale on the dark web on Friday. As per rewriterz, the company that has found the data dump says that the cybercriminal behind this data breach is demanding \$2.1 million for the data. The company said that it has analyzed the samples of the data dump that has been released on a popular dark web forum. The stolen data includes users' personal details, such as full name, complete address, their mobile numbers as well as their NIC number and Tax number. (April 13, 2020) breccorder.com

As the internet use in the country has increased during the COVID-19 lockdowns, the Pakistan Telecommunication Authority (PTA) has asked internet providers to offer affordable services to customers. In a letter to Fixed Line Operators (FLO) on Thursday – a copy of which is available with Dawn – the PTA said during the ongoing lockdown across the country, the overall requirement in the country for broadband had increased considerably. In view of the prevailing COVID-19 circumstances and mandate given under Section 4(1) C read with Section 6 (F) of the Pakistan Telecommunication (Re-organization) Act 1996, the PTA directed all fixed-line operators to immediately launch student/work from home packages of 2Mbps (40GB data limit) at a reasonable rate of less than Rs600 (inclusive of tax) per month. The letter further advised operators to offer more relief to its subscribers in terms of additional data on top of package limits, one-month extension in billing due dates and continuity of services to the customers if they could not pay within the due date. However, according to the

Internet Service Providers Association of Pakistan (ISPAK), the PTA had exempted itself from helping the nation in testing times and tried to pass on the entire responsibility to telecom operators. In a letter written to PTA, ISPAK Convener Wahaj us Siraj said while telcos in many countries had provided relief to their customers with better packages, they had been fully backed and subsidized by their respective governments and regulators in form of elimination of taxes, regulatory fees and provision of subsidies. Terming the proposed package by PTA 'irrational', the letter said a package with 40GB data limit would be consumed in just few days. It added that one month's extension in payment of bills could be given if PTA provided a financial guarantee for defaulters who would not pay deferred charges. "There's no comparison of costs of a cellular operator with fixed line operators. Deployment costs of FTTH is 30x of a cellular customer. There is no upfront cost of a cellular operator in connecting a new customer whereas FLOs installation cost for one customer is around Rs10,000," it said. According to ISPAK, the cost of providing internet services to customers during COVID-19 had increased. The bandwidth usage increased drastically due to which FLOs had to buy costly additional bandwidth in US dollars from upstream providers. A reference had been pending with PTA for last three years to delink the cost of bandwidth with US dollars but nothing happened, it said. It said the FLOs had to adopt safety measures for their employees and this added to operational costs. Revenues had also drastically decreased by 50-60pc due to corporate sector shut down, the ISPAK said, adding that the operators were struggling to keep their employees and not opting for layoffs. The association urged the PTA to review its proposal. It urged the authority to abolish 12.5pc advance income tax and 19.5pc provincial sales tax, thus giving 32pc direct relief to internet users. It also called for reduction in the cost of wholesale internet bandwidth of upstream providers from current \$2-2.5/Mbits/month to \$0.5/Mbis/month (as per international prices). The association also urged the authority to delink bandwidth costs with USD so that internet users could get 50-100Mbps speed broadband at affordable price. When asked for comment on the concerns raised, the PTA said it would review the letter and take action where needed. "We have written letters to licensed operators to encourage them to launch pro-consumer offers in the wake of COVID-19. The PTA's intentions are to act in support of all stakeholders including consumers and operators," a PTA spokesperson told Dawn. (April 6, 2020) dawn.com



Saudi Arabia

Governor of the Communications and Information Technology Commission Dr. Mohammed bin Saud Al-Tamimi participated in the virtual meeting of the United Nations Broadband

Commission for Sustainable Development. The leaders of the communications and information technology sector from various governmental, international and private agencies took part in

the meeting to discuss ways to harness technology to combat the novel Coronavirus (COVID-19). During the meeting, Dr. Al-Tamimi delivered a speech in which he expressed the Kingdom of Saudi Arabia's keenness and commitment to combat this pandemic through taking precautionary and preventive measures. He pointed out that the safe communication has become an important requirement today, in light of the of applying the remote work procedures taken by most countries, noting that the Kingdom witnessed during the last short period an increasing demand for communications and information technology services. He also affirmed that the Kingdom has taken early measures to harness technology to serve many social and economic fields.

(April 4, 2020) spa.gov.sa

The Communications and Information Technology Commission (CITC) has awarded additional spectrum for mobile service providers in the Kingdom as preventive measures against the spread of the Corona virus are being implemented in the Kingdom and many countries around the world. The aim of this decision is to boost the performance of 4G and 5G networks in the Kingdom and ensure uninterrupted delivery of communication and information

technology services to all users and enterprises across the Kingdom. CITC revealed that mobile service providers have been temporarily licensed to use an additional 40 MHz in the 700 MHz and 800 MHz bands, which represents a 50% increase in the spectrum holdings of Saudi service providers in those bands. CITC said that the activation plan for these frequencies commenced on March 26th and noted that service providers networks showcased a considerable increase in quality of service and mobile internet speeds in the areas where these frequencies have been activated. CITC is predicting further performance gains as these frequencies are fully activated in service providers networks across the Kingdom over the next few days. Last week, CITC revealed that since the implementation of the preventive measures against the spread of the Corona virus, the daily mobile and fixed Internet traffic have increased by 66,000 Terabytes, a 33% increase over February's daily average. CITC also acknowledged the cooperation and crucial role played by mobile service providers in the Kingdom to maintain the quality and reliability of services provided to all users and enterprises in the Kingdom.

(April 1, 2020) citc.gov.sa



Ministry of Health, Nutrition and Indigenous Medicine together with the Information and Communication Technology Agency (ICTA) of Sri Lanka, the apex ICT institution in the country has developed an application to inform, engage and react to the deadly spread of the New Coronavirus also known as COVID-19 under the instructions of his excellency the President Gotabhaya Rajapakse. This is in the wake of a global pandemic reaching the shores of Sri Lanka and with the steadily rising number of infected citizens, the need for a robust mobile application was felt. Representatives from both organizations including volunteers from the private sector worked tirelessly to ensure that through this app citizens will have access to a news feed that shares verified information on the current MyHealth Sri Lanka mobile app populated by data shared by medical authorities. Once downloaded through

either the Google PlayStore, Huawei Appstore store and Apple app store, citizens will be prompted to record their location at the time of using the application. The application locally maps the trail of the mobile app user's locations traveled so that in an unfortunate event of the app user being infected with the virus, they can disclose the stored location history information with the authorities to protect their family and friends who they have associated with, in the last 14-days. All recorded location data are kept securely within the mobile, and will not be transmitted to any external systems without the consent of the mobile app user. If you have crossed paths with an infected individual, you have the option to self-register with the national disease surveillance system.

(April 13, 2020) adaderana.lk

Sri Lanka



The Telecommunications Regulatory Authority, TRA, has announced that 42,000 trainees from 83 countries had taken advantage of the free training courses available on the TRA Academy (previously Virtual Academy) during the last week of March. This shows a significant increase in the number of trainees, which demonstrates the success of the academy as a modern solution for those wishing to develop their capabilities and their personal and professional knowledge, especially in light of the exceptional circumstances the world is witnessing today,

the authority said on Wednesday. Commenting on this milestone, Hamad Obaid Al Mansouri, TRA Director-General, said that the TRA Academy has proven UAE's readiness to face challenges. "We in the UAE believe that the development and training of human resources must continue under all circumstances, being the most valuable asset and the most important force. In light of the conditions the world is witnessing, and the near-full halt of training and educational centers in most countries of the world, the TRA Academy has been a solution accessible to thousands

United Arab Emirates

of those wishing to train. He added, "The figures achieved by the Academy in recent days confirm the human community need for such solutions within the context of digital transformation and achieving sustainable development. The training programmes focus on developing technical, professional and entrepreneurial skills. The academy has launched a large number of programmes that meet the requirements of the current situation such as time management and productivity programmes. Today, the academy makes available more courses for remote working, announced periodically. (April 22, 2020) tra.gov.ae

