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SAMENA TRENDS

FOR SAMENA TELECOMMUNICATIONS COUNCIL'S MEMBERS

BUILDING DIGITAL ECONOMIES



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Governor
CITC, Saudi Arabia

THIS MONTH

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FROM POLICY TO REALITY**

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CONTENTS

04 EDITORIAL

13 REGIONAL & MEMBERS UPDATES

- Members News
- Regional News

75 SATELLITE UPDATES

- Satellite News

87 WHOLESALE UPDATES

- Wholesale News

93 TECHNOLOGY UPDATES

- Technology News

99 REGULATORY & POLICY UPDATES

- Regulatory News
- A Snapshot of Regulatory Activities in the SAMENA Region
- Regulatory Activities Beyond the SAMENA Region

ARTICLES

54 Etisalat Driving the Digital Future to Empower Societies

59 Omantel: 5G for Businesses: Roadmap to Growth and Innovation

69 China Mobile Intl.: Innovation through 5G Industrial Internet to Create...

72 BT: Unlocking the Power of Industry 4.0...

81 ICT will Enable a More Sustainable Future. Openness, Collaborations and...

84 PCCW Global Enables IoT Drones to...

91 New Data Centers and CDN Points of Presence in the Middle East...

96 Digital Customer Care Index 2021

109 The RIPE NCC Throws Light on the Current State of Internet in the GCC...

124 Nexign Helps Operators in MEA Slash Time...

128 The Importance and Role of Cybersecurity...

FEATURED

05



Governor-CITC (Saudi Arabia) Speaks to SAMENA Council

07



DG-TDRA (UAE) Speaks to SAMENA Council

09



GCEO - stc Speaks to SAMENA Council

SAMENA COUNCIL ACTIVITY

09



SAMENA Council Leaders' Summit 2021 on April 8th to Bring Together Renowned Public & Private-Sector Stakeholders...

Digital Economic Growth: From Policy to Reality

Multi-stakeholder collaborative efforts are now ever more necessary to help align needs and ways forward on the complex aspirations and challenges associated with the Digital Economy.

In the now digitally-powered world, ubiquitous connectivity, computational power, and comprehension capabilities are now driving technology development, with reduced cycles of adoption and with a greater possibility (and need) for stakeholder and industry-to-industry cooperation. However, some fundamental needs remain the same: we need to include everyone in the digital economy; and everyone should benefit from the digital-led economic growth.

In this regard, partnership, collaboration, digital capacity-building and innovation carry immense weight and are crucial for sustaining the digital development momentum created over the past year. This momentum is essential for recovery efforts around the world, and must be utilized effectively to propel a new wave of digitally-driven and digitally-inclusive economic development. In the post-pandemic times, new socio-economic and business paradigms, which, in many ways, are very different from those of the past, are the way to the future.

This calls for new initiatives and fresh new efforts in the alignment of the Industry's and the governments' priorities and merits a paradigm shift in policy-making and regulations. On our way to economic recovery, from the technology front alone, increased network capacity and greater resilience are a pre-requisite for building a sustainable Digital Economy. On the other front, key enabling factors, such as public-

private collaboration, improved policy and regulatory enablement steps, aligned well with digital transformation goals set by Operators and the Private Sector, at large, and sustainable influx in investment in both infrastructure and incubation of innovation and ICT talent, will play a central role in catalyzing economic growth opportunities for both existing and new businesses. Quite possibly, this may uplift standards of living for billions all around the world. It is engaging in these efforts, which can ensure we make progress on our visions for digital economic growth.

SAMENA Council Leaders' Summit 2021, to be held on April 8th, with a special focus on "Championing Digital Economic Growth from Policy to Reality", is an important contribution to such efforts. The Summit will bring together renowned Public and Private-sector stakeholders, decision-makers, and global bodies to help voice transformational needs for all.

Leaders' Summit 2021 will focus on the role of broadband networks and advanced digital technologies, such as cloud communications, IoT, AI, with a particular emphasis on understanding their implementation in correlation with emerging social and business value ecosystems as well as thriving digital application ecosystems. The structure of the Leaders' Summit 2021 is designed to accommodate a multi-dimensional agenda, ranging from policy statements, discussions on a complex subject matter, to live insights from renowned personalities in the world. Special focus will be casted on Intelligent Connectivity, Technology Demonstration, Global Action & Collaboration, Vertical Industry Segments, Interview Sessions



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

with Media, Digital Application & 5G Ecosystems, Digital Sustainability, and the Internet Economy.

As our societies and the global economy digitalize, there are greater possibilities to put into effect human-centric, data-driven, and evidence-based policies, increase economic competitiveness, create more jobs, enhance provision of improved public services throughout the SA-ME-NA region's urban and rural communities, and to create more capital.

We just need to put policy to action, and work together in a well-orchestrated manner to address the systemic transformational requirements of operating in the new environs. 🌱

Governor-CITC Speaks to SAMENA Council

H. E. Dr. Mohammed bin Saud Al-Tamimi has been the Governor of the Communications and Information Technology Commission (CITC) by royal order since October 2019. Al-Tamimi has been the vice chairman of ITU-T Study Group 13 at International Telecommunication Union since 2016. He has also been on the board of directors at the Saudi Broadcasting Authority since 2018, and is a member of Arbitration Committee at the European Telecommunication Networks Innovation Forum.

Q. How is CITC's strategic mission enabling the Kingdom's transformation into a digital society?

A. With our new, transformative strategy, CITC is seeking to fulfil three objectives. Firstly, we understand that next-gen, high-speed connectivity underpins the digital economy. Therefore, we aim to ensure the deployment of broadband infrastructure throughout the Kingdom while continuing to promote competition and protect users. We must also take into consideration allocating adequate spectrum for international mobile technologies (IMT) usage, fair competition based on our MDDD (Market Definition, Designation and Dominance) approach and promoting universal connectivity.

Emerging technologies and processes, such as quantum computing, IoT, blockchain, AI, cloud and fintech all rely on robust telecom infrastructure and we must work with regulatory bodies from other sectors, government ministries and local and international private enterprises to ensure that Saudi Arabia is at the forefront of the digital revolution.

Our second objective is to manage the convergence of the telecom sector with the IT and technology sectors. We must identify and removing barriers for adjacent sectors to grow while enabling and promoting localization of emerging value chains in key areas: data storage and analytics, as well as e-service applications in the health, education and logistics sectors.



H.E. Dr. Mohamed Al Tamimi
Governor
CITC



We expect the National Spectrum Strategy to have significant impact and contribute to Vision 2030, including a sizeable contribution to the economy (direct GDP contribution of around SAR 500 million annually and about 20% increase in spectrum enabled GDP by 2025), additional non-oil revenue up to SAR 18-36 billion per annum, all facilitated by a doubling of the spectrum allocated to commercial and innovative uses.

Thirdly, we recognize that the traditional communications sector is an enabler of the digitalization of the wider economy. Emerging technologies and processes, such as quantum computing, IoT, blockchain, AI, cloud and fintech all rely on robust telecom infrastructure and we must work with regulatory bodies from other sectors, government ministries and local and international private enterprises to ensure that Saudi Arabia is at the forefront of the digital revolution.

Q. How much spectrum will CITC be releasing for commercial and innovative use over the next few years, and how does this accelerate efforts to fulfil national ICT plans?

A. Saudi Arabia's National Spectrum Strategy 2025 is structured along two main pillars supported by a foundational enabler. The first pillar (Pillar A) aims to "Unlock the Future" by acting on current spectrum demand and proactively

anticipating future needs. This is achieved by optimizing legacy spectrum, fostering commercial and innovative uses, and safeguarding national access.

Pillar B aims to "Empower a 'Smart Spectrum'" in order to meet the demand captured in Pillar A by enhancing our portfolio of spectrum management tools and services, including developing adaptive regulatory mechanisms, facilitating wireless access and investments, as well as embracing market-oriented approaches.

The key enabling goal to this two-pronged approach is to "Build the Foundation" and ensure the organizational capabilities, tools, and spectrum ecosystem are prepared to fulfill their strategic objectives. We expect the National Spectrum Strategy to have significant impact and contribute to Vision 2030, including a sizeable contribution to the economy (direct GDP contribution of around SAR 500 million annually and about 20% increase in spectrum enabled GDP by 2025), additional non-oil revenue up to SAR 18-36 billion per annum, all facilitated by a doubling of the spectrum allocated to commercial and innovative uses. These outcomes will help drive the growth of Saudi Arabia's digital economy and position us among the world's top 20 ICT nations by 2030.

Q. CITC has recently launched the "Game Mode" initiative. Please share with us the significance of this initiative?

A. The 'Game Mode' initiative was launched with the aim of enhancing Saudi

Arabia's booming gaming sector. It is our responsibility to encourage healthy competition among telecom operators and provide the best experience for gamers, raise the level of transparency in the market, and enable investment by providing key data and indicators on the sector's performance. The Game Mode initiative ticks all of these boxes.

We also launched a quarterly award for the internet service provider with the best response time (lowest latency) for video gaming, a key indicator of the network's performance. In addition, the commission will start the publication of quarterly reports comparing response times among service providers across some of the most popular video games in the Kingdom, thus enhancing transparency and competition.

Q. What are CITC's plans for the future to help position Saudi Arabia as a global leader in the ICT sector?

A. With our vision of a "connected nation for a thriving digital economy", CITC is well along the path of transforming itself from a traditional telecom regulator to a digital regulator. We are stepping up to meet the International Communication Union (ITU) 5th-generation regulation requirements, reserved for the world's most advanced and high-performing ICT regulators. This transformation will be measured by our success in helping Saudi Arabia to attain its objective of being among the top 20 countries for the telecommunications and information technology sector by 2030, improving the national ICT sector's performance and contribution to GDP. 🇸🇦

With our vision of a "connected nation for a thriving digital economy", CITC is well along the path of transforming itself from a traditional telecom regulator to a digital regulator. We are stepping up to meet the International Communication Union (ITU) 5th-generation regulation requirements, reserved for the world's most advanced and high-performing ICT regulators.

DG-TDRA (UAE) Speaks to SAMENA Council

H.E. Hamad Obaid Al Mansoori is the Head of the UAE Digital Government and Director General of the Telecommunications and Digital Government Regulatory Authority. He has been awarded the Prime Minister's Medal for Distinguished Director-General in the Fifth Cycle of Mohammed bin Rashid Government Excellence Award. This honor is the culmination of a journey full of awards, achievements and responsibilities on many national levels.

When it comes to the telecommunications and information technology sectors in the SA-ME-NA region, SAMENA Council is the hub that offers us the space and opportunity to consult with industry leaders on various important issues. This is how it was, and this is how it will stay. SAMENA Council has always been an important regional organization. However, it has gained higher importance after what mankind faced, following the pandemic in 2020 and continues to face even today.

We, in the Arab region, are in dire need of further consultations between the various stakeholders involved in the telecom sector, to agree on the future we want for our children. I trust SAMENA Council to help achieve this objective, being the umbrella that brings together the regional countries for serving noble humanitarian causes through developments in the telecommunications sector.

Pandemics have been a part of history, but with COVID-19, it was the first time that an illness spread during the presence of robust telecommunications network worldwide. We can say that the world could continue to stay informed, connected and even entertained; businesses survived and education continued online. Many countries were able to neutralize a large part of the difficulties arising from the precautionary measures, thanks to the progress in the telecommunications sector.

The UAE was one of those countries that could navigate the pandemic effortlessly. We switched to remote work, distance learning, and eCommerce in the early stages of the pandemic. The government too provided many digital services to the people.

While these are great successes indeed, they remain incomplete unless the higher human goals are achieved; foremost of which are bridging the digital divide, achieving the United Nations Sustainable Development Goals 2030, and fulfilling the Action Lines of the World Summit on the Information Society.



H.E. Hamad Obaid Al Mansoori
Head, UAE Digital Government
Director General, Telecommunications and
Digital Government Regulatory Authority,
UAE

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GCEO - stc Speaks to SAMENA Council

Saudi Telecom Co. (stc) has named Mr. Olayan Mohammed Al Wetaid as the new group CEO, starting March 28, 2021. Mr. Al Wetaid has more than 20 years' experience in the ICT Industry and worked at Saudi Aramco before joining stc. He is also the new Chairman of SAMENA Telecommunications Council.

Q. What is the message that you would like to give to other business leaders and CEOs to help them prepare for the new digital-led post COVID era?

A. Covid-19 has been challenging on so many fronts. From human suffering, losses and bankruptcy of businesses, unemployment, pressure on public health services, to impact on education, and so on and so forth, the challenges have been immense. Our experience of the past year has fundamentally changed our view on digital transformation.

stc's timely efforts in enabling digital capabilities facilitated our sales, customer care, and operations without any disruption during the past year, even as all employees shifted overnight to working from home.

stc's timely efforts in enabling digital capabilities facilitated our sales, customer care, and operations without any disruption during the past year, even as all employees shifted overnight to working from home.

From stc's experience, my message to all business leaders is to consider the following for a post COVID-19 era:

- Put digital transformation at the top of your agenda with clearly defined and measurable short-term and long-term objectives.
- Prepare early as our world is getting more and more complex, which require us to be agile in preparing for technology.
- Build the right technical and human capabilities along with working on the right organizational culture that facilitates digital transformation.
- Establish flexible work environments and workforce policies. In stc, we have seen productivity gains through flexible and digitally enabled work policies in the past few months. These activities and lessons learnt have led us to formalize our HR/People policies through a fundamental shift towards flexible ways of working enabled by digital channels.



Eng. Olayan M. Alwetaid

GCEO

stc

stc

Q. How is stc investing in technology to help enable your future business growth and if you could share some key achievements on the technology front and its impact on your business?

A. Technology is not only an enabler but a key source of strategic competitive advantage for stc. Improvement in Global Competitiveness Index (GCI) is a clear target in KSA Vision 2030 and Saudi Arabia has been consistently improving its position. Saudi Arabia jumped up by three positions in the global ranking (36th rank). Among the G20 economies references by the WEF, Saudi Arabia is a top digital riser.

Investment in ICT has been the biggest contributor in KSA's GCI improvement and stc's investment in technology in the past few years.

Digital transformation in one of the four pillars of stc's **dare** strategy. In addition to developing new ways of working and building human capabilities, our fundamental focus is on building the right technology platforms that will enable agile operations, world class customer experience and become a growth engine for new digital services.

In summary:

- stc has maintained its technology leadership position in the region and launched the first commercial 5G network in the region. Since then, we have significantly invested in 5G

Digital transformation in one of the four pillars of stc's dare strategy. In addition to developing new ways of working and building human capabilities, our fundamental focus is on building the right technology platforms that will enable agile operations, world class customer experience and become a growth engine for new digital services.

coverage and KSA is ranked among the best 5G networks globally.

- stc has recently won a number of awards for 5G technology such as three international awards at the 5G MENA summit.
- stc is investing heavily in the IT service and is the market leader in KSA.
- stc has successfully connected more than 2 million households with high quality fiber (FTTH) technology.
- stc is also investing heavily in IoT use cases, cloud services, and data analytics capabilities. These areas are strategic growth areas for stc.
- stc's digital transformation efforts have shown great success during Covid-19 pandemic. Our ability to serve customers through digital channels and continue operations through remote working has been an exceptional success. This has only been possible due to our investments in digital transformation.
- stc's investments in Fintech – stc Pay – are creating significant value and the business scale is growing.

Going forward, stc will continue to enrich people's lives as our main brand and to invest in new technologies, and will play a significant role in the development of the Kingdom's mega projects such as NEOM, the Red Sea project, and other entertainment, transport, and infrastructure projects. Building the underlying smart technologies that will facilitate the attractiveness of these mega projects for foreign investment.

Q. Many telecoms are working on 5G for business to business. What is your input on this?

A. 5G technology promises significant benefits and breakthroughs that sparked an unprecedented wave of innovation in many different domains and applications. The combination of unprecedented wireless network speed, extremely low latency, and features like edge cloud and network slicing and virtualization can transform the ways in which data is generated, collected and used.

The opportunities these developments present to the industrial world are truly transformative, and are driving a new

paradigm of industrial innovation known as "Industry 4.0". Across the world, leading industrial firms are driving innovation in developing private 5G networks designed specifically to address the challenges they face, including supply chain optimization, plant operations continuity, and safety and workforce well-being.

These innovations in 5G Campus Networks are primed for massive growth in adoption and provide a unique strategic opportunity for stc to expand our B2B portfolios, strengthen our foothold in the enterprise market, and capture significant economic value from high margin value propositions. Similar to the Telcos around the world, stc is also taking aggressive action to seize the 5G Campus Networks opportunity. We are partnering with enterprise customers and solution providers to explore use cases that will shape value propositions in this area. Below are the use cases we are exploring as combination with our Smart 5G Campus offering. Machine to Machine (M2M) and Machine to X (M2X) Communication, Smart Helmet , and Predictive Maintenance.

These are just a few examples of the innovative use cases being developed for Smart 5G Campus Networks that illustrate the massive potential for 5G in empowering the evolution of Industry 4.0. Many more applications and use cases are being developed across the ecosystem to address challenges inhibiting the next industrial transformation.

To continue its pioneering role in unlocking potentials of new technologies, stc is investing in its LAB as well as its Technology Innovation Center (TIC) to create the foundation needed for validating and developing new use cases that leverage the capabilities of the latest technologies such as 5G, edge computing, Artificial intelligence (AI), Blockchain, and Internet of Things (IoT). In addition, stc LAB and stc TIC serve as a platform for collaborations with universities and research and development (R&D) centers across the Kingdom of Saudi Arabia to help students unleash their innovation abilities and create the next generation of innovators and job creators. 🌱

SAMENA COUNCIL ACTIVITY

SAMENA Council Leaders' Summit 2021 on April 8th to Bring Together Renowned Public & Private-Sector Stakeholders and Global Bodies to Voice Transformational Needs of the Digital Age



SAMENA Telecommunications, with patronage of the Telecommunications & Digital Government Regulatory Authority (TDRA) of the UAE, strategic partnership of stc Group and Zain Group, and with Huawei as the host for the eighth consecutive year, will hold one of the world's premier ICT Industry leadership congregations, the Leaders' Summit 2021, on April 8th. To be organized under the theme "Championing Digital Economic Growth from Policy to Reality", Leaders' Summit 2021 will congregate Public and Private sector Leaders with diverse industry backgrounds, and from across multiple time zones.

As an annually anticipated leadership event, Leaders' Summit encompasses ICT as well as cross-industry stakeholder

participation, experience exchange, and intellectual discourse among key decision-makers and innovators. Leaders' Summit 2021 will welcome Chairmen and CEOs from the ICT Private Sector, and top decision-makers from various Regulatory Authorities, and Thought Leaders from across developed and developing economies, and Leaders who are demonstrating progressiveness in policy and regulatory reforms, digital transformation, and in driving cross-industry synergies. To this effect, the Summit will also include participation of global leaders and entities focused on institutionalizing and fostering cross-sector collaboration. This makes the Leaders' Summit 2021 the year's premier and one of the world's first major virtual destination for leadership dialogue,

Leaders' Summit 2021 will focus on the role of broadband networks and advanced digital technologies, such as cloud communications, IoT, AI, with a particular emphasis on understanding their implementation in correlation with emerging social and business value ecosystems as well as thriving digital application ecosystems.

Bocar BA, CEO & Board Member, stated: "The agenda of the SAMENA Council Leaders' Summit 2021 is most relevant to our current needs as ICT Industry and as society. Throughout the past year, our resolve and readiness to embrace accelerated change have been tested, and we may have observed certain set backs in being able to achieve our globally-defined sustainable development goals. We now need to propel digital-led economic growth to put life back on track..."

demonstration, and for defining future policy actions in order to thrive in the 5G business environment.

Leaders' Summit 2021 will focus on the role of broadband networks and advanced digital technologies, such as cloud communications, IoT, AI, with a particular emphasis on understanding their implementation in correlation with emerging *social and business value ecosystems* as well as thriving *digital application ecosystems*. The structure of the Leaders' Summit 2021 thus encapsulates a multi-dimensional agenda, ranging from policy statements, discussions on a complex subject matter, to live insights from renowned personalities in the world. Special focus will be casted on Intelligent Connectivity, Technology Demonstration, Global Action & Collaboration, Vertical Industry Segments, Interview Sessions with Media, Digital Application & 5G Ecosystems, Digital Sustainability, and the Internet Economy.

Inviting industry stakeholders to join the virtual discussion on April 8th, **Bocar BA, CEO & Board Member, stated:** "The agenda

*of the SAMENA Council Leaders' Summit 2021 is most relevant to our current needs as ICT Industry and as society. Throughout the past year, our resolve and readiness to embrace accelerated change have been tested, and we may have observed certain set backs in being able to achieve our globally-defined sustainable development goals. We now need to propel digital-led economic growth to put life back on track. This necessitates that we all work together to champion the development of a sustainable Digital Economy. A key step in this regard is to start by identifying growth opportunities for enterprises and citizens alike in line with actual policy and technology requirements. SAMENA Council's highly valued collaboration with Huawei in this regard builds on our shared legacy of addressing the Industry's needs with a far-reaching objective of assisting in the development of sustainable digital economies in the South Asia - Middle East - North Africa region and, under the leadership of its **Chairman of the Board of Directors, Eng. Olayan M. Alwetaid - new GCEO of stc Group**, the Council looks forward to further driving collaboration within and outside of the Industry."*

Charles Yang, President of Huawei Middle East, added: "The post-pandemic world will need an innovative approach towards economic recovery and improving quality of life; making businesses smarter and creating a more inclusive world in which everyone has the opportunity to thrive. The ICT sector thus serves a vital role in building a more resilient, sustainable future. Nevertheless, that opportunity hinges on our commitment to open cooperation and innovation. Now more than ever, we must all work together to forge new partnerships, and to bridge the digital divide by fostering inclusion on a national, regional, and global scale."

ICT Industry as well as cross-industry efforts and innovation across policy, regulatory, and business fronts needs to be accelerated, to help fulfill the United Nations' 2030 Agenda for Sustainable Development, while ensuring investment sustainability for the Private Sector. Following the events of 2020 and in the wake of accelerated 5G developments, there is a particular need to catalyze and sustain momentum around economic development opportunities, both in established and nascent market segments, from multiple sectors and verticals. Moreover, there is a need to leverage the role of broadband networks and advanced mobile technologies to foster sustainable growth of the newly emerging social and business value ecosystems. The Leaders' Summit 2021 is being held at a time when the intrinsic value of 5G and other allied digital technologies are being assessed against the social and business values they create, and as the private sector seeks new opportunities and incentives to invest, sustainably. 🌱

MEMBERS NEWS



Launch Of 5G Network in Over 47 Cities Around the Kingdom

The Communications and Information Technology Commission (CITC) revealed that stc was the operator with the highest mobile downloading speed in the Kingdom, with a 5G network that reached a speed of 342.35 MB/s. This announcement was made in the 2020 Q4 Meqyas report on the average downloading speeds for 5G networks. In this context, stc announced

the deployment of its 5G network in over 47 cities around the Kingdom, in a plan to strengthen its leadership in reliable mobile coverage and deploy the largest advanced 5G network in the Middle East. According to the group, the next phase will see the expansion of the 5G network in Saudi Arabia, with the intention to increase the network's reach to over 71 cities across the

Kingdom. Furthermore, stc will continue to pursue its market leadership in the field of new and advanced technologies to achieve a significant and comprehensive expansion of its 5G network, while also developing its advanced 4G network. The company is also working on further enriching its customer experience and on continuing the development of reliable and advanced digital network and infrastructure that represent the backbone of various sectors and industries. This will be done in parallel with the company's DARE strategy, which is aligned with the Kingdom's Vision 2030. The company recently received the Ookla Speedtest award for the best mobile network in the Kingdom of Saudi Arabia for Q3 and Q4 of 2020. It also ranked first for average mobile data download speeds during Q3 and Q4 of 2020, according to the CITC Meqyas Report. The OpenSignal Global Report ranked stc among the top global companies with the most improved downloading speed experiences.



11 Global Architecture Excellence Awards of ICMG

stc won total of 11 Global Architecture Excellence awards of ICMG Award, which is the most prestigious global awards in the domains of Enterprise Architecture, Digital Architecture and IT architecture. The award is considered to be one of the most remarkable global recognition which confirms stc's unique leadership and capabilities in its Digital Transformation Journey and Enterprise Architecture Capability Development. There were 119 submissions globally and each submission evaluated over 300 parameters, which are

covering the whole journey from strategy to execution and value realization in the "internal digitalization & EA build up projects". *Global 2020 excellence awards won by stc are: *

Corporate capability Level:

1. Global excellence - Digital Transformation
2. Global excellence - Digital strategy to execution
3. Global excellence - IT landscape rationalization
4. Global excellence - Improving business

by improving process

5. Global excellence - Best Architecture in HR function

Leadership Level:

6. Top Rated Global Enterprise CEO's
7. Top Rated Global CIO's
8. Top Rated Global Chief Enterprise Architects
9. Top Rated Global Chief Architects
10. Top Rated Global Chief Digital Strategists
11. Top Rated Global Architecture Project Leader.

stc, Ericsson Ink Managed Services Agreement

Saudi Telecom Company (stc) has selected Ericsson as its managed services

provider in Saudi Arabia. According to the agreement, the Swedish networking leader

will deploy Ericsson Operations Engine to strengthen stc's network operations.

Ericsson will deploy its latest Artificial Intelligence (AI) powered software suite and machine learning tools and capabilities to provide an automated end-to-end managed operations service. The Ericsson Operation Engine will support activities in Network Operation, IT Operations and Field Support and Maintenance for stc's

networks, covering technology domains from the core to access, including 5G. Bader Abdullah Allhieb, Operations Vice President at stc, said: 'We are committed to providing a futuristic network that enables world-class experience for our customers in Saudi Arabia and this agreement shows our commitment in this direction. We

are confident that this partnership with Ericsson will strengthen stc's operational capabilities to improve our people's quality of life and contributing to the economic and social development of Saudi Arabia in line with Saudi Vision 2030.'

stc Launches the Largest Digital Operations Control Center in the MENA

stc has inaugurated the digital operations control center, which is considered the largest integrated operating center in the region with an area of more than 42,000 square meters that can accommodate about 2,300 employees. The ceremony took place in the presence of His Royal Highness Prince Mohammed bin Khaled Al-Abdullah Al-Faisal, the Chairman of stc's Board of Directors, and the Vice Minister - Ministry of Communications & IT, Eng. Haitham Al-Ouhali. The CEO of stc group, Eng. Nasser bin Sulaiman Al-Nasser confirmed that the digital operations control center includes a system made out of advanced digital processes in several areas, such as simulation, digital infrastructure management, digital crises management and reinvention within a range of digital solutions. It is a comprehensive and complete technical space abiding by high security standards. He also noted that the center will enhance Saudi Arabia's position as a leading regional business center or a "HUB". It will lay the foundation for the

company to become a regional center offering a system of digital services in the Middle East and North Africa. This would help to achieve the objectives of the second phase of stc's strategy "DARE", in order to enable digital transformation in various fields, benefit from the Kingdom's strategic location at the crossroads of three continents. It promotes investments in international connectivity services and data centers to extract the value from the group's numerous assets and its advanced services and technologies. The center operates the biggest international gateways in the Middle East and North Africa, which have the capacity of more than 8.4 terabits per second, and are connected to more than 4 submarine cables. They consist of the latest protection and distribution systems in the world, used for the first time in the region to generally secure the company's service system and the data transmission and voice circuits system for all customers. In addition, there are many global content

localization systems, making stc's network one of the most active networks in the world in terms of internet provision, especially when it comes to some social media platforms. The center also operates and monitors the largest and latest long-range correspondence networks in the region, which exceed 155,000 kilometers of fiber optics. These networks will boost connectivity between the East and the West through the continental marine stations located in a number of coastal cities in the Arabian Gulf, such as the city of Al-Khobar and the cities of Jeddah and Yanbu on the Red Sea Coast. Two more stations are expected to be added in the cities of Duba and Haql in order to provide intelligent connectivity systems for all of the world's marine cable systems. These systems cover more than 100 stations across continents with the length of the continental marine cables exceeding 35,000 kilometers. In order to protect this technical system from cyber threats, the Centre has been equipped with the largest and newest cybersecurity operations centre in the region (SOC). This center is managed by highly skilled cybersecurity experts in accordance with the best international practices and standards to develop a secure national network. stc has also worked on developing a plan to deploy the 5G network in more than 47 cities throughout the Kingdom. This came within the scope of a plan aimed at strengthening the group's leadership in terms of reliable mobile coverage and deploying the largest advanced 5G network in the Middle East. Over the course of the next phase, we will expand the scope of deployment of the 5G network in Saudi Arabia to cover more than 71 cities across the Kingdom.





The Governor of the Capital Governorate Opens Batelco Business Center at the Avenues Mall

His Excellency Shaikh Hisham bin Abdulrahman Al Khalifa, Governor of the Capital Governorate, officially opened Batelco's first Business Center at The Avenues Mall in the presence of a number of Batelco's executive management. This is in line with Batelco's strategic direction to elevate its services especially for Small and Medium Enterprises (SMEs), which play a vital role in the national economy. The Business Center is located close to the main business area, and will serve a larger Enterprise segment. During the inauguration, His Excellency Shaikh Hisham bin Abdulrahman Al Khalifa, stated: "It gives me great pleasure to be present at the launch of Batelco's Business Center in the Kingdom, which marks a new phase in the way services are provided to this vital sector of the national economy, as SME's represent about 93% of the total number of local companies. Due to the strategic location of the Avenues Business Center, which lies at the heart of Bahrain's capital, we are confident that it will benefit multiple businesses across various sectors." His Excellency praised the variety of services provided by Batelco to consumers and the Enterprise sector. Batelco's Business Center at The Avenues Mall, features a modern design with a focus on providing an integrated store experience for Enterprise customers

by combining a display of the latest technologies and solutions relevant to their industry, such as, fixed internet services, ICT solutions, latest mobile devices, PABX and point of sale solutions. Customers have the opportunity to experience the devices, and receive technical advice from Batelco's specialists, while also being able to complete purchase transactions and service subscriptions at the Center. Batelco CEO Mikkel Vinter expressed his appreciation to His Excellency Shaikh Hisham bin Abdulrahman Al Khalifa, Governor of the Capital Governorate for officially opening Batelco's Business Center at the Avenues, adding that Batelco looks forward to serving enterprise customers in the Capital Governorate and across

Bahrain, and supporting the growth and development of their businesses. "We are pleased to launch Batelco's first Business Center concept which will benefit SMEs through a fully integrated experience in line with the needs of this sector. This is an important step in the company's strategy to further support the Enterprise sector by providing relevant services to enable the efficient performance of their business," he concluded. In addition to its new Business Center at the Avenues Mall, Batelco also opened another center at Sharaf DG in City Center Bahrain. Both Centers are open every day, from 10am to 10pm. Furthermore, Enterprise customers can contact Batelco's Call Center for enquiries and technical support by dialing 101



Batelco Opens Bahrain's Biggest Ever Data Center

In the presence of H.E. Engineer Kamal bin Ahmed Mohammed, Minister of Transportation & Telecommunications and Chairman of Batelco Shaikh Abdulla bin Khalifa Al Khalifa, Batelco's Data Center, located in Hamala, was officially opened on Thursday, February 4th. The launch of this center is a remarkable achievement for Batelco, supporting the Kingdom's achievements in the telecommunications sector, which is in line with the Fifth Telecommunications Plan for the development of the sector, ensuring its readiness to support and develop the Kingdom's digital economy. Batelco's Data Center is designed in accordance with international standards for the construction of such centers and is the third data center of the company. The new Data Center has achieved Tier III certification for design and build from the Uptime Institute, a global authority that specializes in evaluating global data centers through a series of performance-based assessments designed to measure progress and efficiency of all

data centers across the world. Evaluation is based on specific criteria such as the availability of round the clock service and the quality of equipment enabling uninterrupted power supply to ensure business continuity of the center. With an area of 12,236 square meters, the Center is equipped with a total capacity of 2.7 megawatts that services a total of 250 working cabins, making it the largest data centre for the commercial sector in the Kingdom of Bahrain, which is ready to provide hosting services for Enterprise customers. During the visit, a presentation was given outlining the company's strategy in building and operating modern Data Centers in Bahrain, in line with the requirements of digital transformation in the telecommunication sector. Batelco also highlighted the support of the Ministry for such projects that contribute to the development of telecommunication infrastructure in the Kingdom of Bahrain. The Minister then toured the Data Center and was informed about its facilities including the benefits it offers such

as providing the right environment for the operation of high-speed servers, and cooling systems that support a temperature controlled Data storage hall, as well as the structure of the center and monitoring systems. During the tour, the Minister pressed the activation button for the cooling systems, announcing the official operation of the Center. Commenting on the launch, H.E. Engineer Kamal Bin Ahmed Mohammed praised Batelco's efforts in elevating the Kingdom's telecommunication sector, saying, "The telecommunication sector is a key pillar in the success and prosperity of Bahrain's economy, particularly the digital economy, and on this occasion I would like to congratulate Batelco on its achievement in launching a world-class certified Data Center that is in line with the Fifth Telecommunications Plan to support the Kingdom's digital economy and facilitate digital transformation in various sectors." "I am pleased to witness the recent remarkable developments in the telecommunication and Information technology sector, which is reflected in the development of mobile services such as the launch of 5G and broadband services, as well as digital solutions related to cloud

computing, the Internet of Things and Data Centers, and these are all indicators of very positive progress in the Kingdom's digital economy." Batelco Chairman Shaikh Abdulla conveyed his appreciation to His Excellency Engineer Kamal Bin Ahmed Mohammed for visiting and opening Batelco's newest Data Center and thanked him for his continuous support for the telecommunication sector. "We are proud to host His Excellency Eng. Kamal bin Ahmed Mohammed and to have him officially inaugurate Batelco's newest Data Center. I would like to take this opportunity to express my gratitude for his continued support to the telecommunication sector, especially to the telecommunication companies in the Kingdom, which has had a great impact on the continued advancement of the Kingdom's telecommunication and information technology sector and in keeping with international standards."



The Minister of Transportation and Telecommunications Engineer Kamal bin Ahmed Mohammed Visits "BNET" to Review Work Progress

BNET Chairman Shaikh Ali bin Khalifa bin Ahmed Al Khalifa welcomed HE Engineer Kamal bin Ahmed Mohammed, Minister of Transportation and Telecommunications at BNET headquarters in Hamala last Thursday, who was on a visit to discuss work progress in accordance with the Kingdom's national telecommunication plan. The visit was attended by Batelco Chairman Shaikh Abdullah bin Khalifa Al Khalifa and members of BNET board of directors and its executive team. During the visit, His Excellency the minister and guests took a tour of the company's new facilities, recently equipped with the latest technologies. His Excellency was briefed on the facilities and departments of the company, most notable are the recently announced Cybersecurity Operations Centre (CSOC), launched to secure digital infrastructure and ensure the provision of safe and reliable services, as well as both the Service Management Centre (SMC) which provides round-the-clock support to BNET customers and licensed service providers in the Kingdom, and the Networks Intelligence Centre of Excellence (NICE), ensuring the delivery of secure, reliable and stable network

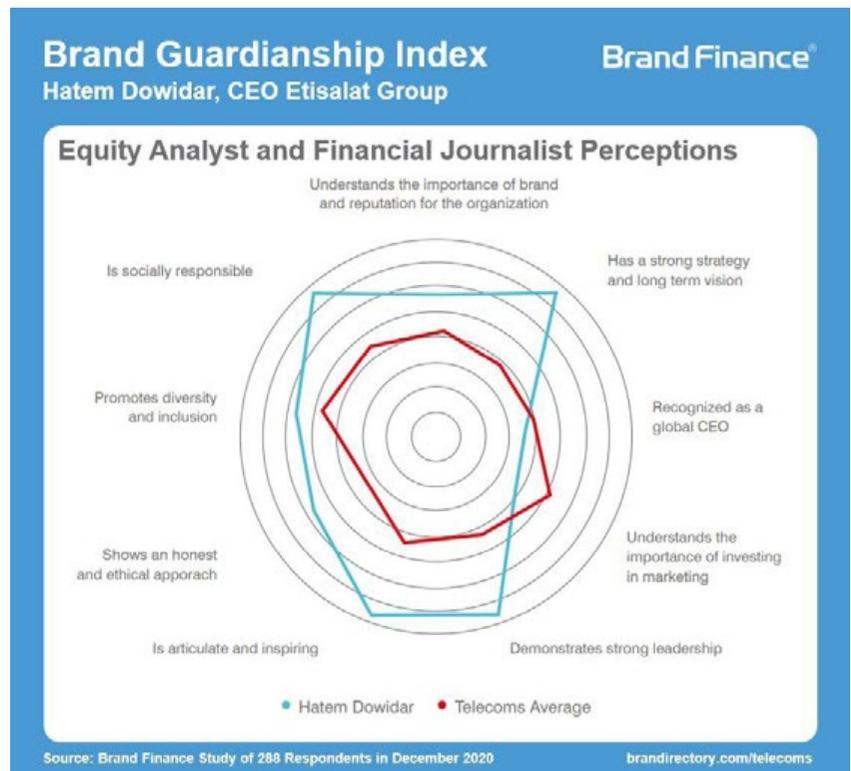
services. The three centers were launched in January as part of continued efforts to optimize digital operations and ensure the resilience of Bahrain's telecommunication sector. Headed by Chief Executive Officer Mohamed Bubashait, the BNET team presented the company's achievements since its establishment in 2019, which were implemented following a carefully developed medium to long-term strategy and guided by the company's vision and goals. The presentation also included BNET's progress and plans in implementing its key role in deploying fiber infrastructure as required by the roll out targets set out in the Fifth National Telecommunications Plan. BNET continues to work on achieving this goal and its strategic objectives in order to support economic growth and diversity in the telecommunications sector, encourage sustainable and effective competition and ensure the provision of quality services to all licensed operators in the Kingdom. HE the Minister of Transportation and Telecommunications said "A fiber optic network is the backbone of any knowledge-based economy and society and supports the government's vision guided by His Majesty King Hamad

bin Isa Al Khalifa's directives which emphasizes on the transformation into a robust and resilient digital economy. The availability of an advanced and modern telecommunication infrastructure will enable the Kingdom of Bahrain to adequately interact with various future developments in this sector and support growth and digital transformation across all sectors of Kingdom's economy." HE praised BNET's efforts, and its contribution to preparing the Kingdom for a digital future with a robust digital communications infrastructure, and is looking forward to BNET continuing efforts toward ensuring fiber connectivity to meet the increasing demand for broadband internet. BNET Chairman Shaikh Ali bin Khalifa Al Khalifa thanked HE the Minister for his continuous support to the telecommunications sector in the Kingdom. He added "we are honored to receive HE Engineer Kamal bin Ahmed Mohammed at BNET's new headquarters. BNET's launch was a key part of the national telecommunication plan and contributes to enhancing the Kingdom's position as a strategic investment destination and a regional hub for information technology."



Hatem Dowidar, Group CEO, Etisalat Among Only 3 Telecom CEOs To Feature in The World's Top 100 CEOs

Etisalat has made history by emerging as the strongest brand across all categories in Middle East and Africa (MEA) region. This feat puts Etisalat among the top 25 brands globally in the strongest brands index by Brand Finance, the world's leading independent brand valuation and strategy consultancy. This global accomplishment was made possible due to Etisalat's brand strength and performance with continuous efforts and investments in accelerating its value by engaging with consumers across markets with launching many successful innovative global branding initiatives. With this ranking from Brand Finance, Etisalat is now among the world's strongest brands including Ferrari, Coca Cola, Apple, among others making it to the global top 25 strongest brands in the world. Continuing its growth streak, Etisalat is turning its sights on transforming into a truly global player and climbed 17 spots in the global 500 brand value ranking this year from 225th to 208th. Another noteworthy achievement this year is being ranked among the top five strongest telecom brands across global markets and the strongest telecom brand in MEA region. This achievement is further enhanced with the recent ranking by Brand Finance for Etisalat GCEO, Hatem Dowidar, who features among the worlds' Top 3 Telecom CEOs and is among the world's Top 100 CEOs, overall. Dowidar's contribution to Etisalat's strategy and vision of driving the digital future to empower societies is evident. Under his leadership the brand was named the fastest network in the world – in itself a significant achievement – Dowidar will now be setting his sights on long-term transformation, turning the brand into a truly global player. His experience across a variety of global markets – including in Asia, Europe, and Africa - will help to expand the brand's footprint from its current standing of 16 nations and 149 million subscribers. Etisalat has also retained its title as the most valuable telecom portfolio of brands for the fifth year in a row with an impressive portfolio of brands touching more than AED 40 bn including Etisalat Misr, Mobily, Ufone, Maroc Telecom, PTCL and is also the only telecom brand to retain AAA brand rating. Operating in 16 countries with 149 million subscribers across Asia, Middle East and Africa, Etisalat's success can also be attributed to its continued efforts to provide the best solutions and services in the various markets in which it operates, its support for community initiatives and events, and its adoption of digital transformation strategies in its various operations. Etisalat has



led the telecom sector and the region with the deployment of the 5G network setting a major benchmark in the industry. Most recently Etisalat made a huge leap forward with the landmark announcement of achieving the world's fastest 5G download speed of 9.1 gigabits per second. Etisalat's pioneering 5G efforts in the region and delivering one of the fastest, smartest and best-connected places on earth for the upcoming global mega Expo 2020 Dubai has attributed to its success as a brand in the region. As the premier digital services and telecommunications partner of Expo 2020 Dubai, Etisalat is prepared to deliver the event's visitors and delegates 5G connectivity that brings the Expo themes to life for the millions of visitors. The success and growth of Etisalat's brand value is mainly driven by an innovative customer service strategy, adapting well to a digital savvy marketplace, leading the 5G revolution and the successful launch of global brand

building initiatives. Etisalat has also led digital innovation in the country by working on several digital initiatives in infrastructure, entertainment and smart cities. Etisalat has reached out and engaged with its consumers across markets with global branding initiatives by sponsoring global football teams and clubs aligning with the brand's priorities of being at the forefront of major sporting events. Etisalat also launched the brand campaign 'Together Matters' to highlight togetherness among its subscribers in today's world of connectivity. Brand Finance is the world's leading independent branded business valuation and strategy consultancy, and is the organization behind the Global 500 Brands and Telecom 300 league table of the world's biggest brands ranked by their brand value, assesses the dollar value of the reputation, image and intellectual property of the brand.

Etisalat Group Reports Consolidated Net Profit of AED 9.0 Billion A 3.8% Increase Year Over Year

Etisalat Group announced its consolidated financial statements for the 12 months ending December 31 2020.

2020 Financial Highlights and Key Developments

- Aggregate subscriber base reached 154 million, representing year over year increase of 3.6%.
- Consolidated Net Profit reached AED 9.0 billion a 3.8% increase year over year attributed to strong growth in the international operations that outweighed the decline in the UAE operations.
- Consolidated EBITDA amounted to AED 26.4 billion, representing a year over year increase of 0.3% and resulting in EBITDA margin of 51.1%.
- Proposed dividend payout of 40 fils per share for the second half of 2020, representing a total dividend payout of 80 fils for the full year.
- Board proposed cancellation of the share buyback program and instead proposed a one-time special dividend of AED 0.40 per share. As a result, the total dividend per share for the full year 2020 is AED 1.20
- Credit Ratings by agencies S & P Global and Moodys affirmed Etisalat Group's high credit rating at AA-/Aa3 with stable outlook.

Community Support during Covid19

Etisalat launched multiple initiatives to support the community during the pandemic including but not limited to:

- Etisalat provided Free Internet access to families without connectivity at home to facilitate access to distance learning services.
- More than 10 million Etisalat mobile subscribers enjoyed free browsing to over 800 websites related to education, health and safety.
- Free access to apps and platforms for distance learning and for government services.
- Launched enhanced offers for customers to upgrade their home and mobile plans at no extra charge.
- Etisalat introduced a wide range of device bundles and free access to Etisalat's unified communication and collaboration platform CloudTalk Meeting to help businesses stay connected.
- Introduced new innovative applications and services to ensure seamless business continuity during work from home period.
- Etisalat deployed a dedicated task force to ensure business continuity, monitor the performance of basic applications and ensure 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
- Allocating extra network resources and services to the health sector
- Provided connectivity to quarantined and other critical areas in the health sector
- Conducted Stay-At-Home awareness campaigns across multiple channels.
- Etisalat rolled out special offers with the support of the Frontline Heroes Office to help frontline professionals nationwide stay connected to family and friends at home and abroad while protecting the nation through the COVID-19 pandemic.

Industry Recognition

- Etisalat crowned as the 'Strongest Brand' in MEA region and ranked the most valuable telecom portfolio brand in MEA for 5th year in a row
- Etisalat recognized as the fastest mobile network in the world by Ookla
- Etisalat awarded 'Best Regional Wholesale Carrier' for the 12th year
- Etisalat recognized by Frost & Sullivan as 'UAE Data Centre Services Industry Company of the year'

Key Developments

- Etisalat completed the acquisition of Help AG, a privately held regional company specializing in the delivery of cyber security solutions and services
- Digital Financial Services, a joint venture of Etisalat and Noor Bank, partnered with MoneyGram to offer international remittance services in the UAE
- Etisalat achieves the world's fastest 5G download speed of 9.1 Gigabits per second
- Etisalat partnered with Ericsson to connect to its charging system and 5G Business Support Systems (BSS) supporting new use cases including IoT, network slicing, AR and VR
- 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 subscribers can now access 5G fixed networks for the first time from their homes in UAE
- Etisalat in partnership with Ministry of Interior signs an MoU with Sheikh Zayed Housing Program to provide villas with the smart fire alarm solution 'Hassantuk'
- 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 teams up with BMW Group Middle East to power connected drive services in UAE
- Dubai International Financial Centre (DIFC) collaborated with Etisalat to deploy innovative technologies for an advanced telecom infrastructure, high speed internet and superior mobile connectivity
- Etisalat partnered with Microsoft to enhance its public cloud infused with automation and AI
- Etisalat joined Amazon Web Services (AWS) Direct Connect Service Delivery Program to offer fast, private, and secure connectivity for accessing AWS cloud services
- Etisalat and First Abu Dhabi Bank (FAB) partnered to deploy a cloud-based IoT Smart Building solution, providing FAB 'anytime anywhere' access and ease of operations across its entire portfolio
- Etisalat expands 'SmartHub' presence with a Tier 3 data center facility at two new locations in UAE
- 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 partnered with Smartworld to bring 'Shahada', a tamper proof digital certificate platform for all educational institutions in the region.
- Etisalat loyalty program 'Smiles' launched UAE's first ever blockchain-powered Rewards Exchange
- Etisalat partnered with Department of Health, the regulator of the healthcare sector in Abu Dhabi to launch the 'Digital Healthcare' Centre
- 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 Vectramind, a global healthcare and communications

technology firm to offer 'Firstpass' an innovative healthcare platform to its customers in the region.

Chairman's Statement:

H.E. Obaid Humaid Al Tayer, Chairman of Etisalat Group, said: "As we begin our journey into a new digitally empowered future, 2020 was a true testimony to Etisalat Group's resilience and agility. "Despite the unprecedented global impact of the COVID 19 pandemic, Etisalat demonstrated robust financial performance, driven by our bold vision to constantly innovate while ensuring that communities we serve remain connected, informed and productive. Across our footprint, we stood for our communities and took immediate steps to protect our teams and customers, support critical verticals, and ensure the uninterrupted delivery of quality services. We engaged heavily with governments and authorities while supporting the community with innovative offerings and free initiatives that assisted students, organizations, and societies as a whole. During the year, revenue and net profit growth were witnessed in our international markets while the domestic market experienced a decline in both due to the pandemic and market maturity.

Etisalat Grows its Subscriber Base to 154 Million, Following a Strong 2020

UAE based international telco, Etisalat, has grown its international subscriber base to 154 million as the company posted a strong set of financial figures for 2020. This represented a 3.6% increase on its figures for 2019. In its home market of the UAE, Etisalat increased its number of subscribers to 2.2 million. The news came as Etisalat Group recorded a strong set of financials for the financial year 2020. Consolidated net profits reached AED 9.0 billion (\$2.45 billion) a year on year increase of 3.8% increase, which the company attributed to strong growth in the international operations that outweighed the decline in the UAE operations. The company also recorded consolidated EBITDA of AED 26.4 billion (\$7.18 billion), a year on year increase of 0.3% and resulting in an EBITDA margin of 51.1%. "As we begin our journey into a new digitally empowered future, 2020 was a true testimony to Etisalat Group's resilience and agility," said

H.E. Obaid Humaid Al Tayer, Chairman of Etisalat Group. "The telecom industry has proven to be the backbone of the new-norm and a tool of empowerment. We take pride in our response that stood out amongst global peers across our footprint. Etisalat demonstrated strong commitment, swift reactions, and readiness as a result of years of adept planning of business continuity and crisis management scenarios. We have also been in leading positions across several industry rankings. Years of investments in infrastructure and digital capabilities resulted in positioning Etisalat on global standings in ICT readiness and adoption, broadband subscriptions, fiber penetration and mobile coverage," he added. Etisalat Group's Board of Directors recommended a dividend payout of 40 fils per share for the second half of 2020, representing a total dividend payout of 80 fils for the full year. Etisalat undertook a number of key community projects in

2020, providing free internet access to families without connectivity at home to facilitate access to distance learning services during the Covid 19 pandemic. The company also provided more than 10 million mobile subscribers with free browsing to over 800 websites related to education, health and safety. Despite the challenges of an unprecedented year, Etisalat was crowned as the 'Strongest Brand' in MEA region and ranked the most valuable telecom portfolio brand in MEA for 5th year in a row. It was also recognized as the fastest mobile network in the world by Ookla "Our journey in 2020 was transformational with an unprecedented pandemic that reshaped humanity, created a new 'irreversible' normal, shattered the digital adoption divide, and accelerated the future. For Etisalat Group, it was a year of resilience, agility, social responsibility, and in contrast to many businesses, great results. A moment of truth that obliged

us to reflect and transform at group level to affirm our position as a leading world-class telco. "It was indeed a challenging year, however across our operations we remained committed and took necessary steps to support our customers and the communities we serve. Our prime focus was to ensure business continuity and the sustainability of high-quality services in a

manner that was safe for our employees and customers. This was all possible due to the relentless effort towards realizing our vision while investing for growth, sustaining a world-class telecom infrastructure, retaining differentiated assets, platforms, and capabilities integral to building a network for a better future across our operations. As a result we have

achieved many historical milestones, from being recognized as the fastest mobile network in the world, to being crowned the strongest brand in Middle East and Africa and the most valuable telecom portfolio brand for a fifth year in a row," said Eng. Hatem Dowidar, CEO of Etisalat Group.

Etisalat AGM Approves a Record Total Dividend Per Share for the Year 2020 of AED 1.20, Inclusive of 40 Fils Special Dividend

At Etisalat's Annual General Meeting (AGM), shareholders have backed the board's recommendation to pay full-year 2020 dividends of 80 fils per share, approved the cancellation of the share buyback program and instead agreed to a one-time special dividend of 40 fils per share, bringing the total dividend per share for 2020 to AED 1.20. The AGM backed the board's recommendation to increase the non-UAE nationals share ownership limit to 49 percent. The AGM also elected four board members to fill the seats of Etisalat Group's Board of Directors that are not reserved for the Government Shareholder. The elected members are:

- Sheikh Ahmed Mohamed Sultan Al Dhahiri
- Mr. Abdelmonem Bin Eisa Alserkal
- Mr. Khalid Abdulwahid Hassan Alrustamani
- Mr. Otaiba Khalaf Ahmed Al Otaiba

Etisalat Group also announced that the Emirates Investment Authority, as the government shareholder in the company, has appointed its representatives in the Etisalat board as the following:

- H.E. Jassem Mohamed Alzaabi, Chairman
- Mr. Essa Abdulfattah Kazim Al Mulla
- Mr. Hesham Abdulla Qassim Al Qassim
- Ms. Mariam Saeed Ahmed Ghobash
- Mr. Saleh Abdulla Ahmed Al Abdooli
- Mr. Mansoor Ibrahim Ahmed Almansoori
- Mr. Michel Combes

The new board of directors will begin their duties with the start of the new term of the board scheduled to begin on 21 March 2021. H.E. Obaid Humaid Al Tayer, Chairman, Etisalat Group said: "I am pleased to announce that our shareholders approved the recommendation of the Board of Directors to proceed with a record high full year dividend payout. Another historical milestone was the approval of 49 percent ownership limit of non-UAE nationals that will help diversify the investor base and add further value to our current shareholders as well as bring liquidity and depth in Etisalat's financial capabilities. Thanks to the Group's talented workforce and investment acumen, Etisalat was able to deliver on its vision in the current macro-economic climate. The unprecedented economic headwinds caused by COVID-19 have certainly demanded agility across our operations and we have demonstrated capabilities to quickly adapt to the present market conditions. Etisalat continued its focus on enhancing the core business and exploring new growth opportunities, while being well geared for the future with its digital capabilities and solutions. Etisalat's dedication to continue to build a robust, agile and

transformative business enabled us to meet customer demands for quality services during the lockdown, while generating shareholder value and returns. I would like to express my gratitude to the visionary UAE leadership for their continuous support, the loyalty of our customers and the trust of our shareholders. I also want to extend my appreciation to Etisalat's management team for their contribution to the company's success and commitment during a challenging year while working towards achieving our vision and strategic goals." Eng. Hatem Dowidar CEO, Etisalat Group said: "In 2020 we have delivered robust financial performance with consolidated revenues reaching AED 51.7 billion while consolidated net profit after federal royalty amounted to AED 9.0 billion, an increase of 3.8 percent compared to the previous year. Despite the challenges, a strong execution, an agile and resilient business model led to EBITDA reaching AED 26.4 billion with a growth rate of 0.3 percent and a margin of 51.1 percent. During these challenging times, we advanced our efforts to digitally transform our business both internally within the company and externally to all our customers, this led to increasing our subscriber base by 3.6 percent reaching a total of 154 million subscribers. This growth is central to our belief that the network and infrastructure has played a key role in empowering millions of customers during the pandemic. In the new normal, telecoms and digital technologies have become the anchor of our lives - be it remote working or virtual classrooms, our networks ensured that the world did not come to a standstill. Innovations in telecom and digital technologies have altered the fabric of life, becoming a necessity and a human right in a digitally connected world.





Mobily Takes Its Online Payment Solutions to the Cloud

Saudi Arabian mobile network operator, Mobily, has gone live with the Optiva payment solution on Mobily private cloud. The move will allow Mobily to benefit from the speed, agility and digital-first focus of Optiva's online payment solution. Mobily has always been among the region's most technologically ambitious telcos and was the first operator to launch 4G services in the region, back in 2011. Since then, Mobily has kept itself ahead of the curve in terms of network innovation. With its move to cloud, Mobily

will continue the evolution of its mobile network infrastructure. "Mobily will dramatically increase its business and operational agility, flexibility and responsiveness by leveraging the cloud. This is vital to our increased growth – to meet digital market demands today and maximize our ability to seize new revenue opportunities long-term," said Alaa Malki, CTO of Mobily. Mobily's subscribers will benefit from the upgrade to cloud-native technology on the private cloud and a consolidated payment solution platform, which will allow them to access online e-vouchers to top up their accounts. The move to the private cloud will also provide Mobily with increased platform performance, and reduced operational expense. "Mobily's success during our 8-year partnership has been a result of Mobily continually exceeding customers' expectations and investing in innovation. This fosters a culture of close collaboration, which allows Optiva to be a partner in supporting Mobily to achieve its business goals and expand its market opportunities," said John Giere, President and CEO of Optiva. Mobily provides the full range of mobile, fixed line and fixed wireless access telecommunications services across the Kingdom of Saudi Arabia. It presides over one of the region's largest FTTH networks and boasts an impressive array of data centers.



Mobily Reports a Surge in Profit to SAR783m in 2020

Saudi Arabian mobile network operator (MNO) Etihad Etisalat (Mobily) has published its financial results for the twelve months ended 31 December 2020, reporting a 4.4% year-on-year increase in revenues to SAR14.046 billion (USD3.7 billion), up from SAR13.450 billion in 2019. The company claims that the positive result was due to the growth of data and wholesale revenues, and growth of its Business unit, in addition to the expansion and improvement of its subscribers base.

Further, EBITDA increased to SAR5.350 billion in 2020, up by 8.2% y-o-y, while interest and financial charges decreased from SAR929 million to SAR561 million in the period under review, reflecting the company's efforts to reduce funding costs by refinancing of a big portion of its debts at the end of 2019 and the decrease in the interest rate. Net profit, meanwhile, improved to SAR783 million in the twelve months ended 31 December 2020, compared to a net profit of SAR31

million in 2019. CAPEX for 2020 remained flat, at SAR2.792 billion (SAR2.760 billion in 2019).



Mobily and CSG Extend Digital Transformation Agreement

Etihad Etisalat (Mobily) has announced a multi-year extension to its partnership with CSG. Mobily will deploy CSG's innovative suite of revenue and customer management solutions to accelerate growth, introduce new products and services and evolve the customer experience through traditional and digital channels. Alaa Malki, CTO at Mobily, said: "Our partnership with CSG supports our

corporate strategy, technology innovation and advancement of our service offerings to our rapidly growing customer base. It also supports our overall transformation goals of being an agile and dynamic company that capitalizes on opportunities presented by 5G and beyond, whilst providing a unified customer experience across all Mobily communication channels." CSG will deploy a full-stack

solution that optimizes Mobily's ability to increase process agility and go-to-market flexibility, while lowering expenditures. The CSG solution will shift Mobily's billing and revenue management operations to a consolidated managed services model, replacing existing legacy systems with one that digitally transforms Mobily's systems and business operations.

For the Second Year in A Row, Mobily Is the Fastest Growing Among The 10 Most Valuable Saudi Brands

Brand Finance released its 2021 ranking report for brands in the Kingdom of Saudi Arabia where Mobily ranked seventh on the list of the top valuable brands in the Kingdom, advancing two places since 2020 and four since 2019. The value of the Mobily brand is now at SAR 4.8 billion, a 17% increase YoY. According to Brand

Finance, the growth rate of the brand value of Mobily topped the list of the 10 most valuable Saudi brands and the list of telecommunications companies in the Middle East for the year 2021. Salman bin Abdulaziz Al-Badran, CEO of Mobily, stressed that Mobily is pushing ahead with its growth strategy on all levels, and

said the Brand Finance ranking testifies to the success of the ongoing, collaborative efforts of Mobily employees to leverage the company's status and leading position in ICT, both in the Kingdom and the Middle East

Mobily Business Improves Customer Experience and Operational Efficiency with Mobileum Credit and Collections Solution

Mobileum Inc. ("Mobileum"), a leading global provider of analytics-based roaming and network services, telco security, risk management, and testing and monitoring solutions, is pleased to announce that it is supporting Mobily Business to improve its collections process while enhancing customer experience. Leveraging Mobileum's Credit and Collections solution, Mobily Business can engage with customers across online interfaces, mobile devices, and social networks to resolve customer disputes faster and more efficiently, resulting in a more positive experience for its valued customers. With Mobileum's solution, Mobily Business can monitor closely the efficiency of its credit scoring process, along with specific collections and dunning strategies. Mobileum's automated solution allows Mobily Business to replace tedious manual tasks and disjointed collections systems, speeding up responses to inquiries, decreasing average handling times, and reducing operational costs. This modular solution improves recovery rates due to its seamless integration with payment platforms. It also tracks customer account information and monitors customer credits, usage, and debt in real-time. Its intuitive interface allows users to configure collection workflows and interactions without support from IT. Mobileum's Credit and Collection solution is tailored for the telecom industry, with proven capabilities to shorten revenue collection timelines.

Mobily will be able to rely on its automated alerts and advanced dunning capabilities to improve customer engagement and communication, providing valuable information to enable faster resolution, creating stronger customer relationships. The solution will also enable a tighter customer risk management, allowing Mobily Business to apply risk scoring, which improves customer bad debt prediction. "As part of Mobily Business vision to be the leader in the market and provide our customers with the best customer experience, we invest in enhancing our digital infrastructure with our partners to provide innovative digital solutions that make us a pioneer in the region," stated Majed Alotaibi, Chief Business & Wholesale Officer at Mobily. "In today's

competitive environment, every customer touchpoint can become a significant differentiator. Mobily is committed to delivering excellent service and greater transparency to its subscribers. We are very pleased to work with Mobily Business and to help them improve their customer journeys, providing an advanced solution that will create a next generation of customer engagement and effectiveness," stated Bernardo Lucas, Mobileum CMO. Mobileum's Collection Assurance solution brings out-of-the-box functionality that supports credit scoring, credit control, and debt collection processes. It assesses credit risks in real-time, automating credit controls and collection policies through the configuration of dunning scenarios to ensure end-to-end debt control.





