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FOR SAMENA TELECOMMUNICATIONS COUNCIL'S MEMBERS

BUILDING DIGITAL ECONOMIES



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Eng. Maziad Alharbi

Chief Executive Officer

Kuwait Telecommunications Company (**stc**)

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Connectivity and the Rise of Innovation

The “Golden Decade” for the industry and the “Final Decade of Action” for Member States will be driven by innovation, Fiber, and IPv6. For Operators, the coming years will primarily revolve around realizing the added value created by adopting technologies and digital solutions that can transform and optimize daily life, business, and sustainable development.

Together, however, our aim is to create an intelligent world; a world built on enhanced connectivity which, in turn, demands extensive availability of digital infrastructure, and it requires extensive digital space for supporting the billions of connections that are happening before our eyes.

As our societies and the global economy digitalize, there are ever more possibilities to advance standards of living through human-centric, data-driven, and evidence-based policies, increased economic competitiveness, higher-quality jobs, enhanced provision of public services throughout the SA-ME-NA region's urban and rural communities.

We need to advance the necessary fixed-line infrastructure and leverage the power of Fiber and IPv6, unlock new capital, and new ways of sharing responsibilities to develop that infrastructure, and develop human capital for the digital age, create awareness and relevance to proliferate meaningful digital services, ensure everyone can afford broadband connectivity and quality-of-service, which are fundamental to realizing value-addition in the digital realm.

In the larger interest of the region's socio-economic empowerment goals, we need to align our priorities and programs together to move forward in synch. The way we bring access to connectivity must take into account the technological progress we have made as Industry. With changed societal, technological, and market realities, the investment in new infrastructure can no longer follow the same approaches that got us this far. This applies equally to bringing about the best customer experience; to developing 5G and “Green 5G”; to building ICT capacity and digital skills throughout the region; and to tackling digital divides.

As more people and things go online, continued investment in communication networks is needed to ensure that connections and transfers of data between connected devices can take place quickly. Thus, use of fiber networks and IPv6 in fixed networks and cloudification must be achieved to support increases in speed and capacity across all next-generation technologies.

It is crucial that the Private Sector be provided with the necessary collaborative support and key areas of regulation and policies be revisited, with regard to accelerating deployment of Fiber, and transitioning to IPv6 and, of course, to IPv6 enhanced innovations (IPv6+). Regional economies need to realize their digital transformation goals on time and be on the path to sustainable digital economic development in which broadband networks, innovations, and digital services and solutions have a central role to play. 🌱



Bocar A. BA
Chief Executive Officer
& Board Member
SAMENA Telecommunications
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Working Group on 21st Century Financing Models for Sustainable
Broadband Development

21st Century Financing Models for Bridging Broadband Connectivity Gaps

October 2021



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SAMENA COUNCIL ACTIVITY

“SAMENA Accelerator – UBBF” Calls for Action to Achieve Ultra Broadband Policy Enablement and to Timely Address Challenges Facing Fiber Deployment and IPv6 Migration in the Region



During the Ultra Broadband Forum (UBBF) 2021, held in Dubai in October, SAMENA Council pressed upon the need to recognize the criticality of ultra-broadband networks and to enable their deployment for developing underserved communities and businesses in the SA-ME-NA region. Fixed-line fiber networks as well as intelligent cloud-based capabilities, leveraging the power of IPv6 and new cloud business models, lie at the foundation

SAMENA Council's message during the UBBF focused on advocating for advancing necessary fixed network infrastructure and leveraging the power of Fiber and IPv6, unlocking new capital, exploring new ways of sharing responsibilities to develop that infrastructure, developing human capital for the digital age, creating awareness and relevance to proliferate meaningful digital services, and ensuring everyone can afford broadband connectivity and quality-of-service.



of a healthy and inclusive digital economy and the intelligent world in the making. SAMENA Council's message during the UBBF focused on advocating for advancing necessary fixed



network infrastructure and leveraging the power of Fiber and IPv6, unlocking new capital, exploring new ways of sharing responsibilities to develop that infrastructure, developing human capital for the digital age, creating awareness and relevance to proliferate meaningful digital services, and ensuring everyone can afford broadband connectivity and quality-of-service. The Council also correlated the aims of the UBBF with the objectives of the Broadband Commission's Agenda for Action, and also highlighted the recently released four strategic recommendations of the Broadband Commission's Working Group on 21st Century Funding and Financing Models to address ICT infrastructure gaps, including gaps in fiber deployment. The UBBF was followed by SAMENA Council's SAMENA Accelerator – UBBF policy discussion forum, organized in collaboration with Huawei, to deep dive into issues ranging from processes, lack of enabling environment, lack of investment incentives, and other business and operational difficulties, which continue to impede deployment of fiber networks and migration from IPv4 to IPv6. Adding to the multi-country perspectives by the ITU and from Europe, Africa, South Asia and the Middle East, achievements shared by TDRA (UAE), CITC (Saudi Arabia), PTA (Pakistan), NTRA (Egypt), and experience-sharing from Africa's developing economies, including Senegal and Botswana, Bocar BA, CEO - SAMENA Council, in his message, encouraged the rectification of "Right-of-Way issues, Fiber deployment methodology selection, collaboration among Fiber players, and the need for governments to champion deployment of Fiber with full understanding of the Business, Social, Market, and National needs." The discussion on fiber deployment underpinned



the importance of the Private Sector to work in close collaboration with the Public Sector, to drive common understanding on the flexibility, scalability, and asset potential of fiber networks. On the IPv6 front, the SAMENA Accelerator - UBBF discussion revealed how, increasingly, Administrations and the Private Sector in the SA-ME-NA region are recognizing the importance of IPv6, and are in the process of defining and implementing policies to support IPv6/IPv6+ development, aimed at promoting large-scale IPv6 deployment and IPv6+ technological innovation, and



Key Messages on Fiber:

- Fiber is the gold standard for robust high-quality networks, the highway to a digital future, and its deployment is instrumental in bringing connectivity to all, and to catalyze major socio-economic impact
- Fiber targets and visions should be based on in-depths study of demand and geographic conditions
- Stakeholders' engagement and collaboration across the ecosystem is key to implement government plans, down to municipalities, ensuring that the right regulations are introduced
- While 100% fiber penetration may not be achieved in the foreseeable future, more than 50% is achievable and should serve the needs
- Enabling policies that effectively address Rights of Way, procedural impediments, Open Access, Infrastructure Sharing are critical for fiber deployment





Key Messages on IPv6:

- Transforming and future-proofing networks requires IPv6 transition, as IPv6 is a prerequisite for leveraging enhanced innovative use-cases in the areas of 5G, IoT, AI, and cloud
- IPv6 will play a big role in IoT and Cloud Computing, Blockchain (other ledger technology / smart contracts) and is key to NGN services, and IPv6+Protocol Innovation, from IPv6 best-effort to differentiated high-quality services such as (SRv6 Slicing) will be game-changers
- In Banking / Financial MNCs Sector, IPV6 deployment is on the rise, with key drivers being large WANs, adopting SD-WAN, and cost issues related to IP addressing
- Retail Sector is also making a promising progress, with IPv6 adoption taking place in retail shops on Wi-Fi networks, and proofs of concept are taking place
- Key milestones in IPv6 transition include establishment of the IPv6 taskforce and bring stakeholders together to drive readiness; focusing on enterprises and conducting multiple bilateral projects with enterprises to assess needs to adopt IPv6 and stimulate demand for IPv6; publishing IPv6 deployment guidelines; and enabling and upgrading home devices to adopt IPv6
- IPv6 is not just solving an address shortage, but it also brings simplified protocol layers, avoiding complexities of maintaining the dual stack, and provides better security; it can enhance performance, in particular the latency and outperform IPv4 roundtrip values, page-load times, etc.
- Awareness, collaboration, and capacity development are at the heart of any successful IPv6 transition
- A national strategy is important, but governments need to accompany this with good policies: for example, Governments can ensure that all services are ready and available in IPv6; they should play a leading role, then the ecosystem will follow
- Increased transparency and continued dialogue with all stakeholders, effective community collaboration, also with Internet organization RIPE NCC, ITU and IPv6 Forum, are key
- Plan early! Start early! Train early! Migration plans should be put into place urgently and planning should start with the product cycle in mind and integration and insisting with vendors that the new devices should support IPv6
- ITU, as a Member States' agency of the UN, is using dual-stack deployment (IPv4 and IPv6 at the same time), and its entire delegate Wi-Fi network is accessible via IPv6; one native IPv6 VALN is being used for testing purposes
- For Telecom Operators, IPv6 adoption can support the move to resilient advanced networks and ensure the offerings of advanced services

Regional Economies & Connectivity Goals

1. Connectivity is central to and is at the forefront of digital initiatives by the UN, the ITU and the Member States, and their priorities
2. Internet resources are key for all devices that are and will be connected online, and this will dictate the inevitable transition to IPv6
3. Three areas of ITU's work with regards to IPv6 and fiber include: Resolutions; Capacity Building; and Assistance to Member States
4. In the UAE, fiber roll-out started early, and by adopting international standards, has propelled the UAE to the top of fiber, globally, and it is key to the emergence of "Gigabit Society" in the region
5. In Saudi Arabia, visions and setting targets were key to drive fiber roll-out, and public and private sectors have invested total value of 15 bn USD to achieve set targets.
6. Funds and other financial instruments are on the rise in the GCC region, supported by international ownership, better legal processes, and better data protection policies
7. In Egypt, in line with the SDGs, the "decent life" project targets mainly people in rural areas to provide decent housing, digital inclusion, high connectivity, different private and public services of education and health and create opportunities and encourage SMEs, all of which can benefit from better fiber penetration
8. In Pakistan, major barrier has been removed through the introduction of the "Rights of Way Policy Directive", and fast track processes with rights of way, streamlined charging mechanism and expedited approval processes, common service corridors, etc. have been implemented, resulting in 124,000 km of current fiber deployment
9. In Senegal, fiber connectivity is key to economic and socioeconomic progress, especially in view of the Digital Strategy 2025 for the Emerging Senegal Plan
10. Botswana's increased ICT usage, deployment of IoT devices & smart solutions is demanding increased fiber penetration and greater need for more IP digital space
11. Each Smart Africa country has flagship projects, including those based on fiber, but with a heterogenous approach to technologies used for provisioning connectivity



finally achieving IPv6 only networks. The discussions connected economic development and digital inclusion with the promotion of IPv6 industry development and which, in the words of Bocar BA, requires "The will and determination to plan ahead and accelerate IPv6 transition. Not only will this open new door of opportunity across business, society, security, and overall sustainability of the ecosystem; it will literally help create the Intelligent Internet of everything, which is the ultimate goal of digitalization transformation." This message was complemented by Huawei's Xipeng Xiao, Head of Standards & Industry Development for Data Communications at Huawei Europe, that "the first step in IPv6 transition is to start early, as it takes three years to acquire the necessary skills and capacity to fully implement IPv6." As



Call-to-Action by SAMENA Council to Accelerate Fiber Deployment

Our societies and the global economy are digitalizing rapidly, and there are ever more possibilities to advance standards of living through human-centric, data-driven, and evidence-based policies, increased economic competitiveness, higher-quality jobs, enhanced provision of public services throughout the SA-ME-NA region's urban and rural communities. Fiber holds the power to do to rural communities what it has enabled for urban areas: more possibilities of digital inclusion and socio-economic participation.

SAMENA Council views that, in order to achieve greater penetration of Fiber, the regional markets need to:

1. Draw upon global recommendations, such as from the ITU and the UN Broadband Commission, to inspire accelerated efforts in Fiber-optic deployment across the region
2. Recognize the necessity and inevitability of deploying Fiber for reaching Universal Digital Access; for fostering greater productivity in the Enterprise Sector; for improving Government Digitization processes; realizing the Smart City visions; fortifying 5G with the right level of Fiber penetration; and, as a whole, for building a sustainable Digital Economy
3. Optimize approval and permit processes
4. Incentivize investment in non-economical and complex geographies
5. Foster CAPEX reduction and better return on investment by reducing redundancy and the cost of network expansion – this, for example, can be achieved via use of existing infrastructure such as electricity infrastructure
6. Create enabling environment of positivity, predictability, tax relief incentives, reduced license fees, among other regulatory, legal, and financial incentives and supportive measures should be considered for readily implemented in letter and spirit. Moreover, outdated or non-essential regulation should be removed
7. Consider implementing the 4 core recommendations of the Broadband Commission's Working Group on 21 Century Funding Models, which could address ICT infrastructure gaps, including of Fiber, and which may play an important complementary role in the initiatives taken by the Governments
8. Set coverage and minimum speed targets through a national broadband plan or universal service obligation, which is aligned with our emerging desire to create "giga-bit societies"
9. Recognize and address issues that have impeded Fiber deployment or Fiber migration -- whether such issues relate to processes, lack of an enabling environment, lack of investment incentives, or other business or operational difficulties
10. Incentivize the Private Sector to work in closer collaboration with the Public Sector, to drive common understanding on the flexibility, scalability, and asset potential of Fiber networks. This alignment will support our efforts in building a sustainable digital economy, which relies not only on connectivity infrastructure, but also on capacity-building and ICT talent development initiatives, to help realize digitization-driven socio-economic impact from urban areas to the last mile

Call-to-Action by SAMENA Council to Accelerate IPv6 Migration

We need to promote IPv6 industry development and, collectively, should muster up the will and determination to plan ahead and accelerate IPv6 transition. Not only does this open new door of opportunity across business, society, security, and overall sustainability of the ecosystem; it will literally help create the Intelligent Internet of everything, which is the ultimate goal of digitalization transformation. By ensuring a timely and effective transition towards IPV6 and taking steps to facilitate peering and interconnection between networks, the Internet in the SA-ME-NA region can continue to deliver on its potential, leading to economic growth in the region.

SAMENA Council views that, in order to achieve accelerated transition from IPv4 to IPv6, the Private and Public sectors need to consider some important factors that can contribute in the right direction when it comes to IPv6:

1. Global IPv6 deployment is vital to the continued growth and stability of the Internet. This alone is a major reason to accelerate collaboration to overcome challenges in transitioning from IPv4 to IPv6.
2. Private-sector entities should aim for realizing rich interconnectivity, and should aim for building consensus on approaches to implement IPV6 as smoothly as possible
3. The transition from IPv4 to IPv6 has its own Cybersecurity/network security, and infrastructure/asset security considerations, which demand timely placement in the agenda of the industry
4. While transitioning or thinking transition, it may be necessary to create learning modules that would allow for gaining understanding necessary for their role to manage the changes coming with the shift from IPv4 to IPv6
5. The region's economic development is greatly dependent on robust ICT/IT infrastructure, and thus the private sector should work in synch with entities like the national IPV6 Task Force in Saudi Arabia and TRA in the United Arab Emirates
6. Funding mechanisms being discussed to accelerate meaningful connectivity (and to connect the remaining 46% of the world's population), similar approaches may be necessary to fund IPV6 transition
7. Regionals Governments should play their role in driving adoption of IPv6, communicating IPV6 as a national priority, and encouraging cross-stakeholder and cross-industry participation in capacity-building opportunities
8. Policymakers and regulators should incentivize investments and "future-proof" those physical infrastructure and cloud investments
9. Accelerated cooperation building for harmonized adoption of 5G and to make proper use of Ultrabroadband networks, timely adoption of IPV6 is critical
10. Transforming networks in terms of artificial intelligence, cost-cuttings, and a host of other features, transition to IPV6+ is a milestone for which all mobile networks should aim

the issues of shrinking digital space, fostering a healthy IoT ecosystem, and making networks efficient and operations cost-effective are critical, the Private and the Public sectors need to consider some important factors that can contribute in the right direction when it comes to IPv6. BA highlighted that the Private sector should aim for building consensus on approaches to implement IPV6 as smoothly as possible. Given that transition from IPV6 has its own cybersecurity and infrastructure asset security considerations, which demand timely placement in the agenda of the industry, while transitioning or thinking transition, it may be necessary to create learning modules that would allow for gaining understanding necessary for their role to manage the changes coming with the shift from IPV4 to IPV6. Moreover, the region's economic development is greatly dependent on robust ICT/IT infrastructure. Thus, the private sector should work in synch with entities like the national IPV6 Task Force in Saudi Arabia and TDRA in the United Arab Emirates. Accelerated digital transformation requires an overall vision where technology, along with human capital, improves efficiency and effectiveness of business. This can only be achieved with a new internet protocol, and thus governments should play their role in necessarily driving adoption of IPV6, communicating IPV6 as a national priority, and encouraging cross-stakeholder and cross-industry participation in capacity-building opportunities related to IPV6. [\[1\]](#)





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stc Kuwait Talks to SAMENA Council

Telecom services and digital solutions have become a critical component of the gradual road to normalcy with more governments and businesses accelerating the adoption of digital technologies.

The onset of the pandemic led to drastic changes in what was considered to be normal. Lockdowns, social distancing, mandatory quarantine, and other safety protocols enforced by governments around the world called for a global shutdown that impacted economies and communities. People were eager to stay informed with the latest news updates and maintain open communication lines with their loved ones. Businesses quickly realized the importance of the digital world and the path towards digital transformation as they initiated their continuity plans. These significant events highlighted the importance of sustaining a strong telecom infrastructure capable of delivering vast digital solutions that can allow businesses to maintain their operations remotely and cater to their customers' needs.

Since then, telecom services and digital solutions have become a critical component of the gradual road to normalcy with more governments and businesses accelerating the adoption of digital technologies.

Q. The telecom sector played a key role during the pandemic, how did stc Kuwait respond to customer attitudes during this period and what were some of the significant steps taken by the company to manage the accelerated demand for digital transformation in Kuwait?

A. Once Covid-19 was declared a pandemic, **stc** was quick to realize the necessity of implementing its business continuity plan to continue providing pioneering digital solutions and telecom services to its customers. As the world recognized the importance of adopting a digital culture that was driven by digital transformation, telecom companies found themselves at the brim of a rapidly changing world. This period marked a very significant time for **stc** and the telecom industry as a whole. Prior to the pandemic, **stc** had been implementing its own digital transformation strategy while offering a range of solutions that assisted businesses in enabling their



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stc

unique strategies. The level of knowledge and experience the company possesses within this field aided **stc** in its numerous contributions to the local economy and government initiatives.

As a leading telecom and digital solutions provider, **stc** had focused, prior to the pandemic, on strengthening its 5G infrastructure and expanding its network coverage to 98% of the populated areas in Kuwait. This progressive development strategy allowed **stc** to manage the increased demand for 5G and connectivity products during the full and partial lockdown periods, as we were ready and have enabled different industries' remote operations such as the health, educational, and financial sectors. In early 2019, **stc** was one of the leading telecom companies to commercially deploy a nationwide 5G network with over 1000 5G NR sites supported by a massive device ecosystem of more than 100K devices including 5G CPEs. This initiative set the benchmark in the market, marking one of the largest 5G commercial rollouts in the world at that time through **stc's** 5G innovation center. The 5G innovation strategy and its execution aimed to open the doors to new business prospects within the realms of ultra-broadband, IoT, smart city services, all while positioning **stc** as the undisputed leader in the 5G era.

Elevating the User Experience

Due to the prolonged impact of the pandemic, and in accordance with **stc's** 5G development strategy, in 2020, we focused on elevating the user experience for our consumer and enterprise customers by further enhancing our 5G coverage. **stc** started delivering Sub-3Ghz 2.1Ghz 5G NR with nationwide implementation by late 2020, focusing especially on indoor and weak coverage spots. Upon doing so, **stc** was a pioneer telecom operator to commercially launch such an advanced technology on a large scale in the MENA Region. Following this development, **stc** also pioneered in launching the commercial E2E 5G SA network in the Middle East to provide high rise buildings with better coverage, increasing uplink bandwidth and improving user-traffic latency for an enhanced quality of experience.

Ensuring Customer Safety

The strength of our 5G network enabled **stc** to provide our individual and corporate customers with dependable and consistent high-speed connectivity that was crucial at the time to fulfill their work, education, and leisure needs. The advanced upgrades applied to **stc's** network also assisted the company's specialized business arm, **solutions by stc**, to expand its offering line with new-to-market solutions that required minimal deployment timelines.

Aside from the steps taken by **stc** to manage its network-based solutions, we found it essential to provide our customers with complete control and access to manage their accounts and enrich their customer experience by upgrading our digital platforms. **stc** redefined the user journey and experience on its website, portals, and mobile application to permit customers in taking full control of their **stc** accounts from the comfort of their homes, an initiative that goes hand in hand with the directions issued by the government during the full and partial lockdown periods. To build on this initiative, **stc** introduced special promotions and offers that aimed at meeting the communication, entertainment, and work needs of customers, especially during the full and partial lockdown periods. Through its role as a market leader, **stc** strives to build a robust digital experience for its customers that is linked to the latest pioneering technology, while considering the latest economic and societal conditions. This stems from **stc's** commitment to support the Kuwaiti community through various initiatives and relief campaigns during times of need, in addition to providing a range of solutions that enable digital transformation in line with international standards.

Q. The pandemic led to drastic changes in the work culture of most organizations, how did stc embrace these changes and how has that transformed your work culture?

A. The level of uncertainty the entire world was facing when the pandemic hit is a crucial point to consider when looking at the response strategies implemented to manage and maintain a positive work

As a leading telecom and digital solutions provider, stc had focused, prior to the pandemic, on strengthening its 5G infrastructure and expanding its network coverage to 98% of the populated areas in Kuwait.

culture. We were learning more and more about the virus once it emerged and how it disrupted our daily routines and lives. Considering **stc's** position as a pioneering digital solutions enabler, we recognized the importance of utilizing our expertise to streamline our operations remotely and maintain the level of quality and service we commit to our customers. The strategic steps **stc** took to preserve its competitive and empowering work culture were essential in getting us to where we are today. One of the main functions executed by **stc** to maintain its communication and operation lines was implementing our three-level business continuity plan.

Business Continuity Planning

The highly detailed and tested continuity plan consisted of three scenarios, each categorized based on the conditions the country was in. The first scenario, 'Situation Under Control', was primarily based on employees being present at **stc's** Head office. They would have the ability to communicate and interact through routine communication channels, while abiding to the defined controls during the period such as frequently sanitizing hands, wearing a face mask and following restricted controls. The second scenario, 'Social Distancing', reflected work protocols during the partial curfew period. The work from home procedures were initiated under this scenario with limited access to **stc's** headquarters and branches. Only employees performing critical tasks were able to be present at the headquarters. Under scenario three, 'Lockdown', where total lockdown was

imposed on the country, all operations were shifted remotely with full closure of **stc's** headquarters and branches.

Employee Training and Self-Development

In line with our continuity plan, Human Resources had introduced online learning through LinkedIn and other E-Learning platforms. The team, in collaboration with other departments, ensured that employees possessed the proper tools needed to effectively complete their tasks including collaboration tools, hardware, a secure cloud-based storage, and all else that was applicable to their duties. Information Technology and Human Resources also developed a mobile application allowing employees to perform remote requests and seek approvals. Additionally, a Virtual Application (VAPP) was introduced at the time to enable **stc** employees and contractors to work remotely from home. These initiatives, as well as others, were all introduced and enhanced throughout the restriction periods to ensure that employees were safe and able to complete their tasks in a timely and efficient manner. Now with the gradual return to normalcy, we have embraced the developments within our own digital transformation journey to instill a performance driven culture that is built on efficiency. We have automated internal and external processes, which have proven to be resilient during the most difficult of times.

Q. How has CSR played a role during this time, and what would you consider to be the most significant achievements under your program?

A. We take pride in our extensive CSR program and consider it to be an essential program where we can effectively give back to our community, especially during times of need. **stc** values the critical role CSR played in balancing the impact on economies across the globe as businesses of all sizes came together to minimize the repercussions caused by the pandemic. In Kuwait, the efforts of the private sector with the guidance of the Kuwaiti government helped spread awareness on the gravity of the situation we were dealing with, which led to a quick realization by the population. We also witnessed many businesses within the private sector show

their support by backing the government's Covid-19 precautionary and relief plans. Within our CSR framework, we launched a series of social and awareness initiatives that focused on supporting the preventative measures and activities in the country within the fields of health, safety, and social awareness. During the early stages of the pandemic, **stc** launched a social media campaign that involved influencers, doctors, and other specialists within their fields to encourage residents and citizens to stay home and adhere to the government issued guidelines. The initiative helped spread awareness on the magnitude of the pandemic and the rapidly increasing infection rate within the country.

Supporting the Community

In another initiative, **stc** launched its "Far Yet Close" campaign provided **stc** customers and the working personnel staying at Khiran Resort and Al Joan Resort at Julai'a with unlimited local voice calls to ease the quarantine protocols set by the government. The purpose of the campaign was to allow customers to connect

with their loved ones while spreading awareness on the conditions taking place within the country. Within the framework of the campaign, **stc** also visited Kuwait International Airport to distribute face masks, sanitizers, and information leaflets to airport staff, departing and returning passengers.