The Telecommunications Regulatory Authority, TRA, announced that it has received the European Standard Certificate in Corporate Sustainability. The TRA's receiving of the BS-8900-1 managing the sustainable development of organizations was a result of its efforts to ensure the sustainability of the ICT sector under all circumstances and for future generations. Hamad Obaid Al Mansouri, TRA Director-General, said, "Recent events and the ensuing precautionary measures, such as remote working, distance learning and remote services underscore the importance of the business continuity in government entities, including the TRA, which oversees a vital sector in the age of digital transformation. We are happy to be among the most prepared and sustained government entities in all circumstances, where we are working to provide full support to the sectors, whether in terms of telecommunications infrastructure or enabling digital transformation." He added, "The strategic goals of the TRA are based on developing a fair regulatory environment for the ICT sector in the UAE to enhance competitiveness and effective sustainability, improve the quality of services provided by the UAE's ICT sector, thus keeping up with the technological developments of the ICT sector." Al Mansouri added, "The UAE has a legacy of sustainability, pioneered by our nation's Founding Father, the late Sheikh Zayed bin Sultan Al Nahyan. His vision for

the UAE embodied the sustainable development of our economy, society and the environment we live in. Today, under the guidance of the wise leadership, we are following the same path to promote sustainable development and find effective, innovative solutions that will ensure a happy life for us and future generations based on a sustainable knowledge economy." The TRA's receiving of this international sustainability certificate is the result of several actions and steps it has taken, such as raising the Eatisation rates in the sector, supporting the community, recycling waste, shaping the future of services and project development, contributing to preserving national security, building national capabilities, conserving energy, and supporting the 17 Sustainable Development Goals of the United Nations. The TRA has various plans and policies in business continuity and sustainability, as the telecommunications sector forms the cornerstone of various activities and areas such as economics, education, health, security, and defence. Therefore, sustaining these sectors is driven essentially by sustaining the telecommunications sector.

(April 20, 2020) wam.ae/en

The number of telecommunications subscribers in UAE mobile, fixed-line and data services amounted to around 23.67 million in December 2019, 120,000 up from the preceding month, according to statistics released by the Telecommunication Regulatory Authority. The number of mobile phone subscribers increased to around 18.278 million in December from 18.178 million in November, which equals to 203.3 - 204.3 lines per 100 inhabitants last year, according to TRA's figures. Prepaid-service subscribers numbered 14.655 million in the reference year, while post-paid service mobile subscribers reached 3,623,000. Up to 3.046 million people subscribed in internet services until December, while fixed-line subscribers hit 2.345 million, according to the RTA's figures. 📍

(April 4, 2020) wam.ae/en

REGULATORY ACTIVITIES BEYOND THE SAMENA REGION



Angola

The Ministry of Telecommunications & Information Technology (Ministerio das Telecomunicacoes e Tecnologias de Informacao, MTTI) has merged with the Ministry of Mass Media as part of a government reshuffle. The newly combined ministry will have two

secretaries of state, namely Nuno dos Anjos Caldas Albino, Secretary of State for Mass Media, and Mario Augusto da Silva Oliveira, Secretary of State for Telecommunications and Information Technologies.

(April 8, 2020) ANGOP



Australia

The Australian government has called for views from stakeholders and members of the public on a proposed update of the Telecommunications in New Developments (TIND) policy. In a press release regarding the matter, the Department of Infrastructure, Transport, Regional Development and Communications (DITRDC) said the proposed revisions to the policy follow an initial round of public consultation that concluded earlier this year. The DITRDC noted that the government considers 'that the main features of the TIND policy remain appropriate, but changes can be made to improve the market's operation and simplify the policy going forward'. In line with this, the primary changes include proposals that: developers remain responsible for arranging for telecommunications infrastructure, both pit and pipe and active networks, to be installed in their developments, and for funding it; fixed line networks should be installed as a default, except where this is not reasonable, in which case fixed-wireless or satellite should be used – consistent with the proposed statutory infrastructure provider (SIP) legislation; and that the carrier contracted to service a development should be the infrastructure provider for that development, consistent with the SIP legislation. Further, it has been proposed that, where carriers other than NBN Co have end-user charges, these should be published on their websites, and the total end-user charge for broadband and television services should not exceed AUD500 (USD319). With regards to NBN Co specifically, meanwhile, as per the proposed update to the TIND policy, that company's current developer and end-user charges will be treated as price caps, meaning it has flexibility to charge below the caps where necessary to respond to competition. NBN Co will also be permitted to charge above the caps where a developer asks for additional services, such as expedited installation. In addition, NBN Co will be free to install competing infrastructure on a commercial basis, but must keep records of its commercial decision making, while access to backhaul and NBN Co's B2B interface should be pursued on a commercial basis. Comments on the proposals have been requested by a deadline of 8 June 2020. (April 27, 2020) commsupdate.com

A total of 182 new base transceiver stations (BTS) will be delivered under the fifth round of the Australian government's AUD380 million (USD242 million) 'Mobile Black Spot Program', bringing the total number of BTS funded under the program to 1,229. In a press release regarding the matter, the Department of Infrastructure, Transport, Regional Development and Communications (DITRDC) noted that, together with co-contributions from the funding recipients and state governments, 'Round Five' of the program will deliver more than AUD73 million in new infrastructure investment, including AUD34 million in Commonwealth funding. According to the regulator, to date the Mobile Black Spot Program has enabled the construction of more than 800 mobile base stations across the country and generated more than AUD836 million of new investment in mobile infrastructure. With the Round 5 rollout expected to commence 'shortly', and the first new BTS set to be activated 'later this year', the government has also released a discussion paper to consult on options for the design of the next round of the program. The DITRDC has noted that this upcoming round ('Round 5A') will use uncommitted funds from 'Round Five' to continue to expand and improve mobile coverage in regional and remote Australia. The consultation is accepting submissions until 19 June 2020. (April 21, 2020) commsupdate.com

In publishing position papers, the Australian Competition and Consumer Commission (ACCC) has outlined its views on wholesale access terms currently being considered by two National Broadband Network (NBN) related inquiries. However, the regulator has announced that it is pausing its inquiries, which examine both NBN entry-level access pricing and wholesale service standards, so as 'to allow the communications sector to focus on its response to the COVID-19 pandemic'. According to the regulator, its position papers 'provide the ACCC's current views of the nature and direction of any final access determination (FAD) that the ACCC may make, once circumstances stabilize'. With regards to its NBN Wholesale Service Standards Inquiry, this sets out the ACCC's views on measures designed to

improve incentives for NBN Co to meet its connection, fault repair and technician appointment commitments. Meanwhile, the second position paper, related to the NBN Access Pricing Inquiry, codifies what the ACCC considers to be fair and affordable prices for basic speed NBN services (classified as offering downlink/uplink speeds of 12Mbps/1 Mbps). Commenting, ACCC Commissioner Cristina Cifuentes was cited as saying: 'We have released the position papers to provide guidance for NBN Co and access seekers if they

continue negotiations on new wholesale arrangements, which are due to expire later this year.' With specific regards to the matter of the pricing of basis services, Cifuentes added: 'NBN Co has recently allowed access seekers to boost their capacity on the network by up to 40% at no extra cost for three months, which does temporarily address a key concern we have regarding NBN access pricing for basic services.'

(April 2, 2020) commsupdate.com



Belgium

The Belgian Institute for Post and Telecommunications (BIPT) has opened a consultation on plans to grant the country's three main mobile network operators (MNOs) – Proximus, Orange and Telenet – exclusive permits for mobile backhaul frequencies. This would amend licenses in the E-band (71GHz-76GHz with duplex in 81GHz-86GHz), enabling 5G backhaul connections

of up to 10Gbps per channel of 2GHz. According to the draft decision, the three operators would each be granted a 1GHz block of spectrum, while they and other users would also be able to deploy links using the remaining 1GHz and 0.75GHz blocks. The consultation will close on 30 April 2020.