Omantel Launches 5G For Mobile



The strategic impetus that Omantel gives to its every service has taken the shape of an exciting offering mobile phone users in the Sultanate have been waiting for. In a first by any telecom service provider in the Sultanate, Omantel has announced the launch of 5G services for mobile devices giving mobile customers further value and speed for their money and putting the full potential of this pathbreaking communications technology into their hands. Omantel, which has always been the first in furthering the latest advancements to its vast subscriber base, made an announcement. Understanding the needs of the future well in advance, Omantel had rolled out its 5G services for fixed Home Broadband in December 2019 and now, its mobile customers too are able through their 5G enabled mobile devices or 5G router –benefit more from the speed and efficiency this technology offers. Oman's telecom services market has witnessed significant changes over the past years, fueled by a growth in demand, the thrust towards digital transformation, and evolving user behavior. Omantel has always stayed above the competition in laying the groundwork for future needs as it also strategically aligns its service delivery suites with national growth. The roadmap

for launching 5G for mobile had been in place even before late 2019 when 5G services were introduced for Home Broadband in certain areas. Backed by this solid 5G infrastructure and buoyed by the great customer response that exceeded expectations, Omantel has now brought 5G for mobile to revolutionize Oman's ICT sector as the technology is an enabler for speed, efficiency, and innovation. The Company has been working continuously to make this technology available to as many members of the population as possible by expanding 5G service coverage. As 5G reaches more and more customers – be it individuals or enterprises - Oman will be further propelled towards its digital transformation goals that have been enabled by smart solutions and innovative services delivered faster, thanks to the power of 5G and Omantel's proactive and futuristic approach. Commenting on the launch, Talal Said Al Mamari, Chief Executive Officer of Omantel said, "Needless to say 5G is the latest communications technology that provides high-speed Internet connection with low latency than any previous technology. The launch of 5G for mobile is yet another remarkable achievement by Omantel. It is a testimony to the company's service quality which has resulted in a steady growth in customer numbers." Al Mamari added, "We are proud to be the first telecom operator in the Sultanate to commercially launch the 5G network at the end of 2019. Today, we are pleased once again to be the first to launch 5G for mobile, which will open new horizons for the mobile telecommunications sector and will heavily contribute towards supporting growth and digital transformation efforts across different sectors, by facilitating the adoption of the Fourth Industrial Revolution technologies i.e. smart cities, the Internet of Things (IoT) and Artificial Intelligence." Omantel has continued to remain a dominant player in Oman's ICT sector, staying ahead of the game through foresight and investments in the necessary infrastructure. The launch is the latest in a series of achievements by Omantel in bringing the future technologies and further solidifying Oman's image as the region's ICT gateway. It is worth noting that Omantel's mobile network has been recently rated as the fastest in Oman by Ookla, an online platform dedicated to measuring the performance of broadband networks around the world. This achievement is apart from the acknowledged excellence Omantel has shown through innovative technologies and smart solutions. Omantel is the Sultanate's first and leading integrated telecommunications services provider, enabling the digital society to flourish, allowing new ways of doing business and delivering a world of information, news and entertainment. While striving to ensure optimum customer satisfaction, Omantel plays a key social role to provide the required support and subsidy to all sectors of the Omani society.

Omantel Inks Pact to Diversify 5G Uses Beyond Network Capabilities

Omantel, the leading integrated telecommunications services provider in the Sultanate, has embarked upon yet another package of smart ICT solutions that leverage the company's 5G capabilities and have the ability to revolutionize operations in Oman's oil and

gas, logistics and transport sectors, which are vital for the country's sustainable economic growth. Omantel and Huawei entered a tri-party Proof of Concept (POC) Memorandum of Understanding (MoU) with Hutchison Ports Sohar for showcasing successful utilizations of the

telecom giant's 5G infrastructure in three areas. These POCs, to be implemented at Hutchison Ports Sohar, aim to provide highly reliable communication services and improve operational efficiency, accuracy, time management, and security, among other services.

Talal Said Al Mamari, CEO of Omantel, said, "The overall objective of the POCs is to showcase the capability of our 5G network and how it enhances and streamlines performance of the port operations. These POCs will also highlight 5G for other uses other than in the telecom network. 5G synergized with AI can streamline business operations across multiple sectors. Omantel is proud to leverage its smart solutions that use 5G technology is an important sector like transport and logistics. We are confident that these POCs will be successfully converted into strategic commercial agreements at the end of their evaluation period." "One of Hutchison Ports Sohar's strategic aim is to become fully automated and engage with customers, stakeholders, and the cargo in the safest and highly efficient manner. We have continuously invested in automated equipment's and technologically advanced systems and apps for constant service enhancements. Ports are fundamental to Oman's economy. In the worldwide port and container terminal business, 5G has proven to be one of the crucial future development for automation and smart technologies. We're pleased to partner with Omantel and Huawei for the 5G PoC study in the terminal equipment and look forward to a solution out of it," said Anacin Kum, Chief Executive Officer, Hutchison Ports Sohar." Robin Chen, CEO of Huawei Oman, noted, "Omantel is a leading ICT service provider in the Middle East region, Hutchison Ports is one of the largest port operators globally and Huawei is a strategic partner of Omantel. It's our great pleasure to be part of this strong



triangle to integrate 5G in Hutchison Ports Sohar Operational Activities. It is believed that 5G can bring significant values and benefits to Sohar port. Moreover, this 5G pilot will open new doors to introduce the technology advancements of 5G helping to reshape and upgrade vertical industries of Oman. This direction serves to create direct and indirect gains to Oman towards 2040." Under the first POC, work on which will start immediately, Omantel will enable Smart Surveillance with artificial intelligence (AI). Smart solutions under this POC will be mutually beneficial to Omantel and Hutchison Ports Sohar, as it will not only diversify and showcase the use of 5G infrastructure beyond network speed and efficiency but also bring more accountability and streamlining to port's operations. The Smart Surveillance with AI will allow real-time surveillance of the port's loading and unloading transport area, monitor the sea tide, enhance ship container video surveillance, make AI-based intelligent video analysis, allow

for AI-enabled unmanned detection and generate an automatic alarm in real-time in case of any default. Other benefits include leveraging AI for HSE compliance and meeting future cost optimization goals. These technologies can be deployed in other port operation management scenarios and crane management etc. The two other POCs will enhance the uses of handheld devices (Push to talk) for critical communication and pagers over a 5G network for real-time location monitoring and messaging. Maintaining its position as the Sultanate's most trusted ICT and digitization partner, Omantel will use these POCs as a springboard to further build and diversify its 5G capacities. The MoU is a demonstration of Omantel's commitment towards its enterprise customers for enabling them to embrace Industry 4.0. and with the guaranteed success of the POCs, create a lasting customer relationship based on its superior ICT infrastructure and efficient service delivery.



Orange Jordan Upgrades Network in Two Governorates

Orange Jordan has strengthened its mobile network in the Amman and Ajloun governorates, with the rollout of additional towers and the deployment of additional frequencies. Orange's Chief of Information Technology and Networks and Wholesale Officer Walid Al-Doulat explained that the operator had spent JOD5 million (USD7.1 million) on the

works across the two regions. In Ajloun Orange installed additional sites, resulting in a 21% reduction in network congestion, according to the official. In the Amman governorate, meanwhile, the company deployed 900MHz frequencies on its '4G+' LTE-A network, bolstering the system's capacity whilst also improving coverage and speeds. Separately, Orange added that

its 3G coverage has now reached 98.6% of the population, whilst it 4g footprint stood at 97.4%. The operator did not disclose coverage details for its 4G+ network but claimed that the system was capable of providing download speeds of up to 250Mbps.

Orange Jordan and Int@j Meet with Advisory Committee to Discuss Jordanian Startups Map

Orange Jordan and the Information and Communications Technology Association of Jordan (Int@j) held a second meeting with the advisory committee to discuss the Jordanian Startups Map, a study carried by Int@j and StartupsJo, on behalf of Orange Jordan's "Innovation Space" project funded by the European Union through the "Innovate Jordan" Program, to promote youth entrepreneurship in the kingdom. In line with preventive measures taken to curb the spread of COVID-19, the committee

discussed via Zoom results of the first phase of the study, as more than 350 startups from different sectors applied. The committee is comprised of Orange Jordan, the Crown Prince Foundation, the Ministry of Digital Economy and Entrepreneurship, the Ministry of Planning and International Cooperation, the Ministry of Youth, the Innovative Startups and SMEs Fund (ISSF) and the Jordan Investment Commission. The study will be conducted over three months in different stages to draw a map

that includes a comprehensive database of Jordanian startups, based on the stages they reached. The map will provide main sectors that include sub-sectors following international standards to define and categorize startups locally and globally and shed light on sectors with promising opportunities and high demand. The plan is to conduct a periodic review to enhance startups' contribution to socio-economic development. By supporting this study, Orange Jordan, the responsible digital leader and the kingdom's digital partner, seeks to develop entrepreneurship, a pillar of its corporate social responsibility strategy. The company is building on a previous study conducted in partnership with Int@j to provide insights into the entrepreneurship industry, its impact on the kingdom and its role in the national economy. The company said that these studies aim at shedding light on the entrepreneurship culture in the kingdom to explore the areas that will pave the way for more successful startups. Orange Jordan is committed to supporting entrepreneurship projects and initiatives, mainly through Business Innovation Growth (BIG) by Orange, which is about to launch its 8th season.



Orange Jordan, Intaj Map Jordanian Startups

Orange Jordan and the Information and Communications Technology Association of Jordan (Int@j) have published the findings of a study mapping Jordanian startups. During the three-month study, 275 startups were classified into 21 major sectors, including as e-commerce, financial technology (Fintech), health technology, gaming, agricultural technology, cybersecurity, artificial intelligence, and others. The study is part of efforts exerted to strengthen and upgrade the entrepreneurship ecosystem and landscape in the Kingdom. It will be updated periodically and made available through Intaj website. To be added to the study, Intaj said eligible startups must

be Jordan-based or provide proprietary productions and solutions, among other requirements including stage of maturity and registration status. The study found that 57 percent of all eligible startups are centered in 5 main sectors. It also indicated that 60 percent of the enterprises are in growth stage while 25 percent are viable projects while the rest are still in the ideation stage. Furthermore, the study revealed that female presence in startups amounted to 40 percent, while 35 of these startups have joined a business incubator or accelerator. Intaj was able to produce the mapping with the support of Orange Jordan and an advisory committee made up of the Crown Prince Foundation, the Ministry of

Digital Economy and Entrepreneurship, the Ministry of Planning and International Cooperation, the Ministry of Youth, in addition to the Innovative Startups and SMEs Fund and the Investment Commission. The study will pave the way for more successful Jordanian startups, especially when understanding the entrepreneurial ecosystem in the Kingdom and the main sectors that have future opportunities for growth and expansion. The results of the study were released by Intaj and StartupsJo (Startup Council) on behalf of the EU-funded "Innovation Space" project, a pioneering initiative in Jordan and a one-stop-shop for digital innovation and entrepreneurial support.

Orange Jordan, GJU Sign Agreement to Launch Digital Development Club

Orange Jordan and the German Jordanian University (GJU), in partnership with the German Agency for International Cooperation (GIZ) signed a joint cooperation agreement to establish the "Orange Center for Innovation and Digital Development Club" at the university. According to a press statement issued by the telecom company, the club aims to develop the skills necessary for young people to enhance their employment potential inside and outside the Kingdom. Under the agreement, signed by Orange Jordan CEO, Terry Marini, and the university's president, Dr. Manar Fayyad, the university will host the club to provide students with a set of training programs to develop their skills and benefit from trainers specializing in various fields within the Orange Digital Center program, which is headquartered in Amman's Abdali area.

The club offers free integrated programs, digital manufacturing laboratories, a start-up acceleration program, in addition to an investment fund to finance emerging companies in the Middle East and Africa, according to the statement. During the signing ceremony, Marini said the club, affiliated with the GJU's Digital Orange Center, will contribute to benefit the largest number of university students in various parts of the Kingdom. Orange Jordan will prepare the GIZ-funded facility and will support the training provided to enhance digital education that refines youth skills to increase their chances in the labor market and support them to establish their own projects in line with the market needs, within the framework of the company's social responsibility, Marini pointed out. Fayyad, for her part, said this partnership will benefit university students

in terms of education, training, and new skills acquisition that will help them start entrepreneurship and projects that serve the community. Head of the GIZ technical and vocational education projects, Iman Qaraen, said the project will contribute to bridging the gap between learning outcomes and labor market requirements and promoting the idea of student entrepreneurship, which is a GIZ's key priority in the Kingdom. GJU will participate in the establishment of the club within the university's innovation and leadership program, which serves its students and employees in developing their innovative ideas. The program has so far created more than 20 start-up companies, as well as an innovation platform, an innovation laboratory and a technological business incubator.

Orange Jordan and Luminus Mobile Fablab First Cohort Graduation



Orange Jordan and Luminus Education celebrated the graduation of the Mobile FabLab's first cohort via Zoom in line with COVID measures. The event was attended by the CEO of Orange Jordan, Thierry Marigny, CEO of Luminus Education, Ibrahim Al Safadi, and media representatives. The lab is the first of its kind in the Kingdom. The graduation of 9 students who joined the program in its first stop in the Jordanian German Center of Excellence for Solar Energy in Al Mafrqa came after they received free training in digital fabrication for two months, prior

to the Mobile FabLab moving to its next stop in Jerash governorate. The Mobile FabLab aims to create a comprehensive infrastructure across the Kingdom, to teach and train beneficiaries in the latest digital fabrication devices, tools, and programs such as web development, computer-controlled design and cutting, scanning, 3D printing, designing and manufacturing electronic panels, and programing. The mobile program was inspired and built by FabLab Irbid. The fabrication facility in Irbid is the first digital fabrication lab in Jordan and one of the 20 largest facilities under

the International Fab Foundation network. Luminus ShamalStart inaugurated FabLab Irbid in 2016, to support owners of creative and promising projects in the north of Jordan with the necessary resources to transform their ideas into actual prototypes that serve their local communities and help develop industries at large. Orange Jordan supported the Mobile FabLab launch by covering five students' training fees, while the program continues to receive support from Orange Foundation under the Solidarity FabLab that supports 90 labs in 16 countries. CEO of Orange Jordan, Thierry Marigny stressed the importance of the Mobile FabLab in expanding the free digital training scheme that Orange provides for youth across the Kingdom, to boost their opportunities in starting innovative projects or finding a job based on the skills they receive. On his part, CEO of Luminus Education, Ibrahim Al Safadi, said "We are excited to celebrate the result of our partnership with Orange Jordan in the Mobile FabLab, an important and proactive step to enhance digital education to maximize reach in different governorates, a goal that Luminus Group strives continuously to achieve."

Orange Jordan and Greater Madaba Municipality Partnership to Offer Fiber Service

Orange Jordan and Greater Madaba Municipality recently signed an agreement to establish Fiber Optic network for residential and commercial, and to provide governorate areas with this service to ensure high-speed and quality internet. The event was attended at the municipality, by the Mayor of Madaba, Ahmad Salameh Alazaida, and Director of Commercial Sales Department at Orange, Abd AlKhatib. According to the agreement, Orange Jordan will connect the municipality's separate locations with the main HQ, using advanced telecom network to transmit data and internet, in addition to offering mobile and internet service to the municipality's staff. This agreement comes within Orange Jordan's framework as the Kingdom's digital partner, to enhance digital inclusion and expand coverage to benefit more users with the advanced integrated technological solutions, mainly Fiber, with its strong infrastructure and international expertise to increase its wide base, achieving remarkable success in different governorates. The Mayor expressed his excitement to partner up with Orange Jordan, stemming from its

leading position in the ICT sector, where Fiber service will elevate the services in line with digital transformation that the municipality seeks within its given responsibility, in addition to the importance of offering this service for the citizens and companies to provide the fastest and strongest internet in the Kingdom. Mr. Abd AlKhatib praised the new partnership with the Greater Madaba Municipality, being an important residential and enterprise hub in the Kingdom, Orange was keen to take all necessary measures to establish the Fiber

service to enable the municipality and the different sectors in the governorates to rely on fast and reliable service that will enhance efficiency and develop the digital infrastructure generally. He also explained the partnership's importance; in offering Fiber service from Orange with its given efficiency for individuals and enterprises in Madaba to enjoy the best experiences, noting that the company is constantly updating its offers and technology to provide users with added values for reasonable prices.



Zain 'Best Mobile Operator' in Kuwait During 2020

For the ninth time, Zain - the leading digital service provider in Kuwait - ranked first in the 'Best Mobile Operator' category in Kuwait for the year 2020 by Service Hero, the Arab World's only 100% consumer-powered customer satisfaction index. The announcement came during the virtual awards ceremony held over video conferencing technology to adhere to the health guidelines posed by the COVID-19 pandemic. Zain ranked first for achieving the highest customer satisfaction scores by providing the best quality service standards to the Kuwaiti market. The award came after an in-depth evaluation by Service Hero's independent advisory council, which recognized Zain's

leadership in offering the best innovative digital services, as well as its relentless pursuit of excellence and innovation with the aim of achieving superior digital lifestyle transformation for its customer base, considered the biggest in Kuwait. Zain received the award for achieving high rates of customer satisfaction. The recognition from Service Hero for the ninth time demonstrates Zain's commitment in providing its customers with the highest levels of service, further reinforcing its efforts in maintaining the values of its brand. The company is motivated to continue its pledge in providing innovative services to meet the needs of its customers as well as to facilitate

their personal, professional, and business needs. Last year, Zain received 'Kuwait's Fastest Fixed Broadband Network' award for Q1-Q2 2020 from Speedtest by Ookla, the global leader in transparent Internet testing applications, data and analysis. The award reflected Zain's efforts in offering the largest and most powerful 5G network in Kuwait since commercially launching fifth generation wireless technology back in June 2019. Zain was the first operator to offer 5G technology in the GCC region via the Kuwaiti market with nationwide coverage of all areas. The company succeeded in designing the first integrated network for 5G services built on a world-class infrastructure,

ultimately transforming the telecom sector across the country and region. Service Hero's assessment method is statistically rigorous, robust, and relevant. From representative sample sizes to service quality checks and ratings scales, Service Hero's Index provides a rigorous annual snapshot of consumer feelings. Based in Kuwait, Service Hero is the only consumer powered customer satisfaction index in the Middle East. The company is a member of ESOMAR (European Society for Opinion

and Marketing Research) and adheres to the global organization's principles and guidelines for self-regulation and ethical practice. Service Hero is overseen by an Independent Advisory Council to assure results that are impartial, objective, and accurately reflect consumers' preference, making the company's findings a credible benchmark that offers transparent and relevant insight for companies. It is comprised of academics and business professionals representing leading

institutions and corporate establishments in Kuwait and the UAE, including the American University of Kuwait, Australian College of Kuwait, Gulf University for Science and Technology, Abu Dhabi University, and Zayed University. Since 2010, Service Hero has measured around 330,000 validated consumer assessments covering more than 600 private sector companies.

Zain Group Generated Revenue of USD 5.3 Billion and Net Profit of USD 605 Million for 2020



Zain Group announces its consolidated financial results for the full-year 2020, and fourth quarter ended 31 December, 2020. The Group ended the year with a customer base of 47.8 million customers.

Group Key Performance Indicators (KD and USD) for the Full-Year 2020

Total Active Customers	47.8 M	
Consolidated Revenue	KD 1.63 B	(USD 5.3 B)
EBITDA	KD 673 M	(USD 2.2 B)
EBITDA Margin	41%	
Net Income	KD 185 M	(USD 605 M)
EPS	43 fils	USD 0.14

For the full-year 2020, Zain Group generated consolidated revenue of KD 1.63 billion (USD 5.3 billion), reflecting a 2% Year-on-Year (Y-o-Y) decrease, while consolidated EBITDA for the period declined by 8% Y-o-Y, to reach KD 673 million (USD 2.2 billion), reflecting a healthy EBITDA margin of 41%. Consolidated net income reached KD 185 million (USD 605 million), down 15% and reflecting Earnings Per Share of 43 Fils (USD 0.14). For the full-year, foreign currency translation impact, mainly due to the 16% currency devaluation in Sudan from an average of 45.6 to 54.4



(SDG / USD), cost the Group USD 110 million in Revenue, USD 50 million in EBITDA and USD 16 million in Net Income. The Board of Directors of Zain Group recommended a cash dividend of 33 fils per share for 2020, adhering to the Group's commitment made last year of a minimum 33 fils dividend for 3 years. This is subject to the Annual General Assembly and statutory approvals.

Group Key Performance Indicators (KD and USD) for the Fourth Quarter 2020

Consolidated Revenue	KD 432 million	(USD 1.4 B)
EBITDA	KD 172 M	(USD 563 M)
EBITDA Margin	40%	
Net Income	KD 54 M	(USD 176 M)
EPS	13 fils	USD 0.04

For the fourth quarter (Q4) of 2020, Zain Group generated consolidated revenue of KD 432 million (USD 1.4 billion), down 2% Y-o-Y. EBITDA for the quarter amounted to KD 172 million (USD 563 million), down 10% Y-o-Y, reflecting an EBITDA margin of 40%. Net income for the period amounted to KD 54 million (USD 176 million), down 16 % Y-o-Y, representing Earnings Per Share of 13 fils (USD 0.04). For Q4 2020, foreign currency translation impact, cost the Group USD 33 million in Revenue, USD 14 million

in EBITDA and USD 7 million in Net Income. Key Operational Notes for 12 months ended 31 December, 2020

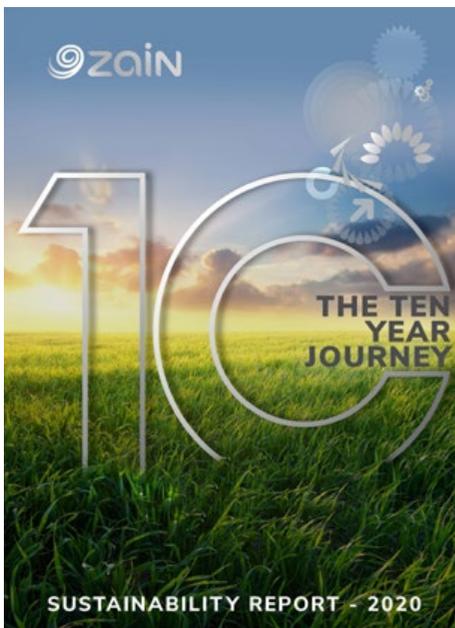
1. COVID-19 pandemic disrupted economic activity due to lockdowns and travel bans across all Zain markets, impacted Group's revenue by USD 417 million for the full year
2. Decisive cost optimization measures such as contracts renegotiation and management of cashflows succeeded in reducing operational expenses by USD 168 million
3. The year was highlighted by the notable revenue growth from 5G in Kuwait and Saudi Arabia that underscored the Group's consolidated data revenue growth of 9% Y-o-Y, to reach USD 2.2 billion, representing 41% of the Group's revenue for 2020.
4. Throughout 2020, Zain Group invested USD 1.4 billion in CAPEX (26% of revenues), predominantly in 5G rollouts in Kuwait and Saudi Arabia; 4G upgrades and new network sites across Iraq and Jordan; expansion of Fiber-to-the-Home (FTTH) infrastructure; and spectrum license fees
5. Zain KSA completed its capital restructuring during Q4 2020 with massive demand in the remaining priority rights subscription that was oversubscribed by an unprecedented 469%
6. Zain Iraq granted 4G license with mobile license extended to 2030
7. Handover of Lebanon's network to the Ministry of Telecom, effective October 30, 2020
8. Company launches a new powerhouse in gaming, 'Zain eSports' to boost the gaming ecosystem
9. The Zain Group Application Program Interface (API) platform witnessed impressive customer uptake, generating healthy revenues from having over 5 million transactions per month
10. Zain joins a global effort with GSMA to improve Digital Inclusion of Persons with Disabilities
11. Zain ranked best Telecom employer in the region by Forbes' World's Employers list for 2020. Also ranked 4th best regional employer across all industries and only company from Kuwait in Forbes list

Commenting on the results, the Chairman of the Board of Directors of Zain Group, Mr. Ahmed Al Tahous said, "Since the

start of the COVID 19 pandemic, the Group's key focus has been on providing meaningful connectivity and implementing more digitalization initiatives to better serve communities, businesses and governments, aiming to lessen the impact of the pandemic on society. I would like to thank all the government ministries and regulatory authorities across our markets for their wisdom and understanding of the emerging industry dynamics, supporting us in overcoming challenges faced by the telecom sector during these unique times." Zain Vice-Chairman and Group CEO, Bader Al-Kharafi commented, "The Group's performance for 2020 reflects the reality of the COVID 19 pandemic's disruption on economic-social activity and the unavoidable impact it had on the financial results. The Board and management are working closely together in minimizing this impact across our footprint with a particular focus on driving efficiencies, cost optimization and monetizing our 4G and 5G networks. Our 4Sight strategy is taking shape, building on our many strengths while seeking new value-creating business verticals that support our vision of becoming a leading ICT and digital lifestyle provider."

Zain Group Publishes 10th Annual Sustainability Report, Titled 'The Ten-Year Journey'

Zain Group announces the publication of its consecutive 10th annual sustainability



report, entitled 'The Ten-Year Journey', which charts the sustainability agenda the company has undertaken in this area across its footprint over the last decade. During this decade, Zain has evolved its operations by becoming a digital lifestyle service provider, establishing value-driven and purposeful activities, building resilience, adapting to market changes, addressing societal deficits, and establishing purpose driven activities centered on Meaningful Connectivity. The 10th edition showcases how Zain continued to improve and adapt its activities to align to international best practices and report on its activities following the GRI Standards Framework. Moreover, for first time Zain also adopted the Sustainability Accounting Standard Board framework (SASB) for Telecommunications Services. Both standards were externally assured by Ernst & Young (Al Aiban, Al Osaimi and

Partners) providing limited assurance. The COVID-19 pandemic accelerated and further pronounced the huge societal discrepancies exposed in many areas of life across the globe. Zain's latest report demonstrates the company's firm commitment to creating positive, long-lasting systemic change to better address the socio-economic and environmental impacts across its operating markets and to facilitate socio-economic growth. This is achieved by building relationships based on transparency and trust with all stakeholders, setting meaningful goals, and placing sustainability at the core of Zain's business activities. The company's earlier development of digitalization and sustainability programs placed it in a good position to react quickly to the unprecedented impacts of the COVID-19 pandemic, with operations in each market playing pivotal roles in support of their local

communities. Zain Vice-Chairman and Group CEO, Bader Al-Kharafi commented, "Publishing our 10th sustainability report is a significant achievement, and along with over 7,500 Zainers, we are extremely proud of the programs and initiatives we have implemented, and all the lives we have impacted for the better. The ongoing COVID-19 pandemic has brought the meaning of that mission sharply into focus and offers a profound reminder that beyond our commercial activities and providing essential connectivity, vitally important as they are, there are lives at stake, requiring all our best efforts to protect and save." Al-Kharafi continued, "I extend my thanks to all the sustainability teams across our operations for working so tirelessly

over the years in establishing Zain as the regional leader in this important area. We have a mission to work to leave the world a better place than we found it and leave no one behind."

A new five-year Corporate Sustainability strategy (2020-2025)

Zain's newly established Corporate Sustainability strategy is centered on four pillars which are: Climate Change, Social Business, Inclusion and Generation Youth. The strategy was created by assessing the materiality of sustainability-related topics on the business and the value it creates for society. By balancing financial returns and social values, this strategic approach aims to establish purpose driven activities centered on Meaningful Connectivity.

Qualitative and quantitative targets have been embedded to ensure measurable metrics are set to assess and track the progress of Zain's sustainability-related activities. Examples of the some of Zain's 2020-2025 targets include:

- Empower 16 million children and youth across Zain's footprint
- Foster women in STEM-related fields
- Supporting People with Disabilities and increase access
- Equip 943,000 children with digital literacy skills
- Reach 891,000 unemployed youth
- Target 70% of Group Suppliers and 50% of local suppliers to complete Zain's social and environmental related self-assessment questionnaire

Zain Group Publishes Insightful Report on 'Women in Technology- Bridging the Gender Gap in STEM Fields'

Zain Group, the leading mobile telecom innovator in seven markets across the Middle East and Africa, announces the publication of its annual thought leadership report, this year entitled, Women in Technology - Bridging the Gender Gap in STEM Fields. It provides insights on the gender gap in science, technology, engineering, and math (STEM), highlighting the impact on socio-economic development across the board. The release of the report, which coincides with International Women's Day, explores several important issues regarding the cause, nature, and effects of the challenges faced by women as related to STEM, and the prejudices they face even upon entering professions related to the subject area. The publication delves into aspects of gender disparity; the gender digital divide; literacy and STEM education; as well as employment equality. Bader Al-Kharafi, Zain Vice-Chairman and Group CEO commented, "The role of women in tech needs to be increased. It is that simple. Zain is continually driving equality programs, recognizing the need to push an agenda that is cohesive, inclusive, and fair to all. This thought leadership report is another tool to highlight the extent of the exclusion of women from STEM-related fields, and what is needed to close the gender gap across the region and beyond."

Al-Kharafi added, "Since the launch of our Gender Diversity initiative, we have invested in certifying over 100 females within Zain on the fundamentals of Data Analytics and Science. These colleagues then went on to take part in our groupwide 12-hour datathon in April 2020 at the height of pandemic, and are now part of a talent pool of resources we tap into for tech related projects across our footprint. WE will continue to inspire learning through practice, and the engagement in this datathon has proven the resilience of our talented pool of women in STEM."

Jennifer Suleiman, Zain Group's Chief Sustainability Officer said, "Zain has a long list of activities aimed at reducing the gender gap. The COVID-19 pandemic has highlighted glaring inequalities across so many aspects of modern life, and the plight of females in STEM-related fields is one of them. The timing and topic of our latest report that coincides with International Women's Day couldn't be more appropriate, and we hope it forces people to recognize the state of play when it comes to gender exclusion and the steps required to rectify it."

This latest and insightful thought leadership encompasses issues related

to gender biases in STEM; innovation in STEM; developing STEM skills to achieve financial inclusion; and COVID-19 and women in technology. Core areas of discussion and highlights in the report include:

Aspects of Gender Disparity

Women account for half of the world's population and are fundamental to ensuring a sustainable future and peaceful societies. There has been some progress made towards achieving a more equal society, however, there is still a long way to go and according to the UN, the gender gap is considered "the unfinished business of our time."

The Gender Digital Divide

Studies have shown that the gender digital divide is due to the lack of access females have in attaining digital skillsets that can help them advance and develop in the area. Additionally, women are more likely to represent lower income segments, leaving them unable to afford and purchase digital software and hardware. Glaring discrepancies exist with regards females gaining access to digital tools, including:

- 165 million fewer women own a mobile phone in comparison to men
- Globally, 433 million women are unconnected

- The global internet user gap is 17%
- If 600 million more women were connected to the internet over the next three years, global GDP would rise between US\$13 billion and US\$18 billion

Literacy and STEM Education

As the number of girls gaining an education increases, disparities associated with access to opportunities, quality and topics they choose to study becomes more evident. It is imperative for girls to further develop themselves in STEM education, as careers in these areas are seen as the jobs of the future, driving innovation, social well-being, inclusive growth, and sustainable development. Zain Bahrain's Girls for Tech Camp, for example, was launched in partnership with the Kingdom's Supreme Council for Women and Clever Play, an organization that aims to inspire children's curiosity and passion for STEM. Established in October 2019, the program equips girls between ages 8 and 13 years with 10 hours of training in coding, and targets training 1,000 girls. In 2019-2020, 1,000 girls completed the program.

Employment Equality

Women are underrepresented in the technology sector and even though large strides have been made in STEM education, it has not translated into employment. Studies have shown that even though countries have largely invested in improving girls' education including STEM education, cultural and societal constraints have hindered this needed transition, impacting societies in a dramatic manner. This gap in STEM employment prevents economies from reaching their full potential as it omits half of the population's potential and talent to contribute to the economy.

Gender Biases in STEM

Gender stereotypes in the context of STEM start at an early age and

continue to impact children at later stages in their lives. It has been studied that children's choices to enter STEM start as early as 3-5 years of age. By the ages of 6-10 years, girls start developing the notion that boys are better in math, which is not the case, as analyses show girls and boys in fact perform the same. Another stereotype that starts to emerge during this time is that males innately succeed in the field of STEM. These stereotypes continue to manifest throughout the course of women's education and career.

Innovation in STEM

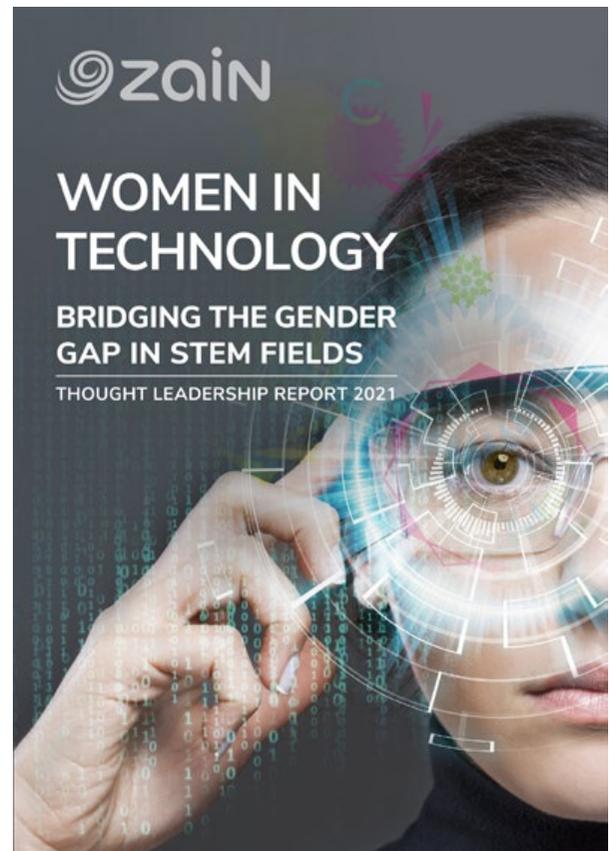
STEM plays a key role in creating innovative tools to address global challenges that our world faces. It has been proven that diversity in teams drives transformation as it brings about new ideas and perspectives. As men and women have different life experiences that lead to varied perspectives, such diversity in viewpoints triggers creativity and improves results. Merging STEM and diversity creates phenomenal growth opportunities.

Developing STEM Skills to Achieve Financial Inclusion

Technology and digital services are seen as tools that can be used to enable development. When used to progress development, technology can be extremely transformational and improve social and economic outcomes. Such tools could also be used to improve distribution in addition to promoting inclusivity, increasing accessibility and allocating resources. With that being said, it is important for marginalized and disadvantaged segments to leverage tools that help elevate their standards of living and increase their access to services.

COVID-19 and Women in Technology

A needs assessment conducted by UN agencies highlighted that households led by women had less access to the internet than



those led by males during these times of COVID-19. In addition, only 41% of women-led households claimed that their children had access to online websites created by ministries of education that supported the continuation of learning in comparison to 56% of male-led households. In addition to learning inequalities, the increase of violence during lockdowns is extremely alarming as females are left vulnerable to dire situations. Digital advancements such as instant messaging with geolocation functions, domestic abuse hotlines, and disguised apps that provide discreet information for survivors in case their abusers continue to track them, can play a pivotal role in saving the lives of women.

'Choose To Challenge' is this year's theme for International Women's Day

Marked annually on March 8th, International Women's Day (IWD) is a global day celebrating the social, economic, cultural and political achievements of women. The day also marks a call to action for accelerating gender parity. The campaign theme for International Women's Day 2021 is 'Choose To Challenge'. A challenged world is an alert world. And from challenge comes change. So let's all #ChooseToChallenge.

To reduce negative environmental impact, the Women in Technology - Bridging the Gender Gap in STEM Fields report is only available online: <https://zain.com/en/sustainability/thought-leadership-reports/>.

Zain Highest Ranked MEA Operator in CDP Global Index on Climate Change

Zain Group, the leading mobile telecom innovator in seven markets across the Middle East and Africa, announced its inclusion in the global list of the CDP with an advanced rating in Management Scope 'B' for the Climate Change Index. This rating makes Zain the highest ranked and only telecom operator in the Middle East and Africa to achieve this positive rating with respect to its efforts to address climate change. As an active member of the GSMA Climate Action Team since in 2019, Zain begun disclosing its environmental impacts, energy consumption and carbon emissions through the CDP, a non-profit organization with regional offices in 50 countries. There are now companies, cities and regions in over 90 countries disclosing emissions data to the CDP Foundation, which is also recognized by prominent global indicators, including the MSCI Index of Environmental, Social and Corporate Governance (ESG), which reflects the evolving needs of investors who aim to integrate indicators. For the second year in a row, Zain succeeded in meeting the requirements stipulated by the CDP for membership, remaining one of a few signed-up members from the region. Zain attained the 'B' rating within the category of global companies that disclose the environmental impact of their operations, which indicates that the telco exceeded the global average of 'C', and the regional average for Asian markets of 'D'. Bader Al-Kharafi, Zain Vice-Chairman and CEO

of the Group said, "At Zain, we are aware of the urgent need to address the climate crisis the world faces, and we also realize that to achieve sustainable growth, we must participate in global efforts to protect the planet and preserve its resources. Zain has taken significant strides towards addressing its environmental footprint by setting goals to reduce carbon emissions, reduce waste, raise awareness, and identify risks and opportunities for climate change." Al-Kharafi continued, "Having this high 'B' rating in recognition of our efforts to disclose and reduce the carbon footprint of our operations will spur us further in dedicating ourselves to the regulatory reforms included in the Paris Climate Agreement of 2015. Moreover, disclosure of climate measures is a strong indicator of transparency for our customers and investors." Al-Kharafi concluded, "In conjunction with trusted partners such as the CDP Organization, it is imperative that we intensify our own efforts to make environmental reporting and risk management a commercial standard, as this will help us build stronger partner and supplier relationships with organizations that are jointly committed with us to disclosing carbon emissions, and working together towards making this a cleaner, more sustainable world." Only 35% of the 9,600 companies and institutions included the CDP list attained Management level score or higher, of which Zain was one, emphasizing the company's commitment

to fulfilling its promise to make systematic changes through the CDP, and to provide a transparent framework for climate change reporting. Zain's climate action plan has set targets to reduce emissions, reduce waste, and align with UN Sustainable Development Goal number 13. The company is committed to building climate change scenarios that would help limit global warming to 1.5 compared to pre-industrial levels, and the company strongly believes this strategy will help achieve a reduction in emissions, and operating costs, while also mitigating risks related to climate change. CDP manages the global disclosure system for investors, companies, cities and regions to manage their environmental impacts, and is viewed as representing the gold standard for environmental reporting with the most comprehensive set of data on corporate and city actions. Over 560 investors investing in assets valued at US\$106 trillion, rely on information provided by CDP to help guide their investment decisions, and more than 150 buyers with over US\$ 4 trillion in procurement spending, utilize CDP data to support their investment strategies and purchases. CDP collaborates with a large number of stakeholders in a wide range of areas including Business Organization for Social Responsibility (BSR); World Business Council for Sustainable Development (WBCSD); Global Reporting Initiative (GRI); Sustainability Accounting Standards Board (SASB); Climate Disclosure Standards Board (CDSB); World Wildlife Federation (WWF); Alliance for Institutional Transparency (ACT); Science Based Targets Initiative (SBTi); United Nations Global Compact (UNGC); and United Nations Climate Change Initiative (UNCC). The mobile telecommunications industry is working to become completely transparent about climate emissions for the industry. The sector has developed a roadmap for climate action at the industry level, with the aim of achieving "net-zero" greenhouse gas emissions by 2050, and reducing carbon emissions by 50% by 2030, in line with the Paris climate agreement.



Arthur D Little

Arthur D. Little Appoints New Partner Jim Miller to Lead Travel & Transportation Services in the US

Arthur D. Little (ADL) announced that Jim Miller has been appointed as a Partner. Jim will play a leading role in developing ADL's Travel & Transportation (T&T) practice in the US, where the company aims to expand its presence and build on its global reputation as a leading consultancy in the mobility space, from aviation to public transport. For over 30 years, Jim has delivered economic and financial analyses for airports, airlines, ports, and rail. He has particular expertise in the aviation sector, where he has served as an advisor on over 50 airport privatizations and over 150 forecast/financial valuation analysis projects for some of the world's largest airports. Jim's areas of focus include: air service development, domestic deficiency analyses, forecasting, OPEX analysis, commercial planning, feasibility and cargo studies, land use and master planning,

terminal area plans, airport/airline use and leasing, strategic planning, and bilateral advice. Before joining ADL, Jim had the dual role of developing the Public-Private-Partnership (PPP) transportation business at Royal HaskoningDHV, an international engineering and project management consultancy, while leading the PPP transaction business at InterVISTAS Consulting, which focuses on the aviation, transportation and tourism sectors. Jim had previously served as President of InterVISTAS, following a merger with Innova Aviation, the boutique consulting firm he founded in 2005. Jim has also worked at GKMG Consulting and PA Consulting, where he was appointed as a Senior Partner responsible for its Global Transportation practice. He started his career as Manager of Marketing and International Affairs at Metropolitan

Washington Airports Authority. "The U.S. is poised to experience a wholesale shift across transportation sectors, and ADL is excited to welcome Jim as a leader who can apply his deep expertise to our clients' situations. His wealth of experience in American and global transportation, and aviation in particular, will significantly enhance our capabilities and perspective," said Craig Wylie, Managing Partner at ADL. "ADL's growth in the U.S. demonstrates the value of building teams around those who invite collaboration and apply lessons from across industries and regions. Jim is an excellent fit to bring that spirit to our Travel & Transportation practice." Jim Miller, Partner at ADL, adds: "What really attracted me to ADL is the space and opportunity it gives its partners to be genuinely entrepreneurial in their dealings with clients, as this is how I've always worked most successfully in the past. That approach is critical today, as airports and airlines consider how to restructure their business to reflect new market conditions, while the industry itself changes to address pressing sustainability issues. The challenges unfolding this decade will require both insight and practical advice from experts such as ADL, and I'm proud to have become part of their team." Jim earned his Juris Doctor from the University of Tulsa College of Law in 1983, and a Master's Degree in Mathematical Economics from West Virginia University in 1979.



AT&T and U.S. Department of Veterans Affairs Will Test 5G-Powered Healthcare Innovations

What's the news? AT&T has delivered AT&T 5G capabilities across the entirety of the U.S. Department of Veterans Affairs (VA) Puget Sound Health Care System in Seattle in a public-private partnership with the VA. VA expects to pilot a variety of healthcare use cases with our 5G and multi-access edge computing (MEC) technologies to

explore how they can improve healthcare delivery to the approximately 9 million Veterans who use VA healthcare services each year. Why is this important? This is an industry-first deployment of 5G and MEC capabilities across the entirety of a VA health care and training facility. Multi-access edge computing is essentially a

computer and cellular network architecture that brings real-time, high-bandwidth, low-latency access to latency dependent mobile applications. 5G and MEC "holds the potential to be transformational by enabling new healthcare delivery and business models" according to Gartner1. Among the healthcare-focused use cases

that could be piloted are:

- Mobile-to-mobile connectivity across/ between medical devices, allowing the tracking of people and assets within the facility.
- Improved medical procedures and training through the use of emerging technologies such as augmented reality (AR) and virtual reality (VR).
- Remote and virtual pain management using AR and VR.
- Remote and/or near real-time surgical assistance via the ability to layer multiple surgical techniques using AR.

What is the status of the technology implementation?

We have completed installation of a 5G Distributed Antenna System (DAS) for

use with Sub6 GHz spectrum and other components needed to enable 5G. This 5G coverage extends to the recently opened Mental Health & Research building. We expect to deploy MEC and 5G millimeter wave spectrum and technologies in 2021, which will significantly boost speeds while improving latency. Daniel Mesimer, Director, WAN/LAN Infrastructure Engineering & Provisioning Solution Delivery, Office of Information and Technology, IT Operations and Services, U.S. Department of Veterans Affairs "AT&T has installed a full 5G Distributed Antenna System (DAS) encompassing the entire Seattle VA Medical Center. This is the first campus-wide indoor 5G system to be used by both VA staff and veterans on the AT&T

Mobility Network. This 5G system allows for increased carrier speeds and provides the next generation of cellular and mobility technology for both veterans and staff. It sets the groundwork for future capabilities of mobility networks for VA users and applications." Chris Smith, Vice President – Civilian and Shared Services, AT&T Public Sector and FirstNet said "This public-private partnership to test our 5G and MEC capabilities is distinguished by the scope of implementation and innovation it allows, going well beyond a single-room care environment to encompass an entire medical care and training campus. It's an honor to work with the VA to explore the future of 5G and MEC-powered healthcare innovations."

AT&T CEO Discusses Closing the Digital Divide

John Stankey, chief executive officer of AT&T Inc., spoke at the AT&T Policy Forum on the steps needed to make high-speed internet connections accessible, affordable and sustainable to more rural and low-income families. In a discussion with Steve Clemons, Editor at Large of The Hill, Stankey said industry and government can work together to financially incentivize investments and modernize subsidy programs to ensure that all children can learn and workers can do their jobs remotely. Failure to act will only further disenfranchise young Americans who already face challenging social and economic situations. Supporting students and workers through this current public health crisis, and beyond, is a social, business and economic imperative. He identified 3 key elements that will help close the digital divide:

Identify where broadband is and isn't available. In December, Congress allocated \$65 million for precise broadband mapping. Acting FCC Chairwoman Jessica Rosenworcel announced last week the



formation of a task force to improve broadband maps. Stankey applauded the new FCC. Modernize FCC's Lifeline and E-Rate programs. Goal is to be more consumer-friendly, increase monthly financial support for broadband service and move to a more sustainable funding source. Continued encouragement of private investment. Broadband providers have invested nearly \$2 trillion since

1996 on communications network infrastructure. Congress and the FCC should maintain policies that incentivize providers to continue investing in broadband connectivity. The public and private sector have key roles to play in bringing broadband to all Americans in ways that are accessible, affordable and sustainable. The time to act is now.

AT&T Unveils 2021 5G Strategy

As part of its Analyst & Investor Day, AT&T shared long-term goals to bring AT&T's fast, reliable and secure 5G to more consumers, businesses, and first responders across key areas: sports

and venues, entertainment, travel and transportation, business transformation, and security and public safety. And for many of our business customers, we're marrying 5G along with edge compute

technologies to deliver new, unique and secure experiences. "Connectivity is at the heart of everything we do - 140 years and counting. From our fiber network backbone to the layers of wireless spectrum

technology, we provide 5G network coverage that delivers the speeds, security and lower latency connections that customers and businesses need," said Jeff McElfresh, CEO – AT&T Communications. "Over the past five years, AT&T has invested more capital in the U.S. than any other public company.". Between 2016 and 2020, AT&T's total investment in the United States, including capital investment and acquisitions of spectrum and wireless operations, was more than \$105 billion. Over the past five years, AT&T has invested more in the United States than any other public company. Our 5G network now covers 230M Americans in 14,000 cities and towns and AT&T 5G+ is now available in parts of 38 cities in the U.S.1 Our ability to tap into our unique combination of assets across WarnerMedia and AT&T coupled with our fiber and mobility strengths mean we are positioned to win. During the recent C-band auction, we secured 80mhz of spectrum and a 29% share of the

available licenses. We plan to deploy this mid-band spectrum starting at the end of this year and into 2022 and beyond. It will complement our nationwide 5G network on low band and allow us to deliver faster average speeds across the country. Our

combination of spectrum will provide the coverage, reliability, security and speeds that customers deserve and the ability to deliver the experiences customers have told us they value – across mobility, fiber and fixed wireless internet.

AT&T's long-term goals to bring fast, reliable and secure 5G to more consumers, businesses and first responders across key areas involve...



Sports



Entertainment



Travel



Business Transformation



Security



UK's First 5G Immersive Classroom Brings Richer Learning Experience to Pupils

With schools reopening across the UK this month, pupils in North Lanarkshire can now experience what it's like to be in outer space, under the ocean, on a World War 1 battlefield or even on top of Everest - thanks to a new initiative which is the first of its kind in the UK. Led by North Lanarkshire Council, BT and Interactive

Immersive Classroom, the UK's first 5G-enabled immersive classroom has arrived in Scotland. The new immersive classroom has been developed within the Muirfield Centre in Cumbernauld, North Lanarkshire, where a room has been transformed – using innovative technology - into an engaging and digital

learning environment. The 360-degree room creates a digital projection that uses all four classroom walls and the ceiling to bring the real-world into an immersive experience for students. The concept aims to push beyond traditional methods of teaching to create an inclusive digital experience that helps explain abstract and challenging concepts through a 3D model. It will also have the potential to support students with learning difficulties in developing imagination, creative and critical thinking and problem-solving skills. BT has deployed its 5G Rapid Site solution to support 5G innovation and digital transformation of UK's education sector. The solution is made possible through the EE 5G network which brings ultrafast speeds and enhanced reliability to classrooms now, and into the future. With the greater bandwidth that the solution provides, students and teachers can livestream virtually from any location with minimal disruption and connect many more devices than on previous



networks. This means students can still enjoy a rich learning experience and not be disadvantaged by their location or by the uncertainty of the Covid-19 pandemic. Pupils at Carbrain Primary School, Cumbernauld, were the first to dive into the new experience with an underwater lesson about the ocean. A student from Cabrain Primary also said his favorite part was seeing the Northern Lights, a subject he studied at school: "I loved the colors, it was as if I were seeing them in real life!". Another student enjoyed the Safari experience, saying: "It was so cool to see the animals so close up." "The immersive classroom allows us to break free of the traditional classroom boundaries," explained Councilor Frank McNally, Convener of Education and Families with

North Lanarkshire Council. "Its potential uses really are limitless and we hope that it can be used to engage pupils who are perhaps turned-off by traditional learning experiences as well as by local community groups such as historical societies. "This project shows that North Lanarkshire is at the cutting edge in terms of technology and connectivity and demonstrates our commitment to providing our pupils with outstanding learning opportunities." The interactive experience is multifaceted and can be used for school learning, college and university workshops, corporate training workshops, gym classes, and tourism, meaning it can be applied to all learners for all ages, and be deployed across many industries in the UK. Rob Shuter, CEO of BT's Enterprise unit, said: "By harnessing

the power of 5G, we've been able to help transform education for students in North Lanarkshire. We know that technology can help to make education richer and more accessible for young people. This is vital for both students and teachers; a blended learning approach can engage and support pupils better than traditional methods only. We're really excited to be partnering with the Council to use our ultrafast 5G network to provide a UK-first in education. "Our Skills for Tomorrow program aims to give 10 million people and businesses the skills they need to thrive in a digital world. We'll continue to deliver innovative solutions like this right across the UK, to help build better public services for customers and our society."

BT Adds £24 Billion (US\$33.4 Billion) to UK Economy and Supports 300,000 Jobs, According to an Independent Report

BT Group is responsible for generating £1 in every £75 produced in the UK economy, according to an independent report published. The Economic Impact of BT Group in the UK report, by consultancy firm Hatch, calculates that BT generated more than £24bn in gross value added (GVA) during the last financial year. The report estimates that around 300,000 full-time jobs in the UK are supported through BT's direct employment, its spending with contractors and suppliers, and the spending of its employees. The Group also spent nearly £10.1 billion with suppliers based around the UK, including helping to maintain around 35,000 vehicles, with an ambition to transition up to 28,000 to electric vehicles by 2030. Spending by people in receipt of a BT pension also supported an estimated 26,600 jobs and contributed nearly £2bn across the UK. BT Group has broadband and mobile networks spanning from the Scilly Isles to Shetland, built and maintained by some of the 82,800 direct employees it has in the UK. This is equivalent to one in every 12 employees working in the IT and communications sectors. The company is currently modernizing its business, including investing in the UK's largest workplace consolidation and modernization program, as it moves from 300 locations to around 30 as part of its Better Workplace program. It plans to move into a brand-new HQ



in London later in 2021 and has also announced plans to open new or refurbish existing locations. New strategic hub locations will open in Bristol, Birmingham and Manchester, providing future-fit workplaces of the future for thousands of colleagues. Jane Wood, BT Group director of nations and regions, said: "I'm immensely proud of the contribution our colleagues make in supporting the UK economy. At an important time for our country, our spending on people, networks and suppliers, provides a vital economic boost for the UK. The wider impact of that

spending helps to sustain communities and small businesses right across the UK. "In the past year, having good connectivity has become more important than ever as we've all had to work, learn, and spend more leisure time online. Despite these challenges, our dedicated and determined colleagues have ensured EE's 5G network has been extended to cover 125 towns and cities, built out Openreach's full-fibre networks to reach 4.1 million premises and EE's 4G network now reaches 85 per cent of the UK. I know these significant investments will help to underpin the

country's economic recovery post-Covid." Employees from across BT Group, which includes Openreach, EE and Plusnet, have played a key role in keeping the country connected during the pandemic. The company has provided critical support to the NHS, SMEs via its Small Business Support Scheme and school children by providing unlimited broadband and mobile data, free and mobile data, free BT Wi-Fi vouchers and zero rating access to two of the most popular online education sites. BT's Consumer contact centers now handle 100% of customer calls in the UK, at centers from Dundee to Plymouth. Since customer service for BT, EE and Plusnet customers was brought back to the UK and

Ireland last year, more than 34 million calls have been handled. Tim Fanning, Director at Hatch, said: "Our analysis underlines how vast BT Group's contribution is to the UK economy as a whole as well as to individual communities in the nations and regions. Its presence across the country generates significant further activity and investment, supporting many thousands of jobs."

Summary of results for year 2019/20:

- 82,800 employees directly working for BT Group in the UK, and 10,600 contractors (Full Time Equivalent – FTE)
- 300,000 total FTE jobs supported (including indirect and induced effects)
- £3.4 billion total income of BT Group

employees (including contractors)

- £10.1 billion spend with suppliers based in the UK
- £24 billion total GVA impact associated with BT Group activities (including indirect and induced effects)
- BT Group directly employed 1 in every 230 employees in the private sector across the UK, and 1 in every 12 in the IT and Communications sector
- BT Group directly created £1 in every £165 of GVA in the UK
- As a result of the full economic impact of BT Group, the firm supported £1 in every £75 of GVA in the UK economy and 1 in every 90 employees working in the UK economy

BT Confirms Plans to Reach 20 Million Premises with FTTP By Late-2020s

Following UK telecom regulator OFCOM setting out plans for its regulation of fixed access services for the five years from 1 April 2021 yesterday (18 March), BT has moved to confirm its fiber-to-the-premises (FTTP) investment plans. With the telco noting that a major focus of the watchdog's statement related to how it would stimulate investment in full fiber services across the UK, BT has said that, based on its initial assessment, it believes OFCOM's plans are 'broadly in line with the expectations laid out at [BT's] Q3 2020/21 financial results and, when taken as a whole, will allow BT

to earn a fair return on its GBP12 billion [USD16.7 billion) FTTP investment'. As such, the telco has confirmed its intention to roll out FTTP technology to a total of 20 million premises by the mid- to late-2020s. It noted, however, that further details of the telco's deployment plan will be announced once it has undertaken a full review of OFCOM's 'Wholesale Fixed Telecoms Market Review' statement and it has a better understanding of any further government support which is available to aid the industry's rollout of FTTP. Commenting, BT Group CEO Philip

Jansen said: 'This is good news for all fiber providers in the UK. For us, it is the greenlight we've been waiting for to get on and build like fury.' Meanwhile, Clive Selley, chief executive at BT's network unit Openreach, added: 'We've now passed almost 4.5 million premises [with FTTP] and are building faster, at lower cost and higher quality than anyone else in the UK. Today's regulation will allow us to ramp up to three million premises per year providing vital next generation connectivity for homes and business right across the UK.'



China Mobile, Huawei Pilot 5G Indoor Distributed Massive MIMO

Huawei and China Mobile Guangdong have launched a pilot 5G indoor distributed Massive MIMO network using 2.6GHz inter-frequency (80MHz+80MHz) networking in Huawei's Southern Factory in Dongguan, an industrial city in China's Pearl River Delta, reporting 1.2Gbps peak cell uplink throughput – quadrupled compared with traditional 4T4R cells. The pilot uses LampSite, Huawei's 5G digital indoor network product supporting up to 64T64R channels and pooling beamforming, MU-MIMO and other technologies. The vendor said that the results show that the solution ensures end-to-end high-quality uplink

for smart manufacturing applications, with 5G opening up new opportunities for factories to implement smart, flexible, and transparent manufacturing based on wireless technologies, while such pilots provide carriers with new options for emerging industrial services such as video transfer and AGV operations, expanding 5G to airports, ports, power grids, transportation, security, and many other industrial markets. As previously reported by CommsUpdate, in March 2020 the Chinese government issued instructions to 5G network operators to provide wider indoor coverage, greater support for

applications in vertical industries and to enable the exploration of new business models, and in April 2020 China Unicom and Huawei announced the launch of a 5G indoor distributed Massive MIMO solution to be integrated into LampSite. February 2021 saw China Mobile Shanghai and Huawei deploy a LampSite Massive MIMO indoor stadium network at the Shanghai New International Expo Centre (the venue for Mobile World Congress Shanghai), aggregating bandwidth of 200MHz in the 2.6GHz and 4.9GHz bands with a peak rate exceeding 3Gbps.



Cisco Webex Innovation Breaks Through Language Barriers with Real-Time Translation for More Inclusive Meeting Experiences

Eliminating language barriers is a key step to enabling a truly global, hybrid workforce. To help, Cisco announced the availability (in preview beginning this month) of its real-time translation feature while also dramatically expanding the language library from 10+ to more than 100 languages, ranging from Armenian to Zulu. As part of the all new Webex, organizations can provide employees with inclusive and seamless collaboration experiences, which is essential to supporting the needs of a workforce that is more globally dispersed than ever before. Users can create their own personalized Webex meeting experience by quickly and easily self-selecting the language of their choice from the most commonly used languages, such as Arabic, Dutch, French, German, Japanese, Korean, Mandarin, Russian and Spanish, as well as more localized languages such as Danish, Hindi, Malay, Turkish and Vietnamese. The personalized language experience provides a path through one of the major hurdles in global business – the language barrier. Now users can engage more fully in meetings, translating from English to 100+ other languages, enabling teams to communicate more effectively with each other, and opening new opportunities for businesses to build a more inclusive, global workforce. For businesses, there's a talent and cost benefit. The feature enables businesses to focus on finding the best talent regardless of wherever they call home or their native language. And a recent report from Metrigy on intelligent virtual assistants found that nearly 24% of participants have meetings that include non-English native speakers and of these, more than half have been using third-party services to translate meetings into other languages (incurring an average cost of \$172 per meeting). Integrating intelligent virtual meeting assistants with language translation capabilities significantly reduces or even eliminates this cost entirely. "The inclusive features of Webex help create a level playing field for users regardless of factors like language or

geography. Enabling global Real-Time Translations is another step toward powering an Inclusive Future, and an important component of driving better communication and collaboration across teams." said Jeetu Patel, SVP and GM Security and Applications, Cisco. "AI technologies play an integral role in delivering the seamless collaboration, smart hybrid work and intelligent customer experiences that Cisco is known to deliver." Webex has a rich history of helping employees innovate and remain productive wherever they are. Since the pandemic, Webex has not only continued to help businesses thrive, it has also been an integral platform for governments to continue to lead remotely, doctors to meet with patients safely, and educators to teach students at a distance. It's clear that the future of work will involve a combination of remote and on-site interactions, known as hybrid-work. Cisco has a clear vision of how technology can help customers realize that future today and create a more inclusive world for all, by enabling a Webex experience that is 10x better than in-person while at the same time making in-person interactions 10x better as well.



Cisco Launches Digitization Program in Japan to Support Inclusive Pandemic Recovery

Japan, the world's third-largest economy, and Cisco, a worldwide leader in technology, announced a collaboration framework through Cisco's Country Digital Acceleration (CDA) Program to drive mass-scale digitization across Japan in support of its Society 5.0 vision and towards an inclusive recovery from the global COVID-19 pandemic. The program in Japan was unveiled at virtual event attended by Guy Diedrich, Vice President and Global Innovation Officer at Cisco, and Ichiro Nakagawa, Vice President and Head of Japan at Cisco, Wayoh Suzuki, Chairman, Cisco Japan, with remarks via video from Takuya Hirai, Japan's Minister of State for Digital Transformation, the Minister of State for the Social Security and Tax Number System and Minister in charge of Information Technology Policy. The CDA program is strategically aligned with the Japanese Government's digital agenda and its vision with Society 5.0 vision, which aims to

stimulate Japan's economic growth, enhance the quality of life, and create a society where everyone can fully reap the benefits of digital transformation. "I would like to express my sincere respect for Cisco's program to support digitalization around the world. In Japan, Cisco has been promoting a number of projects to support digitalization in areas such as IT talent development, network security, industry, government, education, and healthcare. This direction is exactly what we are aiming for," said Minister Hirai. "As business leaders it is our responsibility to play a role in stepping up to the challenges of inequity, and to create new pathways to economic prosperity, spark new ideas and ignite innovation. We are delighted to be collaborating with the Government of Japan to help bring to life key initiatives that will help build an inclusive future for all, and further propel Japan into the digital age," said Guy Diedrich. In collaboration with industry, academia and

government, the Japan CDA program will accelerate various initiatives, with specific focus on the following areas:

Secure Public Infrastructure: Cisco will support the development of secure network platforms for Government and Critical Social Infrastructure. It will also build a cybersecurity human resource development program to develop the next generation of cybersecurity professionals in the country. This is critical as cybersecurity is the foundation of all digitization initiatives and there exists a significant shortage of talent to fill cybersecurity roles.

Digital Schools: Cisco will help advance the digitization of education and help bridge the digital divide that exists, in terms of equity of access to online resources. Initiatives will be in close alignment with the GIGA School initiative, whose goal it is to ensure that each student has access to one digital device and high-speed broadband internet, while introducing online education for children tailored to their preferences and developmental stages.

Advanced Remote Work: Cisco will work alongside enterprises, including small and medium sized businesses, to help them adapt to the ongoing changes in the way we work, triggered largely by the pandemic.

Many of these changes are here to stay and with companies looking at a more widely distributed workforce, the need for right collaboration tools and underlying cybersecurity infrastructure has never been more important.

COVID-19 Response and Digital Healthcare: In response to the continued spread of COVID-19, Cisco will help private, public, and not-for-profit sector organizations accelerate their transition to remote functionality to maintain operational continuity, with a specific focus on Digital Healthcare.

Supply Chain: Cisco will co-innovate alongside Japanese companies in areas such as Artificial Intelligence, Internet of Things, Data Analytics, Edge Computing etc. to help businesses in Japan improve productivity, accelerate innovation, provide better customer experiences, and improve overall competitiveness.

Regulatory Reform and Digital Society: Cisco will work with regulatory authorities and advise on innovative approaches to promoting a digital society while adhering to environmental, safety, and security considerations. In addition, the Cisco will aim to re-imagine the fan experience in the context of live entertainment and events.