"Stay Safe" is another multi-layered initiative **stc** launched under its CSR program, which runs parallel to the Company's digitization strategy. The first initiative under the campaign was aimed at reducing the spread of rumors regarding the pandemic, in collaboration with the Ministry of Health, by dedicating a page on **stc's** official website with news and announcements from verified sources, in addition to an emergency contact directory and Covid-19 statistics. Other initiatives under the campaign included a blood drive, equipping **stc** branches with safety supplies, and distributing hand sanitizers, face masks, and other safety supplies to the Ministry of Interior in a gesture of appreciation to ensure their safety while on duty.



In one of our most important initiatives, we collaborated with the Communication & Information Technology Regulatory Authority (CITRA) in a series of programs that aimed to alleviate the Kuwaiti society during the crisis. The initiatives were embodied with providing customers with free unlimited local calls to all operators, in addition to free 5GB daily data usage for a one-month period. We also collaborated with Kuwait Airways and the Ministry of Health in an initiative organized to welcome returning citizens by distributing 25,000 free prepaid lines with internet bundles and free local calls.

Another notable initiative was establishing a data link connection between the International Hospital and the Ministry of Health (MOH) data center to support local entities in the battle against the current Coronavirus (COVID-19) pandemic. The purpose of establishing the link was mainly to provide a seamless connection between the International Hospital in Salmiya and the MOH data center in the Sabah Health area, allowing ease of access to systems and applications at high data transmission speeds.

In the first initiative under the partnership, stc and the Tarahom Volunteer Team distributed over 7,000 iftar meals to paramedics across Kuwait under the "Ramadan Lives On Campaign". The second initiative was a multi-layered campaign titled "#today_we_can", which focused on spreading awareness on the importance of acting today for a better tomorrow.

On two occasions, **stc** partnered with the Tarahom Volunteer Team to create a positive impact in the community during the holy month of Ramadan.

The campaign aimed to support members within the community who are in need, distribute iftar meals to sanitary workers, and offer gift baskets as a token of appreciation to frontliners.

Our CSR program remains to be a top priority, as it showcases our commitment to support and serve the Kuwaiti society. We will continue to focus on spreading awareness on causes that are directly impacting our community, while implementing our annual CSR agenda.

Q. What were some of stc Kuwait's most notable achievements during the past two years aside from those under its CSR program?

A. Looking back at the past two years, **stc** had several successful milestones that reflected its position as a pioneering telecom and digital solutions provider. One of our greatest achievements during this period was receiving the approval from the Communication and Information Technology Regulatory Authority's (CITRA) to launch the first-of-its-kind mobile virtual network operator (MNVO) license to launch Virgin Mobile Kuwait in partnership with Virgin Mobile Middle East & Africa. The license will permit Virgin Mobile Kuwait to operate using **stc's** network, with **stc** acting as a Host Facilities Based Provider "FBP" with Virgin Mobile Kuwait, offering prepaid plans to users, and making it the first virtual telecom service in the country.

Under the direction of our business continuity team, we received the latest version of the ISO Certification in Business Continuity (ISO 22301:2019) after completing a vigorous auditing process performed by TopCertifier. The certification comes as a testament to the diligent approach taken by **stc** to implement protocols and guidelines through our business continuity plan applied across all business-related aspects during the pandemic.

We were also the leading operator in the Middle East to launch unlimited 5G roaming

for all our postpaid, prepaid and enterprise customers across all GCC Countries. This initiative allowed customers to utilize our innovative and unique service that could be added to any of our offered packages to both existing and new customers. By subscribing to the roaming service, customers were able to enjoy our ultra-fast 5G speeds throughout all GCC countries without any additional charges to their existing roaming packages.

To better serve our customers, we expanded our 5G network on a 2.1 GHz frequency band to be the first of its kind in Kuwait. The deployment of the network not only improves the overall user experience for customers, but also prepares for the exploration and development of 5G vertical industry applications. This 5G DA service offered by **stc** is considered one of the best ICT solutions for SMEs, given the sector's demand for faster deployment timeframes with minimal cabling. Complemented by a stable experience and professional services, the 5G DA will provide SMEs with fast GTM connectivity. The service is also a preferred choice for larger enterprises due to its capability to serve as a primary link and fiber backup. These services have been offered to several customers in various sectors and have proven to drastically enhance their operations with great success.

Q. We spoke about some of the significant steps taken by stc Kuwait to manage the accelerated demand for digital transformation, what new services have you added to assist businesses in their transformation?

A. While digitization has been a transition that most companies have been implementing to keep pace with the latest technological innovations, the real business transformation has now become a critical one in this digital age. In terms of providing affordable connectivity solutions, **stc** unified its 4G and 5G packages, allowing customers to switch at no additional cost. This transition allowed us to showcase the strength of our 5G network while providing our B2B customers with reliable high-speed internet to manage their businesses online, in addition to offering advanced ICT solutions to fulfill the extensive need of the enterprise sector in Kuwait

Enabling Digital Transformation

stc strides to accelerate vertical transformation by constructing advanced Business Support Systems tolerated to fulfil a wide range of industry transformations and business model requirements. This stems from our commitment to fulfill the needs of startups, SMEs, and larger enterprises by offering flexible, automated, scalable, guaranteed, and reliable solutions. These solutions can accelerate their digital strategies into the 5G platform allowing the introduction of new solutions and business processes.

During the pandemic, stc launched its 5G LIVEBUS, a smart and safe bus supported by 5G connectivity. This first of its kind transportation vehicle combines advanced and integrated safety solutions for business owners and their employees. The initiative targeted all sectors and institutions within the country, especially the transportation sector, which is the most vital in the development of the local infrastructure.

Through its specialized business arm **solutions by stc**, **stc** focused on introducing lucrative digital solutions to support its B2B customers. **solutions by stc** aims to provide customers with world-class connectivity and IT solutions, paving the way for digital transformation in businesses. In collaboration with Futures Communication Company, **solutions by stc** released digital and cloud-based solutions allowing small businesses to develop

and activate their own online stores through a dedicated mobile application. The company also introduced Office 365 and Google products, amongst other digital services, to support businesses in streamlining their workflows while reducing their operational costs.

The offering line under **solutions by stc** was also extended to our large to medium sized B2B customers in addition to specialized products that were designed to help manage the safety measures and protocols set in place by the government. The team introduced high body temperature detecting thermal cameras, monitoring bracelets, remote collaboration tools, a fleet management solution, in addition to other solutions that could assist in the gradual resumption to normalcy.

Our primary goal is to assist our customers in realizing the added value created by adopting technologies and digital solutions that can transform and optimize the way they do business. Focusing on the experience and customer journey in adopting new concepts, we have dedicated a team of highly skilled professionals that provide around the clock assistance. The support team specializes in simplifying and easing the transition of business owners as they introduce new systems that can enhance their operations.

Introducing innovative digital solutions that solved real world problems for our B2B customers allowed us to shift our business model towards new areas of sustainable growth that have consistently improved our revenue streams, even during difficult times. Simultaneously, we continue to explore new applications and digital solutions that apply the latest technological revolutions in this digital era to enhance the operational and financial performance of our B2B customers.

Q. How has the Kuwaiti telecom sector transformed in the past two years and what do you believe that entails for the future of stc Kuwait?

A. As mentioned previously, we witnessed a massive transformation in the telecom industry triggered by the pandemic.

This transformation came in the form of increased demand for telecom and digital services such as competitively priced plans, whether voice or internet, connectivity solutions, ICT solutions and innovative products that focus on digitally transforming the cultures of businesses. We witnessed a massive wave of demand primarily focusing on accelerating the path towards digital transformation for most companies, providing the telecom and digital solutions sector with an opportunity to utilize their resources to find solutions that meet the needs of corporate customers. This was actually a trend experienced worldwide and is now considered to the future of doing business in most sectors.

Another transformation the sector experienced was the growing demand for 5G and 5G enabled products. Today, using our 5G network, we are able to provide a wealth of solutions and services to corporate and individual customers given the ease of access and fast speeds the technology possesses. This has opened the doors to a world of potential opportunities in terms of accessibility, innovation, and expanded network services. The 5G revolution has redefined the way we connect to the world and has set the bar on a higher level in terms of the types of solutions we can offer our customers.

I believe that these two key transformations will play a great role in the future of **stc**. We have set up a clear transformation journey to cater customer needs and enrich their experience with **stc**, all defined in our Corporate Strategy 'AHEAD'. We invested early on in building the strongest 5G network in Kuwait and have been implementing our own corporate digital transformation strategy. Using our experience and expertise, we will continue to set our sights moving forward on meeting the needs of our individual customers in a way that empowers and enriches their lifestyle, while assisting our corporate customers in achieving the diverse objectives under their unique digital transformation strategies. 🌱

MEMBERS NEWS



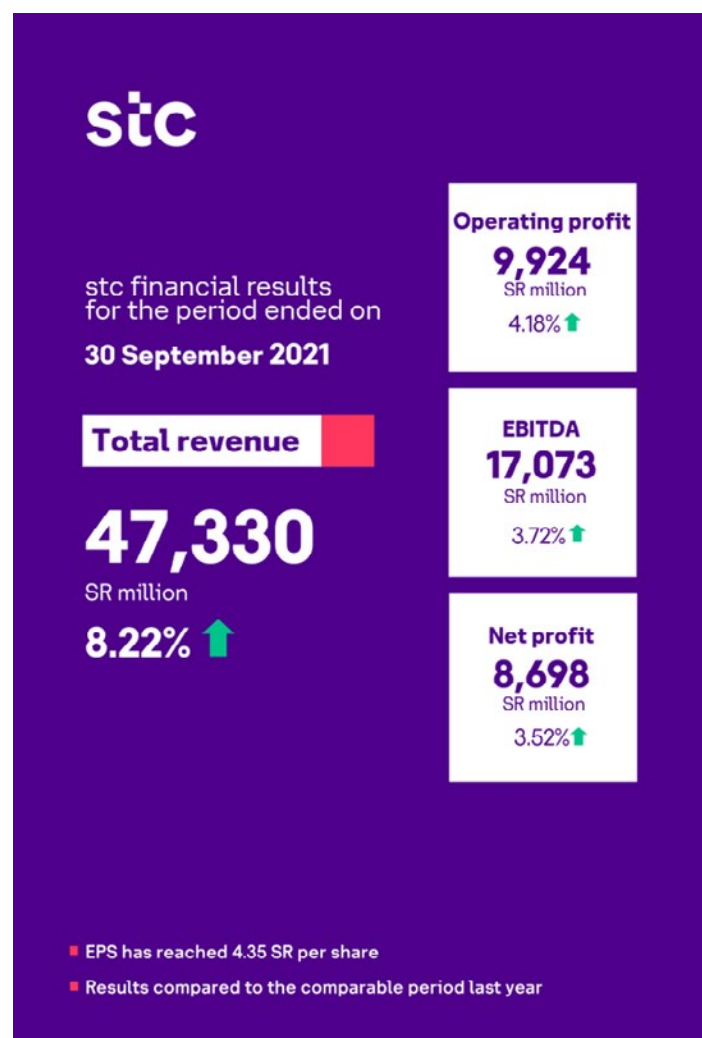
stc's Net Income for Q3 And 9 Months Of 2021 Compared to the Comparable Quarter and Same Period of Last Year Increased By 5.71% & 3.52% (Respectively)

stc has announced the company's preliminary financial results for the period ending at 30 September 2021:

- Revenues for the 3rd quarter reached SR 15,735m with an increase of 5.74% compared to the corresponding quarter last year. For the 9 months period of 2021, the revenues reached SR 47,330m an increase of 8.22%.
- Gross Profit for the 3rd quarter reached to SR 8,369m with a decrease of (6.71%) compared to the corresponding quarter last year. For the 9 months period of 2021, the Gross Profit reached SR 25,278m with a decrease of (0.90%).
- Operating Profit for the 3rd quarter reached to SR 3,192m with a decrease of (7.75%) compared to the corresponding quarter last year. For the 9 months period of 2021, the Operating Profit reached SR 9,924m with an increase of 4.18%.
- Earnings before Interest, Taxes, Zakat, Depreciation and Amortization (EBITDA) for the 3rd quarter reached to SR 5,606m with a decrease of (3.14%) compared to the corresponding quarter last year. For the 9 months period of 2021, the Earnings before Interest, Taxes, Zakat, Depreciation and Amortization (EBITDA) reached SR 17,073m with an increase of 3.72%.
- Net Profit for the 3rd quarter reached to SR 2,924m with an increase of 5.71% compared to the corresponding quarter last year. For the 9 months period of 2021, the Net Profit reached SR 8,698m with an increase of 3.52%.

In accordance with the approved dividend policy for three years starting from the 4th quarter 2018, which was announced on 16 December 2018, and has been ratified during the Extra Ordinary General Assembly Meeting on April 24th 2019, stc will distribute a total of SR 1,997 million in cash dividend for Q3 2021, representing

SR 1 per share. The eligibility of dividends shall be for the shareholders at the close of trading on Thursday 28/10/2021 corresponding to 22/03/1443 H and as per the registered shareholders in the register of The Securities Depository Center Company at the end of the 2nd trading day following the eligibility date. Dividend distribution date will be on 18/11/2021 corresponding to 13/04/1443H. Commenting on these results, Eng. Olayan Mohammed Alwetaid, stc Group CEO, stated that the company's results for the 9 month period came in line with our expectations, as the company was able to grow its top line by 8.2% compared to the same period last year, which was achieved through the continuation of the exceptional performance from the Enterprise business unit and its ability to grow its revenues, as it achieved 27.4% revenue growth during the period, due to



the unit being well positioned to cater to the strong demand from the public and private sectors. The Wholesale business unit also contributed positively to the company's performance, as it registered 3.4% revenue growth during the period due to the increase in its international revenues, benefitting from stc's infrastructure investments which led to a growth in the company's Hubbing services. As for the Consumer business unit, revenues increased for the residential segment, driven by an increase in FTTH and fixed wireless access subscribers by 15% and 27%, respectively. Alwetaid went on to say that stc aims to establish its position among the world's leading companies, and to enable

innovation and digital transformation in the Middle East and North Africa through an integrated system of services provided by the Group and its subsidiaries. This has enhanced the success of companies such as (solutions by stc) to transform from a SR 100 million acquisition in 2007 to a company with a value of more than 18 billion riyals upon its listing, and becoming at the forefront of IT service providers for five consecutive years, in addition to being the preferred partner for the public and private sectors in the Kingdom. The successful listing of (solutions by stc) in the Saudi Stock Exchange, Tadawul, represents a qualitative and important leap in supporting companies working in the field of communications and

information technology. Recently, stc announced its wholly owned submarine cable system named Saudi Vision Cable, that is inspired by the Saudi 2030 vision, which will be a game changer for subsea cables in the region. This state of the art submarine cable system will enable a unique and low latency route, linking the major subsea hubs in the Red Sea cities of Saudi Arabia. Saudi Vision Cable is the first ever high capacity submarine cable in the Red Sea region that will provide seamless connectivity through 4 landings in Jeddah, Yanbu, Dubai, and Haql. Further and in recognition of the strong financial position of the company and its objective to maximize its shareholders' value, the Board of Directors of Saudi Telecom Company

has recently recommended a dividend policy starting from the 4th quarter of 2021. Where stc commits to distribute SR 1 per quarter for the next three years, with a possibility of paying additional dividends subject to assessment of the company's financial position, future outlook, and capital requirements. Finally, stc is still committed to investing in infrastructure and acting as a national enabler for digital transformation. As stc adopts sustainable national initiatives that are concerned with building digital capabilities and skills for future leaders, embracing entrepreneurs and innovators, supporting the digital environment, empowering society and consolidating the Kingdom's position as a regional technical leader.

solutions by stc Partners with Redington to Offer a Variety of Microsoft Solutions

solutions by stc, the specialized business arm of Kuwait Telecommunications Company – stc, announced its partnership with Redington, a leading Microsoft partner in the region offering a variety of solutions, while delivering advanced support to assist companies in initiating their digital transformation journeys seamlessly through Microsoft. This partnership falls in line with solutions by stc's commitment to continue building strong partnerships with market leaders to provide B2B customers with the latest solutions available in the digital world. solutions by stc released a statement indicating that the Company currently offers a wide range of Microsoft solutions but aims to enhance the experience for customers through its newly formed partnership. The products and services that will be available cater to both SMEs, as well as larger institutions, especially in light of the conditions triggered by the pandemic. The applications and cloud services provided by Microsoft are the perfect suite for both remote and onsite working as employees return to their offices. Through the numerous products and services offered by Microsoft 365, there are three primary packages that include applications that are considered to be essential. Each package will include a variety of products and services compiled to meet the needs of businesses, including frequently used apps such as Word, Excel, PowerPoint, and Outlook. An additional product offered by Microsoft free of charge to subscribers is OneDrive, a cloud-based drive capable of online storage. With OneDrive, users can simply store, sync, and share their files across their PC, mobile, or other devices. One of the main benefits of acquiring and utilizing these services in the Kuwaiti market through solutions by stc would be the dedicated professionals who can guide customers on the best digital tools that fit their unique business models. solutions by stc set a competitive pricing strategy for the bundled services similar to those



offered in the market, but will be inclusive of free setup consultations and a dedicated support team. In agreement with Redington, solutions by stc will be offering its B2B customers competitive bundled services, access to a dedicated customer support team, as well as other services that are managed in collaboration with Redington. These include Microsoft products such as Windows 10 Enterprises, Windows Server Datacenter and Remote Desktop Services, Project Professional, SQL Server and other standalone applications or services. Office 365 applications such as Word, Excel, PowerPoint, OneNote, and Microsoft Teams will also be offered through the bundled services to empower the transformation journey for customers. solutions by stc added that it will continue to explore alternative methods that elevate the digital journey and experience for its valued customers. Possessing a deep understanding of customer needs has aided the Company in offering solutions that enhance operational efficiency, as well as the day-to-day activities for businesses of all sizes. As a business solutions provider, solutions by stc also offers a range of connectivity solutions, fixed or wireless services, 5G technology through stc, Fiber connectivity, ICT, IoT and the IT products and services.

solutions by stc and Datumcon Join Forces to Bring The 'Internet of Eyes' to Kuwait

solutions by stc, the specialized business arm of Kuwait Telecommunications Company – stc announced its new partnership with Datumcon, a Gulf-based artificial intelligence (AI) and data science company, to bring the benefits of AI-enabled video analytics to businesses in Kuwait. The two companies are joining forces to offer INSIGHT AI™, Datumcon's proprietary computer vision software, to enterprise and SME customers in Kuwait. The intelligent AI-enabled video analytics solution securely processes video streams and images in real-time to perform intricate, outcome-driven computer vision tasks. A subfield of artificial intelligence, computer vision is among the most exciting and impactful areas of applied AI. It enables systems and computers to 'understand' a scene and derive meaningful information from digital images, videos, and other visual inputs. Leveraging machine learning and AI, computer vision is then able to take actions or make recommendations based on that information. Meshari Al Hamad, General Manager of Sales & Account Management at solutions by stc, said, "The remarkable growth in camera use by businesses has created tremendous opportunities in the capture, analysis, and interpretation of the large volumes of visual data being generated daily. Our close collaboration with Datumcon now enables us to offer a state-of-the-art video analytics service that delivers tangible results and real, demonstrable impact for businesses." Industry reports estimate that close to a billion surveillance cameras will be installed worldwide by 2021 and expect exponential growth in deployments for the foreseeable future. The sheer amount of video footage generated by these cameras is mind-boggling and raises the question of how it all can be analyzed. The applications of video analytics are extensive and diverse, but the reality is that the vast majority of visual data available in any organization goes unused. This is where AI-powered analytics and software come in,

offering compelling and cost-effective solutions. Similar to the Internet of Things (IoT), the 'Internet of Eyes' is a network of cameras and visual sensors connected via the internet that enable the secure exchange and collection of visual data on a scale unimaginable before. Many experts believe this will likely be larger – in both scale and impact – than the IoT. As costs decline and significant advances in image quality and AI are achieved, the concept is poised to become truly mainstream with significant implications on all business sectors. Al Hamad added, "Computer vision applications are poised to make a major impact on businesses across industries. solutions by stc is proud to be the first and only ICT provider to launch this kind of service in the Kuwaiti market, further expanding our growing portfolio of offerings to help businesses thrive in the digital era." The newly formed collaboration aims to accelerate the 'Internet of Eyes' adoption in Kuwait by broadening the appeal of the fast-growing advanced technology. It also builds on solution by stc's strategy to provide its customers with the latest and most secure innovations to support their digital transformation. INSIGHT AI™ combines different types of deep learning architectures that allow computer vision tools to detect patterns in videos and images more effectively over time. This use of AI makes it possible for machines to categorize, process, and understand visual data at an unprecedented scale and speed, transforming the physical world into actionable data. The service provides visibility and insights into the condition of a business and helps improve profitability, while providing a competitive edge in effectively adapting to today's fast-changing market dynamics. Radwan AlJumaah, Managing Partner at Datumcon, said, "We are excited to work closely with solutions by stc to generate new value and drive substantial outcomes for enterprises of all sizes across multiple sectors in Kuwait. INSIGHT AI™ is a powerful platform that enables businesses and solutions providers to create and deliver highly customizable video analytics that are able to address unique needs across a wide spectrum of business environments. Powered by AI, the advanced video analytics solution offers clear advantages to organizations that extend well beyond substantially improving levels of security. It also empowers enterprises by making it possible to make smarter business decisions, amplify productivity, reduce errors, elevate the customer experience, and significantly improve operational and marketing efficiency.

solutions
by stc

Datumcon

Supervise, monitor and optimize your business efficiency with AI solutions

solutions by stc's Successful IPO Reflects Saudi Economy's Strength, Investors' High Confidence in the Local ICT Sector

The Arabian Internet and Communications Services Company (solutions by stc) announced the success of its IPO. The company's market value has reached, upon listing, SAR 18.1 billion (USD 4.8 billion). The total size of the offering increased to SAR 3.624 billion (USD 966 million), which represents 20% of the company's capital. Based on this offering, stc Group seeks to diversify the Saudi stock market and raise its value. The volume of the Saudi communications and information technology sector reached SAR 33.8 billion in 2018, and it is expected to grow at a compound annual growth rate of 6.7% by reaching SAR 53.1 billion by 2025. Solutions by stc is one of the most important companies in the Kingdom's information technology sector. It holds the largest share of the Saudi market, with a rate of 13%. Based on this step, Solutions by stc is the first company of listed on the Software & Services index

in Tadawul. Solutions by stc's IPO is one of the most successful local offerings and it has attracted a large number of the international and local investors who are interested in the digital transformation, which represents stc Group's vision to be the world's leading digital company. The IPO order book of institutional investors achieved a coverage ratio exceeding the target by 13004.7%, with a value of SAR 471 billion. The Saudi companies' subscription achieved a coverage rate estimated at 9507.6%, the public and private funds as well as the others funds managed by financial market institutions achieved a coverage with 2395.9%, the foreign investors 908.7%, the government institutions 41.4%, and the other investors 151.1%. The individual subscribers also reached 1,042,090 participations, with coverage exceeding the target by 2365.0%, and the requests worth SAR 8.6 billion. The trading of Solutions by stc shares

started in the Saudi Exchange (Tadawul) on September 30, 2021, under the Software & Services sector. On the first trading day, the share price closed at SAR 196.2, an increase of 30% over the offering price SAR 151. Solutions by stc's successful IPO reflects the diversity of the Saudi economy, the investors' high confidence and the external funds' interests in the Kingdom's information technology sector and the emerging technologies in particular. This step also reflects the successful journey of the stc Group in the Saudi digital payments sector, especially the company had recently transformed stc Pay to a digital bank after it became the first Saudi billion emerging company. Also launched sirar cybersecurity, and invested in electronic games platform through stcplay platform, which reflects the success of the privatization of the telecommunications sector for more than 20 years ago, and the Kingdom's digital transformation plans.



Etisalat Group Announces the Appointment of New Group Chief Operations Officer

Etisalat Group has announced the appointment of its new Group Chief Operations Officer (GCOO) as part of its significant transformation and planning for the next phase of growth and expansion of the company. Keeping in line with this vision and strategy, Obaid Bokisha will transition into the role of GCOO from his previous position of Group Chief Transformation Officer and acting Group Chief Procurement Officer, as he will continue to lead transformation, procurement and administration. Additionally, Obaid will now oversee business continuity and crisis management. Obaid has had an illustrious career of 23 years at Etisalat, having joined in 1998 and

growing across several roles from network planning and optimization to introducing new technologies and enhancing mobile networks performance. He brings a wealth of experience to the position, including his previous role as Chief Business Continuity and Corporate Quality Officer at Etisalat. He also currently serves as a member in multiple boards of directors, governance teams and steering committees. Bokisha will be now instrumental in taking Etisalat Group to new heights and in helping the company achieve its organizational goals as it continues to expand and grow.