(April 6, 2020) commsupdate.com



China

Telecoms watchdog the Ministry of Industry and Information Technology (MIIT) has announced that it has adjusted the country's frequency use plan for the 700MHz range to accelerate the development of 5G technology and to promote the effective use of spectrum resources. Under the new plan, MIIT will abandon the current usage plan – 702MHz-798MHz for TV and radio and broadcasting – in favor of 703MHz-743MHz/758MHz-798MHz for FDD mobile communication systems. In its notification, the MIIT rules that mobile systems operating in the band must not interfere with broadcasting or other services operating in the same or adjacent frequency bands. Further, to avoid interference, frequency migration, site relocation and equipment medication of existing legal radio stations must be carried out, although the cost will be borne by the user of the 700MHz mobile

spectrum. The spectrum in question is currently held by radio and TV broadcaster and 5G newcomer China Broadcasting Network (CBN, also known as China Radio and Television), which plans to use the airwaves in conjunction with its 4.9GHz spectrum to provide a suite of interactive TV services in the short term, and mobile communication and IoT services in the future. Local news outlet C114 writes that the operator still needs to clear the spectrum and migrate existing radio and TV services to other frequencies, the cost of which was estimated to run to more than CNY10 billion (USD1.41 billion). The operator may be able to reduce that expense through cooperation with cellular providers, though, with a senior China Mobile official quoted as saying that the two providers had communicated 'to discuss the possibility of co-construction'. (April 2, 2020) commsupdate.com



Ethiopia

The Ethiopian Communications Authority (ECA) has published drafts of several directives designed to 'facilitate issuance of telecommunications service licenses pursuant to the new Telecommunications Regulatory Framework', and is now seeking feedback on them from interested parties. In total, three directives having been published, namely: a telecommunications licensing directive; a consumer rights and protection directive; and a dispute resolution directive. However, the ECA has also revealed that it plans to release

additional directives 'in the next few days', with these to cover areas including quality of service (QoS), numbering, interconnection, infrastructure sharing and collocation, telecommunications rights of way, and a universal access obligation (USO) framework. A two-week consultation period will now be undertaken, ending 11 May 2020, following which the ECA has said it will review all submissions and consider the comments made in adopting the final directives.

(April 29, 2020) commsupdate.com



Finland

Applications to take part in an upcoming sale of spectrum in the 26GHz band are now being accepted, the Finnish Transport and Communications Agency (Liikenne- ja viestintävirasto, Traficom) has announced. With the frequencies in question to be offered via an auction that will get underway on 8 June 2020, the regulator has confirmed that those interested in taking part have until 20 May to submit their applications. A total of three network licenses are to be made available, and those companies that secure them will be able to utilize the spectrum from 1 July 2020 for 5G deployments; the concessions will be valid until 31 December 2033. In a press release regarding the matter, Traficom claimed that assigning the 26GHz band for 5G by auction 'enhances Finland's position as the 5G leader', while suggesting that the additional frequencies will allow for those operators that have rolled out 5G connectivity to offer 'additional capacity and greater speed'.

(April 22, 2020) commsupdate.com

The Ministry of Transport and Communications (Liikenne- ja viestintäministerio, MoTC) has announced that the government has finalized the regulations that will underpin a forthcoming auction of spectrum in the 26GHz band. Confirming the details in a press release, the MoTC noted that it will offer three 800MHz blocks in the 26GHz band at auction, with this spectrum covering mainland Finland, and it has set a starting price of EUR7 million (USD7.6 million) for each block. Meanwhile, the MoTC has also confirmed that the lower part of the 26GHz band (24.25GHz-25.10GHz) is to be excluded from the sale process and reserved for the construction of local networks. With the regulations set to officially enter into force on 15 April, would-be participants for the spectrum sale will be able to register to take part from 21 April, while the start date for the auction has been confirmed as 8 June 2020. Beyond that, the ministry has confirmed that 26GHz frequencies will be useable for the construction of 5G networks from 1 July 2020. (April 9, 2020) commsupdate.com



France

The telecom regulator Arcep is considering a request to extend the roaming agreement which allows Free Mobile to use Orange's 2G and 3G network. The extension would be for two years to December 31, 2022. The deal was first struck in 2011, when Free Mobile entered the market, to run until December 2020. The extension follows a request from Free Mobile based on a need to offer competitive coverage. Since 2015, Arcep has had the power to request that mobile operators amend their network-sharing agreements to meet regulatory obligations. Free Mobile and Orange amended their agreement in 2016 to include the gradual termination of

roaming by reducing speeds until 31 December 2020. If the latest contractual amendment is agreed, Free Mobile customers' roaming upstream and downstream speeds would be capped at 384 Kbits in 2021 and 2022. There would also be no increase in the capacity of interconnection links between the Free Mobile and Orange core networks for roaming. The amendment sets out the financial terms that would apply in 2021 and 2022. This includes a financial mechanism which would be introduced in 2022 to encourage "a reduction in the number of Free Mobile customers who are using Orange's 2G/3G network". (April 13, 2020) mobileeurope.co.uk



Germany

The Federal Network Agency (FNA, known locally as the Bundesnetzagentur or BNetzA) has ordered four mobile operators to reduce the fees they charge for mobile number portability (MNP) from around EUR30 (USD32.6) to EUR6.82 (gross). In February the regulator reduced the wholesale porting fee to EUR3.58 (net) and while most providers went on to lower their end-user charges, freenet, 1&1 Drillisch, 1&1 Telecom and Telefonica Deutschland failed to reduce their MNP fees to the maximum EUR6.82 specified by the FNA with effect from 20 April. (April 21, 2020) commsupdate.com

The telecom regulator threatened punitive action if operators failed to meet a fresh set of mobile broadband coverage targets, after missing conditions set as part of a spectrum auction in June 2015. Bundesnetzagentur (Bnetza) stated Telefonica Deutschland, Deutsche Telekom and Vodafone Germany failed to supply 98

per cent of households nationwide with minimum data rates of 50Mb/s by 1 January. It granted an extension until 31 December, with interim milestones along the way, but said it would consider financial penalties if the amended deadline was not met. A review of coverage found Telefonica missed targets for all 13 federal states in the country, while it only reached 80 per cent on traffic routes, compared with a goal for ubiquitous coverage of these. Deutsche Telekom fell short in three states, but came closer than its rival on transport, with 97 per cent coverage of motorways and 96 per cent of railways. Vodafone was similar, missing the goals covering four states, with 96 per cent coverage on motorways and 95 per cent rail. In addition to the financial threat, Bnetza said it would strictly monitor work to fill the gaps, with operators required to submit monthly reports on their progress.

(April 15, 2020) mobileworldlive.com



Ghana

Telecoms regulator the National Communications Authority (NCA) has temporarily granted Vodafone and MTN Ghana additional spectrum to help them cope with a significant increase in internet traffic during the country's COVID-19 lockdown, reports Ghana Web citing Communications Minister Ursula Owusu-Ekuful. According to the Minister, the additional spectrum has been granted to the country's two largest mobile network operators (MNOs) at no cost for a three-

month period to 'help reduce pressure on their networks', which are 'bearing the brunt' of the surge in demand. She also appealed to the public to moderate their data usage in order to alleviate the pressure on telecoms providers. The two MNOs provide mobile services using frequencies in the 800MHz, 900MHz, 1800MHz and 2100MHz bands, while MTN also uses the 2600MHz band for LTE-A services.

(April 15, 2020) commsupdate.com



Hungary

Hungary's Government Informatics Development Agency (KIFU) under the Ministry of Innovation & Technology disclosed on its website the latest call for proposals for EU/state-funded high speed broadband network rollouts under the country's Superfast Internet Program 2 (SZIP2). Focusing on 100Mbps-plus fiber access deployments, the government has identified the current need for expansion and upgrade of networks for 62,000 households in 72 districts. Companies can register their applications for constructing 100Mbps-

plus networks between 6 May and 11 June 2020. The statement adds that 'investments can be supported with up to HUF5 million to HUF1.5 billion [USD15,000 to USD4.61 million] per district.' the government kicked off the SZIP2 program in January 2019 with the target of spreading 100Mbps-plus network coverage to 90% of households by 2025, with emphasis on gigabit-capable fiber-optics alongside 5G fixed-wireless/mobile infrastructure.