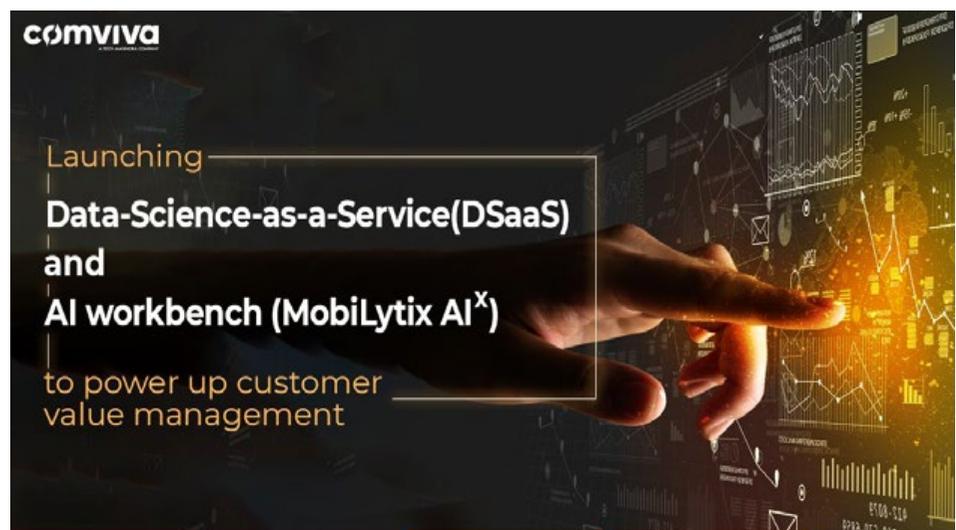
5G Infrastructure: Cisco will consult and

collaborate with an array of stakeholders to build the underlying core infrastructure required to roll out 5G networks across the country. The connectivity, speed and low latency provided by 5G networks will further accelerate innovation, create better outcomes for businesses and experiences for consumers. "The Japanese Government has laid the foundation for future growth by accelerating its digital policy and agenda and Society 5.0 vision. For it to succeed we need structural innovation, infrastructure development, wide-spread adoption and use of cutting-edge technologies, as well as training and development of next-generation of IT workforce. At Cisco Japan, we are committed to playing our role in helping turn this vision into a reality," said Ichiro Nakagawa. Cisco's CDA team collaborates with national, state, and local governments in 40 countries around the world to accelerate their national digitalization agendas, co-develop cutting-edge solutions, and deliver beneficial services to their citizens faster and more effectively. CDA has over 900 active or completed projects spanning several verticals in close partnership with government, industry and academia.



Comviva Introduces Data Science-As-A-Service (DSaaS) and AI Workbench (MobiLytx AIX) Solutions to Enhance Returns from Customer Value Management Programs

Comviva, the global leader in providing mobility solutions announced the launch of its new Data-Science-as-a-Service (DSaaS) and AI workbench (MobiLytx AIX) solutions that accelerate the use of AI by Communications Service Providers (CSPs) and increase returns from their Customer Value Management programs. Marketers are dependent on data science teams for modeling and are hindered by non-availability of industry standard or proven AI/ ML models. Comviva's Data Science-as-a-Service (DSaaS) coupled with MobiLytx AIX solution provide ready-built and proven Artificial Intelligence (AI) and Machine Learning (ML) models to kick start AI based customer value



management (CVM) initiatives. MobiLytx AIx platform utilizes the full potential of user centered self-service design to create a multi-experience AI development workbench. With the AI Workbench, data scientists and marketers will benefit from access to a library of embedded attributes, models and algorithms. This reduces time to develop and implement AI/ML models for marketers. It also provides insightful data storytelling to understand customer responses in comparison to predicted behaviors. Commenting on the launch, Manoranjan (Mao) Mohapatra, Chief Executive Officer, Comviva said, "We noticed that many Communication Service Providers are building customized environment to power proprietary and specialized data models. With DSaaS and MobiLytx™ AIx, we are bringing to life ready-built models, to ensure faster time-to-market and increased returns from their Customer Value Management (CVM) programs. For Comviva, Mobilytix AIX is about empowering Telecom operators

with user centered self-service design, so they may unleash the potential of AI for maximizing the returns of the CVM programs." By leveraging Comviva's Data Science-as-a-Service (DSaaS) offering, Communication Service Providers (CSPs) can implement market-proven AI solutions and build and deploy model in days and weeks rather than months for immediate activation. The solution can be used to increase the competency of CVM teams, accelerating the adoption of AI technologies. Speaking on the occasion, Amit Sanyal, Executive Vice President and Chief Operating Officer, Customer Value Solutions, Comviva said, "With DSaaS and MobiLytx™ AIx, we are pleased to introduce a powerful solution for both marketers and data scientists who want to build, import or select their own models. The CVM AI Competency Center ensures collaboration among marketers, CVM and data scientist teams to achieve retention, crosssell, upsell and acquisition goals much faster. The MobiLytx™ AIx workbench,

has ready-built dictionaries of attributes, scores, algorithms and dashboards, along with auto AI and auto ML operations features that cut implementation lead times by half." Comviva's MobiLytx™ platform has two other major solutions - MobiLytx™ Real Time Marketing (RTM) and MobiLytx™ Loyalty and Rewards. Comviva's MobiLytx™ Real Time Marketing (RTM) is a next generation real-time interaction management and multi-channel marketing automation platform that leverages advanced artificial intelligence (AI) and Machine Learning algorithms to drive incremental revenue for enterprises. The platform utilises real-time transactional data in conjunction with a rich unified customer profile to maximize the value of individual customers and their micro-moments of interaction with the service provider. MobiLytx™ Loyalty and Rewards is a comprehensive loyalty management solution supporting the complete loyalty program lifecycle and reward partner ecosystem.



Eutelsat Entrusted Once Again by The European GNSS Agency (GSA) to Host EGNOS GEO-4 Payload

The European GNSS Agency (GSA) has selected Eutelsat Communications (Euronext Paris: ETL) for the development, integration and operation of its next-generation EGNOS GEO-4 service. The contract agreed between Eutelsat and GSA covers 15 years of service provision and represents a total value of €100m, of which €85m subject to the confirmation of funds allocated to the EGNOS program from the European Union budget for the period 2021-2027. EGNOS is the European Geostationary Navigation Overlay Service that acts as an augmentation service to global positioning systems, to improve the reliability of positioning information. This is ensured by a crucial integrity message which is essential in aviation where the Global Navigation Satellite System (GNSS) alone does not satisfy strict operational requirements set by the International

Civil Aviation Organization (ICAO). It is especially important during critical flight stages such as the final approach. Other transport means including maritime and rail benefit from this EGNOS Safety of Life service. EGNOS also increases the positioning accuracy for other land-based applications, notably precision farming, geomatics, and land management. Eutelsat already operates the EGNOS GEO-3 payload on its EUTELSAT 5 West B satellite which entered into service in February 2020. Built by Airbus Defence and Space, EUTELSAT HOTBIRD 13G satellite, which will host the EGNOS GEO-4 payload, is scheduled to be launched in the first half of 2022. Commenting on the agreement, Rodolphe Belmer, Chief Executive Officer of Eutelsat said: "We are delighted to have been entrusted once again by the GSA for this critical mission.

It showcases the unparalleled coverage of our fleet as well as our technological expertise and reliability. Space technology continues to change the way we live, and we are delighted to support the GSA to ensure that European citizens get the most out of satellite navigation programs. We are looking forward to collaborating on other projects of this nature with GSA." Rodrigo da Costa, GSA Executive Director added: "The GSA has awarded Eutelsat the EGNOS GEO-4 contract to manage this important payload that enhances the GSA's core mission to deliver reliable and secure space-based services. Along with delivering economic benefits to innovative service providers and related businesses, satellite navigation is changing how we manage the mobility, safety and security of people and goods for Europe and beyond in fundamental ways."



Huawei Reiterates Its Support for UN's Sustainable Development Goals

The "Connected for Shared Prosperity Forum" was held by Huawei, Global Mobile Association (GSMA), where participants joined both online and in person to discuss the value of digital technologies in sustainable development for a better, connected world, representing organizations from around the world, including international industry regulators and think tanks. More than 1000 guests from over 50 countries attended the conference online. Chen Lifang, Huawei Senior Vice President and Board Member, delivered a keynote speech titled "Believe in the Power of Technology" where she described how technology can be used as an engine for human progress. While calling on individuals and businesses to think big and act small, Chen reiterated her support of the UN's sustainable development goals and building a green, innovative and inclusive world. We've all had mixed feelings about 2020. The pandemic has changed our lives. Many things we took for granted no longer exist and our values have changed. My biggest take away from the past year has been just how hard it is for society to reach a consensus. There seems to be constant conflict and disagreement, from deciding if it's necessary to impose lockdowns to debating if it's worth it to wear a mask. Today, we've come together to discuss the United Nations' 17 Sustainable Development Goals. I, personally, believe that technology is crucial to advancing these goals,

and together, we must do two things to fully unleash the power of technology and drive sustainable development. 5G is a standardized technology defined by its high bandwidth, low latency, and broad connectivity. It helps traditional industries transform and can benefit all. Wide-scale 5G deployment can already be seen in multiple industries around the world. Every-day consumers are benefiting from 5G experiences, while industrial use in seaports, mines, and the transportation sector is increasing operational efficiency. Is this a bad thing? I don't think so. If we claim that technology is critically important but its development is ideologically wrong, this will only result in division, confusion, and regression. We must reach a global consensus on this issue and believe in the power of technology to leverage it for the benefit of the society. Of course, there is always the danger that someone will abuse a new technology. This is not a new concern. But since the industrial revolution, we have seen how establishing rules to manage technological risks can safeguard us. Through rules, technological developments can transcend national boundaries and improve the livelihoods of all without incurring undue risk. We are entering a digital era, and many are hard at work creating the governance rules for cyber security, privacy protection, and trusted AI that will keep us safe. For the rest of us, it's time to be confident and open to technological development. What's more, Huawei and UNESCO launched the Open Schools program over the course of a three-year partnership, to help schools in Egypt, Ethiopia, and Ghana improve their digital skills with online education. Every one of these examples, every single connection, every gram of emissions reduced, every watt of electricity saved, every small improvement we've made, couldn't have been achieved without small advances in tech. This is the value tech brings to the world.



Huawei Chief Warns of Growing Digital Divide

Huawei rotating chairman Ken Hu highlighted the Covid-19 (coronavirus) pandemic had exposed weaknesses in communications infrastructure across the world, and warned a lack of access to 5G services could widen the digital divide. In a keynote, he explained changing behaviors caused by lockdown restrictions had negative and positive impacts worldwide. For example, while bankruptcies of small enterprises spiked, data traffic surged as much as 70 per cent in some areas. "Covid-19 brought about

unprecedented disruption for the whole of mankind. Yet, we have accelerated the process of the digitalization and intelligent transformation, with more and more companies embracing digital technologies," Hu said He explained traffic distribution changed dramatically. Before the pandemic, there were distinct peak and low periods. "Now there is no clear line between the two", with the lines also blurred between indoor and outdoor, and urban and rural usage. "The distribution is becoming more even than before," he said,

noting this requires network coverage to be better balanced. He noted the gap to countries which are slower to deploy 5G networks and services would expand as the technology advances and spreads. Hu said 2020 was not an easy year for Huawei due to the pandemic and "we were confronted by some extraordinary difficulties", but managed to record relatively stable results in line with its original guidance on revenue and profitability. But he added 2020 was also a year of learning and "brings a lot of possibilities for us in future".

Huawei Reaffirms Cybersecurity Commitment and Agreements on Data Openness and Transparency

On the sidelines of this week's Milipol Qatar summit, the President of Huawei Middle East reaffirmed the company's commitment to supporting digital transformation across the Middle East by building stronger ICT ecosystems supported by cooperative cybersecurity mitigation programs. This ecosystem will ultimately contribute to the realization of national development visions over the coming years. When it comes to 5G in particular, Huawei has noted that the GCC countries have been among the world's first wave of 5G deployments, now becoming a reference point for global commercial use. These investments will demonstrate their value once again during mega-events like the upcoming FIFA World Cup 2022 in Qatar, Hajj season and similar events enabling brand-new experiences such as 8K live broadcasts and exciting in-home viewer experiences through augmented and virtual reality. "The use cases of 5G are almost unlimited in terms of healthcare, education, entertainment, transportation, energy, and more," said Charles Yang, President of Huawei Middle East. "Nonetheless, with the rapid development of 5G together with AI and cloud industries, countries in the region are rightfully attaching great importance to data sovereignty and cybersecurity. Huawei is committed to cooperative cybersecurity mitigation programs while never putting commercial interests ahead of cybersecurity policies. I reiterate that Huawei welcomes signing cyber security agreement with governments to ensure openness, transparency, and trust." Over recent days, Huawei has been working closely with other global manufacturers, security and safety experts, governments, and enterprises at Milipol to help establish a more secure digital ecosystem in the region. Building and fully implementing an end-to-end global cybersecurity assurance and privacy protection system is one of Huawei's most crucial strategies for the region, according to Yang. In 2020 alone, Huawei supported the stable operations of over 300 networks internationally, and helped operators to provide online services and minimize the impact of the pandemic

on their business. Huawei has also signed more than 1,000 contracts for industrial 5G applications in more than 20 industries, demonstrating the trust that governments and its customers have in Huawei. "Our responsibility has always been to make secure, trustworthy, and high-quality products," noted Yang. "Huawei has not had any major cybersecurity incidents while working with more than 500 telecom providers for nearly 20 years in 170 countries. No other vendor can claim this level of cybersecurity success." In parallel with its cybersecurity emphasis, Huawei is doubling down on its research efforts in the region and internationally. The company is already one of the largest patent holders in the world. In 2020, Huawei was the top filer of patents for the fourth consecutive year, according to the World Intellectual Property Organization (WIPO). The company has also been leading in areas like 5G patents for some time, and has in turn been featured on rankings such as the EU Industrial R&D Investment Scoreboard in 2020. "In the post-pandemic era, local governments and enterprises are all actively pushing for industrial digitalization, upgrading smart systems and solutions to enhance the level of public services," said Yang. "As a consequence, they are looking at enhanced cybersecurity and privacy frameworks to guide how that transformation can happen. New policies, organizational structures, and processes will need to be determined, and will

ultimately nurture a vibrant ecosystem that promotes innovation in the Middle East." That future will also require bolstering local ICT talent, added Yang. Huawei's talent ecosystem currently consists of four parts: a Seeds for the Future program, the Huawei ICT Competitions, an internship program, and various ICT Academies. Yang also cited how in 2020, the LearnOn online learning platform was launched in the Middle East. Over the last five years, this talent ecosystem has included work with 440 universities in the region, more than 20 ministries and commissions, with more than 35,000 people being trained and over 9,000 being certified by Huawei in areas like 5G, AI, and cloud. Yang stressed that the company will continue to work with local universities, partners, governments, and enterprise customers to cultivate more qualified ICT talent. "With powerful technologies, a local talent ecosystem, and well-established cybersecurity frameworks, we are confident that advanced digital applications across all industries can become more widespread in the region," concluded Yang. Huawei's cybersecurity practices have already gained the trust of global value chain partners and industry-leading organizations. To date, more than 700 cities and 228 Fortune 500 companies—among which 58 are from the Fortune 100—have selected Huawei as a digital transformation partner.



Huawei Releases a 5G Voice Solution

At MWC Shanghai 2021, Huawei officially released a 5G voice solution, Single Voice Core, helping operators improve voice quality and build a cloud-based 5G voice network. Voice calls have always been considered one of the most reliable means of communication. As protocols stipulate that voice calls cannot fall back from 5G to 2G/3G networks, the IMS-based VoLTE network was set as the basic voice network following the commencement of 5G. As such, operators must invest in and operate multiple networks, causing inconsistent service, cumbersome O&M, and other issues. To better understand these challenges, we can introduce a concept from the economic industry, the misery index, to tally network complexity. The misery index for an operator is determined by the number of networks, platforms, and NEs owned by an operator, as well as an O&M complexity factor. The larger the misery index is, the more cumbersome O&M is. For example, an operator serves about 10 million subscribers. In 2G/3G, the overall network is simple, and the misery index for the operator is about 260. In 5G, a VoLTE network is necessary, and CS and IMS networks must coexist for a long period of time. In this case, the misery index for the operator is 700. As a large number of devices on the live network will reach the end of their life cycles in the next two years, the misery index will soar to over 1000. As a result, Huawei has proposed the Single Voice Core solution. This innovative solution adopts all-cloud IMS architecture and aims to integrate CS and IMS networks to simplify the network topology, inherit all basic CS services, and provide unified interfaces. With the Single Voice Core solution, media transcoding times and call forwarding times are reduced, improving voice quality, reducing hardware usage by 30%, and lowering OPEX by 40%. In addition,

the integrated network supports access of and offers services for 2G, 3G, 4G, 5G, and fixed-line subscribers. The Single Voice Core solution can reduce the misery index to 220 or lower, making it the best choice for operators to provide voice services with 5G. Huawei is committed to developing and innovating voice network technologies and has accumulated years of extensive experience. Huawei will continue to inspire and innovate, as well as collaborate with partners to boost new voice services and create new value for customers.



Nexign Invests in The Development of The Universal Billing

Nexign (a part of ICS Holding LLC), a leading Business Support System (BSS) and Internet of Things (IoT) solutions provider, announced the start of the project called "Universal Digital Billing." The project will be funded with investments from Nexign, as well as with a grant from the Russian Fund for the Development of Information Technologies (RFRIT) on a targeted and free basis. The sales start is scheduled for 2022. The product is intended for both telecom operators and companies from related areas: it can be used by service platforms for the production and distribution of content in various digital networks, as well as by SaaS and PaaS platforms. Telecom operators and service providers need a flexible solution for settlements with consumers, partners and

suppliers. This need is driven by growing complexity of the ecosystem, which combines classic communication services and new digital services for private and corporate customers. At the same time, the billing solution must take into account the exchange rates and taxation schemes, as well as other factors that affect mutual settlements between suppliers and consumers of products and services. Providing extensive converged billing capabilities, the Nexign's new product will give customers the choice between using mainstream commercial databases and moving to open source database systems, such as PostgreSQL. Thus, flexibility, scalability, and availability for both large market players and small companies will be the key advantages of the universal

billing. "We rely on our experience in the telecommunications industry and take the trends and needs of a changing market into consideration. Digitalization of various sectors of the economy creates high demand for billing solutions. The flexibility and high performance of the universal billing will enable Nexign to support the digital transformation strategies of telecom operators and service providers in both local and international markets," says Igor Gorkov, CEO of Nexign. "The support from RFRIT means that Nexign team will be able to strengthen the company's research and development functions. It also indicates recognition by experts who selected the best projects during the competition."

Nexign Helps Operators Slash TTM By Up to 5 Times and Cut Costs by Introducing Unified Billing

Nexign (a part of ICS Holding LLC), a leading Business Support System (BSS) and Internet of Things (IoT) solutions provider, completes the large-scale digital transformation project that addresses the challenges of CSPs globally, including the Middle Eastern and African regions. Nexign claims that technologies and methodologies introduced in the Unified Billing project help CSPs of any size reduce TTM for new digital services by up to 5 times, simplify cooperation with partners and optimize costs for support of billing systems. With a high pace of modernization in the MEA telecommunications market, CSPs are looking for a partner to support and speed up their digital transformation. By completing the Unified Billing project for MegaFon – the provider of digital opportunities that operates in Russia, Tajikistan, the Republic of Abkhazia and South Ossetia – Nexign has proven it can bring measurable value to CSPs' business and help them facilitate transformation. The need to go beyond classical telecom services pushed MegaFon to rebuild the billing core and develop a unified billing system for all its subsidiaries. The joint team of Nexign and MegaFon gradually moved 8 operator's subsidiaries to a single BSS platform and ensured that migration of the subscriber base did not impact customers. In the course of the project Nexign enabled the operator to achieve the following results:

- Time to market (TTM) for various product categories reduced by 2-5 times;
- Unification of processes regardless of the organization's size and infrastructure complexity;
- Transition from a regional-based to a single shared operation service to increase its efficiency;
- The product portfolio aligned within all branches of the operator while maintaining the flexibility of local pricing policy;



Introduction of joint call centers with the same service KPIs and standardized routes for handling calls;

Improved quality of customer service across the entire coverage area.

Nexign also introduced several tools, which simplify digital transformation processes and are in huge demand among CSPs:

The microservice factory, which accelerates the formation of partner ecosystems and enables telco operators to speed up launch of new business projects. The use of the microservices fabrics enabled MegaFon to launch more than 100 new business projects. The FastTrack methodology designed to automate the update implementation process. With this approach CSPs can spend no more than two weeks on minor changes to their billing system core. The product catalog, which acts as a single point of development and modification of operators' products and services. "Since CSPs in the Middle East and Africa are looking for the way to streamline digital transformation processes, it is clear that unified and centralized product management, as well as technologies like microservices and

methodologies like Fast Track are in huge demand in the market. Nexign is ready to help local operators take their business to the next level and increase subscriber loyalty by offering future-proof solutions and ensuring uninterrupted service at any stage of the project," says Hassen Hamza, Business Development Manager of Nexign. "The Unified Billing project is unique for the telecommunications market – both in terms of organized interaction and in terms of results achieved. The Nexign team carried out a comprehensive transformation of billing systems, which enabled fast-changing business of MegaFon to enter a new phase of development. Whereas the operator will be able to address short-term and long-term business challenges, Nexign's expertise will benefit telcos of any size that are looking to develop digital services," says Igor Gorkov, CEO of Nexign. Nexign employs more than 1,800 people. The company has offices and subsidiaries through Russia, the Commonwealth of Independent States, the Middle East, Africa and LATAM.



Oman Broadband to Implement 'Fiber Over Electric Poles' Project

In a first for Oman's telecom sector, wholly government-owned Oman Broadband Company, which is playing a pivotal role in implementing the National Broadband Strategy, plans to install fiber optic cable (FOC) across existing power lines, as a cost-competitive alternative to trench-laid cables. A number of contractors are bidding for the company's contract to design and install overhead fiber optic cables on electricity poles in designated areas of the Sultanate. The objective of the 'Fiber Over Electricity Poles' project is to "utilize the existing electricity poles to lay Oman Broadband's FOC (fiber optic cable) for providing broadband services by backhauling mobile sites," said the state-owned telecom infrastructure services provider. New poles may be installed where

required and new trenches dug depending upon conditions at site, it noted. As many as 37 mobile sites currently operated by the company will be covered through the 'Fiber Over Electricity Poles' project, utilizing existing electricity poles and potentially constructing new ones in various governorates. Trenching for a distance of around 360 kilometers will be required as well. Oman Broadband – part of Oman ICT Group – has already been collaborating with utilities of Nama Group (formerly The Electricity Holding Company) to benefit from the massive electricity networks and associated optical fiber cables already installed by the latter. Last October, Oman Broadband signed a strategic partnership agreement with Nama Group to utilize the latter's nationwide fiber optic infrastructure

that currently extends around 74,000 kilometers across the length and breadth of the Sultanate. Utilization of Nama Group's fiber optic network will contribute towards avoiding double investments on similar projects as well as positively increase the pace of projects and achieves better financial returns and cost cutting, said Oman Broadband. Oman Broadband is currently focused on the roll-out of a passive fibre network infrastructure that seeks to provide equal and open access to telecommunication service providers, on a wholesale basis, and owners and operators of private networks, on a retail basis, thereby enabling end users to efficiently leverage high speed fiber in Oman.

PCCW Global

Viu, PCCW's leading pan-regional OTT video streaming service, achieved remarkable results in Q4 2020 according to a report from AMPD Research, a subsidiary of Media Partners Asia (MPA).

Key highlights of the report:

- Viu ranks first in aggregate monthly active users amongst premium major video streaming platforms in Southeast Asia (which includes Indonesia, the Philippines, Singapore and Thailand for the purposes of the report).
- Viu ranks second in paid subscribers and streaming minutes amongst major streaming platforms in Southeast Asia.

Viu Ranks First by Monthly Active Users Amongst Major Video Streaming Platforms in Southeast Asia

- In Indonesia and Singapore, Viu ranks second in monthly active users, paid subscribers and total streaming minutes.
- In the Philippines, Viu ranks first in monthly active users and second in paid subscribers and total streaming minutes.

Ms. Helen Sou, Chief Business Officer, Asia, Viu, said, "The opportunities in the rapidly growing online video streaming market are immense and expected to continue to grow at 26% CAGR over the next three years**. We are pleased that our content strategy focusing on Asian content, commitment to partnerships and our monetization model including both advertising and subscription tiers has continued to garner traction with both subscribers and advertisers across Southeast Asia as demonstrated in the AMPD research report." Commenting on the findings, Mr. Anthony Dobson, MPA Vice President & AMPD Managing Director, said, "Total online video users in the region have reached 195 million, excluding YouTube,

with Viu in the lead among platforms with 30.5 million total users in those markets. Viu drives subscribers through premium Korean content and a growing collection of local acquisitions and original productions, which contributes to the overall growth of SVOD in Southeast Asia." The report, entitled "Southeast Asia Online Video Consumer Insights & Analytics: A Definitive Study", leverages MPA's proprietary AMPD Research platform, which evaluates consumer behavior and usage patterns across the digital economy, including online video and gaming. Using a unique solution that fuses passively observed digital behavior and empirical survey data, the study is a result of research carried out between October to December 2020 in the four Southeast Asia markets*** with insights collected from a combined sample base of 29,007 individuals aged 15+. The report covers 45 unique OTT platforms and provides detailed analysis and profiles of these platforms.



PCCW Global Upgrades Middle Eastern Connectivity Via A New Network Node in Aqaba, Jordan

PCCW Global, a leading international ICT service provider, in collaboration with Naitel*, a licensed telecommunications service provider in the Hashemite Kingdom of Jordan, have enhanced Middle Eastern international connectivity and expanded the region's network reach by extending PCCW Global's growing global Tier 1 network coverage via a new IP node in Aqaba, Jordan. This new unique geographic position ensures that the Gulf Corporation Council (GCC) region has access to high-speed connectivity and state of the art network automation via Console Connect, a global platform for Software-Defined Interconnection®. The new Point of Presence in Aqaba, which is located in a carrier-neutral facility, provides the Middle East with a new level of connectivity using PCCW Global's advanced, resilient and automated Tier 1 network, and caters to the increasing demand

of global wholesale and enterprise customers in the region. Aqaba is PCCW Global's latest addition to the carrier's extensive global network of over 120 on-net Points of Presence (PoPs) in 52 countries and 81 cities. In addition, Console Connect incorporates network automation software that delivers on-demand access to PCCW Global's dependable, high-speed global private network, enabling users to quickly spin up network connections when required. Users are able to utilize the platform to automatically order global IP transit (AS3491) services and private MPLS links on-demand, bypassing the public Internet and directly connecting to cloud providers, content providers, applications partners and any community on the platform. The multi-award-winning Console Connect platform provides a new level of speed and agility that can be achieved in just a few clicks with a simple, easy-to-

use web portal. Console Connect can also be integrated directly into enterprise applications via an API, providing robust and secure enterprise-wide access to partner infrastructure and leading cloud service providers throughout the world including Amazon Web Services, Microsoft Azure, as well as Google, Tencent, Alibaba, IBM and Oracle cloud services. Mr. Sameh Sobhy, Managing Director, Middle East, Turkey, Africa, PCCW Global, said, "Aqaba is an important strategic location for development. Our goal is to bring the latest, most innovative, fast and robust services to customers in the GCC region. Network automation makes it possible for users to manage and control their own data resources by accessing a wide variety of cloud services and content on top of our state-of-the-art data network." Development of the new node in Jordan is strategically aligned with other PCCW Global network expansion and connectivity projects in the EMEA region, including the innovative Pakistan & East Africa Connecting Europe (PEACE) cable project. The PEACE cable system is a 12,000km-long, 200G and 16T/FP privately owned cable system connecting three of the largest and most populous continents in the world - Asia, Africa and Europe. On schedule to be completed next year, the PEACE subsea cable system will provide the shortest and most direct data route from Asia to Europe, assuring exceptionally low latency, which is vitally important for people and organizations to leverage the innovative use of ICT in the region and around the world. PEACE connects countries on both sides of the Mediterranean and provides connectivity for the Middle East en route between Europe and Asia.



Telna And PCCW Global Join Forces to Provide Global Out-Of-Box Connectivity to The Asian OEM's Market

Telna, the leading managed multi-network cellular connectivity platform provider with the largest LTE footprint in the world, and PCCW Global, a leading telecommunications service provider, have announced collaboration to combine the strengths of both companies and deliver fully managed connectivity solutions to Original Equipment Manufacturers (OEMs) in Asia. Telna provides multi-network access to some of the world's leading OEMs, including Xiaomi, ZTE, Meizu, TCL

and Vivo for their data solutions. The Telna - PCCW Global collaboration will create new value by leveraging these integrations with PCCW Global's unparalleled infrastructure in the Asia-Pacific region. Mr. Gregory Gundelfinger, Chief Executive Officer of Telna, said, "The combination of Telna's existing OEM partners with PCCW Global will create instant revenue opportunities in IoT, consumer and enterprise connectivity." Mr. Emmanuel Bain, Senior Vice President, Mobility & Voice, PCCW Global, said, "PCCW

Global and Telna are uniquely positioned to deliver innovative connectivity solutions that will be supported by our local teams to meet the needs of OEM's." PCCW Global serves the mobile and IoT industry through its expert team, supported by unique network services that leverage automated Console Connect infrastructure across over 120 Points of Presence delivering mobile to cloud seamless connectivity.



Speedchecker Issues Mobile Network Performance Rankings for Turkey

SpeedChecker, mobile crowdsourcing company released a new report on the performance of mobile networks in Turkey. The market in Turkey is served by three operators - Turkcell, Türk Telekom and Vodafone. Turkcell being the largest operator and an incumbent has performed well in download speed ranking topping the score with 27 Mb/s, closely followed by Türk Telekom at 25 Mb/s, Vodafone a distant 3rd at 15 Mb/s. A very different situation can be observed with upload

speed where it is Vodafone leading the pack at almost 10 Mb/s. Where the situation is more even is on latency metrics which are especially important for real time communication and gaming. All 3 operators showing latencies around 100ms. SpeedChecker calculates latency to the servers placed within popular CDN networks. The 100ms latencies are the effect of missing peering agreements with CDNs and Turkish users needing to pull the content from European locations which

affects latencies and user experience. When it comes to LTE, Turkey is very well covered with all 3 operators. Türk Telekom users enjoy the most time connected to 4G, specifically 98.64% of time. Turkcell and Vodafone users connected 94.44% and respectively 94.22% of the time to 4G. The SpeedChecker report has been compiled using data from 29,697 mobile devices performing 89,410 tests in January 2021.



Solutions by stc Strengthens Its Cybersecurity Solutions With "Shield"

Kuwait Telecommunications Company – stc, a world-class digital leader providing innovative services and platforms to customers, enabling the digital transformation in Kuwait, announced that it is offering its corporate customers through its specialized business arm solutions by stc with the ultimate solution in cyber security and protection, "Shield". The pioneering service is deployed through solutions by stc under the Security Operations Center (SOC) to ensure the safety of businesses by identifying risks in possible data breaches, 360 degrees protection, and assessing critical assets to enable a worry-free environment for businesses to thrive digitally. solutions by stc issued a statement highlighting the benefits of its leading IT solutions in the cyber security field that can elevate the customer experience and provide protection for businesses who rely on digital and online data. The cyber security solutions are offered through solutions by stc's SOC, which consists of highly qualified and intellectual cyber security technicians that utilize the latest cutting-edge technology, world-class standardized tools, and advanced methods to manage online and data protection. The SOC aims to detect and analyze vulnerabilities in the digital infrastructures without inflicting data loss or any unexpected interruption in service. The team monitors and identifies possible breach attempts or incidents that might compromise the security of any business, while analyzing data logs and reporting any suspicious behavior to the customer in real-time to take proper action. To strengthen its SOC, solutions by stc partnered with leading international cyber security providers to keep pace with the rapidly evolving tools and techniques hackers may use to penetrate the fire walls of any business. As a pioneering IT solutions provider in the region, solutions by stc maintains the highest level of cyber security for its customers, ensuring that their data is always protected. "Shield", the solution offered by solutions by stc, aims to reduce the costs businesses

would generally expect when hiring experts to carry out the same functions and standard of protection. The solution also includes 24/7 rapid detection while minimizing risks and possible downtime. The cyber solutions offered by solutions by stc follow a series of innovative offerings introduced by the Company to support businesses in managing their operations more effectively while enhancing efficiency. "Shield", an innovative cyber security solution, stems from stc's strategic plan to provide safe and secure world-class connectivity through IT solutions under one roof, paving the way for digital transformation in businesses. As a business solutions provider, solutions by stc offers a range of connectivity solutions, fixed or wireless services, 5G technology, ICT, IoT and the IT products and services. Mohammad N. AlNusif, Chief Executive Officer of solutions by stc, said, "As the number of daily cyber-attacks increases both locally and globally, so does the demand for effective data protection. Through our SOC, solutions by stc can provide competitive solutions that suit the diverse needs of our growing corporate customer base while providing 24/7 data protection monitoring and prevention. We possess an in-depth understanding of our customers' needs which positions us as the preferred telecommunication and IT solutions provider in the region." AlNusif added, "We will spare no effort in developing effective solutions that maintain the highest levels of online and data security for our customers with the support of international players who specialize in data breach and prevention management. Additionally, we provide a breadth of solutions that can greatly enhance the operational efficiency of the day-to-day activities run by businesses of all sizes across multiple industries. In our mission to aid businesses succeed within their industries and sectors, we will continue to introduce new offerings, and enhance existing ones, to achieve optimal outcomes for our customers."

stc Announces its Financial Results for the Year-End 2020

Kuwait Telecommunications Company (stc), a world-class digital leader providing innovative services and platforms to customers and enabling the digital transformation in Kuwait, announced its financial results for the financial year ended 31 December 2020. stc highlights the financial and operational performance in addition to the social initiatives that the company took during the year 2020 amid COVID-19's difficulties, challenges and negative economic consequences affecting most companies within various sectors. Commenting on the announcements of these results, Dr. Mahmoud Ahmed Abdulrahman, stc's Chairman, stated: "2020 was an unusual year that is radically different from previous years in terms of the external events associated with the COVID-19 pandemic. In addition to the ongoing internal development processes which have resulted in a significant transformation of stc's operational activities in line with company's digital transformation strategy". As for the overall performance of the telecommunications sector, Dr. Abdulrahman added: "On a local, regional and global level, the telecommunications sector is witnessing drastic changes in terms of enhancing the digital services and business solutions in addition to providing advanced as well as diversified Information and communication technology (ICT) packages aimed at enhancing company's operational and financial performance". He pointed out: "Despite the continuing negative repercussions of the current economic crisis associated with the COVID-19 pandemic, which affected most sectors on a global level, we are optimistic about the future of business, and we are; therefore, constantly seeking to renew and innovate everything we offer our customers with in addition to our keen to expand easy and accessible communication channels to provide better and faster services". Dr. Abdulrahman commented on stc's social initiatives since COVID-19's outbreak: "During 2020, stc was keen to support all segments of Kuwaiti society by launching a series of social initiatives that include supporting the country's preventive activities in the field of health, safety and social awareness". He also stated: "Throughout the year, stc has collaborated with some governmental agencies and medical companies on ways to prevent the infectious diseases in addition to undertaking a number of precautionary measures and procedures for prevention in accordance with the health guidelines and instructions provided by the Ministry of Health. stc has also adopted the best safety standards and instilled them in the culture of performance of its employees to provide high quality services consistent with the required measures that were predefined to protect its customers and employees. stc has also continued providing social activities targeting several sectors, including sports, education and health, with the aim of leaving a social impact in Kuwait. In addition to its



leading role in providing integrated, advanced and innovative digital as well as technology solutions for individuals and enterprises throughout the COVID-19 outbreak, stc has been able to achieve these results by adopting a flexible operating model in addition to being flexible in implementing the company's digital transformation strategy and providing integrated advanced technical solutions that serve the Kuwaiti government's outlook with regards to the social distancing for the individual and enterprise segments. Capitalizing on the 5G network, stc was able to provide a range of digital services, which have become a major part of the Kuwaiti society's daily activities. Furthermore, stc was also able to meet the growing demand for high-speed wide broadband networks following the latest governmental decisions with regards to pursuing the current academic year through online platforms. Not to mention company's digital and cloud

computing services designed to better serve the latest corporate directions". Commenting on the stc's financial position as of December 31, 2020, Dr. Abdulrahman said: "Company's total assets reached KD 374.2 mn at the end of 2020, while the total shareholders' equity increased by 3.2% reaching KD 222.2 mn. As a result, the book value per share reached 445 fils. Moreover, the company has a strong solvency position among its peers in the Middle East. stc's Board of Directors has recommended distributing cash dividends to respective shareholders of 60 fils representing 60% of the share's nominal value for the year ended 2020, subject to the approval of the Ordinary General Assembly of the company. This decision was driven by stc's confidence in the evolution of its business, its strong financial position and the ongoing cash flow generation during economic downturns."



Tech Mahindra Recognized as A Leader in Gartner 2021 Magic Quadrant

Tech Mahindra, a leading provider of digital transformation, consulting, and business reengineering services and solutions, announced today that it has been recognized as a Leader in Gartner 2021 Magic Quadrant for customer service BPO. Tech Mahindra for its Business Process Arm has been positioned as a Leader in the analysis based on its ability to execute and completeness of vision. Tech Mahindra's BPS business has been growing ahead

of the industry by leading the Customer Experience market and challenging the middle and back-office markets through hyper-automation. Through its strategy of creating human centered experiences, Tech Mahindra is using artificial intelligence, automation and analytics to drive superior business outcomes for its customers while reducing total ownership costs. Tech Mahindra, through its, new-age platforms like M. AI. A and SeeR, is helping predict,

personalize and disrupt the way customers are serviced. Tech Mahindra is leveraging its partner ecosystem effectively to bring the best of breed omni-channel solutions across verticals, resulting in this leadership position. Ritesh Idnani, President, Business Process Services, Tech Mahindra, said, "The CX industry is rapidly evolving, and our objective at Tech Mahindra is to help our clients provide human centered experiences, across channels, anytime and every time. I believe being positioned as a Leader in Magic Quadrant for Customer Service BPO reflects the strong relationships we have with our customers. I would like to take this moment to thank our esteemed customers, appreciate our partners and applaud our teams for their unending support throughout." As part of NXT.NOW framework, which aims to enhance 'Human Centric Experience', Tech Mahindra focuses on investing in emerging technologies and solutions that enable digital transformation and meet the evolving needs of the customer.



Tech Mahindra Acquires Majority Stake in Perigord Asset Holdings Limited

Tech Mahindra, a leading provider of digital transformation, consulting, and business re-engineering services and solutions, announced that it has acquired 70% stake in Perigord Asset Holdings Limited ("Perigord"), a digital workflow and artwork, labelling and BPO services firm. This acquisition will help Tech Mahindra to augment expertise in the global pharmaceutical, healthcare and life science (HLS) sectors. The strategic partnership will strengthen Tech Mahindra's position as a leading digital transformation enabler in the artwork and packaging services space with an integrated platform and services portfolio. Additionally, Tech Mahindra will leverage Perigord's expertise and offerings to extend capabilities towards delivering efficiency and automation levers, across sectors including consumer-packaged goods (CPG), medical devices and over the counter (OTC) products to enable growth and scalability in the future. The

acquisition is a part of Tech Mahindra's long-term growth plan to build presence across key markets in Ireland, Germany, USA, and India with enhanced global delivery. Vivek Agarwal, President – BFSI, HLS and Corporate Development, Tech Mahindra, said, "Healthcare and Lifesciences (HLS) is a key vertical for Tech Mahindra and this acquisition will expand our footprint globally in these domains. Perigord's disruptive proprietary platform and expertise in the artwork space and life sciences industry will add significant value to our offerings and capabilities. We welcome Perigord employees into the Tech Mahindra family and look forward to achieve great success together." With leading capabilities in the BPS (Business Process Services) segment along with the SaaS (Software as a Service) implementation and roll-out, the acquisition will further establish Tech Mahindra as a preferred service provider

in the Life Sciences Industry across digital supply chain. Alan Leamy, Chief Executive Officer, Perigord Asset Holdings Limited, said, "We are excited and looking forward to joining forces with the Tech Mahindra family as this partnership is the perfect mix of scale, technology, expertise and timing that will enable the company to continue our journey as the world's leading provider in pharmaceutical labelling, artwork and workflow solutions. Both companies' future ambitions and desires to digitally transform the world of Pharmaceutical packaging services will deliver long term innovative solutions to our clients that will future proof their needs over the next ten years." Ritesh Idnani, President, Business Process Services, Tech Mahindra, said, "This acquisition lies at the centre of our strategic priorities around platform-led BPaaS (Business Process as a Service) offerings expanding our global footprint and bolstering our capabilities in digital

supply chain in the healthcare and life sciences market. Further, it will consolidate our leadership in using technology to render next generation offerings to our clients, and together, we aspire to leverage

synergies of both organizations to deliver seamless services to our customers across the globe." The acquisition underlines Tech Mahindra's focus on digital growth, under the NXT.NOW framework, which focuses

on leveraging next generation technologies and deliver disruptive solutions to enable digital transformation and meet the evolving and dynamic customer needs.

Tech Mahindra and Celonis Launch Frictionless Contact Center BPO Transformation Solution

Celonis, the global leader in Execution Management Systems (EMS) and Tech Mahindra, a leading provider of digital transformation, consulting, and business re-engineering services and solutions, have announced an expanded global partnership with the launch of the first of three new joint solutions for Business Process Outsourcing (BPO) transformation. The expansion results from Tech Mahindra having secured significant new customer deals deploying Celonis' Execution Management System (EMS) technology, having executed over 50 projects since the start of the global strategic alliance in December 2019, including a multimillion-dollar deal with a Forbes Global 500 customer in the telecoms sector, and reported customer savings of several million dollars. Both partners co-developed a Frictionless Contact Center BPO Transformation solution that enables customers to address the costs and lost profitability caused by poor customer service. The new co-developed solution provides a pathway to best-in-class service for customer contact centers that increases business efficiency and optimizes cost by reducing friction. The solution incorporates a real-time performance cockpit that helps senior managers and team leads identify and measure process inefficiencies and take actions by leveraging intelligent insights and automation. The system identifies opportunities for automation, omni-channel support and revenue optimization. It reduces repeat calls, facilitates intelligent escalation, effectively manages capacity and predictive demand, and hands off selected tasks that can be managed via automation. As a result, it drastically reduces the numbers of tickets that need to be processed and improves first-call resolution rates, better agent utilization



as well as more zero-touch transactions and overall automation. "By combining the Celonis Execution Management System with our business process services, we are able to both find the execution gaps in our customers' businesses and help them reach their full execution capacity", said Ritesh Idnani, President, Business Process Services, Tech Mahindra. "Our new, jointly-built Frictionless Contact Center BPO Transformation solution is a unique platform for improving efficiencies, driving optimization, enabling self-service and ensuring an enhanced customer experience. This is tangible proof that through our partnership with Celonis, Tech Mahindra is delivering greater business impact for global customers driving faster growth, higher margins, and a more predictable return on investment." Malhar Kamdar, Chief Ecosystem Officer at Celonis, comments: "We are very excited to collaborate with the TechM BPS teams to drive their NXT.NOW Transformation agenda that will offer our joint customers a 360 degree CX experience for zero touch operations and digital self-service across multiple B2B/B2C channels, leveraging Celonis' Execution Management System

(EMS) platform and TechM's global capabilities and domain expertise to drive more execution capacity for our customers and their end consumers and supplier ecosystem, to run more efficiently and operate at their full potential. We are thrilled by the difference that Celonis and TechM teams are together driving to accelerate enterprise digital and process transformation initiatives for our global clients." As part of the partnership, Tech Mahindra has also established an internal Celonis Center of Excellence to boost the deployment of the Celonis' EMS with its customers alongside its own managed services offerings. The EMS helps companies in every industry maximize execution capacity – the optimum level of performance they can achieve with available time and resources. The newly expanded offering forms part of Tech Mahindra's broader Platforms NXT strategic transformation approach to deliver actionable insights and creative solutions to help enterprises grow exponentially in a world of multiplying factors and interaction points, and the other two joint solutions will be announced later in 2021

Tech Mahindra Amongst Forbes Top 50 Organizations in Blockchain for 2021

Tech Mahindra, a leading provider of digital transformation, consulting and business re-engineering services and solutions, announced its inclusion in the 2021 Forbes Blockchain 50 companies list, a highly respected global listing of pioneering companies, startups and influencers in the distributed ledgers space. Tech Mahindra has been recognized for its transformative and innovative platform-based approach in Blockchain implementations for global clients, out of which its implementation enabling 500

million mobile phone customers manage their consent and preferences to avoid spam calls and text messages, was specifically highlighted. The recognition serves as a strong testimony for Tech Mahindra's blockchain service capabilities and provides a strong competitive edge over its peers. In 2019, Tech Mahindra introduced a blockchain based solution using Hyperledger, to manage unsolicited commercial calls (or "spam" calls), in compliance with the regulations and guidelines of TRAI (Telecom Regulatory

Authority of India). The project is unique in its scale, and today remains one of the largest live ledger implementations in the world to date. Forbes, in its analysis for Blockchain 50 2021, highlights that this recognition is an illustration of the trend of globalization of blockchain technology and its incipient rise in Asia, in particular. Rajesh Dhuddu, Practice Leader in Blockchain and Cybersecurity, Tech Mahindra, said, "We are delighted to be recognized by Forbes as one of the leading blockchain organizations of the world. Tech Mahindra is leveraging Blockchain to solve tough business problems and create a completely differentiated experience for end users through a combination of best-in-class platforms, product innovation and deep domain expertise. The recognition further serves as a great testimony of our investments in Wave2 technologies under TechMNxt.now charter and the value we have delivered to our global clients by implementing several transformative projects over the years. It is indeed a matter of great pride that we are the only Indian company and only IT and digital services consulting company to feature in the coveted list."



Yahsat and Tawazun Collaborate to Develop 'Made in the UAE' SATCOM Solutions

Tawazun Economic Council and the UAE's flagship satellite services operator, Yahsat, have signed a Memorandum of Understanding (MoU) to establish a new company to develop critical in-country capabilities in relation to the development and manufacture of advanced satcom solutions within the UAE, with a focus on building intellectual property locally for increased national security and advanced technology development. The MoU confirming the planned collaboration was signed during IDEX 2021 by Eisa Al Shamsi, Deputy General Manager of Yahsat Government Solutions, and Matar Al Romaithi, Chief Economic Development Officer for Tawazun, in the presence of

H.E. Tareq Al Hosani, Chief Executive Officer of Tawazun, Musabbah Al Kaabi, Chairman of Yahsat and Masood M. Sharif Mahmood, Chief Executive Officer and Board Member of Yahsat. Under the MoU, the new company will develop technologies and produce products around three main streams: Aeronautical Satcom Technologies, Satellite Modem Technologies and Enablement of other Satcom Products and Technologies. It will leverage the significant knowledge and expertise establishment in the UAE and will be complemented by select international experts to build a global leader in this sector. The first seed project entails the development of a

protected, multi-platform satellite modem for government and defense markets in the UAE and internationally. Yahsat will play an integral role in ensuring that the new company's products meet the requirements of its government customers with a differentiated and targeted product strategy, enabling the UAE Government and other local and international users to address key technology development. It will source key product development capabilities from leading solution providers and manufacturers to lay the foundation for local production lines and integrated value chain management. "Yahsat and Tawazun are playing a key role in accelerating the advancement of

the satellite communications sector in the UAE, this collaboration is further testament to our country's position as a global pioneer across a number of high growth sectors. These partnerships are vital to the diversification of the UAE's economy, and we are committed to supporting our UAE Investments' portfolio companies as they contribute to our nation's sustainable growth," said Musabbeh Al Kaabi, Chairman of Yahsat. CEO Tawazun, H.E Tareq Abdulraheem Al Hosani said: "At Tawazun, we seek to reaffirm Abu Dhabi's position as a leading regional hub of strategic technologies and manufacturing. We are excited about the long-term prospects of our collaboration with Yahsat. In less than a decade since it launched its first satellite, Yahsat has grown to be one of the world's leading satellite enterprises, with an enviable track record of accomplishments that are a source of pride to all Emiratis. Our collaboration stands to gain tremendously from Yahsat's expertise and connections, spurring innovation and technology development within the UAE." Ali Al Hashemi, Chief Executive Officer Designate of Yahsat added: "Yahsat has always served as a catalyst for the diversification of the UAE's economy. We have invested



heavily in nation-building through our longstanding partnership with the UAE Armed Forces and various other initiatives, driving growth and new opportunities. In keeping with the Abu Dhabi Economic Vision 2030, we now look forward to commencing homegrown production of advanced communication technologies so that the UAE can achieve its national objectives with greater autonomy. We are grateful to our country's leadership and Tawazun for entrusting us with this opportunity to develop Emiratis to serve

the growing space sector." By developing bespoke solutions for critical national requirements, Tawazun and Yahsat expect to raise the bar for customer satisfaction, especially among key decision-makers in the UAE, GCC and beyond. Their mission is to capture value and establish the UAE as a producer of satellite-enabled defense communication technologies, entrenching its reputation as a sustainable and sovereign space economy.



Zain Provides Coverage in Newly Developed Areas

Zain Bahrain has become the first network operator to provide enhanced mobile, 4G and 5G home broadband connectivity in the newly developed areas of East Hidd, Hid block 111, and Lawzi. The operator notes it took a progressive approach and worked tirelessly through last year to roll out 4G and 5G broadband networks to

these specific areas, where residents will enjoy enhanced data speed and greater network connectivity opportunities to meet increasing customer demand. Ali Al-Yaham, Director of Technology at Zain Bahrain, commented: 'During these unprecedented COVID-19 times we understand our responsibility as a

telecommunications operator and a digital enabler is much bigger than normal times. We sought to ensure that connectivity for the residents remotely working or attending online classes or providing education do not get hampered during these tough times.' 📶

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ARTICLE

Etisalat Driving the Digital Future to Empower Societies

Digital initiatives in 2020 set the pace for innovation and transformation in the network and services

2020 has been a defining year for Etisalat with intensive transformation and agile delivery of services, ensuring a strong performance while making Etisalat well positioned for the future. The unprecedented economic headwinds caused by the pandemic have demanded agility and capabilities to quickly adapt to the present market conditions. Etisalat ensured uninterrupted delivery of services by standing for our communities taking immediate steps to protect our teams and customers and support critical verticals. This was possible due to the years of

UAE setting global benchmarks

With the fastest mobile network in the world and the most valuable consumer brand in the Middle East and Africa for the fourth consecutive year, Etisalat UAE's digital agenda was accelerated during the year, with data monetisation, the deployment of 5G networks, the harnessing of AI, and an increase in the adoption of digital channels. Additionally, the company identified and boldly leveraged new opportunities by working closely with the government to assist the education and healthcare sectors.

DP World. Each of these organisations is exploiting the power of 5G technology to enable new services and features which were previously not possible.

Etisalat's digital unit made great strides in its digital B2B services, particularly in the areas of cybersecurity, the Internet of Things (IoT), and cloud connectivity. In the cybersecurity space, the integration of Help AG operations concluded in the UAE and Kingdom of Saudi Arabia (KSA), thereby creating the region's strongest cybersecurity unit. This will be a key enabler of secure, seamless, and effective digital transformation for customers.

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investments in infrastructure and digital capabilities making sure that readiness was in place and customers get onboard the digital divide. The pandemic set the need for a new norm accelerated with digital transformation. At Etisalat while we continue to focus on enhancing the core business we are invigorating all key aspects of business with a focus on digital capability building across the group. There were some great initiatives carried out across Etisalat markets setting pace for digital innovation keeping in line with the company strategy to 'Drive the digital future to empower societies'.

Etisalat remained focused on growing digital business-to-business (B2B) and business-to-consumer (B2C) revenue; enriching core services; driving value by harnessing new technologies (namely AI, data monetisation, and 5G); and increasing the adoption of digital channels.

Furthermore, Etisalat UAE has launched fixed 5G services. This will assist the company in extending its broadband services to rural areas. Several 5G use cases and proof of concepts (PoCs) with key entities have also been tested, including for the Dubai Police, ADNOC, and

The company also partnered with the Dubai Police to deliver the Oyoon project. The aim of the project is to raise awareness of e-crime and to improve safety for all citizens, residents, and tourists, using Etisalat's video cloud platform and its AI capabilities. Moreover, Etisalat has worked with the Dubai Multi Commodities Center (DMCC) to create the first smart, sustainable district in the region using the company's 5G network and IoT solutions. Etisalat and the Ministry of Interior (MOI) are, furthermore, continuing to run the Hassantuk project, the first smart fire alarm solution in the region that will cover more than 400,000 villas across the seven emirates.

In addition to the above, Etisalat has evolved towards a Cloud Managed Services Provider, sustained by state-of-the-art platforms and infrastructure, partnerships with global industry leaders, hyperscale cloud service providers, and impressive multi-cloud consulting and operations.

The company's cloud computing services are the foundation of digital transformation in all industries. Etisalat has also been collaborating with Amazon Web Services (AWS) and Microsoft Azure to offer Etisalat's Cloud Express. The service enables secure, private connectivity between the customer's corporate network and their public clouds. Etisalat's focus on cloud services has led to the expansion of the company's data centers, with two new facilities opening in Dubai and Al Ain in 2020.

Another area that has witnessed growth is SD-WAN with an overwhelming response from many OEMs and service providers due to its superior features. The value proposition is headed by cost optimisation and efficient performance. Businesses are opting for a managed service provider who can analyse, design, migrate, implement, and monitor SD-WAN solution and provide network performance and application reports. SD-WAN and virtual network services will be the key building blocks for a WAN that can enable business outcomes and become a driver for digital transformation.

The new concept of Secure Access Service Edge (SASE) reduces complexity and improves performance by unifying network, security, and identity management under a single umbrella. In today's world, work is moving outside the office, and securing these remote workers has become a necessity that comes with its own set of complexities. SASE gives businesses the required convergence across multiple areas. SASE can secure cloud, branch network edges, remote users and data centre to deliver a secure SD-WAN fabric across disparate connections.

Enterprises need to review the strategic roadmap for the evolution of the WAN. Assessing the current status of the network, and where it wants to be in the future is critical. Finally, preparing a gradual migration path that leverages existing infrastructure with SD-WAN should be the next step. Due consideration has to be given on how enterprises can optimise the use of AI and automation to give their networks scalability, flexibility, manageability, cost-effectiveness, and



security that it requires. A strategic plan backed by intense research and careful understanding of the network architecture will help enterprises build an agile and future-proof network ready to put technology to the most effective use.

Mobily focuses on becoming a digital telco

Mobily announced a digital transformation partnership with global technology company SAP to energise its sales force automation in line with its overall strategy. Mobily's digital transformation accelerated growth in all the company's digital channels ranging from the portal and e-shop to the application. New registrations in the app doubled while online store visitors and eShop orders skyrocketed.

The company also expanded coverage on the 5G network reaching 50 cities, including most regions in the Kingdom. The company acquired 5G spectrum in 2.6 GHz and 3.7 GHz, increased 5G sites rollout by over 5 times in comparison to prior year and extended FTTH coverage to 26 cities. Mobily partnered with Ericsson to trial 5G on the 800 MHz and 1800 MHz bands using Ericsson Spectrum Sharing (ESS) technology that allows both 4G and 5G technologies to be deployed in the same band, enabling Mobily to manage network traffic more efficiently.

The company achieved SA 5G network capability for data services offering independent 5G technology with zero reliance on the 4G network. Mobily partnered with Open Broadband to

provide Mobily Fiber services. Through the agreement with Open Broadband, 3.5 million homes now have access to fixed broadband services through fiber optic technology.

With business continuity becoming a key component in the pandemic, the company became the first telecom operator in the Middle East and North America (MENA) region to receive ISO 22301:2019 certification, for the new international standard for Business Continuity Management Systems.

Mobily also made its first successful 5G voice call in the Middle East known as Voice over New Radio (VoNR), and was made using the SA 5G network.

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Looking ahead, Mobily will continue to implement its "GAIN" corporate strategy as it aligns with Saudi Vision 2030 and ICT Sector Strategy 2023. In 2020, the company succeeded in transforming from mobile centric telco to integrated telco and it aims to become a digital telco in 2021. Mobily will prioritise customer service excellence and to ensure that the most advanced communication technologies are available to its customers

Etisalat Misr focuses on digital enablement for SMBs

The company was the first to introduce B-Digital, a fully digital platform to empower SMBs. This first kind of a platform helps efficient management of operations by giving small businesses the flexibility of managing the services digitally enabling them to smoothly work from home.

Robotic process automations are currently being utilised to reduce the handling time of complex interactions and processes, creating a digital workforce.

Among its other achievements Etisalat Misr launched Etisalat TV, a partnership with E-Vision to launch this state-of-the-art app enabling viewers to enjoy both English and Arabic movies, series and Ramadan productions across smart devices anywhere and anytime.

On the network in terms of mobile internet speed, Ookla ranked Etisalat Misr as having the second fastest download/upload speeds while ranked first for latency.

Maroc Telecom brings digital solutions for students

Maroc Telecom launched the Maktabati service was launched as an online digital library for children and adolescents up to 15 years of age, which provides them with educational and cultural content. More than 10,000 educational books, novels and comics are available on the platform in French, Arabic and English.

As the company continually invests in technologies, it was well equipped to implement the above changes and to deal with the increase in demand and rise of new uses that resulted from the

lockdowns. This meant that the quality of Maroc Telecom's services was not hampered during the lockdowns.

In 2020, a new self-help service was launched enabling several services to be combined into a unified, user-friendly web page where customers can manage their mobile, land-line and Internet lines in a more autonomous manner and through a single account.

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Regarding the digitalisation of customer identification, new features have been deployed on the mobile identification app used by prepaid customers. These features offer full digital access by securing the authentication of customers SIM card, scanning and automatic recognition of their identity document using their

smartphone camera and capturing the electronic signature.

In terms of the network, Maroc Telecom's 4G mobile network coverage reached 99 percent of the Moroccan population in 2020.

PTCL focuses on innovation in cashless payments

In Pakistan, as an industry-first initiative, PTCL launched cash-on-delivery services, allowing customers to place orders for CharJi (wireless internet) online or via a dedicated helpline. This provides access to a complete end-to-end service, with ease of payment, biometric verification and a top-up facility, at their doorstep.

For an enhanced customer experience, PTCL also introduced the new AI-based analytical Broadband Answering Model and the Upgrade Propensity Model with the addition of interactive voice response (IVR), emails and one-way and two-way SMS messages.

With the extension of its partnership with the subscription video-on-demand service STARZPLAY by Cinepax, allowing payment integration, it became easier for customers to pay for their subscription as part of their monthly bills. Customers were also rewarded for making payments via UPaisa, an innovative branchless banking solution from Ufone.



Ufone puts efforts in digital initiatives for SMBs

Users are now able to access and manage their bundle plans themselves. They can view their usage, extract their monthly bills and make online payments as well as detailed data usage through Ufone's Web portal, 'BizEaze'. Ufone also collaborated with PTCL in 2020 to offer SME bundle plans for mobile connectivity, wireless broadband, and fixed connectivity 'Triple Play' bundles. The bundles incorporate a number of off-the-shelf solutions that cater to the most critical business requirements of SMEs, from productivity to collaboration, to marketing and sales and more. The solutions are immediately

Ufones's mobile financial services brand, 'UPaisa', was a major move to cashless payments a mobile app was introduced for iOS and Android users, allowing all essential transactions, including QRbased payments. With a simple and user-friendly interface, the UPaisa app allows its users to avail multiple financial services through one platform. The UPaisa app focuses on simplicity and enables users to navigate with ease.

available to customers and are easy to manage. Going forward, the company plans to improve its bundle offerings, with cloud and digital services, and business SMSs, among other things. There is huge potential for revenue growth in the SME sector, and the PTCL Group has the ability to meet consumers' needs in this market.

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Ufone maintained its ranking as one of the top three operators in Pakistan in 2020, in terms of customer satisfaction.

Afghanistan gives easy access to healthcare and education

Etisalat Afghanistan made it easier for citizens to access healthcare services during the pandemic. Access to medical facilities is limited in the country, which caused a lot of additional stress for members of the public who required the services of a medical practitioner. In the second quarter of 2020, the company addressed the problem by rolling out its Doctor in Your Phone service.

Additionally, the company supported the education sector during this time. Along with the country's other mobile network operators, Etisalat Afghanistan partnered

Etisalat Afghanistan partnered with the Ministry of Education to find a solution to possible interruptions in education. Given Afghanistan's device penetration and connectivity issues, it would not have been practical to use an existing online model, such as Google Classroom or Microsoft Teams. The company thus rolled out an affordable eLearning platform that makes the curriculum materials available in text form.