Etisalat Chief Highlights the Importance of 'Driving Sustainability Through Smart Cities'

Smart and dynamic growth through collaboration between government and private entities, academia and citizens are most essential with a reliable infrastructure as the backbone for major national transformation programmes stimulating economic growth and gearing smart cities towards a sustainable future, said Hatem Dowidar, CEO, Etisalat Group. He made these comments during a panel discussion at the Forbes Sustainable Innovation Summit 2021 held at the Expo 2020 site, an event that gathered global leaders to discuss the various pillars required for sustainable innovations that are at the forefront of smart cities development agenda. Khuloud Al Omian, Editor-in-Chief at Forbes Middle East and CEO of Arab Publisher, said: "Today's event gathered leaders from across industries to discuss their sustainability agenda and their efforts in building smart cities and ecosystems. With the telecom infrastructure playing such a critical role in creating this transformation, Etisalat has made immense efforts in closing this gap of digital readiness enabling smart communities while achieving the fastest network in the world today." Dowidar's session focused on unlocking the key to an efficient and sustainable smart city model by integrating ICT and Big Data in the right way to make cities more sustainable. He was joined by global leaders from the technology industry. Dowidar stressed on the increasing relevance of telecom sector as a key pillar for building smart cities requiring a reliable



infrastructure which is a backbone for providing seamless, end-to-end connectivity, a key enabler for all aspects of smart cities. This also requires ubiquitous broadband connectivity through a high-speed fiber optic and 5G networks acting as a platform for advanced services built on IoT, AI and machine learning. He applauded the efforts of the UAE leadership and pointed out how the country is a perfect model for others to emulate today taking a lead globally with its cutting-edge infrastructure and the deployment of smart technologies across essential services and sectors improving the quality of life of its residents.

Etisalat and G42 to Merge UAE Data Center Operations

Etisalat Group of the United Arab Emirates has signed a binding agreement with Group42 (G42) to merge their data center businesses. Etisalat Group will take a 40% stake in the combined entity, Khazna Data Centers, which will operate at twelve

sites in the UAE. Salvador Anglada, Chief Business Officer of Etisalat Group, said: 'The combination of our data center capabilities will deliver a unique portfolio of infrastructure services for current customers, and will also create a market

leader for the future to global hyperscalers. We believe that this transaction will further strengthen the UAE as a preferred destination for global technology companies seeking world-class presence in the region.'



Mobily Signs Agreement with Ericsson to Recycle Old Electronic Devices in the Kingdom

Mobily has announced an agreement with Ericsson to recycle expired and discarded electronic devices in ways that contribute to preserving the environment. The partnership forms part of Mobily's wider pledge to act towards successfully achieving the Saudi Vision 2030 sustainability goals to safeguard the environment for future generations. Eng. Alaa Malki, Chief Technology Officer, represented Mobily

in signing the agreement during GITEX 2021, while Ericsson was represented by Ekow Nelson, Vice President of Ericsson Middle East and Africa. Mobily will join the Ericsson Product Take-Back Program in accordance with the agreement to improve customer convenience and recycle discarded electronic devices for safe and responsible disposal. Commenting on the agreement, Alaa Malki, Chief Technology Officer at Mobily, said: "Mobily decided to

cooperate with Ericsson's Product Take-Back Program due to the importance of preserving the environment and the convenience and ease it provides for customers in terms of disposal procedures for their electronic devices. The program also has a proven track record of success in safe disposal of electronic waste and reducing the environmental impact of expired electrical equipment."

Mobily to Launch Financial Services Solutions in Saudi Arabia in Collaboration with Ericsson

In the presence of Chief Executive Officer of Mobily: Eng. Salman Al-Badran, Chief Executive Officer of Ericsson: Börje Ekholm and President of Ericsson Middle East and Africa: Fadi Pharaon, a cooperation agreement to launch financial services has been signed by the Chairman of the Board of Directors of Etihad Fintech Company: Mr. Ismail Al-Ghamdi and Vice President of Ericsson Middle East and Africa: Mr. Ekow Nelson where Mobily has selected Ericsson (NASDAQ: ERIC) to launch the

Financial Services and provide solutions for Saudi customers. Mobily's new initiative supports the Financial Sector Development Program, which is part of the Vision 2030, which aims to increase the share of Saudi Arabia's cashless payments to 70 per cent by 2030. Ayman A. Aleissa, Chief Executive Officer at Etihad Fintech Company says: "Mobily strives to enhance customer experience with a first-of-its-kind, next-generation financial services platform that enables secure and

convenient journey for consumers. With the right technology partner like Ericsson, our ambitions to roll out new services that provide added benefits and features to propel financial inclusion and achieve the goals of the Saudi Vision 2030." Ekow Nelson, Vice President of Ericsson Middle East and Africa says: "Mobile financial services are a key driver in enabling digital transformation in today's world. Together with Mobily, we aim to make financial services as intelligent and intuitive as possible so Saudi consumers can access and perform secure, financial transactions anytime, anywhere. Our mobile financial solutions will help Mobily extend its trusted brand into financial services and lay the foundation for growing revenues in adjacent markets." Ericsson's mobile financial services are secure, functional, and easy to use, driving customer and partner growth throughout the mobile-commerce eco-system. Deployed globally, Ericsson's pioneering offerings empower service providers to reduce related costs, attract new customers, drive customer loyalty while accessing new revenue streams, a win-win strategy which drives financial inclusion.



MoSD and Omantel Sign Pact for Integrated Cloud Contact Center

The Ministry of Social Development and Omantel have signed an agreement under which Omantel will set up a center for cloud services for the Ministry. Her Excellency Dr Laila Ahmed Al Najjar, Minister of Social Development and Talal bin Said Al Mamari, CEO, Omantel signed the agreement. As per the agreement, Omantel will set up an integrated contact center for cloud communications to provide IT solutions and services within a secure, high-quality, and flexible cloud environment. Services covered by this agreement include cyber protection, digital data storage, and the issuance of periodic reports. The call center will also be linked to the Ministry's CRM

system and will speed up transactions and add more accuracy in dealing with existing files. These integrated solutions will help Ministry's officials access regular reports on performance of the units and call center employees. Such reports will enable them to follow up the performance indicators in line with administrative policies related to the public sector. Commenting on the signing of this agreement, Her Excellency Dr Laila Ahmed Al Najjar said, "Through this agreement, we intend to upgrade the services and operational processes of the Ministry. We seek to benefit from the solutions and cloud services provided by Omantel, which are known for being flexible

and of high quality and most importantly meet the Ministry's requirements." She added, "These solutions and technologies will make the process of receiving inquiries, reports, complaints, family counseling and beneficiary services in a flexible, fast, accurate and secure manner. They will also facilitate following up on files from different departments and digital storage for long periods. The move will contribute towards updating the Ministry's systems and services to support e-government." On his part, Talal bin Said Al Mamari, said, "Signing this agreement reflects the confidence of our customers in the advanced services provided by Omantel.

Today, we are pleased to have Ministry of Social Development join the list of government agencies benefiting from our state-of-the-art ICT solutions. "Omantel is keen to provide the latest technologies and communications solutions and leverage its vast experience and capabilities to ensure that the Ministry achieves the

maximum benefit from this project. I am confident that this cooperation will enhance government's efforts towards digitizing governance and will link various public organizations." 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 Bags "Outstanding Leadership and Growth" Award at SAMENA Council Endorsed MEA Business Technology Achievement Awards

Awards and recognitions seem to have become part of a day's work at Omantel. The leading integrated telecoms service provider of the Sultanate has marked yet another milestone with an Award that recognizes its Wholesale capabilities in the regional and global markets. The company was awarded the 'Outstanding Leadership and Growth Award' at SAMENA endorsed MEA Business Magazine Technology Achievement Awards 2021. Baha Al Lawati, Vice President, Enterprise at Omantel received the award on the company's behalf. On receiving the Award, Baha Al Lawati said, "This award reflects the direction in which Omantel is headed. Omantel has positioned itself as the market leader in integrated communications. The way now only leads upwards and the Wholesale arm is helping us to achieve that. We are humbled by being awarded for 'Outstanding Leadership and Growth' by a leading regional business publication such as MEA Business in coordination with SAMENA Council at GITEX, which is a platform that brings together global industry leaders, start-ups and game-changers to unveil the future. The recognition is a further motivation to us to continue to excel in our leadership and innovation." In September 2021, Omantel Wholesale emerged as a winner at the Carrier Community Global Awards (CCGA), walking away with top honors as the Middle East Regional Operator of the Year, which is a prestigious achievement and a global recognition of its success in the Wholesale business and growing investment in national and international capacities. Omantel has been continuously receiving international recognitions and global awards for the past three years. The Company's comprehensive "Global Wholesale Integration Program" is at the center of its strategic maneuvers,



delivering access on a global scale to 120-plus cities through Omantel's global reach. Omantel's network connecting major European economic and communications hubs has helped Wholesale customers to extend their reach to the Middle East, Asia and Africa. In Oman, Omantel supports terrestrial connectivity across the Middle East with cross-border terrestrial links between UAE, Saudi Arabia and Yemen. Globally, Omantel's vast network of submarine fiber spans over 264,000 km, with access to more than 20 submarine cables. Omantel is a consortium member in the largest submarine cable systems in the world that connect Asia, Africa and Europe via Oman. Such investments serve the growing high-capacity demands for data, internet, Cloud, and content. Moreover, Omantel is the first GCC operator to have a submarine landing station in the EU. This reflects the trust that the wholesale industry is showing in Omantel's capabilities in helping its customers to reach further. Omantel is continuously expanding its reach through Omantel International, its international

wholesale arm for handling the carrier business. Furthermore, Omantel has a wide footprint of international roaming with 685 operators in over 210 countries in addition to the recently introduced 5G data roaming services. Since these terrestrial and submarine cable systems need constant monitoring and support, Omantel built the state-of-the-art, 24/7 International Network Operations Centre (INOC), which also meets demands of cloud and content-centric market. Taking further advantage of Oman's strategic geolocation between Asia, Africa and Europe, Omantel partnered with Equinix, the leading data center operator in the world, to set up MC1, the region's first carrier-neutral data center providing ultra-low latency interconnection points between key global business markets. 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. Omantel strives to ensure optimum customer satisfaction.

Omantel & Infoline to Deliver Effortless Experiences Across Entire Customer Journey with Avaya OneCloud CCaaS

Avaya announced a new partnership with Infoline, Omantel ICT's business process outsourcing leader, that will see Infoline significantly advance customer experience across the Sultanate as it adopts Avaya (NYSE: AVYA) OneCloud™ Contact Center as a Service. One of the first deployments of its kind in the region, the Avaya solution will enable Infoline, a subsidiary of the Omani telecom "Omantel", to seamlessly meet the demands of a regional market set to grow by 6.9% annually to 2028, when it will be worth almost \$20 billion. That growing market will serve increasingly discerning end customers on behalf of a variety of clients, and Omantel/Infoline will be better placed to address their needs with Avaya OneCloud CCaaS. The new technology will deliver effortless experiences across the entire customer journey – whether they're interacting via voice, web, chat or email. And it will also enable end customers to be intelligently matched with the best agents to serve their needs. "At Infoline, we are keeping pace with changing expectations by committing to a digital-ready customer experience, and through our partnership with Avaya, we are enabling our joint clients with the same capabilities. Avaya OneCloud CCaaS will further empower our clients with the advanced solutions needed to address fast-moving customer demands, and help them move forward with the e-Oman vision and strategy," said Aladdin Abdullah Baitfadhil, Chairman of the Board of Directors of Infoline and VP of Consumer Business Unit at Omantel. "Our priority is, and always has been, on enriching the experience of our clients' customers, and the technology that we choose is always based on that guiding principle. With Avaya OneCloud CCaaS, we will be able to deliver meaningful experiences for end customers regardless of their chosen interaction method, while also empowering our own agents to drive increased customer loyalty on behalf of our

clients," said Mohammed bin Hamad al Maskari, Chief Executive Officer of Infoline. Indeed, the cloud-based solution will help Omantel & Infoline to create personalized agent experiences with custom workspaces that bring customer insights from different applications into a single pane of glass. This will help agents stay ahead of every customer interaction by predicting needs and proactively engaging with customers. Nidal Abou-Ltaif, President, Avaya International, added: "Improving the quality of experiences through both the customer and employee journey is today among the most important differentiators and creators of brand affinity. This is a fact that the leadership of Infoline and Omantel know extremely well, as the two companies are rightly celebrated for advancing customer experience across the Sultanate. We are proud to be contributing to that effort as we empower them with Avaya OneCloud CCaaS."



Orange Jordan Sponsors the Media Competition for the Causes Related to Persons with Disabilities

Orange Jordan announced sponsoring the competition that was launched by the Higher Council for the Rights of Persons with Disabilities, under the patronage of the Council's President, His Highness Prince Mired bin Raad, to increase awareness of the rights of persons with disabilities and motivate media representatives to address their issues from a human rights perspective, in addition, to encourage creative and media pieces that contribute to awareness regarding the rights and issues of persons with disabilities and their inclusion in society. Deputy Chief PR, Corporate Social Responsibility and Corporate Communication Officer, Eng. Rana Al - Dababneh affirmed the importance of this competition in enhancing the positive image for the persons with disability in the Kingdom, noting that Orange Jordan is keen to sponsor the competition in addition to various awareness initiatives, due to the importance of media

and educational role to contribute in changing the stereotypical perspective and empowering persons with disabilities, as part of its extended partnership with the Higher Council for the Rights of Persons with Disabilities. Al - Dababneh also noted that digital inclusion is one of the company's priorities, to include sustainable services, solutions, and initiatives that enhance the contribution of persons with disabilities and shed the light on their achievements and active roles in society, under the company's umbrella "Differently Abled, Definitely Enabled" as part of the company's CSR strategy. The competition includes 4-pillars; visual, audio, written media, and drama, where the participants will be evaluated by a jury of experts in the field of human rights and media to select three winners from each pillar, the first winner will receive JD 2500, while the second winner will receive JD 1,750, while the third winner will receive JD 1,000.



Zain Acknowledged with Three Awards at the SAMENA Council Endorsed MEA Business Achievement Awards



Zain Group, a leading mobile telecom innovator in seven markets across the Middle East and Africa, announces it has been presented with three awards at the prestigious SAMENA Council endorsed MEA Business Magazine Technology Achievement Awards 2021, in the categories of New Technology Leadership for 5G launches in Kuwait and Saudi Arabia; Innovation Collaborations and Partnerships for the launch of Zain Esports; and Ground-breaking Products and Services for the ground-breaking Fintech solution 'Tamam' in Saudi Arabia. The awards presentation that took place during GITEX 2021 in Dubai by leading regional business publication MEA Business in coordination with SAMENA Council, were part of a multi-sector recognition awards program aimed at highlighting significant technology achievements in the ICT industry. SAMENA Telecommunications Council is a tri-regional, non-profit telecommunications association that embodies a community of South Asian and MENA region telecoms operators, manufacturers, regulatory authorities, and academia. The Council is driven by telecoms issues that operators face, determined in providing its advocacy expertise to help aid the incubation of novel approaches and ideas that would provide better means for the expansion and utilization of telecommunications in the region. Commenting on the three awards, Nawaf AlGharabally, Zain Group Chief Technology Officer said, *"Innovation is at the core of all Zain's efforts, seeking new business areas in line with its '4Sight' strategy and becoming a full digital services provider. These prestigious Awards recognize our efforts in areas that are extremely important to our ongoing growth and success."* AlGharabally continued, *"We are strong proponents of the power of partnerships and collaboration, believing that working with like-minded organizations accelerates the achievement of our combined vision, and provides our customers with the best quality of service possible in a rapid time-frame. We shall endeavor to continue operating at the highest levels of efficiency, while delivering the best offerings and results to all our stakeholders."*

5G Technology Award in Kuwait and KSA Zain's pioneering 5G deployments in Kuwait and Saudi Arabia, and later Bahrain

led to its recognition as the New Technology Leadership award recipient. An early adopter of 5G, in May 2019, Zain announced its 5G network in Kuwait was fully ready for the commercial launch of services. In October that year, Zain Saudi Arabia launched the largest 5G network in the region at the time, and third largest in the world. Later in November 2019, Zain announced another regional 5G first as its operations in Kuwait and Saudi Arabia successfully launched 5G roaming across the MENA region, with download speeds reaching as high as 500 Mbps for both outbound and inbound roaming. This milestone 5G roaming agreement opened up countless opportunities to further enhance the mobile experience for Zain customers.

Zain Esports collaboration award Zain was awarded the Innovative Collaborations and Partnerships prize for its Zain Esports collaboration with YaLLa Esports and other entities in the region's ecosystem such as Playhera in KSA and AlHub in Kuwait. Zain eSports was launched in December 2020, marking the beginning of a year-long calendar of large and exciting regional online esports tournaments comprised of multiple flagship events as well as smaller, regular community tournaments with attractive cash and devices prize pools. Zain Esports is inspired by the competitive spirit of the 18,000 professional and amateur gamers who have played in the various tournaments held so far and the enormous social media following that have been garnered, which exceeds 35 million views on Zain's YouTube, Twitch and other social media channels.

Zain Esports' presence as a gaming powerhouse engaging with the gamers and youth across the region, is creating an ecosystem that reduces reliance on traditional telco services and opens up growing opportunities for fast growing and lucrative digital services and online gaming.

Tamam's ground-breaking Fintech award in Saudi Arabia With respect to ground-breaking Products and Services, Zain was awarded this prize for its Tamam financial technology (fintech) company in Saudi Arabia, which provides consumer micro-lending services. The Fintech was established in 2019 with the goal to increase financial inclusion in the Kingdom in line with the Financial Sector Development Plan, part of Saudi Arabia's Vision 2030. Tamam offers individuals requiring financing the opportunity to immediately avail an Islamic Shari'a compliant loan without physically visiting a bank location. The end-to-end Shari'a approved process takes minutes from the time a client downloads the app to the loan amount being advanced. It should be noted that Tamam was the first entity in the Kingdom and the region to be licensed by a regulator to offer consumer micro-loans via a fully digital and seamless customer experience, through a mobile app. Fintech is a key focus in Zain Group's '4Sight' strategy aiming to be the first telco-led challenger bank capitalizing on its regional footprint, technology, trusted and highly valued brand, 50 million customer base, with the ultimate aim to provide mobile customers with additional and much needed digital financial services while increasing value for all stakeholders. Zain views the opportunities presented by the digital economy in the Middle East as brimming with potential, as digital capabilities offer greater levels of innovation and direct positive impact on economic and social development of the communities it faithfully serves.

Zain Kuwait and Huawei Sign 5G Advancement MoU

Huawei has signed a memorandum of understanding (MoU) with Zain Kuwait its global partner to 'advance its 5G infrastructure' aiming to achieve the best possible user experience and enhance network quality. Zain Kuwait CEO Eaman Al-Roudhan commented: 'Today we expand our strategic partnerships in technology to affirm our utmost commitment in offering the most advanced services to our customers. Zain always aspires to offer world-class solutions that live up to our customers' needs, both consumers and businesses. Through this agreement, we explore implementing many technological innovations, including those that are related to 5G solutions, to enhance network coverage, capacity, and to improve 5G consumer experience, fixed wireless access (FWA) user experience, and accelerate creating the development of 5G Standalone (SA) network. The MoU also explores upgrading our 5G network's

infrastructure to better empower the digital transformation plans of many vital sectors and industries that Zain serves in the nation.' Al-Roudhan continued: 'This MoU not only focuses on operational and technical advancements, but also extends to making sure we achieve sustainable growth, something that we believe in very strongly. Together we will explore how we can reduce our environmental

footprint by implementing energy saving solutions, improving network energy efficiency, building a green 5G network, and supporting green solutions for telecom operations within the private and public sectors.' TeleGeography notes that Zain Kuwait's 5G network – launched in mid-2019 – currently covers 93% of the country's population, providing mobile and fixed-wireless broadband services.



AT&T Books Improved Wireless Revenue, Base

AT&T's wireless service revenue increased 4.6 per cent year-on-year to \$14.5 billion in Q3, as company executives pointed to growth in contract subscribers and the potential to upsell to higher-value plans moving forward. The operator's wireless division recorded net additions of 928,000 post-paid subscribers in Q3 taking its base to 66.4 million. In the equivalent quarter of 2020 it added 645,000 to its post-paid base, which then stood at 63.5 million. AT&T CEO John Stankey hailed the

progress as "our best post-paid phone net additions quarter in more than ten years". During the company's earnings call, AT&T Communications CEO Jeffery McElfresh added there remained a "large opportunity" to upsell mobile users to higher-value and unlimited tariffs. "We still have large portions of our subscriber base that we have not migrated into those rate plans." "We're letting the customers choose when it's time for them to take advantage of an offer or to move into a new rate plan, and

we'll continue to execute that. That's got room to run for several quarters." Across the whole company, AT&T Q3 revenue was down 5.7 per cent to \$39.9 billion on divestment of various businesses and separation of its video unit earlier this year. It also noted a decline in fixed enterprise earnings. Net income was \$5.9 billion, up from \$2.8 billion, largely attributed to lower operating expenses and higher operating income.

AT&T Selects Ericsson for C-band 5G Expansion

AT&T and Ericsson have announced a five-year agreement to accelerate the expansion of the telco's 5G network. Ericsson notes that the deal will support the rollout of AT&T's recently acquired C-band spectrum and the launch of Standalone (SA) 5G architecture. The vendor will deploy

its Ericsson Radio System portfolio, which includes the Advanced Antenna System, Advanced RAN Coordination and Carrier Aggregation (CA) technologies. TeleGeography notes that AT&T was one of the most prominent bidders in Auction 107, which saw the sale of C-band frequencies in the

3.7GHz-3.98GHz range. Bidding via AT&T Spectrum Frontiers, the telco committed to pay USD23.407 billion for 1,621 concessions. Previously, in March this year AT&T handed rival vendor Nokia a five-year deal to deploy its C-band 5G network in selected parts of the US.

AT&T Ranked #1 in Latest J.D. Power Study

AT&T scored two more J.D. Power awards for business customer satisfaction. We just snagged the #1 spot in the J.D. Power 2021 Business Wireless Satisfaction Study for large enterprise and medium business wireless service. This comes on the heels of winning the J.D. Power 2021 Business Wireline Satisfaction Study for large enterprise and medium business in July. The J.D. Power 2021 Business Wireless Satisfaction Study measures satisfaction across 6 factors: performance and reliability; customer service; sales representatives and account executives; billing; cost of service; and offerings and promotions. Mobile connectivity has never been more important for businesses. The pandemic affirmed that. The connections we create help businesses thrive every day. From mobilizing a workforce, to collaborating and engaging customers, to connecting a growing number of things, wireless connectivity is key for today's businesses. We bring an entire suite of connectivity solutions – harnessing the power of mobile and fiber-based technologies – to our customers providing them the best capabilities for their specific and unique needs. Our integrated approach enables us to deliver innovative solutions to customers no matter their industry, size, or location. Nearly 3 million businesses turn to us for their needs, and we're proud to be their trusted advisor. Our focus is on serving customers first. We've spent the last 3 years transforming our operations to serve customers faster and smarter. The significant investments we've made in our Customer Service and Operations have resulted in:

- Automating and streamlining the ordering, delivery, and installation of solutions – 70% of site readiness provisioning work is handled by an AT&T Business virtual technician.
- Using predictive analytics that leverage Artificial Intelligence (AI) and Machine Learning (ML) to identify potential problems in advance – We now have an 80% on-time installation rate for business customers as of May 2021, up from 71% in January 2020.
- Integrating industry-leading platforms to offer more comprehensive solutions – We've achieved a 20% decrease in our overall end-to-end cycle time to deliver our solutions faster compared to 2019.
- Providing more ways than ever to connect with service and



support – 30% of customer requests are now resolved by chatbots and never require interacting with a live agent.

"Enabling businesses to thrive and transform through the power of connections is our core mission. We're committed to meet customers where they are while providing them with the integrated, innovative connectivity solutions that help them deliver successful outcomes. I'm proud to see the realization of these commitments through this affirming feedback from our customers." – Anne Chow, CEO, AT&T Business

"In recent years, companies have learned the importance of reliability and having the support they need to make last-minute decisions. This has changed how our customers evaluate and purchase technology, and the companies that support them. Factors such as cycle time, response time, and scalability not only apply to the technology itself, but to the quality of support for it." – Paul Rosenbaum, EVP, Customer Service & Operations, AT&T Business.