(April 20, 2020) commsupdate.com



Iceland

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

- Siminn: block B3600 (3500MHz-3600MHz)
- Nova: block C3600 (3600MHz-3700MHz)
- Vodafone Iceland (Syn): block D3600 (3700MHz-3800MHz).

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

population in Blonduos, Thorlakshofn and Egilsstadir; Nova (Hellu, Sandgerdi and Vestmannaeyjum); and Vodafone Iceland (Hvolsvelli, Siglufirdi and Grindavik).

(April 30, 2020) commsupdate.com

Iceland's Appellate Committee for Telecommunications and Postal Affairs (Urskurdarnefnd FjarSKIpta- og Postmala, or UFP) has ratified the Post and Telecom Administration's (PTA's) Decision No. 18/2019 from 23 August 2019 revoking Yellow Mobile's frequency allocation in the 2600MHz band. The PTA took its decision to cancel the airwaves due to the company's failure to start utilizing the concession within the stipulated timeframe (by 7 July 2018). Despite an extension of the Yellow Mobile deadline to 1 November 2018, the company failed to fulfil its obligations and the company's frequency license was revoked. For its part, the company claimed that it had fulfilled the conditions regarding the use of the frequency spectrum as it had set up one transmitter on Sudurlandsbraut on 12 June 2019, in collaboration with Siminn.

(April 6, 2020) commsupdate.com



India

Sector watchdog the Telecom Regulatory Authority of India (TRAI) has published a consultation paper on the applications of spectrum usage charges (SUCs) with regards to spectrum sharing. Under the current rules operators are permitted to share spectrum provided that they both hold frequencies in that band, with an incremental SUC of 0.5% of Adjusted Gross Revenue

(AGR) applied to that spectrum band and circle. The TRAI notes that, as it is not possible to monitor the quantum of spectrum being shared at each site and segregate the AGR on a site by site basis, the licensees are assumed to be sharing the entirety of their spectrum in the specific band and circle. In early 2020, however, the Department of Telecommunications

(DoT) received requests that the additional SUC should only be charged for the spectrum bands that are being shared, rather than the operators' entire spectrum holdings (i.e. including frequencies that they had not been permitted to share), indicating that the fee was being applied to cellcos incorrectly in some places. Consequently, the DoT has requested that the TRAI recommend whether the SUC should be applied to the specific band being share or to the Weighted Average Rate for SUC – which has been derived from all bands – or an alternative, that the TRAI deems fit for purpose. To that end the TRAI has requested stakeholders submit their views regarding the methodology for the application of the charge. Further, the regulator has sought comments on the potential for the fee to act as a deterrent to spectrum sharing, and what measures could be introduced to promote sharing.

(April 27, 2020) [commsupdate.com](#)

Sector watchdog the Telecom Regulatory Authority of India (TRAI) has revised the pricing regime for International Termination Charges (ITC) following a review of the market. Under the new system, the TRAI has imposed a forbearance regime with a range of INR0.35 (USD0.0046) per minute to INR0.65 per minute. To maintain a level playing field, however, the regulations require access service providers to offer the same non-discriminatory ITC rate to standalone and integrated International Long Distance Operators (ILDOS). Explaining the move, the TRAI notes that the fixed rate of INR0.30 per minute it had imposed in February 2018 to mitigate potential grey market concerns was amongst the lowest in the world. Consultation with industry stakeholders late last year had indicated that the move was an unwarranted overcorrection, with the system exacerbating other pressures on the industry, such as the shift in traffic from carriers to over-the-top (OTT) routes.

(April 20, 2020) [commsupdate.com](#)

Sector watchdog the Telecom Regulatory Authority of India (TRAI) has asked the nation's mobile providers to submit data on their pre-paid customer bases, so

that it can assess what steps may be needed to protect such users following the extension of India's stay-at-home order to 3 May. TRAI asked cellcos – including two state-owned operators – to provide details such as the number of users that ran out of credit during the lockdown period and have not recharged their account, and what proportion of their pre-paid user bases these customers made up at the start of the lockdown. Providers were also asked how many users were given free credit of INR10 (USD0.13) or more by the cellcos to ensure continuous connectivity during the shutdown. Once it receives this information, the TRAI is expected to finalize advice or instructions for further protective measures for customers that may have access to communications services limited by the lockdown extension. The regulator has not yet taken steps to oblige operators to provide protections for potentially vulnerable pre-paid customers, as the cellcos have each introduced various measures of this kind, such as extending the validity of their plans until 17 April (i.e. for the original duration of the lockdown period), and providing free credit. With the extension of the stay-at-home order, however, the TRAI is keen to ensure that similar protections remain in place, but industry lobby group the Cellular Operators Association of India (COAI) has warned that the government may need to provide companies with financial assistance from the universal service fund. The TRAI has given no indication yet that it intends to force providers to implement further protective measures, with a senior TRAI official quoted as saying that: 'It's for them to come forward and announce extensions of the offers for pre-paid customers since the lockdown period is now extended.' On a similar note, whilst the COAI is keen for the government to acknowledge and address the level of financial stress in the sector, director general Rajan Mathews clarified that the COAI's members would 'continue to monitor the situation and decide on appropriate means to meet the needs of customers.' According to the TRAI's most recent data, pre-paid users made up more than 95% of India's mobile customers in September 2019.

(April 15, 2020) [The Economic Times](#)



Ireland

The telecoms regulator, ComReg, has announced that it will release additional mobile spectrum to ease network congestion on the country's networks during the Covid 19 pandemic. The move comes after an application from Eir, Three Ireland and Vodafone Ireland for the release of additional spectrum as millions of people across the country are forced to work and study from home. The regulator will release additional spectrum in the 700MHz and 2.6GHz bands, while simultaneously relaxing restrictions on spectrum use in the 2.1GHz band. "Now, more than ever we are

depending on technology to connect with others and to access services. These regulations will ensure that our mobile network operators have the capacity to accommodate the increase in demand. I'd like to thank ComReg for responding to this need so quickly," Ireland's Minister for Communications, Climate Action and Environment, Richard Bruton said. The move has raised objections from both the Irish Aviation Authority and home broadband provider Virgin Media, who both use spectrum in these bands for their current operations. The Irish Aviation Authority is particularly

concerned, as the 2.6GHz band is close to the band it uses to provide coverage for air traffic controllers, according to a report by SP Global. Virgin Media uses

spectrum in the 700MHz band on its fixed line home broadband services.

(April 12, 2020) itp.net



Latvia

Latvian telecoms watchdog the Public Utilities Commission (Sabiedrisko Pakalpojumu Regulesanas Komisija, SPRK) has published a public consultation document on the conditions for the planned auction of spectrum in the 700MHz band. The tender will comprise spectrum in the 703MHz-733MHz/738MHz-788MHz range, which will be available for mobile communications from 1 January 2022. The SPRK notes that the spectrum will gradually become available during a transition period between 1 January 2022 and 30 June 2022, as TV broadcasters cease use of the

airwaves. The SPRK is planning to divide the spectrum into the following three lots, each of which would have a starting price of EUR1 million (USD1.1 million):

1. 703MHz-713MHz, 738MHz-743MHz and 758MHz-768MHz (25MHz total)
2. 713MHz-723MHz, 743MHz-748MHz and 768MHz-778MHz (25MHz total)
3. 723MHz-733MHz, 748MHz-758MHz, and 778MHz-788MHz (30MHz total).