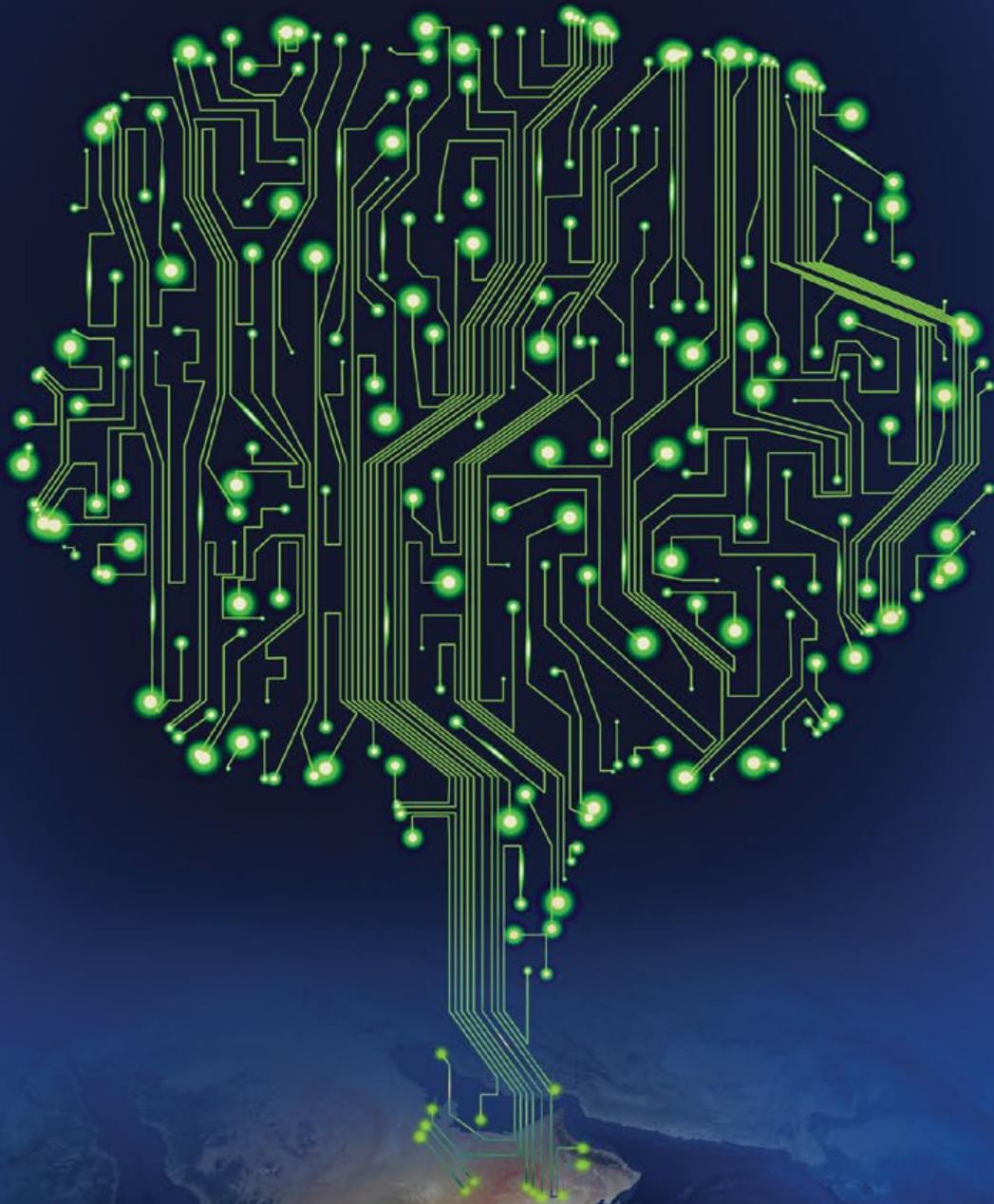
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In 2020, Etisalat expanded its 4G LTE services and accelerated the process of upgrading LTE in Kabul, by adding 35 sites during the year, taking the overall LTE penetration to more than 60% of sites in Kabul. Etisalat's 4G network was rolled out in the Kandahar Province in July 2020. 

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ARTICLE

5G for Businesses: Roadmap to Growth and Innovation

Businesses in Oman are expected to excel with 5G's prospects in improving security, customer experience and operational efficiency



Businesses see 5G not just as a technology but as a roadmap to growth. Faster speeds, lower latency, and improved device capacity will mobilize automated and intelligent technologies that will install better business outcomes that were not possible earlier.

Until recent history, 5G telecom technology remained just a part of digital transformation discussion, as the world awaited its formal arrival. The technology is now being successfully applied in several sectors, shattering general notions that 5G only meant high-speed internet connectivity. Yes, it is fast and dependable, with download and browsing speeds 10 to 20 times faster than 4G. However, there is more to it, especially in the business environment.

Industries across the spectrum that identify and apply the 5G technology are

Omantel began the 5G roll out in 2019 with fixed home broadband and introduced it for mobile phones in 2021, becoming Oman's first network operator. Oman, which has steered its course towards a digitally-driven economy, has already embraced 5G in all prominent sectors, enabled by Omantel, the Sultanate's leading integrated telecom service provider.

only using the 5G surface. Just like an iceberg, Underneath lies a whole world of endless possibilities and answers that will drive enterprises' operational and growth capacities.

Several research reports businesses time across industries to invest in 5G deployment is now and give direction for strategic planning to capitalize on this opportunity.

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Businesses in Oman are optimistic about 5G's prospects in improving security, customer experience, and operational efficiency. For example, blockchain is being piloted in the logistics sector as supply chains become complex. Oman's airports and seaports are at the forefront of embracing digital dependence through 5G, robotics, drone and other technologies, with technical support from Omantel, which plays an empowering and leading national role in this direction continued reinvention, rethinking and investment for every sector.

Businesses see 5G not just as a technology but as a roadmap to growth. Faster speeds, lower latency, and improved device capacity will mobilize automated and intelligent technologies that will install better business outcomes that were not possible earlier. The flexibility that 5G offers by the interlinking workforce, enterprise applications with cloud and mobiles, enables vertical-specific and highly responsive business organization.

Omantel has piloted two major 5G projects in Oman's transport, and logistics sector as the Sultanate is a vital maritime hub with highly modern ports and logistics infrastructure. Building upon its operational efficiency hence becomes increasingly crucial. These intelligent solutions will diversify and showcase the use of 5G infrastructure beyond network speed and efficiency and bring more accountability and streamlining to port operations.

In collaboration with Asyad Group, Omantel launched 5G Proof of Concept trials to provide video surveillance 'video as a service' and high-speed internet for vessels docking at the dry dock at the Special Economic Zone, Duqm. The Special Economic Zone of Duqm was chosen for the trials because of local and international companies presence which can benefit from such solutions. These trials marked the first use of the 5G technology in providing intelligent video



Omantel's second enterprise 5G client is Hutchison Ports Sohar. Under a tri-party Memorandum of Understanding (MoU) involving Huawei, three POCs aim to improve port efficiency, accuracy, time management, and security.



surveillance services and analytics in the Sultanate for enterprise customers.

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By leveraging the latest "AI technology"

riding on Omantel's 5G infrastructure, Hutchison Ports Sohar will stand to, among other advantages, enhance surveillance efficiency of the port's CCTV cameras and enable real-time action.

The Smart Surveillance with "AI" will allow real-time surveillance of the port's loading and unloading transport area, monitor the sea tide, enhance ship container video surveillance, make "AI-based" intelligent

video analysis, allow for "AI-enabled" unmanned detection and generate an automatic alarm in real-time. Other benefits include leveraging "AI for HSE" compliance and meeting future cost optimization goals. These technologies can be deployed in different port operation management scenarios, crane management, etc.

The two other POCs will enhance handheld devices (Push to talk) for critical communications and pagers over the 5G network for real-time location monitoring. Maintaining its position as the Sultanate's trusted ICT and digitization partner, Omantel will use these POCs as a springboard to further build and diversify its 5G capacities. The MoU will see Omantel build a dedicated 5G pipeline for its Enterprise customers, and with the guaranteed success of the POCs, create a lasting customer relationship based on its superior ICT infrastructure and efficient service delivery.

5G is one of the most enabling technologies of the 4th Industrial Revolution (4IR) that will lead to a breakthrough in many sectors, including education, health, transportation, and entertainment. Besides, it is a critical component in future smart city projects. While the education, healthcare, logistics, and oil & gas industries are just starting to embrace the possibilities. It is not tough to imagine the volume of comprehensive pan-sectoral (mining, banking, manufacturing, etc.) growth once 5G arrives, in the true sense of the word. 📍

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REGIONAL NEWS

World Digital Report 2020 Highlights Digital Lifestyle in UAE

The Telecommunications and Digital Government Regulatory Authority has appreciated the data insights by the World Digital Report 2021, published in partnership between "We Are Social" and "Hoot suite". The report sheds light on the digital lifestyle in the UAE, based on group data that monitored individuals and companies' behavior during the year 2020, which witnessed the coronavirus pandemic. The report revealed the total value of digital payment transactions in the UAE during 2020 reached US\$18.50 billion and indicated that the average time an individual spends on the Internet in the UAE is 7 hours and 24 minutes a day. Furthermore, the report states that an individual spends 40 hours per week browsing the Internet via a Smartphone, while 86 percent of the population plays electronic games via the Internet using available devices. The report has also indicated that the UAE residents spent 320 million hours on Smartphone applications during 2020 and the number of smart homes in the country has reached 190,000. Hamad Obaid Al Mansoori, Director-General of the Telecommunications and Digital Government Regulatory Authority, Head of the Digital Government of the UAE government, commented, "The emergency faced by the world last year, has made 2020, a digital year of excellence, as websites, social media pages, portals and smart sites thrived. They were the only means for the world's population to pursue their lives, work and education. The communications and information technology sector's overall infrastructure has been a decisive factor in enabling many sectors of society to maintain the continuity of various aspects of everyday life like work, education, and shopping. "Most importantly, the period has proved that digital transformation is an urgent necessity and not a technical luxury. Following our wise leadership's directives, we in the UAE have been pioneers in this process, as most government agencies developed their smart platforms and services. We were the first to adopt and develop digital solutions that enabled us to overcome the difficult situation and managed to achieve many successes," he added. According to the report, 99 percent of the Emirati community members are active on social media, and 97.6 percent of the population owned Smartphones. While 9.3 percent of the population owned smart devices in their homes, 5.2 percent use augmented virtual reality technologies. The report also stated that the high internet speeds in the UAE contributed to enhancing the digital presence of the various members of society. The average internet speed on smartphones reached 177.52 megabytes per second, an increase of 104.6 percent from the year 2019, while the fixed internet speed reached 131 megabytes per second, a rise of 44.6 percent from 2019. The report also mentioned that Google ranked first as a search engine in terms of the number of visitors with a total of 244 million visits, while YouTube ranked first at 87.4 percent as the most widely used social media platform. Telecommunications and Digital Government Regulatory Authority has launched several initiatives to support the vision of the country's leadership. These



are related to remote working, distance learning, e-commerce and providing government services remotely. In coordination with service providers, the authority provided a set of applications to support remote working from homes. The authority has worked with service providers to raise the fixed broadband speed to 100 megabytes per second to secure high internet speeds that ensure the smooth running of remote work operations. The Authority and service providers enhanced network capacity and re-engineered bandwidth to provide seamless remote work experiences.

Egypt The Most Advanced in Using Fixed Broadband Subscriptions in Africa

OMDIA, a leader in the field of data, research and studies supporting providers of services and technology solutions, recently released its latest report on broadband networks that is widely spread due to its economic and social benefits, as it is one of the most important and strategic pillars for the development of countries worldwide. The report revealed special expectations that help decision-makers to take appropriate steps and plans for the future of their business, especially as it encompassed a set of important recommendations and suggestions for developing broadband networks in Egypt. On top of them, is inevitability of working on reducing the digital gap and ensuring that broadband services reach all citizens, in addition to reviewing the increase in participation in mobile and fixed facilities to overcome financial obstacles. Moreover, the report underscored the fact that investment in broadband should be enlarged to be able to continue providing quality services, especially after the spread and outbreak of COVID-19. Eventually, the report emphasized that Egypt should continue to invest in developing digital skills to guarantee the provision of high-level services to customers. The report also indicated that the Egyptian government is working on developing the broadband infrastructure in Egypt in light of the country's vision in digital transformation, in cooperation with Telecom Egypt (TE), in which the Ministry of Communications and Information Technology has an 80% stake, to modernize the access network since

2014. According to a statement issued by Telecom Egypt, the company invested 12.7 billion Egyptian pounds (\$ 790.3 million) in 2019 as a new shift in fixed broadband offerings in line with the country's strategy to develop its network capabilities and improve the quality of internet services in Egypt. Moreover, the growth in broadband networks in Egypt in terms of infrastructure, digital initiatives and services is due to the efforts of the Ministry of Communications and Information Technology, the National Telecommunications Regulatory Authority and the operators, where Egypt witnessed a growth in fixed broadband services from 25% in 2017 to more than 35% in the first quarter of 2020, and there is still more growth potential for high-speed fixed broadband for the right technology at the right price in the market. Matthew Reed, an analyst in OMDIA said: "Broadband reports have become of great prominence, whether for companies working in the field of technology or smart governments, especially after the great expansion in the usage of the communication technology." He also expounded that this global pandemic led to an increase in the internet networks and social communication's usage, especially when it comes to the fields of education, public, health services, and others. Meaning, these services have started to become carried out remotely, which led to the existence of a changing lifestyle compared to what used to occur prior to the emergence of this lethal pandemic, the thing that enforced an acceleration of growth in subscription

to fixed broadband services in Egypt. He also added: "The spread of Covid -19 has led to an increase in subscriptions to XDSL services by 6.1% at a quarterly rate, or 16.1% annually, to reach 7.99 million subscribers, by the end of 2020, compared to 6.88 million in 2019. While mobile broadband subscriptions saw growth from 36.89 million in the second quarter of 2019 to 41.79 million with a growth of 2.7% on a quarterly basis and 13.3% annually. Reed also stated that the growth in fixed broadband subscription in Egypt is the highest of its kind in Africa. However, it is considered low compared to the Gulf countries, and it also highlights the need of the customers in Egypt to have reliable and high-speed connectivity." He carried on his words by explaining that the progress and enhancement of the broadband services is an important factor in providing a system for the growth of digital services, including online communication tools, e-commerce, financial services, and finally e-government, which forms the basis of the digital economy. He concluded his words by assuring that, information and communication technology will increasingly contribute to the development of the country's Gross Domestic Product (GDP), noting that OMDIA's broadband reports expect that although the market share of XDSL will decline over the next few years, XDSL will remain the largest fixed broadband technology in the region, capturing 39.7% of fixed broadband subscriptions in 2025.

Nepal Preparing to Begin 5G Testing in Four Cities

The Ministry of Communications and Information Technology (MOCIT) has announced that it will soon commence testing of 5G networks in four cities of the country, reports The Himalayan Times. Communications Minister Parbat Gurung revealed that necessary technical and infrastructure studies are being conducted prior to staging 5G trials in Kathmandu, Pokhara, Birgunj and Biratnagar,

during which consumers will be able to access the service free of charge. As previously reported by TeleGeography's CommsUpdate, the MOCIT instructed state-owned telecoms provider Nepal Telecom (NT) to begin 5G network testing during the current financial year ending mid-July. Meanwhile, a meeting of the National Radio Frequency Policy Determination Committee has given

approval for the tests to begin and will now decide which frequencies will be allocated to operators for 5G services. The National Telecommunications Authority (NTA) has proposed using low-band 700MHz, 900MHz, 2300MHz and 2600MHz spectrum, mid-band 3300MHz, 3400MHz, 3600MHz and 4100MHz frequencies and 26GHz high-band spectrum.

UAE Tops in Telecom Infrastructure in Region: Survey



The UAE's telecommunications infrastructure ranks first in the Gulf, Arab Region and Western Asia, and seventh globally in the Telecommunications Infrastructure Index, according to the UN E-Government Survey 2020. In the Smart Services Index, the UAE ranks first in the Gulf, the Arab Region and West Asia, and the eighth in the world, said a statement from the UAE Telecommunications and Digital Government Regulatory Authority (TDGRA). The authority said the year 2020 witnessed a noticeable increase in the demand for telecommunications and Internet services. This growth is also a reflection of the sector's readiness and the authority's resolve to move towards the future, by deploying all modern technologies in the best way possible to realize greater achievements at local, regional and even global levels. The UN survey confirmed the UAE's determination to provide services that meet the people's needs and aspirations by employing emerging and advanced technologies and implementing digital transformation programs like Smart Dubai, Blockchain and Artificial Intelligence Strategy, TRA said. During 2020, the UAE maintained its first place globally in mobile phone subscriptions index and advanced from second place to first in the world in mobile broadband Internet subscriptions index. The UAE also ranked first in the Arab world and at the regional level in the Information & Communication Technologies Index, the Internet Access Index, and the Internet Use Index. In terms of the overall percentage of Internet users, the UAE made progress by reaching the fifth position globally and a qualitative leap from the 68th place in the world to the 29th position in the fixed broadband subscriptions index. The UAE ranked first in the Arab Region in the index of local Internet domain names, which uses the symbol (.ae). These indicators measure the percentage of domain registration in other countries and indicate movement

volume and technological interaction, it said. When it came to the launch and use of 5G - the fifth-generation network, the UAE ranked first in the Arab Region and fourth globally, according to the Global Connectivity Index issued by Carphone Warehouse, specialized in technology benchmarking. An added achievement, the UAE came first in the Middle East for transformation to Internet Protocol version 6 (IPv6), according to statistics issued by Ripe NCC, Akamai Technologies, and Google. The transition to IPv6 helped Internet service providers deliver better services and significantly impacted implementing 5G technologies for mobile phone networks and digital transformation. The IPv6 was critical due to the shortage of Internet protocols and the inability of IPv4 to meet the growing demand in light of the internet's rapid growth. In the ODIN report issued by the Open Data Watch, which included 187 countries, the UAE ranked 16th globally, leaping 51 places at once, compared to 2018. In this indicator, the UAE outperformed countries such as the USA, Korea, Switzerland, France, Spain, Japan, and the United Kingdom. According to the report, two main factors - openness and comprehensive coverage, classified the countries for open data sites. Hamad Obaid Al Mansoori, Director General of the Telecommunications and Digital Government Regulatory Authority, said: "The year 2020 was exceptional at all levels and full of unexpected development and never-before challenges. There was an increased need for internet services from lockdown in most countries and the almost total suspension of transport movement to reliance on the internet to accomplish business, education, communication, and government services. This increased demand added pressure on networks, which required the most modern infrastructure and technologies to deal with this sudden development. "The UAE affirmed its leadership in all sectors, especially in communication technology as the Telecommunications and Digital Government Regulatory Authority confirmed its ability to achieve distinguished results. Indeed, it is a proud moment of strategic thinking and continuous development under the guidance of our wise leadership." He added: "We were able to meet the nation's growing needs during the last year and exceed expectations with the readiness of the Telecommunications and Digital Government Regulatory Authority in its pursuit of excellence, which helped to achieve impressive results at local, regional and global levels. We consider these achievements a catalyst for achieving more positive results and will help us continue efforts to reaffirm the United Arab Emirates position in the world". "The United Arab Emirates is one of the leading countries in the region in the field of digital transformation. It is supported by qualified national human resources who are open to international best practices. The UAE's teams have always been keen to develop their skills and enhance their online presence; they develop their strategies to keep pace with the developments and prepare for the future. It is for these reasons, that the UAE achieves distinguished results every year," said Richard Kerby, President, Richard Kerby LLC and an expert advisor of international repute on digital transformation of governments.

Tax Burden for Pakistan's Telecoms Sector to be Reduced

Pakistan's media has recently reported on government plans for significant tax cuts for telecommunications companies and services. With a budget on the way in which these measures will be formalized, this will be welcome news to the IT industry, which these tax breaks are meant to boost. The federal cabinet has apparently approved the grant of industry status to the telecom sector and a gradual reduction in heavy taxes on both the industry and on mobile phone users. Tax on mobile phone users is to be slashed, as is federal excise duty on telecom services. The fee of Rs250 (about \$1.59) on the issuance of a new SIM is to

be abolished altogether. There will be a reduction in tax on telecom services for all telecom companies with a Pakistan Telecommunication Authority (PTA) license. In addition, customs duty and regulatory duty on the import of telecom equipment, as well as on raw material for the optic fiber cable manufacturing industry, will all fall. Highlighting these plans, federal minister for IT and Telecommunication Syed Aminul Haq also mentioned the ministry's other achievements like its Right of Way policy and the Universal Service Fund (USF) that he noted had played a major role in

ensuring the launch of 32 different projects worth about Rs22 billion (about \$140.1 million) during the first 31 months of the current government. These and other achievements were emphasized by the minister at a recent press conference, but it's likely that the less onerous tax structure will be the initiative most enthusiastically welcomed by the communications sector – and many end users. After all, as the GSMA points out, sector-specific taxes, fees and other levies have a significant impact on affordability.

Telecom Companies to Provide Free Internet in Jordan

The Ministry of Higher Education on Saturday expressed appreciation for the Kingdom's three telecom companies, Zain, Orange and Umniah, for providing university students with free Internet bundles, the Jordan News Agency,

Petra reported. According to a ministry statement, Higher Education Minister Mohammad Abu Qdais, highlighted the importance of the three companies' efforts towards supporting the government's measures in response to the pandemic,

mainly easing university students' access to universities' educational platforms. The three companies, Zain, Orange and Umniah, announced that they will continue providing free Internet bundles for university students until next June.

Zain Launches 4G in South Sudan

The South Sudanese unit of Zain Group has launched a commercial 4G network in the capital Juba. 'In collaboration with the National Communication Authority (NCA), Zain South Sudan has launched

its 4G internet service in Juba on Friday 5 March 2021,' the Ministry of ICT and Postal Services announced on its social media page. Kuwaiti-owned Zain is South Sudan's second largest mobile operator behind its

only competitor MTN South Sudan, which is based in South Africa. TeleGeography's GlobalComms Database states that Zain had 1.05 million customers at the end of 2020, compared to MTN's 1.70 million.



Ministry Adds New E-Services To “Invest Easy” Portal

A number of improvements and new e-services have been added to the Invest Easy portal, according to the Ministry of Commerce, Industry and Investment Promotion (MoCIIP). The new services aim to facilitate the process of amending trade names by the investor himself without a visit to the premises of MoCIIP, and any suspension on the commercial registry could be lifted in order to amend the concerned trade name. The first article of the Ministerial Decision No (37/2021) stipulates the cancellation of Clause No. (8) of Article (10) in the regulation for organizing the registration of trade names “if it carries a meaning synonymous with the business name of the establishment or combines or singles out the name of the registered establishment.” The third article of the decision stipulates that the decision shall be enforced from the day following the date of its publication in the Official Gazette. Commenting on these improvements, Mubarak bin Mohammad Al-Dohani, Director-General of Commerce and Head of the Digital Transformation Team at MoCIIP, said that the ministry continues to facilitate the process of starting new businesses by reducing procedures in all transactions and cutting down the time to complete investor transactions to commence their projects, as well as finding solutions to tackle the difficulties of investors. Accordingly, MoCIIP has started adding new amendments to a number of services provided by the portal of Invest Easy, Al-Dohani added. He pointed out that MoCIIP has launched a service for registering trademarks electronically through self-service or via Sanad offices. The registration of this service is also being provided through “approved legal offices” via Invest Easy portal.



These offices will be able to register trademarks through the Invest Easy portal not requiring the attendance of the investor to the ministry's premises or its affiliated directorates and departments across the Sultanate. Mubarak Al-Dohani emphasized that among the facilities provided by MoCIIP, which aims at the continuation of work at all times in order to complete the investor transactions electronically, quickly, easily and conveniently, the ministry has activated the electronic authentication feature via the phone chip for its employees associated with the Invest Easy portal. This accelerates the pace of completion of investor transactions electronically through the online portal, where the concerned employee can enter the portal through the phone or smart tablets and complete a number of transactions after official working hours or during holidays from anywhere efficiently and effectively.

Pakistan Eyes Launch Of 5G Services by December 2022

Federal Minister for Information Technology Syed Aminul Haque said that Pakistan eyes launch of 5G network services in the country by December 2022, ARY NEWS reported. The federal minister said this while meeting a high-level delegation of the Huawei company, which

was led by its Middle East Regional Head Charles Yang. The delegation lauded the services of Aminul Haque in speeding up the digitalization process in the country. Haque said that they were working to ensure the provision of mobile and internet facilities in all parts of the country. “We

have set the target of December 2022 for launching the 5G services in the country,” he said. Charles Yang during the meeting said that Huawei's complete focus was on the promotion and usage of 5G services in the entire region. It is pertinent to mention here that the First-ever fastest 5G video call experiment has been carried out successfully in Pakistan in November 2020. Federal Minister of IT and Telecommunication Syed Aminul Haque using high-speed internet made a 5G video call to Beijing and enjoyed the best quality of video and audio. The Inauguration ceremony of the experimental 5G video call was held here at Zong Headquarter Islamabad. While speaking at the inauguration ceremony, the federal minister said that he felt extremely proud to witness the launch of 5G experimental service which in the future would completely change the technology landscape in Pakistan.



Saudi Arabia Aims to Become a Top 20 Digital Powerhouse By 2030

Bassam Al-Bassam, deputy Minister for telecom and digital infrastructure at Saudi Ministry of Communications and Information Technology (MCIT), reiterated Saudi Arabia's objective to become a top 20 digital powerhouse by 2030. The Kingdom seeks to achieve its objective by working with industry players to develop and adopt more 5G and IoT use cases in new verticals in the Kingdom such as the education, health, and oil and gas sectors, he said. The first partnership of developing dedicated networks was signed with Aramco, STC and Huawei last month with a plan to extend this further in the near future. Al-Bassam made the remarks as he delivered the opening note of the GTI Summit 2021, part of Mobile World Congress Shanghai 2021, early this week. Al-Bassam highlighted how countries that have better-developed digital infrastructure have been better able to respond to the COVID-19 pandemic and build a path toward a more resilient future. In particular, the deputy minister noted how growing Saudi Arabia's digital economy and becoming a leading digital society is at the heart of Vision 2030. He stressed that this digital transformation was wisely addressed early on as the core enabler for realizing Vision 2030, citing how Saudi Arabia has invested more than \$15 billion in partnership with

the private sector in digital infrastructure initiatives, which has led to the delivery of new capabilities and the country's exceptional response to unforeseen network demand. Al-Bassam further noted that in recent years, Saudi Arabia has become among the top five countries globally in terms of 5G performance, a leading G20 nation regarding spectrum allocation, while recent investments have led to 45 percent country-wide coverage of 5G. The GTI Summit 2021, themed "5G in the Moment" gathered global information and communications technology (ICT) experts to discuss opportunities for

mobile operators, vendors, and vertical industry partners to leverage, innovate, and overcome the challenges of the 5G commercialization. Participating in the event alongside GSMA Director General Mats Granryd, GTI Chairman Craig Ehrlich, Huawei Chairman of the Board Liang Hua, and other senior-level industry leaders, Al-Bassam discussed the impact of COVID-19 in the development of digital infrastructure, and the necessity for increasing investment to leverage ICT as a means to rebuild economies with the potential to surpass pre-pandemic productivity levels.



Free Internet Service Under RTDF Reaches 31 Districts Across Nepal

Under the Rural Telecommunication Development Fund (RTDF), Nepal Telecommunication Authority (NTA) has completed installation of free internet service in 31 districts so far. Internet has been installed at around 1,000 public places. Issuing a notice, the authority has published the work progress so far. According to the authority, Vianet Communication and WorldLink have installed broadband network in 15 districts. The 15 districts are Taplejung, Sankhuwasabha, Solukhumbu, Achham, Bajhang, Bajura, Baitadi, Dadhuldura, Darchula, Doti, Jajarkot, Kalikot, and Rolpa, including Eastern Rukum and Western

Rukum. Similarly, WorldLink and TechMinds Network have installed broadband in Dolpa, Jumla, Humla, Mugu, Dailekh, Surkhet, Salyan, Manang, Mustang, Baglung, Myagdi, Panchthar, Bhojpur, Dhankuta, Tehrathum and Khotang. Under this facility, municipalities, rural municipalities, ward offices, community schools and community health institutions of the select districts will receive free internet services for next two years. Thereafter, the service-seekers will have to pay certain amount set by the NTA. NTA's RTDF has been funding the internet expansion project in all rural areas of the country. The project is being implemented in 18 packages. NTA has also

requested to be informed within 15 days if any municipality, village municipality, ward office, community secondary school and community health institution/ center/ hospital in the above districts have been exempted from internet connection. "The service recipients whose two-year period is about to expire are requested to contact concerned service provider and continue the service at the rate approved by this authority," reads the notice. Aiming at supporting the government's Digital Nepal campaign, NTA started this project in 2019 in association with the internet service providers.

Pakistan Likely to Get Its First Ever International Payment Gateway

The government of Pakistan is keen on advancing the nation's digital infrastructure and is therefore planning to introduce the country's first ever IPG to provide ease of doing business to the digital users. The Ministry of Information Technology and Telecommunication and the National IT Board (NITB) is going to launch the country's first IPG. The Ministry said that it was aiming for User's Digital payments with ease, convenience and enhanced safety. To make this possible, a

user sensitive approach has been adopted and the ministry has requested the users to provide a detailed feedback regarding the features for enhanced usability of IPG. This system aims to facilitate the acceptance of electronic payment for online transactions. Freelancers, e-commerce retailers and small traders need to define their needs for international payments to benefit from IPG. The Ministry has also asked the concerned people to disclose the problems that they have been facing in receiving international

payments. It has also requested for details of security-related aspects in obtaining international payments and fraud-related issues when dealing with international and cross-border payments. The Ministry has invited suggestions from the users as to what they would like for the government to do to meet their particular needs when making online transactions. The IPG targets to make the digital payment system as convenient, fast and secure as it possibly can for the digital users.



Italy's Leonardo To Provide Cyber Test and Training Systems to Qatar

Italy's Leonardo has signed a contract with Qatar Foundation for Education, Science and Community Development to provide cyber-security services, the aerospace and defence group said. Under the deal, Leonardo will supply Qatar Computing Research Institute (QCRI) its platform to facilitate training of cyber security operators and allow the institute to assess the resilience of digital infrastructure against cyber-attacks.

Oman Issues E-Payment Framework for Small Businesses

Oman has announced a framework allowing small businesses to use electronic payment services, the Sultanate's state news agency has reported. The move by the Central Bank of Oman (CBO) is part of a larger campaign to promote cashless

transactions across the country, as well as a national e-commerce strategy already implemented in the public and private sectors. The framework applies to micro-businesses with less than ten employees, such as gas delivery services

or small restaurants. The new government directive will allow these entities to acquire e-payment facilities – payment cards, mobile transactions, electronic wallet applications – from licensed banks and payment service providers.

Pakistan, Germany Agree to Enhance Cooperation in IT Sector

Pakistan and Germany have agreed to enhance cooperation in the information technology (IT) and telecommunication sector. The understanding was reached during a meeting between Federal IT and Telecommunication Minister Syed Aminul Haque and German Ambassador to Pakistan Bernhard Schlagheck. Welcoming the ambassador at his office, Aminul Haque said Pakistan greatly values its relations with Germany and wants to enhance cooperation between the two

countries in the field of IT and telecom. He said that steps were underway to fulfill the vision of Digital Pakistan. He said that his ministry was taking concrete measures to develop the country's IT and telecom sector, which was why information and communication technology (ICT) export remittances surged 40pc to \$958 million in July–December FY21 as compared to last year. He urged the German IT and telecom companies to invest in Pakistan as the environment for investment in the latter

was conducive. The German ambassador appreciated the IT minister's role in the development of Pakistan's IT and telecom sector. IT & Telecommunication Secretary Shoaib Ahmad Siddiqui was also present in the meeting. Separately, Syed Aminul Haque held a virtual meeting with International Telecommunication Union (ITU)-BDT Director Doreen Bogdan-Martin to discuss issues pertaining to connectivity and telecommunication services. 📍



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ARTICLE

Innovation through 5G Industrial Internet to Create New Value Across Industries



The impact of 5G and IoT is being compared to that of the printing press or electricity in that it has the potential to spark profound innovation and bring new momentum to the global economy. This makes collaboration by industry stakeholders more important than ever.

The introduction of 3G and 4G wireless networks over the past two decades has given consumers fast access to the internet and changed people's lives. With the shift to 5G connectivity offering greater bandwidth and supporting large-scale multiple-input multiple-output (MIMO) antenna arrays, the industrial internet is set for a major transformation.

We are already seeing 5G applications expand from consumer smartphones to the transportation, agriculture, manufacturing, healthcare and energy sectors, among others. Indeed, the impact of 5G and IoT is being compared to that of the printing press or electricity in that it has the potential to spark profound innovation and bring new momentum to the global economy. This makes collaboration by industry stakeholders more important than ever.

High-precision positioning

In their latest collaboration, China Mobile, ZTE Corp. and Qualcomm are conducting phased 5G positioning tests based on the current 3GPP 5G new radio (NR) Release 16 specifications and the upcoming Release 17, which is scheduled for completion in Q3 2022 with coverage and positioning enhancements.

The positioning accuracy of 5G is continuously improving as standards and technologies evolve. It can also complement global navigation satellite systems (GNSS) to meet growing demand for applications that rely on precise outdoor and indoor navigation, such as augmented reality as well as Internet of Things (IoT) applications like connected vehicles and smart manufacturing.

China Mobile, ZTE and Qualcomm are long-term partners. In 2017, they jointly conducted the world's first end-to-end 5G interoperability data testing. This achieved multi-gigabit per second peak data rates at significantly lower air interface latency than 4G mobile networks.

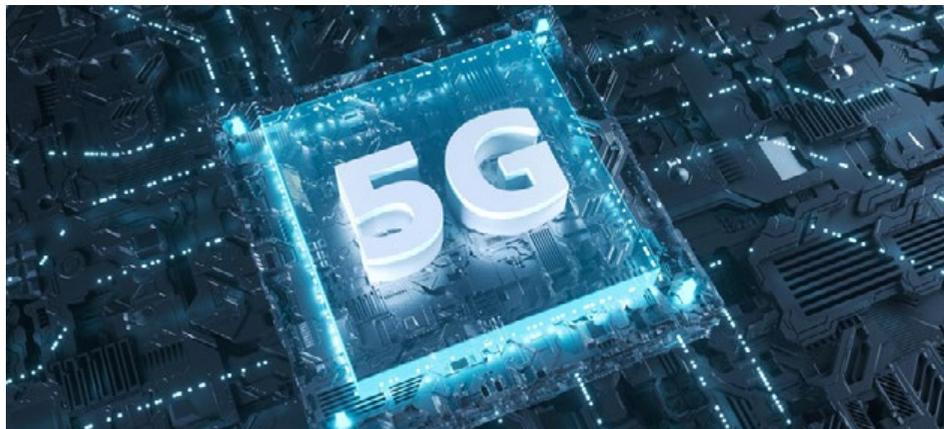
5G development on three fronts

China Mobile has consistently been among those at the forefront of 5G development, which is enabling rapid development of the Industrial Internet. China Mobile has a set of applications tailored for 100 business scenarios across 15 vertical industries, and is focusing its efforts in three key areas to enable industry players to deliver on the promise of 5G technology.

Investing in infrastructure

5G networks that offer service providers wide coverage, outstanding performance and low costs are essential. Globally, the industry continues to accelerate the construction of 5G and gigabit optical networks and to apply extremely high frequency (EHF) and standalone architecture (SA) technology.

In China, 390,000 5G base stations had been deployed nationwide by China Mobile by the end of 2020, covering all prefecture-level cities and serving 165 million users. It will increase its investment in 2021 to expand coverage to urban areas and other key locations.





China Mobile and other industry players are working together on an initiative based on the ORAN (Open RAN) concept that is expected to increase efficiencies, bring substantial cost savings for all operators, and ultimately bring numerous benefits to customers.

All 5G roaming with China Mobile is supported by China Mobile International (CMI) IPX, with its existing 74 IPX-ready PoPs around the world. CMI has optimized IoT roaming connectivity, supporting 5G roaming since last year and planning for NB-IoT roaming soon. This solution is not only one of the first to market, but also easy to implement and backed by 24x7 service support. Until February 2021, China Mobile's 5G roaming services (covering 36 countries

All 5G roaming with China Mobile is supported by China Mobile International (CMI) IPX, with its existing 74 IPX-ready PoPs around the world. CMI has optimized IoT roaming connectivity, supporting 5G roaming since last year and planning for NB-IoT roaming soon.

and regions) have been available for 51 operators using Non-Stand Alone (NSA) architecture.

- **Leveraging new technologies**

China Mobile has laid a solid foundation for wider industrial applications of 5G with its investment in building the infrastructure. The application and integration of new technologies alongside 5G—with its high-speed, low-latency and high-reliability features—will help facilitate new innovations and applications and accelerate digital transformation across industries. These technologies include artificial intelligence, IoT, cloud computing, big data, edge computing and blockchain. Together, they are enabling an Everything-as-a-Service (XaaS) future that will have the potential to support high-quality economic and social development.

One example is 5G-powered connected drones for industrial applications. Drones equipped with high-resolution cameras and infrared detection technology can be used for emergency communications, traffic management, agriculture and environmental monitoring, power line inspection, surveying and inspections at construction sites. Integrating the use of drones in smart cities is top of mind for smart city planners looking to

5G is already powering applications leveraging the potential of the Industrial Internet. With solutions tailored for different sectors, China Mobile offers IoT cards, terminal products and integrated solutions for smart homes, cities and businesses.

increase connectivity.

- **Building a new ecosystem**

In July 2020, more than 20 companies, including China Mobile, Fibercom, TVU and other operators, equipment manufacturers and industry solution providers, jointly launched the 5G Internet of Things Innovation Program to spearhead the growth of the digital economy around the world. China Mobile has also continued to expand its global Hand-in-Hand (hi-H) Program. Launched in 2015 to enhance collaboration among partners from the ICT industry, and accelerate the shift to 5G, hi-H program has 27 members that serve over 3 billion mobile subscribers worldwide.

5G is already powering applications leveraging the potential of the Industrial Internet. With solutions tailored for different sectors, China Mobile offers IoT cards, terminal products and integrated solutions for smart homes, cities and businesses. Since the onset of the pandemic, China Mobile has developed anti-epidemic solutions that help companies safely resume operations.

China Mobile firmly believes that stakeholders throughout the telecommunications value chain will need to work together to ensure that 5G benefits all industries and promotes the intelligent interconnection of sectors. This is important because the sustainable future development of 5G technology carries the promise of a digital economy that improves people's lives. 📍

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ARTICLE

Unlocking the Power of Industry 4.0 with 5G

Why is 5G such a good fit for manufacturing?

Whereas 4G was all about enhanced mobile broadband and spawned a host of new applications like Uber and Spotify, 5G is all about mission critical applications like remote surgery, driverless cars and massive machine type communications. Manufacturing sites typically use fixed local area networks (LAN) to connect things, as wireless technologies can struggle in environments with a lot of metal. However, this poses a few problems as fixed cables can't be moved easily. Often production runs need to be reconfigured at short notice if there are supply issues or a surge in demand, and you can't use LANs for retrofitting sensors as they are a trip hazard in a busy factory. So, a good, reliable, low-latency cellular technology using indoor cells is very attractive; and this is where 5G comes in.

As coronavirus introduces new factors into the business equation and accelerates others, manufacturing is looking to 5G to support its journey to Industry 4.0.

Using 5G to enhance manufacturing operations

Industry 4.0 is all about driving efficiency, something called the OEE score, which stands for Overall Equipment Effectiveness. This is calculated by multiplying three things: what percentage of my machines are available at any given time, of these what percentage are performing as they should be and of these what percentage are producing good quality products. 5G can be used to reliably and securely connect new sensors to measure things like vibration, pressure and temperature to help predict equipment failures to improve the OEE score. 5G can also be used to monitor Computer Numerical Control (CNC) machines. CNC machines often create intricate designs in metal and are controlled by a computer. If there is any suggestion that there is a problem, they need to be shut down very quickly (within a tenth of a second) otherwise the damage can be more than £50,000. Traditionally PCs have been strapped to each machine tool to manage these shutdowns, but with the low latency and high availability of 5G, we now have a viable more cost-effective alternative.



Andy Rowland

Head of Digital Manufacturing
BT



New developments in worker safety

5G with its low latency and excellent availability is a great enabler for what we call Mixed Reality (MR). As experts retire, or become less able to travel, it's often necessary for less experienced staff to resolve problems themselves. Increasingly Augmented Reality (AR) headsets are being used to allow experts to remotely instruct staff on site. Whilst this can be done over 4G, the number of dropouts and high latency can make the experience frustrating and potentially unsafe for the person being supervised. Also, increasingly, workers and robots are co-existing in close proximity; for instance, a robot might lift a heavy part over a worker's head while they fit it into place. As the robot assistant moves around, having a reliable low latency technology like 5G is key to avoiding any accidents.

5G can also be used to support Virtual Reality (VR) training, which has been found to be far more effective in terms of health and safety than less immersive technologies. As VR is so realistic, worse cases scenarios can be played out before the trainee's eyes, leaving far more of a

In the next few years, we expect to see 5G being widely deployed in manufacturing, eclipsing private LTE due to its low latency, high availability and higher bandwidth attributes. Several new developments will further facilitate this. The use of mm wave spectrum will support up to 10Gbps connectivity over short distances, whilst network slicing will enable different quality of service levels to be offered over public networks to complement the existing private networks.



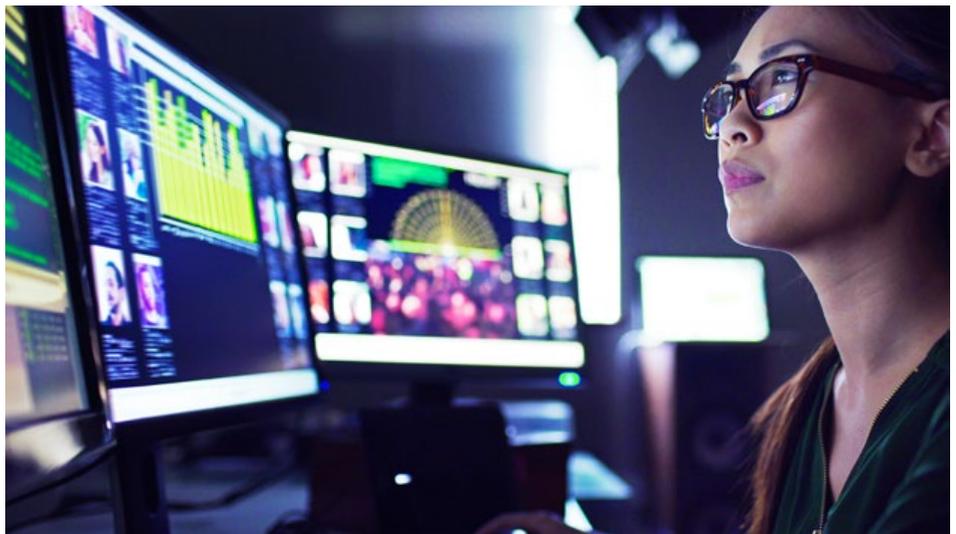
lasting impression than classroom-based warnings.

How has coronavirus changed things?

Coronavirus has accelerated the digitisation of manufacturing, and interest in using 5G. Traditionally, people have been flown in to fix equipment, or to even carry out routine activities. For example, one food producer would fly in people from another country to clean all the pipes in its ice cream production lines following a shut down. This is currently not possible, and, in future, the way things have been done in the past is likely to change. Consequently, we are seeing an increased focus on factories being more self-sufficient and relying on collaboration tools designed for 'blue collar' workers. 5G will be a key enabler, driving efficiencies and supporting employees as they collaborate.

Looking to the future

In the next few years, we expect to see 5G being widely deployed in manufacturing, eclipsing private LTE due to its low latency, high availability and higher bandwidth attributes. Several new developments will further facilitate this. The use of mm wave spectrum will support up to 10Gbps connectivity over short distances, whilst network slicing will enable different quality of service levels to be offered over public networks to complement the existing private networks. OpenRAN (Radio Access Networks) will encourage a wide range of innovative companies to join the big three in offering more choice, more virtualisation and greater flexibility for customers. Finally, we will start to see greater convergence between 5G, WIFI 6 and, eventually, fixed networks to provide a seamless experience for users. 📡



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SATELLITE NEWS

Egypt to Launch a Satellite at End of 2021

A series of Egyptian satellites dubbed "Next" will be launched starting from December, executive director of the Egyptian Space Agency said Saturday. According to Al-Qoussi, "Cairo, in cooperation with German and Chinese partners, will launch new satellites, the first of which is a satellite for remote sensing and scientific research, weighing 65 kilograms. It will be launched in December this year." In parallel with Next, a group of nanosatellites will be launched in March 2022 to monitor climate changes, especially the levels of carbon dioxide and gases in the atmosphere, Quosi said. In September 2022, EgyptSat 2, weighing 330 kilograms, will be launched to be used in sensor application with a photographic accuracy of two meters. EgyptSat 2 has been designed in cooperation with China

per an agreement that includes a grant worth \$45 million, he added. He also said that Egypt had an ambitious plan to build space systems and infrastructure, as well as strengthen international space relations, explore space and establish Egyptian space law, according to the Al-Youm Al-Sabea newspaper. Al-Qoussi said that his country's ambitions in space science were greater than the five satellites that it currently had in orbit. A satellite assembly and testing center will be inaugurated in September 2022 in the International Space City to be the first center of its kind in the Arab world. It is planned to also produce pure Egyptian satellites for purposes related to development in Egypt and Africa, as well as scientific research. Quosi also said now that Egypt will host the African

Space Agency after the African Union's approval. There is a plan in cooperation with Kenya, Uganda, Ghana, Sudan, and Nigeria to launch a joint satellite dubbed the African development Satellite. The headquarters of the African Space Agency is now being established in the International Space City at a budget of USD 10 million. The Egyptian Space Agency is also working on the development of the MisrSat-2 satellite. The satellite will be 100% manufactured in Egypt, meaning that all the components of the satellite will be totally local and will demonstrate Egypt's capacity for space exploration. The Chinese government provided some form of grant as well as assisting with the design of the satellite. The MisrSat-2 is scheduled for completion in August 2022.

KSS 3rd Satellite Cluster Launch on Space-X Targeted December 2021

Kleos Space, a space-powered Radio Frequency Reconnaissance data-as-a-service (DaaS) company, has signed a new contract with rideshare provider Spaceflight to launch its third satellite cluster (KSF2) in December 2021 aboard a SpaceX Falcon 9 rocket, further growing the constellation. The four KSF2 Polar Patrol Mission satellites will launch into a 500-600km Sun Synchronous orbit, complementing Kleos's first and second satellite clusters and increasing cover over key maritime areas of interest like double the coverage over both poles. Kleos's second satellite cluster – the Polar Vigilance Mission – has recently completed a key development milestone and remains on track for a mid-2021 launch aboard a SpaceX Falcon 9. Commissioning and data collection from Kleos's initial Scouting Mission satellites, which launched from India into a 37-degree inclination in November 2020, is nearing completion. Kleos Space CEO Andy Bowyer said: "The launch of our third satellite cluster will further improve the frequency and value of Kleos's radio

frequency intelligence data, generating higher-value datasets and further tiered subscription license options. While Kleos is targeting a constellation of up to 20 satellite clusters, each cluster will increase the volume of data that can be sold and provide further insights as to activity in key areas of interest for our customers. While we progress our constellation roll out with the launch of our second and third

satellite clusters, we continue to focus on securing and building a new subscriber base. Data delivery from the Scouting Mission satellites allows us to commence revenue generation from early adopter and test contracts." Final costs incurred are anticipated to be comparable with publicly available space rideshare costs and within the envelope of the cost of a launch advised within the prospectus.



Starlink Expected in Lebanon by 2022

The awaited satellite internet constellation, Starlink, is expected to have active coverage in Lebanon next year. According to its official website, Starlink is targeting coverage in Lebanon in 2022. Pre-orders are available with a fully-refundable deposit of \$99. It's worth noting that the deposit payment does not guarantee that the Starlink Kit and service will be available. Instead, it serves to establish priority for the payer in his or her region for purchasing the Starlink Kit when available in the future. Starlink has already launched its beta service and made it available to a limited number of users in parts of the United States and Canada. SpaceX, the company that's constructing the constellation, has launched more than 1,000 satellites into space in over 2 dozen missions. The company, owned by American business magnate Elon Musk, aims to deploy thousands more. The full Starlink Kit, which includes a small mountable dish antenna, a Wi-Fi router, and power supply, costs \$499. The service also requires a monthly \$99 subscription. Although Starlink is more expensive than most traditional internet services today, its ease of installation,

high accessibility for remote areas, low latency, and impressive speeds (300 Mbps download speed), can make the high fees more bearable for some.



Tuvalu Boosts Satellite Capacity

Tuvalu Telecommunications Corporation (TTC) is expanding its national and international telecoms capacity under a contract with satellite services provider ABS. Satellite technology is utilized in Tuvalu not only for international communications but also for inter-island

connectivity. Under a four-year upgrade plan, TTC is extending 4G mobile coverage to outer islands using ABS satellite links. Tomalu Talu, Acting COO of TTC, commented: 'Through the expansion plans with ABS, we are able to continue the support of critical communications

on Tuvalu, ensuring that the necessary infrastructure is constantly available to support the needs of our population. An increase in satellite bandwidth is considered important at this point in time because it will help meet the rapid demand growth of ICT in the present Tuvalu market.'

Globe Looking at Satellite Broadband for Remote Areas



Telco giant Globe Telecom is looking at satellite internet services to cover remote areas in the country. Globe said in a statement it was working with US-based Curvalux, the company behind the CurvaNet satellite constellation project. CurvaNet will have 240 low earth orbit satellites providing high-speed and affordable broadband around the world.

"The CurvaNet satellite constellation will be able to deliver affordable broadband internet to even the most remote areas beyond the reach of any telecom towers, infrastructure or electricity with the use of its proprietary low-cost, solar powered customer terminal," Globe said. Globe said it was also tapping Curvalux's broadband wireless technology for its ongoing network upgrade. It said the American company's patented "phased array multibeam broadband system" provided better coverage, was more cost efficient and can run on solar panels and batteries. "This dramatically reduces operational costs and enables deployment of the system to remote areas that were previously unserved due to the lack of a

reliable power source," Globe said. Globe and Curvalux have been working on this end-to-end solution for the past year and a half. "This technology enriches Globe's internet solutions portfolio, allowing us to cover as many households as possible, and helps provide low cost internet in hard-to-reach areas which are currently deprived of connectivity," Darius Delgado, Globe's head of broadband business, said in a statement. "Our partnership with Curvalux will allow faster deployment of high-speed broadband to our customers ranging from 50 to 120 Mbps [megabits per second] average download speeds," he added. Globe will initially deploy Curvalux's solutions in 39 areas in the country and up to 315 more areas within the year.

Indonesian Satellite Construction to Start in September of This Year

PT Pasifik Satelit Nusantara (PSN) has initiated their Multifunction Satellite (SMF) project called Satellite of Republic of Indonesia (SATRIA). Through its subsidiary, PT Satelit Nusantara Tiga (SNT), and the PSN Consortium consisting of fully local entities, PSN is working together with France-based aerospace manufacturer Thales Alenia Space (TAS) to begin the satellite construction program in September of 2020. The start of SATRIA construction was marked by the signing of the SATRIA Preparatory Work Agreement (PWA) by PSN President Director and SNT President Director, Adi Rahman Adiwoso, in Jakarta together with TAS VP Telecom Business Unit, Pascal Homsy, in France on Thursday, September 3, 2020. The Minister of Communication and Information, Johnny G. Plate, said, "I congratulate the PSN Consortium for completing the PWA signing of the SATRIA project between SNT as part of the PSN Consortium and Thales Alenia Space. The pandemic has had a very significant impact on the aerospace industry, including satellites, such as adverse effects on project completion, disruptions to supply chains, and a slowdown in the operation of manufacturing facilities. However, for

Indonesia and its partners in satellite industry, the opposite is true. The PWA of the PSN and TAS Consortium shows that the investment climate and development of Indonesia's telecommunications infrastructure are not slowing down, but rather gaining momentum. " PSN President Director and SNT President Director Adi Rahman Adiwoso explained that TAS construction will immediately be in effect with the PWA signing. Adi also emphasized that construction will commence this month. "Indonesia can quickly become a digital society by facilitating education, governance, health, economy, etc. using Internet access. This accessibility prepares the entire nation for a future that will be revolve around digital technology. With a capacity of 150 Gbps – more than three times the national capacities that are currently still in use – we believe that SATRIA can be the solution to the digital gap that still exists in Indonesia." According to Adi, the SATRIA project is part of a series of Nusantara satellites by PSN group which began in 2019. This multi-function satellite has a capacity of 150 gigabytes per second (Gbps) using Very High Throughput Satellite (VHTS) technology in the Ka-

Band frequency. Adiwoso added that the SATRIA project is a strategic government decision of equal importance to the time when the government decided to launch the Palapa A Satellite in the 1970s for a domestic satellite communication system, allowing all Indonesians to communicate and enjoy the first national television, TVRI. Adi also explained that SATRIA's total investment of \$550 million (IDR 8 trillion) would be financed by a syndicate of international banks, namely The Hongkong and Shanghai bank Corporation Limited (HSBC), Banco Santander, SA (Santander) and The Korean Development Bank (KDB) which is guaranteed by Bpifrance Assurance Export (Bpi), the Export Credit Agency from France, and a multilateral financial institution, the Asia Infrastructure Investment Bank (AIIB), based in Beijing, China, all constituting a loan facility percentage of approximately \$425 million (IDR 6.3 trillion) or 77.27% of the total investment. Meanwhile, the remaining \$125 million or equivalent to 22.73% of SATRIA's total investment will be funded by the PSN Consortium's capital. Adi added, the government, through the Telecommunication and Information Accessibility Agency (BAKTI), can make SATRIA equivalent leasing costs more efficient at 12-20% of the current government leasing cost by the use of the VHTS technology. Northern Sky Research predicts that the price of 1 megabyte per second (Mbps) in the market in 2024 will still be twice as expensive as what BAKTI will pay for the SATRIA project. Thus, said Adi, the government has made the right decision by implementing this program, as it offers affordable leased capacity that will allow government expenditure savings.



Russia Launches its First Arctic Monitoring Satellite

Soyuz rocket blasted off from the Baikonur cosmodrome in Kazakhstan carrying Russia's first satellite for monitoring the Arctic's climate, the Roscosmos space agency said. Video published by the Russian space agency showed the Soyuz blaster launching against grey skies at 0655 GMT, carrying an Arktika-M satellite.

Space agency chief Dmitry Rogozin wrote on Twitter later that communication with the satellite had been established. The monitoring system will need at least two satellites to operate properly, the space agency said. 'As part of the system, they will provide round-the-clock all-weather monitoring of the Earth's surface and the

seas of the Arctic Ocean,' it added. The launch of the second Arktika-M satellite is planned for 2023, Russian state news agency RIA Novosti reported. Economic exploitation of the Arctic is one of Russian President Vladimir Putin's key goals.

Viasat Pushes ViaSat-3 Satellite Launch to 2022

Viasat has pushed back the launch of its first ViaSat-3 satellite, and does not expect to launch the satellite until early 2022. CEO Rick Baldrige said during the company's Third Quarter (Q3) 2021 financial report call on Thursday that work on the program has been hindered by a wave of COVID-19 cases in Arizona. Viasat is preparing to deliver the first satellite payload to Boeing, which will begin the final phase of the countdown to launch readiness. "We continue to make really good progress on the program and we're moving closer to delivery of the first payload. The record COVID spikes seen in the quarter, especially in Arizona where our payload facilities are located ... haven't worked in our favor. They've caused some intermittent work delays both internally and with our supply chain in the recent quarter," Baldrige said. ViaSat-3 is a constellation of three ultra-high-capacity satellites that will deliver broadband service to residential, aviation and government transport users. In the

previous quarter, Viasat had targeted a late 2021 launch. Baldrige also said it will take several months after the satellite is launched for it to be in full service, because it is a "very complicated overall system" that must go through thorough testing. The company reported \$576 million in revenue in Q3 2021, a 2% decrease from the same quarter in 2020. Revenue grew sequentially, up from \$554 million in Q2. Net income in Q3 was \$6.8 million, an increase of 4.6% during the quarter in the year prior. Viasat had a busy Q3 in terms of new deals, and the operator highlighted its agreement to acquire RigNet, and the remainder of the wholesale broadband joint venture in Europe, the addition of SKY Brasil as a broadband distribution partner, and the In-Flight Connectivity (IFC) deal with Delta Air Lines. Government Systems, Viasat's segment with the most revenue, reported \$265 million in Q3 revenue, a 9% decrease from Q3 2020. Viasat expects "transient effects associated with the

change in administration" to affect the Government Systems segment in the very near-term. Backlog at the end of the quarter is over \$1 billion, a 12% increase Year-over-Year (YOY). Satellite Services and Commercial Networks saw modest revenue increases. Satellite Service revenue in Q3 was \$221 million, up 4% over Q3 2020. Viasat reported 596,000 subscribers, down from 603,000 at the end of the prior quarter. The company attributed the subscriber decline due to bandwidth supply constraints, sustained demand for premium service plans, and network planning to accommodate increases in passengers and planes in service. Commercial Networks saw \$90 million in revenue, 6% growth over the same period in 2020. Awards in the quarter for this segment grew 75% YoY to \$235 million with the first terminal orders under the Delta Air Lines win, and a large next-generation antenna program.

South Korean Researchers Develop Small Satellite Communications Device Operable During Disasters

Researchers in South Korea have developed a small satellite communication device that can quickly restore communication networks in case of disaster. This could be essential to getting people help quickly when they need it. Typhoons accompanied by strong winds and heavy rain, and massive earthquakes striking cities. These catastrophic disasters are bound to destroy critical urban communications infrastructure and if base stations were to get damaged, mobile networks and the internet would immediately be paralyzed. In South Korea, researchers from the Electronics and Telecommunications Research Institute have developed a small piece of satellite communications equipment, which can act as a base station in the event of such emergencies. The transmitter and receiver, which can fit into a coin-sized chip, automatically identifies the location of satellites floating in the earth's orbit, in order to establish a communications network. "In the event of a disaster, such as typhoons or earthquakes, the ground network may collapse. We developed a chip and a device that provides emergency communication services using communications satellites." Once the chip is inserted into the device, it can immediately be used as a satellite

phone. Previously, satellite terminals had to go through a repeater in the middle of the communication, causing a delay of about 0.5 seconds during the calling process. However, the delay time using the new chip has been reduced to point-2-5 seconds, since the receiver and the transmitter are connected directly through the satellite. This technology, which has been tested for use with the South Korean Chollian satellite, is expected to be placed into disaster sites after being tested by agencies and the military. It is also set to be exported to island or desert countries where wide-area communications networks cannot be accessed.



Nigeria to Launch Another Satellite in June

The National Space Research and Development Agency (NASRDA) has stated that it is putting modalities in place to launch a Cubesat 'EduSat-2' within the first half of the year. The Acting Director-General of NASRDA, Dr Francis Chizea, said this at the ongoing Science and Technology Expo on Tuesday, March 16, in Abuja, where the agency showcased its research works and achievements. The science expo is with the theme "Science, Technology and Innovation for Economic Recovery and Sustainability Amidst the COVID-19 Challenges" and is a platform to showcase innovation within agencies of government, private research institutions, the academia, among other participants. Chizea explained that EduSat-2 was a build-up on EduSat-1 which the agency built in collaboration with the Federal University of Technology, Akure and the Japanese Birds-1 program launched in 2017. A CubeSat is a type of very small satellite which is based on a standardized unit of mass and volume. It can be used alone

or stacked to suit the needs of a specific mission. He said that the agency was working in line with the National Space Policy and Program (NSPP) of 2001 and the Federal Government approved 25 years Roadmap for the agency in 2007. He said that the CubeSat was in line with the agency's mandate which included building indigenous satellites, launching a Nigerian astronaut into space, build and launch a Nigerian made satellite in space. Chizea said "EduSat- 2 was developed by NASRDA engineers, an earth observation satellite with minimal resolution and we are expecting to launch it in June or July from the International Space Station. "We are already talking with the committee on the Peaceful Use of the Outer Space to help us secure launch facilities on one of the member countries, which have the facilities to provide for us. "The satellite is one of its kinds to be made by Nigeria and the only thing we can do now is to develop on that. "The major thing the satellite will address is a technology demonstration, to show that we can do it by ourselves, we want to show that it can work," he said. Chizea called on the private sector to come in and support the space program of the country, meet NASRDA's mission, generate significant economic returns and create jobs." Potential areas of Public-Private Partnership include space communication and telecommunications, satellite servicing and space systems, interplanetary small satellites, remote sensing, strategic space applications, software development, among others." He, however, said that the level of technology development of a country reflected its political and economic strength, while the level of space technology reflected the comprehensive power of a nation. According to Chizea, Nigeria is a political epicenter that is crucial for the economic development of Africa cannot afford to miss out on developing its space industry.



Vodafone Launches Broadband Satellite Community Wi-Fi in Fiji



In a bid to improve internet access in remote parts of Fiji, Vodafone Fiji has launched the country's inaugural Satellite Community Wi-Fi service in Nakavika village, in the Central Division's Namosi province. Vodafone is pioneering innovative solutions to deliver broadband services in the Pacific island country and its Satellite Community Wi-Fi platform has connected 61 households in the village, which lies about 57km west of the capital, Suva. The Fiji Broadcasting Corporation (FBC) cites Vodafone Chief Marketing Officer Rajnesh Prasad as saying that Satellite Community Wi-Fi is 'a drive for innovation and equal connectivity, breaking barriers of locality'. Vodafone Fiji added that it has received requests from other communities for its installation going forward. 📶

Lighting up the Future

Building a Fully Connected, Intelligent World



ARTICLE

ICT will Enable a More Sustainable Future. Openness, Collaborations and a Sense of Shared Success are Key to Achieving it

The information and communications technology (ICT) sector has a vital role in building a more resilient, sustainable future. Innovation within this realm is about more than just addressing the challenges we face as local and even global communities – we innovate in order to create a brighter tomorrow. While COVID-19 is our priority for today, the post-pandemic world will need an innovative approach towards economy recovery and improving quality of life, making businesses smarter, and creating a more inclusive world in which everyone has the opportunity to thrive, thereby enabling greater prosperity. However, to create the most value in a society empowered by connectivity, it is essential that innovation is focused on not only means of achieving economic growth and strength, but on bridging the gap between the haves and have-nots by fostering digital inclusion on a national, regional, and even global scale.