AT&T Rings the Changes for Enterprise Customers

AT&T has partnered with RingCentral to digitize business wireline phone services, stating the move will boost security and reduce costs for its enterprise customers. RingCentral provides cloud-based unified communications service, which AT&T is making available to businesses nationwide through a new service called AT&T for Business – Advanced. In a statement, the operator highlighted the benefits of combining cloud-based functionality with the reliability of traditional wireline

phone service. AT&T and RingCentral will use hardware made by DataRemote to digitize analog traffic so that it can be transmitted by VoIP networks. In addition, AT&T said the device can provide 12 hours of operation using an internal battery backup in the event of a power failure. AT&T noted the new service can increase reliability for a number of wireline services in addition to voice, such as alarms, elevators, fax machines, modems, point-of-sale terminals and even healthcare

equipment. Nationwide businesses using wireline phones often need to pay separate phone bills in each state due to regional regulations, AT&T noted. This solution can consolidate all lines onto one bill, the operator explained. AT&T is the second major mobile operator in the US to partner with RingCentral. In May, Verizon announced plans to combine RingCentral's cloud-based messaging, video, and phone service with Verizon's 5G, mobile edge computing, SD WAN, and security services.

AT&T First to Deliver Both High and Low-Band 5G Connectivity to GE Research Campus



AT&T and GE Research are fueling the future of healthcare, aviation and green energy. GE Research, the research and development division of General Electric (GE), has added AT&T 5G to its cross-industry 5G testbed at its research facility in Niskayuna, New York. The purpose of GE's testbed is to create real-world solutions, so the research facility's environment must reflect the marketplace – today and beyond. AT&T currently provides 2 flavors of 5G – AT&T 5G, using low-band or sub-6 spectrum, which offers the Nation's Best 5G Network¹ to our customers nationwide and AT&T 5G+, which delivers super-fast speeds and unprecedented performances via mmWave spectrum. The addition of AT&T's 5G network provides GE Research with the most advanced networking capabilities available and for the first time, enables them to use both high and low-band 5G to uncover new opportunities to advance clean energy, air transportation and precision health. Why is this important? High-speed, lower-latency 5G connections have the potential to alter the very DNA of critical industries in exciting ways. GE Research and AT&T are actively exploring ways to use 5G connectivity to improve patient care and outcomes. As healthcare becomes more personal, precise and portable over the next decade, we need faster, secure and reliable networks to realize this potential. Having access to both forms of AT&T's 5G connectivity can enhance the ability of GE Research to shape the future of patient care and improving patient outcomes. This can help GE Research develop and optimize data flow across both spectrum bands throughout the care cycle and regardless of location. This means enhancing the level of care whether a patient is receiving care at home, in an ambulance or at a healthcare facility. "The power of reliable, robust sub-6 and 5G+ networks will transform healthcare by bringing care more directly to the patient," said Eric Tucker, senior director of technical products, GE. "We're already seeing how doctors have become more connected to their patients through the power of telemedicine or teleconsulting. Just imagine what will be possible when millions of medical devices and diagnostics tools can be reliably connected to help doctors deliver faster, more effective patient care." Tucker added, "Today, when you don't feel well, you call the doctor and schedule an appointment so that the doctor can examine you and figure out what's wrong. Depending on schedules, it may take several hours or even days before you get into the doctor's office. But with the development of wearable sensors and other medical monitoring devices that GE and others are innovating, a future scenario could well be that the doctor calls the patient to tell them something is wrong first. This is possible in a very limited way today. The power of 5G networks could make it pervasive." Here are some of the ways 5G could help enhance the patient experience in the coming years: Accelerating the development of wearable sensors and medical devices: Instead of a prolonged hospital stay, a patient could recover at home, but without any loss in the doctor's ability to monitor and respond to changes in their recovery. Transforming asset management and monitoring: In the modern hospital setting, it can often be difficult to rapidly locate necessary medical equipment. As 5G matures and more precise location monitoring is available, we envision a world in which medical assets are always where you need them. Elevating precision health with precision data: 5G will be critical to enabling improved data collection and analysis. It will also allow for more effective expert networks, enabling teleconsultation and AI-augmented decision making. What are people saying? "Bringing

AT&T's full spectrum of 5G connectivity to GE's Global Research facility is opening the doors for improved patient care, experience and outcomes. Next generation networks will play an important role in enabling personal, proactive and portable healthcare experiences," said Rasesh Patel, executive vice president and chief product and platform officer, AT&T. "A critical focus for the GE 5G testbed is democratizing technology and building solutions that work in the real-world setting," said SM Hasan, 5G Mission Leader, GE Research. "Having both flavors of 5G enables us to build solutions that span both high speeds, in building networks and the over-the-air 5G network available to AT&T customers." What else should I know? The deployment on the GE Research campus also expands the AT&T 5G footprint in the broader community, giving high-speed wireless access to more Niskayuna residents and visitors. In addition, these enhancements will bring Band 14 spectrum to the area – a nationwide, high-quality spectrum set aside by the federal government specifically for FirstNet®, Built with AT&T. FirstNet is designed to solve for long-standing communications challenges faced by the public safety community by allowing first responders to communicate with one another during everyday situations, big events or emergencies. FirstNet is the only nationwide, high-speed broadband communications platform dedicated to and purpose-built for America's first responders and the extended public safety community. Shaped by the vision of Congress and the first responder community following the 9/11 terrorist attacks, FirstNet stands above commercial offerings. It is built with AT&T in public-private partnership with the First Responder Network Authority (FirstNet Authority) – an independent agency within the federal government. The FirstNet network provides first responders truly dedicated coverage and capacity when they need it, including unique benefits like always-on priority and preemption and high-quality Band 14 spectrum. These advanced capabilities enable FirstNet to help fire, EMS, EMA, law enforcement and 9-1-1 personnel save lives and protect their communities.



Batelco Net Profit Up 9% in Q3, Revenues Grow 2%

Bahraini telecoms group Batelco has announced its financial results for the quarter and nine months ended 30 September 2021, reporting a 9% year-on-year increase in net profit for the quarter to BHD15.7 million (USD41.4 million), while net profit for the first nine months of 2021 reached BHD53.2 million, a rise of 6%. Revenues grew 2% y-o-y to BHD98.2 million in the third quarter and by 4% to BHD296.4 million in 9M21, mainly driven by y-o-y increases in fixed broadband, adjacent services and wholesale revenues of 15%, 15% and 3% respectively. Operating profit for the quarter, meanwhile, was 8% higher at BHD21.8 million (up 5% to BHD71.0 million in 9M21) and EBITDA stood at BHD40.6 million in 3Q21 compared to BHD38.2 million in the same period of 2020, an increase of 6%. For the first nine months of 2021, EBITDA rose 5% to BHD126.0 million, with a 'healthy' EBITDA margin of 43%. Batelco's total subscriber base stood at 3.9 million at the end of September, an increase from 3.8 million twelve months earlier, with international operations contributing 53% of both revenues (unchanged y-o-y) and EBITDA (up two percentage points). Commenting on the company's operational performance, Batelco CEO Mikkel Vinter said: 'I'm happy that we have maintained the momentum set in the first six months of 2021 to deliver sound financial results, with a year-on-year increase of 15% respectively

in fixed broadband and adjacent services and 3% increase in wholesale revenues contributing positively to this.'

Batelco announces Financial Results for the nine month period ended 30 September 2021



Batelco Wins 'Cloud Go-to-Market Initiative of the Year' Award at tahawultech.com Future Enterprise Awards 2021

Batelco has been recognized for its cloud-based technologies at the TahawulTech.com Future Enterprise Awards 2021, winning the "Cloud Go-to-Market Initiative of the Year" Award, in acknowledgement of the ground-breaking solutions developed by the Company. TahawulTech is a leading platform in the Middle East for IT content, covering stories across enterprise

technology, cybersecurity, and the region's IT channel industry, and bringing business leaders and technology decision makers together to share their transformation stories. The awards honor companies and individuals across the Middle East for their outstanding work in the IT sphere. They celebrate enterprises and IT leaders that have pioneered new solutions to

transform the business operations of their customers. The TahawulTech.com Future Enterprise Awards 2021 took place on October 17th at the Ritz-Carlton DIFC, coinciding with GITEX 2021, currently being held at the World Trade Centre in Dubai. The award was accepted by Batelco's Director of Enterprise Digital Solutions, Saad Al Rashed. The "Cloud Go-to-Market Initiative" award is given to a regional organization that has done the most to advance the uptake of cloud-based technologies over the past year, with Batelco's delivery of UCaaS and CCaaS in collaboration with Avaya contributing to the win. Abdulla Danesh, General Manager Enterprise Division at Batelco, said: "We are delighted to receive the "Cloud Go-to-Market Initiative of the Year" award. We are proud to be recognized for our cloud-based services that meet our customers' needs and demands for the best quality solutions. Our delivery is aimed at contributing to the growth of the IT segment, keeping our customers' requirements at the forefront," Mr. Danesh added.



Batelco's Customized Solution Designed to Enhance Cloud Network Connections

Following Batelco's introduction of AWS Direct Connect services in 2019 and SD-WAN (Software-Defined Wide Area Network) in 2020, the Company has created a customized solution that bundles both services. AWS Direct Connect provides an easy way for customers to establish a dedicated private network connection between AWS and Data Centers, offices, or colocation environments, while SD-WAN is an end-to-end networking solution that seamlessly blends MPLS, Internet, LTE and 5G technologies into a single communication channel that delivers improved visibility, agility, control and cloud integration. The new integrated solution, combining the two services to form one practical bundle, enables companies to connect their

branch offices and Data Centers to AWS environments through managed, secure, and optimized network services. Customers can additionally choose their preferred network route, whether through the Internet or through Private Connection, to utilize the services. Hani Askar, A/General Manager of Global Business at Batelco, said: "With the continuous drive of Cloud-first strategies, organizations with a number of locations ranging from their headquarters to branch offices need to ensure that all their employees have secure, fast, consistent network access, regardless of their location and device. Additionally, the increase of employees' mobility, combined with the rise of hybrid architectures consisting of private servers, public cloud and

virtual servers, has led to applications and data being hosted in both Data Center and Cloud environments. These circumstances complicated network traffic management and application delivery, adding strain to the traditional network." "Therefore, we are pleased to address this need and provide the essential support that enterprises require to enhance their migration into a more digital-centric world. The aim is to introduce new solutions that could potentially make sophisticated global networks easier to monitor, manage, and become more agile," he added. "We are proud to be the first in the region to provide our customers with such a solution that supports them in their Cloud-computing adoption," Mr. Askar concluded.



China Mobile Big Winner in HK Spectrum Sale

China Mobile Hong Kong emerged as the biggest spender in an auction of 255MHz of spectrum in the 700MHz, 850MHz, 2.5GHz to 2.6GHz and 4.9GHz bands which netted a total of HKD1.9 billion (\$244.3 million). The operator won 15-year licenses for spectrum in three bands, bidding a total of HKD648.5 million for 10MHz, 15MHz and 40MHz in the 700MHz (paired), 2.5GHz to 2.6GHz (paired) and 4.9GHz bands respectively, the Office of

the Communications Authority (OFCA) announced. China Mobile Hong Kong is now the largest holder of spectrum in the territory, with 20MHz of 1.8GHz, 30MHz of 2.3GHz, 35MHz of 2.6GHz, 60MHz of 3.5GHz and 80MHz of 4.9GHz. HKT spent HKD599 million acquiring 10MHz in the 700MHz band and 25MHz of 2.5GHz to 2.6GHz spectrum. SmarTone purchased 5MHz of 700MHz for HKD72 million, 7.5MHz of 850MHz for HKD82.5 million

and 40MHz of 4.9GHz for HKD222.5 million. Hutchison Telephone spent HKD252 million on 10MHz of 700MHz and 5MHz of 2.5GHz to 2.6GHz. The spectrum was spilt into 19 frequency blocks, with 70MHz unsold and no takers for 600MHz. SmarTone was the only operator to release a statement on the auction results, with CTO Stephen Chau noting the blocks came at a reasonable price.

China Mobile Exec Insists 6G Needs Massive Bandwidth

The head of 6G at China Mobile highlighted in a presentation at the Brooklyn 6G Summit spectrum will be the most important component for future networks, arguing the lower the frequency the better. Liu Guangyi said nationwide coverage will be important for operators to promote the new technology. For early deployments he suggested operators need more than 500MHz of contiguous spectrum in sub-10GHz bands. "If we can achieve that it will be very beneficial for building competitive 6G networks." He noted this, of course,

needs to be supported by mmWave and terahertz spectrum which can be switched on and off depending on demand. "In this way we can not only minimize power consumption, but also minimize variance among different sites and improve the user experience." Satellite coverage will be in important to supplement the terrestrial network for drones and autonomous aircraft. He outlined an integrated space-air-ground network which will support converged access technologies. Liu said China Mobile is working to introduce a

service-based architecture into the RAN to reduce time-to-market of new services and network functions. Earlier in the year the Chinese government outlined plans to accelerate the development of 6G through the IMT-2030 (6G) Promotion Group, which is similar the IMT-2020 (5G) Promotion Group that coordinated the 5G development. Industry players don't expect the technology to start to be deployed until at least 2030.

EVOTEQ to Deliver UAE's First Smart Bracelet Solution for Bee'ah's Street Cleaning Crew

In partnership with China Mobile International (CMI), EVOTEQ is primed to launch a smart bracelet solution powered by Narrowband IoT (NB-IoT), a first for the UAE to utilize this technology. Customized to meet the needs of Tandeef, the waste collection division of the Middle East's sustainability company Bee'ah, the innovative solution aims to enhance the safety and security of street cleaning crew, while improving management efficiency. The announcement came after a signing ceremony held today (October 19, 2021) between EVOTEQ and China Mobile International, on the sideline of GITEX 2021, a series of exhibitions and conferences that convenes consumers and traders on areas of information, communication, and technology. The smart bracelet detects vital signs such as heart rate and its temperature-sensor wrist strap enables monitoring of body and environment temperatures. This feature ensures the safety of workers, particularly in extreme weather conditions. The bracelet transmits alarms to the dashboard if the wearer's vital signs are not in the normal range, enabling early intervention and risk prevention. Furthermore, a one-tap SOS button also allows workers to request urgent on-site assistance in the event of an emergency. Jihad Tayara, Chief Executive Officer of EVOTEQ said: "We are very excited to launch this smart bracelet solution, which we believe is a first in the UAE. We are proud to leverage the expertise of China Mobile International, while advancing the digitalization efforts

at Bee'ah and solidifying their commitment in ensuring the safety of their employees." On his part, Colin Wang, Managing Director of China Mobile MEA Region, commented: "We are proud to partner with EVOTEQ and introduce our technology in the UAE for the first time. Since the smart bracelets are NB-IoT enabled, it uses cell phone towers to transmit data instantly and at low power. We are excited that EVOTEQ is using this cost-effective and scalable technology to create new and sustainable efficiencies for their clients." The smart bracelet solution also enhances management through an integrated dashboard that allows real-time location management, sending cleaning staff to areas where services are required, and guiding them to their designated sites. This feature enables managers to optimize crew deployment and identify areas that need further cleanup. Commending the

solution, Rafael Sanjurjo Lopez, CEO of Bee'ah - Tandeef said: "We look forward to sharing the smart bracelets with our street cleanup crew, enhancing their safety while enabling the next level of operational efficiency at Bee'ah Tandeef." Lopez added, "Our fleet of waste collection vehicles and crew already had digitally-enabled solutions to help optimise operations. With the addition of these smart bracelets, we have a digital solution that very specifically meet the needs of our street cleanup teams. Bringing together our workforce with this innovative solution, we are further accelerating our journey towards a zero-waste future in the UAE." The smart bracelet solution will be deployed by the end of 2021. EVOTEQ will first implement the solution for 1,000 crew members, and thereafter scale up to include Tandeef's entire street cleanup team.



Cisco Partners with COP26 to Support a More Inclusive and Sustainable Future

Cisco announces its partnership with COP26, the United Nations Climate Change conference taking place in Glasgow, UK, from 31 October to 12 November 2021. Throughout the event, Cisco technology will support inclusive debates and discussions on decisive issues for the future of our

planet. For those in Glasgow, world-leading and secure Cisco networking technology will provide connectivity across the whole venue. For those joining virtually, where this is permitted for delegates unable to be onsite, Webex will connect discussions, facilitate side conversations and press

conferences. To support inclusive and representative outcomes, almost all of the 3,000 anticipated physical sessions at COP26 will include a digital component, supported by Cisco Gold partner ITGL. "Cisco is proud to be helping policymakers and their teams from around the world

to join the most important climate negotiations to date. We believe that it's on all of us to ensure that the future is inclusive," said Fran Katsoudas, Chief People, Policy & Purpose Officer, Cisco. "The actions that we take to protect our planet today are foundational to achieving that mission. This is a defining moment for climate policy and the future of our planet, so we are incredibly proud to be partnering with COP26." Legislate for Webex, is a platform specifically designed to facilitate secure hybrid discussions for policymakers. Cisco's partners, ITGL and Davra, have developed a customized version of Legislate for Webex for the specific needs of COP26. Spontaneous ad-hoc discussions can be facilitated with secured break-out Webex sessions. Live interpretation and closed captioning is also available through Legislate for Webex, supporting multilingual participation. Webex's state-of-the-art security combined with Legislate for Webex's customizable nature makes it the ideal platform to host the COP26 future-defining talks. To help provide a seamless connectivity experience for up to 25,000

in-person attendees over two weeks, Cisco will be providing state-of-the-art, secure networking technologies, embedded with powerful visibility and network intelligence from Cisco ThousandEyes. All networking technology used for the event will be repurposed to ensure no equipment is wasted. COP President-Designate Alok Sharma said: "I am delighted to welcome Cisco to the COP26 family as a Partner for the UN climate conference taking place in Glasgow. We are committed to hosting a safe and secure in-person summit and our work with Cisco is a vital part of this. I look forward to working with Cisco and all our Partners ahead of the summit as we

ensure a successful and inclusive COP26." Wendy Mars, President, Cisco Europe, Middle East, Africa and Russia added "Cisco has developed the most inclusive platform for participants of meetings and events to interact, whether they are attending in-person or virtually. We are extremely proud of our team and partners in Europe who have been working to deliver the most secure and inclusive experience for COP26, home to the most important climate negotiations. Our technology and innovations are a critical part of the green and digital transition that will contribute to an inclusive sustainable future for all."



Cisco Establishes Industry Trust Benchmark for Digital Transformation

Cisco published its New Trust Standard, a benchmark for assessing an organization's trustworthiness as they embrace digital transformation. This new framework raises the bar for building trust with customers as work becomes hybrid, more data is collected online, and cyber threats increase. With supporting data insights from the Cisco 2021 Consumer Privacy Survey, the New Trust Standard establishes the following critical elements needed for organizations to earn, maintain, and grow customer confidence:

- **Zero-Trust architecture:** Keeping out attackers by challenging assumptions and verifying every connection, from every device, every time.
- **Trusted supply chain:** Being aware of every component, how it is manufactured, and where it has been – while working closely with suppliers to mitigate risk.
- **Data rights:** Stay ahead of evolving customer expectations and government regulations.

- **Transparency:** Being clear about what data is collected and how it is used; being open about incidents and issues as they transpire; and publicizing what is being done to rectify.
- **Certifications and regulatory compliance:** Demonstrating commitment to customers by earning trusted certifications awarded by independent third-party auditors.

"Trust is more than a sentiment," said Anthony Grieco, Cisco's Chief Information Security Officer. "Digital businesses need the ability to verify the trust and resilience of its solutions, operations, and actions. This framework helps us understand the core pillars in a process that makes trust quantifiable."

In the context of today's digital economy, these elements are critical to bolster consumer confidence. According to the Cisco 2021 Consumer Privacy Survey, which engaged 2600 respondents across 12 countries, consumers have a clear desire for transparency and control with

respect to a business' data practices. Other key survey highlights include:

- **"Privacy Actives":** Nearly one third of consumers have taken a more active role in protecting their privacy, including leaving organizations over their data practices or policies
- **Privacy Regulations:** Laws are regarded very positively around the world, albeit awareness remains relatively low in many countries
- **Protections During the Pandemic:** Most people want little or no reduction in privacy protections while supporting broad public health measures
- **Artificial Intelligence:** Consumers are very concerned about the use of their personal data in AI decision-making, and their trust is at stake

"Privacy is a cornerstone of trust," said Harvey Jang, Cisco's Chief Privacy Officer. "Transparency, clarity, and control are integral to building and maintaining consumer confidence."



Eutelsat Raises its Shareholding in OneWeb

Eutelsat Communications (Euronext Paris: ETL) has exercised a call option on a portion of the latest OneWeb funding round subscribed by Bharti, for a consideration of \$165 million, taking its shareholding from 17.6% to 22.9%. The transaction was undertaken on identical financial terms to Eutelsat's initial investment of \$550 million announced in April and completed on 8 September. The completion of this latest transaction is expected around year-end 2021 subject to regulatory authorizations. Since Eutelsat's initial investment, OneWeb has gained significant traction, both operationally, with a 100% launch success rate leading to nearly half of the constellation now in orbit, and commercially, with numerous distribution partnerships secured ahead of its partial entry into service, which remains on track for end-2021. In the meantime, as already announced by the company, OneWeb's capital structure has been further strengthened with an additional \$500 million commitment by Bharti completing the funding of its first-generation constellation and a \$300 million capital injection from South Korea's Hanwha. Following the exercise

of the call option and the completion of Hanwha's investment, Eutelsat's 22.9% holding will make it the second largest shareholder behind Bharti with 30.0%, thereby strengthening its position as a key shareholder and partner of OneWeb. Eutelsat's investment comes after it delivered a strong FY 2021 performance in terms of cash flow generation and leverage reduction, and is compliant with Eutelsat's financial framework. At 30 June 2021, Eutelsat's liquidity amounted to €1.9bn in cash and undrawn credit lines.

Commenting on the transaction, Rodolphe Belmer, Eutelsat's Chief Executive Officer stated: "We are hugely excited to grasp this opportunity to deepen our commitment to OneWeb. The significant progress it has made in the run-up to its now imminent entry into service, together with the vote of confidence demonstrated by the commitment of both its investors and future customers, makes us even more convinced of OneWeb's right-to-win in the low earth orbit (LEO) constellation segment."



Eutelsat's EUTELSAT 9B Satellite Selected by Zeonbud to Extend Its Broadcast Coverage Throughout Ukraine

Eutelsat Communications' popular 9° East position has been selected by Zeonbud to assure the distribution of its high-quality broadcast content in Ukraine. Zeonbud Limited is the nationwide licensed Digital Terrestrial Television operator transmitting Ukraine's 33 major channels covering a wide range of quality broadcast content. Launched in 2010, it reaches approximately

40% of the population and covers 95% of the territory. Through this long-term contract it will leverage the unparalleled coverage of the EUTELSAT 9B satellite over Ukraine to feed its DTT network, and potentially extend its offer to a DTH service beyond the reach of its existing tower infrastructure. The 9° East orbital location is home to a powerful satellite optimized for broadcast services and representing an ideal platform for channels seeking maximum reach into satellite homes and to terrestrial head-ends in the high-growth digital TV markets within its footprint, notably Ukraine. Commenting on the agreement, Philippe Oliva Eutelsat's Chief Commercial Officer said: "We are excited to welcome Zeonbud with its high-quality content offer as part of our line-up on EUTELSAT 9B, further consolidating our position in the dynamic Ukrainian Broadcast market." Irina Alyabyeva, Zeonbud's Chief Executive Officer, added: "We are delighted to partner with Eutelsat and leverage the 9° East position to ensure the best quality of service delivery of our of national channels to our viewers, and access the optionality of extending our reach through alternative distribution models."