The regulator is accepting comments on its proposals until 25 May 2020. (April 28, 2020) commsupdate.com



New Zealand

The government has announced new investment in rural broadband network capacity, which it hopes will 'help lift the development and wellbeing of isolated communities as New Zealand's economy recovers from COVID-19'. Up to NZD15 million (USD9.06 million) in savings from the Ultra-Fast Broadband Initiative (UFB) initiative has been allocated to upgrade existing rural mobile towers, improve wireless backhaul between remote sites and central networks, and install external antennae to households to improve coverage. 'This investment brings broadband services

to rural households that are currently without access to the internet, and means remote communities will be much better equipped to get going again when we exit lockdown,' Broadcasting, Communications and Digital Media Minister Kris Faafoi said in a press release. He added that while the government's Rural Broadband Initiative aims to provide access to 99.8% of the population by the end of 2021, this work will bring forward capacity upgrades to meet demand in isolated regions during the pandemic.

(April 29, 2020) commsupdate.com



Niger

The government of Niger has announced it has awarded a 15-year license for the establishment and operation of a 4G network to Zamani Com, the new owner of mobile operator Orange Niger. At the same time, the cellco's existing 2G and 3G licenses have been renewed for a further 15 years. Orange will pay a total of XOF12 billion (USD19.7 million) for the new LTE license, while the price of renewing its 2G and

3G concessions has been set at XOF28.4 billion. In November 2019 France's Orange Group completed the sale of its entire 95.5% stake in Orange Niger to Zamani Com, after the transaction received approval from the relevant authorities. Zamani Com is wholly owned by businessmen Mohamed Rissa of Rimbo Invest and Moctar Thiam, both already minority shareholders of Orange Niger. (April 7, 2020) commsupdate.com



Nigeria

The Nigerian Communications Commission (NCC) has confirmed that Nigeria has successfully completed its 5G trials. While reiterating that 5G is not yet operational in Nigeria, the communications industry regulator said that it had approved the trialing of the technology in 2019, completed in collaboration with the Ministry of Communications and Digital Economy and MTN Nigeria. At the same time, the NCC added that it had issued a statement in response to the widely circulating conspiracies regarding 5G and coronavirus (COVID-19). The regulator said that there is no link between 5G and COVID-19, but assured that 5G had

not yet been deployed in the country. The Minister of Communications and Digital Economy, Mr. Isa Ali Ibrahim Pantami, said that the Council had not released any bulk frequency spectrum for the deployment of 5G. He added that no license had been issued in Nigeria for the deployment of the technology. The NCC said that 5G would transform the world by efficiently connecting everything with everybody. The organization stated that the deployment of 5G in Nigeria would create millions of jobs and add billions of dollars to the economy (GDP).

(April 9, 2020) itweb.africa

The government of Niger has announced the award of a 4G license to operator Zamani Com. The award of the 15-year license for the establishment and operation of a 4G network to Zamani Com, the new owner of mobile operator Orange Niger, makes it the second operator in Niger, after Airtel, the local subsidiary of Indian giant Bharti Airtel, to plan to offer 4G in the country. The announcement also notes that Zamani Com's existing 2G and 3G licenses have been renewed for a further 15 years. According to local press reports the total cost will be around \$19.7 million for the new 4G/LTE license. The 2G and 3G renewals will cost around \$47 million. Orange completed the sale of its entire 95.5 per cent stake in Orange Niger to Zamani Com in November

last year. Zamani Com is wholly owned by Mohamed Rissa of Rimbo Invest and Moctar Thiam of Greenline Communications, both minority shareholders of Orange Niger. The company's services were to continue to be marketed under the Orange brand during a transition period. In its press announcement at the time, Orange said that the Africa and Middle East region remained a strategic priority for the Orange Group. "However," it added, "the market environment in Niger has led Orange to make this decision responsibly, prioritizing business continuity for the benefit of the company's customers and protecting the interests of the women and men working at Orange Niger."

(April 7, 2020) developingtelecoms.com



Norway

The National Communications Authority (Nasjonal kommunikasjonsmyndighet, Nkom) has launched a consultation regarding the possible future use of spectrum which is currently available in the 410MHz-430MHz range. In a press release announcing the consultation, the regulator noted that there is currently 2x1.8MHz free (410.8MHz-412.6MHz/420.8MHz-422.6MHz), and as such it is looking to gauge interest in these frequency resources. Having suggested that one option would be to devote most of the available spectrum to mobile communication, the Nkom has called for feedback, while asking specifically for comments on several points, including whether it would be appropriate to divide the frequency band and make the spectrum available on a region-by-region basis. A deadline of 29 May 2020 has been set for submissions from interested parties, and the regulator has said that following the consultation it will make a decision regarding how the available spectrum resources will be allocated.

(April 17, 2020) commsupdate.com

The National Communications Authority (Nasjonal kommunikasjonsmyndighet, Nkom) has announced that an additional NOK150 million (USD14.6 million) is being made available by the government to support the rollout of broadband services in those areas of the country not considered commercially profitable. In a press release the regulator noted that in its ordinary state budget, the government had earmarked NOK256 million for rural broadband development in fiscal 2020, but has now increased that figure by NOK150 million as part of economic measures designed to address the potential consequences of the COVID-19 pandemic. While the Nkom had previously managed the state broadband scheme, in November 2019 it was revealed that from 2020 county municipalities would take over the responsibility of managing broadband funding. For its part, the regulator continues to have an active role in offering guidance regarding the use of allocated funds, and on issues regarding state aid regulations and rules on third party access. It also continues to gather statistics on the development of broadband networks that results from state funds. (April 8, 2020) commsupdate.com



Peru

The Ministry of Transport and Communications (Ministerio de Transportes y Comunicaciones, MTC) has praised a private RAN sharing agreement between cellcos Movistar Peru and Entel Peru. In a statement the ministry said that the pact would help maximize the use of existing resources and encouraged further sharing agreements. Such measure allow for more efficient use of infrastructure that has already been deployed, the MTC went on, adding that it would also enable companies to improve coverage, capacity and service quality of their mobile services. However, the ministry stressed that both companies must still comply with the terms of their licenses and other obligations, adding that the RAN sharing agreement did not exempt either party from the fulfilment of those

obligations. In a related development, meanwhile, the MTC confirmed several measures it has taken to address the changing role of the sector during the COVID-19 pandemic. To that end, the ministry issued a decree (Emergency Decree No. 035-2020) requiring telcos to priorities telecommunications traffic from public entities, in particularly those in the health sector, to prevent vital communications being slowed by the increasing use of networks for tele-work, tele-education and leisure activities. The decree obliges telcos to provide better access to telecommunications services to the government ministries involved in combating the pandemic, including those for the interior, defence and education. Separately, the MTC is working with the education ministry to help deliver online schooling.

To that end, the MTC said it has coordinated with the nation's telcos to ensure that the public are not charged for accessing the government's home schooling website and that utilizing the site does not

consume customers' data allowance. A spokesperson for the MTC said that six million students and 600,000 teachers would be able to use the home schooling platform free of charge. (April 7, 2020) [commsupdate.com](#)



Philippines

The Department of Information and Communications Technology (DICT) will lower the spectrum user's fee (SUF) for telecommunication companies on their fixed WiFi internet connectivity services to homes and offices as a move to encourage telcos to improve the speed, accessibility and cost of their services to Filipino homes, especially during the extended enhanced community quarantine (ECQ) in most parts of the country due to the coronavirus disease (COVID-19) pandemic. Eliseo Rio Jr., undersecretary for operations, said the DICT will issue a department order to the National Telecommunications Commission (NTC) for the lowering of the SUF for the provision of fixed internet to homes and offices by telcos. "(DICT) Secretary (Gregorio) Honasan is going to come up with a department order, a policy that will lower the SUF for frequencies being used for internet connectivity, WiFi internet frequencies and IP (internet protocol) radio frequencies," Rio told The STAR in a phone interview the other day. "The spectrum user's fee for all spectrum that are used for internet WiFi, IP radios will be reduced substantially," Rio said. He said the DICT wanted to encourage further the current surge in work-from-home (WFH) arrangements prevailing among private companies and the skeleton staff in government offices during the ECQ being enforced as a result of the global COVID-19 pandemic. "Now, our problem is that the internet connectivity going to homes is not fast enough and the subscription price is expensive because many are connected through the mobile network (of big telcos)," Rio said. "There is a serious shortage of cable to the home, fiber optic to the home, at least even just the fixed line, fixed wireless broadband," Rio said, stressing the need to strengthen cyber infrastructure. By lowering the SUF for the fixed wireless broadband internet services, Rio said they can help telcos, especially the small players in the other urban centers outside Metro Manila, focused on

providing fixed internet services to homes. "We can encourage small players, small ISPs (internet service providers), to improve their infrastructure and their services," Rio said. He said thousands of ISPs stand to benefit. "In our provinces, there are so many small ISPs," he said.