To create the most value in a society empowered by connectivity, it is essential that innovation is focused on not only means of achieving economic growth and strength, but on bridging the gap between the haves and have-nots by fostering digital inclusion on a national, regional, and even global scale.

It's impossible to deny that COVID-19 has had a massive impact on individuals, businesses, and countries across the world, however, the positive side is that technology has played a significant role in enabling businesses and public services as close to usual in many situations via accelerated digitalization initiatives, as well as in combatting the disease itself through innovation in healthcare and scientific R&D. The past year has emphasized just how important a solid ICT foundation can be, but it has also created new requirements for digital infrastructure. According to a recent study by the market intelligence and advisory company IDC, various senior executives highlighted that the COVID-19 have positively led to an impressive 76% of manufacturers in the Middle East, Turkey and Africa (META) region to engage in or about to start, a formal Digital Transformation (DX) program, and that 65% of Global GDP will be digitalized by 2022, driving Over \$6.8 Trillion of Direct DX Investments from 2020 to 2023¹.



Charles Yang
President
Huawei Middle East



Technologies such as 5G, artificial intelligence (AI) and cloud are more in demand than ever before. They form the bedrock of a digital economy, enabling intelligent and flexible operations. When combined, 5G, AI and cloud create a solid combination with the potential to drive immense productivity gains, especially during the unprecedented circumstances of the pandemic.

Huawei has worked closely with carriers to ensure stable operations of more than 300 networks across 170 countries, while successfully deploying 140 commercial 5G networks in 59 countries with over 50% of these were built by Huawei, in addition to helping entities within the public and private sectors to rapidly adopt digital solutions that enable continuity during a time of massive societal upheaval. Huawei also ranked first in the number of SEPs filings among 5G companies worldwide. The 5G Standard Essential Patents (SEPs) which is filed by the Chinese technology giant accounted for about 15.05% of the global total, making it a leader in the era of 5G communication field and in tech markets.

Technologies such as 5G, artificial intelligence (AI) and cloud are more in demand than ever before. They form the bedrock of a digital economy, enabling intelligent and flexible operations. When combined, 5G, AI and cloud create a solid combination with the potential to drive immense productivity gains, especially during the unprecedented circumstances of the pandemic.

Digitalization on this level also creates opportunities. By 2025 for example, Huawei predicts that 97% of all large companies will use AI, the digital economy will drive prosperity, and 60% of global carrier revenue will be derived from industry customers. In order to achieve digital transformation on a scale that will boost economic recovery and establish a solid footing for sustainable growth in the future, industries in particular need to focus on improving their capabilities, building the ICT ecosystem, and creating value with digital technology.

Investment in 5G innovation is helping to drive digital transformation across all industries. Huawei, for example, is focused on innovation in the three key areas of technology, products, and applications, which will help to breakthrough ICT-related challenges at a company and industry level. Through joint innovation and strategic partnerships with our customers, we aim to drive a 1 to N expansion of 5G applications for business, while also working to develop devices targeted to meet specific industry needs.

5G also stands to benefit society as a whole. For example, the convergence of networks, devices, and technologies such as augmented reality (AR) can create new immersive virtual experiences that elevate our interactions with the world. This has significant applications in education in particular, but the potential expands far beyond that – there are almost limitless ways in which the high precision integration of virtual and physical realities can create growth opportunities. In addition to the obvious educational uses, industries such as entertainment, tourism, transportation and navigation – amongst others – can benefit.

Countries with established ICT ecosystems have the ability to leverage technology to overcome the pandemic and spur economic recovery, but societies with less developed digital capabilities will lag behind even more. The effect of COVID-19 will expand the digital divide, making it even more imperative that we address the gap to produce greater social value and empowerment through technology. Partnering with entities in countries that have less-developed ICT infrastructures with the aim to help deploy new technologies, especially with a focus

on mobile coverage and digital literacy, will help to bring communities online, giving individuals the opportunity to leverage connected solutions that can augment their lives and enable them to prosper. 5G can improve access to education, boost business opportunities, and enhance medical care by connecting people to remote doctors.

The deployment of 5G is accelerating worldwide. The forecasts about 5G network deployment that were made one year ago have all become a reality. The number of 5G users globally has reached 200 million, and 800,000 5G sites have been constructed worldwide. This technology is becoming part of core production processes in industries. 5G applications have been deployed in more than 20 industries, including manufacturing, healthcare, education and logistics.

The pandemic has revealed the value of cooperation in overcoming one of the greatest challenges the world has seen in recent times. We need to take this lesson and apply it to our future, because while COVID-19 may have closed doors, it has opened new windows of hope. Collaboration can empower the progression of global society, building new opportunities for economic growth, sustainability, and prosperity. This is what the future of ICT is – and Huawei intends to continue working alongside customers and partners across the world to help drive digitalization in ways that will make life better, businesses smarter, and the world more inclusive.

We all share the challenge to reach an honest consensus on whether technology is an engine of human progress. The other challenge will be taking resolute action to make technology truly effective and create value for all. If we claim that technology is critically important but its development is ideologically wrong, this will only result in division, confusion, and regression.

We must reach a global consensus on this issue and believe in the power of technology to leverage it for the benefit of the society. 

¹ https://www.idc.com/getdoc.jsp?containerId=prUS46967420&utm_medium=rss_feed&utm_source=Alert&utm_campaign=rss_syndication

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ARTICLE

PCCW Global Enables IoT Drones to Deliver Life-saving Medicine in Remote Communities

PCCW Global, the leading telecommunications service provider, has optimised its international IoT infrastructure and network solutions to enable fully-connected unmanned aerial vehicles or "drones" to rapidly and safely deliver medical and emergency supplies to remote communities that are usually difficult, expensive and time-consuming to reach by traditional road or air supply.

Internet of Things (IoT) technology company, Hangjian Unmanned Aerial Vehicle (HJUAV) has already developed a range of fully-connected IoT Unmanned Aerial Vehicle (UAV) drones that are compatible with PCCW Global's IoT network solutions. Making use of PCCW Global's extensive network and partner infrastructure, HJUAV's drones are available for service almost anywhere in the world, including African countries where a lack of infrastructure plagues the provision of effective healthcare services.

PCCW Global's teams on the ground have extensive experience in providing sophisticated hybrid solutions that include fibre, satellite, microwave, DIA, SD-WAN, MPLS and wireless connectivity services...

For many people living and working in isolated areas, getting access to medicine and other essential supplies is difficult. Often these locations do not have their own resident doctor or pharmacist and it may take many hours to reach such a town or village by road, preventing residents from receiving the medical care they need.

HJUAV solves these challenges with a new range of fully connected commercial UAV drones that are able to automatically fly directly to remote locations, potentially reducing delivery times from many hours by road, to a matter of minutes.

This results in the rapid delivery of medicine and essential supplies while PCCW Global's connectivity enables IoT automation that frees up human resources, enabling additional aid and community projects that improve both the quality of medical care and the



Craig Price

Senior Vice President, Mobility Products and Marketing
PCCW Global

PCCW Global

number of people who can benefit from medical attention in remote communities.

Once a UAV has connected to one of PCCW Global's international IoT ecosystem mobile networks, it is immediately able to transmit its altitude and position data, as well as provide a live video feed to a flight control platform. It is also possible to use a topology platform to create and mark waypoints that can be transmitted to the UAV, enabling it to follow a route and fly autonomously to the desired location.

Crucially, HJUAV's industrial-grade UAV's are able to carry heavier than usual payloads, including refrigerated containers for the transportation of temperature-sensitive medicine.

PCCW Global's innovative Console Connect network automation platform and pre-installed SIM connectivity devices can connect UAVs and other compatible devices to a worldwide network of 2G, 3G and 4G partners, supported by an extensive private and secure global MPLS infrastructure.

Console Connect itself is the world's first platform for Software-Defined Interconnection® and is a game-changer for business - making the process of connecting to cloud-based, business-critical applications and geographically distributed offices, partners and clients simple, predictable and secure.

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PCCW Global's mobile partner networks expand the company's IoT ecosystem around the world, delivering low latency, high-speed connectivity and crucial communications to areas that have previously not been connected - providing a tremendous opportunity for valuable commercial IoT applications and connected devices.

Now functioning as the core of PCCW Global's international digital platform, Console Connect is 100% integrated into the provision of global network services, including the ongoing development of additional on-demand products and services, innovative apps and IoT functionality.

While end-to-end IoT connectivity can be very complex and often involves a combination of local and international connections, leased lines, public internet, mobile and Wi-Fi networks, Console Connect IoT simplifies the ordering, deployment and change management of global device connectivity such as IoT drones.

PCCW Global's mobile partner networks expand the company's IoT ecosystem around the world, delivering low latency, high-speed connectivity and crucial communications to areas that have previously not been connected - providing a tremendous opportunity for valuable commercial IoT applications and connected devices.

In the case of drones that are capable of delivering life-saving medicines to remote locations, it's this IoT infrastructure that provides the connectivity to make such innovative healthcare solutions possible.

While there is an application for fully connected IoT medical drone delivery in many regions around the world, such services are likely to prove life-changing for many African communities. With more than 20-year's experience on the continent, PCCW Global is heavily invested in providing the next generation of connectivity to satisfy Africa's growing demand for digital services - including connectivity in remote locations.

PCCW Global's teams on the ground have extensive experience in providing sophisticated hybrid solutions that include fibre, satellite, microwave, DIA, SD-WAN, MPLS and wireless connectivity services that are specifically designed to suit African conditions.

Overall, PCCW Global provides services to as many as 54 African countries, either by providing direct services or through an extensive partnership network that includes 89 mobile network operators.

This extensive reach includes cellular backhaul networks that are delivered using satellite and wireless technologies where terrestrial connectivity is not available. The result is that PCCW Global provides more direct connections to Africa's mobile operators than any other carrier. In addition, PCCW Global provides Africa with an integrated network and related connectivity over a fully diversified backbone with both East and West submarine connections to a global high-speed network.

Where terrestrial connections to these submarine cables are not possible, PCCW Global provides connectivity through 50 satellite transponders. In so doing, PCCW Global operates one of Africa's most advanced regional and international networks as well as providing the widest satellite coverage on the continent.

Craig Price, Senior Vice President, Mobility Products and Marketing, PCCW Global, says: "It's exciting to be a part of the innovative opportunities that IoT is providing in so many industries around the world. With an expansive, growing global network and our own cutting-edge technologies, we are ideally positioned to enable innovative and fully connected IoT solutions almost anywhere in the world." 



Bridging Networks. Sparking Opportunities.

Manama Internet Exchange (MN-IX) is the internet traffic exchange platform interconnecting global networks within the Global Zone, the neutral transit zone.

MN-IX meets the demands of the global network operators and content providers from a comprehensive integrated platform. It also contributes toward the development of internet services across the region including interconnecting regional Internet Exchanges, Cloud service providers, CDNs, Data Centers and retaining regional traffic, leading to ultimately enhancing the user experience.

<https://www.mn-ix.com>

WHOLESALE NEWS

5G Roaming Subscribers to Reach 147 Million Globally By 2025

A new study from Juniper Research has found that the number of international 5G roaming subscribers will reach 147 million by 2025; increasing from 4.3 million in 2021. This represents a growth of 3,300% over the next four years. It predicts that standalone 5G architectures, which leverage innovative core network technologies and high levels of virtualization, will be instrumental in allowing operators to create appealing 5G roaming packages for this growing number of subscribers. It predicts that the higher degree of software-defined network applications in standalone 5G networks will create greater efficiencies in routing of voice and data roaming traffic, thus reducing operators' investment needed to offer 5G roaming services. The new study, *Mobile Roaming: Emerging Opportunities, Regional Analysis & Market Forecasts 2021-2025*, argued that current non-standalone 5G architectures, which leverage the same core network technologies as 4G, will not be sufficient in aiding operators to launch cost-effective international roaming services over 5G networks. Despite the global pandemic causing substantial decreases in international roaming traffic, the research

urges operators to bypass the creation of non-standalone 5G roaming agreements and focus on basing 5G roaming agreements on standalone architecture immediately. Research author Scarlett Woodford noted, 'The current decrease in international roaming traffic must not be used as a reason to neglect future roaming activities. Given that roaming agreements can take between 12 and 18 months to be established, operators must focus on standalone 5G roaming agreements

now, in preparation for the recovery of the market.' The research identified operators in North America and the Far East as leading in 5G roaming agreements. By 2025, it anticipates that over 35% of 5G roaming subscribers will be attributable to these two regions. However, the research warns that these early agreements must be extended to include standalone 5G roaming capabilities, as the prevalence of non-standalone networks diminish.



Brazilian Fiber Wholesale Network Deal is Confirmed

Following news of a potential agreement to set up a new fiber optic broadband wholesaler in Brazil, this deal has now been confirmed. Telefónica Group, a major international operator, and Caisse de dépôt et placement du Québec (CDPQ), a global investment group, have reached an agreement for the construction, development and operation of a neutral and independent optical fiber wholesale network in Brazil. It will be called *Infraestrutura e Fibra Ótica SA* (or *FiBrasil*). Telefónica Group and CDPQ will each hold 50 percent in *FiBrasil*, although Telefónica Group's participation will be held through

Telefônica Brazil (Vivo) and Telefónica Infra, the infrastructure arm of Telefónica Group, each of which will hold a stake of 25 percent. Operating as a neutral wholesale company, *FiBrasil* is set to deploy and operate fiber optic networks in selected mid-sized cities across Brazil outside the state of Sao Paulo, and to offer fiber-to-the-home (FTTH) wholesale access to all telecommunications service providers, enabling them to offer these services to their end customers. This is clearly a major initiative, a fact underlined by the amount of money that is going into it. CDPQ, one of the world's largest global institutional

investors in infrastructure, is investing a total of up to R\$1.8 billion (about \$315.7 million) in this joint venture. It will start with a portfolio of 1.6 million homes passed (HPs) contributed by Telefônica Brasil, but *FiBrasil* aims to expand its network to reach around 5.5 million HPs within four years. However, this may be part of an even bigger coverage drive. Christian Gebara, Telefônica Brasil's CEO, said: "Fiber will be a key driver for Vivo's future top-line growth aiming at reaching at least 24 million HPs by the end of 2024, and *FiBrasil* will be Vivo's platform for expanding coverage to greenfield cities."

OFCOM Outlines Plans for Wholesale Regulation Designed to Bolster UK's Fiber Future

UK telecoms regulator OFCOM expects 'millions of homes' to be upgraded to faster, more reliable broadband under newly announced regulations which it claims are designed to 'help shape the UK's full-fiber future'. In a press release outlining the plans, OFCOM said it was confirming how it will regulate the nation's wholesale telecoms markets for the next five years 'and beyond' following public consultation on the matter, with a particular focus on driving competitive investment in the country's fiber infrastructure. Among the strategies outlined to achieve that goal, OFCOM proposes wholesale price regulation which it says will encourage investment and promote competition. With the watchdog noting that in recent years it has reduced the wholesale price that BT's network unit Openreach charges retail providers for its entry-level 'superfast' copper broadband service (offering downlink speeds of 40Mbps), it has confirmed that the price of this service – and the prices of slower copper broadband packages – will be kept flat in real terms. Meanwhile, the regulator has also confirmed that Openreach's fastest fiber services will continue to be free from pricing regulation, arguing that allowing it to raise

wholesale prices significantly for faster, unregulated products 'is constrained by the fact that people can choose the entry-level service as an alternative'. Further, the network unit will also be permitted to charge more for regulated products that are delivered over full fiber instead of copper; according to OFCOM, allowing the operator to do so 'reflects the fact that full fiber is consistently faster, and much more reliable, than copper-based broadband', while it argues such an approach 'improves the investment case for BT and its rivals by providing them with a margin to build the new networks'. Finally, with regard to full fiber rollouts, the watchdog has said it does not expect to introduce cost-based prices for fiber services for at least ten years. With regards to the closing of the UK's copper network, meanwhile, OFCOM has argued that Openreach should not have the 'unnecessary' costs of running two parallel networks. As such, it has confirmed that once the network unit has rolled out full fiber in a particular area, it will progressively remove regulation on its copper products over 'a number of years'. The regulator has, however, stressed that customers will be protected during this transition to ensure they can continue to

access their services, particularly those in vulnerable circumstances. OFCOM has also said it aims to prevent Openreach from harming competition, by reviewing all long-term discount agreements it offers its wholesale customers, and restricting them if they could stifle investment by its rivals. In addition, the BT unit will continue to be prohibited from offering geographic discounts on its superfast broadband wholesale services, while a similar ban is to be extended to the wholesale operator's services based on full fiber technology. The new regulations are expected to apply from April 2021 until March 2026. Commenting on the matter, OFCOM's Chief Executive, Dame Melanie Dawes, said: 'Over the past year, being connected has never mattered more. But millions of homes are still using the copper lines that were first laid over 100 years ago. Now it's time to ramp up the rollout of better broadband across the UK. We're playing our part – setting the right conditions for companies to step up and invest in the country's full-fiber future. This is a once-in-a-century chance to help make the UK a world-leading digital economy.'

MTN, 9mobile to Seek National Roaming Approval

MTN Nigeria and Emerging Markets Telecommunication Services (9mobile) plan to seek regulatory permission to roll out national roaming on their respective mobile networks, 9Mobile CEO Alan Sinfield told The Africa Report. The decision follows a trial of national roaming between the two companies in Ondo State. As previously reported by CommsUpdate, the Nigerian

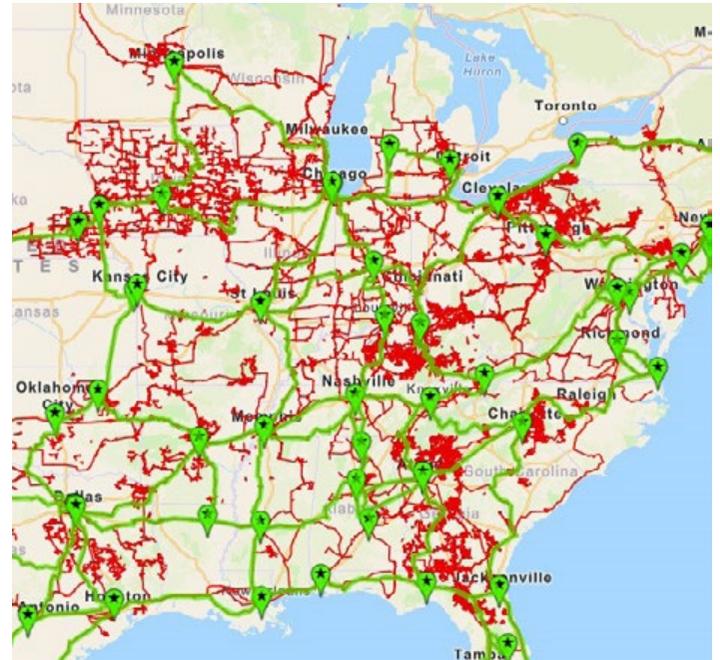
Communications Commission (NCC) approved the trial between market leader MTN and second-placed 9mobile last year, stating that the tests could be conducted for a period of three months, from 1 August to 31 October 2020, in a few local governments, designated as the 'National Roaming geographic area', in Ondo State. According to the Executive Vice Chairman of the NCC, Umar Garba Danbatta, the primary objective of the national roaming trial was to encourage network resource sharing among operators. He said this would lead to operational expenditure optimization and capital expenditure efficiencies, thereby freeing up resources to expand mobile network coverage to unserved and underserved communities across the country, which will result in improved quality of service delivery to subscribers. 'The successful implementation of the trial will enable 9mobile subscribers to access MTN network service within the National Roaming trial geographical area without the need for an MTN SIM card,' Danbatta said last year.



Windstream Lights Up Wholesale Fiber Access, Adds 60K Locations

Windstream announced the addition of 60K wholesale fiber locations across its 18 state footprint. The additional wholesale access locations became available during the first quarter of 2021. These new Windstream wholesale fiber locations are available in exchanges where Windstream is the incumbent provider. Windstream wholesale partners can now sell this fiber access to business customers. "As we continue to drive fiber deeper into our network, our cost-effective broadband and ethernet access is now available for our wholesale partners for business customers," said Jeff Small, Kinetic President in a press release. "Through simple provisioning and transparent customer support, our fiber product fits seamlessly into any portfolio." Windstream is currently embarking on a \$2 billion program to expand fiber broadband access. The company also won \$523 million in RDOF funding to expand rural broadband access, of which Windstream intends to deploy significant FTTH. Windstream reported that it had fiber available to 590K locations at the end of 2020, reporting a net gain of 60K in the year. Ultimately Windstream intends to get gigabit capable FTTH to 50% of its LEC territory within ten years. Beyond Windstream providing wholesale fiber access, the wholesale division provides bandwidth and transport services to content and media providers, cloud and data center operators, international carriers, cable operators, wireless carriers, and traditional network service providers. Windstream announced a network transport agreement for its wholesale unit with the NCTC

back in June 2020. The company has also extended its reach globally. Earlier in 2020, the company landed at a Virginia Beach, Va., international subsea cable landing station, and began taking orders out of a new Globalinx Data Center.



Smart Expands 5G Roaming Service to Bahrain, Kuwait, Saudi Arabia

Following the successful launch of its partnership with all mobile operators in the United Arab Emirates, PLDT wireless arm Smart Communications, Inc. (Smart) partners with Zain, a leading mobile voice and data services operator in the Middle East to further expand its 5G roaming services in the region. Under this partnership, Smart prepaid and postpaid customers overseas will be able to access worry-free 5G roaming speeds while in Bahrain, Kuwait, and Saudi Arabia. The Middle East is home to many overseas Filipinos, second to North America. This makes Smart the first Philippine operator to have the widest roaming coverage in the territory. "Smart's 5G roaming service allows a Smart subscriber to enjoy worry-free 5G service even while abroad through Smart's 5G roaming partners. This is part of our commitment to deliver

the best experience to our customers," said Alice Ramos, Vice President for International Roaming and Consumer Business at Smart. Smart 5G roamers in Saudi Arabia can subscribe to GigaRoam Saudi Arabia for P499/30 days, which includes 1GB data allowance with open access for web surfing, video streaming, and use of social applications. Meanwhile, overseas customers in Kuwait and Bahrain can enjoy GigaRoam packs for as low P999/5 days. With GigaRoam, they can enjoy value-for-money 5G roaming data allocation and validity coupled with 5G roaming speeds because of Smart's partnership. "Customers with 5G-ready SIMs and 5G-capable handsets can enjoy 5G roaming speeds for better video experience, and seamless data connectivity for the productivity or social platforms that they need to access when

they visit other countries for work or vacation," added Ramos. Like Smart, Zain KSA has also been recognized by Ookla, the global leader in internet testing and analysis, as the telco with the "fastest fixed network speed in the Kingdom." The comes after Smart's partnership with UAE's Etisalat and du, resulting to a full 5G roaming coverage in the Emirates; Taiwan's FarEasTone; and South Korea's KT Corp. Taiwan and South Korea number among the world's top three countries for best 5G experience in a February 2021 report by mobile analytics and insights research company Opensignal. This series of 5G roaming partnerships with the world's top operators in key markets is testament to Smart's commitment to provide world-class roaming services to its travelers as travel restrictions are anticipated to relax with mass vaccinations. 📍



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ARTICLE

New Data Centers and CDN Points of Presence in the Middle East and their Impact on the User Experience

SpeedChecker shares their insights on how the new AWS and Azure data centers in the Middle East have contributed to reducing latency and improving the user experience.



Janusz Jezowicz

CEO
SpeedChecker



In recent years it's without question that operators in the region are improving the user experience considerably. 5G dominates the industry, focusing both on the investment front as well as on the marketing push. A less sexy topic to boast about is the continuous drive to improve the interconnections which play a major role in improving the user experience as well. Operators, when launching 5G, often accompany marketing messages with speed test app screenshots showcasing 1Gb+ speeds. This indicates the challenge in the industry to find the real use cases for 5G as, surely, the purpose of 5G is not just making speed tests faster.

Operators, when launching 5G, often accompany marketing messages with speed test app screenshots showcasing 1Gb+ speeds. This indicates the challenge in the industry to find the real use cases for 5G as, surely, the purpose of 5G is not just making speed tests faster.

At SpeedChecker we look beyond measuring fastest 5G speeds: our testing methodologies look at capturing data on the user experience such as video streaming, web browsing or services relying on low latency. One of the topics that we feel does not get enough attention from the industry is the impact of new data centers in the region and how they improve the latencies and, in effect, user experience of many services which are hosted in the region and are latency sensitive.

First Microsoft Azure and then, soon after, Amazon AWS launched new data centres in the Middle East. Azure launched in the United Arab Emirates in June 2019 and AWS launched in Bahrain in July 2019.

Shortly after the launch SpeedChecker evaluated the connections to the new data centers from the Middle East region. The results were not pretty: most of the connections to both Azure in UAE and AWS in Bahrain were not providing low latency links that would improve the quality of experience. With the exception of Bahrain

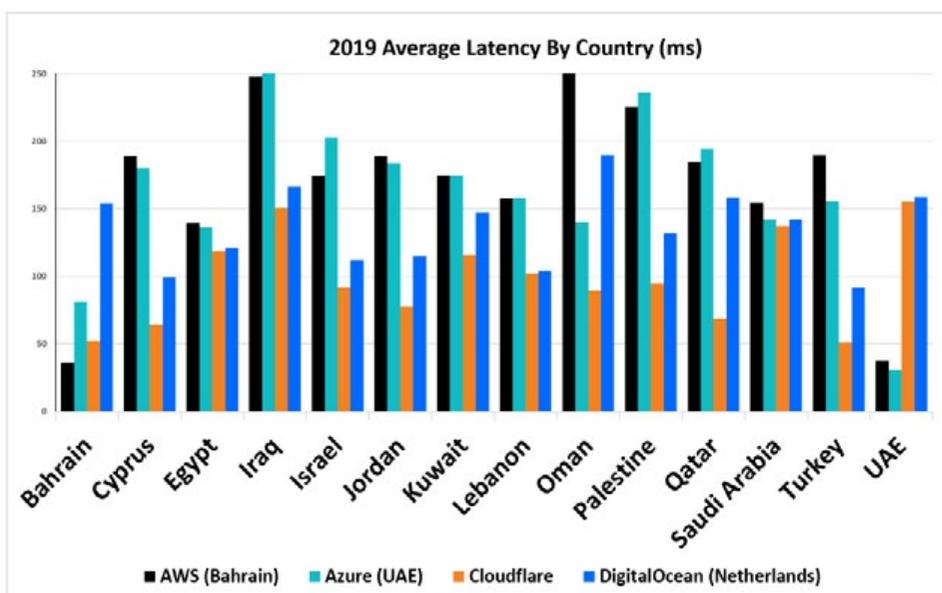


Chart 1: Average latency to AWS Bahrain, Azure UAE, Cloudflare and DigitalOcean Amsterdam in 2019

Fortunately, since 2019 the situation has improved considerably for both AWS and Azure clouds.

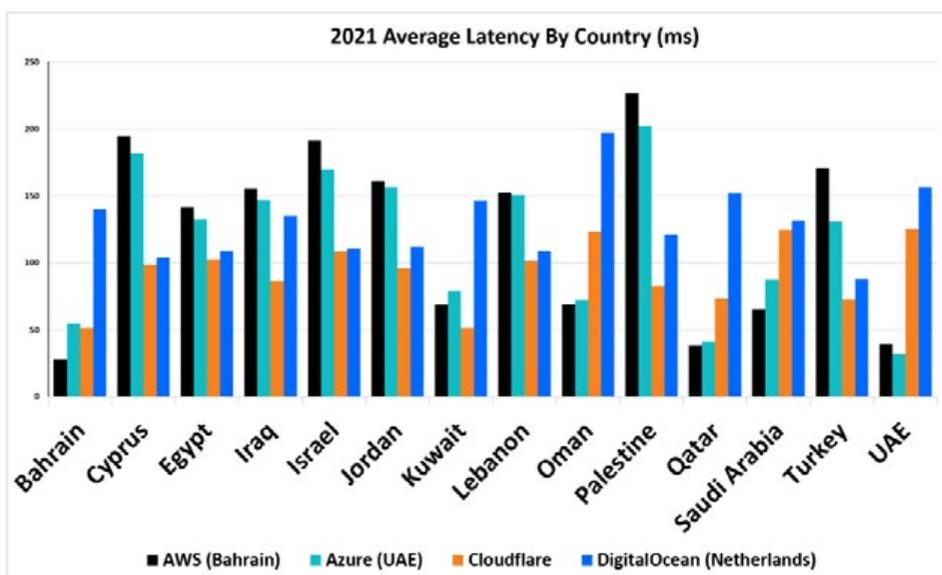


Chart 2: Average latency to AWS Bahrain, Azure UAE, Cloudflare and DigitalOcean Amsterdam in 2021

and UAE which interconnected very well, the rest of the countries had latencies to the new datacenters in the Middle East that were similar to those in Europe. This meant that to truly offer great user experience across the region CDNs such as Cloudflare had to be utilized.

The biggest improvements were experienced for users in Qatar, Kuwait, Oman and Saudi Arabia. The latencies to the new datacenters in UAE and Bahrain from those countries decreased by more than 100%.

Not all users in those countries benefited equally though. Some operators invested heavily in improving the latencies, most notably Ooredoo (in Qatar, Kuwait and Oman), STC (Kuwait and KSA), Omantel and Turkcell.

While there were plenty of improvements for the AWS and Azure datacenters, not much can be said with Cloudflare. Cloudflare, being one of the most popular CDNs in the world, hosting over 10% of websites worldwide did not experience similar gains. Noted, Cloudflare already has one of the best low latency offers in

the region but was overtaken in some markets such as KSA, Qatar, UAE, Oman. The reason being that Cloudflare caches were not deployed to few key operators in the region. While Zain group has been very welcoming with Cloudflare as well as Ooredoo group, bigger MNOs such as STC in KSA or Etisalat have not decided to set up partnerships yet.

Country	% of local CDN cache
Bahrain	81%
Egypt	4%
Jordan	75%
Kuwait	85%
Oman	31%
Qatar	44%
Saudi Arabia	15%
Turkey	23%
UAE	48%
UK	80%
Germany	78%
France	90%

Table 1: Percentage of traffic going to local datacenters of Cloudflare CDN

As we can see in the charts above, the latencies for countries which do not have local caches are more than twice as slow as countries with a high percentage of cache access. The reason being that users with no local cache access are sent to EU-based datacenters. This is an unfortunate situation in the region as it has a big impact on the user experience. In other regions such as the EU the lack of local CDN cache does not pose a big impact on the user experience as the users who do not have access to local cache can be routed efficiently to neighbouring countries which are geographically not very far and therefore the latency impact is minimal.

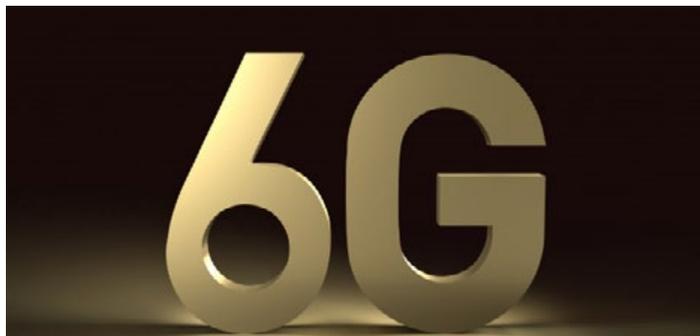
Conclusion

The situation in the region has improved considerably since 2019 and it is the new data centers and the partnerships with carriers and operators that have enabled this for the users. The biggest gains were observed with AWS and Azure datacenters which will push more local companies to host with those platforms and enable consumers to have an improved user experience.📍

TECHNOLOGY NEWS

EU Group Looks to Scratch the Surface Of 6G

European institute CEA-Leti announced the launch of a EU 6G research project with involvement from 13 parties including Orange, Telecom Italia and vendor NEC Europe. In a statement, CEA-Leti said the RISE-6G project was a "visionary" initiative based on designing, prototyping and testing smart and energy-sustainable technology advances, on reconfigurable intelligent surfaces that will enable programmable control. The research institute explained these surfaces may be diode-based antennas or metamaterials in the environment, such as mirrors, ceilings, walls and applications, and they will operate as reconfigurable



reflectors or transceivers "for massive access when equipped with active radio frequency elements". Ultimately, RISE-6G aims to address the design of key hardware building blocks and their integration in future 6G networks. CEA-Leti followed other industry players in stating it expects 6G to be deployed by the end of the decade, creating the "basis for human-centered smart societies and vertical industries". To achieve this, the group believes advances will be expected to support the long-term, sustainable transformation of networks into a distributed smart-connectivity infrastructure, where terminal types such as mirrors, signs and walls are embedded into the environment. "Our mission is to enable this disruptive new concept as a service for the wireless environment by dynamically controlling wireless communication for local, brief and energy-efficient, high-capacity communications," said Emilio Calvanese Strinati, RISE-6G project coordinator. In addition to the two operators and NEC, academic, research and vertical players are involved in the initiative. Industry noise around 6G continues to gather pace. In 2020 the Next G Alliance research group launched, tasked with developing and defining the technology, which has had backing from US operators, vendors Ericsson and Nokia and LG, Apple and Google.

China to Accelerate 6G Push Over Next 5 Years

China's government reportedly plans to prioritize the development of 6G up to 2025, stepping-up its ambitions for the technology following recent research advancements in Europe and the US. State-owned newspaper China Daily stated government and industry experts have outlined a plan to advance 6G between 2021 and 2025, as part of a wider "digital China" standalone objective to ensure technology provides fresh economic impetus. Yang Xiaowei, deputy head of the Cyberspace Administration of China said at a news briefing the country would accelerate

R&D of 6G technologies, construction of a large-scale 5G network and a push around IPv6. He reportedly explained more effort would be made to build up systems and standards "to accommodate data flow, cross-border data transmission and data security protection", as China looks to reap the benefits of the digital economy. Details of what exactly the country plans to do to accelerate 6G or when it expects the technology to launch were not revealed, however industry players have widely indicated the technology will not see the light of day until 2030 at least. Industry

murmurings around the next-generation of mobile has grown over the last year. Last month, a new 6G research project was unveiled involving major European operators, while in 2020 US operators committed to the Next G Alliance, a group tasked with developing and defining the technology. China has also already been active, launching what it claimed was the first 6G experimental satellite to test communications for space using high-frequency terahertz spectrum in November 2020.

Two Slovak Cellcos To Debut Commercial 5G in April

Slovak operators Orange Slovensko and 4ka have confirmed that they plan to launch 5G services in Bratislava in April this year. A report from Zive.sk says both firms will be using 3.5GHz spectrum for

the commercial networks, with 4ka also expected to utilize 1800MHz frequencies, as it has been doing for its trial in the Banska Bystrica area. Slovak Telekom introduced the country's first commercial

5G service in eight districts of Bratislava in December, while O2 Slovakia is deploying its own 5G infrastructure under a recently-announced contract with Ericsson.

Apple Recruiting 6G Experts

Apple began seeking engineers to research and contribute to industry standards for 6G, as it targets an early lead in the technology. Job adverts on the company's site explain engineers will work to define system-level concepts; create rapid prototyping platforms and conduct system simulations; develop new algorithms;

specify RAN protocols; and contribute to 3GPP development of 6G standards. The move is the latest from Apple to position itself at the forefront of 6G development: it joined AT&T, T-Mobile US, Verizon, Google, Facebook, Ericsson, Nokia et al in the North America-focused Next G Alliance in November 2020. Apple was a latecomer to

the 5G smartphone market, only deploying the technology in its iPhone 12 range in October 2020. A host of industry groups have been formed to research 6G, with the majority targeting commercialization in 2030, though 3GPP is yet to indicate when it plans to commence standards work.

Türk Telekom Tests 4.5Gbps 5G; Raises Fiber Performance With AI

Türk Telekom (TT) and Nokia have conducted tests in which they claimed a new 5G 'world record' data transmission speed of above 4.5Gbps, using mmWave (26GHz) spectrum bands in an eight-carrier configuration over a 5G NR test network with specially equipped smartphones. TT Deputy General Manager of Technology, Yusuf Kirac, announced: 'Thanks to this technology, which provides many benefits for users and operators, we have achieved the high speed and large capacity targets promised by 5G. These technologies are also planned to be used in 6G, providing ultra-high speed and capacity. It also acts as a bridge for the Terahertz systems to mature and pave the way.' In the tests at the operator's Innovation Centre in Ankara, TT and Nokia used eight carriers with a bandwidth of 100MHz and a 5G smartphone equipped with a Qualcomm Snapdragon X55 5G mmWave module, compatible with 3GPP standards. In a separate announcement, TT reported how it is using locally-developed artificial intelligence (AI) solutions to maximize its fiber network quality and increase internet performance. TT's patented AI analysis platform 'TT Optical Network (TT-ON)' prevents performance losses

by conducting automatic root cause analysis in Dense Wavelength Division Multiplexing (DWDM) systems and proactively monitoring the quality of fiber-optic cables, explained Yusuf Kirac, who added: 'With the smart software we have developed ... we have succeeded in raising our fiber service quality standards

significantly.' Kirac noted that TT has 25 worldwide technology patents including 17 for 5G-based products, adding that the group 'will continue to invest in local and national technologies that will create added value for Turkey's economy in order to reduce the technological and economic dependence on foreign countries.'



First 5G Commercial Network in Operation in Russia

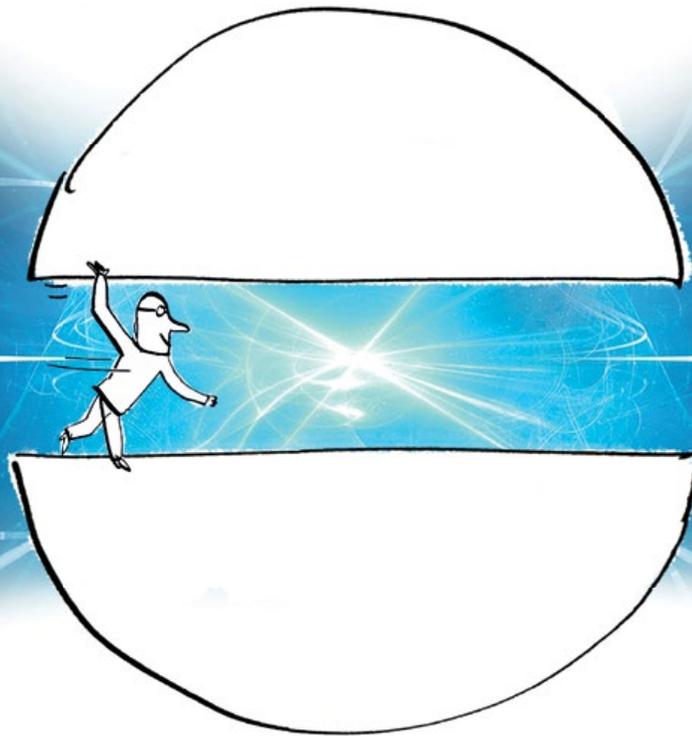
The MTS mobile telephone operator launched the first 5G network in Russia, which is already available in 14 busy places of Moscow, local media reported. 'After many tests, our company has launched the first 5G pilot network in Russia, available for our thousands of users,' CEO of the

company Alexei Kornia noted, according to Sputnik news agency. He claimed that MTS users that have cell phones compatible with this technology can enjoy the 5G high connectivity advantages in this capital, in downtown areas of the city for the time being, especially in the historic center.

However, not all MTS clients will be able to use 5G for the time being. The operator will send automatic invitations when users get close to any of the chosen areas. The media reported that 5G was deployed in the 4.9 GHz band with low latency and a network speed of up to 1.5 Gbps. 📶



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ARTICLE

Digital Customer Care Index 2021

Success Factors for Becoming a Truly Customer-centric Company



Dr. Alexander Henschel

Managing Director and Global Head of TMT



Armin Raffalski

Partner and Head of Dubai office



Nirnay Mangilal

Manager



Digitalization has profoundly changed how telcos interact with their customers. Digital customer care is at the forefront of this development.

While in the past, customer care was restricted to in-store services and basic call centers, today's companies can choose from a broad variety of technology-enabled solutions. Digital customer care can establish a critical competitive advantage while reducing the cost of service delivery. But what is the state of digital customer care? How well are telcos prepared to deal with its challenges? And most importantly: What do they have to do to get it right?

With the Digital Customer Care Index 2021, goetzpartners has taken a look at

With the Digital Customer Care Index 2021, goetzpartners has taken a look at the current state and expected future of digital customer care. We have assembled a panel of 35 experts working in customer care across multiple telcos and related industries.

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CUSTOMER CARE : THE CURRENT STATE **Factors driving the digitalization**

The study reveals that all experts consider digital customer care as critically important for their business success (score of 4.3 out of 5). This does not come as a surprise. Excellent customer service is one of the few aspects by which companies can differentiate their service offering and retain a competitive edge.

Nonetheless, the transition towards digital customer care is rather driven by competitive pressure than by companies' "intrinsic motivation" to actively embrace this new technology. This is supported by the fact that service quality and speed only seem to play a minor role in telcos' digitalization efforts.

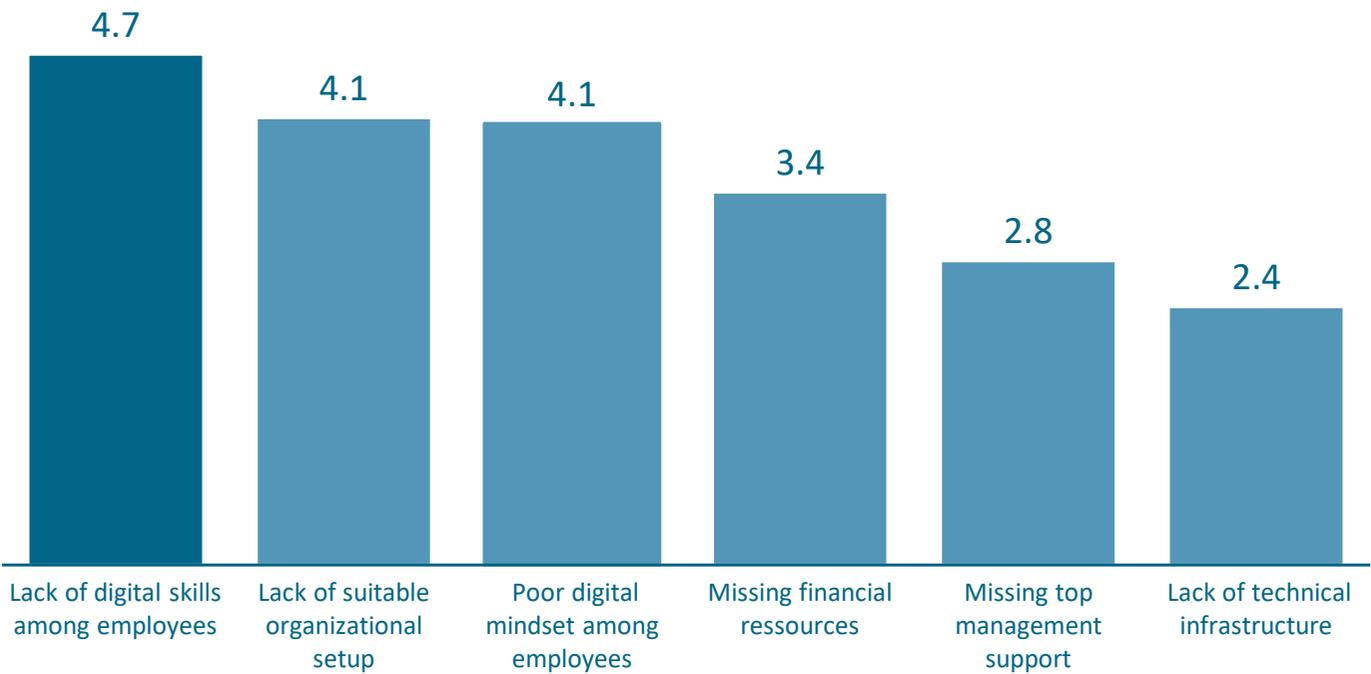
The findings show that, despite being aware of its importance, most telcos still have a long way to go in becoming a truly customer-centric organization.

Key challenges

Our study shows that the major roadblocks to implementing digital customer care are attributable to people-related issues.

KEY CHALLENGES FOR DIGITAL CUSTOMER CARE

Scale from 1 = low to 5 = high



The cited "Lack of suitable organizational setup" is often not just limited to the customer care department but relates to the entire company. Technology is another major enabler of digital customer care. The main challenges in this field are typically related to technical implementation and the seamless transfer of data between different channels. Consequently, IT capabilities and the implementation of application programming interfaces, as well as related processes, rank as top priorities.

The journey towards becoming a truly customer-centric company requires major investments with regards to people, processes, and technology.

THE FUTURE OF CUSTOMER CARE Changing the channel mix

The overarching theme of digital customer care's future is omnichannel. Today, call centers remain by far the most important point of contact. Within this channel, an overwhelming share of tickets is still processed by humans. Besides call centers, customer portals and traditional in-store customer care are the most important channels. Chat/messenger and

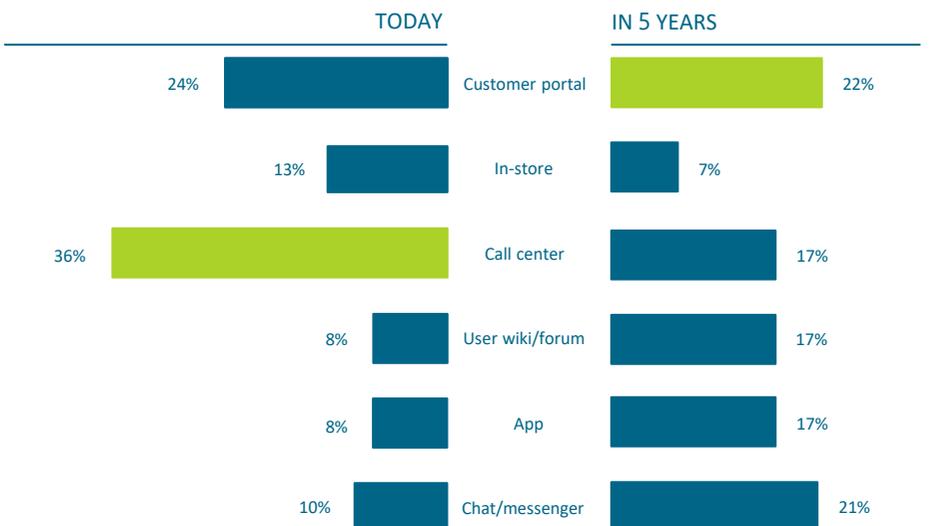
apps only account for a small fraction of requests.

Over the next five years, however, the channel mix in customer care is expected to shift radically, with call centers significantly losing importance and in-store customer service being marginalized. Customer requests are expected to be

distributed more evenly across multiple digital channels, including customer portals, chat/messenger, user wikis/forums and apps.

The study results illustrate that telcos must reallocate resources from a few traditional channels to a broader range of digital solutions.

SHARE OF CUSTOMER REQUESTS : PER CHANNEL



Source: goetzpartners expert panel. Due to rounding, percentages don't add up to 100%.

The role of artificial intelligence

The study reveals that technological enablers do not yet live up to expectations. When asked about how well technologies meet current demand, especially chatbots and interactive voice recognition score comparably low with 2.4 and 2.9 out of 5, respectively. Although technologies such as machine learning

and artificial intelligence struggle with the complexity of human interaction and language, respondents see them as the most important technological trends (58%). Consequently, investments into state-of-the-art technology and technological know-how are indispensable for companies that strive to play a leading role in digital customer care. 📌

DIGITALIZING CUSTOMER CARE : KEY TO SUCCESS

STEP 01 Actively embrace digital customer care as a key differentiator

In the face of increasing competition and product commoditization, excellent customer care can be a key differentiator. Companies must actively embrace this opportunity to boost service quality and speed, rather than just seeing it as a necessity resulting from competitive pressure.

STEP 02 Build a customer-centric organization

In order to fully live up to its potential, digital customer care must be embedded into a fully customer-centric organization. Decision-makers must put digital customer care at the top of their corporate agenda, making it a company-wide priority.

STEP 03 Invest in people and change

Many of today's challenges are people-related, as the transition to digital customer care requires new skills and capabilities. Companies must invest in their people and drive digitalization across the company.

STEP 04 Upgrade processes and technology

End-to-end digital processes and technology are critical enablers of digital customer care. Companies must invest in technology to power the seamless integration of channels and increasingly automate interactions with customers.

STEP 05 Prepare for the channel shift

Digital customer care will turn the traditional channel mix upside down. Companies must prepare for this by revisiting their existing setups and ramping up new channels.

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REGULATORY NEWS

ITU Asia-Pacific Formulates Regional Digital Priorities Ahead of The World Telecommunication Development Conference 2021

The second in the series of six preparatory meetings for the ITU World Telecommunication Development Conference (WTDC-21) took place on 9 and 10 March 2021. Held virtually, the Regional Preparatory Meeting (RPM) for Asia and the Pacific gathered 158 delegates from 33 countries to ensure regional coordination ahead of WTDC-21, set to be hosted in Addis Ababa, Ethiopia, on 8-19 November 2021. WTDC-21 is expected to develop innovative approaches and new models of collaboration for connectivity and digital solutions in this final Decade of Action to achieve the Sustainable Development Goals (SDGs) adopted by the United Nations in 2015. "This is a good opportunity to consolidate and express regional priorities as Asia-Pacific, which will contribute to the discussion at the WTDC-21," noted Masanori Kondo, Secretary General of the Asia-Pacific Telecommunity (APT). Doreen Bogdan-Martin, Director of the ITU Telecommunication Development Bureau said: "I believe the next WTDC has the potential to be hailed as a landmark conference in rewriting the global connectivity agenda, and our enhanced preparatory process has been developed to support this ambitious vision. By bringing together Member States, the private sector, financial institutions, such as regional development banks, and key civil society organizations, WTDC-21 offers us a unique opportunity to harness a swelling tide of political will around connectivity and to build long-lasting partnerships that advance our digital transformation agenda."

Proposed regional priorities

WTDC-21 aims to forge a global plan for digital development over the next four years, providing future direction and guidance to the ITU Telecommunication Development Sector (ITU-D). Participants at RPM Asia-Pacific proposed several key priorities for the years 2022-2025:

- Addressing the special needs of least



developed countries, small island developing states including Pacific island countries and territories, and landlocked developing countries;

- Harnessing information and communication technologies to support the digital economy and create inclusive digital societies;
- Fostering development of infrastructure to enhance digital connectivity;
- Enabling policy and regulatory environments;
- Contribute to a secure and resilient information and communication technology (ICT) environment.

"I am humbled by your trust in me. I am also grateful to you for a very successful RPM and for a clear elaboration of our regional initiatives, in which we emphasize the needs of developing countries, the least developed countries (LDCs), the small island developing states (SIDS), and landlocked developing countries (LLDCs)," said the RPM Asia-Pacific Chair, Dr. Ahmad Reza Sharafat. Preparations by Asia-Pacific countries for WTDC-21 will continue within the framework of the Asia-Pacific Telecommunity (APT), where stakeholders will continue preparing contributions for ITU Inter-Regional Preparatory Meetings and finalizing their

Asia and the Pacific Common Proposals for WTDC-21.

Launch of Digital Trends in Asia and the Pacific 2021

A report released at the regional meeting, Digital Trends in Asia and the Pacific 2021, provides an overview of trends and developments in ICT infrastructure, access and usage trends across the region, which includes 38 ITU Member States and is home to a population of 4.2 billion people. The report finds that just over 96.1 per cent of the population is now within reach of a 3G mobile signal, and that 94.2 per cent is within reach of a long-term evolution (LTE) mobile broadband signal. Only a decade ago, some countries in the region had no 3G or 4G infrastructure in place. Despite these developments, a significant gender gap and a rural-urban divide persist. In 2019, only 41.3 per cent of women across the region used the Internet, compared with 48.3 per cent of men, the report shows. Moreover, only 37 per cent of rural households had access to the Internet in 2019, compared with almost twice as many urban households (70.4 per cent). The report further finds that, despite progress made since the last World Telecommunication Development Conference in 2017, some long-standing

challenges remain, and new challenges have emerged over the past three years. These have been compounded by the COVID-19 pandemic and require concerted and focused action. Meeting participants reported on the implementation of SDGs in the sector, as well as of the WTDC-17 Buenos Aires Action Plan, associated regional-level initiatives, and the World Summit for Information Society (WSIS) Plan of Action. "Despite the COVID-19 pandemic, the ITU Regional Office has delivered technical assistance and continued the implementation of the regional initiatives to connect the unconnected," noted Atsuko Okuda, ITU Regional Director for Asia and the Pacific region.

Generation Connect regional action plan, 2022-2025

In parallel with the regional preparatory meeting, the Generation Connect – Asia and the Pacific Youth Group presented

the draft Generation Connect Asia and the Pacific Action Plan 2022-2025, which outlines key interests, perspectives and concerns of young people regarding the opportunities and challenges presented by digital technologies. The group comprises 26 young people from the region, selected after a competitive selection process. The Generation Connect initiative promotes meaningful youth engagement and participation in the WTDC-21 process and at the Youth Summit to be held on 6-7 November 2021.

Network of Women for the ITU Telecommunication Development Sector

The meeting unveiled the Network of Women (NoW) Asia-Pacific for the ITU Telecommunication Development Sector, an initiative that aims to build a community to support female delegates, expand their network, and advocate and share experiences and knowledge with other female delegates. The Network of

Women for WTDC-21 Asia and the Pacific aims to promote active participation of women in ITU activities, including in the tech sector in general. "The Government of Mongolia gives great importance to the ICT sector and digital transformation," said Bolor-Erdene Battsengel, Chairwoman of the Communications and Information Technology Authority (CITA) of Mongolia. "We want to ensure that the benefits of digital transformation are fully recognized by citizens and public and private sectors and that they contribute to the empowerment of women in the ICT sector."

ITU International Centre of Digital Innovation

In a discussion focused on ITU's International Centre of Digital Innovation (I-CoDI), the Indian delegation presented a national initiative to promote digital innovation in connectivity and highlighted a series of upcoming webinars on innovative applications and connectivity options.

ITU to Advance AI Capabilities to Contend with Natural Disasters

The International Telecommunication Union (ITU) – the United Nations specialized agency for information and communication technologies – has launched a new Focus Group to contend with the increasing prevalence and severity of natural disasters with the help of artificial intelligence (AI). In close collaboration with the World Meteorological Organization (WMO) and the United Nations Environment Program (UNEP), the ITU Focus Group on 'AI for natural disaster management' will support global efforts to improve our understanding and modelling of natural hazards and disasters. It will distill emerging best practices to develop a roadmap for international action in AI for natural disaster management. The group's first meeting is scheduled for 15-17 March 2021. Participation is open to all interested parties. "With new data and new insight come new powers of prediction able to save countless numbers of lives," said ITU Secretary-General Houlin Zhao. "This new Focus Group is the latest ITU initiative to ensure that AI fulfils its extraordinary potential to accelerate the innovation required to address the



greatest challenges facing humanity." Clashes with nature impacted 1.5 billion people from 2005 to 2015, with 700,000 lives lost, 1.4 million injured, and 23 million left homeless, according to the Sendai Framework for Disaster Risk Reduction 2015-2030 developed by the UN Office for Disaster Risk Reduction (UNDRR). AI can advance data collection and handling, improve hazard modelling by extracting complex patterns from a growing volume of geospatial data, and support effective emergency communications. The new Focus Group will analyze relevant use cases of AI to deliver technical reports

and accompanying educational materials addressing these three key dimensions of natural disaster management. Its study of emergency communications will consider both technical as well as sociological and demographical aspects of these communications to ensure that they speak to all people at risk. "This Focus Group looks to AI to help address one of the most pressing issues of our time," noted the Chair of the Focus Group, Monique Kuglitsch, Innovation Manager at ITU member Fraunhofer Heinrich Hertz Institute. "We will build on the collective expertise of the communities convened by

ITU, WMO and UNEP to develop guidance of value to all stakeholders in natural disaster management. We are calling for the participation of all stakeholders to ensure that we achieve this." Muralee Thummarukudy, Operations Manager for Crisis Management at UNEP explained: "AI applications can provide efficient science-driven management strategies to support four phases of disaster management: mitigation, preparedness, response and recovery. By promoting the use and sharing of environmental data and predictive analytics, UNEP is committed to accelerating digital transformation together with ITU and WMO to improve disaster resilience, response and recovery efforts." The Focus Group's work will pay particular attention to the needs of vulnerable and resource-constrained regions. It will make special effort to

support the participation of the countries shown to be most acutely impacted by natural disasters, notably small island developing states (SIDS) and low-income countries. The proposal to launch the new Focus Group was inspired by discussions at an AI for Good webinar on International Disaster Risk Reduction Day, 13 October 2020, organized by ITU and UNDRR. This conversation continued at a subsequent AI for Good webinar, 21 January 2021, organized by ITU and UNEP. "WMO looks forward to a fruitful collaboration with ITU and UNEP and the many prestigious universities and partners committed to this exciting initiative. AI is growing in importance to WMO activities and will help all countries to achieve major advances in disaster management that will leave no one behind," said Jürg Luterbacher, Chief Scientist & Director of Science

and Innovation at WMO. "The WMO Disaster Risk Reduction Program assists countries in protecting lives, livelihoods and property from natural hazards, and it is strengthening meteorological support to humanitarian operations for disaster preparedness through the development of a WMO Coordination Mechanism and Global Multi-Hazard Alert System. Complementary to the Focus Group, we aim to advance knowledge transfer, communication and education – all with a focus on regions where resources are limited." ITU Focus Groups accelerate ITU studies in fields of growing strategic relevance to ITU membership. They establish a basis for related international standardization work in ITU Study Groups. The ITU Focus Group on 'AI for natural disaster management' will report to ITU-T Study Group 2 (Operational aspects).

OFCOM Announces Results of 5G Auction's Principal Stage

British communications regulator OFCOM has announced the outcome of the principal stage of its auction to release more spectrum to improve mobile services and support 5G. Four companies have secured new frequencies, with the sale process raising a total of GBP1.356 billion (USD1.88 billion) for state coffers. EE emerged as the biggest spender, securing 2x10MHz of paired frequency spectrum in the 700MHz band at a cost of GBP280

million, as well as further 20MHz block of supplementary downlink spectrum in that same band for GBP4 million, and 40MHz in the 3.6GHz-3.8GHz band (GBP168 million), taking its total spend to GBP452 million. O2 UK also secured frequencies, agreeing to pay GBP280 million for 2x10MHz paired in the 700MHz band and GBP168 million for 40MHz in the higher band. Meanwhile, Vodafone UK offered GBP176.4 million for a 40MHz block of spectrum in the 3.6GHz-

3.8GHz band, with Three UK rounding out the winners, having bid GBP280 million for 2x10MHz in the 700MHz band. In terms of the next steps, OFCOM said the auction will now move to the 'assignment' stage, which will involve a single bidding round in which the MNOs can bid for the frequency positions they prefer for the airwaves they have secured in the principal stage. According to the regulator, after submitting their assignment stage bids for the 3.6GHz-3.8GHz band, bidders will have the opportunity to negotiate the frequency positions among themselves, should they seek to join together their newly-acquired spectrum with frequencies they already hold in the wider 3.4GHz-3.8GHz band. OFCOM noted though that this will be subject to whether the companies wish to enter the negotiation period, and should they do so it said it would publish the dates for the negotiation period. Final results for the auction – including the total amounts paid, the specific frequencies secured for each bidder, and the outcome of any agreements reached in the negotiation period – will be published once all stages are complete.

Ofcom

Ofcom spectrum auction
Principal stage results revealed

We have announced the outcome of the principal stage of our auction for airwaves to boost current mobile services and support 5G

The money raised from the auction will be passed on to HM Treasury

FCC Commissioner Carr Outlines 5G Spectrum Priorities

FCC Commissioner Brendan Carr outlined his 5G priorities for the coming years, with spectrum getting top billing. "With all the work we've been doing over the past four years, we now have a lot of spectrum in the pipeline," Carr said during keynote remarks at the American Enterprise Institute. "The key is to make sure we get those airwaves out into the commercial marketplace as quickly as possible." That includes holding respective auctions for 100-megahertz of spectrum in the 3.45-3.55 GHz band, and more than 100-megahertz in the 2.5 GHz band. As the Republican commissioner acknowledged, many of the actions on his agenda are already in the works. The FCC is slated to vote this Wednesday on a proposed order as well as Public Notice for input on auction procedures, circulated by FCC Acting Chairwoman Jessica Rosenworcel last month, for the 3.45 GHz band. As for 2.5 GHz EBS licenses, or Auction 108, Carr said: "We've already put the leg work in to get this across the finish line later this year," with a public notice issued in January. Former FCC Chairman Ajit Pai's departure earlier this year paved the way for the Biden administration to appoint a Democratic majority, but the commission currently remains split with four members. In 2021 Carr also wants the FCC to seek input on increasing the power levels for operations in the shared Citizens Broadband Radio Service (CBRS) 3.5 GHz band. AT&T was among operators asking for higher CBRS power levels back in 2019. Countries around the globe are using the 3.5 GHz band for 5G, and Carr noted that higher power limits would help align the U.S. with international standards. The CBRS band also sits between the 3.45 GHz band to be auctioned as well as the 3.7 GHz C-band that carriers just spent more than \$81 billion to acquire licenses in – and he said increased power limits could span those 3 GHz band operations. "We should take the real-world experience we're gaining with CBRS builds and coordinate with federal users as we look at increasing the power levels here," Carr said in prepared remarks. "Getting this done will help extend the reach of 5G services to even more Americans." Other spectrum items on Carr's list for 2021 include allowing very low power devices (VLP) to operate in the 6 GHz band at 14 dBm, as well

as client-to-client device communications in the band. For VLP devices, he said it's key for 5G "because it would help power the AR/VR and other applications that will drive consumer demand for 5G devices." It would also align with what other countries like Brazil have done. A final spectrum item on the commissioner's agenda for 2021 is updated rules for frequencies between 5470-5725 MHz, which Carr contends would help make it more actively utilized. "This band contains a large, 255 megahertz-wide swath of unlicensed spectrum that is vastly underutilized today – indeed, equipment manufacturers don't even bother to include the band in many 5 GHz Wi-Fi devices," he said. The current rules are meant to protect federal users in the band, but he wants the FCC to explore whether technology advances could keep incumbent users protected while allowing more access for unlicensed use. Next year, the agency should tee up an auction for 50-megahertz between 1.3-1.35 GHz, which the FCC and NTIA have been exploring. And also hold another mmWave auction, with Carr pointing to the 42 GHz band as the next prime candidate. Beyond 2022, he cited the lower 3 GHz band, 4.8 GHz, 7.125-8.4 GHz, and spectrum above 95 GHz (including terahertz bands that could be useful in 6G) as main priorities. Along with spectrum, Carr's plan targets infrastructure rules and policy aimed at making it easier for those looking to deploy on federal lands and in rural areas.