Eutelsat's Konnect Africa Selected by Globacom to Bring Satellite Broadband to Underserved Regions of Nigeria

In the presence of the French President, Emmanuel Macron, Eutelsat Communications (Euronext Paris: ETL) and Globacom have signed at the Elysée Palace in Paris, a multi-year, multi-Gbps wholesale capacity contract, enabling Globacom to extend its coverage beyond the reach of its terrestrial infrastructure, leveraging the EUTELSAT KONNECT satellite. The service will be used to deliver high-speed broadband via satellite to businesses and communities in unconnected and underserved areas throughout Nigeria. Globacom, trading under the name Glo, is a multinational telecommunications company and the second largest operator in Nigeria, with a market share of circa 28% and over 51 million subscribers. In service since early 2021, EUTELSAT KONNECT is a new-generation High Throughput Satellite offering unprecedented operational flexibility. Delivering significant resources for broadband services with quasi-complete coverage of Sub-Saharan Africa, it addresses direct-to-user consumer and enterprise broadband services, with a comprehensive range of packages from bite-sized "pay as you go" vouchers through to monthly and annual contracts. Commenting on the agreement, Rodolphe Belmer, Chief Executive Officer of Eutelsat, said: "We are honored to have been

selected by Globacom, one of the leading telecommunications operators in Africa's most populous market, to extend the reach of its services. This agreement illustrates the unparalleled resources of our powerful EUTELSAT KONNECT satellite to satisfy the strong demand for connectivity in underserved regions throughout the African continent." Dr. Mike Adenuga Jr., Chairman of Globacom Limited,

added: "We are delighted to add satellite services to our portfolio, leveraging the state-of-the-art EUTELSAT KONNECT satellite to extend connectivity to even far-flung areas in Nigeria, in line with our mission to build Africa's biggest and best telecommunications network. The infrastructure will complement our Glo 1 submarine cable and extensive fiber optic layout across the country."



FACEBOOK

Facebook Growth Unabated by Headwinds

Facebook CEO Mark Zuckerberg used its Q3 earnings call to address challenges confronting the company and noted it is growing despite these major obstacles. The executive referenced recent changes made by Apple to protect user privacy, which make it much harder for Facebook and other services to deliver targeted advertising. "As expected, we did experience revenue headwinds this quarter", Zuckerberg said. Facebook warned investors about the

impact of Apple's changes more than a year ago. The social media company's revenue increased 35 per cent year-on-year to \$29 billion despite the iOS move, with net income of \$9.2 billion up 17 per cent. Daily active users rose 6 per cent to 1.9 billion. Facebook COO Sheryl Sandberg explained 60 per cent of video revenue was mobile-first, which it defines as clips of 15 seconds or less, or shot vertically. Zuckerberg addressed the growing chorus

of complaints about Facebook's handling of hate speech, claiming it is the victim of "a coordinated effort to selectively use leaked documents to paint a false picture of our company". The CEO spoke just a few hours after former employee Frances Haugen testified to UK politicians regarding claims Facebook protects profits rather than restricting hateful or provocative posts.

Facebook Completes Metamorphosis

Facebook changed its corporate name to Meta as part of a move to expand its presence beyond social media by creating a so-called metaverse. CEO Mark Zuckerberg (pictured) explained in a letter Facebook, Messenger, WhatsApp and Instagram services will retain their names, but focus on creating the new initiative. "From now on, we will be metaverse-first, not Facebook-first. That means that over time you won't need a Facebook account to use our other services", Zuckerberg explained. Meta will allow people to share "immersive experiences", with Zuckerberg citing holograms as an example. He tipped greater use of AR and VR devices, while noting mobile phones and PCs would still have a role. Meta hopes to bring 1 billion people into the metaverse in the next ten years. In a separate statement, Meta explained its corporate structure will not change but earnings reports would be

split by social media services and reality laboratories beginning in the current quarter. Nitesh Patel, director of wireless media strategies at Strategy Analytics, told

Mobile World Live the move is "pragmatic and visionary", as Zuckerberg will be able to focus on building "future value" through VR, AR and its existing services.



Huawei Appoints Steven Yi Regional President for Middle East

Huawei, a leading global provider of information and communications technology (ICT) infrastructure and smart devices, has announced the appointment of Steven Yi as President for the Middle East at Huawei. In his role, he will work with both regional and global ICT ecosystem partners towards Huawei's vision to bring digital to every person, home, and organization for a fully connected, intelligent world. The appointment comes as Huawei continues to strengthen its leadership role in the ICT industry, supporting nations in the region with their post-COVID recovery through the expansion of open, secure, and innovative digital infrastructure. "The Middle East and Africa region is an incredibly dynamic geography. Huawei has been proud to serve governments, telecom operators, enterprises, and consumers here over recent decades," notes Yi. "Today, national digitization plans around the fourth industrial revolution are truly breathtaking in their scope. With this in mind, Huawei will continue to invest in its partners and its people to serve the businesses of tomorrow, and assist nations in achieving their development visions." Yi will be responsible for directing the company's operations across all countries and all Huawei business groups in the region. He will guide the company's strategic direction, cultivate high-level stakeholder relationships, and play an active role in supporting the adoption of Huawei solutions. "It all starts with having a customer-centric mindset," adds Yi. "We must always deliver results while creating the best possible user experience for our customers. Huawei has been doing that successfully for more than 20 years in the region, and is committed to creating further value in a society empowered by connectivity and digital economy." As a longstanding Huawei



executive, Yi first joined the company in 1998. He is currently a member of the ICT Infrastructure Managing Board, member of the Supervisory Board, and president of

Huawei in MEA. He has previously served as Deputy CFO of Huawei in the region, President of the Sales & Delivery Finance Management Department, President of

Huawei's America area operations, and General Manager of the Huawei Pakistan Representative Office.

Huawei Announces New President at HUAWEI CLOUD Middle East

Huawei, a leading global provider of information and communications technology (ICT) infrastructure and smart devices, has announced the appointment of Frank Dai as the new President of HUAWEI CLOUD Middle East. In his new role, Dai will be responsible for overseeing Huawei's cloud business expansion in the region. The appointment comes as HUAWEI CLOUD business growth accelerates worldwide. In 2020, HUAWEI CLOUD ranked number five in the global IaaS market, and is currently the fastest-growing mainstream cloud vendor. HUAWEI CLOUD has established more than 20,000 partners, attracted 2.3 million developers, and released more than 4,500 applications in the cloud market. Steven Yi, President of Huawei Middle East, noted: "Computing power has become a new source of productivity with cloud services essential to smarter upgrades of government and enterprise organizations. Under Frank Dai's leadership, I am confident that HUAWEI CLOUD will continue to flourish,

while also contributing to a stronger cloud ecosystem in the region." Speaking on his appointment, Dai added: "HUAWEI CLOUD has been expanding rapidly in the Middle East for the last few years. The opening of our region in Abu Dhabi, combined with the digitization trends in the post-COVID era, will only accelerate this growth. I look forward to overseeing what will undoubtedly be one of the most exciting periods for our business in the region." With 10 years of experience, nine of which have been spent at Huawei Middle East, Dai has held several key positions in the company including President of Huawei Cloud and AI Business Group in the UAE. HUAWEI CLOUD is committed to growing with enterprises and partners in the Middle East, helping the region with its digital transformation through advanced technologies. The company aims to provide the best public cloud services in the region including optimal latency and ultimate experience. The availability of infrastructure in the region also addresses



data sovereignty and data security for the government and regulated industries. To support a wider cloud rollout, Huawei has unveiled several programs to help the region cultivate digital experts and build the local ecosystem. It recently announced a support program for developing 3,000 cloud experts in the region as part of the HUAWEI CLOUD Oasis Program.

Industry-First Commercial Long-Reach E-band Verified by China Mobile Inner Mongolia and Huawei

China Mobile Inner Mongolia field-tested Huawei's innovative long-reach E-band microwave solution in Ordos, Inner

Mongolia for optimal 5G backhaul. E-band works at 80 GHz, and is perfect for backhaul given its ability to deliver a high bandwidth

of up to 20 Gb/s and low delay. Given the high working frequencies, E-band supports only a limited transmission distance, creating a great challenge for operators to apply this band at the scale required to accelerate their 5G deployment. Huawei's long-reach E-band solution uses unique integrated high-transmission-power equipment and large-size intelligent beam tracking (IBT) antenna, providing a 12–18 dB higher link gain than industry's average. As such, E-band signals can reach 5G base stations more than 10 km away, basically meeting the backhaul distance requirements. In addition, the integrated design avoids the issues of complicated power supply and low reliability of the previous separate design, providing a strong support for scaled commercial deployment. Looking to maximize E-band's



advantages in transmission distance for quicker 5G deployment in the city, the branch of China Mobile Inner Mongolia in Ordos decided to deploy Huawei's innovative long-reach E-band solution in the Banner of Otog of Ordos. The one-

month long field test found that the links remained stable at maximum capacity, and services were not effected when the tower swayed in strong wind. Mr. Xu Cheng at China Mobile Inner Mongolia commented that "The long-reach E-band microwave

solution enables quick implementation of 5G backhaul solutions. By allowing for a longer transmission distance, long-reach E-band will significantly accelerate our 5G development."

Huawei Releases Business Results for First Three Quarters of 2021

Huawei released its business results for the first three quarters of 2021. During this period, Huawei generated US\$70.44 billion in revenue, and its net profit margin was 10.2%. "Overall performance was in line with forecast," said Guo Ping, Huawei's Rotating Chairman. "While our B2C business has been significantly impacted, our B2B businesses remain stable.

Through our ongoing commitment to innovation, R&D, and talent acquisition, and rigorous attention to operating efficiency, we are confident we will continue to create practical value for our customers and the communities in which we work." "We would like to thank our customers and partners for their ongoing trust and support," continued Guo. "With their collaboration,

and the excellent work and dedication of our Huawei team across the globe, we will together use digital technology to drive a greener, intelligent world." The financial data disclosed here are unaudited figures compiled in compliance with the International Financial Reporting Standards; exchange rate at the end of September 2021: US\$1 = CNY6.4703.



Paltel Group Upgrades Network Infrastructure with Juniper Networks for a Superior User Experience

Juniper Networks a leader in secure, AI-driven networks, announced that it has been selected by Paltel Group, Palestine's leading telecommunications company, to upgrade and develop parts of its network and infrastructure through installing a simplified and space/power-conscious network to deliver fixed and broadband services for its business and residential subscriber bases. Paltel Group has consolidated its ongoing co-operation with Juniper, in a strategic move where they will be working together to design and deploy this cutting-edge infrastructure. Paltel, and its mobile arm, JAWWAL, are increasingly focused on the quality of digital experience for their users through bringing about innovative new services regularly for domestic and international customers across voice, data and video. This partnership is part of their continuous work to meet their objective of delivering optimal experiences at scale while managing operational costs and space/consumption limitations. Paltel uses its network to provide a wide range of digital offerings, including fixed and mobile broadband, value-added services, business internet connectivity, data communications

and international peering services. The company decided to invest in a state-of-the-art infrastructure encompassing its broadband network gateway, international gateway and provider edge to ensure a cohesive, agile and scalable platform to underpin its fixed and mobile operations. Juniper was selected for its ability to build transformational architectures using intelligent, open solutions which enable operational efficiencies through automation and consistently deliver superior end-user experiences.

News Highlights

- Managing power constraints and limited space while maximizing throughput, bandwidth availability and scale was a key concern for Paltel when reviewing future requirements in the context of its existing platforms. It selected the versatile Juniper Networks® MX Series Universal Routing Platforms for its gateway and provider edge use cases because they are optimized for industry-leading 400G capacity, deliver high density in constrained environments, coupled with software-driven automation and feature-rich, secure capabilities.

- Paltel wanted to ensure that its investment will be protected for the future. Juniper is enabling them to build a foundational network that is equipped to grow and evolve easily, ahead of changing, unpredictable user requirements and ongoing increases in capacity demand driven by video and content consumption.
- In relation to bandwidth-hungry video and streaming content services, Paltel's strategic focus on user experience is further strengthened by the powerful provider edge infrastructure provided by the MX Series in the new design. Coupled with network automation capabilities that ensure streamlined, consistent centralized network management, this enables distributed content to reside closer to users which provides faster, lower latency and scalable services.
- Operational simplicity, continuity and future-proofing are further supported by One Junos Experience OS from Juniper that powers all of the routing and switching solutions deployed by Paltel. Junos provides the open, programmable automation framework and the ability to scale operations easily

on-demand, in line with Paltel's future business objectives.

- Juniper's local partner, BCI, worked with Paltel to install the new network.

"Paltel regards digital communications as a fundamental, non-negotiable element for the community that we serve. Therefore, the network platform has to be so much more than 'just' a set of products; it really is the enabler of a flawless digital experience across business, information

sharing, education, entertainment, public services, family life and a lot more for our customers every day. For us, this is a huge responsibility and Paltel is confident that Juniper is exactly the right partner to help us succeed." Ammar Aker, Chief Executive Officer, Paltel Group said, "Scale and performance have always been important attributes, and supporting today's digital requirements and expectations have led to increasingly complex demands on the

network. This has shifted smart service providers' focus on operational simplicity and service assurance driven by software automation as a business transformer. We think of this in terms of going beyond building better networks; it is about making the experience of networking better. I am very pleased that Juniper is working with Paltel to deliver the best possible network for its users."



Consumers in Turkey Benefit from Better CDN Interconnections

SpeedChecker, the mobile crowdsourcing company released a new report (July 2021) on the performance of mobile networks in Turkey. This report is part of an ongoing commitment from SpeedChecker to benchmark true user experience. The SpeedChecker report has been compiled using data from 66,626 unique mobile devices performing 98,275 tests in 1 week in July 2021. Consumers in Turkey

have benefitted from Cloudflare's recent upgrades of its Istanbul POPs for all MNOs. The top 3 MNOs have seen speed increases of up to 50% compared to our previous report in January 2021. The results have Turkcell 10 Mb/s ahead of Türk who are, themselves, 10 Mb/s ahead of Vodafone. Vodafone customers are still getting an impressive 20 Mb/s (up from 14 Mb/s in our January report and match

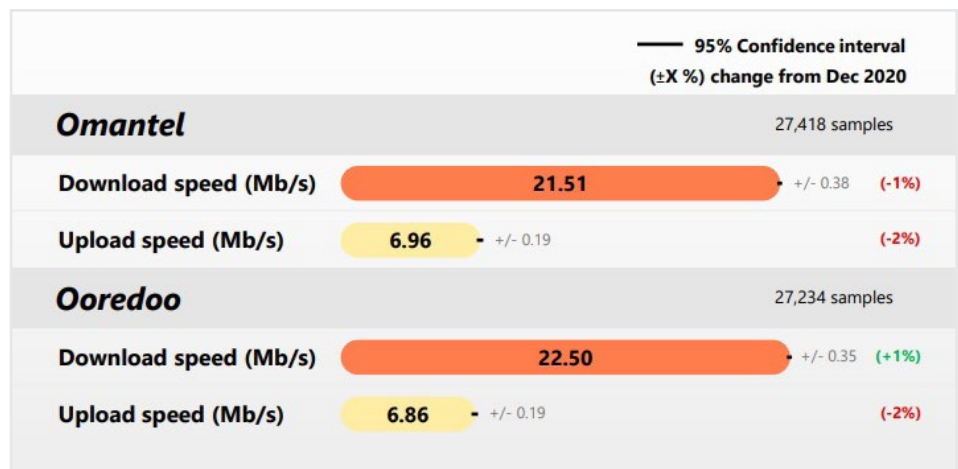
Türk in various parts of the country. Things can only get better as Turkey continues with its End-to-End Domestic and National 5G Communication Network Project. This is part of a national strategy (2019-2013) to transition to 5G and promote domestic production, machine to machine and the internet of things. Read more in the ITU 5G Country Profile.

SpeedChecker: Demand for 5G Expected to Grow as 5G is Launched in Oman

SpeedChecker, the mobile crowdsourcing company released a new report (June 2021) on the performance of mobile networks in Oman. This report is part of an ongoing commitment from SpeedChecker to benchmark true user experience. The SpeedChecker report has been compiled using data from 38,874 unique mobile devices performing 56,838 tests in 3 weeks in June 2021. There has been little change in Oman mobile speeds since our previous report in December 2020. There is nothing to choose between Omantel and Ooredoo with both offering excellent speeds in excess of 20 Mb/s. These speeds are set to improve as Omantel have followed up their successful tests of 5G in June with the first launch of 5G in Oman in September. This launch is in alignment with the ITU's goals of Growth, Inclusiveness, Sustainability, Innovation and Partnership (ITU Connect

2030). Ooredoo is working with Nokia to deploy FWA (Fixed Wireless Access) to offer 4G and 5G experience. They are also continuing to expand 1Gb FTTH to two new locations. A report by Ericsson ConsumerLab has highlighted the need

for the consumers in Oman to be better informed about the benefits of 5G to encourage uptake. The report states that 20 per cent more smartphone users would have taken up 5G had the knowledge gap been addressed. [\[4\]](#)



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ARTICLE

Open RAN to Create an Evolution in the Telecom Industry



Mohamed H Almarzooqi

Acting CTO-International
Etisalat Group



Open radio access networks (Open RAN) are the dominant topic of discussion in the mobile network world today. A movement to disaggregate wireless telecommunications RAN functions and create open interfaces between them, Open RAN promises a future in which long-term costs for mobile operators are sharply reduced, vendor competition is increased, network flexibility is enhanced, and opportunities for innovation are expanded.

As new use cases such as autonomous vehicles, smart cities, and automated factories emerge, mobile operators will need to support communication between a million devices per square kilometer (compared w/ 100k for 4G). MNOs will only be able to take advantage of these opportunities if they can scale up their networks affordably.

The Open RAN movement closely parallels the evolution from proprietary systems to open systems to virtualisation that occurred in the IT industry beginning in the 1980s. That earlier example offers convincing proof that moving away from proprietary hardware and software to interoperable systems is beneficial for all parties.

Companies across the mobile ecosystem agree. Mobile operators, network equipment manufacturers, chip makers, and software vendors around the globe are joining a growing number of Open RAN standards and advocacy organisations, and prominent Open RAN deployments have demonstrated the commercial viability of the technology.

The Open RAN architecture is purposely designed to meet the evolving needs of mobile operators.

What Open RAN means for operators?

The advent of 5G and its escalating demands for long-term investment in capacity, power, backhaul infrastructure, and more are forcing operators to take a hard look at how best to accommodate growth, ensure QoS, and simplify their architectures while getting the lowest network total cost of ownership (TCO).

Open RAN, the RAN Intelligent Controller (RIC), and automation offer an important way to address these pain points by helping operators lower their CAPEX and OPEX while expanding services into new markets, building their customer bases, and ensuring optimum quality of service (QoS) for subscribers.

For many, it's time for a wholesale reevaluation of the future of their networks, especially in urban markets. The current high cost of hardware, software and services has made it difficult to build a business case for network expansion into low average revenue per user (ARPU) markets.

Bringing modern mobile communications to less populated areas is a priority for many jurisdictions around the world. Access to high-speed Internet service is essential to supporting public education, local business, healthcare access, financial services access, and more. However, building out networks in remote communities requires major CAPEX investments that offer little or no near-term ROI.

Operators have advanced technology roadmaps and product capabilities but have not yet been able to leverage them fully because the rest of the market have yet to catch up. The delay between making technology investments and earning revenue from them has put pressure on operators' balance sheets.

There is not enough clarity on how best to use Artificial Intelligence (AI) and automation in network operation and planning to reduce cost and enhance availability. Vendors and Open RAN advocacy groups are working to ensure that AI and automation will be major factors

in making Open RAN more affordable and reliable, yet many operators are unclear on how best to proceed.

Growing competition will continue to put pressure on operators to find new ways to drive revenue and profitability. New players are entering the telecom market, particularly in the Internet of Things (IoT) and space telecommunications arenas. As new use cases such as autonomous vehicles, smart cities, and automated factories emerge, mobile operators will need to support communication between a million devices per square kilometer (compared w/ 100k for 4G). MNOs will only be able to take advantage of these opportunities if they can scale up their networks affordably.

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With Open RAN and its inherent features of virtualisation

The RIC and the automation are absolutely essential to ensure an Open RAN environment that delivers greater freedom of choice while keeping CAPEX and OPEX manageable for mobile operators. With the capabilities that Open RAN provides, mobile operators will gain the ability to fulfill the promise of new IoT and other emerging use cases in urban environments, expand their networks into new territories to bring 5G within reach of underserved markets, and the solid architectural foundation they need to plan effectively for the long term. Above all, Open RAN will ensure that all mobile residential and business customers have access to the communications solutions they need to improve and enrich their daily lives.

How automation and the RIC address operator challenges

Automated orchestration and management is key in order to achieve the benefits provided by a cloud-native Open RAN solution. Automation with modern tools and technologies can bring in several

advantages and help in different stages of network deployment starting with preparation to rollout a network or a new service, followed by creation to roll out the prepared plan, then operate and monitor the network once it is rolled out. Finally, terminate to shutdown/scale down the network or the service as required. This very much aligns with the business needs-driven network deployment model.

Etisalat among the first to implement Open RAN

Etisalat supports technology innovation and is often among the first mobile operators to test and implement new ideas that can enhance its competitive strength in the marketplace and deliver a better customer experience. That is why Etisalat is supporting Open RAN testing and evaluation with the goal of implementing an Open RAN solution once all technical aspects and conditions have been fulfilled.

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Etisalat Group, Saudi Telecom Company STC, Zain Group, Mobily, and du, from Emirates Integrated Telecommunications Company (EITC), joined forces recently to push forward the implementation of Open RAN solutions in their existing telecom networks, share their industry knowledge and experience setting a clear path to drive innovation for the ICT sector across the Middle East.

Mohamed Almarzooqi, Acting International CTIO of Etisalat Group said: "With Open RAN and its inherent features of virtualisation and automation Etisalat will be able to meet the needs of our customers cost-effectively in central Asia and beyond. An

Open RAN system will help us not only extend our initial investment, but also help us innovate and bring new services quickly now and in the future."

In April of 2021, Etisalat announced a partnership with Parallel Wireless to deliver central Asia's first Open RAN implementation. When completed, the implementation will be the world's first cloud-native O-RAN-compliant 5G 4G 3G 2G Open RAN solution. The solution is being developed in collaboration with Intel on a hardware platform based on Intel

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Xeon scalable processors by leveraging its AI/ML capabilities.

Such new hardware features combined with AI/ML tools and optimised Software Development Kits (SDK) software optimisations greatly enhance the performance of telco domain AI applications.

Etisalat Afghanistan achieved greater agility, resilience and portability

The easy scale-out and hardware decoupling of Open RAN in Afghanistan provided greater agility, resilience and portability across cloud environments for greater TCO savings.

Etisalat was able to replace legacy 2G/3G/4G systems with Remote Radio (RRUs) from the Open RAN radio hardware ecosystem with white box solutions that will be able to be upgraded to 5G in the future.

Etisalat's strategic goal is to build and grow wireless networks to provide next-generation digital services to its customers in the region by assembling viable solutions that build on an open and modular architecture, improving service agility through cloudification, reduce operational costs across geographically distributed sites with automation.

Etisalat's strategic goal is to build and grow wireless networks to provide next-generation digital services to its customers in the region by assembling viable solutions that build on an open and modular architecture, improving service agility through cloudification, reduce operational costs across geographically distributed sites with automation.