(April 27, 2020) [philstar.com](#)

The National Telecommunications Commission (NTC) has directed all Public Telecommunication Entities (PTEs) and Internet Service Providers (ISPs) to submit a business continuity plan that details measures they have taken to ensure uninterrupted service in view of the increased demand for information and communications technology (ICT) services. In a statement, the Department of Information and Communications Technology (DICT) said the order aims to boost efforts at maintaining the operation of vital ICT services and supporting infrastructure, as the national government extended the enhanced community quarantine (ECQ) until April 30 in a bid to curb the further spread of the coronavirus disease (COVID-19). "For the duration of the ECQ, telecommunications play a key role as many businesses shift from traditional operations to work-from-home arrangements for health and safety concerns," the department said. According to DICT, the order is also in line with its directive to the NTC to monitor mobile network operators and ISPs to ensure continued provision of reliable services through sufficient bandwidth allocation. Reports on the business continuity plans are expected to be submitted to the Office of the Commissioner of the NTC on or before April 17. The DICT said these measures also complement the Republic Act No. 11469, otherwise known as the "Bayanihan to Heal as One Act," which mandates the continued operation of telecommunications as a critical service during the ECQ. (April 14, 2020) [newsinfo.inquirer.net](#)



Poland

Poland publicized plans to dismantle its current 5G auction and restart the tender process, to avoid any legal ramifications after it delayed the sale due to the COVID-19 (coronavirus) pandemic. In a statement, the Ministry of Digital Affairs said suspending the process on the assumption of continuing when the epidemic subsides was not in line with auction rules, leaving it open to legal challenges. Poland's regulator, the Office of Electronic Communications, put the auction on ice in mid-April, but the government noted

because operators had already made moves, the postponement undermined the legal status of the process. "The government's intention is to introduce a commercially functioning fifth generation network to Poland as soon as possible and meet the deadlines set out in the Digital Agenda for Europe." "Therefore, having regard to the possible consequences, as well as the above-mentioned safety issues, it was decided to repeat the entire procedure", the ministry stated. The ministry also detailed a revamp of Poland's telecoms

law, aiming to improve customer rights as it moves to bring the market in line with the European Electronic Communications Code. Fresh rules require operators to improve contract cancellation processes, and be more transparent about contract end dates and best tariff options. To support the new regulations, the regulator will operate a centralized platform for operators and ISPs to communicate with consumers, a move expected to smooth the process of switching services. (April 29, 2020) mobileworldlive.com

The auction of 5G-capable 3.6GHz spectrum has become the latest victim of the COVID-19 crisis, with the sale having been postponed by telecoms regulator the Office of Electronic Communications (UKE).

Applications for the auction of four 15-year nationwide licenses were opened on 6 March, but the process has now been temporarily suspended and will resume at a later date. Each concession offers 80MHz of spectrum in the 3.4GHz-3.8GHz band. (April 17, 2020) commsupdate.com

The Office of Electronic Communications (Urząd Komunikacji Elektronicznej, UKE) has opened a consultation on the refarming of spectrum in the 2100MHz band. The regulator is proposing that TDD frequencies between 1900MHz and 1920MHz, plus FDD spectrum in the 1920MHz-1980MHz and 2110MHz-2170MHz ranges should be opened for 5G use. The frequencies are currently utilized for 3G and 4G services. (April 14, 2020) commsupdate.com

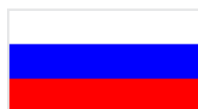


Romania

Romania's government has transferred approximately RON700 million (USD157.1 million) from the National Authority for Management and Regulation in Communications' (ANCOM's) reserves to the state budget, in order to support efforts to combat the COVID-19 pandemic. The move was made possible by an emergency ordinance, passed on 15 April, which approved the regulator's annual budget. Following consultation with telecom operators and the media, the same ordinance also postponed until 31 October the deadline for spectrum fee payments. (April 17, 2020) profit.ro

The National Authority for Management and Regulation in Communications (ANCOM) has confirmed that Orange Romania and Vodafone Romania have both paid EUR30 million (USD32.9 million) to extend their 2100MHz licenses until end-2031, following a government decision establishing the renewal fees last week. The two operators' 2100MHz licenses, which are currently used to provide 3G services, are now valid for the period 1 April 2020 until 31 December 2031.

(April 1, 2020) commsupdate.com



Russia

Russia's lower house of parliament the State Duma has adopted a law reforming universal communications services (UCS) which mandates the provision of public Wi-Fi internet services to all villages with over 100 residents while making it mandatory to deploy mobile network services to all remaining settlements with 100-500 residents which currently lack any cellular connection. The law also contains provisions to appoint UCS operators for certain regions, whereas to date state-backed fixed line operator Rostelecom has held the status of exclusive Federation-wide UCS provider. As reported by ComNews, the law officially removes a previous requirement to deploy 'collective access points' as part of UCS, due to a lack of demand for such usage, while universal payphones are to be upgraded with public emergency warning facilities. The existing UCS mandate of Rostelecom (which owns cellco Tele2 Russia) included the provision of payphones in remote settlements throughout the Federation, public Wi-Fi access points in settlements of 250-500 people plus collective internet access points in larger villages.

(April 7, 2020) commsupdate.com

Russia's Ministry of Digital Development, Communications & Mass Media (a.k.a. Ministry of

Communications or Minkomsvyaz) has drafted a new strategy document on 5G network development, including proposed details of operations under a joint venture (JV) to be formed by national cellcos MTS, MegaFon, Beeline and Rostelecom/Tele2. As reported by ComNews, the proposals include allocating regions to each of the four cellcos for exclusive 5G network rollout. In an initial phase, the selected 'anchor operator' for a given region would share access to the new network with the other JV participants, who would pay a share of the operational costs. Once sufficient 5G spectrum resources became available in a region, each JV partner would be permitted to deploy their own 5G networks. The four main players agreed in principle on forming a JV to support 5G development in December 2019. The Ministry's draft also includes a proposal to issue operators 5G spectrum licenses without competitive auction, in return for the federal government obtaining an ownership share in the 5G JV. The document also reportedly contains plans to push forward with the allocation of 5G mobile frequencies in the 700MHz (694MHz-790MHz) band which currently remains partially occupied by TV services.

(April 7, 2020) commsupdate.com



Singapore

Singtel and a joint venture between StarHub and M1 were awarded licenses to build two nationwide standalone (SA) 5G networks, with rollouts expected to start in January 2021. The winners were each allocated 100MHz of 3.5GHz spectrum and will be required to cover at least half of Singapore by end-2022, then provide up to nationwide coverage by end-2025, the Infocomm Media Development Authority (IMDA) stated. Singapore will be among the first countries in the world to launch SA networks. The government held off releasing 5G spectrum until this year in order to move straight to the SA version from the start. Other operators will have access to the networks through wholesale arrangements. Tan Kiat How, CEO of IMDA, said: "The ongoing COVID-19 situation underscores the criticality of a robust digital infrastructure and the importance of timely investments to meet our national connectivity needs." The nationwide 5G licenses were

awarded through a call for proposal. Tan said it received three proposals, with the winners selected based on a comprehensive assessment of how their manifestos would deliver the best outcomes for businesses and consumers in Singapore. TPG Telecom, which won a spectrum auction open only to new entrants in December 2016 and recently launched service, was the other bidder. IMDA said the joint venture between StarHub and M1 will deploy and own key parts of the 5G network, leasing access to the two operators which will continue to operate separately and provide retail services to customers. The nationwide 5G networks will be supplemented by localized mmWave deployments providing high-capacity hotspots, allowing all operators, including TPG Telecom and MVNOs, to offer next-generation services. Singtel, StarHub and M1 also will each be assigned 800MHz of mmWave spectrum.