Nigeria to Free Up Analogue Broadcast Spectrum By 2022

Hard on the heels of South Africa's similar announcement, Nigeria's National Broadcasting Commission now says that the country's Digital Switch Over (DSO) project will be completed by middle of 2022 when the country will fully transit from analogue to digital terrestrial broadcasting. Speaking at the weekend, the acting director-general of the commission, Professor Armstrong Idachaba, noted that funding from federal government and the recent establishment of a ministerial task force should speed the process up. According to Nigeria's Vanguard newspaper, the pilot program actually launched as long ago as 2016 in Jos, Plateau State, followed by Abuja, Kwara, Kaduna, and Enugu, halting in Osogbo in February 2018. After what appears to be a three-year break, blamed in part on a lack of political will and financial constraints, the launch will now resume in the country's big cities,

notably Lagos, with a completion date of the middle of 2022. While this will may be good news for television broadcasters and viewers in Nigeria, there is an increasing need in other industries for spectrum, more of which will become available after the switchover, potentially benefiting a number of players, including suppliers of mobile communications services. Readers will remember that in February a similar announcement was made in South Africa, where the country's president Cyril Ramaphosa said that he expected the province-by-province process to start this March and be completed by the end of March 2022. Like Nigeria and a number of other countries in Africa, South Africa missed the original deadline set by the International Telecommunication Union for completion of the switchover process, meant to happen in June 2015.

Thailand May Extend 5G License Payment Deadline

A national 5G committee in Thailand has asked regulator NBTC (National Broadcasting and Telecommunications Commission) to grant the country's operators various relief measures, including an extension of their license payment deadlines. As reported by Bangkok Post, the committee - chaired by Prime Minister Prayut Chan-o-cha - has ordered the regulator to consider a suite of relief measures for the telecoms sector, which is weathering the financial impact of the

ongoing pandemic. Operators registered declines across Q4 2020, with market leader AIS seeing its revenue fall, second placed True Move making a loss, and dtac experiencing a drop in profit. Between them, these three operators - together with state-backed firms CAT Telecom and TOT - spent a total of THB100.5 billion (\$3.3 million) on 2,805MHz of spectrum across the 700MHz, 2600MHz and 26GHz bands during the auctions held in February 2020. Winners of the 700MHz and 2600MHz

concessions have 10 years to pay back the fees, but 26GHz license holders are required to pay in full within just one year of receiving the permit. In 2018, the regulator advocated extended the payment period for AIS and True Move's 4G licenses, but this plan was shelved following negative feedback. The NBTC has been asked to propose further measures to aid the sector at the committee's next meeting, to be held on an unconfirmed date in April.

Senate Grants DITO 25-Year Franchise



The Philippines' Senate committee on public services yesterday (10 March) approved the issuance of a new 25-year operating franchise to the country's new third telco, DITO Telecommunity Corp. Local press reports confirm the granting comes in the wake of the newcomer having successfully passed its recent technical audit by the National Telecommunications Commission (NTC). The company's original franchise - issued under its former name, Mindanao Islamic Telephone Company (Mislattel) - is due to expire on April 2023, but the Senate committee noted that having made good on rollout requirements to supply minimum 27Mbps mobile internet to at least 37% of the population in year one, it had granted the application. The telco currently has 1,602 operational cell sites in the Philippines and launched 4G and 5G services in 15 areas on 8 March.

GSMA Calls for Stronger EC Stance on Network Costs

Industry association the GSMA urged the European Commission (EC) to expand the scope of a draft directive on cutting the cost of deploying broadband networks by increasing the focus on issues hampering mobile operators. In its response to the EC's public consultation on the Broadband Cost Reduction Directive (BCRD), the association noted to increase the policy's effectiveness it should put stronger emphasis on reducing fees and red tape related to deploying mobile networks. It added "increased costs of compliance and deployment result in worse consumer and socioeconomic outcomes," pointing to a need to introduce consistent policies across European Union member states to meet connectivity goals. Among the GSMA's suggestions was to improve and expand access to existing infrastructure owned by public or private bodies; simplify planning permission procedures; streamline and harmonize rules across the region; and adopt an "ambitious pro-investment approach". It also called for the rules to encourage co-investment in projects such as edge cloud initiatives and mobile network sharing, on both cost saving and environmental grounds. The deadline for responses to the EC's

BCRD consultation. On releasing its draft measures in December 2020, the EC noted it aimed to ease and "incentivize the rollout of high-speed electronic communications networks by lowering the costs of deployment with a set of harmonized measures".



NCC Highlights the Role of Telecoms in Nigeria's Exit from Recession

The Nigerian Communications Commission (NCC) has highlighted the role played by the telecommunications sector in lifting the country out of recession in the recently released fourth-quarter Gross Domestic Product (GDP) figures for the fourth quarter of 2020. The sector contributed 12.45 per cent to the country's GDP in the fourth quarter of 2020. In a statement signed by its Director of Public Affairs, Dr. Ikechukwu Adinde, the NCC stated that the latest data released by the National Bureau of Statistics (NBS), showed that telecommunications and Information Services under Information and Communication, grew by 17.64 per cent in Q4 2020 from 17.36 per cent in Q3 2020 and 10.26 per cent in Q4 2019. According to the NBS report, agriculture, industries, and services sector, under which telecommunications is categorised, contributed 26.95 per cent, 18.77 per cent, and 54.28 per cent respectively. "This is a pointer to the fact that telecommunications, trade, services and crop production are the main drivers of Nigeria's exit from recession," Adinde said. In specific terms, NBS report showed that largest sub-sectors in Q4 2020 are crop production at 3.68 per cent, crude petroleum and natural gas at 8.2 per cent, trade at 14.9 per cent, telecommunications and information services at 12.45 per cent, and real estate at 5.7 per cent. "Telecommunication sector has, in the last five years been a major driver of the digital economy agenda of the federal government, as it has continued to provide the needed digital sinews that support the economy, especially during the COVID-19 pandemic and its attendant restriction period. "Since the outbreak of the pandemic, government institutions, businesses and individuals have relied heavily on telecoms services to carry out their daily operations and official routines. "In response to the increased demand, the commission put a number of regulatory measures in place to ensure seamless access by Nigerians to telecommunication services and protect against any adverse impact on the quality of service enjoyed by consumers. "The steady growth of the telecoms sector over the years with its pervasive positive impact on all other sectors of the economy in terms of increased automation of processes and digital transformation in service delivery, has

been remarkable. "The growth trend since 2015 has reawakened hope that the economic diversification dreams of the country may finally be a reality as the sector continues to energize significant economic activities in the services sector of the economy," Adinde said. He added that through effective regulatory regime emplaced by the NCC, under the leadership of its Executive Vice Chairman, Prof. Umar Danbatta, telecoms investment grew from about \$38 billion in 2015 to over \$70 billion currently. He said broadband penetration also increased from six per cent in 2015 to 45.02 per cent at December, 2020, indicating that 85.9 million Nigerians are now connected on 3G and 4G networks, which provide enhanced high-speed internet that has continued to boost efficiency and increase productivity across the economic spectrum. "Recent statistics also indicate that between 2015 and December 2020, active voice subscriptions have increased from 151 million to 204.6 million, with teledensity standing at 107.18 per cent. Basic active internet subscriptions grew from 90 million to 154.3 million during the period," Adinde said. He assured Nigerians that the commission would continue to be committed to its culture of quality regulation of the telecommunications industry and would continue to ensure a stable and robust sector which drives the digital economy agenda of the federal government and ultimately leads in the growth of the country's GDP.



36,700 Additional Base Stations Needed by End-2025 According to Osiptel

Peruvian mobile network operators will need to deploy an additional 36,695 base stations by the end of 2025 to support the growing demand for mobile data services, according to a study conducted by sector watchdog the Supervisory Agency for Private Investment in Telecommunications (Organismo Supervisor de Inversión Privada en Telecomunicaciones, Osiptel). According to the regulator's estimates, the nation will need a total of 34,577 base transceiver stations (BTS) by the end of

2022, with that figure rising to 49,135 a year later and 60,771 by the end of 2025. With a total of 24,076 BTS in service at the end of 2019, Osiptel estimates that 36,695 additional sites need to be deployed to address rising demand – representing an increase of over 150% – but notes that the figure could be less if operators implement sharing agreements for passive or active infrastructure. Osiptel's study found that average monthly mobile data traffic stood at roughly 206.7PB in Q3 2020 and

projected that the figure would rise to 971.0PB per month by 2025. The regulator also highlights a network development gap, identifying five regions where more than 200% increase in sites will be needed in the coming years, namely: Arequipa (1,347 BTS installed at end-2019 and 4,367 needed by end-2025, or a 224% increase), Ica (337%), La Libertad (219%), Lambayeque (270%) and Ucayali (242%).

Malaysia Fleshes Out National 5G Plan

Malaysia's media and telecoms regulator explained a national 5G plan unveiled last week aims to lower the costs operators face in deploying the technology, freeing them to focus on improving LTE coverage and invest more in innovative services. The Malaysian Communications and Multimedia Commission (MCMC) stated the plan to construct a nationwide 5G network would encourage operators to

invest in the "right areas" and reduce duplication. It argued this was vital to enable service providers to continue deploying fibre, and improve 4G coverage and quality. Its objective is to reduce infrastructure-based competition and encourage development of "truly game-changing" consumer and business services. A special purpose vehicle established by the nation and governed by

the MCMC will be allocated 5G spectrum and offer capacity to mobile operators on a wholesale basis. MCMC said operators will have "open, fair and equal access" to the new network and there will be private sector involvement. The government targets the launch of 5G services by the end of the year. It previously postponed deployment of the technology to boost the focus on LTE.

FCC Plans Vote on Open RAN Review

Acting Federal Communications Commission (FCC) head Jessica Rosenworcel proposed an inquiry into open RAN to establish what the agency's role should be in promoting the approach. The proposed review would seek views from the industry on the current status of global open RAN deployments; the role of emerging and incumbent vendors, and the FCC in standards setting; challenges involving testing, integration and deployment; and establishing a competitive market. Rosenworcel stated a fuller investigation would allow the FCC to "compile a record about how we can secure our vulnerable supply chains once and for all, and revitalize the nation's 5G leadership and innovation". A vote on the proposal is set for next month. Rosenworcel previously suggested the



government fund open RAN development, and that the FCC could establish a testing environment and incentivize operators to use the approach to replace equipment deemed not to be trustworthy.

Morocco, Luxembourg Sign Memorandum on Digital Transition

Morocco and Luxembourg have signed a Memorandum of Understanding (MoU) to cooperate on digital transition projects, particularly in the areas of electronic government (e-gov), digital inclusion, and infrastructure. Morocco's Minister of Industry, Trade, and Investment, Moulay Hafid Elalamy, and Luxembourg's Deputy Minister of Digitalization, Marc Hansen signed the agreement Monday during a videoconference. Within the framework of this partnership, Luxembourg and Morocco intend to share their experience and expertise in the field of digitalization. Hansen expressed a joint ambition to collaborate in the fields of data interoperability, training for digital inclusion, and developing digital infrastructures. The minister specified that the agreement "marks the beginning of a mutual collaboration that will contribute to a mutually beneficial digital transition

for both countries." This partnership also paves the way for collaboration between the GovTech Lab of the Luxembourg Ministry of Digitalization and the Moroccan Digital Development Agency in the field of innovation and modernization of digital public services. Morocco's Digital Development Agency implemented a new strategy to further develop the country's e-governance as well as e-commerce. Digital Morocco 2020, "fosters the digital ambitions of the kingdom," explained Moulay Hafid Elalamy. This initiative aims to accelerate Morocco's digital transition and to position the country as "the leading African digital hub." The strategy's objective is to put 50% of administrative procedures online while reducing the digital divide by 50%. According to Elalamy, the digitalization of administrative services will achieve better productivity and reduce the costs for administrative services.

In the industry sector, Digital Morocco 2020 seeks to connect 20% of Moroccan small to medium enterprises (SME). By digitizing the economy sector, the ministry hopes to attract foreign investment and to encourage business owners by limiting administrative obstacles. With the newly signed memorandum, Luxembourg and Morocco appear determined to work toward furthering their evolving economic cooperation. In 2020, Luxembourg's government opened a Trade and Investment Office (LTIO) in Casablanca. The office, the very first in Africa, will help identify opportunities in Morocco and more widely in Africa for Luxembourg companies from different sectors. It will also support Moroccan investors and companies to access Luxembourg as a European gateway.

EU Charts Cybersecurity Certification Scheme for 5G

An EU-wide cybersecurity certification scheme for 5G networks will be rolled out across the bloc in a bid to patch technical vulnerabilities in next-generation mobile communications, the European Commission said. The move comes as part of the EU's cybersecurity act adopted in 2019, which attempts to encourage market players to bolster the security of their connected devices in order to achieve EU certification. The bloc's cyber agency, ENISA, has been tasked with coming up with the standards required to qualify for the certificate. The cybersecurity of 5G networks has long been on the minds of policy workers in the field, as the EU attempts to establish a common approach with regards to the security of next-generation networks in light of various concerns about third-country operators. EU nations must make urgent progress on mitigating the risks to 5G telecommunications networks posed by certain high-risk suppliers, the European Commission said in a progress report published on Friday (24 July). In January last year, the Commission unveiled its 5G Toolbox, in which EU nations were tasked with assessing the risk profile of telecoms providers, with a view to applying restrictions for those vendors considered to be high-risk. A progress report on the plans in July pressed member states to make 'urgent progress' on mitigating the risks to 5G telecommunications networks posed by certain high-risk suppliers. The announcement to establish a cyber certification scheme for 5G comes as the EU attempts to bring member states closer together on the issue of telecommunications security. In January, the European Court of Auditors said that EU countries are 'progressing at different paces' in terms of 5G security protocols introduced by the European Commission as part of last year's toolbox. "Member states have developed and started implementing necessary security measures to mitigate risks," the European Court of Auditors' Paolo Pesce said, speaking on the

launch of a year-long probe of the bloc's security standards in the field. "But from the information gathered so far, member states seem to be progressing at a different pace as we implement this measure." Meanwhile, the Commission's internal market chief, Thierry Breton, said in a statement on Wednesday that the new certification framework could bring EU nations closer together on 5G security. "Security is at the core of 5G technology roll-out. EU-wide certification, in combination with other types of measures in the EU 5G Toolbox, supports our efforts to optimize 5G security and patch technical vulnerabilities," he said. "This is why it is important that member states make further progress in implementing the Toolbox." For their part, Chinese telecoms manufacturer Huawei, who has previously been a cause for concern in some member states, including most recently Sweden, welcomed this week's news. "A European cybersecurity certification scheme is the backbone for safe and secure 5G operations in Europe," a spokesperson from the company told EURACTIV. "We believe this announcement is a positive step as 5G in Europe is critical for the continuation of a resilient Digital Society."



Industry Groups Welcome EU Privacy Agreement

GSMA and ETNO called for further action to ensure European operators are able to compete effectively with other players in the digital economy, as European Union (EU) member states agreed revised rules on e-privacy rules in the bloc. In a joint statement, the industry associations welcomed the agreement, which comes after four years of regulatory wrangling. They said the telecoms industry was fully committed to the principle of confidential communications and supported the continent's ambitions to lead the data economy. They added the move was an important step in the right direction in efforts to align e-privacy with General Data Protection Rules (GDPR), but warned

work was still needed. "If regulatory asymmetries linked to the discrepancy between e-privacy and GDPR persist, European players will face hurdles: this is both a matter of competitiveness and ability to develop European data services inspired by European values," they added. The statement was in response to an agreement by the European Council to negotiate a mandate on updated e-privacy rules, which aims to define cases in which service providers are allowed to process electronic communications data, or have access to data stored on end user devices. It follows work led by the Portuguese presidency to update the existing e-privacy directive from 2002 to cater for new

technological and market developments, including widespread use of VoIP, web-based email and messaging services, and emerging techniques to track users' online behavior. The draft legislation will repeal the existing directive, with the aim to cover electronic communications using publicly-available services and networks, and metadata (such as information on location and time) related to the communication. In addition, to ensure full protection of privacy rights, and promote trusted and secure IoT, the rules will cover machine-to-machine data transmitted via a public network. The Portuguese presidency will now begin talks with the European Parliament to define the final text.

Ethiopia Could Shut the Door on International Telecoms Investors if they Don't Meet its Minimum Valuations

Ethiopia could reverse its decision to open up its telecoms market to international investment, if the bids it receives for a 40% stake in state owned Ethio Telecom do not meet a minimum threshold. Eyob Tekalign, the Government Minister responsible for overseeing the privatization process, told reporters from Bloomberg that the government could walk away from the scheme, if minimum valuations were not met. "If we get the value, we expect from the bidding process, we will go ahead," he said. "If not, we will have another look." This is the first time that the Ethiopian government has publicly stated that it could be prepared to ditch plans to open up its telecoms market to international investors, if it doesn't get the financial package it is looking for. The prospective

liberalization of Ethiopia's telecoms sector has been a hot topic in the industry, since the country first expressed an interest in courting foreign investment into its telecoms sector three years ago. Back in 2018, the Ethiopian government pledged to open up its state-run telecoms sector to international investment and promised to auction off two telecoms licenses to successful international bidders. The new telcos would have competed against Ethio Telecom, creating a three-operator market in the East African nation. The government received interest from a swathe of international telcos, desperate to secure a foothold in this new market. However, the Ethiopian government has since rowed back on that pledge, preferring instead to offer a 40% stake in state-

owned Ethio Telecom to international investors. Now, even those plans look to be in doubt. With more than 100 million subscribers, Ethiopia represents a huge potential market for international telcos. The Ethiopian Communication Authority went as far as tendering for prospective licensees and had received Expressions of Interest from some of the world's biggest telcos, including Global Partnership for Ethiopia (a consortium of telecom operators made of Vodafone, Vodacom, and Safaricom), Etisalat, Axian, MTN, Orange, Saudi Telecom Company, Telkom SA, Liquid Telecom, Snail Mobile, and two non-telecom operators, Kandu Global Telecommunications and Electromecha International Projects.

Mobile Industry Ramps Calls for European Rule Overhaul

European Union (EU) regulators faced growing calls for a regulatory revamp in the region, moving to policies which allow cost-effective deployment of 5G, drive development of the digital economy and cut inequality in access to technology. In separate statements, Telefonica and industry association the GSMA added to comments last week from ETNO and Ericsson Chief Borje Ekholm pointing to issues hampering Europe's progress in 5G and highlighting risks to the digital economy from outdated regulations. The GSMA published a document entitled

Sovereignty, Resilience and Trust, which sets out a series of measures required to help the mobile industry support digital aims and aid Europe's economic recovery in the wake of the Covid-19 (coronavirus) pandemic. In it, the association noted the continent needed "a market environment that encourages critical infrastructure investment", highlighting current policies which had proven a stumbling block to investment. Among the recommendations were adoption of policies which don't undermine infrastructure investment, improve merger review processes to take

into account the "changing competitive landscape", fair spectrum pricing and assignment policies, and encouragement of network sharing deals. The GSMA also called for an internationally coordinated approach to encourage an open-RAN ecosystem and an easing of logistical complications for accessing sites for infrastructure. To encourage a shift to 5G architecture, the GSMA pushed for measures to aid the creation and use of interoperable mobile edge cloud infrastructure.

Nepal Telecom Granted Mobile Money License

Nepali Digital Payment Company, a joint venture created by state-owned telecoms provider Nepal Telecom (NT) and Rastriya Banijya Bank, has received authorization from Nepal Rasta Bank to operate a mobile money service, Nepalitelecom.com has re-

ported. Nepal's central bank approved the license application submitted in January 2021 following an assessment of the company's systems. Nepali Digital Payment Company will use NT's mobile number as a digital wallet, enabling customers to

use their mobile balance for digital transactions such as money transfers and bill payment. The service, which is expected to be launched in the coming weeks, will be particularly useful for NT's customers in remote areas with no internet access. 📍



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ARTICLE

The RIPE NCC Throws Light on the Current State of Internet in the GCC Countries, Yemen and Iraq



The report gives a detailed outlook on the Internet infrastructure, connectivity and routing within the Gulf region aiming at helping mobile operators and Internet service providers to drive the development and future growth of their networks.

The RIPE NCC previously published a series of Internet country reports. The latest report produced by the RIPE NCC in this series examines the Internet landscape in the following countries: Bahrain, Iraq, Kuwait, Oman, Qatar, Saudi Arabia, the United Arab Emirates (UAE), and Yemen, as part of an ongoing effort to support Internet development through our service region by making our data and insights available to leaders, decision and policy makers, industry players and Internet community.

The report gives a detailed outlook on the Internet infrastructure, connectivity and routing within the Gulf region aiming at helping mobile operators and Internet service providers to drive the development and future growth of their networks. The report reaches several conclusions to reach

Mobile Internet connectivity has had a faster growth and penetration rate than fixed broadband in the Gulf, given the region's high reliance on mobile access. The region has some of the highest mobile subscriptions per capita in the world.

a healthy, competitive digital landscape that cannot be fully realised until a number of enhancements take place.

The analyses and results are based on data collected by the RIPE NCC measurements tools and a number of external data sources.

Growth in Local Internet Registries (LIRs):

The report shows that Iraq, Saudi Arabia, United Arab Emirates, and even Kuwait have shown significant growth over the past decade in establishing local networks. The report indicates that Iraq overtook the GCC countries with the most Local Internet Registries (LIRs). On the other hand, Bahrain, Oman, Qatar, and Yemen have experienced far less growth, with some even decreasing their number of LIRs.

The number of private networks (ASNs) in a given country is one indication of market maturity. These networks encourage interconnection, offer security and increase resiliency in the market. As more service providers enter the domestic market, this will drive down costs and increase innovation – all of which support the long-term health of the local Internet ecosystem.

Demand for connectivity and depletion of IPv4: Mobile Internet connectivity has had a faster growth and penetration rate than fixed broadband in the Gulf, given the

region's high reliance on mobile access. The region has some of the highest mobile subscriptions per capita in the world.

As more and more organisations scrambled to get access to Internet networks, demand for IPv4 in the region increased with Saudi Arabia and the United Arab Emirates, and other countries acquiring more IPv4 addresses from the secondary market. Saudi Arabia is the most dominant of the Gulf countries in the transfer market followed by the United Arab Emirates, the report indicates.

Need for IPv6 deployment: Despite IPv4's dwindling availability and its increasing cost on the secondary market, many countries in the Gulf region continue to struggle with IPv6 deployment. Although Iraq, Saudi Arabia, the United Arab Emirates, and Kuwait have substantially increased their IPv6 holdings in recent years, there are vast differences when it comes to actual deployment rates. The UAE leads the region in IPv6 deployment followed by Saudi Arabia.

Dependency on International Internet exchange points (IXPs):

Recent years have seen an increase in the number of Internet exchange points (IXPs) in the Gulf region with Bahrain, Kuwait, Saudi Arabia, and the United Arab Emirates each having at least one operational IXP.

While some Gulf countries lead the world in indicators such as mobile penetration and Internet speeds, the region lags far behind, with most traffic being sent far outside the region. These detours generally increase costs for the network operator and, more importantly, the additional distance travelled unnecessarily increases the risk of disruptions.

While some Gulf countries lead the world in indicators such as mobile penetration and Internet speeds, the region lags far behind, with most traffic being sent far outside the region. Providers in the Gulf region prefer International IXPs such as in Amsterdam and Frankfurt, with traffic being sent across distant locations rather than making use of regional IXPs. These detours generally increase costs for the network operator and, more importantly, the additional distance travelled unnecessarily increases the risk of disruptions.

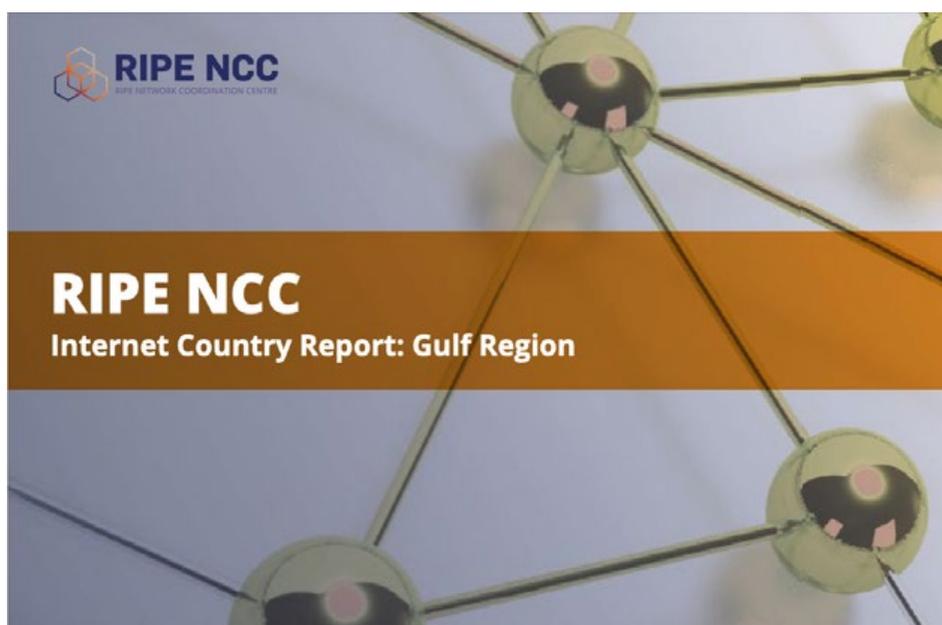
Protecting data and networks: Routing security could be greatly improved in the region by adopting the Resource Public Key Infrastructure (RPKI), a digital certificate that helps network operators make more secure routing decisions.

The report calls mobile operators and Internet service providers to certify their Internet number resources and share best current operational practices around routing security in general. This is in order to better safeguard the Internet and reduce the risk of a hack. There is a need for open diverse markets that allow for greater connectivity, multiple access points, and increased choice in service providers.

Some of the key findings include the following:

The report reaches a number of conclusions about what is needed in the region from a technical and regulatory standpoint in order to facilitate Internet development and future growth:

- IPv4 scarcity may pose less of a challenge than in other parts of the world, given the region's high mobile penetration, but further IPv6 deployment is still needed to support future growth
- Domestic connectivity within the countries shows bottlenecks and potential single points of failure
- International connectivity in many of the Gulf countries is not very diverse, with the majority dependent on a small number of providers
- Regional connectivity is far from optimised in the region as a whole, with traffic being sent across distant locations rather than making use of local exchange points
- Routing security could be greatly improved in the region
- Governments need to adapt to the changing environment through open and flexible regulation that supports growth. 🌱



The report is published in English and Arabic, and can be downloaded at:

<https://labs.ripe.net/country-reports/ripe-ncc-internet-country-report-gulf-region-arabic-version/view>

<https://labs.ripe.net/country-reports/ripe-ncc-internet-country-report-gulf-region/view>

A SNAPSHOT OF REGULATORY ACTIVITIES IN THE SAMENA REGION



The Telecoms Minister Brahim Boumzar has stated that 5G development is not an immediate national priority, as the government is instead focused on improving 4G mobile services for the population. Speaking in a radio interview on 14 March, Boumzar called the existing quality of 4G service 'poor', adding: 'For the moment, the essential thing is to offer a respectable [service] to our citizens. First, we have to offer good 4G and at the right time we can move on to other generations.' He also argued that cellcos need enough time to get financial returns from their 4G networks, which were launched little over four years ago, saying: 'the operators should also manage to amortize their investments.' The minister continued: 'Our current facilities are 5G-ready. When

the time is right, we will launch 5G.' He also expressed concerns that a switch to 5G – with 4G coverage remaining weak – could even accentuate the digital divide in the country and harm the digital transformation ambitions promoted by the government. TeleGeography says that Algeria's commercial introduction of 4G LTE services took place in October 2016 – less than three years after its launch of 3G – and whilst the combined 4G network footprint of the country's three cellcos Mobilis, Djezzy and Ooredoo has reached a presence in all 48 provinces, significant improvements are still required, evidenced by regulatory fines issued to the trio in 2020 for unsatisfactory 4G coverage.

(March 13, 2021) Agence Ecofin

Algeria



Bahrain Telecommunications Regulatory Authority (TRA) has signed a cooperation agreement with the Arab Centre for Dispute Resolution (ACDR). The agreement aims to organize and manage disputes relating to the domain names '.BH' and '.Albahrain' Internationalized Domain Name (IDN). On this occasion, Director of Technical and Operations of the Telecommunications Regulatory Authority of the Kingdom of Bahrain Eng. Mohamed Alnoaimi stated "TRA signed this agreement with the Arab Centre for Dispute Resolution to settle disputes resulting from the use of domain names. This will have a positive impact in making the domain name for the Kingdom of Bahrain trusted and reliable." Mrs. Majd Khaddash, Director of the Centre, outlined that the agreement provides partnership between the two parties in the field of managing disputes carried out by the authority, specifically in relation to the domain names ".BH" and "Albahrain", whereby the Centre shall coordinate with complainants, respondents and registrars to complete the necessary documents for filing cases, in addition to the panelists adopted by the Centre. The Centre provides services in the areas of domain names attributable to dispute management, and was approved by ICANN on the 18th of May, 2013. She added that ACDR maintains a leading position when it comes to implementing the Uniform Domain-Name Dispute Resolution Policy (UDRP), along with its supplemental rules. The Centre aims to provide the adequate and reliable support to reinforce guidelines, procedures and format for disputes resolution process, in addition to cases involving inaccurate registrations carried out in bad faith. The Centre also seeks to

promote effective communication with an aim of promoting a broader understanding of policies relating to the latest developments in intellectual property law and the resolution of disputes over domain names. It is noteworthy that ICANN, a non-profit organization, includes participants from around the world seeking to preserve the security, stability and interoperability of the online community, and has worked towards building domain name dispute settlement guidelines. (March 13, 2021) bna.bh/en

Bahrain's National Action Charter has contributed tremendously to boosting the kingdom's ICT sector, Mohammed Ali Al Qaed, Chief Executive of Information & eGovernment (iGA), has said. Congratulating His Majesty King Hamad bin Isa Al Khalifa, and the Crown Prince and Prime Minister, HRH Prince Salman bin Hamad Al Khalifa on the 20-year anniversary of the National Action Charter, Al Qaed said that the anniversary recalls the achievements of the kingdom made possible thanks to the vision of HM the King, including accomplishments in the ICT sector and its unprecedented development over the past few years. This is in addition to the supporting decrees and legislations that contributed to the readiness of the country's technological infrastructure, and enhanced its ability to meet various challenges, including the current circumstances. Al Qaed highlighted some of the kingdom's most notable digital transformation achievements during the pandemic, including providing over 500 round-the-clock eServices via the National Portal, bahrain.bh, and the launching of the BeAware Bahrain app, following the vision of

HRH the Crown Prince and Prime Minister. The app facilitated instant access to a range of public health-related eServices, including vaccine registration and certification, while helping the Ministry of Health and Ministry of Interior contact trace and monitor positive cases. He credited the directives of HM the King in adopting modern technology and Artificial Intelligence (AI) in various fields, and their role in establishing relationships with major technology leaders such as Microsoft and Amazon web Services (AWS). Bahrain made many important strides towards the digital transformation of government services and systems, which helped elevate its reputation regionally and globally. Al Qaed called the National Action Charter a defining moment in the Kingdom's history, one that that helped achieve wide-ranging development and improved quality of life for citizens and residents. Based on the principles of reform and progress, it enhanced the democratic process, supporting freedom of expression and equality between citizens, ensuring education and health and a commitment to economic development and diversified revenue streams. This reflected positively on the kingdom's services and products, introducing new systems that contributed to quality of life. He added that this anniversary is an opportunity to reflect on the kingdom's achievements during this pandemic, which were made possible by HM the King's dedication to ensuring the health and wellness of all citizens and residents, as well as the efforts of the National Taskforce for Combating the Coronavirus, led by HRH the Crown Prince and Prime Minister. Al Qaed concluded by congratulating the kingdom's senior leadership and all of Bahrain on this anniversary, expressing his best wishes for its continued local, regional, and global achievements, calling on all citizens to continue offering their best in service of the nation.

(February 15, 2021) tradeArabia.com

Through the SafeSurf initiative, The Telecommunications Regulatory Authority in cooperation with Google, held an interactive workshop attended by several educational personnel from schools in the Kingdom of Bahrain. This workshop aims to spread awareness, support digital safety education particularly within the educational sector, in addition to addressing the latest risks faced online and the right way to overcome them. The workshop, which was held through Google's "Abtal AI Internet" Program, discussed several issues related to the latest National Internet Safety Review study conducted by TRA highlighting the

level of Internet safety in the Kingdom of Bahrain in addition to digital training on an online safety curriculum. Regarding this workshop, TRA's Director of Consumer Affairs and Media, Sh. Abdulla bin Humood Al Khalifa, said: "This cooperation comes within the community partnership with various entities and institutions to enhance knowledge cooperation. TRA will continue its role in promoting awareness about the safe use of online services through the SafeSurf initiative in the interest of providing a safe and effective internet environment in the Kingdom of Bahrain. This will enhance awareness within the community and help individuals discover and avoid internet risks, especially those resulting from the use of social media, in addition to giving solutions to overcome them, to mitigate the negative effects and their impacts on Social, psychological and educational aspect of life such as cyberbullying, fraud, identity theft and many others." Sh. Abdulla affirmed: "TRA has also worked to expand the scope of knowledge through cooperation with various entities, including Google and the Ministry of Education whose contribution we would like to recognize, and through this interactive workshop that included a large group of teachers to be able to train their students and spread this culture in the educational environment and will then be a certified "Abtal AI Internet" trainer." On his part, Salim Edde, Director and Head of Government Affairs and Public Policy in the MENA region at Google said: "We are committed to providing the entire community, especially children, with the skills and tools they need to be able to use the Internet safely while protecting their privacy. We are pleased to be partnering with TRA to help children and educators through Google's "Abtal AI Internet" program, especially in light of current circumstances and distance learning. The participants in the workshop were introduced to the "Abtal AI Internet" program designed to educate and equip children with the required skills to use the Internet safely and wisely. Teachers are trained on the tools and methods necessary to teach the basics of Internet safety and prepare students for a healthy and safe use of the Internet. The SafeSurf initiative was launched by TRA in 2010 to provide citizens and residents of Bahrain and their families with sufficient knowledge and information to create a safer internet environment, in addition to promoting awareness on cyber safety, culture and innovation by educating and empowering digital technology users and sharing knowledge and experiences.

(February 1, 2021) tra.org.bh



Bangladesh

The Bangladesh Telecommunications Regulatory Commission (BRTC) has successfully completed an auction of additional spectrum in the 1800MHz and 2100MHz bands for BDT76.16 billion (USD883 million), local news source New Age writes. Regarding the 1800MHz band, the regulator sold 7.4MHz of airwaves for USD229.4 million, with Banglalink securing 4.4MHz for USD136.4 million, Robi Axiata (2.6MHz, USD80.6 million) and GrameenPhone (0.4MHz, USD12.4 million). All

three aforementioned operators also secured spectrum in the 2100MHz band: GrameenPhone (10MHz, USD378.75 million), Banglalink (5MHz, USD145 million) and Robi (5MHz, USD145 million). Teletalk, which also participated in the 2100MHz auction, failed to secure any airwaves; the state-owned operator withdrew in the 15th round of the bidding, with GrameenPhone emerging victorious after 81 rounds of bidding against the remaining participant Robi. GrameenPhone agreed to pay USD233.75 million

for the 5MHz block. The spectrum licenses are valid for 15 years, with operators required to pay 25% of the fee by 23 March and the remainder in instalments over five years.

(March 15, 2021) commsupdate.com

The four mobile phone operators obtained 30.83 lakh new subscribers in February with the leading telecom operator, Grameenphone, adding 22.69 lakh new customers to its base in the month after losing 9.16 lakh customers in January. The total number of connections of the operators increased to 17.33 crore at the end of February from 17.02 crore in the previous month, showed the Bangladesh Telecommunication Regulatory Commission data. Of the connections, mobile internet connections in the country increased by 1.58 lakh to 10.32 crore at the end of February. With 95.22 lakh broadband internet connections, the total mobile and broadband internet connections in the country reached 11.27 crore in February. Even though the country's mobile phone users and internet connections have been on the rise, customers have continued to be dissatisfied with the service quality of the telecom operators. To improve the service quality, the telecom regulatory body auctioned 27.4 megahertz of spectrum on March 8 as the telecom operators were using very low volumes of radio frequency to serve the customers. The commission has also started a wider test of service quality of the telecom operators to improve customer satisfaction. After the spectrum auction, the posts and telecommunications minister expected that the acquisition of spectrum by the telecom operators would help to improve the quality of service. The BTRC report showed that leading mobile operator GP's subscriber base increased to 8.04 crore in February. The number of connections of Robi, the second largest mobile operator, rose by 3.88 lakh in February and reached 5.15 crore at the end of the month. The number of Banglalink connections rose by 3.65 lakh to reach 3.59

crore at the end of February. State-owned Teletalk gained 1.11 lakh connections in February to take its subscriber base to 55.3 lakh. (March 13, 2021) newagebd.net

Operators in Bangladesh spent \$898.2 million to secure spectrum in the 1800MHz and 2100MHz bands to expand their limited 4G holdings as demand for data services soars. The Bangladesh Telecommunications Regulatory Commission (BTRC) auctioned four 5MHz blocks in the 2100MHz band and 7.4MHz of 1800MHz spectrum. Data from BTRC shown to Mobile World Live (MWL) revealed Grameenphone spent \$391.8 million on 10MHz of 2100MHz and 0.4MHz of 1800MHz airwaves, bringing its total holdings to 47.4MHz, 20MHz of which is in the 2100MHz band. Robi Axiata acquired 5MHz of 2100MHz and 2.6MHz of 1800MHz band for \$225.6 million, while Banglalink bought 5MHz of 2100MHz and 4.4MHz of 1800MHz for \$281.4 million: they each now have 15MHz of 2100MHz spectrum. All three increased their individual holdings in the 1800MHz band to 20MHz. In a statement to Grameenphone acting CEO and CFO Jens Becker told MWL the additional spectrum leaves it "well-positioned to further contribute to the digitalization of Bangladesh and meet people's growing need for high-speed internet in rural as well as urban areas". He added it will continue enhancing 4G quality of service by focusing on widespread coverage. The spectrum licenses have 15-year terms, with operators required to pay 25 per cent by 23 March and the remainder in instalments over five years. In April 2020, the operators called on BTRC to release additional 2100MHz spectrum as they experienced a surge in data usage during a Covid-19 (coronavirus) lockdown. The country held its first 4G spectrum auction in early 2018. GSMA Intelligence data showed 4G connections increased 70 per cent year-on-year to 27 million in 2020, with penetration up from 9.7 per cent in 2019 to 16 per cent. (March 10, 2021) mobileworldlive.com



Egypt

The Minister of Communications and Information Technology Amr Talaat has inaugurated several projects under his ministry's umbrella in the Kafr El-Sheikh governorate. Talaat also met with Kafr El-Sheikh Governor Gamal Nour El-Din on the sideline of his visit to the governorate to inaugurate and inspect some of the Ministry's projects there. The Minister said that a digital training and innovation center will be established in Kafr El-Sheikh with investments of EGP 100m. It will provide technical training and implement programmes for digital creativity and entrepreneurship for young people. Additionally, during this year, 50 post offices in the governorate will be developed and provided with two mobile offices to serve crowded areas, in addition to the installation of 40 machines ATMs. He added that his Ministry will raise the efficiency of the information infrastructure in the Motobas district. It comes as part of the Ministry of Communications and Information Technology's participation in the "Decent Life" initiative to develop villages. The participation will see the ministry

also supply the district with fiber-optic cables to improve the efficiency of the Internet in every home in the district's villages. A Memorandum of Understanding (MoU) was signed between the Ministry of Communications and Information Technology and Kafr El-Sheikh Governorate, with the aim of empowering women using technology. It also aims to enable an e-learning culture, building knowledge societies, and support and develop the digital capabilities and skills of youth in the governorate. The MoU will last for two years, and its scope of work includes educating 1000 women and girls on financial inclusion and the safe internet. At the same time, it will empower 500 women and girls on the basics of inclusiveness and financial independence. The initiative will support the services provided by government agencies in this regard, whilst contributing to opening bank accounts at Egypt post or an Egyptian bank, and which are compatible with the needs of women and girls. At the same time, it is set to empower female knowledge pioneers and entrepreneurs with information

and communication technology skills. This comes with the aim of supporting the skills of 50 women in the field of electronic marketing on the Internet for 50 women, in addition to creating some websites and a number of e-marketing pages on social networks. The MoU also stipulates that cooperation takes place to support young people with technological skills compatible with the needs of the free labor market. This includes new mechanisms in support, guidance and follow-up with the participation of the government and civil institutions, in addition to leading global and local private sector companies. Cooperation will also be made to disseminate the culture of e-learning and support its industry by encouraging civil society organizations, institutions and agencies concerned with community development to promote and spread the culture. It also seeks to train human elements working in the e-learning industry and develop the skills of employees by certifying e-learning centers (the Cisco Academies Program), in addition to training students, graduates, and faculty at Kafr El-Sheikh University to use content production programs. The MoU also includes using the services and applications of the "Kenana Online" platform to build knowledge societies online with the participation of the community. This will include all its governmental, civil, and private institutions as well as experts in all areas of development in the governorate. This aims to create and develop the governorate's portal for comprehensive development, to include several sub-sites for the district office. It will also prepare and develop civil society databases and the locations of civil society projects, initiatives, and institutions in the governorate. During his visit to the governorate, Talaat also inspected the surveillance system in the Crisis Room covering the city of Kafr El-Sheikh with cameras, to monitor the streets and work to provide excellent services to citizens. The Ministry of Communications and Information Technology seeks to immediately detect anything happening on the streets the moment of its occurrence, and to deal with it accordingly, in coordination with the concerned agencies. The Minister's visit will witness the opening of two post offices after their development. He will also inspect the School of Intellectual Education, visit the redeveloped Telecom Egypt customer service center in Kafr El-Sheikh, and hold a video conference with a number of beneficiaries of the training programmes and services provided by the Ministry to the residents of the governorate.

(March 8, 2021) dailynewsegyp.com

Egypt's National Telecom Regulatory Authority (NTRA) has organized an introductory seminar for representatives from the Federation of Egyptian Chambers of Commerce (FEDCOC) in Alexandria, Beheira, and Matrouh governorates. The seminar focused on the tasks and role performed by the authority in controlling and governing the telecommunications market. Participants in the symposium were representatives and secretaries of all three provinces, as well as heads of chambers of commerce, heads of communications divisions, and more than 50 importers, merchants and sales outlets owners. The symposium is part of a series of introductory seminars implemented by the NTRA in the various governorates, to clarify and explain the regulatory and governance frameworks in which the agency operates. This comes particularly in relation to the import and circulation of communications equipment, and the sale and purchase of mobile phone lines, which help to control the mechanisms of work in the Egyptian market. In a statement, NTRA explained the importance of using its new digital portal, launched at the beginning of this year, for import and licensing services, which works to save effort and time to obtain services. It serves more than 5,000 customers, whether companies or individuals, dealing with all types of communication equipment that cover the needs of the Egyptian market annually. The services supported by the platform include all procedures related to permits, licenses, customs clearance, with obtaining the services of the authority also facilitated electronically. The symposium dealt with discussion sessions on the topics of cybercrime and its negative effects, as well as the importance of the speedy construction of cell towers. This is driven by their positive impact on the quality and spread of communication services. It also reviewed the system for receiving and resolving users' complaints, and the development that has been made to ensure complaints are resolved. NTRA added, during the seminar, that it performs its supervisory and regulatory role to control the market. It has cooperated with Egypt's police forces to implement a series of judicial seizures at sales outlets across Egypt. These were carried out to ascertain the outlets' commitment to the procedures and instructions issued by the agency in the handling of devices that do not conform to the specifications and are not authorized. These efforts have resulted in the seizure of a large number of communication devices that do not conform to requirements, and which have entered the country illegally. (February 13, 2021) dailynewsegyp.com



The government is finalizing plans for an auction of 3.5GHz spectrum to support 5G cellular services. A report cites Nastaran Mohseni, Deputy Head of Iran's Communication Regulatory Authority (CRA), as saying that the allocation will go ahead despite problems acquiring equipment in the 3.5GHz band due to US trade sanctions. Meanwhile, Morteza Taheribakhsh, the

Iran

Head of Technical and Network Svelopment at the country's largest cellco, Mobile Communication Company of Iran (MCI), has warned that the sale should ensure that frequencies can be shared between operators, to avoid the creation of a monopoly. MCI has previously stated that it hopes to launch commercial 5G services by March this year. (February 16, 2021) PressTV



Jordan

The Telecommunications Regulatory Commission (TRC) has announced the renewal of the individual public telecommunications license for Batelco Jordan, a subsidiary of Umniah. The signing ceremony, between TRC CEO Dr. Ghazi Al Jobor and Umniah CEO Ziad Shatara, also saw the attendance of senior executive team members from both sides. According to Dr. Al Jobor, the agreement is a clear illustration of the depth of the cooperation between the public and private sectors, as well as the TRC's tireless efforts to support the telecommunications sector by facilitating the regulatory processes for them, thus advancing their investments in this vital sector of the national economy. Dr. Al Jobor went on to explain that the regulatory processes and facilities provided by the TRC boost interest in investments in this sector while consistently working to increase competitiveness, which paves the way for the most innovative and cutting-edge telecommunications services that are on par with global quality standards. Also, at the ceremony, Shatara spoke of the tireless efforts by the TRC to increase competitiveness in the telecommunications sector and support its growth on a national level, which has ultimately made it the best performing on a regional level. He went on to stress the significance of this agreement, which will allow the company to continue providing innovative communications solutions and services while continuously advancing towards its mission of supporting the digital transformation process in the Kingdom. Shatara added that Umniah, the fastest growing telecommunications operator in

the Kingdom, has adopted the ideals of a digital economy and has made great strides through the provision of efficient and effective telecommunications services and solutions in line with that goal.

(March 1, 2021) [zawya.com](#)

Internet penetration in Jordan increased by 0.8 percent over the year 2020, standing at 66.8 percent in January 2021 with a total of 6.84 million Internet users in the country, according to a report issued by DataReportal, a global platform that specializes in providing data on online usage and trends. The figures indicated that the number of social media users in Jordan increased by 11 per cent between January 2020 and January 2021. That is an increase by 600,000 making a total of 6.3 million social media users, which is 61.5 per cent of the population. Furthermore, the reports highlighted that there were 8.01 million mobile connections in Jordan in January 2021, a 0.04 per cent increase from the figures recorded in January 2021. The report noted that there were 3.20 million social media users in Yemen in January 2021 and it increased by 700,000 between 2020 and 2021. Also, the number of social media users in Yemen was equivalent to 10.6 per cent of the total population in January 2021. According to the report, there were 4.25 million social media users in Kuwait in January 2021 and it increased by 99,000 between 2020 and 2021. The number of social media users in Kuwait was equivalent to 98.8 per cent of the total population in January 2021.

(February 27, 2021) [menafn.com](#)



Kuwait

The Communication and Information Technology Regulatory Authority (CITRA) has announced that it has awarded the country's first MVNO license to a consortium comprising Virgin Mobile Middle East and Africa (VMMEA) and STC Kuwait. In awarding the concession, the watchdog says that it hopes the introduction of a new player 'will lead to increased competition, lower prices, and the provision of modern services'. (March 22, 2021) [commsupdate.com](#)

The Chairman of the Board of Directors of the Public Authority for Communications and Information Technology (PACIT) Eng. Salem Muthaib Al-Athaina, has issued a decision listing the rates for home internet subscriptions for individuals in Kuwait, reports Al-Anba daily. The decision No. 36 of 2021, a copy of which has been obtained by the daily, will be published in the Official Gazette (Kuwait Alyoum) states that it has decided to reduce the subscription fees for home fixed, lined and wireless internet

subscriptions in Kuwait. The maximum annual tariff is as for annual subscription is as follows: The annual subscription for 1 MB is of 20 dinars; for 2 megabytes 33 dinars, 3 MB 43 dinars, 4 MB 52 dinars, 5 megabytes 58 dinars, 6 MB 60 dinars, 7 MB 70 dinars, 8 megabytes 76 dinars, 10 MB 78 dinars, 12 MB 83 dinars, 14 MB 79 dinars, 16 MB 113 dinars, 18 MB 128 dinars, 20 MB 139 dinars, 22 MB 155 dinars, 24 MB 172 dinars, 30 MB 185 dinars, 40 MB 212 dinars, 50 MB 239 dinars, 60 MB 263 dinars, 70 MB 285 dinars, 80 MB 304 dinars, 90 MB 314 dinars, 100 MB 322 dinars. In its second article, the decision states that home internet service providers are prohibited from exceeding the maximum value for home subscriptions stipulated above, and in the third article of the decision says it is not permissible to impose a fair use policy in providing home internet services. Subscription prices will be reviewed periodically every 6 months and whenever necessary.

(March 20, 2021) [arabtimesonline.com](#)



A meeting was held on 15 March between Faisal Gergab, Chairman of the Libyan Post Telecommunication & Information Technology Company (LPTIC), and Lydie Sheehan, Country Director for British Trade Relations in Libya and Tunisia, Libya Herald has reported. The LPTIC, the government holding company in charge of all state-owned telecoms firms, revealed the meeting considered 'the importance of cooperation between the two countries in the field of telecommunications and technology and the opening of new horizons for development and investment in the sector in Libya. The meeting also discussed how British telecommunication companies can contribute to LPTIC's strategic plan and future projects'. Following the meeting, Faisal Gergab stated: 'LPTIC seeks to benefit from British companies' expertise to develop the telecommunication sector and expand investments in the country in line with the company's 2021-2023 strategic plan.' Lydie Sheehan, meanwhile, expressed Britain's desire to strengthen cooperation and investment by establishing commercial partnerships with Libya in the ICT sector.

(March 17, 2021) commsupdate.com

Libya and Italy have discussed ways in which information and communication technologies can be deployed to improve the delivery of public services in the North African country. A draft memorandum of understanding (MoU) was studied last week in Tripoli by the two parties, represented by Giuseppe Buccino Grimaldi, the Italian ambassador to Libya, and Mahmoud Khalifa Al-Tlissi, the Foreign Ministry Undersecretary for Technical Affairs of the Government of National Accord, with a view to establishing a cooperation agreement. According to the Libyan government, the draft MoU relates to support 'in the field of digital technology used in public services to improve and simplify communication between citizens and public administrations. Libya's efforts to restore its public sector structures following several years of internal conflict have been hampered by the COVID-19 pandemic and the associated restrictions.

(February 10, 2021) Agence Ecofin

Libya



Morocco's National Telecommunications Regulatory Agency (ANRT) released a report containing the main statistics showing the development of the telecommunications sector, including internet use, in Morocco at the end of December 2020. In the report, ANRT reported a 17% increase in the total number of internet subscribers. The percentage brings the number to 29.80 million, increasing the penetration rate to 83%. With regard to the number of 4G mobile subscribers, the report shows an increase of more than 30% to approximately 20.5 million. Meanwhile, the fiber-optic network subscribers increased by nearly 80% year-on-year to more than 218,000 users. The smartphone penetration rate hit 137.5%, and the contract mobile user base increased by

16.32% annually, reaching 5.48 million users at the end of 2020. For the mobile data traffic, it rose by 155% in 2020, while fixed-line data traffic increased by 56%, resulting in a 27.26% rise in international Internet bandwidth, which reached 2,507 GB at the end of 2020. Morocco had more than 20.5 million internet users in 2017 including 12 million Facebook users, according to the International Telecommunication Union (ITU), representing a 58.3 percent penetration rate. In 2018, the same organization released a statistical report on individual internet access in Morocco. This report shows that 64% of the population used the internet, of that, 61.1% were women compared to 68.5% of men.

(March 9, 2021) moroccoworldnews.com

Morocco



Nepal plans to roll out 5G mobile internet by mid-July as it races to become the first country in South Asia to offer super-fast connectivity. Fifth generation wireless mobile networks will be set up in Kathmandu and three other major cities under a pilot project by the end of this fiscal year. Min Prasad Aryal, Director of the Nepal Telecommunications Authority, said they had submitted a proposal on February 1 to the National Frequency Determining Committee under the Ministry of Information, Communication

and Technology to issue a separate frequency for 5G operation. The ministry is studying the proposal, officials said. Anup Nepal, chief engineer at the ministry's Frequency Management and Analysis Division, said they were carrying out additional studies on the proposal. "The decision may most likely come by next week," he told the Post. He added that they would first identify the spectrum required for installing 5G technology. "The service will then be tested in multiple geographical locations, and feedback

Nepal

will be collected before it goes into commercial operation," he added. According to Nepal, 5G will be tested using different bands and suitable ones will be selected. "The 5G trials may take two-three months or even a year." Once the frequency for 5G operation is separated, state-owned telecom giant Nepal Telecom will start trial operation. For commercial operation, the telecom regulator has started doing homework to fix the frequency band, spectrum, distribution process, pricing and other possibilities, Aryal said. The frequency band needs to be separated for trial operation and commercial use, he added. Addressing the 23rd anniversary of the Nepal Telecommunications Authority, Information Minister Parbat Gurung said that they had started preparations to roll out 5G network by piloting it in four major cities in the country. Nepal currently has 4G networks that were established in January 2017. According to Nepal Telecom, 4G service has reached all 77 districts in the country, covering 654 local units, or 85 percent of the population. The authority said that 75 percent of the population used devices that are 4G supportive. The fifth generation 5G technology standard for cellular broadband networks offers faster connections, higher throughput and more capacity than 4G, and will benefit areas of high traffic such as public places. The government will work to expand the 5G network under the Digital Nepal Framework 2018. Nepal Telecom has conducted tests for interference that can happen in a 5G network, and encountered interference while using a band proposed by the authority in a preliminary study. A meeting is expected to be held between the Ministry and the Authority to resolve this matter. Dilli Ram Adhikari, Managing Director of Nepal Telecom, said they had asked their 4G equipment and service supplier to provide 5G equipment to conduct a trial. "As soon as they submit a report and recommend an appropriate modality for the trial phase, we will start piloting in the selected cities," he said. "If things go as planned, we may begin the 5G trial by the end of this fiscal year." Nepal Telecom currently has basic infrastructure for a 5G network which needs to be upgraded, Adhikari said. "After the spectrum is identified

and is approved, we can procure additional equipment for the 5G network. They will be installed on the existing telecom towers," he said. When asked if the 5G network would be expensive, Adhikari said they had not calculated the cost yet. "Once the piloting is successful, we will issue a global tender to buy the equipment. A cost analysis will also be made at that time," he said. According to the latest management and information report of the authority, internet access has reached 82.79 percent of total population with 60.34 percent mobile broadband users. The number of 4G users had reached 6.68 million as of mid-January, including 2.38 million 4G subscribers of Nepal Telecom, 4.08 million subscribers of Ncell and 219,708 subscribers of Smart Telecom. According to reports, Hong Kong, Seoul, Sydney, Taipei, Manila, Tokyo and Shenzhen have already introduced 5G networks. In May 2020, Bangkok became the first city in Southeast Asia to roll out a 5G network, while Singapore in August started a six-month trial.

(March 6, 2021) kathmandupost.com

Nepal's National Telecommunications Authority (NTA) has determined the spectrum bands that will be used for 5G. NTA spokesperson Meen Prasad Aryal confirmed that the regulator has adopted the bands identified by the National Frequency Management Forum – a body formed by the regulator, the Ministry of Communications & Information Technology (MoCIT) and telecom operators – and has submitted the plans to the National Radio Frequency Policy Determination Committee for approval. The forum has recommended using the 700MHz, 900MHz, 2300MHz and 2600MHz spectrum bands in the lower range, 3300MHz, 3400MHz, 3600MHz and 4100MHz in the mid-range and 26GHz in the high range. Service providers will only be allocated frequencies once the Committee, chaired by the MoCIT, has agreed the plans. In the meantime, the NTA has been tasked with conducting a study into the deployment of 5G services.

(February 16, 2021) The Himalayan Times



Oman

The Telecommunications Regulatory Authority (TRA) has established the annual royalty rate that telecoms licensees are obligated to pay to the government of Oman. 'Ministerial Decision No. 19/2021 Determining the Percentages of the Annual Royalty Prescribed on the Licensee to Provide Telecommunications Services' states that Class I licensees (including mobile operators) will be required to pay 12% of their total annual revenues, while other fixed line operators must pay 7% in 2021 and 10% of their total annual revenue from 2022. For providers of 'other telecommunications services', the rate has been set at 7% of their total annual revenues. (March 8, 2021) commsupdate.com

The Telecommunications Regulatory Authority (TRA) of the Sultanate has announced the launch of a public consultation on its regulatory sandbox – a framework in which telecom service

providers and researchers can pilot or test their innovations or ideas. Announcing the launch of the public consultation, the Authority said: "The TRA intends to allow telecommunications technology, applications or services to be tested in a coordinated, coherent, secure and safe manner." The framework, it stated, will be applicable to all entities or individuals (seeking) to test services related to telecommunications technology, applications or services directly. It defined the sandbox as a 'safe house' where pilots of specified types of innovative products and services can take place. "Sandboxes allow businesses to test innovative products, services, business models and delivery mechanisms in a live environment, without having to immediately comply with all regulatory requirements," the Authority explained. According to the regulator, the regulatory sandbox will be open to any company, technology firm or individual who aspires to "introduce

innovation in the telecommunications market" in the Sultanate. Besides enabling interested parties to test their products and services in a controlled manner, the framework also reduces

time-to-market at potentially lower cost. Additionally, it aids in identifying appropriate consumer protection safeguards to build into new products and services, it said. (February 16, 2021) omanobserver.om



Pakistan Telecommunication Authority (PTA) has conducted an independent Quality of Service (QoS) survey of GT Road (Lahore to Peshawar) and Indus Highway (Peshawar to Karachi) from 22nd to 24th February, 2021, to measure the performance of Cellular Mobile Operators (CMOs) in terms of mobile coverage, service availability and its quality. The survey results reveal that good 3G coverage is available throughout GT Road, whereas Indus Highway has adequate 3G coverage with patchy 4G coverage. Overall, satisfactory voice, SMS and data services are available on both the highways. However, few anomalies have been observed in voice and SMS QoS parameters of all CMOs throughout GT Road (from Lahore to Peshawar) and Indus Highway (from Peshawar to Karachi). CMOs have met the 3G and 4G signal strength and User Data Throughput on entire GT Road, while, on Indus Highway, 3G signal strength of CMOs was found in compliance with license standard, whereas, 4G signal strength was below the license standard. CMOs have been directed to rectify the issues highlighted by PTA, optimize mobile network so as to improve Key Performance Indicators up-to the license standards and also plan additional resources/sites throughout the above stated routes. A confirmatory survey will be conducted upon receipt of compliance from the licensees. (March 18, 2021) telecoalert.com

Pakistan Telecommunication Authority (PTA) has said it has issued Mobile Device Manufacturing (MDM) regulations and has started receiving applications for mobile device manufacturing. In a statement, PTA said that the implementation of the authority's Device Identification, Registration and Blocking System (DRIBS) in 2019 had resulted in significant increase in legal import of mobile devices and establishment of over 33 local assembly plants of mobile devices in Pakistan. These plants have produced over 25 million mobile devices including 4G smartphones since the implementation of the system. The PTA said that with the successful execution of DRIBS, the local assembly industry had evolved from infancy to growing stage, with significant growth seen in local assembly of smartphones. In 2019, only 119,639 smartphones were assembled locally whereas in 2020, the number of such devices grew to 2.1 million. It is important to highlight that the end of the second month of 2021, around 1.21 million smartphones had been assembled in Pakistan. In the light of the tremendous impact of DRIBS, the government has introduced a comprehensive Mobile Manufacturing Policy to encourage and attract manufacturers to Pakistan and establish their plants. The PTA has issued MDM regulations and has started receiving mobile device manufacturing applications. This initiative will help create more jobs in this technical sector, as well as enable consumers to buy locally manufactured mobile devices. The PTA said that the country had the distinction of implementing the world's first

open-source, full-fledged DRIBS. This system has the ability to identify all IMEIs latched on Pakistan's mobile networks and to categorize them based on their compliant status.