Etisalat expects that Open RAN will open the door to greater competition among vendors, enabling the company to evaluate solutions from a larger pool of telecom vendors. Greater competition and innovation will lead to improved OPEX and CAPEX. Etisalat also believes that software will emerge as the primary component in the telecommunications industry and will facilitate the introduction of AI to its portfolio of products. 🌱

(Excerpts from a white paper on the vital roles of the RAN intelligent controller and automation in Open RAN created by Etisalat and Parallel Wireless)

REGIONAL NEWS

Saudi Arabia Expands Digital Infrastructure Plan

Saudi Arabia's Ministry of Communications and Information Technology has announced four new cooperative initiatives to build and develop hyperscale data centers across the Kingdom. The move aims to leverage environmentally friendly and renewable energy generation projects currently underway across the country, reported Saudi Press Agency (SPA). The announcement comes as an extension of the Ministry's Saudi Vision 2030 multi-phase plan to transform the Kingdom from a factor-based to innovation-driven digital economy. This transformation is facilitated by the buildout and development of hyperscale data centers needed to accelerate digital transformation, increase the adoption of emerging technologies, boost technology and digital investments and drive the emergence of Saudi Arabia as a leading cloud services hub. The Ministry worked closely with a group of local and international companies to structure the right business principles for the buildout and operation, in line with the ambition of this multi-phased plan to accelerate the development of hyperscale data centers. The estimated capacity will be 1300 Megawatts and will leverage sustainable renewable energy generation and an expected investment of around \$18 Billion. The four new initiatives structured in cooperation with Malaz Financial Company, Dawiyat Integrated Telecommunications and Information Technology Company, Quantum Switch Tamasuk and Alfano Group, and follow an earlier announcement made by the Ministry and bring the total number of companies adopting the business principles up to seven. Deputy Minister for Infrastructure Bassam Al Bassam said: Today, we drive the buildout and development of hyperscale centers needed to increase the adoption and maturity of cloud services. This is a foundational component for digital services, and enables video game publishers,

e-sports tournament organizers, online broadcasters, content service operators and other digital platforms localize their services in Saudi Arabia. The Kingdom is rapidly progressing towards consolidating its position as a leading digital hub in the region by partnering with companies that can accelerate the pace of economic growth and ensure readiness to digitally empower this ambitious nation. Abdulsalam M Al Mutlaq, Chairman of Alfano Group, said: Our group, building on its international expertise in advanced renewable technologies, manufacturing and integration of digital solutions and digital infrastructure projects, is keen to deliver on the initiative of the collaboration with the Ministry that will transform the Kingdom into a leading cloud services hub. Abdulaziz Jazzar, Managing Director of Malaz Capital, which is backing Orjan Consulting Group, said: Hyperscale data centers are at the heart of the Kingdom's ambitious digital transformation plan to increase the welfare of people and the prosperity of our nation. Dawiyat Integrated Telecommunications and Information Technology Company CEO, Ahmad Sindi, said: Hyperscale data centers are one of the important components of enabling Saudi Vision 2030's digital transformation

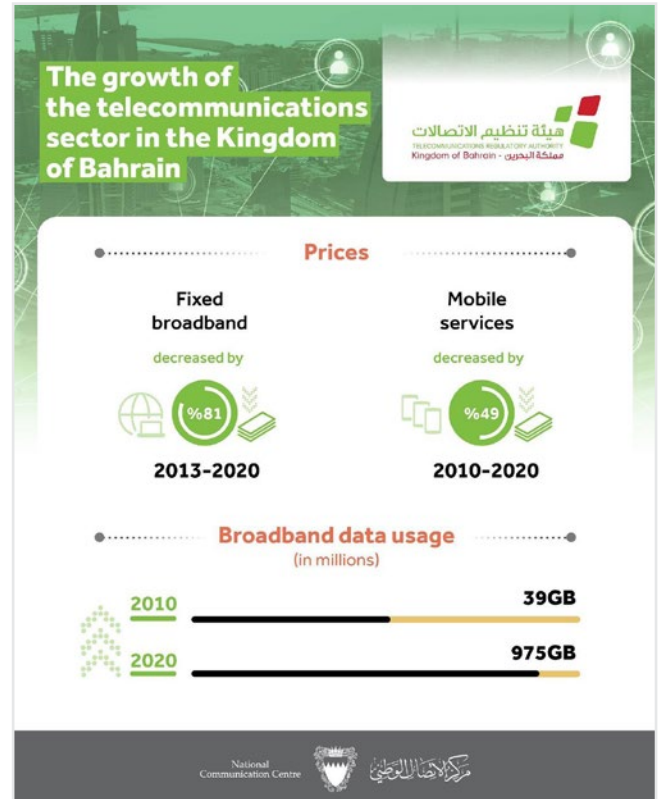
goals for the Kingdom. Such data centers are also a core component of enabling the 4th Industrial Revolution usage cases, and contribute to increasing local content across the ICT sector at the highest standards. Quantum Switch Tamasuk CEO and Managing Director Mathew Nathan, said: We are proud of our partnership with the Ministry of Communications and Information Technology on hyperscale data centers, and are ready to support the Ministry's digital transformation drive in the Kingdom with our financial position and expertise. The government of Saudi Arabia has made great efforts to stimulate the development of the country's digital infrastructure and enhance its role in connecting the globe. The government launched a nationwide initiative to connect 3.5 million households via fiber to the home (FTTH), covered 70% of the rural households in remote areas with wireless broadband networks, covered more than 74 cities with 5G technology and launched the first neutral Internet Exchange Point in Saudi Arabia (SAIX). The Kingdom is home to three of the largest telecom operators in the region and is the largest ICT and emerging technology market in the Mena region with a value exceeding \$35 billion as of 2020.



Bahrain Internet Among Cheapest in Region

Bahrain's Internet prices are the second lowest among Arab countries with services costing up to two per cent of an individual's income, it was revealed recently. Telecommunications Regulatory Authority (TRA) Acting General Director Shaikh Nasser bin Mohammed Al Khalifa added that a 95pc satisfaction rate was registered for mobile phone services last year – up from 82pc in 2011. He also disclosed that broadband prices reduced by 81pc from 2013 to 2020, while mobile service prices dropped by 49pc from 2010 to 2020. "There is a national plan for collaborative efforts between the government and the TRA, and we are in the process of implementing the goals of the Fifth National Plan which includes developing the telecommunications infrastructure," said Shaikh Nasser during a media briefing organized by the National Communication Centre. "We also want to place Bahrain on the regional map as a hub for IT in addition to providing high-speed Internet services at competitive prices." This year, we have achieved reaching an Internet speed of 1GigaBit per second which is a critical achievement for users who need high-speed Internet. "Mobile phone subscriptions rose from 1.5 million in 2010 to more than 1.7m in 2020, while portable broadband rose from 269,189 in 2010 to 1,861,240 in 2020 and wired broadband rose from 67,557 in 2010 to 148,050 in 2020. "These are all achievements that we must be proud of as Bahrainis." Shaikh Nasser also revealed that more wired broadband subscriptions (fiber optics) are expected following the separation from Batelco. He also said that in 2010 individuals consumed only 39GB of data annually which has risen to 975GB in 2020, and it is expected to increase further with new applications and more digitalization. According to the latest TRA report, the monthly price for broadband services has reduced significantly in the last six years – 50Mbps dropped by 66pc (from BD50 to BD16.8), 100Mbps by 68pc (from BD75 to BD24.15), 150 to 250Mbps by 69pc (from BD100 to BD31.5) while 300 to 500Mbps by 72pc (from BD150 to BD42). "We have also reduced the costs of international roaming by 85pc in the last five years through collaborative efforts with telecommunications regulatory authorities in the GCC with efforts underway for further reductions," he added. "We are also the first country in the Arab region to launch the service of switching service providers without losing or changing

telephone numbers which was an important step for clients. "The service previously took around 24 hours but this has now been reduced to an hour or an hour-and-a-half." Shaikh Nasser also said that 1,473 complaints were registered in 2019, 2,084 in 2020 and 2,009 up to the third quarter of this year with 96pc of the complaints resolved. He also added that plans are in the pipeline to strengthen networks in new housing towns such as Salman Town, Khalifa Town and East Hidd, among others.



Trilateral MoU Signed in Pakistan

University of Central Punjab (UCP), WorldCall Telecom Limited (WTL), and the UK based World Mobile Group (WMG) have signed a trilateral Memorandum of Understanding (MoU) for setting up a state-of-the-art Block Chain Centre of Excellence at the University of Central Punjab. The signing ceremony was conducted at the head office of World Call Telecom Limited on Friday, October 22 and was covered by the electronic and print media. A high-level delegation from UCP led by Pro-Rector Dr Nassar Ikram and Dr Ahmad Shabbar Kazmi Dean Faculty of IT, Zubair Anwar, Head UCP Centre for Professional Excellence and Abdullah Iqbal, Deputy Manager Coordination & Technology joined this notable event. The management team of WTL, including Babar Ali Syed, Chief Executive Officer (CEO), Agha Mansoor, Director, Effan Riaz Technical Director, Muhammad Azhar Saeed, Chief Finance Officer (CFO), and Faisal Ahmed, Executive Vice President Corporate Affairs, received UCP delegation and arranged a guided tour to their technical facilities after the signing ceremony.



Rapid Digitization Must be Collaborative to Ensure Both Prosperity and Sustainability in the Middle East



As more industries across the Middle East embrace digital transformation, a focus on collaborative development will be pivotal to extending the gains achieved to date, according to Huawei's top executive in the region. Steven Yi, the recently appointed President of Huawei Middle East, spoke with journalists from around the region on the sidelines of the GITEX Global 2021 summit held recently in Dubai, UAE. The executive noted how many governments and enterprises in the Middle East today have benefited greatly from being at the forefront of emerging technologies—be it 5G commercial deployments, adopting cloud capabilities, designing intelligent city infrastructure, and more. In cloud alone, approximately 81% of enterprises globally now use cloud-based applications, with Yi wanting to extend these benefits to countries in the Middle East. Huawei recently announced investing USD15 million to support cloud-oriented ecosystem development in the region, with HUAWEI CLOUD having already developed more than 100 local partners in the Middle East. HUAWEI CLOUD and partners are now covering 27 regions and serve over 170 countries. "In the past two years, the development of new technologies and the new normal under the pandemic has

accelerated the advent of a digital world," said Yi. The executive spoke on how that spirit of collaboration in the ICT domain can open new windows of socio-economic progress in line with countries' national development agendas. Yet it will also take a concerted effort to drive digitalization in ways that will create value for all. "Openness and globalization are irreversible trends. Almost every country has now formulated its national strategies, and the integration of advanced technologies such as 5G, cloud, and AI will significantly serve the targets of building digital economies and achieving these visions and targets," noted Yi. In this regard, Huawei has openly collaborated with government entities to contribute to their national visions and develop their ICT ecosystems. As a result, Yi confirmed that the company's business has continued to grow in the region. "We are grateful to customers and partners in the Middle East for their trust and support. We remain committed to customer-centricity in the Middle East, for the Middle East," he added. Though we are living in a digital age, Yi acknowledged that some are still left behind and are unable to benefit from emerging technology and the opportunities that it provides. Meanwhile, the UN has estimated that 68% of the world's population will live in urban areas by 2050, putting pressure on cities themselves to move towards more intelligent management and connectivity. "Talent is the cornerstone for a digital economy. While each Middle East country has different plans for different situations, talent cultivation must be our long-term strategy," commented Yi. The executive cited how Huawei alone plans to train 100,000 ICT talent across the Middle East over the next three years, working with local universities and relevant organizations and governments. In addition to growing the local talent pool, Yi recognized how the sustainable development of the

sector would require advancing open, transparent, and secure networks. For its part, in the past 30 years, Huawei has not had any major incident related to cybersecurity. "We call on all parties to cooperate in fields such as governance architecture, standards, and verification, sharing successful practices so as to enhance the trust and confidence of the society as a whole," added Yi. "Cybersecurity is a common challenge for the entire industry, for all companies and all countries. It is really a technical issue, and it needs technical solutions based on verifiable facts and objective methods." The launch of a 5G security working group earlier this year within the Organization of the Islamic Cooperation – Computer Emergency Response Team (OIC-CERT) is just one example of such collaboration. In addition to being a member of OIC-CERT, Huawei is one of the first telecommunication vendors to have its 5G equipment audited, tested, and certified under GSMA's NESAS/SCAS scheme, while contributing to developments of 3GPP's security specifications. Touching on 5G specifically, Yi reaffirmed that 5G deployments have been "quite successful" in the Middle East to date, with the number of 5G subscribers in GCC countries estimated to exceed 10 million by the end of 2021. Globally, 176 commercial 5G networks have been deployed. "Traffic is growing rapidly in the Middle East. Since the pandemic, industry digitization and online business have gained strong momentum. The next important step in 5G development is 5GtoB – applying 5G technologies to all industries," concluded Yi. The benefits of developing local talent, strengthening cybersecurity frameworks, and expanding 5G applications are further detailed in a new Huawei Intelligent World 2030 report, which provides a glimpse of what the world will look like in 2030 in healthcare, food, living spaces, transportation, cities, enterprises, energy, and digital trust.

Cyber Security Council Issues Directives to Strengthen Cyber Incident Response

The UAE Government's Cyber Security Council has issued directives to all governmental and semi-governmental entities in the country to adopt advanced solutions in the field of cybersecurity to raise national operational efficiency, ensure business continuity, and protect against any cybersecurity attacks that would pose a potential risk. In this regard, the council has entered into a strategic collaboration with Etisalat, one of the world's leading telecom groups in emerging markets, and Help AG, the cybersecurity arm of Etisalat Digital, as part of its continuous efforts to strengthen the UAE's critical infrastructure, improve its security posture and enhance the coun-

try's leading position in global competitiveness indicators. The Cyber Security Council is the official agency overseeing UAE's national cybersecurity framework, policies and implementation of best practices. The council has evaluated several security offerings provided by Etisalat and Help AG and approved Distributed Denial of Service (DDoS) mitigation solutions as one of the national standards to protect government and semi-government entities in the UAE against malicious cyberattacks. All entities shortlisted by the council will receive subsidized subscription rates for the service. Commenting on the partnership, His Excellency Dr. Mohammed Ha-

mad Al Kuwaiti, Head of Cyber Security for the UAE Government, said that all sectors – government and private – around the world are facing an unprecedented level of digital attacks which are increasing in size and complexity. Responding to these security threats requires close cooperation between various sectors in order to ensure the maximum degree of cybersecurity for the various vital sectors. His Excellency added that the partnership between the public and private sectors represented in cooperation between the Cyber Security Council and the most important service providers in the country, such as Etisalat, is an essential pillar to achieve the national security agenda of the UAE and enhance protection from potential cyber-attacks. Hatem Dowidar, Chief Executive Officer of Etisalat Group said the partnership with Cyber Security Council aims to protect government entities from malicious cyber-attacks and support the UAE leadership's vision of bringing the country at the forefront in terms of digital transformation. He added: "Our DDoS mitigation solutions aim to support the national cybersecurity strategy and ensure the highest standards of protection for UAE's critical infrastructure. This service provides a multi-layered protection around the clock by specialised teams so customers benefit from threat detection and mitigation on a real-time basis, keeping businesses running uninterrupted."



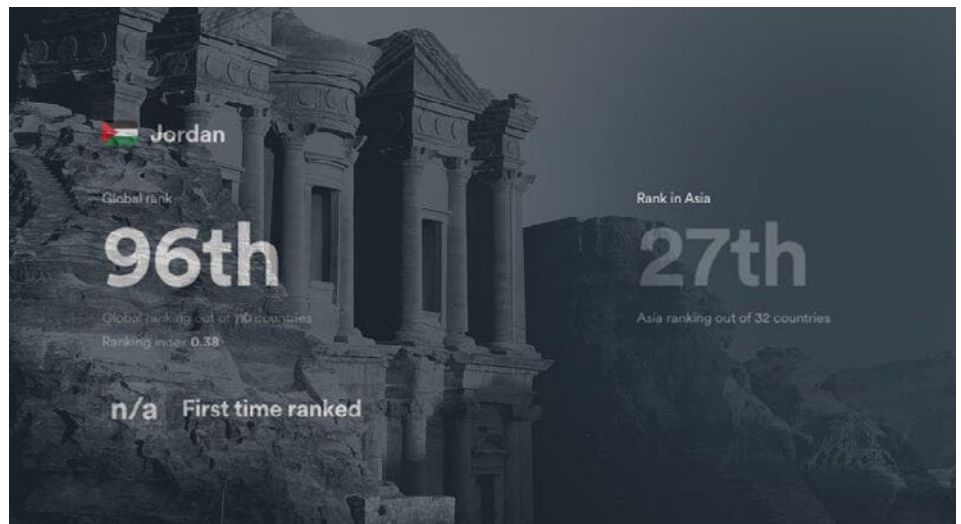
Jordan Ranks 96th in the World in Digital Quality of Life Index 2021

The third annual edition of the Digital Quality of Life Index (DQL) ranks Jordan 96th among 110 countries. Covering 90% of the global population, the DQL study is conducted by the cybersecurity company Surfshark and evaluates countries based on a set of five fundamental digital wellbeing pillars. Joining the study for the first time, Jordan shows its highest score in e-infrastructure (50th) but displays comparatively lower results in internet affordability (94th), internet quality (90th), e-security (100th), and e-government

(98th). Jordan ranks last (12th) among all indexed Western Asia countries, surpassed by Oman, Qatar, and Azerbaijan. The country shows a competitive rank in e-infrastructure, claiming 50th position in the world. The study shows that 85% of individuals use the internet in Jordan, which is the 40th best result globally. Additionally, the country ranks 38th in broadband speed growth. Since the COVID-19 pandemic, it has improved by 52% and now is 23.49 Mbps. However, Jordan has room for improvement in all

digital wellbeing areas, as its DQL index is 30% worse than the global average. The internet could be more affordable, as it ranks only 94th worldwide. People in Jordan have to work almost 10 hours to afford the cheapest broadband internet package, 4 hours more than the global average. E-security could also be better since Jordan ranks 100th in this pillar. The score is 50% worse than the global average. "Digital opportunities have proved to be more important than ever during the COVID-19 crisis, stressing the importance

for every country to ensure fully remote operational capacities for their economies," – explains Vytautas Kaziukonis, CEO of Surfshark. "That is why, for the third year in a row, we continue the Digital Quality of Life research, which provides a robust global outlook into how countries excel digitally. The index sets the basis for meaningful discussions about how digital advancement impacts a country's prosperity and where improvements can be made." In an all-around picture, 6 out of 10 countries holding the highest scores are located in Europe, following last year's trend. Denmark ranks 1st in DQL for the second year in a row and is closely followed by South Korea. Finland ranks 3rd, while Israel and the U.S. round out the top five of 110 nations that were evaluated. The bottom 5 countries are Ethiopia, Cambodia, Cameroon, Guatemala, and Angola. Regionally, the U.S. stands out as a country with the highest digital quality of life in the Americas, while South Korea takes the leading position in Asia. Among countries in Africa, people in South Africa enjoy the highest quality of their digital lives whereas Australia leads in Oceania, outperforming New Zealand in various digital areas.



Other significant findings of the report include:

Broadband is globally less affordable this year. Comparing countries included in both DQL20 and DQL21, people have to work 11% more (25 min more) to afford broadband internet in 2021. However, people have to work 29% less (28 min less) to afford mobile internet this year. The world's worst internet is the least affordable. People in some countries, such as Nigeria, Côte D'Ivoire and Mali require approximately a week's worth of

work to afford the internet. Investing in electronic infrastructure and electronic government contributes to people's digital wellbeing the most. The 2021 DQL research examined a total population of more than 6.9 billion people in terms of five core pillars and 14 underpinning indicators that provide a comprehensive measure. The study is based on open-source information provided by the United Nations, the World Bank, Freedom House, the International Communications Union, and other sources.

Libyan International Telecommunication Company, in Partnership with Microsoft, Launches Azure ExpressRoute Service in Libya

The Libyan International Telecom Company (LITC), one of the state LPTIC holding companies, launched in Tripoli, in partnership with the international company Microsoft, the Azure ExpressRoute service, which will cover the needs of the Libyan market, as part of the comprehensive trend towards digital transformation. The service will enable cloud computing provided by Microsoft will provide advanced features in the Libyan labor market, including backup services and the ability to access data at any time and any place and communicate in a reliable manner and high speeds, the LITC said. Commenting on the launch, Faisal Gergab, Chairman of LPTIC, said "Today we affirm the essential role that the telecommunications sector plays in the journey of progress and development that Libya seeks at the current stage,

especially through the strategic plan for digital transformation launched by LPTIC." Adel Abu Fares, Chairman of LITC said "The launch of the service today will help expand the private networks of customers using cloud services, which will contribute to covering their basic needs in the labor market where cloud computing allows information technology to be rented instead of buying, and thus will provide copies, which is a pioneering step taken by the LITC in Libya." Abu Fares stressed the company's commitment to support its customers by providing cloud computing that guarantees customers more ease of use, expansion and flexibility, instead of spending money and resources on old IT systems, and providing the best solutions in response to the evolving market requirements. On his part, Nizar Al-Haddar,

Regional Director of Microsoft Corporation said "We look forward to further empowering our partners and customers in the Libyan market, to be in safe, highly efficient and effective communication." The partnership will enhance the position of the LITC locally and regionally, as major customers of Microsoft services in Libya will be able to access new services, enabling and accelerating the digital transformation journey, using the functionality of private digital cloud service solutions, which is an infrastructure that is rented by a single customer, and provides higher level of security and control, along with the flexibility and cost savings of public clouds models that are expensive and save computing resources for multiple customers.

Winners of Internet of Things (IoT) The Communications and Information Technology Commission (CITC) and Monshaat Challenge Announced.

The Communications and Information Technology Commission (CITC) announced the winners of the Internet of Things (IoT) challenge, organized in partnership with the Small and Medium Enterprises General Authority's (Monshaat) Thakaa Center. The announcement was made at a ceremony attended by His Excellency the Governor of CITC, Dr. Muhammad bin Saud Al-Tamimi and the Governor of Monshaat, Eng. Saleh bin Ibrahim Al-Rasheed. Winning first place was Firnas Aero winning an SR200,000 prize for presenting an innovative product in "Transportation and Logistics" path, In second place was iOcean winning SR150,000 for their innovation in "Improve Quality of Life" path, In third place, winning SR100,000 was Qinwan for their innovation in "Green and Smart Buildings" path. Commenting on this occasion was Deputy Governor for Information Technology and Emerging Technologies at CITC, Raed Al-Fayez. He noted that the projects submitted in the challenge, in their various tracks, highlight the extent to which our national cadres possess ideas and innovations. "With unlimited support by our wise leadership, innovators can keep pace with the Kingdom's aspirations in innovation and strengthen the technology sector," he added. The challenge is one of the authority's initiatives to enable entrepreneurs to put forward smart solutions that will equip them to develop innovative products based on the IoT in the areas most in need, added Al-Fayez. This will further enable them to keep pace with the acceleration of innovation in emerging technologies in the Kingdom through unique, innovative ways to lead Saudi companies, contributing to achieving the Kingdom's Vision 2030 goals. From his part, the Vice Governor of Monshaat for Entrepreneurship, Eng. Abdulmajeed Al-Omrani said that the digital transformation has contributed to the development of digital infrastructure. It has improved the quality of life, facilitated access to services, and raised their efficiency. IoT-based technologies have provided incredible opportunities in the ongoing development phase we're experiencing, giving tremendous opportunities for many new innovative solutions. Al-Omrani added that the objectives of the IoT challenge intersects with the strategic objectives of Monshaat and CITC by spreading a culture of innovation and entrepreneurship. "Through this challenge, we strive to increase the number of IoT startup companies, find solutions to address existing challenges and create new economic opportunities, while encouraging local talents to innovate," said Al-Omrani. He added that Monshaat is keen on promoting innovation and developing the Kingdom's science and technology fields and products to support the transformation into a knowledge society, encouraging innovative and talented developers and entrepreneurs in scientific, technical, and intellectual areas. It is noteworthy that the IoT challenge



aims to enable entrepreneurs to design smart solutions, provide innovative products based on IoT technologies in the areas most in need of them. The challenge also encourages national talents to increase the number of technology companies in IoT, find solutions to address the challenges in the area, and create new economic opportunities.

UAE at the Forefront of Digital Technology and Connectivity

Etisalat Group's strong results are an outcome of our sincere efforts to drive growth and generate efficiencies despite unprecedented challenges in certain markets, thanks to the flexibility and agility in our efficient business model to deliver growth and a robust performance, said Hatem Dowidar, Group CEO, Etisalat, in an email interview ahead of the GITEX Global 2021. He said, "This was positively reflected in the financial results of the group with a market value of \$58 billion and revenues touching Dhs26.4 billion with a Year on Year (YoY) increase of 3.2 per cent and consolidated net profit after federal royalty amounting to Dhs4.7 billion." Dowidar said, "These results are a reflection of our continuous endeavor to work in line with our strategic vision to 'Drive the digital future to empower societies' while remaining focused on our core business and exploring new growth opportunities ensuring that we are well geared for the future with our digital capabilities and solutions. On the operations front, despite the challenges faced from the pandemic last year our robust plans on business continuity and crisis management helped in maintaining growth and business across operations." He added, "Many telcos faced major challenges from global markets but UAE is at the forefront of digital technology and connectivity and has the highest fiber penetration globally enabling consumers

and businesses to study and work remotely during this period. Despite these unique market conditions, Etisalat managed to grow positively due to the efficient management of our operational expenses not affecting the quality of services while the increase in revenues was slightly affected with investments focused on connecting all homes with fiber and launching enhanced offers for customers to upgrade their home and mobile plans at no extra charge to support them to work and study from home." Dowidar said, "We are confident that Etisalat Group will maintain its leadership position in the telecom industry with an unwavering commitment to key strategic priorities to enable a future driven by digital innovation across our operations. At Etisalat, we are determined to continue the incredible transformation we have been experiencing in 2021 across our markets and believe that our major sustainable drivers of growth at Etisalat remain to be our international portfolio and efforts in the digital space. With regard to the latter, there is strong potential in the cloud, IoT and cyber security space, which will fuel future growth and rebalance telecom revenues and at the same time provide returns to shareholders and create added value for customers. With people working and studying from home, there was an exponential increase of 40 percent in the use of home internet during the pandemic."