(April 30, 2020) mobileworldlive.com



Slovakia

Slovakia's Office for Regulation of Electronic Communications & Postal Services (Regulacny Urad, RU) is planning to push ahead with an auction of 5G-capable spectrum in order to comply with an EU deadline. The EU requires member states to have allocated spectrum in the 700MHz band by 30 June 2020 and the RU recently announced a sale of licenses in this band along with spare 900MHz and 1800MHz frequencies. While some countries have postponed spectrum auctions during the COVID-19 crisis, Zive.sk cites the Slovak regulator as saying that it will stick with its timetable in order to meet the EU target. Operators have until 25 May to apply to take part in the auction. Local cellcos are, however, calling on the regulator to reduce some of the financial burden on winning bidders. A spokesperson for market leader Orange is quoted as saying: 'In the current crisis related to the coronavirus pandemic, we consider it important to set the most flexible terms in terms of payment per license, given that operators' funds will be under pressure from crisis management measures at the same time.' Smallest player 4ka, meanwhile, has said it would welcome a postponement and a change to the terms of the auction, with the regulator awarding spectrum to cellcos at minimum prices to ensure the rapid deployment of 5G services.

(April 20, 2020) commsupdate.com

The Regulatory Office (Regulacny Urad, RU) has invited applications for its planned auction of 5G-capable spectrum in the 700MHz band as well as frequencies in the 900MHz and 1800MHz bands. 2x30MHz is available at 700MHz, with operators limited to 2x15MHz each. The spectrum will be sold in 2x5MHz blocks, with each carrying a reserve price of EUR16 million (USD17.5 million). There are no frequencies reserved for the SWAN Mobile/4ka, the smallest of the country's four existing mobile network operators (MNOs); it had been speculated that the market's newest player could have spectrum reserved as it currently has no frequencies in the sub-1GHz range. The 700MHz licenses will be valid for 20 years. Winning 700MHz bidders must cover 95% of the population of every county town by end-2025 and 90% of the population outside county towns by 2027, with 70% of the overall population to be covered by 5G by end-2027. 900MHz spectrum carries a reserve price of EUR840,000 for a 2x4.2MHz block and frequencies must be utilized within six months of acquisition, while the 1800MHz licenses have a reserve price of EUR550,000 for each of the three 3MHz blocks on offer, with a requirement to use them within twelve months. These licenses are valid until end-2025. Applications are open for all licenses until 25 May.

(April 2, 2020) commsupdate.com



South Africa

According to local news reports MTN Group, Vodacom and Telkom have all been granted additional mobile spectrum, while Liquid Telecom and Rain Networks were also granted additional spectrum for their fixed wireless access services. The temporary licenses grant emergency access to additional spectrum to ease congestion for the duration of the nationwide lockdown that is now in force to limit the spread of the coronavirus. A surge in connectivity has been the result of many South Africans working from home or simply using the internet more often while unable to go out. The licenses were released late last week by South Africa's telecoms regulatory body, the Independent Communications Authority of South Africa (ICASA), to both mobile network providers and internet service providers. These licenses were granted at no cost to the operators. However, they do come with a few conditions attached. Firstly, operators are obliged to facilitate access to remote learning initiatives and virtual classrooms. In addition they must not charge their subscribers for access to health-related websites specifically identified by the country's Department of Health. And, of course, as has been stated more than once, this is a stopgap measure. The additional spectrum will be only be available to operators on a temporary basis. The country aims to auction off permanent licenses for the spectrum later this year.

(April 20, 2020) developingtelecoms.com

Telecommunications regulator, the Independent Communications Authority of SA (ICASA), said it has received about 35 applications for the temporary allocation of radio frequency spectrum to aid communications during the national lockdown. The announcement came three days after the government published a gazette containing regulations for the allocation. The government instructed ICASA in March to issue new spectrum to telecom operators on a temporary basis in order to expand the network and cater for a surge in demand as companies work remotely during the nationwide lockdown. ICASA did not disclose the list of applicants, which may include established players MTN, Vodacom, Cell C, Telkom and recent entrants such as data-only player Rain, in which Patrice Motsepe's African Rainbow Capital Investments holds about a fifth. As the additional spectrum is meant to increase capacity for existing networks, it's unlikely that operators who don't already have cellphone towers in place have applied. Fiber network operator Vox Telecom is one such player and CEO Jacques du Toit recently confirmed that the company had not applied. In addition to mobile operators, applicants could include technology companies, banks and local government authorities with their own communications systems in place. Spectrum refers to the radio frequencies on which data and information are carried. Mobile operators have long argued that access to spectrum will help reduce the cost of mobile data in SA because it will allow them to cover a wider geographic area with

existing towers while carrying more data traffic. SA's last big set of spectrum was allocated in 2004 and 2005, enabling Vodacom and MTN to roll out their 3G networks. Cell C followed in 2011. Spectrum issued under this week's guidelines will be valid until the end of November 2020. (April 12, 2020) businesslive.co.za

The Independent Communications Authority of South Africa (ICASA) has announced that it will be extending the validity of all existing radio frequency spectrum licenses due to South Africa's current COVID-19 lockdown. The communications authority revealed last week that it had made the decision in compliance with regulation 10 of South Africa's radio frequency spectrum regulations. ICASA said that in terms of the regulations, the usual due date for the renewal of all radio frequency spectrum licenses is 31 March every year. The rules further state that failure to pay the set license renewal fee by the due date will result in the expiry of the radio frequency spectrum permit immediately on the next calendar day as it marks the beginning of a new financial year. In this regard, considering the national lockdown in response to the global coronavirus pandemic, ICASA has made the critical decision to grant all its radio frequency spectrum license holders an extension to allow them to renew their licenses by no later than 30 June 2020.

(April 9, 2020) balancingact-africa.com

South Africa's regulator ICASA invited operators to apply for additional spectrum which will be released on a temporary basis, responding to government orders, in an effort to meet increased demand caused by the COVID-19 (coronavirus) outbreak. In a statement, ICASA said it would make high-demand spectrum available for the duration of a national state of disaster to ease network congestion, maintain good quality of broadband services and enable licensees to lower the cost of access for consumers. The move comes after the South African government reportedly demanded ICASA issue additional spectrum to aid operators, as the country entered a three-week lockdown to contain the virus. Spectrum in the 700MHz, 800MHz, 2300MHz, 2600MHz and 3500MHz bands will be made available, with companies required to submit applications by 9 April, ICASA said. Acting Chairperson Keabetswe Modimoeng, however, insisted the emergency release of spectrum "does not, in any way whatsoever", negate processes underway for the permanent assignment of spectrum. South Africa plans to hold an auction for additional frequencies, which it hopes to finalize by the end of 2020. Modimoeng added the criteria used to release the spectrum on an emergency basis will be fair and non-discriminatory, as ICASA was committed to ensuring the move should neither delay, nor undermine, the move to license the spectrum permanently. "We intend to take the necessary care in this regard, and to ensure that there are no irreversible anti-competitive effects for the market," he said. (April 2, 2020) mobileworldlive.com



South Korea

The number of subscribers to the 5G mobile network in South Korea passed the 5 million mark in February, 10 months after its commercialization, government data showed. Nearly 5.37 million South Koreans subscribed to the top-of-the-line wireless network as of end-February, up 8.1 percent from the previous month, according to the data compiled by the Ministry of Science and ICT. The nation's three mobile carriers -- SK Telecom Co., KT Corp. and LG Uplus Corp. -- have been aggressively promoting the commercial 5G network for premium smartphones after rolling out

the service in early April last year. Industry watchers attributed the February increase mainly to preorders for Samsung Electronics Co.'s new flagship Galaxy S20 smartphones. Industry leader SK Telecom's 5G customers accounted for 44.9 percent of the total in February, trailed by KT with 30.2 percent and LG Uplus with 24.8 percent. The data also showed the number of mobile communication subscribers in South Korea totaling 69.1 million as of end-February, with SK Telecom taking up 42.1 percent of the total.