(March 7, 2021) profit.pakistantoday.com.pk

Ministry of Information Technology and Telecommunication has approved seven projects worth Rs. 4800 million. These reviewed and modified projects were approved for different departments in Departmental Development Working Party (DDWP) meeting chaired by Federal Secretary Ministry of IT and Telecommunication Shoaib Ahmad Siddiqui. These approved projects will not only pave way for fulfilling the Prime Minister's Digital Pakistan vision but also ensure training of over 22,000 youths and create more than 5000 job opportunities besides provision of broadband services on Karakoram Highway and establishing of IT institutions. The meeting was held under one of the projects Special Communications Organization (SCO), the attached department of Ministry of IT, will spend Rs. 1580 million for provision of internet services and mobile connectivity in Diamer Bhasha dam site and its surrounding areas. The meeting also approved project worth Rs. 298 million under which a Technical Training Center will be established in Gilgit. The meeting gave approval for a project of worth Rs. 651 million for setting up a National Testing Center for 5G Testing under National Information Technology Board (NITB), while Rs. 1944 million was approved for cyber security project. The meeting approved Rs 143 million for formulation of a Program under Virtual University for bringing Pakistani degrees to equal level of the degrees of the countries signatory of Seoul accord. The meeting gave approval of Rs. 367 million for National Freelance Training Program. The chair gave direction for timely completion of all projects and in transparent manner. The meeting was attended by officers of Ministry of IT & Telecom, Ministry of Planning, Development, Finance Division, and others. (March 6, 2021) telecoalert.com

Pakistan Telecommunication Authority (PTA) has directed Cellular Mobile Operators (CMOs) to improve network coverage and performance, and maintain Quality of Service (QoS) as per license standards. In view of public complaints regarding degradation in service quality and results of PTA surveys, it was observed that lack of network expansion and insufficient network/sites are some of the causes of QoS issues. CMOs have been asked to take concrete measures for resolution of root causes, ensure network stability and adequate coverage through expansion of their networks, especially in densely populated urban areas. PTA will review the steps taken by CMOs from time to time to check that improved voice and data services are being extended to the subscribers. Better coverage and service quality will ensure that

Pakistan

end-user expectations for optimum performance are being met.

(February 26, 2021) pta.gov.pk

The Pakistan Telecommunication Authority (PTA) has published draft regulations on tariff setting, which look to amend the watchdog's capacity to regulate pricing for services. The draft rules require operators with significant market power (SMP) to submit written proposals to the PTA, which may approve, amend or reject the proposal if the tariff is considered anti-competitive or 'burdensome'. The regulator considers tariffs burdensome if they provide profits for the licensee that were 'abnormally high', or the tariff is considered beyond the affordability of the intended consumers. A similar review and approval system

would also be established for non-SMP providers, albeit with a shorter timeframe of seven days – rather than the 15 required from SMP operators – and with a focus on whether the pricing is considered burdensome, although the PTA may amend the tariff if it becomes anti-competitive or burdensome at a later date. The regulations also permit the PTA to set price ceilings and floors for basic services. Alongside empowering the PTA to more closely monitor and regulate tariff pricing, the draft regulations also tie-in to consumer protection rules and regulate potentially misleading information in advertising. Stakeholders have until 24 February 2021 to submit feedback on the draft regulations.

(February 17, 2021) commsupdate.com



Qatar

The Communications Regulatory Authority (CRA) has called on consumers and service providers to comply with their responsibilities and respecting consumer rights as part of its activities to celebrate World Consumer Rights Day (WCRD) 2021. The WCRD is marked on March 15 every year to raise global awareness of consumer rights and needs. The CRA is Qatar's communications agency which regulates the telecommunications and information technology sector, postal, and access to digital media. The CRA balances consumer rights with the needs of service providers. "You are responsible to protect yourself as a telecom consumer by knowing your responsibilities and rights," the CRA said in a statement on Twitter. It urged consumers to read the contract and terms of service conditions before subscription (a 2020 survey from ProPrivacy.com showed that only 1% of technology users read 'Terms & Conditions'). The CRA noted that consumers should choose a suitable credit limit that meets their requirements, choose a convenient package, ensure they read notifications and bills sent by service providers, and lodge complaints to the service provider before reaching the CRA. Meanwhile, telecoms service providers have been implored to provide innovative and high-quality services and customized services for consumers with special needs. The providers are to clarify terms and conditions of the service to the consumers before subscription, issue accurate and understandable bills in the consumer's preferred language, send SMS notifications to consumers about their credit limit and receive and solve consumers' complaints. Recently, the CRA disclosed that it received 1,303 complaints and inquiries from consumers about telecom services in Qatar. According to the CRA, these complaints were evaluated based on a set of criteria to determine their validity to CRA's complaint process, of which 696 were valid complaints, and CRA resolved 95% of the total complaints and inquiries received. It stressed that it was working with Ooredoo Qatar and Vodafone Qatar to finalize the related investigation of the remaining ones. (March 21, 2021) thepeninsulaqatar.com

On the World Consumer Rights Day, which occurs every year on March 15, the Communications Regulatory Authority

(CRA) publishes the resolution results of telecom consumers' complaints received in 2020. CRA received 1303 complaints and inquiries from consumers about telecom services in Qatar, these complaints were evaluated by CRA based on a set of criteria to determine their validity to CRA's complaint process; 696 were valid complaints and CRA resolved 95% of the total complaints and inquiries received. Also, CRA is working with Ooredoo Qatar and Vodafone Qatar to finalize the related investigation of the remaining ones. "One of CRA's responsibilities is ensuring to balance between consumers' and telecom service providers' rights through various aspects; issuing the needed regulatory instruments to regulate the sector effectively, monitoring the service providers' compliance and the quality of telecom networks and services provided to consumers, enhancing the sustainable competition between service providers to ensure the provision of innovative and high-quality services and finally resolving consumers' complaints if not resolved by the telecom service providers or if consumers are not satisfied with the provided resolution," said Amel Salem Al-Hanawi, Director of Consumer Affairs Department, CRA. The statistics indicate that 71% of all received complaints were related to mobile services; billing complaints of post-paid services accounted the highest percentage of complaints, while the other main complaints were related to mobile packages, networks coverage, and mobile number portability service. As for fixed-line services, the statistics indicate that they were 29% of the total complaints, out of these complaints the billing and service disconnections complaints were the most received. It is worth mentioning that under CRA's telecom complaint resolution process; consumers with a complaint are free to approach the CRA if their complaint lodged directly to their service provider about a mobile service disconnection remains open or unresolved for 48 hours, or 72 hours in case of fixed-line disconnection. Also, if the complaint is not related to a service disconnection and remains unresolved for 30 calendar days or if the complaint is closed at any time and they were dissatisfied with the offered resolution. Consumers can lodge a complaint to CRA through different channels: CRA's 24/7 hotline number (103), email address consumervoice@cra.gov.

qa, CRA's Twitter, Facebook, or Instagram accounts @CRAqatar, CRA's Mobile App "Arsel", or by filling CRA's complaint form on the website www.cra.gov.qa. (March 14, 2021) zawya.com

Qatar has ranked number one globally in Internet Adoption according to 'The Global State of Digital 2021' report released by Hootsuite. The report features in-depth profiles of more than 230 countries and territories around the world. With a population of 2.91 million in January 2021, over 99 percent of Qatar's population live in urban areas, and 2.88 million Internet users were recorded in Qatar in January 2021, an increase of 29,000 between 2020 and 2021, the report said. Other countries with 99% Internet adoption include Bahrain, Iceland, Kuwait, Norway, and the UAE. The Hootsuite report also stated that Qatar has 2.87 million social media users, equivalent to 98.8 percent of the total population as of January 2021. Qatar's mobile connections increased by 35,000 (+0.8%) between January 2020 and January 2021, raising the connections to 4.67 million and 160.6% of the population. The mobile connection figures are shown to exceed the total population because many people use several mobile connections. Over 70 percent of the population use pre-paid connections, while

fewer than 29 percent use post-paid connections. Broadband connections ranging from 3G to 5G covers 87 percent of the population. Meanwhile, Google Chrome recorded a 68.3 percent share of web traffic, a year-on-year increase of 8.6 percent, the report said. Safari 16.8 percent, Firefox (1.3%), (Samsung Internet 3.6%), Microsoft Edge (2.4%), Opera (1.4%), and Internet Explorer (0.7%), other web browsers with 5.7 percent complete the list. Recently, the mobile Internet speed in Qatar was ranked the fastest in the world in December 2020, according to the Speedtest Global Index results. The country has been ranked among the top five countries globally in 2020 and has won several laurels in Information and Communications Technology (ICT) in 2020. One of the main highlights was the recognition by the World Economic Forum. In December last year, the country was ranked second in the Arab world and ninth globally in ICT adoption as per the Global Competitiveness Report Special Edition 2020 report by the World Economic Forum. Qatar has also invested substantially in 5G technology, allowing peak Internet connection speed to reach 1Gbps. The 5G rollout has also accelerated the development of a more comprehensive communications infrastructure in Qatar.

(March 9, 2021) menafn.com



Saudi Cabinet approval for the establishment of Digital Government Authority (DGA) proves the Kingdom's commitment to becoming a leading digital economy, experts said. This will be achieved by adopting digital transformation in government services on a par with international standards, according to Mohammed Khurram Khan, a professor of cybersecurity at King Saud University, Riyadh. "The newly approved authority will play an instrumental role in creating digital interactions, online platforms and electronic services between citizens to government, government to citizens, and government to businesses," he told Arab News. "Consequently, it will unify and improve the efficiency of government departments by providing transparent, secure and cost-effective services." The authority will help prepare a national e-government strategy, and organize the work of digital government, including platforms, websites, services and e-government networks. Khan said that the step highlights the Kingdom's determination to have an integrated digital government with harmonized policies, strategies and regulations. Osama Ghanem Al-Obaidy, an adviser and law professor at the Institute of Public Administration in Riyadh, told Arab News: "The establishment of the DGA is a major step toward improving and enhancing digital services provided by various government agencies." He added that the authority will increase the efficiency of e-services, which will augment the return on government investment in digital services. "This comes in line with Saudi Vision 2030, which aims to improve the Kingdom's ranking to be among the top five countries in e-governance by 2030 and its ranking in the government effectiveness index to be among the top 20 countries," Al-Obaidy said. He added that the Kingdom has achieved "tremendous strides" in the field of e-governance,

and expanded services to include job searches, distant learning, traffic, passport, civil status and digital payments. "The authority will simplify and facilitate the procedures (of provided services), diversify communication channels and tools, and support the use of digital applications by government agencies, such using government digital cloud, sharing data platform and managing human resources," said Al-Obaidy. He noted that the creation of the authority comes at a time when countries are changing to digital economies and transformation, and Saudi Arabia aims to be a leader in this new world of digital governance. Abdullah Al-Swaha, minister of communications and information technology and chairman of the National Digital Transformation Unit, said that the authority opens up new horizons in digital government services through proactive and integrated digital services. DGA is responsible for building the national capabilities specialized in digital government to adopt and enable modern technologies, in addition to adopting policies related to the authority's activities, plans, programs and projects necessary for its implementation. The minister also said that the authority will raise the efficiency of government digital business models and develop the talent of government employees. (March 13, 2021) arabnews.com

The Communications and Information Technology Commission (CITC) launched the "Game Mode" initiative, with the aim of enhancing Saudi Arabia's booming gaming sector. This comes within the framework of CITC's work to encourage healthy competition among telecom operators to provide the best experience for gamers, raise the level of transparency in the market, and enable investors and the public with key data and indicators on the sector's performance. The "Game Mode" initiative includes

Saudi Arabia

the launch of a quarterly award for the internet service provider with the best response time for video gaming, a key indicator of the network's performance. In addition, the commission will start the publication of quarterly reports comparing response times among service providers across some of the most popular video games in the Kingdom. Data from CITC's first Game Mode quarterly report reveals that Mobily topped the list of average response time in the popular game "Fortnite" in the fourth quarter of 2020, based on an average response time of 21 seconds. This compared favorably with Integrated Telecom at 28 seconds, Zain at 29 seconds, and Saudi Telecom Company (STC) at 35 seconds, for a total national average of 33 seconds. Soccer video game "FIFA" was also tested by Game Mode, with Zain ending in first place among operators with an average response time of 29 seconds. Mobily also outperformed other service providers in the average response time for the "Apex Legends" shooter battle royal game, after recording an average response time of 24 seconds, followed by Integrated Telecom, Zain, and STC. As for the online battle arena game "League of Legends", the performance was relatively low across the spectrum of operators, with Mobily and Zain topping the list with an average response time of 86 seconds, followed by STC at 95 seconds, and Integrated Telecom at 97 seconds. For fixed internet average latency in Saudi Arabia, Integrated Telecom was first place with a latency of 9ms. Mobily and Zain were second and third with latencies of 13ms and 18ms respectively. STC's fixed internet average latency was 19ms and Go was 34ms. Zain was first place for mobile internet average latency with 33ms, closely followed by Mobily and STC with 34ms and 36ms respectively. Zain also led the field with mobile 5G average latency with 22ms with STC in second place with 24ms and Mobily in third with 25ms. The report also looked at the service providers' performance in each of Saudi Arabia's 13 regions. Zain was the top performer in Riyadh, Mobily first place in Makkah, and the two providers were tied first place in the Eastern region. The "Game Mode" reports provide other useful insights on the Saudi gaming market, including a list of the most popular video game platforms, the most talked-about games in the gamers' community, along with guidelines for gamers to improve the overall quality of the internet

connection and speed. Saudi Arabia's current gaming market size is SR2.6 billion and is expected to reach SR9.5 billion by 2030. The Saudi gaming market's annual growth rate is 22 percent, which is among the highest in the world. (March 6, 2021) digitalstudiome.com

Saudi Arabia showcased its model to strengthen the security and resilience of critical infrastructure against cyber-attacks and other hazards during a meeting of the International Telecommunication Union (ITU) Council Working Group on international public policy issues related to the Internet. During the meeting, which was attended by ITU secretary-general Houlin Zhao, his deputy Malcolm Johnson and a number of representatives of the ITU member states, the Kingdom shared with the member states the Saudi model for strengthening the resilience of cybersecurity during the year of its presidency of the G20 and the virtual G20 Leaders' Summit. During its G20 presidency, the Kingdom, represented by the National Cybersecurity Authority, was keen to develop the model, as a comprehensive reference for the countries that will chair the G20 in the future and all major conference organizers. Participants in the meeting praised the Saudi model for strengthening cybersecurity resilience, and its contribution to holding this important event safely and reliably.

(February 8, 2021) saudigazette.com.sa

The Communications & Information Technology Commission (CITC) announced that Integrated Telecom Company (ITC) and another telecom operator won the tender for providing the mobile virtual network operator (MVNO) services. The two companies were given a grace period of 90 days from the day of notifying them about the award to complete all regulatory requirements. However, failure to fulfill such requirements by any of the two firms during the prescribed period will lead to awarding the tender to the third winner as an alternative, CITC added. The telecom regulator also noted that the completion of requirements by the two firms to obtain the licenses within 90 days will bring the total number of awarded MVNO licenses in the Kingdom to four licenses. In 2014, CITC awarded the MVNO licenses to Virgin Mobile KSA and Etihad Jawraa. (February 6, 2021) argaam.com



Following the conclusion of its recent public consultation on the matter, the Telecommunications Regulatory Commission of Sri Lanka (TRCSL) has announced that fixed number portability (FNP) and mobile number portability (MNP), enabling customers to switch provider while retaining their existing number, will likely be introduced from October 2021. According to the local Daily Mirror newspaper, TRCSL Director General Oshada Senanayake has announced that the policy would be implemented 'in consultation with the Pakistan Telecommunication Authority, due to its success in implementing number portability in Pakistan'. It is understood FNP/MNP has reached the technical discussion stage after receiving the support of all domestic operators for its launch, in principle. Senanayake highlighted the government's hope

that number portability will lead to a significant improvement in the quality of services of voice and broadband once implemented, as it 'empowers the consumer to have the final say'. As previously reported by CommsUpdate, in January this year the regulator published a public consultation to seek feedback on its proposed MNP/FNP plans, inviting comments and views from the industry, academia, and other interested parties. Prior to that, in August 2020 TRCSL had put in place 'preliminary measures' to usher in MNP. Using its Twitter platform, the regulator confirmed: 'TRC initiates preliminary steps on implementing number portability which would enable consumers to select service providers without change of existing mobile numbers'.

(March 19, 2021) commsupdate.com

Sri Lanka



Turkey

The "Regulation on the Establishment and Operation of the National Mobile Warning System" prepared by the Information and Communication Technologies Authority (BTK) was published

in the Official Gazette and entered into force. Deputy Minister of Transport and Infrastructure Dr. Ömer Fatih Sayan made statements on the subject. (February 26, 2021) btk.gov.tr



United Arab Emirates

The Telecommunications and Digital Government Regulatory Authority announced that the National Laboratory has been equipped to inspect telecom devices with the latest technologies to examine mobile devices compatible with 5G technology, which aims to ensure that these devices meet the approved technical standards. The lab has the capacity to scan mobile devices that provide 5G services. This step aims to examine, test and certify mobile phone devices compatible with 5G networks to operate on the UAE operators' networks, and to protect users from using devices that do not meet the standard specifications, which may affect the safety of mobile networks as well as the users. It also helps government and private entities examine the devices before importing or buying them from abroad. Through these upgrades, the National Lab will ensure that 5G devices conform to the approved international standards and are compatible with the telecom networks in the country. It also ensures their compliance with the UAE specifications such as early warning, in order to guarantee the devices' compatibility with local networks and regulations. In this context, Saif bin Ghelaita, CEO of Technology Development Affairs, said: "The UAE has achieved advanced positions globally in adopting and implementing 5G technologies. The Telecommunications and Digital Government Regulatory Authority is keen, under the guidance of the wise leadership, to accelerate the pace of spreading 5G due to its great role in achieving digital transformation, applying artificial intelligence and leveraging big data. Accordingly, the Authority is keen to ensure that all devices designated for using 5G are safe in order to achieve the desired benefit." Mohammad Al Shamsi, Manager of National Lab, said: "The Telecommunications and Digital Government Regulatory Authority works constantly to ensure that mobile phones are compatible with the approved technical standards included in the Type Approval Regime, with the aim of ensuring access to the best services and full compatibility with networks operating in the country. Moreover, given the high demand for 5G compatible devices, the Authority launched this initiative with the aim of ensuring that all mobile phones in the market are safe and meet the required standards." The Telecommunications and Digital Government Regulatory Authority provides many type approval services, including registering and approving telecom devices, registering suppliers of telecom equipment, and issuing custom release permits for telecom devices. The Authority's Type Approval Regime works to

identify and register telecom devices that can be used in the UAE without causing damage to users, interference of frequency, or damage to telecommunications networks. It also supervises and participates in approving and registering telecommunications equipment in the country before importing them and ensuring that they comply with laws and regulations. (March 16, 2021) wam.ae/en

The number of telecom subscribers in the UAE, including mobile phones, landlines and Internet, grew to 21.929 million by the end of 2020. The latest statistics released by the Telecommunications and Digital Government Regulatory Authority indicated an increase in the number of mobile phone subscribers to 16.820 million by December end from 16.707 million in November, at a spread rate of 186.1 lines per 100 people, with mobile subscriptions accounting for 76.2 percent of the total subscription base. Pre-paid mobile phone subscriptions totaled 13.178 million by end of December, while post-paid mobile phone subscriptions stood at 3.641 million for the same reference month. Landline subscriptions likewise increased to 2.128 million. However, the total number of internet subscriptions stood at 2.98 million. (March 8, 2021) wam.ae

According to The Telecommunications and Digital Government Regulatory Authority 's report, the year 2020 witnessed a noticeable increase in the demand for telecommunications and Internet services. This growth is also a reflection of the sector's readiness and the Authority's resolve to move towards the future, by deploying all modern technologies in the best way possible to realize greater achievements at local, regional and even global levels. According to the UN E-Government Survey 2020, the UAE's telecommunications infrastructure ranks first in the Gulf, Arab Region and Western Asia, and seventh globally in the Telecommunications Infrastructure Index. In the Smart Services Index, the UAE ranks first in the Gulf, the Arab Region and West Asia, and the eighth in the world. The survey confirmed the UAE's determination to provide services that meet the people's needs and aspirations by employing emerging and advanced technologies and implementing digital transformation programs like Smart Dubai, Blockchain and Artificial Intelligence Strategy; that was in line with the wise leadership's directives to engage the various segments by providing easy and interactive services that enhance society's happiness. During 2020, the UAE maintained its first place globally in mobile phone subscriptions index

and advanced from second place to first in the world in mobile broadband Internet subscriptions index. The UAE also ranked first in the Arab world and at the regional level in the Information & communication technologies Index, the Internet Access Index, and the Internet Use Index. In terms of the overall percentage of Internet users, the UAE made progress by reaching the fifth position globally and a qualitative leap from the 68th place in the world to the 29th position in the fixed broadband subscriptions index. It is worth noting that the UAE ranked first in the Arab Region in the index of local Internet domain names, which uses the symbol (.ae). These indicators measure the percentage of domain registration in other countries and indicate movement volume and technological interaction. When it came to the launch and use of 5G - the fifth-generation network, the UAE ranked first in the Arab Region and fourth globally, according to the Global Connectivity Index issued by Carphone Warehouse, specialized in technology benchmarking. An added achievement, the UAE came first in the Middle East for transformation to Internet Protocol version 6 (IPv6), according to statistics issued by Ripe NCC, Akamai Technologies, and Google. The transition to IPv6 helped Internet service providers deliver better services and significantly impacted implementing 5G technologies for mobile phone networks and digital transformation. The IPv6 was critical due to the shortage of Internet protocols and the inability of IPv4 to meet the growing demand in light of the internet's rapid growth. In the ODIN report issued by the Open Data Watch, which included 187 countries, the UAE ranked 16th globally, leaping 51 places at once, compared to 2018. In this indicator, the UAE outperformed countries such as the USA, Korea, Switzerland, France, Spain, Japan, and the United Kingdom. According to the report, two main factors - openness and comprehensive coverage, classified the countries for open data sites. His Excellency Hamad Obaid Al Mansoori, Director General of the Telecommunications and Digital Government Regulatory Authority, said, "The year 2020 was exceptional at all levels and full of unexpected development and never-before challenges. There was an increased need for internet services from lockdown in most countries and the almost total suspension of transport movement to reliance on the internet to accomplish business, education, communication, and government services. This increased demand added pressure on networks, which required the most modern infrastructure and technologies to deal with this sudden development. The UAE affirmed its leadership in all sectors, especially in communication technology as the The Telecommunications and Digital Government Regulatory Authority confirmed its ability to achieve distinguished results. Indeed, it is a proud moment of strategic thinking and continuous development under the guidance of our wise leadership." He added: "We were able to meet the nation's growing needs during the last year and exceed expectations with the readiness of the Telecommunications and Digital Government Regulatory Authority in its pursuit of excellence, which helped to achieve impressive results at local, regional and global levels. We consider these achievements a catalyst for achieving more positive results and will help us continue efforts to reaffirm the United Arab Emirates position in the world". "The United Arab Emirates is one of the leading countries in the region in the field

of digital transformation. It is supported by qualified national human resources who are open to international best practices. The UAE's teams have always been keen to develop their skills and enhance their online presence; they develop their strategies to keep pace with the developments and prepare for the future. It is for these reasons, that the UAE achieves distinguished results every year," said Richard Kerby, President, Richard Kerby LLC and an expert advisor of international repute on digital transformation of governments. (March 3, 2021) menafn.com

H.E. Hamad Obaid Al Mansoori, Director General of the Telecommunications Regulatory Authority (TRA), praised the advanced results achieved by TRA in the Global Star Rating System for Services, which were approved by His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of UAE and Ruler of Dubai. TRA website and smart Application were rated four stars in the results that included, for the first time, the rating of digital channels and government call centers, and covered about 100 service provision channels in 28 entities. This rating adds up to TRA's long list of achievements, as it was ranked first in the happiness and wellbeing in the workplace, issued by the National Program for Happiness and Wellbeing, which aims to enhance happiness and wellbeing in the workplace in government entities. Additionally, these results reflect the great interest of TRA to develop its digital channels in order to provide easy, fast and round-the-clock services to the public. A team of competent Emiratis works to develop TRA digital portals, and to support other government entities in enabling and measuring digital transformation in the field of website development. H.E. Hamad Obaid Al Mansoori, TRA Director General, commented on this achievement, saying: "The advanced results achieved by TRA website, smart app and call center reflect TRA's commitment to the wise leadership's directives and are consistent with the UAE directions towards achieving a full digital transformation. These results also confirm TRA's keenness to provide the best and fastest services around the clock. TRA's teams have made great efforts in the field of developing its smart and electronic channels, based on specialized surveys and customers' opinions about the services provided by TRA. TRA has given every opinion or idea that was received from the public the necessary attention, as they were studied carefully to achieve customer happiness and support the UAE goals and future visions." H.E. Al Mansoori added: "We are proud of what we have achieved, which motivates us to keep up the hard work to achieve more accomplishments and develop our services and projects. I thank all the working teams at TRA for their dedication to work and double efforts to meet the needs of customers, especially in the past months, which were characterized by an unprecedented increase in demand for electronic and smart services." The development process of the website and the smart application content goes through several stages, the most important of which is engaging the customers themselves in improving the content and other components through digital consultations and surveys. TRA is keen to involve the public in this matter based on the priority of customer happiness, in line with the directives of the wise leadership that the customer is the goal and the purpose. (February 3, 2021) tra.gov.ae

ARTICLE

Nexign Helps Operators in MEA Slash Time to Market by up to 5 Times by Introducing Unified Billing



Michael Matyushin
Chief Technology Officer
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nexign

With a high pace of modernisation in the MEA telecommunications market, CSPs are looking for a partner to support and speed up their digital transformation. To meet this demand, in 2020 Nexign completed the large-scale digital transformation project that successfully addresses the challenges of CSPs globally, including the Middle Eastern and African regions. The project called "Unified Billing" was carried out for MegaFon – the provider of digital opportunities that operates in Russia, Tajikistan, the Republic of Abkhazia and South Ossetia.

Challenge

MegaFon PJSC is a leader in the Russian and global telecommunications market, offering wide range of services: mobile and broadband internet access, digital TV and OTT services, innovative digital products across Information and Communication Technologies (ICT), the Internet of Things, Big Data analytics and processing, cloud solutions and more. Initially, MegaFon has been evolving as a group of companies that have become its subsidiaries following the company's restructuring in 2009.

Since CSPs in the Middle East and Africa are looking for the way to streamline digital transformation processes, it is clear that unified and centralized product management, as well as technologies like microservices and methodologies like Fast Track are in huge demand in the market.

Apart from establishing unified management standards, strong single brand and corporate culture, MegaFon wanted to unify the subsidiaries' IT infrastructure to take its business to the next level and facilitate digital transformation. With billing system being the backbone of the IT infrastructure, the fact that subsidiaries were utilizing seven separate solutions with different logic and custom code led to an array of issues. Such variety of BSS systems did not allow to fully unify the company's business processes. It also hindered launching new offerings, made integration of partner services more complicated and required substantial investments to support these systems.

In 2015, the executive leadership team decided to bring the whole company to a unified billing system and set the following strategic goals:

- Support digital and business transformation;
- Improve the quality of customer service;
- Centralize and accelerate launch of new business projects;
- Create an ecosystem that will facilitate faster integration of the external partners;
- Optimize total cost of ownership (TCO) for the billing system by 20-30%.

Solution: the "Unified Billing" project

One of the project's core tasks was creating a cross-functional team with common goals. It was fairly challenging given that around 1,500 MegaFon employees were involved. The project's success relied on the mutual involvement and engagement of both MegaFon and Nexign teams. Also, it required to simultaneously migrate subscribers to the new platform and support legacy billing solutions until they are fully replaced – this only added to the challenge. Thanks to coming up with an accurate plan together with the operator, migration of B2C subscribers ran nearly unnoticed for the customers: additional tariff schemes were added to the new billing system at once, while the existing ones were migrated gradually.

"This project is unique in many ways. Together with MegaFon, we ran complex transformation of its systems. With modernizing the BSS platform, the

With a high pace of modernisation in the MEA telecommunications market, CSPs are looking for a partner to support and speed up their digital transformation. To meet this demand, in 2020 Nexign completed the large-scale digital transformation project that successfully addresses the challenges of CSPs globally, including Middle Eastern and African regions.

company also had to undergo serious organizational and procedural changes," noted Mikhail Matyushin, Chief Technology Officer at Nexign.

"We applied an individual approach in the B2X segment. It was critical, because over the years, our customers accumulated a variety of parameters for product applications that were created in accordance with individual needs of customers in different regions – especially the companies with geographically-dispersed structures. For the government and enterprise sector, it was also important to follow SLA – otherwise, we could have simply lost these customers," said Andrey

Knyazev, Director of BSS at MegaFon PJSC.

The COVID-19 outbreak also affected the situation: migration of healthcare organizations was postponed for the final stage of the project and was led especially carefully.

The project lasted for five years and was completed in the middle of 2020 despite all the roadblocks caused by the pandemic, the ensuing lockdown and shift to remote work.

Middle Layer and microservices fabrics

The transformation of the billing service substantially decreased TTM for the new products. However, with such a high pace of modernization in the telecommunications market, MegaFon needed to further speed up its transformation.

"BSS allowed us to launch and configure new products much faster. But if there was a need for adjustments in the partner solutions, we were hampered by vendors. To overcome this challenge, MegaFon and Nexign created a layer of microservices above the billing, so new projects could be promptly created and tested by our own developers or external suppliers," said Igor Glebov, Business Development Director at MegaFon PJSC.

Thanks to introducing this extra layer, the TTM for a new functionality was slashed from several quarters to 2-3 weeks. As an added value, MegaFon is now able to quickly solve tasks related to piloting and testing without making changes to the core of the billing.

Nexign Product Catalogue works as a central configuration point for all operator's offerings. It supports the whole product lifecycle from the inception and adjustment of price and other parameters to the product's decommissioning.

**Nexign and MegaFon
Introduced the Unified
Billing to Facilitate
Digital Transformation**



Nexign is ready to help local operators take their business to the next level and increase subscriber loyalty by offering future-proof solutions and ensuring uninterrupted service at any stage of the project.

Moreover, the Middle Layer created a setting for integrating new partners. The plethora of microservices consolidated on this level serves as a basis for partner and customer cooperation in the joint initiatives. Thanks to microservices, by autumn 2020, MegaFon launched over 100 projects.

Product Catalogue

Nexign Product Catalogue works as a central configuration point for all operator's offerings. It supports the whole product lifecycle from the inception and adjustment of price and other parameters to the product's decommissioning. The catalogue provides MegaFon with the information required for coordinated functioning of the rating, service and self-service systems, billing, order management, settlement payments and many more. With the ongoing partnership, catalogue's functionalities will be further expanded.

"We are still working on the catalogue and plan to finish the works in 2021. Though the catalogue hasn't become a silver bullet for all our problems yet, we have already achieved a lot. The first and second levels – local catalogues and the product catalogue – have already been launched. Now we are in the final stages of completing the third – federative level, which will enable faster integration with partners and channels," said Sergey Nikiforets, Director of Digital Services at MegaFon PJSC.

Results

In the course of the project MegaFon and Nexign achieved the following results:

- **Successfully migrated all 8 subsidiaries into one billing system with the unified billing processes.** Transition of eight subsidiaries to a unified system allowed to slash costs on the billing's support and increase its efficiency.
- **Unified business processes and aligned product portfolio** across all subsidiaries while retaining flexible pricing policy for the regions.
- **Reduced the TTM for different products by 2-5 times.**
- **Launched over 100 products with the microservices fabrics.**
- **Reduced the influence of external risks** including the risks of the currency fluctuation and changes of the pricing policy for different vendors by using the unified solution from the Russian provider.
- **Enabled to offer equally high level of service across all regions** by having merged contact centers with equal KPIs and standard request routes.
- **Completed seamless migration of B2C, B2G, B2B and B2O customers** to a new billing system, which allowed to avoid customer churn or decline in customer loyalty.
- **Cleaned up irrelevant data.** In the beginning of the project, some of the subsidiaries stored a lot of duplicate and old data. At the moment, all duplicates have been cleaned up, and, in the operational contour, there is only data required for tariff modifications (for two

accounting periods for roaming, and for one period for all other services). The rest of the information can be requested from the data store.

Ultimately the "Unified Billing" was a significant contribution to MegaFon's transformation of the telecom operator into the operator of digital opportunities. The company managed to broaden its offerings beyond classic telecom services and start providing digital products and services by expanding its partner ecosystem in particular.

"Since CSPs in the Middle East and Africa are looking for the way to streamline digital transformation processes, it is clear that unified and centralized product management, as well as technologies like microservices and methodologies like Fast Track are in huge demand in the market. Nexign is ready to help local operators take their business to the next level and increase subscriber loyalty by offering future-proof solutions and ensuring uninterrupted service at any stage of the project," says Hassen Hamza, Business Development Manager of Nexign.

By completing the project, Nexign has proven it can bring measurable value to CSPs' business in MEA region and help them facilitate transformation. While Nexign enabled the large telco company to achieve its business goals, the company also plans to use its experience of any-scale projects to help CSPs in the MEA region streamline digital transformation. 📌

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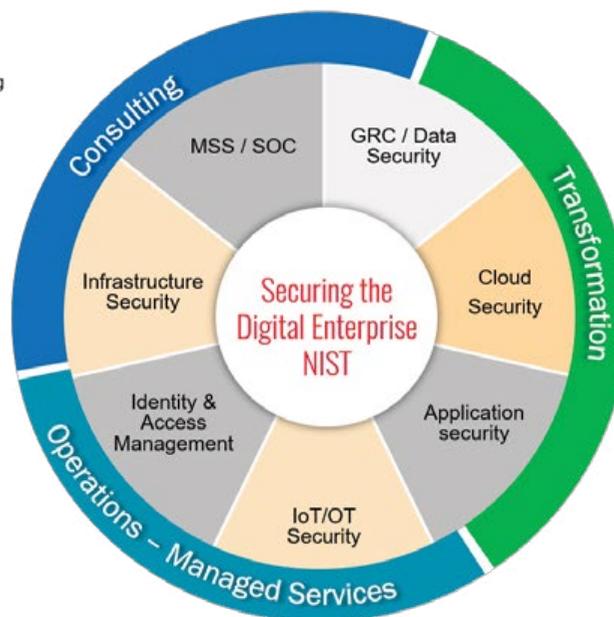
- Manage Detection & response as-a-Service with next gen analytics driven platform securing technology footprint
- Intelligence driven Security IDAM as-a-service for Identity Governance & Lifecycle Management, SSO & PAM
- Automation Driven Security Device Management

Infrastructure Security

- Foundational and Advanced Perimeter, Network, Endpoint and Security
- AI/ML driven Deep Packet Inspections, Sandboxing, Network Behaviour Analytics & Access Controls
- 0-day endpoint protection through signature less endpoint detection & response

Securing Identities

- Enterprise and Consumer IAM
- Access Management
- PIM – Behavioral Authentication
- Protected more than 50 Mn+ users at a time



Risk Quantification & Vulnerability Prioritization

- Real Time Value Risk Score – People / Process / Technology
- GRC Consulting for improving Maturity
- Data Layer Protection – UXP

Zero Trust Framework

- Hiding end points, user's device & server – Authenticate & Connect
- Private / Internet Proxy to complement Zero Trust Design
- Prebuilt misconfig Cloud alert - real time
- 30K+ User Access Proxy enabled - MSSP

SecDevOps

- LitmusT Automation Framework to built E2E CI/CD Pipeline Process
- 30% Cost Reduction on Automated Security Testing
- Dynamic Run time Memory Protection

Securing Connected Devices

- Zero Touch Provisioning with Industry driven SDO
- Traffic Package Analysis & Continuous Threat Monitoring on OT/ IoT / IIoT devices

REAFFIRMING OUR DEFENCE AGAINST CYBER THREATS

Tech Mahindra is a part of the Mahindra Group, a USD 19.4 billion federation of companies that enables people to rise through innovative mobility solutions, driving rural prosperity, enhancing urban living, nurturing new businesses and fostering communities. It enjoys a leadership position in utility vehicles, information technology, financial services and vacation ownership in India and is the world's largest tractor company by volume. It also enjoys a strong presence in renewable energy, agribusiness, logistics and real estate development. Headquartered in India, Mahindra employs over 2,56,000 people across 100 countries.

ARTICLE

The Importance and Role of Cybersecurity in Telecommunications

The Telecom industry keeps the world connected. From private communications to business interactions, it is an intrinsic part of our daily lives, and we take many elements for granted. Be it via the phone, across the internet, over airwaves or cables, this sector makes it possible to communicate in rapid time anywhere around the world. Our modern and fast moving world relies so heavily on connectivity and the telecom industry, which lies amid this domain, should be secured from the malicious cyber-attacks that are bound to occur.

In recent years, as technology has developed, our world has grown, and as the threat landscape has changed, cyber-attacks specifically against the telecom industry are soaring. Given that this industry controls a vast majority of complex and critical national infrastructure, the impact of a successful attack is not only significant, but extensive.

From satellite companies, internet providers, telephone corporations, the infrastructure behind these organizations makes it feasible to send videos, audio and text around the globe, which aids in collaboration and development in practically every industry.

In recent years, as technology has developed, our world has grown, and as the threat landscape has changed, cyber-attacks specifically against the telecom industry are soaring. Given that this industry controls a vast majority of complex and critical national infrastructure, the impact of a successful attack is not only significant, but extensive.

Security systems for companies based in telecommunications are predominately threatened by cyber-attacks, due to the overwhelming amount of sensitive information available.



Anand Dutta
Head Global Alliances | ESRM
Tech Mahindra



In a few cases, telecom companies will act as intermediaries in the chain from supplier to subscriber, which opens even more vulnerabilities to the security of the architecture.

CYBERSECURITY THREATS IN TELE-COMMUNICATIONS

With the additions of cloud computing, IoT, AI technology, and a growing number of connected devices, the perimeter of visibility is widening.

An important key point when attempting to reduce overall risk is acknowledging the wide variety of possible threats to your telecom cybersecurity, which may include:

- **DDoS (Distributed Denial of Service) Attacks:** Cyber attackers intentionally overwhelm their target with a stream of Internet traffic to deplete their victim's uptime and availability.
- **Data Breaches:** Telecom providers continue to struggle with these attacks as they are prime targets due to their valuable data and the breadth of their services.
- **Internal Threats & Human Error:** This type of risk is always present in a company, typically stemming from an employee who intentionally, or by mistake, compromises the security of

Communication networks need to be resilient. Especially, as the scope, variety, and complexity of current cybersecurity threats are increasing exponentially.

The growing volume of data transmissions, legacy technology, and signaling protocols, the increased role of cloud technologies and legacy DNS and DDoS attacks are among the most common "bullets" telcos need to dodge on a daily basis.

the system, resulting in the loss or theft of data.

- **Indirect Client Attacks:** Telecom companies often have a large client base, due to which they are more at risk for attacks targeted to their customers from cybercriminals, such as identity theft, malware, and phishing attempts.

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THE MAIN TYPES OF CYBER THREATS AND WAYS TO MITIGATE THEM

1) SS7 and Diameter Signalling Threats

A number of core telecommunication services are still powered by old protocols such as SS7 (Signalling System No. 7) or Diameter.

SS7 protocol, in particular, has become one of the central cyber threats to the banking industry since hackers can easily intercept 2FA authentication codes and drain users' accounts.

Newer protocols such as SIP (Session Initiation Protocol) can also be extremely vulnerable to cyber threats without proper controls in place. For instance, in 2018 a group of attackers managed to stage a denial of service (DoS) attack on Cisco equipment through leveraging malformed SIP traffic.

According to a report by the European Union for Cybersecurity, most telcos have implemented the basic security measures for SS7 attacks:

Cybersecurity Best Practices for SS7 and Diameter Protocols

- Exhaustive monitoring that covers all interconnect and outgoing traffic, as well as core network elements.
- Harden network nodes by implementing better firewall configuration rules.
- Conduct regular external network

security assessments and penetration tests.

- Implement real-time anomaly detection systems to identify more advanced attacks and their prequels.

2) SIP Hacking

Session Initiation Protocol (SIP), used in most voice-over-IP (VoIP) communications, is another prime target for malicious parties. Without proper security measures, hackers can easily tap into encrypted calls, distribute SIP malware and otherwise tamper with the VoIP services you are provisioning.

Here's a list of cybersecurity threats that were common:

- SIP trunk hacking
- SIP toll fraud
- Eavesdropping
- Caller ID spoofing
- DDoS attacks on PBX systems

Utility suppliers in the US faced a series of VoIP attacks last year. An attacker was initially targeting 1,500 unique gateways tied to some 600 businesses, but later focused on a single company and, using a command-injection technique over HTTP, injected a malicious web shell into the company's server outgoing directory. Granted, the hack was discovered in time before much damage had been done.

Best Practices for Protecting SIP Signalling

- Enforce strong encryption over your Transport Layer Security (TLS) and Real-Time Protocol (RTP) to protect all data transmissions.
- Implement anti-spoofing for SIP messages. Ensure that you have proper in-built mechanisms for challenging messages and authenticating SIP clients.
- Maintain strong Session Border Controller (SBC) controls that perform deep packet inspection of all SIP messages and prevent unauthorized SIP traffic.

3) DNS Attacks

DNS (Domain Name Security) attacks still remain a major sore point for telcos. What's worse, is that the cost of such attacks is increasing year-over-year. In 2017, one such attack usually costed a telecom company \$622,100 on average.

Telecom providers had the highest volume (30%) of sensitive customer information stolen through DNS attacks when compared to healthcare, banking, education, and public services sectors. In general, 43% of telecom companies were victims of DNS-based malware and 81% needed 3+ days to apply a critical security patch.

In 2018, the figure rose by 42% and reached \$886,560 on average. To a large extent, this drastic increase can be attributed to slow response time: on average 3 employees need 17+ hours to mitigate such cybersecurity threats.

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DNS Attack Prevention Best Practices

- Switch from a reactive to a proactive approach to cybersecurity. Start applying adaptive countermeasures.
- Implement real-time analytics for DNS transactions and gradually build up a behavioral threat detection suite, capable of detecting both known and emerging cyber threats and protect against data theft/leaks.
- Enhance your firewalls with ML-driven response policies on traffic to suspicious hostnames.
- Implement query monitoring and logging for all suspicious endpoints.

4) DDoS Attacks

Telcos are usually the prime target for DDoS attacks. As much as 65% of the global DDoS attacks in 2018 were aimed at communication services providers and the

figure still remained high in 2020.

Another recent report reveals that the following DNS attacks are on the rise too:

- Multi-vector attacks – targeting several protocols at once – increased by 65% in the fourth quarter of last year.
- DNS amplification is the most popular current cyber threat for DDoS attackers. In 2019-20, it has been present in one-third of all attacks.
- The average bandwidth attack increased to 5 Gbps in 2020 – up from 2 Gbps in 2016.
- Corrupt cloud servers are under fire too. The volume of DDoS attacks involving these increased to 51%.

Notably the biggest issue with DDoS attacks for telcos is that a large-scale attack could easily create a domino effect. For instance, an operator network overload would likely affect a customer who co-resides or is reliant on the infrastructure transporting the attack.

How Telcos Can Protect Against DDoS Attacks

- **Set up robust Access control lists (ACL)** – your first line of defense. Note, however, that ACL has a scaling issue. A rapid increase of temporary ACLs, built to resist a large-scale attack, can have a major performance impact on different router hardware and software, making the overall management rather challenging. Thus, it's best to write several scripts for automatic router configuration and ACL management.
- **Implement black hole scrubbing** – a variation of the block hole filtering technique. In this case, the traffic is redirected to a different physical interface – a scrubbing center – that can weed out the good traffic from the malicious one. A number of software vendors offer such solutions.
- **Real-time DDoS monitoring is a must** - The best-of-breed tools are now powered with machine learning functionality, meaning their detection accuracy progressively increases over time.

5) IoT Network Security

By 2021, Gartner estimates that some 25 billion IoT devices will be connected to telecom networks. Accommodating such an increased volume of data is

just one part of the challenge though. Preventing unauthorized access, securing data transmissions and ensuring smooth monitoring of a much larger attack surface are the key security challenges for telcos.

Despite low adoption, IoT devices have already proven to present both internal and external threats to cybersecurity. First of all, the device itself can be exposed to various cyber threats and vulnerabilities due to manufacturing issues. Secondly, misconfiguration and lack of proper security measures make an IoT device an easy entry-point to the entire network of devices, or worse – the supporting architecture. In short, most attackers will have an easier way of finding a leeway as the surface of attack increases.

Some of the common types of cybersecurity threats happening at network level are as follows:

- Network congestion
- RFIDs interference and spoofing
- Node jamming in WSN
- Eavesdropping attacks
- Sybil attacks
- DDoS attacks
- Routing attacks

Offering solid protection against these is a joint responsibility between network operators and IoT users.

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IoT Cybersecurity Best Practices

Below are some of the key best practices the association proposes against common cybersecurity threats:

- Network operators should use UICC based mechanisms for the secure identification of IoT devices. You can also provide single sign-on services for devices but mind the security trade-offs.
- Enable secure authentication for all

devices, networks and service platforms associated with an IoT Service.

- Offer data encryption services to IoT service providers to ensure high communication integrity and increase network resilience.
- Deploy private networks to support various IoT networks. These can be developed using Layer Two Tunneling Protocol (L2TP) and secured with Internet Protocol Security (IPsec)

TECH MAHINDRA'S' POV AND SOLUTIONS FOR CYBERSECURITY IN TELECOM

Our experienced advisors are here to help customers navigate the increasingly complex realm of telecom cybersecurity programs and solutions available. A properly implemented security service for telecommunications will offer early detection of cyber-risks, decreased amounts of pointed attacks, rapid response rates for occurring incidents, and advanced overall protection. As cybercriminals continually modify their practices to adapt to changing opportunities, telecom cybersecurity solutions must evolve as

well, with more predictive measures taken to mitigate threats before they have the opportunity to cause serious damage.

At Tech Mahindra, we offer personalized solutions in telecom cybersecurity to meet your business's goals for Digital Optimization and Digital Risk Management. Our trusted advisors have over 200 years of combined IT experience in best practices in telecom cybersecurity.

We help in constructing a security strategy to defend customer's company telecom systems against identified cyber threats. Through assessment, planning, and implementation, Tech Mahindra will be there with our customers every step of the way.

In supporting our customer's business's unique needs, our experienced IT consultants will aid in the selection process of a telecom cybersecurity solution which will secure and streamline your company's workforce into the future offering the below services:

- Fully Managed Security Operations & automation playbooks
- MEC Security deployment with AppEdge - uCPE
- SD-WAN Security & Zero trust design architecture
- E2E Secure 5G & OpenRAN Security architecture & pilot deployments
- Secure Cloud Migration and cost based design
- Secure Digital BSS / OSS
- Data Security – Encryption, Tokenization & Anonymization
- Continuous IT Risk Management & Operators Assessment
- Cost Optimization & Security product Consolidation

THE CONCLUSION

Telecom players have both an exciting and complex time ahead. On the one hand, the industry is undergoing major transformations, resulting in new revenue opportunities and value streams. On the other hand, an increased presence of new assets (such as IoT devices) and increased pressure on the old communication protocols enlarges the defense perimeter every telco needs to create.

Ultimately, to protect your networks against the pervasive cybersecurity threats in the telecom industry, you will need to switch from reactive security to proactive – one that relies on extensive monitoring and has predictive capabilities, powered by advanced analytics and AI. Conduct proper risk assessments for current systems, decentralize and automate the core security requirements with appropriate tools and run even deeper assessments for emerging technologies such as IoT, 5G, and NFV among others. 📍

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REGULATORY ACTIVITIES BEYOND THE SAMENA REGION



Angola

Angola's new mobile market entrant Africell has formalized a contract with the government to become the country's fourth 'Unified Global' telecommunications operator and launch services later this year, it announced in a statement reported by news outlets including Jornal de Angola. After signing the agreement with the Ministry of Telecommunications, Information Technology & Social Communication (Ministerio das Telecomunicacoes, Tecnologias de Informacao e Comunicacao Social, MINTTICS), the Ministry of Finance and the Angolan Institute of Communications (Instituto Angolano das Comunicacoes, INACOM), Africell declared it would invest 'several hundred million dollars' in infrastructure and services during the first phase of the project, estimating that it will create 6,500 jobs in the next five years. Founder and chairman of the Africell group, Ziad Dalloul, expressed a commitment to 'transform the Angolan telecommunications market through lower prices and accessibility' with a focus on high speed

mobile data services and affordable smartphones, adding: 'Angola is one of the most attractive investment destinations in sub-Saharan Africa and an African leader, so we see this as the next logical step for Africell as we continue to expand our network and deepen our footprint across the continent.' Africell was officially selected as Angola's fourth Unified Global operating licensee on 6 July 2020, confirming a decision first announced in May that year, and its new license permits infrastructure-based mobile, internet, fixed line and pay-TV services. Angola's mobile market is currently a duopoly of Unitel and Movitel, while state-backed fixed line operator Angola Telecom holds the third Unified Global license and is planning to share infrastructure with Africell, having scrapped a proposed mobile partnership with Egyptian-backed Angorascom, TeleGeography notes. The Lebanese-backed, UK-headquartered Africell group operates mobile networks in Gambia, Sierra Leone, Democratic Republic of Congo and Uganda. (February 4, 2021) commsupdate.com



Argentina

The National Communications Agency (Ente Nacional de Comunicaciones, ENACOM) has confirmed that it will stage a week-long 5G trial at its headquarters in Buenos Aires this month. The tests will run from 15 March to 19 March and explore how fifth-generation technology will benefit the country's industrial, educational and entertainment sectors. While the spectrum intended for use has not been divulged, TeleGeography notes that the watchdog has previously sanctioned both Movistar and Personal to utilize

28GHz millimeter wave (mmWave) frequencies for 5G trials. While neighboring Chile became the first Latin American nation to successfully auction 5G-suitable frequencies – staging a multi-band spectrum sale last month – Argentina has yet to confirm which bands it intends to auction for 5G. Brazil, meanwhile, intends to run its own 5G auction before the end of June this year. As in Chile, Brazil will distribute spectrum in the 700MHz, 3.5GHz and 26GHz bands for 5G use.

(March 4, 2021) commsupdate.com



Australia

Australian Communications Minister Paul Fletcher has announced that Optus, Pivotal and Telstra have each been awarded grants under the final tranche of the government's AUD2 million (USD1.6 million) Alternative Voice Services Trials (AVST) program. In a press release regarding the development, it was noted that this latest round of tests will include Telstra offering up to 300 'trial services' in a range of 'diverse locations' across the country; the majority of the services offered by the operator will reportedly be 'fixed' voice services delivered using its 4G network, although Telstra will also trial a small number of voice services delivered over satellite. For its part, Optus will offer 15 trial services at predetermined regional locations in New South Wales, Queensland and South

Australia, Queensland and SA; these will include both fixed and mobile voice calls, with the operator also offering optional broadband data access with backhaul provided through its satellite network. Rounding out the trio, Pivotal will offer up to 60 trial services at 30 locations in regional and remote areas of Australia, with those participating expected to 'be able to use the full functionality of mobile handsets to make and receive VoIP calls when at home or out and about'. Commenting, Mr. Fletcher said: 'While Optus, Pivotal and Telstra are already providing voice services across Australia, the grants will enable interested consumers to try out new types of services without additional cost.'

(February 17, 2021) commsupdate.com



Belgium

Telecoms regulator the Belgian Institute for Postal Services and Telecommunications (BIPT) has adopted a decision on the tariffs that alternative operators must pay to use Proximus' fiber-to-the-home (FTTH) GPON network (Bitstream Fiber GPON reference offer). Based on a cost model developed with the help of a specialized partner, the regulator concluded that Proximus' proposed tariffs are fair – i.e. they do not exceed the costs of an efficient operator plus a reasonable margin (between 2.5% and 5% depending on connection speed) – and will allow competition to the benefit of end-users while safeguarding the incentive to invest in the rollout of optical fiber. Full details of the approved tariffs, which apply to areas where Proximus plans to deploy optical fiber on its own and not via joint ventures, can be found on the BIPT's website.

(March 10, 2021) commsupdate.com

Telecoms regulator the Belgian Institute for Postal Services and Telecommunications (BIPT) has confirmed the 2G and 3G spectrum licenses held by Orange Belgium, Proximus and Telenet will be extended for a six-month period until 14 September 2021 to ensure continuity of services. The permits were due to expire on 15 March 2021 but the government's plan to auction spectrum in the bands along with 5G frequencies in the 700MHz and 3.5GHz bands has faced lengthy delays and is now expected to be staged in early 2022. The operators are liable for a one-off fee of EUR51,644 (USD63,332) per MHz per month for the 900MHz and 1800MHz bands and EUR20,833 per MHz per month for the 2100MHz band, payable by 31 March 2021. This means Proximus will pay around EUR11.4 million per month, Orange EUR10.9 million and Telenet, which gave up a portion of its 900MHz and 1800MHz frequencies, EUR8.4 million. (March 1, 2021) commsupdate.com



Bermuda

The Regulatory Authority (RA) is looking to open enforcement proceedings against East End Group (EEG) companies Telecommunications Networks Ltd (trading as East End Telecom) and its subsidiary TeleBermuda International (TBI) over their failure to pay overdue regulatory fees. In giving notice of enforcement proceedings, RA said it had issued 'binding' instructions to both firms on 18 November 2020 concerning outstanding quarterly fees. TBI was instructed to pay half of all owed fees (including arrears) within seven days, with the balance to follow

by 31 December. Further, the company was instructed not to fall behind on its fees payments in future. Similar instructions were issued to TNL, with RA chief executive Denton Williams warning the companies that failure to comply could result in fees of up to BMD5,000 (USD5,000) per day for non-compliance. On its website, RA confirms that it 'seeks to determine, by conducting an informal adjudication' whether the pair have 'contravened certain statutory provisions requiring the payment of fees to the Authority'.

(March 8, 2021) commsupdate.com



Brazil

The National Telecommunications Agency (ANATEL) has approved a proposal to open the complete 5925MHz-7125MHz (6GHz) band for unlicensed Wi-Fi 6E access. According to the watchdog, the use of the 6GHz band for Wi-Fi could unlock huge economic benefits, potentially helping to contribute a staggering USD112.1 billion to Brazil's GDP between 2021 and 2030. Industry advocacy group the Dynamic Spectrum Alliance (DSA) notes that fellow Latin American nations Colombia, Mexico, Honduras, Costa Rica, Peru and Argentina are all expected to make decisions on the future of the 6GHz band later this year.

(March 5, 2021) commsupdate.com

Plans to stage Brazil's long-awaited 5G spectrum auction continue to gather pace, with the National Telecommunications Agency (ANATEL) approving certain 5G-related rules yesterday (25 February). While the full rules have not yet been disclosed publicly, Reuters reports that participating operators will be obliged to deploy Standalone (SA) 5G networks by 2022, rather than relying on dynamic spectrum sharing (DSS) technology, which enables the parallel operation of 4G and 5G services via one frequency

band. In addition, the news agency reports that the watchdog has paved the way for Huawei Technologies of China to participate in the rollout of commercial 5G networks, ending speculation that the vendor would be prohibited from playing a part in the process. President Jair Bolsonaro has previously criticized the Chinese company and was under pressure from the former Trump administration to ban Huawei, citing security concerns. The threat prompted Brazil's telecom companies to complain that by excluding Huawei it would cost them billions of dollars to replace existing equipment; they collectively estimated that the Chinese company supplies around 50% of their respective 3G and 4G infrastructure. According to TeleGeography's GlobalComms Database, back in February 2020 the Ministry of Science, Technology, Innovations and Communications (Ministerio da Ciencia, Tecnologia, Inovacoes e Comunicacoes, MCTIC) provided its own approval of the 5G auction process. The spectrum sale, which will include frequencies in the 700MHz, 2.3GHz and 3.5GHz bands, as well 26GHz millimeter wave (mmWave) spectrum, has been delayed by the ongoing COVID-19 pandemic, but is expected to take place before end-June 2021. (February 26, 2021) commsupdate.com



Bulgaria

Bulgaria's telecommunications authority the Communications Regulation Commission (CRC) has announced that it will hold a 'secret' bidding tender for 5G-suitable spectrum in the 3.6GHz band on 6 April 2021. The regulator initially planned to distribute the airwaves via an auction (slated for 15 March) but cancelled the procedure after it transpired that the spectrum could be distributed without one; however, Vivacom submitted a legal appeal against the regulator's decision to halt the auction, with the CRC stating at the time that it needed to consider all

legal options before proceeding with the spectrum awards. Following determination of all legal options and obtaining the consent of all interested parties, the CRC revoked Decision 94 of 10 March 2021 and set 6 April as the new date for the 5G tender. The regulator is aiming to grant three nationwide permits for a term of 20 years; each license will allow the holder to utilize one unpaired 100MHz block in the band (3500MHz-3600MHz, 3600MHz-3700MHz or 3700MHz-3800MHz).

(March 18, 2021) [commsupdate.com](#)



Cambodia

Cambodia has approved the establishment of a National Internet Gateway (NIG) through which all of the country's domestic and international internet traffic will be routed and managed. Phnom Penh Post reports that a sub-decree signed by Prime Minister Hun Sen on 16 February claims that the gateway will facilitate and manage internet traffic, ensure effective and efficient national revenue collection, protect national security and ensure social order. The NIG will incorporate and manage the Domestic Internet Exchange (DIX) and the International Internet Gateway (IIG), to be located in Phnom Penh, Sihanoukville, Poipet, Bavet and other locations based on demand and as approved by the Ministry of Posts and Telecommunications Cambodia (MPTC). Parties interested in operating the NIG have been invited to apply for a license from the Telecommunication Regulator of Cambodia (TRC). The appointed operator would be required to 'manage and facilitate connections and the use of infrastructure, network and internet services at all instances of

the NIG, as well as terrestrial cross-border network infrastructure. It will have to install and configure the routers, switches and other network equipment to ensure the quality and security of network connections or peering facilities for NIG and operators of [other] international gateways.' It must also cooperate with the MPTC, TRC and other relevant authorities and 'take immediate action to block or disconnect any network connection that affects national revenue, security, social order, et cetera'. In July 2020 the government proposed the establishment of a NIG to facilitate and manage domestic and international internet connections. The plans were criticized by the Asia Internet Coalition (AIC), which stated that the move poses serious risks to businesses and internet platforms. It added that it would undermine citizens' rights to internet access, raising grave concerns about freedom of expression, media censorship, user privacy, deteriorating internet speed and increasing cybersecurity risks.

(February 18, 2021) [commsupdate.com](#)



Canada

Canadian alternative ISP TekSavvy welcomed a decision from the Supreme Court declining to hear appeals by Canada's largest telecoms and cable companies (including Bell and Rogers), who sought to overturn a 2019 decision from the Canadian Radio-television and Telecommunications Commission (CRTC) lowering the wholesale internet rates the large carriers charge smaller competitors. The Supreme Court also ordered the large carriers to pay TekSavvy's legal costs, following an earlier, unanimous decision from the Federal Court of Appeal rejecting the large carriers' appeals with costs, noting the big firms' arguments were of 'dubious merit'.

TekSavvy highlights that despite the Federal Court of Appeal's rejection of the incumbents' appeals, the CRTC issued a new decision declining to implement its own wholesale order, and allowed the large carriers to continue charging higher rates. Therefore, TekSavvy is challenging the CRTC's stay decision, calling it 'flawed and unreasonable'. TekSavvy added in a statement that the existing wholesale price framework has forced it to raise its own prices, warning that 'the CRTC's failure to act is hostile to independent investment.'

(February 26, 2021) [commsupdate.com](#)



Chile

Chilean telecoms watchdog the Department of Telecommunications (SUBTEL) has published the results of the final tiebreaker auction of its 5G spectrum tender process, naming Movistar, Entel and WOM as the winners. Each of the trio was awarded a 50MHz tranche of 3500MHz spectrum. Of the other two bidders, Claro's

bid fell short whilst would-be newcomer Borealnet bowed out after losing the tiebreaker auctions for frequencies in the 700MHz and AWS bands to WOM. According to SUBTEL, the economic offers submitted by the companies amounted to around CLP117 billion (USD162.7 million) for Movistar, CLP100 billion from

Entel and CLP32 billion from WOM. As part of their license obligations, the operators will be required to provide high speed mobile data services to 366 unserved or underserved locations, and connect 199 hospitals to the new networks. Diario Financiero quotes a statement from Claro commenting on the auction results as saying that the company would forge ahead with its 5G development program: 'The results of this first phase of the 3500MHz spectrum tender do not stop Claro Chile's 5G deployment plans. We will continue advancing in the development of 5G with our currently available spectrum, including the 26GHz millimeter band.' The operator also encouraged the regulator to accelerate the process of auctioning additional 5G spectrum, referring to the 'next stage of

the public tender'. The local press outlet also noted that there is a potential route for Claro to purchase additional 3500MHz airwaves in the immediate future, as Entel's award will push the company's spectrum holdings in the band above the 30% cap.

With the conclusion of this round of 5G tenders, the winners of the spectrum are as follows:

- WOM – 2×10MHz in the 700MHz band, 2×15MHz in the AWS band, 50MHz in the 3500MHz band and 400MHz in the 26GHz band
- Entel – 50MHz in the 3500MHz band and 400MHz in the 26GHz band
- Movistar – 50MHz in the 3500MHz band
- Claro – 400MHz in the 26GHz band.

(February 17, 2021) commsupdate.com



Costa Rica

The Superintendency of Telecommunications (Superintendencia de Telecomunicaciones, SUTEL) has revealed that the country's total fiber-optic infrastructure expanded 146.1% year-on-year in the twelve months to 30 June 2020, from 78,417km to 192,996km. Previously, fiber networks spanned just 68,226km as of June 2018. Federico Chacon, president

of the SUTEL board, commented: 'Internet service users have demanded higher quality in telecommunications services, as a result of the conditions caused by the pandemic, and telecommunications companies have responded by expanding their fiber-optic networks. This allows better bandwidth and stability.'

(February 19, 2021) commsupdate.com



Croatia

The government has adopted a new National Plan for the Development of Broadband Access, covering the period 2021-27. The plan aims to deliver the objectives outlined in the EC's 'Connectivity to a Competitive Digital Single Market – Towards a European Gigabit Society' and '5G for Europe' projects, which encourage the development of broadband access and very high-capacity networks that enable gigabit connectivity across EU member states by 2025. Croatia currently

ranks 25th out of 27 states in the EU's Economic and Social Digitization Index (DESI 2020). The Croatian plan aims to provide connectivity with download speeds of at least 100Mbps to all households, while government offices and public buildings such as schools and health facilities will get symmetric connections of at least 1Gbps. The project also seeks to have 5G networks in all main cities and towns and along major highways.