About this year participation in GITEX GLOBAL, he explained, "Etisalat's theme this year 'Shaping the new Digital Era' highlights how in the new digital economy we can leverage technology to be agile in the face of disruption and create new business models— post-COVID, purpose driven, sustainable and inclusive. It is about empowering the next era of digital technology where 5G communication, AI, IoT and machine learning enable a new way of living. GITEX gives us an opportunity every year to meet with peers and technology leaders from across the world to share our experiences giving us an opportunity to showcase capabilities of telecom and technology to transform every industry from transport, retail, healthcare, education to fashion, automotive, utilities and entertainment." About the company's overall performance, he added, "The successes during the first half of the year was not limited to financial performance but also to the global achievements made in our infrastructure and networks. Etisalat's network was recognized the world's fastest network and fastest fixed network in the GCC. These efforts have greatly impacted the country's overall performance resulting to the UAE being ranked the fastest country in the world in January-June 2021 for average mobile download speed and was the only country from the MEA region to be ranked in the top 20 countries globally in fixed broadband index with the fastest average download speeds, as reported on the Speedtest Global Index. "He said, "This global recognition is a result of the relentless efforts of UAE leadership for the past 50 years, and is a shining example of nation building with the growth and development achieving endless success. This is also in line with the late Sheikh Zayed's vision to lay the foundation for future generations to build on. Thanks to the support of the UAE's wise leadership, our partners, and the regulatory authority Etisalat achieved leadership with the launch of the 5G network and succeeded in achieving the highest penetration rate in Fiber to the Home (FTTH) globally for a third consecutive year." About the group global portfolio performance, Dowidar said, "Etisalat Group today operates across 16



markets in Middle East, Asia and Africa in addition to the UAE, the group also operates in Saudi Arabia (Mobily), Pakistan (PTCL), Afghanistan (Etisalat Afghanistan), Egypt (Etisalat Misr) and Morocco (Maroc Telecom) with its operations in Benin, Burkina Faso, Central African Republic, Gabon, Ivory Coast, Mauritania, Mali, Niger, Chad and Togo. Many of our markets witnessed strong performance during the first half of the year resulting in a YoY increase of 7 percent bringing the aggregate subscriber base to 156 million. This reflected positively on the profits of the company that amounted to Dhs4.7 billion representing an increase of 3.9 percent over the previous year." He said, "The Group is continuously investing to develop the required capabilities across its footprint to address the evolving requirements of the various customer segments. To fuel growth both in the home market and internationally, Etisalat will continue to develop unique competencies, both organically as well as through selected mergers and acquisitions in priority areas. As part of this strategy, in 2020, Etisalat Digital, a dedicated business unit of the Group, completed the acquisition of Help AG's businesses in the UAE and KSA. Help AG is one of the leading cyber-security companies in the Middle East and

North Africa (MENA) region." About the company goal for this year, he explained, "This year Etisalat has remained focused on pursuing its vision of transitioning to a complete integrated ICT/digital solution provider securing its position as an industry leader by working on our main goals: reshaping the lives of consumers, accelerating the economic growth of businesses and enhancing the competitiveness of the countries in which it operates. With changing market dynamics, the focus was combining organic and inorganic growth opportunities to position Etisalat as the regional leader in Internet of things (IoT), cloud, security, edge computing and Artificial Intelligence (AI). This was achieved by capitalizing on opportunities such as megaprojects and smart city and Industry 4.0 projects across multiple verticals, including health, education, logistics and oil and gas (O&G). We also focused on taking all necessary measurements to protect our employees and provide the latest solutions to our customers." He added, "Etisalat's 5G network will amplify the use of these futuristic services, target new opportunities, and implement 5G use cases across verticals. Our teams are constantly working on opportunities to deploy services based on emerging

technologies such as IoT, cloud, big data, AI, robotics, autonomous, AR/VR, becoming a trusted partner that supports transformation in a digitally disrupted and fully connected world. Expo 2020 is a prime example of Etisalat's solutions aimed at enhancing the digital experience for visitors with technologies such as AR/VR. Services being hosted on the private and public clouds are one of the key priorities to provide redundant, fast and available connectivity between Expo 2020, its site offices, partners, public and enterprise services. Our IoT platform connected over 1 million SIMs with renowned entities such as Emirates Transport and Xtramix for fleet solutions and Ministry of Interior for Hassantuk Smart Fire Alarm solution, which have had a massive impact on saving lives and enhancing the state of security for the country." About Etisalat's sustainability initiatives and objectives, he explained, "We believe in the positive impact that technology can bring and strive to adopt technologies that ensure long-term benefits to our environment and the climate. Sustainability remains at the core of our strategy and operations aligned with the UAE Vision 2021 and the United Nations Sustainable Development Goals."



Lighting up the Future

Building a Fully Connected, Intelligent World



ARTICLE

How the Middle East Can Lead the Evolution of the Digital Economy

While many organizations in the region are now advancing the digital transformation agenda, it is an opportune time to reflect on what this journey means when performed at scale. Analysts have predicted that more than 65% of global GDP could be digitalized as soon as 2022. On both a national and international level, the fruits of digitization benefit everyone, and the Middle East is actively contributing to this thriving and global digital economy.

The COVID-19 pandemic was a spark that triggered a full-on digitization process in every corner of the region. In collaboration with our industry partners, we have found that the combined application of innovations in 5G, AI, cloud computing, and IoT are already producing significant gains in helping nations to rebound from the pandemic.

Indeed, much has been achieved in recent decades when cultivating advanced ICT infrastructure in the Middle East. Countries in the region were among the first in the world to embrace 5G, as just one example. Many are now also at the forefront of domains such as AI and cloud computing, as well as smart city development. The COVID-19 pandemic was a spark that triggered a full-on digitization process in every corner of the region. In collaboration with our industry partners, we have found that the combined application of innovations in 5G, AI, cloud computing, and IoT are already producing significant gains in helping nations to rebound from the pandemic.

These technologies will soon underpin all business sectors in the Middle East because of their ability to enhance productivity, increase sustainability, and create new value in both existing and future industries.



Steven Yi
President for the Middle East
Huawei



As a result of a new generation of ICT technologies, regional telecom operators have seen faster revenue growth and have been able to open up new revenue streams within other verticals. In the O&G and power generation sector, drones and robotic patrol machines are substantially improving maintenance and inspection productivity. In ports, crane operators are increasingly moving to office environments, and can now oversee multiple cranes simultaneously in real-time with full data visibility, reducing operational expenses.

Let us look at just a few scenarios where this is taking place currently. As a result of a new generation of ICT technologies, regional telecom operators have seen faster revenue growth and have been able to open up new revenue streams within other verticals. In the O&G and power generation sector, drones and robotic patrol machines are substantially improving maintenance and inspection productivity. In ports, crane operators are increasingly moving to office environments, and can now oversee multiple cranes simultaneously in real-time with full data visibility, reducing operational expenses. Today's ICT solutions are also enabling health organizations to better share data across hospitals, government departments, and even among countries.

Perhaps most importantly, evidence shows that digital innovation of this kind has the net effect of creating more jobs. Huawei commissioned a team at the London School of Economics and Political Science to study this precise topic in recent years. While some jobs will undoubtedly be lost with widespread automation, for example, the study found that the situation should be manageable for the economy to absorb these workers into other employment. The

study also found that the countries with some of the highest use of automation through robots—countries like South Korea, Germany, and Japan—often have comparatively low unemployment rates.

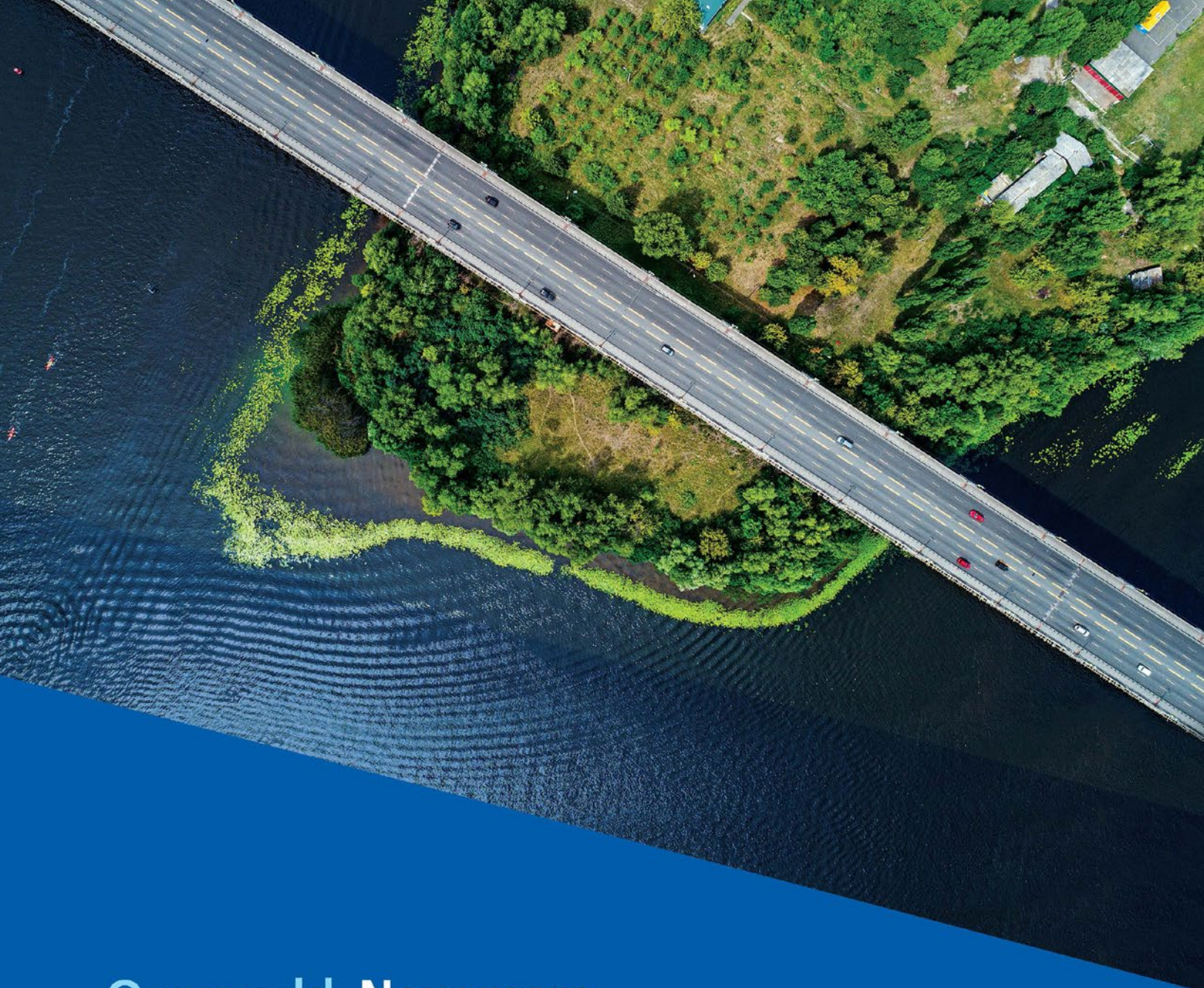
To realize the potential of this digital economy moving forward, it must by default be an open and transparent ecosystem. Our experiences over the last year in particular have made nations realize more clearly that we are interdependent as a global community. Global integration and economies of scale can make the whole world more efficient. To achieve these gains, we must work together openly and share both the risks and value. That means applying unified technology standards, as well as developing shared protocols for

emerging technologies and applications. This is the only route to shared progress and prosperity.

Nations must also develop value-creation paths that align with their most suitable archetypes. These paths must recognize nations' inherent strengths while still being anchored by their economic and technological realities. By 2023, it has been predicted that 75% of organizations globally will have comprehensive digital transformation implementation roadmaps, up from just 27% in 2020. The cultivation of a larger, more inclusive ICT talent ecosystem will be pivotal in the Middle East in particular to support these value-creation paths.

Ultimately, the principle of creating an open, cooperative, and standards-based technology ecosystem within the Middle East is speeding up the gains that both industries and nations are able to reap. We are encouraged to see almost all national development frameworks now prioritize this joint-innovation mindset. Through deeper cooperation, the technology sector can create lasting value for all nations, empowering people, enriching home life, and supping nations in the realization of the national development visions. 🌍

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SATELLITE NEWS

Viasat Expands Brazilian Business Jet In-Flight Coverage with Telebras Satellite Capacity

Viasat will use capacity from Brazilian state-owned telecommunications services provider Telebras to expand its Ka-band In-Flight Connectivity (IFC) coverage for business jets in Brazil. The satellite operator said Tuesday that the extra capacity would come from Telebras' SGDC-1 (Geostationary Satellite for Defense and Strategic Communications), its Ka-band partner satellite. With the expansion, Viasat said it can now provide service to more than 90% of Brazilian business aviation flight paths. "Business aircraft operating in the country will be able to access Viasat's advanced connectivity from takeoff to touchdown — at speeds typically greater than 20 Mbps — enabling passengers to do the same connected activities in the air as they do on the ground, including video, music and TV streaming, video calls, VPN and more," Viasat said in its coverage expansion announcement. Moving forward, the operator is set to provide expanded coverage and capacity across parts of Europe and the Middle East on the Avanti Communication Group's HYLAS-4 and HYLAS-2 satellites. This expansion was originally announced as part of a deal it struck with Avanti in June. In the announcement, Viasat said it would begin to leverage Avanti's satellites beginning this month. "We're excited to bring additional coverage for our advanced in-flight connectivity solution to the business aviation markets in Brazil and, in the near future, Europe and the Middle East," said Viasat Business Aviation Area Director Claudio D'Amico. "This coverage expansion will enable us to extend connectivity for existing

operators, pursue new business in these important regions, and further establish Viasat's market presence globally." Viasat then plans to augment coverage and capacity in these regions with its upcoming ViaSat-3 Ka-band satellite constellation — comprised of three satellites that are scheduled to be launched to Geostationary Orbit next year. The satellites are designed to provide broadband connectivity with speeds of 8-plus Mbps to global commercial, enterprise, and government customers.



Verizon Partners with Amazon to Offer Satellite Internet in Rural Areas

US operator Verizon teamed with Amazon to develop connectivity systems for underserved communities through the latter's Project Kuiper Low Earth Orbit (LEO) satellite network, in addition to jointly working on global enterprise services. In a statement, Verizon revealed work had begun with Amazon's Project Kuiper team to develop technical specifications and define preliminary commercial models for a range of connectivity services for US consumers and global enterprise customers operating in rural and remote locations. Amazon committed \$10 billion to Project Kuiper, highlighting the e-commerce giant's push to increase global broadband access through a constellation of 3,326 LEO satellites designed to serve households, schools, businesses and other organizations where internet access currently limited. Project Kuiper is Amazon's initiative in an ongoing global space race, in which players including entrepreneur Elon Musk, Facebook and global operators are pushing to use satellite to

improve connectivity in underserved areas. Verizon detailed a desire to combine Amazon's LEO satellite system with its wireless technology and infrastructure. Initially, the duo will focus on expanding Verizon's data networks using backhaul from Project Kuiper through antenna developments already in the works. Engineering teams are also working to define technical requirements to help extend fixed wireless access coverage across the US. The companies explained they will work to develop connectivity solutions for domestic and global industries including agriculture, energy, manufacturing and transportation, using the operator's private networking and edge compute set-ups. Verizon chairman and CEO Hans Vestberg stated the future will be built on 5G, which "must be accessible for all". "Today's announcement will help us explore ways to bridge that divide and accelerate the benefits and innovation of wireless connectivity".

SES Sets Up Satellite Quantum Communication R&D Lab

European satellite operator SES has created a joint R&D lab with the University of Luxembourg's Interdisciplinary Centre for Security, Reliability and Trust (SnT) to look at the next generation of high-bandwidth secure satellite systems with quantum communications. The agreement will use Luxembourg's R&D and SES's industry expertise to explore next-generation technology for high bandwidth satellite systems and multi-orbit capabilities, such as SES's Geostationary and Medium Earth (MEO) orbit fleet. This will also give SES and SnT early access to Luxembourg's MeluXina petascale supercomputer. This will be used to test algorithms for radio resource allocation for broadband satellite communications systems to maximize the system performance and to dynamically assign the resources based on user traffic demands. "The past 11 years has seen us achieve great success in our

research activities with SES, spearheading new technologies with impact on standardization, satellite-terrestrial integration, 5G and more. We are delighted to expand the collaboration and broaden into new areas that will benefit information and communication technologies both in Luxembourg and beyond," said Prof. Björn Ottersten, Director of SnT. "This partnership extension comes at a very important time

as we are putting in place next-generation space and ground systems to enable the growing connectivity demand in the high-performance networks," said Ruy Pinto, Chief Technology Officer at SES. "Not only do the R&D activities with SnT benefit Luxembourg's initiatives, this will also set the path for scaling them on a global level, leveraging SES's multi-orbit capabilities and services delivered around the world."



SES Sends New Half-a-Billion Satellite into Space

Luxembourg's SES sent its biggest and most advanced satellite in the company's history off into outer space on Sunday, it said, after a last-minute delay. The SES-17 - a half-billion-euro investment that will enable passengers and crews to use WiFi aboard planes - lifted off from its launch pad in French Guiana aboard an Ariane 5 rocket. The flight for the satellite, ordered in 2016, ran into a one-day delay due to additional ground checks, France's Arianespace had said on Friday. SES-17 will now spend several months finding its permanent slot hovering 36,000 km over the American continents, the company said. The satellite's main mission will be to sell access to high-speed Wi-Fi connections for airline passengers and crews while in flight. The spacecraft will cost Société Européenne des Satellites more than €500 million to build, launch and operate and marks a milestone in SES's bet of billions of euros on its future. Data network access to and from points around the world made up 41% of SES revenues in 2020, the company reported in February. The segment is expected to grow rapidly, at the same time that money from TV

broadcasters that currently provides SES with the bulk of its income slowly fades. The giant new satellite also is expected to be integrated with nearly a dozen new units below it, all orbiting Earth at about 8,000km. The first handful of these middle-Earth-orbit craft are to be launched later this year and more in early 2022, SES said. These O3b mPower satellites - which feature

connections to the Earth's surface that are milliseconds faster than the farther-away SES-17 - will be integrated with their bigger cousin to reach similar customers. These include cruise and cargo ships at sea; jets in the air; oil, gas and mining sites in remote locations; mobile phone network operators and military forces and government agencies, SES said.



Data-Driven Satellite Ready to Launch

The SES-17 satellite, built by Thales Alenia Space, introduces cutting-edge innovations that were developed with ESA's program of Advanced Research in Telecommunication Systems to support the European space industry in the highly competitive global telecommunications market. A fifth-generation digital transparent processor developed by Thales Alenia Space with the support of the French Space Agency CNES and ESA is at the heart of this high-speed "switchboard in the sky" satellite. The unit can be fully programmed while in orbit, to route signals between people on board planes to the ground, for example. SES-17 will have nearly 200 user beams that can be connected to any other beam at any time. This combined with the ability to dynamically change the power and frequency allocation of any beam means that the satellite can adapt to SES's customer evolving needs in real time. This demanding mission is only possible thanks to a novel cooling system that was developed under the industry-initiated Spacebus Neo Partnership Project. The system is the first mechanically pumped loop to be used on large commercial telecommunications satellites. The Spacebus Neo program is a Partnership Project with satellite manufacturer Thales Alenia Space, ESA and the French Space

Agency CNES. The project includes the full end-to-end system to manage the satellite and ground network resources, a key aspect for the next generation of very high throughput satellites. It allows for the reconfiguration of the payload, adapting to user needs in real time. SES-17 is the third Spacebus Neo satellite and is due to be launched together with Syracuse 4, another Spacebus Neo satellite, on an Ariane 5 on 23 October. ESA's Neosat program comprises both

Spacebus Neo by Thales Alenia Space and Eurostar Neo by Airbus. It includes development up to in-orbit validation of new satellite product lines for both companies, allowing the European space industry to deliver competitive satellites for the global commercial satellite market. To date, 15 Neosat satellites have been sold by European industry to six satellite operators, generating exceptional return on investment to industry and participating states.



Starlink Seeks LEO Satellite Spectrum Boost from Vodafone UK

SpaceX's Starlink service, which delivers ultrafast low latency broadband across the world via a mega constellation of satellites in Low Earth Orbit (LEO), is reportedly one of several operators that may be "close to striking a deal" to secure some of Vodafone UK's radio spectrum to help boost their network capacity. Starlink has already launched around 1,800 LEOs into space (over 1,600 are active) and their initial plan is to deploy a total of 4,425 by 2024. At present, beta customers in the UK typically pay a hefty £89 a month for the service, plus £54 for shipping and £439 (\$499) for the kit (dish, router etc.). But for that you can expect unlimited usage, fast latency times of 20-40ms, downloads of c. 50-150Mbps

and uploads of c.20Mbps (such figures should improve as the network grows). The final commercial launch of Starlink is expected anytime now, but meanwhile it's been reported (Telegraph) that they may be "close" to licensing some radio spectrum from Vodafone UK in order to boost their network links and capacity (this could result in improved performance for customers). A spokesperson for Vodafone said: "Regarding satellite spectrum ... we are in talks with multiple operators. We're close to striking a deal." Vodafone has previously informed Ofcom that they were open to such talks with satellite operators, with the focus being on their holdings in the 28GHz band. Interestingly, the 28GHz

band had previously been indicated as one that could be used for multi-gigabit speed UK mmW (millimeter wave) based 5G mobile or fixed wireless broadband services, but the limited coverage and high cost of deployment in that band has stunted progress. The regulator likes to see spectrum holdings being properly utilized, so this may be one way for Vodafone to make some money off it, while still retaining control. At present, it's unclear whether Starlink are after all of their holdings in the band or only part of it. Nevertheless, SpaceX are constantly on the hunt for more spectrum and ground stations to help improve their network coverage and performance.

OneWeb Launches 36 Low Earth Orbit (LEO) Satellite in Orbit

The Low Earth Orbit (LEO) satellite communications company OneWeb backed by India-based Bharti Enterprises has launched 36 satellites, bringing the total in-orbit constellation to 358 satellites, the company said. The satellites were launched into orbit atop a Russian-built Soyuz rocket from the Vostochny Cosmodrome in a mission operated by French company Arianespace. The Liftoff occurred at 5.40 a.m. EDT (3.10 p.m. India time). OneWeb is also one of the founding members of the recently launched Indian Space Association (ISpA). Rahul Vatts, Chief Regulatory Officer Bharti Airtel and Director – OneWeb India is the Vice Chairman of the ISpA. The London-based OneWeb is building a constellation of 648 LEO satellites, which will deliver high-speed, low-latency global connectivity. The new mission had a total duration of three hours and 51 minutes and included nine separations of four satellites each, which will raise themselves to their operational orbit.

"Once deployed, the OneWeb constellation will enable user terminals that are capable of offering 3G, LTE, 5G and Wi-Fi coverage, providing high-speed access globally – by air, sea and land," Arianespace said in a statement. OneWeb aims to reach global service by 2022 and is seeing growing demand from telecommunications providers, ISPs, and governments worldwide to offer its low-latency, high-speed connectivity

services. It has raised \$2.7 billion since November 2020, with no debt issuance. OneWeb Satellites, a joint venture between OneWeb and Airbus Defence and Space, is the constellation's prime contractor. The satellites were built using its leading-edge satellite manufacturing process that can build up to two satellites a day on a series production line dedicated to the assembly, integration, and testing of the satellites.



FCC Reviewing Boeing LEO Satellite Application

Aerospace giant Boeing could be the next company to launch and operate a Low Earth Orbit (LEO) satellite broadband service, after the Federal Communications Commission (FCC) belatedly circulated the company's 2017 application for vote last week. According to Reuters, Boeing seeks to launch and operate 147 V-band satellites to provide 'broadband internet and communications services

to residential consumers, governmental and professional users across the United States, Puerto Rico and US Virgin Islands'. Back in March 2018 the FCC granted Elon Musk-backed SpaceX the authority to deploy and operate a non-geostationary orbit (NGSO) satellite system comprising 4,425 satellites operating in the Ku- and Ka-bands for the provision of a fixed-satellite service (FSS) constellation.

Subsequently, in April this year, the FCC voted to approve a SpaceX plan to deploy 2,814 Starlink satellites at a lower earth orbit than planned; the satellites will now operate in the 540km-570km range, rather than the 1,100km-1,300km range. Interestingly, in 2019 SpaceX urged the FCC to reject Boeing's plan saying it presented a 'clear danger of harmful interference' to other systems.