(April 1, 2020) koreaherald.com



Sweden

The Swedish Post and Telecom Agency (Post & Telestyrelsen, PTS) has announced plans for the sale of 5G-capable spectrum in the 2.3GHz and 3.5GHz bands. The auction is due to start on 10 November 2020, with applications invited until 30 June. Up to 15 nationwide licenses will be sold in the 3.5GHz band (3400MHz-3720MHz), incorporating a maximum 320MHz of frequencies (one license will include 40MHz of spectrum while the rest will offer 20MHz).

The minimum bid for 3.5GHz frequencies is SEK100 million (USD10 million) per lot (SEK1.5 billion in total). Up to 80MHz will be on offer in the 2.3GHz range, split into eight nationwide concessions, with a reserve price of SEK20 million per license (SEK160 million in total). The Sweden is home to four main mobile network operators, Telia, Tele2, Telenor and Tre, plus minor player Net1.

(April 20, 2020) commsupdate.com



Taiwan

Taiwan's National Communications Commission (NCC) has confirmed its approval of Chunghwa Telecom's information security plan, paving the way for the operator to launch 5G services in the third quarter of 2020. With operators required to submit and have approved both a business plan and an information security prior to a commercial 5G launch, the Taipei Times notes that Chungwha's proposal had previously been given the green light last week. As per the latest development, it was reported that the telco's information security plan has now been approved after it provided additional information on how it plans to gauge risks; enforce measures to safeguard and control information security; install infrastructure to protect information security; and detect potential threats within a specific time frame, as well as protect users' personal data when implementing such measures. Separately, the local news outlet reports that the NCC has also given its approval to Taiwan Mobile's 5G business

plan, albeit on a conditional basis. It is understood that certain conditions have been applied as a result of Taiwan Mobile having previously leased its 4G network to Asia Pacific Telecom (APT) without first seeking its permission. As such, Taiwan Mobile has been told that in respect of any core network sharing plans with other providers, it must first file an application to change its business plan. Further, should Taiwan Mobile seek to share its spectrum with other carriers, it must also file an application in advance which has to be approved by the NCC. Taiwan Mobile's information security plan is, however, still under review. Finally, the report also noted that Far Eastone Telecommunications' business plan was approved last week, but that it has now been asked to provide additional information for its information security plan before a review could continue. APT and Taiwan Star both have yet to receive approval for either their business plan or information security plan.

(April 3, 2020) commsupdate.com



Ukraine

The National Commission for State Regulation of Communications & Informatization (NCCIR/NKRZI) issued a statement on its website yesterday (1 April 2020) that it plans to cancel the 4G LTE license it had promised to CDMA mobile network operator Intertelecom, due to non-payment of the license fees. On 7 February 2020 Intertelecom received the green light from the NCCIR to receive a 4G LTE operating license on 1 April 2020 and begin a national LTE network rollout using refarmed 800MHz-850MHz spectrum. However, by that date, the

NCCIR confirmed that only UAH1 million (USD35,000) had been paid of the total UAH194.6 million asking price. The launch of LTE by Intertelecom was intended to form part of the program of 800MHz-900MHz frequency redistribution/refarming between four operators including GSM players Kyivstar, Vodafone and Lifecell alongside the CDMA provider. The GSM trio paid for their newly reallocated technology-neutral 900MHz spectrum licenses last month, with permission to launch LTE-900 services from 1 July 2020, while

the failure of Intertelcom to find funding for its spectrum draws into question its ability to continue serving existing CDMA customers. The NCCIR has requested Intertelcom submit an action plan within ten days,

whilst ordering it to disconnect 9-15 frequency channels in the Transcarpathian, Ivano-Frankivsk, Lviv and Volyn regions in line with certain agreements between the 4 cellcos and the regulator. (April 2, 2020) [commsupdate.com](#)



United Kingdom

Ofcom will advertise licenses for small-scale DAB in batches, starting with 25 local areas. Five of those areas will be where a trial is already operating – Cambridge, Glasgow, Birmingham, Bristol and Norwich. In the second batch, applications will be invited for the north west of England and north east Wales. Under the timescale plans announced, it will take Ofcom over four years to advertise and award all the multiplexes currently planned. In terms of advertising, Ofcom said: "We have planned initially on the basis of eight rounds of licensing and anticipate that each round will take approximately nine months from the date of advertising the licenses to the last license award. This includes a 12-week period for applications to be submitted and a further six months for Ofcom to assess applications and award licenses. "We expect to advertise each batch of licenses approximately 12 weeks before we complete our assessment of the applications received in the previous round. Hence we would advertise batches of licenses every six months approximately." In a change

to the proposals in the consultation, Ofcom will now not require all program services carried by small-scale radio multiplex services to be broadcast using the DAB+ standard. Ofcom adds: "Licensing the trial multiplex areas in the South East of England will need to wait until Round 4 due to international agreements not yet in place for use of the spectrum." Community radio applications, in the form of the new Community Digital Sound Program ('C-DSP') licenses, will open for each local area at the same time as the publication of multiplex license advertisements. Any radio station operating a C-DSP will need to provide social gain and have a studio based within the multiplex coverage area. And anyone winning a small-scale DAB multiplex license will need to launch it within 18 months. Kevin Bakhurst, Ofcom's Content Group Director, said: "Small-scale DAB is making it cheaper and easier for local stations to get on the digital airwaves, which will give more choice to listeners up and down the country."

(April 8, 2020) [radiotoday.co.uk](#)



United States

The US Federal Communications Commission (FCC) has reportedly approved the new MVNO deal granted to Boost Mobile, the Sprint sub-brand which is being sold to satellite TV giant DISH Network. According to industry journal Broadcasting+Cable, Charles Mathias and Catherine Matraves – the co-directors of the T-Mobile/Sprint Task Force – have informed T-Mobile US that the proposed wholesale agreement is consistent with the FCC's goals in requiring the spin-off. The article quotes the officials as saying: 'After a careful review of the submitted materials, we find that your MVNO agreement with DISH is consistent with these principles.' The sale of Boost, which is valued at USD1.4 billion, was one of the pre-conditions of the recent merger between Sprint and larger rival T-Mobile US. It was agreed in July 2019 alongside a USD3.6 billion sale of 800MHz spectrum. DISH expects to transition from an MVNO to an MNO by 2022.

(April 20, 2020) [commsupdate.com](#)

Ligado Networks – the company which emerged from ill-fated open-access 4G start-up LightSquared in February 2016 – has finally been given the go-ahead by the Federal Communications Commission (FCC) to utilise its L-band spectrum for 5G. FCC Chairman

Ajit Pai circulated a draft order to his colleagues that would approve with conditions Ligado's application to deploy a low-power terrestrial nationwide network in the L-Band. Ligado is now only seeking terrestrial use of the 1526MHz-1536MHz, 1627.5MHz-1637.5MHz and 1646.5MHz-1656.5MHz bands, and Pai notes that adjacent band operations, including the Global Positioning System (GPS), are protected from interference. Chairman Pai commented: 'After many years of consideration, it is time for the FCC to make a decision and bring this proceeding to a close. We have compiled an extensive record, which confirms that it is in the public interest to grant Ligado's application while imposing stringent conditions to prevent harmful interference.' In February 2012 the FCC declared that LightSquared's use of non-traditional frequencies in the 1.4GHz and 1.6GHz bands interfered with GPS satellite navigation devices and aircraft flight safety equipment. Subsequent months saw the stricken company beset with myriad financial and legal problems, before being forced into bankruptcy in May 2012. LightSquared emerged from Chapter 11 bankruptcy protection in late-2015 and duly rebranded as Ligado Networks, with a view to targeting the IoT sector. 📡

(April 17, 2020) [commsupdate.com](#)

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