(March 15, 2021) commsupdate.com



Dominican Republic

Nelson Arroyo, the President of the Dominican Telecommunications Institute (INDOTEL), has revealed that the watchdog expects its 5G auction to generate between USD200 million and USD300 million. Interested parties have been invited to register for the process between now and May. The forecast also serves as a ballpark figure for would-be new operators who are interested in entering the Dominican Republic mobile market. With the country accounting for a wireless population penetration rate of just over 80% as of 30 September 2020, INDOTEL is keen for an injection of fresh blood into the market. The 5G auction process will involve the allocation of frequencies in the 698MHz-806MHz (700MHz) and 3300MHz to 3460MHz (3.5GHz) bands. As per INDOTEL documentation, nine 2×5MHz blocks of 700MHz spectrum will be made available,

alongside 16 10MHz blocks of 3.5GHz spectrum. All licenses will have a duration of 20 years. While INDOTEL previously declared its intention to steal a march on its regional rivals with one of the first 5G auctions in Latin America and the Caribbean, TeleGeography notes that Chile ranks as the first LatAm nation to successfully auction 5G-suitable frequencies. This month Chile's Department of Telecommunications (Subsecretaria de Telecomunicaciones, SUBTEL) confirmed the sale of various licenses in the 3.5GHz band (generating USD349.4 million), 700MHz band (USD82.4 million) and AWS band (USD22.4 million). A trio of 26GHz concessions were also issued as part of the same process, but did not require an auction.

(February 19, 2021) commsupdate.com



Estonia

With Ethiopia reported to have in mind a minimum amount that it aims to raise from the sale of new licenses, which it is offering as part of the opening up of the country's telecoms sector, it has been suggested the sale process could be scrapped if such valuations are not realized. According to Bloomberg, Eyob Tekalign, the state minister responsible for the country's privatization process, confirmed that three independent teams have calculated the value of the two new telecoms licenses that are being offered, with these valuations said to have informed the government's expectations of what it should raise from the sale. However, the minister was also cited as saying: 'If we get the value, we expect

from the bidding process, we will go ahead ... If not, we will have another look.' As previously reported by CommsUpdate, a delay to the process of offering the two new concessions was announced last month, with the Ethiopian Communications Authority (ECA) confirming it had postponed the bidding deadline to 5 April 2021 following requests received from would-be bidders. The ECA's RFP for the award of licenses was launched in November 2020, and under a framework for the liberalization and development of the Ethiopian telecoms sector, the ECA plans to award two nationwide full-service concessions through a competitive bidding process. (March 4, 2021) commsupdate.com



Ethiopia

The Ethiopian Communications Authority (ECA), which earlier this month confirmed it was extending the bidding deadline for the country's two new nationwide telecoms licenses, has now moved to reject suggestions that bidders have already been shortlisted. The development comes following comments made by Safaricom CEO Michael Joseph to Business Daily Africa, with the executive having claimed his firm was one of six to have been cleared to bid for a concession. In response though, the ECA has issued a brief statement on its social media feed, in which it noted: 'We wish to clarify that to date no proposals have been received

for the two new telecom licenses, and no prospective bidder has been shortlisted, prequalified nor excluded from participating in the bid process. The RFP [request for proposals] process is ongoing.' As previously reported by CommsUpdate, earlier this month the ECA announced it was pushing back the deadline for parties interested in the new concessions, confirming an updated deadline of 5 April 2021; it said at the time that the postponement was being made following requests it had received from would-be bidders during the question-and-answer period of the RFP process for the concessions. (February 18, 2021) commsupdate.com



Finland

The Ministry of Transport and Communications (Liikenne- ja viestintäministerio, MoTC) has called for comments on draft amendments to the Government Decree on Radio Spectrum Usage and Frequency Allocation Plan (Spectrum Decree). In a press release regarding the matter, the ministry noted that the consultation process is in part related to amendments to the Act on Electronic Communication Services. As per the draft amendments to the Spectrum Decree, the MoTC has said provisions would be laid down to allocate the 2300MHz-2320MHz and 24.25GHz-

25.1GHz frequency bands for the provision of 'minor local network service in the mobile communications network'. Meanwhile, the 1.5GHz frequency band would, sometime in the future, be allocated for dynamic shared use of wireless broadband and radio equipment meant for military defence. A deadline of 24 February 2021 has been set for the submission of comments, and the MoTC has said that following the consultation stage, 'the preparations will continue by public officials. (February 4, 2021) commsupdate.com



France

France's telecoms regulator, ARCEP, announced that it had granted SpaceX's Starlink satellite broadband project a 10-year license to provide internet in France. The license will cover the 10.95–12.70 GHz and 14–14.5 GHz bands. SpaceX has currently launched around 1,145 low-Earth-orbit (LEO) satellites as part of its Starlink constellation, with plans to expand this figure significantly throughout the year and beyond, ultimately reaching around 12,000 devices by the mid-2020s. These LEO satellites are about 60-times closer to Earth than traditional satellites, helping them to overcome traditional issues associated with satellite connectivity, such as high latency. The company had

been accepting pre-orders for its service earlier this month. In order to access the internet, customers will be required purchase a Starlink Kit that includes a phased-array dish antenna and Wi-Fi router device to connect wirelessly to the satellite internet. Once connected, customers will reportedly have access to speeds of 50–150 Mbps, with latency between 20ms and 40ms. In its current form, SpaceX warns that some new customers could experience brief periods of no service, but this should improve as deployment broadens. "As we launch more satellites, install more ground stations and improve our networking software, data speed, latency and uptime will improve

dramatically," said the company. Prior to attaining this license, SpaceX had only received authorization to set up three ground stations in France, in Villeneuve-d'Ornon, Gravelines and Saint-Senier-de-Beuvron. However, initial plans to deploy the ground stations in Saint-Senier-de-Beuvron may in fact prove more problematic than sending the satellites themselves into orbit. The village, which has a population of around 350, issued a decree to block the construction of nine 'radomes', three-meter-tall globes that protect the antennas on the ground. The primary reason given was the perceived health risk. "This project is totally new. We don't have any idea of the impact of these signals," said village mayor Noemie Brault. "As a precaution the municipal council said no." The council argued that the decision was not a result of technophobia but rather due to a perceived lack of research on the biological impact of the electromagnetic radiation. For example, another local farmer, Jean-Marc Belloir, noted that he uses connectivity for a huge variety of tasks on his farm, but, nonetheless, he still has reservations

about the impact of the satellite connectivity itself on the health of humans and animals. "On our farm, we're always online. My cows are linked up; my smart watch warns me when they're going to calve," he said. "But when you see the range of these antennas, there has to be some research." Mayor Brault herself, however, did note that she was somewhat skeptical about the cost effectiveness of the project, as well as some of Elon Musk's additional projects. "When you hear that he wants to implant a chip in people's brains, it's frightening," she said, referring to Musk's Neuralink project. Despite the village's reservations, construction company Sipartech says it will refile its deployment request and the village will be unlikely to block it going ahead given current objections. Starlink's satellite broadband is already being trialed in the US and the UK, as well as being available in some parts of Spain ahead of its official Spanish launch. A launch in Poland is also planned, with SpaceX taking orders for the service for two weeks ago.

(February 23, 2021) totaltele.com



Gabon

The parliament has passed the country's 2021 Finance Law authorizing the state to further reduce its holdings in several companies including Gabon Telecom (Moov Africa) during the financial year. The law specifies that the assets in Gabon Telecom, banking group Union Gabonaise de Banque and utility company SEEG will be reserved for Gabonese investors. The state previously

sold a 51% stake in the telecom operator to Maroc Telecom in 2010 and currently owes the majority shareholder around XAF10 billion (USD18.4 million). Sources claim the Gabonese state will retain a holding in the incumbent telco in order to monitor its progress.

(February 8, 2021) Le Nouveau Gabon



Germany

The Federal Network Agency (FNA) has awarded a nationwide 20-year 450MHz frequency license to critical infrastructure operator 450connect, which announced that it will begin a national LTE-450 radio network expansion shortly. 450connect is backed by a joint venture of four equal partners: Alliander, a consortium of regional energy suppliers, E.ON and the utility alliance 450 (consisting of a large number of mostly municipal utilities, energy and water suppliers with the participation of the EnBW subsidiary Netze BW). 450connect previously expanded regional 450MHz radio networks to cover more than 20%

of Germany, with the first sub-networks already in operation. The company highlights that its 450MHz platform is standardized worldwide for machine-to-machine applications, and supports a crisis-proof and highly available communications network with very good area/in-building coverage via a relatively small number of radio locations, with its plan projecting deployment of 1,600 radio sites by end-2024. Network access will be offered to companies and organizations with critical communication requirements on a non-discriminatory basis.

(March 11, 2021) commsupdate.com



Ghana

The Ghanaian government has revealed plans to implement a SIM re-registration program as part of efforts to increase security and combat the criminal use of technology. Minister for Communications, Ursula Owusu-Ekufu, informed the parliament's Appointments Committee that the government has decided to 'revisit the SIM registration regime, to do and do it properly', adding that previous efforts had been hindered by the lack of suitable ID cards. The

government had announced plans in October 2019 to stage a re-registration program in the first half of 2020, with subscribers required to present the new national ID card, but this was disrupted by the COVID-19 pandemic. The Minister stressed that customers who have already duly registered their SIMs will only have to verify the registration with their network operator.

(February 18, 2021) GhanaWeb

The Minister of Communications, Ursula Owusu-Ekuful, has indicated that the government is considering plans to introduce a unified licensing regime for telecom operators, reports Myjoyonline. Answering questions from the Appointment Committee of Parliament, Mrs. Owusu-Ekuful said the move was in line with the administration's goal to reduce the cost of internet access for consumers, hinting that such an option had become critical due to increasing data usage. The proposed licensing regime would allow telecom operators to acquire one set of licenses for both voice and data operations, rather than individual permits for each spectrum band. 'Moving forward, we will implement the unified licensing regime so that it doesn't matter whether you have a 2G, 3G or 4G spectrum license to

deliver the services that you want for your customers,' she told the Appointment Committee. Meanwhile, the Minister also confirmed that the government is in the process of taking over AirtelTigo, the country's third largest mobile network operator, after owners Bharti Airtel and Millicom International Cellular indicated last year that they wished to exit the Ghanaian market, reports Prime News Ghana. 'The government is in the process of taking over AirtelTigo. It is something we will do quickly ... In view of the importance of this sector, the role it plays and the number of jobs that are supported by this entity, the government has decided that in the short term it will take over the assets and liabilities of AirtelTigo', she told the appointment committee. (February 16, 2021) commsupdate.com



Guyana

Guyanese telecoms watchdog the Telecommunications Agency has published details of the proposed amendments to the licenses of Guyana Telephone and Telegraph (GTT), Digicel Guyana and E-Networks, as well as the exemption order signed by the Prime Minister earlier this week to expedite the licensing of ISPs. Stakeholders have until 8 March 2021 to submit comments regarding the planned amendments to the telcos' concessions, whilst the exemption order took effect immediately, on 19 February. As reported by TeleGeography's CommsUpdate earlier this week, Guyana's PM Mark Phillips signed an exemption order allowing around 50 small, local ISPs to bypass parts of the licensing procedure to accelerate the process of issuing authorizations. At the same time, the official had commented that the government had received and granted requests from the incumbent licensees to amend their concessions to enable them to expand their services. Specific details had not been published at the time. Under the proposals, E-Networks' license will be adjusted to grant the ISP permission to land, install and operate a fiber-optic submarine cable that will connect Guyana and Suriname for the provision of redundant connectivity. Similarly, Digicel's license will be amended to allow the provider to operate a submarine cable connecting Guyana and Trinidad and

Tobago, which it has already been authorized to land and install. The amendment also proposes the allocation of additional spectrum to the cellco for the provision of mobile backhaul within Guyana, and for cross-border communications with Brazil and Suriname. Finally, the proposed amendment to GTT's license also includes the provision of extra spectrum for backhaul, as well as additional airwaves in the 900MHz band (896.4MHz-902.2MHz/941.4MHz-947.2MHz). Regarding the licensing of ISPs, meanwhile, the exemption order establishes a new classification of provider, a 'small internet service provider', defining it as a company that does not operate a facility that would require a license under Section 23(9) or Section 30(10) of the Telecommunications Act (i.e., the exemption does not apply to companies that plan to operate international cable or radio links). The order exempts small ISPs from the requirement to obtain an individual license, or any other license that would be required by the Act, but the companies are still subject to all other obligations covered by the Act. Notably, however, the exemption does not automatically apply to eligible firms and companies must complete a written registration with the Telecommunications Agency to benefit from the order. The exemption order is set to remain in effect for one year. (February 26, 2021) commsupdate.com



Hungary

The Curia (Supreme Court) of Hungary has rejected an appeal by fixed and mobile network operator DIGI, deciding that it was legal for the National Media & Infocommunications Authority (Nemzeti Media- és Hírközlési Hatóság – NMHH) to exclude DIGI from the procedure for selling 5G mobile frequencies. The apex court agreed with a first-instance ruling from the Metropolitan Court in November 2020 dismissing a legal action from DIGI, which had opposed the NMHH's decision to exclude it from the country's 5G frequency license auction completed in March 2020 (resulting in all three of DIGI's main mobile rivals receiving 15-year 700MHz/3500MHz licenses). There is no

further appeal permitted against the Curia's decision, issued on 4 February. The final verdict noted that DIGI (Hungary) did not apply directly for the frequency auction because of conditions which would exclude it from participating, and therefore applied via its parent company – Netherlands-registered, Romanian-listed Digi Communications – a move which the Curia called 'deceptive' and 'against the purity' of the auction procedure. One condition for participation was that a bidding company must have no regulatory infringements against its name in the 24 months prior to the start of the auction.

(February 8, 2021) commsupdate.com



India

The Department of Telecommunications (DoT) has amended the terms of telecommunications licenses, altering the rules regarding procurement of equipment on national security grounds. The new clause requires that providers only source certain categories of equipment from specified 'Trusted Sources', empowering the National Cyber Security Coordinator (NCSC) to determine which types of equipment must follow these guidelines, and which vendors are considered Trusted Sources. The new rules take effect from 15 June 2021 and from that date operators must only connect 'Trusted Products' in their network and must seek permission from the NCSC for permission to upgrade existing equipment that is not designated a Trusted Product. However, the directions do not affect ongoing annual maintenance contracts, or updates to existing equipment already inducted in the network when the rules take effect.

The move has been seen as the government's first formal step towards locking Chinese vendors Huawei and ZTE out of India amidst escalating tensions between Beijing and Delhi. The Economic Times writes that Bharti Airtel and Vodafone Idea (Vi) have existing contracts with Chinese vendors. An unnamed telecom executive was cited as saying that the new rules will force companies to put development plans on hold until the government produces its list of Trusted Sources. In a separate development, meanwhile, Telecom Minister Ravi Shankar Prasad has told parliament that the planned merger of state-owned telcos Bharat Sanchar Nigam Limited (BSNL) and Mahanagar Telephone Nigam Limited (MTNL) has been deferred due to financial reasons. The official added, however, that 'close cooperation and service integration' between the two firms has already begun.

(March 11, 2021) [commsupdate.com](https://www.commsupdate.com)

The Department of Telecommunications (DoT) has reportedly proposed replacing the nation's telecom legislation with new rules that are more in line with current developments in the sector, Mint writes, citing senior officials. The ministry is looking to replace the Indian Telegraph Act (1885) and the Indian Wireless Telegraphy Act (1933) before the launch of 5G, with a view to addressing gaps in the legislation that could hamper the adoption of 5G. DoT Secretary Anshu Prakash was quoted as saying that the government has tasked the National Law University (NLU), Delhi, with studying the Acts and suggesting potential changes:

'Most importantly, the new legislation will require provisions that relate to M2M communication and IoT. The current legislation regulates the interface of persons with each other and with machines. However, for interfaces between a machine and machine, there are gaps.' Alongside M2M/IoT, the DoT has identified several other issues that should be addressed by the new legislation, including net neutrality and consumer rights. The official added that the NLU team is also working on draft laws for telecom infrastructure and right of way (RoW) rules for network development, whilst matters such as spectrum allocation and security requirements – including vendor management and authentication for access to sensitive information and systems and – may also be addressed by the legislative changes. (March 8, 2021) [commsupdate.com](https://www.commsupdate.com)

India's latest spectrum auction ended after two days of bidding, raising a reported INR778 billion (\$10.6 billion) for the government, although the 5G-suitable 700MHz band was left untouched due to high reserve prices. The Economic Times of India (ET) reported the final figure, while Bharti Airtel and Vodafone Idea released separate statements to the Indian stock exchange confirming the auction had come to an end. Bharti Airtel said it committed a total of INR187 billion on 355.45MHz of spectrum in sub-GHz, mid- and 2300MHz bands, which it said gave it "the most formidable spectrum holdings in the country". It explained sub-GHz would help it to improve deep indoor coverage in urban environments, while strengthening its mid-band holdings, helping it to deliver 5G in the future. Vodafone Idea did not reveal exact details, only stating it had bought spectrum in five circles to help further accelerate 4G coverage and capacity. ET reported the pair and Reliance Jio had mostly bought spectrum to renew permits due to expire in July. However, spectrum in the 700MHz band found no takers, similar to the country's auction in 2016. Airtel explained the band "did not get any bid from the operators as it made no economic sense for them based on the high reserve price". It added 700MHz, coupled with 3.5GHz, had the potential to accelerate "India's progress to the top league of digitally-enabled nations, therefore the reserve pricing of these bands must be addressed on priority in the future". Vodafone Idea said as the industry readies 5G in India, it was hopeful a "large quantum of spectrum in harmonized bands" would be made available to operators at fair prices. (March 2, 2021) [mobileworldlive.com](https://www.mobileworldlive.com)



Italy

The Communications Regulatory Authority (AGCOM) has opened a public consultation into the extension of 3.5GHz licenses for wireless broadband services. In November 2019 an Italian court backed an AGCOM decision to extend existing 3.5GHz permits for six years to end-2029, but it said that the financial side of the extension would need clarifying. Cellcos

which paid high prices for 3.5GHz spectrum in the October 2018 5G license auction had complained that existing wireless broadband licensees Aria (now part of Fastweb), Linkem, GO internet and Mandarin were being allowed to utilize frequencies in neighboring bands for a fraction of the cost of their own 5G permits.

(March 1, 2021) [commsupdate.com](https://www.commsupdate.com)



Jamaica

The Spectrum Management Authority (SMA) has confirmed that it has extended the bidding deadline for its available 700MHz license, from 9 March to 23 March. As previously reported by CommsUpdate, the concession will comprise a 2x10MHz block of 700MHz spectrum and be valid for 15 years, while interested bidders must submit a 'technical proposal' and a 'financial proposal' for the license, with the latter fee committed in US dollars. (March 16, 2021) commsupdate.com

Dr. Maria Myers-Hamilton, the Managing Director of Jamaica's Spectrum Management Authority (SMA), has informed the Jamaica Gleaner that the Request for

Proposal for its available 700MHz license has garnered 'global interest'. The concession will comprise a 2x10MHz block of 700MHz spectrum and be valid for 15 years. The most recent amendment published by the watchdog confirms that the sale will use a 'Two-Envelope System', whereby interested bidders must submit a 'technical proposal' and a 'financial proposal' for the license, with the latter fee committed in US dollars. The paperwork says that bids must be submitted by 9 March 2021 at 1pm local time, and will be opened at 2.30pm the same day. If two bidders are tied, the winner will be decided by a coin toss.

(March 2, 2021) commsupdate.com



Kyrgyzstan

The State Communications Agency (SCA) announced on that state-backed mobile operator MegaCom has won two spectrum licenses in the 2300MHz-2400MHz TDD range at auction with total bids of KGS116.87 million (USD1.38 million). The licenses exclude the capital Bishkek and second city Osh but include the rest of the Republic's territory, with bandwidth of 40MHz (2300MHz-2340MHz, costing KGS77.92 million) and 20MHz (2380MHz-2400MHz, costing

KGS38.95 million). MegaCom's bids totaled KGS5.56 million above the two licenses combined starting price, although the SCA indicated that MegaCom was the sole participant in the auction. The SCA disclosed that a third license up for auction – 40MHz (2340MHz-2380MHz) covering Batken, Talas and Naryn regions, with a starting price of KGS17.72 million – went unsold due to the absence of bidders.

(March 18, 2021) commsupdate.com



Lithuania

The Supreme Administrative Court of Lithuania (SACL) has ruled that a Vilnius court must re-evaluate whether to accept Telia Lietuva's complaint against the decision of the Communications Regulatory Authority (RRT) to allow Bite to acquire the spectrum of MEZON. In November last year the RRT approved the sale of broadband operator MEZON to mobile operator Bite, but Telia filed a complaint in court against the transfer

of MEZON's frequencies, saying the move would give Bite a competitive advantage in the market. Telia's challenge was rejected by the Vilnius court and the EUR20 million (USD23.9 million) sale of MEZON was completed in December. However, the SACL has now ruled that the court of first instance must reconsider the issue of admissibility of Telia's complaint.

(February 5, 2021) commsupdate.com



Luxembourg

Following a public consultation launched in October 2020, Luxembourg's Department for Media, Telecoms and Digital Policy (SMC) has announced it will not be allocating user rights in the 5G 26GHz band (24.5GHz-27.5GHz) for the time being. Feedback from the country's operators revealed that although they would potentially be interested in using the spectrum for 5G wireless services in the medium term, they currently have no immediate need. Telecoms minister Xavier

Bettel has therefore decided to postpone plans to grant user rights until a later date. The 5G Strategy for Luxembourg published in 2018 provides that the 26GHz mmWave band will be allocated according to the roadmap established at the European level. User rights in the 700MHz and 3.6GHz bands were granted in August 2020 following an auction.

(March 3, 2021) commsupdate.com



Macau

Companhia de Telecomunicacoes de Macau (CTM) says it expects to have achieved full indoor 5G coverage by June this year, with most buildings covered by end-March. Negotiations are continuing with owners of public indoor spaces such as shopping malls to enable operators to deploy small cell technology to enhance

in-building signals. A report from Macau Business cites CTM's Vice President of Network Services, Declan Leong, as saying: 'For Non-Standalone (NSA)5G, we have already completed the network last year. We have also provided full outdoor coverage [since] last year. In the second half of 2020, we started to build

the Standalone (SA) 5G network, while at the same enhancing indoor 5G coverage.' He added: 'We expect that by March we will have general indoor coverage and by [June] full indoor coverage for all public general areas.' The telco is awaiting the release of 5G permits by the local regulator, the Post and Telecommunications Bureau (CTT), before it can proceed with a commercial

5G launch. The CTT confirmed in April 2018 that separate licenses will not be required for the provision of 5G, as the technology will be included in an updated converged telecom concession that will be issued to existing 3G and 4G license holders, though this has still to take place.

(February 8, 2021) [commsupdate.com](#)



Malawi

The government is aiming to increase access to internet services from the current level of 14% of the population to 80% by 2026. ITWeb reports that the plan is one of the targets of the Malawi Digital Economy Strategy (2021-2026), which has been prepared by the National Planning Commission (NPC). In a bid to make internet access more affordable, the government intends to phase out the 10% excise duty on data and SMS tariff purchases, which was introduced in July 2015, as well as the 3.5% levy imposed by the Malawi

Communications Regulatory Authority (MACRA) on the revenue of ICT service providers. It also wants to establish a special purpose vehicle (SPV) to build a backbone from Nacara in Mozambique to the Malawian capital Lilongwe. The government said access to affordable internet will enable the country to protect the environment while achieving urbanization and industrialization in line with the new Malawi 2063 (MW2063) vision.

(March 11, 2021) [commsupdate.com](#)



Malaysia

The Malaysian Communications and Multimedia Commission (MCMC) has taken a significant step to bring the benefits of satellite connectivity to parts of its population. MCMC announced that it is issuing an invitation for the installation and provisioning of broadband access services via satellite at 839 locations nationwide in Johor, Kelantan, Negeri Sembilan, Pahang, Perak, Selangor, Sabah, and Sarawak across the country. These locations comprise of Orang Asli settlements in Peninsular Malaysia, and remote areas in Sabah and Sarawak where public cellular services and mobile broadband will take a considerable time to deploy, given the consideration of population density and geographical terrain. Peninsular Malaysia has 178 locations (21%), Sabah has 138 locations (17%) and Sarawak has 523 locations (62%). This service is expected to be deployed by October 2021. It aims to provide an intermediate solution, while Malaysia waits for other alternatives. The population at each location will get to enjoy free Wi-Fi at an average speed of 35 Mbps. This program falls under the nation's JENDELA (Jalan Digital Negara) initiative to expand broadband

coverage nationwide. (March 15, 2021) [satellitetoday.com](#)

The Prime Minister Muhyiddin Yassin unveiled the country's 5G infrastructure plan, which will give all licensed operators equal access to a nationwide network, with the first services to be available by the end of 2021, The Star reported. The premier said the government will set up a special purpose vehicle to manage network construction, which will involve a total investment of MYR15 billion (\$3.7 billion) over a ten-year period and create an estimated 105,000 jobs. The entity will be allocated the required spectrum to own, implement and manage the network, the newspaper stated. Yassin explained infrastructure cost-sharing will enable operators to generate higher returns, and deliver better and cheaper 5G services to consumers, The Star reported. Deployment will be done in stages. In 2020, the government postponed the launch of the next-generation service to focus on improving LTE coverage and dropped a plan to bypass a 5G tender process for operators.

(February 19, 2021) [mobileworldlive.com](#)



Malta

The Malta Communications Authority (MCA) has opened a public consultation into the award of 5G-capable spectrum in the 700MHz, 3.5GHz and 26GHz bands. The regulator is seeking submissions

on 'establishing the framework for the assignment of spectrum within these bands and the applicable obligations and license conditions.

(February 10, 2021) [commsupdate.com](#)



Mexico

Mexico's 700MHz open access network provider ALTAN Redes (Red Compartida) has reportedly signed an agreement with the government which will pave the way for the country's three MNOs – Telcel, AT&T and Movistar – to utilize its infrastructure in locations that are home to fewer than 5,000 inhabitants. Salvador Alvarez, General Director of ALTAN Redes, commented: 'It is a win-win [situation] for everyone, since the operators can take advantage of ALTAN's already installed infrastructure and bring connectivity to their customers in areas where they did not have

coverage. Furthermore, Red Compartida adds users in areas with little traffic, which gives sustainability to the network. Finally, we promote healthy competition in these locations, which represents a benefit for end users.' Red Compartida, which was launched in March 2018, currently covers more than 69 million Mexican citizens. Going forward, the network must cover 85% of the population by January 2022, 88.2% by January 2023 and 92.2% of the population by January 2024.

(February 18, 2021) [commsupdate.com](#)



The Netherlands

Mobile operators in the Netherlands have sent a letter to Parliament criticizing the government's plan for auctioning 5G 3.5GHz mobile licenses in Q1 2022, Dutch press reported. The operators including KPN and T-Mobile warned that the existing two-part auction plan 'will yield unpredictable and perhaps undesired results' while financial daily Financieel Dagblad noted that the operators fear that 5G auction costs will rise too high. The auction is open to existing providers and new market entrants. The 3.5GHz auction plan prepared by the Ministry of Economic Affairs & Climate Policy is scheduled for consultation this quarter, and after processing consultation responses the ministry expects to publish the auction scheme before mid-2021 ahead of an application procedure in 2H21 and auction bidding in early 2022, with mobile licenses to

become valid on 1 September 2022. As per a Ministry letter to parliament in December 2020: '[Regarding] current [3.5GHz] users who still have a local license [with expiry dates up to] 1 September 2026, the Telecom Agency [Agentschap Telecom, AT] will set up a migration plan ... Fixing this migration plan is foreseen in the first half of 2021, after which permit holders have until 1 September 2022 to complete the actual migration.' However, the Ministry indicated that certain existing localized 3.5GHz operations would continue beyond this date, whilst across the northern part of the Netherlands, an initiative remains ongoing to reclaim the 3.5GHz band from its existing usage by the satellite communication interception station of the intelligence services located in Burum.

(February 11, 2021) [Telecompaper](#)



Nigeria

MTN Nigeria has announced it has acquired 10MHz of spectrum in the 800MHz band from Intercellular Nigeria (InterC Network). The Nigerian Communications Commission (NCC) has approved the transaction and has already assigned the frequencies to the mobile market leader. MTN said the acquisition will significantly improve customer experience, in line with its commitment to deliver excellent service quality to its subscribers. 'Through this acquisition, we will be better positioned to support the deepening broadband penetration in the country,' commented MTN Nigeria CEO Karl Toriola, adding: 'The added resources will also greatly impact our customers' experience providing even better internet connectivity. It is our goal to keep finding ways to grant everyone access to a modern connected life.' (March 15, 2021) [commsupdate.com](#)

September. MTN reported a mobile subscriber base of 77.4 million at the end of 2020, representing an overall 38.4% share of the Nigerian wireless market.

(March 3, 2021) [reuters.com](#)

MTN Nigeria, the country's largest mobile operator by subscribers, has revealed that it is at an 'advanced stage' in renewing its operating spectrum and license. The Nigerian Communications Commission (NCC) has approved the renewal of the cellco's 900MHz and 1800MHz spectrum holdings, which are due to expire on 31 August 2021, for a further ten years from

The Nigerian Communications Commission (NCC) has said it is yet to conclude license framework that will open telecoms market for the launch of Mobile Virtual Network Operators (MVNO). Dr Ikechukwu Adinde, NCC Director of Public Affairs, made this known in a statement in Abuja last week. The commission was reacting to an online report which stated that the organization had concluded work on the licensing. It categorically stated that such report was untrue, speculative, unfounded and should be disregarded in its entirety by members of the public. "The MVNO license framework, an important precursor to the licensing of this category of telecoms players, is not yet concluded, contrary to the statement in the said media report. "For the avoidance of doubt, the commission, on December 10, 2020, published on its official website, the first draft document on License Framework for the Establishment of Mobile Virtual Network Operators in Nigeria. "The publication followed an industry

stakeholders' workshop on MVNO for the purpose of collectively examining the potential benefits, technical

feasibility, market demand and appropriate model for MVNO adoption in Nigeria. (February 7, 2021) [tribuneonline.ng.com](#)



Norway

The National Communications Authority (NKOM) has confirmed plans for an auction of 5G-suitable spectrum this September, and is now consulting on the proposed rules for the sale process. In a press release, the NKOM confirmed its intention to offer a total of 590MHz across the 2.6GHz and 3.6GHz bands. In the former band, the NKOM intends to offer 2x70MHz of FDD spectrum, divided into 14 2x5MHz lots, alongside a 1x50MHz TDD block. Meanwhile, in the 3.6GHz band (3400MHz-3800MHz) a total of 400MHz will be allocated, divided into four 40MHz blocks and 24 10MHz blocks. In terms of proposed pricing, the NKOM has put forward plans for a minimum charge of NOK25 million (USD3 million) for each 2x5MHz FDD block

in the 2.6GHz band, with a NOK50 million minimum to be set for the 1x50MHz TDD block in that same band. Meanwhile, the NKOM has proposed a minimum charge of NOK25 million for each 1x10MHz block in the 3.6GHz spectrum, with each 1x40MHz block to carry a reserve price of NOK100 million. Frequency caps have also been suggested, with the NKOM indicating it will cap 2.6GHz allocations at 80MHz to ensure there are at least three winners of frequencies in that band, while 3.6GHz allocations will be capped at 120MHz, to ensure four winning bidders. A deadline of 9 April 2021 has been set for interested parties to submit their feedback on the plans to the NKOM.

(February 8, 2021) [commsupdate.com](#)



Peru

The Ministry of Transport and Communications (MTC) has initiated a resolution procedure to determine a course of action regarding the concession to manage the National Fiber Optic Backbone (Red Dorsal Nacional de Fibra Optica or RDNFO) project. In a statement, the MTC noted that it had been involved in detailed negotiations with the current license holder, Azteca Comunicaciones, since 2018 over potential ways to reform the project to better capitalize on the infrastructure. As noted by TeleGeography's GlobalComms Database, Azteca was awarded the contract to install and operate the 13,500km fiber backbone network in 2014 but shortly after its completion in mid-2016 it became apparent that the network was severely underutilized. According to the MTC's most recent statement only 3.2% of the installed capacity on the network was being used, and generated income to cover just 7.7% of its costs. The ministry went on to note that the government had spent USD265 million on the project in initial investment and maintenance and operating fees, equivalent to roughly USD166 million more than had initially been estimated during the planning phase of the project. The problem was blamed on pricing issues, with rates charged for bandwidth being maintained at historic rates rather than adapting to reflect market changes. Due to the structure of the management license and its related legislation, however, an amendment to the law was required (and eventually passed in January 2020) to enable the management company to charge more flexible rates. Rather than continue under the amended structure though, Azteca instead requested that it be released from the contract, which is currently set to expire in 2034. The MTC claims that, over the course of two years of negotiations with the company, discussions shifted from a potential amendment of the contract to optimize utilization of the network, to

the alteration of the license to end the contract and finally a termination of the contract without altering the license. With the two parties seemingly unable to find an acceptable solution, the MTC has launched a unilateral resolution process, via public consultation. A public hearing is set to take place in May this year, with the MTC to reach a decision on the matter in July. In a related development, meanwhile, the ministry also announced that it had won an arbitration case against Azteca regarding elements of the RDNFO project. The arbitrating tribunal accepted the MTC's position that Azteca is contractually obliged to acquire the land on which the nodes of the RDNFO are built. Azteca was also required to cover 100% of the arbitration expenses.

(March 18, 2021) [commsupdate.com](#)

The Ministry of Transport and Communications (Ministerio de Transportes y Comunicaciones, MTC) has authorized full-service providers Claro and Entel – including its Americatel division – to use their 3.5GHz spectrum holdings for fixed-wireless internet services using 5G New Radio (NR) technology. The ministry also noted that it has completed the planning stage for a new competition for spectrum in the 3.5GHz and 26GHz bands, and revealed that it will publish the mechanism for the tender and a timeline for the auction later this month. Commenting on the development, Telecom Minister Eduardo Gonzalez was quoted as saying: 'It is important to promote the initial deployment of 5G technology, even more so as in the last year internet data traffic grew more than 60% on the fixed network. Users demand more speed at lower prices, and the way to achieve this will be with 5G. This first stage will allow us to test the technology.' The official went on to add that the accelerated introduction of 5G technology is considered essential to the nation's economic recovery.

Media, said: 'We will definitely agree on a transitional period and will not allow citizens to be left without

internet access even for the smallest time.'

(March 9, 2021) commsupdate.com



Senegal

Expresso Senegal, the country's third largest cellco by subscribers, has obtained a 4G LTE license from the Authority of Regulation of Telecommunications and Posts (L'Autorite de Regulation des Telecommunications et des Postes, ARTP). 'After several months of negotiations, the ARTP and the operator Expresso Senegal, a subsidiary of Sudatel Group, have reached an agreement for the deployment of the 4G license in Senegal as soon as possible,' the regulator announced in a press release. Under the deal, Expresso's license will be extended to cover 4G services for the duration of its concession. The announcement follows a meeting between Senegal's President Macky Sall and Magdi Taha, Chairman and CEO of Sudatel Group. In February the ARTP criticized Expresso's lack of network investment and threatened to withdraw the operator's license unless it took steps to improve services. Whereas rivals Orange and Free have been offering LTE services since July 2018 and October 2019, respectively, the COVID-19 pandemic forced Expresso to postpone the launch of its own 4G

network in March 2020. (March 1, 2021) commsupdate.com

Senegal's Authority of Regulation of Telecommunications and Posts (L'Autorite de Regulation des Telecommunications et des Postes, ARTP) has ordered Expresso Telecom to relaunch fixed telephony services or face sanctions. In a letter sent on 11 February, the regulator reminded Expresso that it is required to provide such services under the terms of its global license, and warned that it will be obliged to take all necessary legal action unless the service is resumed within 30 days of receipt of the letter. The regulator's market reports indicate Expresso exited the fixed telephony sector in September 2018. Earlier this month, Expresso was put on formal notice by the watchdog that it could lose its operating license unless it improved services. The country's third largest mobile network operator by subscribers is accused of failing to fulfil service commitments contained in its license specifications, following years of under-investment in its network. (February 17, 2021) commsupdate.com



Serbia

Serbian ISP SBB has submitted requests to the Republic Agency for Electronic Communications (RATEL) and the Ministry of Trade, Tourism and Telecommunications (Ministarstvo trgovine, turizma i telekomunikacija, MTT), urging the government to hold auctions for 5G spectrum., according to a statement from the operator's parent, United Group. SBB CEO Milija Zekovic was quoted as saying: 'SBB believes that the conditions in the country have matured sufficiently to start the auction. The time is right for Serbia to follow its EU neighbors and ensure its 5G future. We must take full advantage of all the opportunities that the development of a digital society means for citizens.

The rapid introduction of 5G services is a prerequisite for this.' The government had initially intended to hold an auction for the spectrum in March 2021, but has delayed the sale until the end of the year due to the pandemic. As part of its request, SBB submitted a study it had conducted on the matter which it says argues that a multi-band 5G award would inject new competition into the market. The operator claims that the mobile services in Serbia are more expensive and lower quality than those available in Austria, Slovenia and Croatia, due to insufficient competition, arguing that providers in Serbia have settled into a 'cosy status quo'. (February 25, 2021) commsupdate.com



Slovakia

The Office for Regulation of Electronic Communications & Postal Services (Regulacny urad, RU) has opened a consultation into the award of 5G-capable 3.5GHz spectrum. Existing rights in that band expire between December 2024 and August 2025 and the regulator is

looking to auction spectrum between 3440MHz and 3800MHz by the end of this year. Bidders will be limited to a maximum of 100MHz each.

(March 18, 2021) commsupdate.com



Slovenia

The Agency for Communications Networks & Services (Agencija za komunikacijska omrezja in storitve, AKOS) has received four applications in its 5G spectrum tender, though it has not named the bidders. Spectrum is being offered in the 700MHz, 1500MHz, 2100MHz,

2300MHz, 3.6GHz and 26GHz bands, with winning bidders expected to be announced by mid-2021. Slovenia's mobile market is home to four incumbent operators – Telekom Slovenije, A1 Slovenia, Telemach and T-2. (February 17, 2021) commsupdate.com



South Africa

SA's telecoms regulator pushed back the announcement of the qualifying bidders for its long-awaited auction of new spectrum by a month to March 23, just a week before the sale had been due to be completed. The Independent Communications Authority of SA (ICASA) said it was completing a contract with the external auctioneer who will oversee and manage the process, and the auction would now start on March 31 rather than finishing then. Allocation of high-demand spectrum is seen as key to expanding broadband services, especially 5G, in Africa's most industrialized economy, where the high cost of telecommunications is a barrier to doing business. Telecom operators have been waiting more than a decade for ICASA to release

new spectrum licenses but Telkom, which is partly state-owned, and MTN Group have challenged the auction process in court. "We remain confident that we are not off the track but in a better position to complete the licensing of high-demand spectrum," said ICASA chairperson Keabetswe Modimoeng. Telkom is seeking an order to halt the auction and there has not been a judgment in its case yet. MTN's separate challenge has yet to be heard in court. Operators including MTN, Telkom, Vodacom, Cell C, Rain networks and Liquid Telecoms have applied for licenses. The spectrum auction process was pushed back three months in September due to a delay in issuing invitations to apply." (February 23, 2021) [sowetanlive.co.za](https://www.sowetanlive.co.za)



South Korea

The number of subscribers to 5G network services in South Korea as of last year reached 11.85 million, according to government data. Mobile data traffic using 5G networks too surged, due to the increasing number of 5G users, the government also reported. According to the Ministry of Science and ICT, the number of 5G subscribers in December increased 8.4 percent from a month earlier, continuing the upward trend in the previous month. The number of 5G users has increased by more than 900,000 for a second straight month since November. The increase was largely backed by the launch of Apple's iPhone 12 in October, the ministry explained. The local telecommunications firms' full-scale price competition for 5G devices and data plans also helped the number to increase, the ministry added. The ministry expected the 5G subscriptions would continue to increase at a fast speed in January as Samsung Electronics has introduced its

5G-supporting Galaxy S21 lineup. The increase could further accelerate as local telecommunication firms have started to introduce cheaper 5G data plans. The number of 5G subscriptions is, however, still under the original target of 15 million that the telecommunications industry suggested earlier last year. By companies, SK Telecom has secured 5.47 million 5G subscriptions, while KT and LG U+ trail with 3.61 million and 2.75 million subscriptions, respectively. The ministry noted 5G data traffic in December reached 302,278 terabytes, up from 200,000 terabytes six months prior. During the same period, the data traffic of Long-Term Evolution networks users declined to 399,193 terabytes. The ministry estimated 5G traffic would overtake that of 4G during the second half of this year, given the increasing number of 5G users.

(February 3, 2021) [koreaherald.com](https://www.koreaherald.com)



Spain

The Ministry of Economic Affairs and Digital Transformation (Ministerio de Asuntos Economicos y Transformacion Digital, MINECO) has announced that two remaining 3.5GHz licenses will go on sale, with Telefonica Espana (Movistar) and Orange Espana going head-to-head for the concessions. Each 1x10MHz license will have a starting price of EUR21 million (USD25.4 million) and both spectrum permits will be valid until 2038. Following the conclusion of the tender, the watchdog notes that a reorganization of the 3.5GHz band will be carried out, so that all operators are in possession of contiguous frequency blocks, enabling a more efficient use of the spectrum for 5G. According to

TeleGeography's GlobalComms Database, Spain's first auction of 5G-suitable spectrum in the 3.6GHz-3.8GHz band successfully concluded in July 2018, generating a total of EUR437.6 million for the government, and comfortably exceeding the EUR100 million starting price established by the watchdog. Vodafone dominated the bidding, paying EUR198.1 million for 18 5MHz blocks. Orange was next in line, bidding EUR132.1 million for twelve 5MHz blocks, while Movistar offered EUR107.4 million for the remaining ten 5MHz blocks. Going forward, the auction of 5G-suitable 700MHz licenses is expected to take place later in 2021.

(February 22, 2021) [commsupdate.com](https://www.commsupdate.com)



Sweden

The Post and Telecom Agency (Post & Telestyrelsen, PTS) says its focus this year will be on price supervision in regulated markets. The watchdog says it will be also monitoring compliance of operator reporting, open

internet services and roaming as part of its supervision plan for 2021. The regulator's work plan has been opened for public comments.

(March 2, 2021) [commsupdate.com](https://www.commsupdate.com)

The MTC issued five resolutions amending the relevant elements of the operators' licenses covering the following areas: Ancash, Arequipa, Ica, La Libertad, Lambayeque, Piura, Tacna, Lima and Callao (Entel, Resolution No. 037-2021-MTC / 27.02); Arequipa, Ica, Lambayeque, La Libertad, Lima and Callao (Americatel,

Resolution No. 038-2021-MTC / 27.02); Canete province, Lima (Claro, Resolution No. 036-2021-MTC / 27.02); the provinces of Lima, Callao and San Roman (Claro, Resolution No. 034-2021-MTC / 27.02); and 111 provinces in various departments (Claro, Resolution No. 035-2021-MTC / 27.02). (March 3, 2021) [commsupdate.com](#)



Philippines

The new Anti-Red Tape Authority (ARTA) has reportedly instructed the regulator, the National Telecommunications Commission (NTC), to assign frequencies to NOW Telecom so that it can operate cellular mobile telephony services (CMTS) in the country. Under an order dated 1 March, ARTA has apparently called for the 'automatic approval for the assignment by the NTC of certain frequencies which NOW Telecom needs as a CMTS licensee'. Local press reports point out that the agency says that the regulator has failed to approve or deny NOW Telecom's application since January 2006 despite the applicant having provided all necessary documents and fees. 'Thus, under Section 10 of Republic Act No. 11302 or the 'Ease of Doing Business and Efficient

Government Service Delivery Act of 2018' the said application or request for assignment of concomitant frequencies for the exercise of NOW Telecom's CMTS [application] as attested to in NOW Telecom's Affidavit of Completeness is hereby DECLARED COMPLETE, and is now deemed AUTOMATICALLY APPROVED by operation of law,' ARTA's order read. For its part, NOW Telecom pointed out that ARTA's order automatically approves its application for a provisional authority to operate using a certain frequency range. 'As a result of ARTA's order of automatic approval, NOW Telecom is assigned 220MHz radio frequencies, including 5G frequencies, for mobile and fixed-wireless by operation of law,' it said.

(March 4, 2021) [commsupdate.com](#)

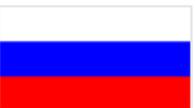


Romania

The Competition Council has announced that it is investigating Telekom Romania Communications for potentially abusing its dominant market position. The operator is suspected of arbitrarily increasing tariffs in 2019 for issuing technical approvals for construction projects. 'In order to obtain a building authorization, there are required approvals from administrators/providers of urban utilities, called emplacement approvals. These approvals, listed in the town planning certificate, are necessary to set whether the proposed construction does not create difficulties in operation of municipal networks. The operators issue these approvals for a fee. Thus, the competition authority has clues that, without having an economic justification, Telekom Romania Communications imposed, in 2019,

a much higher tariff compared to the that of previous year for issuing the necessary construction approvals,' the Competition Council explained in a statement. Although the Council has carried out unannounced inspections at the operator's headquarters and seized documents, it stressed the investigation is at an early stage and no wrongdoing has yet been established. However, should it conclude that the company has breached competition rules, Telekom is liable for a fine of up to 10% of its turnover. Such an outcome could potentially hinder Greek telco OTE's deal, announced in November 2020, to sell its 54% stake in Telekom Romania Communications to Orange Group for EUR268 million (USD318.9 million).

(March 22, 2021) [commsupdate.com](#)



Russia

The Ministry of Digital Development, Communications & Mass Media issued a statement confirming that government agencies have not yet agreed on the extension of existing fixed-wireless broadband frequency licenses used in a number of regions to provide residential internet services, noting that 'discussions on possible conditions for the renewal of these permits are ongoing.' The spectrum in question is in the 3.5GHz band, held on a regional basis by operators including Rostelecom's subsidiary FreshTel, MegaFon (via Neosprint/Synterra), ER-Telecom (via Prestige Internet) and TransTeleCom (TTK). The State Commission for Radio Frequencies (SCRF) has hinted it

may extend 3.5GHz fixed-wireless permits beyond this month on a temporary basis only, whilst the spectrum is expected to be refarmed for 5G mobile usage at a later date. The Ministry said that 'less than 100,000 subscribers use these frequencies on a regular basis', while noting that it is working with telecoms operators on 'measures to prevent the disconnection of these subscribers by organizing their connection in other ways'. The statement added that 'subscribers will be disconnected only if there is an alternative way of their access to the internet on terms no worse than those previously provided.' Maksut Shadayev, Minister of Digital Development, Communications and Mass



Taiwan

The National Communications Commission (NCC) has granted conditional approval for Asia Pacific Telecom (APT) to share Far EasTone Telecommunications (FET's) 5G spectrum and use the latter's network. With this being the first instance of a spectrum sharing arrangement since the implementation of the Telecommunications Management Act last year, the NCC has approved the duo's application, provided that two conditions are met. Firstly, both firms are reportedly committed to constructing 2,000 more base stations to expand 5G coverage – FET will build 500 5G and 1,000 4G base stations within the next two years, while APT will roll out 500 new 4G base stations. The cellcos' subscribers, meanwhile, must have equal access to the shared bandwidth on the 3.5GHz band, NCC Vice Chairman Wong Po-tung was cited as saying. Under the second condition, APT and FET will be required to set up a task force to ensure that both operators have the ability to control the 5G network and monitor information security issues. The task force will be expected to conduct regular meetings and submit records to the NCC. In September 2020 FET

agreed to pay TWD5 billion (USD178 million) to acquire an 11.58% stake in APT, while in a parallel move the two parties also inked a spectrum sharing deal, under which APT would gain access to FET's 5G-suitable 3.5GHz spectrum, paying TWD9.47 billion to use the frequencies, while also sharing network deployment costs. Having received the partnership application in December 2020, Wong said the NCC had reviewed it based on criteria in the Telecommunications Management Act and the Regulations Governing the Use of Radio Frequencies, including ensuring efficient frequency use, facilitating market competition and protecting consumer interests. Commenting on the matter, the NCC executive was cited as saying: 'The Telecommunications Management Act allows telecoms to build networks together and permits a more flexible use of frequencies, which is expected to bring unprecedented changes to the telecommunications market ... We will closely monitor those changes and soon entrust a research institution with the task of studying relevant issues.'

(March 5, 2021) The Taipei Times



Tanzania

TCRA Director General James Kilaba said yesterday that the new rules coming into effect on April 2 require service providers not to offer bundles without approval from the regulator and ensure data bundle prices are within indicative prices directed by TCRA. The new rules require service providers to use simple language in data provision for ease of customers to grasp, while being disallowed from changing and twisting terms and conditions of the bundles within three months of issuance." Service providers will notify user on the usage of the bundle upon reaching 75-percent and 100 percent for voice bundles and short message services (SMS)," the regulator elaborated. Similarly, service providers are required to insert a mobile app to help user know the rate of data bundle usage by downloading the app. Service providers need to enable the user to choose and agree to charges on data use and units of

the selected data, where telecom companies provide for selection in the menu before a user chooses a data or voice bundle to buy. "The service provider will not be allowed to reduce data speed during the use of the purchased bundle," the rules further underline. The new guidelines also direct telecom companies not to issue three promotions and special offers of different kinds at the same time. TCRA said that from 2018 to 2021 the average cost for calls within one network without subscribing to bundles has dropped from 290.27/- per minute to 90.81/-, a 76percent decrease while internetwork connection without bundles has dropped by 81percent. The new rules come from analyzing the cost difference between using bundles and not using bundles, where TCRA noticed that 90-percent of phone use is tied to bundles and thus complaints come most from this source. (March 3, 2021) ipmedia.com



Thailand

The telecoms regulator was asked to consider giving mobile operators additional time to pay for 5G licenses along with other potential relief, to account for a hit to their finances caused by Covid-19 (coronavirus), Bangkok Post reported. A national 5G committee chaired by Prime Minister Prayut Chan-o-cha ordered the National Broadcasting and Telecommunications Commission (NBTC) to consider delaying the payments alongside other potential aid packages for the sector. The regulator is tasked with making recommendations at the committee's next meeting, due sometime in April, the newspaper reported. In February 2020, AIS, True Move, dtac, CAT Telecom and TOT committed

THB100.5 billion (\$3.3 million) on 2,805MHz of spectrum in the 700MHz, 2600MHz and 26GHz bands. The operators are required to pay for the 700MHz and 2600MHz licenses over ten years. The winning bidders of the 26GHZ spectrum need to pay the full amount within a year of the licenses being issued. But operators recorded declines in Q4 2020, with AIS' mobile revenue dropping, True Move recording a loss and dtac's profit shrinking. In 2018 the NBTC recommended relaxing the payment terms of 4G licenses awarded to AIS and True Move in 2015, but later dropped the proposal following criticism.

(March 3, 2021) mobileworldlive.com



United Kingdom

UK telecoms regulator OFCOM is launching its delayed 5G 700MHz and 3.6GHz-3.8GHz spectrum license auction this Friday (12 March 2021), with the aims of improving mobile services and increasing access to 5G technology. OFCOM stated on its website that the auction will increase the total amount of spectrum available for mobile technology in the UK by nearly a fifth. Four operators will be bidding in the auction: EE, Vodafone, 3 and O2. OFCOM is releasing 80MHz of spectrum in the 700MHz band, following a four-year program to clear the band of its existing uses for digital terrestrial TV and wireless microphones. These airwaves are ideal for providing good-quality mobile coverage, both indoors and across very wide areas, including the countryside. Releasing the 700MHz frequencies will also boost the capacity of existing mobile networks. 120MHz of spectrum is up for grabs in the 3.6GHz-3.8GHz band, which is part of the primary band for 5G and will significantly boost capacity for 5G data connections. (March 10, 2021) [commsupdate.com](#)

Arguing that subscribers should be able to switch broadband provider more easily, British telecoms regulator OFCOM has proposed a new 'one touch' system under which it claims will customers benefit from 'quicker, simpler and more reliable switching'. The

plans follow the regulator's October 2020 publication of new rules that include a requirement for a customer's new broadband provider to take the lead in managing the switch – regardless of whether the customer moves between different networks, or to a full-fiber service on the same network. Now, after considering several different options proposed by the industry for how to implement these rules in practice, OFCOM has put forward its 'one touch' system for both fixed line voice and broadband residential customers. As per this process, the first step would be for a customer to contact their new chosen provider and give them their details. Following this, the customer would then automatically receive important information from their current provider, including any early contract termination charges they may have to pay, and how the switch may affect other services the customer has with the company. Assuming the customer wants to proceed with the switch, the new provider would then manage this. With the consultation on the proposals running until 31 March 2021, OFCOM has said it aims to publish a final decision 'in the summer'. The regulator has, however, suggested that the new switching process will not come into force until December 2022, due to the fact that companies will need to make 'significant' changes to their systems. (February 4, 2021) [commsupdate.com](#)



United States

The FCC is seeking public input in how to quickly stand up the \$7 billion COVID-19-related emergency schools and libraries advanced telecommunications connectivity fund created by Congress in the American Rescue Plan to help close the homework gap and aid in remote learning more widely during the pandemic. The commission has 60 days to start handing out the money, which can be spent on advanced telecommunications service for the home (or potentially other non-school or library location) and equipment for use by schools, libraries, students, patrons, and staff outside of the physical school or library location. Covered equipment includes Wi-Fi hotspots, modems, routers and connected devices, but the FCC is proposing not to include smart phones among those eligible devices because "because such devices do not sufficiently allow students, school staff, and library patrons to meaningfully participate in remote learning activities." It is also excluding "dark fiber and the construction of new networks, including the construction of self-provisioned networks," from the fund. The FCC also wants to know if it should require minimum service standards and data thresholds for advanced telecommunications service to qualify for the money and, if so, what they should be to ensure "robust" remote learning. The current FCC threshold for high-speed is 25 Mbps downstream and 3 Mbps upstream, but some argue that is insufficient for the robust service the FCC is trying to ensure.

"Recognizing that some households have more than one student, school staff member, or library patron, and that video conferencing applications commonly used for remote learning place heavy demands on speed and use large amounts of data, what level of service and data thresholds are needed to accommodate multiple users?," the FCC asks. The FCC is seeking advice on "what rules the Commission should adopt to most efficiently and effectively distribute funding, mindful of the Commission's obligation to protect against waste, fraud, and abuse in seeking to meet the connectivity needs of our nation's students, school staff, and library patrons." The Universal Service Fund Administrator (USAC) will administer the program. It already administers the E-rate schools and libraries subsidy program, which the FCC has historically limited to school or library broadband service, rather than home, though the FCC is contemplating whether to change that reading of the statute. The FCC also wants input on how to measure its and USAC's performance in running the program, including whether it should set specific goals for adoption by students, staff or patrons, or availability of end-user devices and, if so, what they should be. It is proposing that schools and libraries already eligible for E-rate be automatically eligible for the new fund, and whether there are other entities not eligible for E-rate that should be eligible for this new money. The public and stakeholders have until April 23 to weigh in. (March 17, 2021) [nexttv.com](#)

Acting Federal Communications Commission (FCC) Chairwoman Jessica Rosenworcel has shared with her colleagues a draft order that proposes to make 100MHz of mid-band spectrum in the 3.45GHz-3.55GHz band available for 5G. If adopted at the Commission's 17 March Open Meeting, the frequencies could be included in the Auction 110 spectrum sale, which is earmarked to begin in early October 2021. Ms. Rosenworcel commented: 'We need to deliver the 5G that the American people were promised. That means a 5G that is fast, secure, resilient, and – most importantly – available across the country. This important auction is a crucial step toward making that a reality. I hope my colleagues will join me in supporting this proposal.' TeleGeography notes that the next US spectrum sale will be Auction 108, which will comprise frequencies in the 2.5GHz band. (February 24, 2021) commsupdate.com

The Federal Communications Commission (FCC) has confirmed that bidding in the 'assignment phase' of Auction 107 – which included 5,684 licenses in the 3.7GHz-3.98GHz band – has now concluded. The assignment phase, which gave the winning bidders the opportunity to bid for frequency-specific licenses, followed the 'clock phase' of the auction, which ended on Friday 15 January, after 97 rounds of bidding. The clock phase generated total financial bids of USD80.917 billion, with all 5,684 licenses sold, making it the highest-grossing spectrum auction ever held in the United States. The list of winning bidders is expected to be published in the coming days. FCC Commissioner Brendan Carr commented: 'We should build on this success by moving quickly with additional 5G auctions, including by moving forward this year with auctions in the 2.5GHz and 3.45GHz bands. Doing so will further secure US leadership in 5G.'

(February 18, 2021) commsupdate.com

The Federal Communications Commission (FCC) has announced that it has entered into an agreement with the National Science Foundation (NSF) and the National Telecommunications and Information Administration to support NSF's Spectrum Innovation Initiative. NSF launched the initiative last year to seek innovative advancements in research and development

on the biggest challenges facing the United States due to increased demand for electromagnetic spectrum access. The FCC's involvement follows its ruling last year that the 5.9GHz transportation safety spectrum would be broken up, with much of it given over to unlicensed wi-fi. "This Memorandum of Agreement between the National Science Foundation, the National Telecommunications and Information Administration, and the Federal Communications Commission is one step toward revitalizing the interagency coordination process so that it once again is able to produce results for American consumers and the economy," says FCC acting chair Jessica Rosenworcel. "Better coordination between these agencies ultimately means more spectrum and more innovation to help restore American wireless leadership and build the 5G future." "Spectrum is the backbone of America's wireless leadership, and we applaud NSF's investments in spectrum research and development," says Evelyn Remaley, acting NTIA administrator. "Engaging with spectrum experts from the FCC, NTIA and the NSF on high impact, cutting-edge research is important to American competitiveness and spectrum sharing." "NSF's Spectrum Innovation Initiative was created to find ways to maximize our nation's limited radio spectrum resources," says Sean L. Jones, NSF Assistant Director for Mathematical and Physical Sciences. "This agreement will provide enhanced access to NTIA and FCC expertise, helping us focus spectrum research and develop a technologically sophisticated workforce at the speed this nation requires to stay at the forefront of innovation." The Memorandum of Agreement between the agencies is intended to ensure that FCC and NTIA staff can provide their subject matter expertise to help ensure that NSF's Spectrum Innovation Initiative investments in spectrum research, infrastructure, and workforce development are in alignment with U.S. spectrum regulatory and policy objectives, principles, and strategies. Key research areas include spectrum flexibility and agility, working towards near real-time spectrum awareness, and improved spectrum efficiency and effectiveness through secure and autonomous spectrum decision-making. The first key goal will be establishing the U.S.'s first National Center for Wireless Spectrum Research.

(February 8, 2021) trafficechnologytoday.com



Uruguay

After its long-delayed decision to appoint an administrator to develop and enact mobile number portability (MNP), Uruguay's Regulatory Unit of Communications Services (URSEC) has asked stakeholders to help with the selection process. Interested parties have until 5th March to query the process, with applications scheduled to open on 10th March and offers due the same day. Tests of the MNP system are slated for July before a commercial launch on 1st October. Operators are obliged to cover the

cost of the porting process, while customers should expect their number transfer to take no longer than three days. In July last year, Uruguay approved Law 19,889/2020 stipulating that MNP is a right for mobile telephony customers. CommsUpdate notes that the country's government set up a committee of industry stakeholders two months later in order to prepare for the implementation of MNP. The timetable for this was approved last month.

(February 24, 2021) developingtelecoms.com



Zambia

The Zambia Information and Communications Technology Authority (ZICTA) has announced that it is inviting applications from eligible licensees for issuance of spectrum in the 800MHz band. However, the Authority has determined that spectrum in the 800 MHz band is in very high demand. It therefore plans to be offered a restricted granting procedure. According to TeleGeography's CommsUpdate, ZICTA is offering a 2x10MHz block (801MHz-811MHz/842MHz-852MHz), with a reserve price of \$12.5 million. Eligibility to bid requires the holding of an Electronic Communication Network License for the International Market Segment. The deadline for applications is 2 March 2021. This isn't a one-off, however. There's already been an award relating to 800MHz in Zambia. In December, again

after a competitive process, ZICTA awarded Airtel Networks Zambia Limited radio spectrum in the 800 MHz frequency band which, like the latest offering, was priced at \$12.5 million. Part of this spectrum, according to the Zambian media, will be used to enhance the spectrum management functions of the Authority, thereby paving way for the quick introduction of 5G services in Zambia as well as enhanced QoE and services like VoLTE. In both cases, it's hoped that the release of the spectrum will also help the country to keep pace with the recent fast growth in mobile voice and data traffic. This is expected to continue as more socio-economic activities are increasingly conducted online in response to Covid-19 restrictions.

(February 13, 2021) developingtelecoms.com



Zimbabwe

The Postal and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ) says it is targeting data affordability for all citizens while ensuring operator viability. In a statement POTRAZ Director General Dr. Gift Machengete said retail mobile data tariffs in Zimbabwe are relatively cheaper compared to the SADC region and beyond. University of Zimbabwe Business School Director, Dr. Nyasha Kaseke said affordable data charges are key to the success of the

country's push for a digital economy. "The only way is to increase competition and unlock value from that for the benefit of end users and operators," he said. The regulator is in the next few weeks expected to release a report on the state of the telecommunications sector. The report is expected to set the tone on new projects, revenue inflows and spending patterns by operators, among others. 📄

(February 28, 2021) zbcnews.co.zw

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