SpaceX to Start Satellite Internet Service in Lithuania Next Year

Elon Musk's SpaceX is expected to start providing high-speed satellite internet services to Lithuanian consumers in early 2022, according to the Lithuanian Transport Ministry. In February, the Lithuanian Transport and Communications Minister Marius Skuodis met with SpaceX representatives to discuss satellite internet development in Lithuania. Following the meeting, SpaceX established a subsidiary Starlink Lithuania. Starlink is preparing 20 satellites to fly over Lithuania, providing

an internet speed of at least 100 Mbps. According to the company, Lithuania will be the easternmost country where SpaceX will launch its services. "We aim to create opportunities for residents and businesses in Lithuania to use innovative, state-of-the-art technological solutions. We are glad that cooperation with SpaceX will soon deliver results," Skuodis said on Thursday. "Building terrestrial internet networks to reach even the most remote corners of the country would be very

expensive. [Starlink] technology is a great alternative," the minister added. Lithuania aims to provide an internet speed of at least 100 Mbps to all its residents by 2025. Starlink technology would allow achieving this goal much faster, Skuodis said. Lithuania is able to provide new generation internet, with speeds of 30 Mbps or more, to around 69 percent of households, below the EU's 86 percent average.

Inmarsat to Offer Global Satellite IoT in Deal with Dutch Start-Up

Inmarsat has formed what it calls a strategic relationship with tiny satellite company Hiber to develop internet-of-things (IoT) services. London-based Inmarsat says it will use its Elera IoT network, announced two months ago, to enable Hiber to bring IoT solutions and services to customers. Hiber, based in Amsterdam and Delft as the Netherlands' first commercial satellite company, launched two of its own in 2018, but always included the idea of using other operators' satellites. Hiber CEO Roel Jansen (pictured) – who took over from founder Laurens Groenendijk in March 2021 – said: “We are witnessing the kind of transformation not seen since the industrial revolution. This strategic partnership with Inmarsat creates the most powerful global network for IoT available and helps Hiber to focus on rural, remote and industrial IoT solutions, which is where the real life-changing innovation will happen.” Jansen, former VP of sales at SurveyMonkey, added: “The partnership also gives Hiber immediate access to a global market, helps us accelerate our time to market, supports new industrial IoT solutions and widens access to cost-effective near real-time two-way communication on proven, reliable technology.” Hiber indicated that, with the deal, Inmarsat will provide the satellite connectivity backbone on which it will continue to build Hiberband, its IoT network. The agreement pairs Inmarsat's Elera IoT network with Hiber's IoT-as-a-service ecosystem to provide what the two companies called “easy-to-use, low power and cost-effective IoT solutions and services to transport, logistics, agriculture, mining and other industries worldwide”. Inmarsat Enterprise president Mike Carter said the deal with Hiber will “provide the IoT connectivity backbone that will support and accelerate their development of proven industrial IoT solutions and services worldwide”. Carter added: “Together we will extend the efficiency, sustainability and productivity benefits that IoT can offer to businesses in those areas where terrestrial or cellular connectivity is either unreliable or non-existent.” Hiber

will continue using its own proprietary protocols that allow for ultra-low power and low-data consumption levels to connect to Inmarsat's Elera network and power its IoT solutions, said the companies. The partnership will enable Hiber “to support a range of new industrial IoT applications and provide its customers with reliable, affordable connectivity even in areas without dependable cellular or Wifi network availability”. Jansen added: “The partnership also gives Hiber immediate access to a global market, helps us accelerate our time to market, supports new industrial IoT solutions and widens access to cost-effective near real-time two-way communication on proven, reliable technology.” Groenendijk, who earlier founded the Just Eat sandwich bar, left Hiber in March to focus on his investment activities, which include, according to LinkedIn, Chinese transport hire company Didi Chuxing as well as cryptocurrency firm Blockchain.com. Hiber confirmed at the same time that it had secured €26 million in EU and private investment to expand its IoT satellite network.



Intelsat Win Air France Contract for In-Flight Connectivity

Intelsat, operator of the world's largest integrated satellite and terrestrial network, has been selected by Air France to install its 2Ku high-speed, satellite-based inflight connectivity solution on 60 new Air France A220-300 aircraft. With deliveries commencing in 2021, the aircraft will fly to short and medium-haul destinations of the Air France network. Intelsat's solution is the industry's leading inflight connectivity (IFC) because it simply delivers the highest throughput and best reliability to aircraft and devices globally, providing a superior connected passenger experience and exceptional Net Promoter Scores (NPS). “We are honored to partner with Air France and delight their passengers with a superior inflight connectivity experience on Airbus' state-of-the-art A220 aircraft,” said John Wade, president, Commercial Aviation of Intelsat. “This award expands the total Intelsat fleet at Air France to 143 aircraft, including widebody B777s and A330s. Air France is the third airline partner to select Intelsat on the A220 airframe and our first 2Ku line-fit European airline partner.” Intelsat 2Ku is

the most rapidly adopted satellite-based broadband connectivity technology in aviation, currently in use by leading airlines across North America, South America, Europe and Asia. “Accessing the internet and being able to stay in touch with family and friends while traveling has become a must have for our customers,” said Fabien Pelous, senior vice president Customer Experience of Air France. “We are happy to partner with Intelsat to provide this service to our customers.” Investing \$2 billion, initially, Intelsat is building a unified global 5G network that will support virtually any access technology, enabling the next generation of global mobility, internet of things, and 5G services. Combining software-defined technology and a multi-orbit, multi-layer, multi-band network, we bring airlines the scale they depend upon and a single, more powerful way to connect easily. Connectivity on Air France's A220 fleet is expected to go live when the aircraft enters commercial service in the fall of 2021.

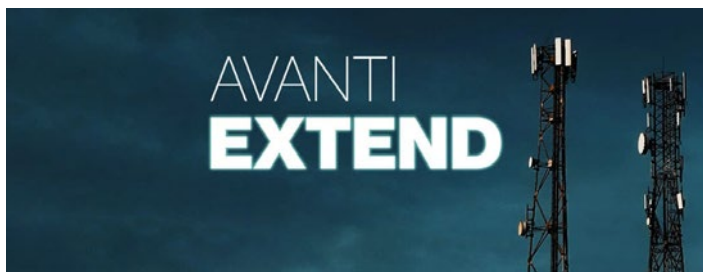
TIM Launches Satellite Service for the Underserved

Telecom Italia (TIM) has gone live with a new satellite-based offering that is set to bring high-speed broadband services to the most difficult to reach areas of Italy. Although not mentioned in today's release, the new TIM Super Sat service is the result of an agreement signed by TIM and France-based satellite company Eutelsat in November 2020. TIM said it will offer the 100Mbit/s data-only service (with 5Mbit/s upload) to new customers that are not yet covered by its fiber-to-the-home (FTTH), fiber-to-the-cabinet (FTTC) or 5G-based fixed-wireless access (FWA) services. TIM Super Sat costs €49.90 (US\$43) per month including a satellite kit complete with a satellite dish, a Wi-Fi modem and installation by a technician. It comes with a fair usage policy of 100GB per month at maximum speeds, after which speeds are reduced to 4 Mbit/s (1Mbit/s upload). The service, as you might expect, comes at something of a premium compared to terrestrial services: TIM currently offers 40Mbit/s 5G FWA services for €29.90 (\$26) a month and FTTH with 1Gbit/s speeds also at €29.90 per month. TIM signed the strategic agreement with Eutelsat as part of its aim to gradually close the digital divide in Italy, covering the most isolated and remote areas of the country. To be sure, providing broadband coverage throughout the nation remains a challenge. In 2020, Italy ranked 24 out of 27 European Union member states in its take-up of ultrafast Internet of at least 100 Mbit/s, according to the Digital Economy and Society Index (DESI). In its 2021 annual report, national statistics agency Istat noted that while Italy's national recovery program has the "ambitious goal" of providing broadband coverage of at least 1 Gbit/s to the entire population by 2025, Italy is currently lagging far behind in the availability of ultra-broadband connections compared with other EU countries. Under its agreement, TIM is purchasing the entire transmission capacity for Italy on the two new high-performance satellites that Eutelsat has either activated or will activate in the coming months:

the Konnect and Konnect VHTS (very high throughput satellite). In service since November 2020, Eutelsat Konnect has a total capacity of 75 Gbit/s and is capable of offering speeds of up to 100 Mbit/s in 15 European countries. Konnect VHTS is expected to allow speeds of up to 200 Mbit/s once it comes into operation. The satellite, due to enter into service in 2022, will also be built by Thales Alenia Space and will have Ka-band capacity of 500 Gbit/s. Elsewhere in Europe, Eutelsat has reached similar distribution agreements with Orange in France and Deutsche Telekom in Germany. For example, DT plans to distribute high-speed satellite broadband to households in the more remote parts of Germany using Eutelsat Konnect from the end of 2021. The operator and Eutelsat are currently piloting an initial deployment in the city of Heimerzheim, where the fixed network was badly affected by the catastrophic flooding earlier in the year. Orange has contracted to use all available capacity on the Konnect satellite to cover the entire French territory. Amid all this activity, Eutelsat recently found the time to raise its stake in Britain's OneWeb, from 17.6% to 22.9%, shelling out \$165 million to make it happen. It has also been busy fending off unwanted attention from Patrick Drahi. Just last month Eutelsat shareholders rejected an unsolicited takeover bid from the billionaire controlling shareholder in operator Altice Europe.



Avanti Connecting Rural Africa with Launch of Avanti EXTEND



Avanti Communications has announced the launch of a new managed satellite service for rural connectivity branded as Avanti EXTEND. Designed specifically for mobile network operators (MNOs), Avanti EXTEND provides high-performance and cost-effective 2G, 3G and 4G solutions to remote and hard-to-reach areas across sub-Saharan Africa. This enables customers to provide reliable cellular service to the 100 million people living in these challenging locations that would otherwise be impossible to reach using traditional terrestrial infrastructure. Avanti

EXTEND's built-in and fully operational CAPEX solution integrates seamlessly into MNOs terrestrial networks to reduce network complexity and increase efficiency. This means customers do not need to manage satellite configurations, hub infrastructure or terrestrial networks to deploy a successful satellite cellular backhaul topology. The service also offers MNOs the opportunity to quickly and effectively undertake large deployments and scale operations to support long-term rural expansion at no additional CAPEX to customers. Libby Barr, Chief Operating Officer at Avanti, commented: "Our mission is to work in partnership with the people of Africa to empower growth, protect communities and unlock opportunities for individuals, businesses, and governments by creating better connections across the continent. By working closely with MNOs, the launch of Avanti EXTEND will help to make this mission a reality." The launch of Avanti EXTEND follows Avanti's recent partnership with Clear Blue Technologies which is expected to connect more than 200 million people across sub-Saharan Africa in the next three to five years.

Hispasat Secures Capacity on the EUTELSAT KONNECT Satellite for High-Speed Broadband in Spain and Portugal

Eutelsat Communications and Hispasat, the satellite telecommunications operator of the Red Eléctrica Group, have entered into a multi-year strategic agreement for wholesale capacity on the EUTELSAT KONNECT satellite with the objective of supporting ubiquitous access to high-speed fixed broadband in Spain and Portugal. The capacity will serve to promote initiatives to bridge the digital divide in Spain and Portugal Hispasat has already implemented. Under the agreement, Hispasat will complement its current capacities with those of the EUTELSAT KONNECT satellite over the two countries, thereby operating in collaboration with Eutelsat and marketing high-quality broadband connectivity services at 100 Mbps to telecommunications operators and Internet Service Providers. Under the agreement, which is effective immediately, Hispasat has committed to the Iberian capacity on EUTELSAT KONNECT becoming the exclusive operator and

distributor of the capacity in Spain and Portugal. The agreement represents a high-single digit €m annual revenue stream at full speed. At a later stage, the agreement could be extended to future capacity. It follows wholesale contracts with Orange in France and TIM in Italy for capacity covering their respective markets, and the recent distribution agreement with Deutsche Telekom for Germany, further underlining the role of satellite as a cost-effective, off-the-shelf and reliable infrastructure to extend coverage beyond the reach of terrestrial networks. In service since November 2020, EUTELSAT KONNECT has a total capacity of 75 Gbps, offering speeds of up to 100 Mbps to both companies and individuals in the digital divide at competitive monthly rates. Commenting on the agreement, Rodolphe Belmer, Chief Executive Officer of Eutelsat said: "We are delighted by this strategic deal with our long-standing partner, Hispasat. Coming after wholesale

agreements covering France and Italy, and a distribution deal for Germany, this latest commitment by a satellite operator to cover the territories of Spain and Portugal confirms the relevance of powerful, cost-efficient next generation geostationary satellites as an immediate solution to the ubiquitous deployment of reliable, high-speed broadband." Miguel Ángel Panduro, CEO of Hispasat added: "Digitalization cannot be addressed without having guaranteed connectivity everywhere first. Satellite technology has evolved and permits Internet access at 100 Mbps immediately from any location, no matter how inaccessible it is. At Hispasat we are fully committed to the goal of providing all citizens Internet access and contributing to digitalizing economic activity regardless of geographic location. That's why we have entered into this partnership with Eutelsat to complement our current capacity".

Kacific Makes Entry Cost for Satellite Broadband More Affordable for Underserved Regions of New Zealand

Easier setup, lower terminal and installation costs with high throughput ST Engineering iDirect MDM2010 IP Satellite Modem Kacific Broadband Satellites has reduced the total price of satellite broadband for New Zealander customers with the introduction of a new terminal kit. The full kit consists of a new, low power, high throughput ST Engineering iDirect MDM2010 IP Satellite modem, a paired iLNB 3210 transceiver and a smaller 75cm VSAT antenna. The MDM2010 is a 2-way, high throughput modem supporting a wide range of IP services like Internet/intranet access, VoIP and multi-casting services. Its easy point and play -installation and high-performance modulation techniques allow Kacific to offer fast broadband services more cost-effectively over its Ka-band network. The compact, lightweight modem is more affordable, easier to set up than

existing modems, and can be configured from a web browser. It has a small profile, low power consumption and is suitable for all weather conditions. The introduction of the MDM2010 will reduce installation time and bring down the cost of the terminal kit by up to 50 percent[1], with entry prices starting from USD\$440 for New Zealand. The new modem will easily connect 4 to 5 average users simultaneously, making it suitable for farms, households and small businesses. "The underlying principle of Kacific's business is providing fast affordable broadband to under-served areas," said Christian Patouraux, Kacific's Chief Executive Officer. "The MDM2010, is an step forward in delivering that. Along with its paired iLNB transceiver, it is an entry level product that will significantly lower the price of Kacific's consumer-oriented terminals without compromising

performance. It is capable of speeds of up to 50Mbps down and 10Mbps up, further reinforcing the total cost-effectiveness of the Kacific broadband plans for consumer and SME end-users. "There is nothing more satisfying for us at Kacific than to see videos of smiling first-time internet users accessing rich online content via a Kacific VSAT terminal. Every life that we and our ISPs and channel partners touch with internet connectivity represents a chance for a child, a family, a community, to have higher quality education and healthcare and be better integrated in a fast, connected world." Lower costs will also give Kacific's partners flexibility to reduce the length of fixed term contracts where installation costs are included in monthly pricing. The new modems and terminals will roll out in New Zealand from 1 October 2021.

PH Space Agency Eyes Satellite Internet for Remote Areas

The Philippine Space Agency (PhilSA) has launched a program to help the country achieve more robust internet connectivity, particularly in remote and far-flung areas. During the launching of the INCENTIVISE (Introducing Non-geostationary Satellite Constellations Test Deployments for Improved Internet Service) program, the PhilSA called on new satellite internet operators (SIO) to conduct test deployments and trials in the Philippines. It said it will facilitate these "test deployments". "This initiative is intended to help expand internet accessibility in hard-to-reach areas through satellite broadband," said PhilSA chief project development officer Agnes May Bantigue. "We are targeting companies that operate satellites in so-called non-geostationary orbit (NGSO) for providing internet access. Examples of such NGSO SIOs, include One Web of UK and Starlink of Elon Musk," she said. As of date, there are no known local companies with NGSO technologies. Citing a World Bank study, Bantigue said "only 46.88% of the population in the Philippines had access to the Internet, making it the country to have the third-lowest penetration rate in the ASEAN region." The Bangsamoro Region has the lowest internet accessibility, with internet access in just 4.5% of its households. In Regions 9 and 10, 93% of households do not have internet connectivity, while 92% of households in Regions 4-B and 5 also cannot access the internet, Bantigue noted. "So, for these regions, we can perhaps turn to satellites as a means for connecting—for achieving connectivity," she said. Bantigue said satellite internet will "bridge the digital divide", which is cost-effective in areas where "terrestrial networks can be uneconomical and logistically difficult." "Moreover, satellites can provide urgent communications during disasters and emergencies when terrestrial infrastructure may be disruptive," she said. But PhilSA could not say how cost-effective the technology would be yet. "Definitely every infrastructure investment entails capital outlay. So, in terms of affordability, we really need to assess this against the benefits that it will bring to the community. Perhaps

in terms of the uses of the internet such as maybe being able to bring education to far-flung areas or being able to conduct TELE-help in far-flung areas, also, financial inclusion," Bantigue said. Bantigue said the new satellite systems located in lower altitudes can cover unserved or underserved areas and can complement traditional geostationary orbit satellites (GEOs) already being used by the Philippine government for internet connection. "So, because they are closer in proximity to earth, they entail shorter return trip time of the signal and therefore there is a latency or delay that is significantly less. So, because it's significantly less, it can better support delay-sensitive applications such as video teleconferencing like this one," Bantigue added, referring to the virtual presser. For example, based on PhilSA's calculations, Elon Musk's Starlink has 99.1% total availability or satellites passing over. This means that for areas like Tawi-Tawi, that could mean "23.98 hours of 24 hours in a day" satellite availability. This depends on the results of PhilSA's tests, if it can determine that this would translate to actual internet connectivity. "INCENTIVISE will help us assess their performance in the Philippines and determine their performance in the local setting or under local conditions," Bantigue explained. The project can also further transfer technology and open opportunities for the Philippines to be part of the space technology's "supply chain" since these satellites need to be replaced more often, she said. "We can pursue further discussions or negotiations on capacity building through know-how transfer and retention and even local design and manufacturing which promote local SSDA industry development." PhilSA is now accepting proposals until the end of this month and will take evaluate and decide which satellite internet operators will be assigned to certain sites for trials. "While the tests are ongoing, we will also be conducting the assessment and preparing the reports, which we intend to complete and present and share with relevant government agencies by early quarter two of 2022," Bantigue said.



Intelsat Partners with Air France on 2Ku Satellite Connectivity Solution

Intelsat to install its 2Ku satellite based inflight connectivity (IFC) solution on the carrier's incoming fleet of 60 A220-300 aircraft. Delivery of the systems will commence in 2021. Air France is Intelsat's third airline partner for the A220 airframe and its first 2Ku line-fit European airline partner. The contract will extend Intelsat installations on Air France's fleet to 143 aircraft, including Boeing 777s and A330s. 

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ARTICLE

Powering Human Digital Capacity within the ICT and Non-ICT Industries across the MENA Region through Enterprise Software Innovations



Robert F. Smith
 Founder, Chairman and CEO
 Vista Equity Partners



"Enterprise software remains the most productive tool introduced into our global business economy in the past fifty years, and likely will be for the next fifty. Its permanence and prevalence is only accelerating, with digital advancements brought forward by the global pandemic increasing its transformative power – and importance – to create a better future."

– Robert F. Smith

Last year, the COVID-19 pandemic upended economies across the globe. Overnight, stay-at-home mandates and distancing measures became the status quo, and businesses were forced to move quickly, reevaluating their digital strategies to enable their continuity and survival.

This shift compelled organizations across the world – from governments to financial institutions to education and healthcare providers – to reinforce their core operations and processes, increasing their reliance on digital technologies.

As a result, digital transformation has further penetrated all sectors of the global economy and enterprise software remains one of, if not, the greatest drivers of business productivity and performance.

According to McKinsey data, from December 2019 through July of 2020, global software company market capitalizations grew 20%, faster than all other sectors, demonstrating its mission criticality to the global economy and business continuity.

The pandemic also highlighted the need for high-speed internet and telecom services. Governments, citizens and the private sector relied heavily on digital connectivity to deliver essential

services, connect with loved ones and enable business continuity.

This activity resulted in total global data consumption increasing by 30% in 2020, while Wi-Fi capacity was stressed by 80%. As a result, 50% of networking executives expect to boost their wireless networking investment while 15% report they'll invest significantly more, according to a Deloitte survey.

As we enter the next normal, the need for network capacity and viability shows no signs of letting up with remote working or hybrid practices likely to remain and appetite for enterprise software only increasing. In a McKinsey survey, 38% of industrial companies said that they aspire to generate 50% or more of revenues within the next three years from digital technologies and services.

Enabling An Ecosystem of Innovation: The Role of Telecom Providers

The pandemic has also accelerated business requirements for privacy and security, along with increased visibility around the value of data and automation. With these factors at play, enterprises are turning to cybersecurity, artificial intelligence and machine learning, and robotic process automation tools among other advanced technologies, at a record pace. According to IDC, the worldwide AI market is estimated to grow 15.2% in 2021 to \$341.8 billion.

By offering significant performance improvements — such as faster speeds, increased data capacity, lower latency, greater device density, and precise location sensing — 5G and Wi-Fi 6 will be crucial to enabling these advanced technologies. In fact, four in five executives consider advanced wireless very or extremely important to their organization's ability to implement IoT, big data analytics, AI, and edge computing—and even more so for cloud computing, according to Deloitte.

Connectivity, in turn, is expediting the growth of these advanced technologies. Gartner forecasts predict that by 2025, over 75% of enterprise data will be created and processed outside the typical data center.

Telecom providers must respond to this need for infrastructure development and innovative IP capabilities that keep pace with an accelerated digital economy — initiatives that require a highly skilled, digital workforce.

The World Economic Forum estimates that 97 million new jobs will be created due to technological advances and closing the global skills gap could add \$11.5 trillion to the global GDP by 2028.

Accelerating Digital Transformation with Digital Skills

Even before the pandemic, many countries in the Middle East and North Africa (MENA) region had outlined ambitious plans to transform their economies into digital powerhouses. There has been a huge appetite for technology and many governments are leading the way with technology deployments and policy developments that support technology. For example, the UAE's Vision 2021 and Saudi Arabia's Vision 2030.

Knowledge and skills are the cornerstones of digital progress and unlocking the potential of the workforce is widely viewed as crucial to any country's economic development in today's digital world.

Digital skills and labor are scarce around the world — software developers in every country globally are in high demand. Worldwide, there are just 26.9 million software developers, a number that is expected to grow to 27.7 million in 2023 and reach 45 million by 2030.

While the digital talent gap affects all sectors, this is particularly pronounced in the technology, media, and telecom (TMT) industries. Telecom operators, for example, need employees with a range of capabilities across product development and analytics to enable their own digital transformations.

With the arrival of 5G and the escalating importance of IoT and cloud computing, telecom companies throughout the MENA region face the compounding burden of finding and training people who can keep pace with these fast-moving technologies, while also incentivizing their workforce to stay in the industry when their skills are desired elsewhere. According to McKinsey, 88% of digital talent who switch companies decide to leave the subsector altogether.

Given the finite pool of workers and the high cost of hiring, a holistic approach to workforce design and reskilling is critical to ensure the telecom industry in the MENA region remains future ready. And with over half the population in the MENA region less than 25 years old, there is a huge opportunity to offer digital skills training to bolster the future digital workforce.

By focusing on early training and reskilling, providers can also experience expanded benefits including boosts in productivity, while preventing information silos and delivering a superior customer experience.

A Model for Digital Reskilling Across the MENA region - Pluralsight and Verizon

The production of digital products and services requires skills in information and communication technologies (ICTs) to code, develop applications and manage networks. If looking for a model for digital reskilling, telecom providers in the MENA region could consider Verizon's initiative with Pluralsight,* the technology workforce development platform that enables employees to develop the skills of tomorrow.

Verizon is one of the largest communication technology companies in the world, ranked 19 of the Fortune 500. The company's strategic priority over the next five years is to build its 5G network. This strategy — Verizon 2.0 — requires product development at scale and a workforce with the technical skills across every domain.

With the pace of technological change only accelerating, Verizon has realized that hiring alone would not solve its skills shortage or position its workers to embrace future changes within the industry. With this in mind, a key component of the

Verizon 2.0 strategy is to upskill its current workforce, while providing access to a learning environment that enables them to keep up with the changes in technology.

Leveraging Pluralsight, Verizon has been able to define and build over 130 roles for its future and map the skills required for each role. Employees have taken thousands of assessments to date, enabling leaders to quickly benchmark skills, identify gaps and develop their digital workforce.

Using analytics, leaders at Verizon have also been able to see continuous skill gains among its workforce and move people into critical roles based on these outcomes. Overall, by leveraging, Pluralsight, Verizon, has been able to:

- Upskill across the entire organization
- Build out roles of the future
- Deliver product releases more quickly

By prioritizing technology skill development in this manner, telecom operators in the MENA region can also prepare their organizations for the evolving digital technology landscape, readying their workforce with the skills of tomorrow and help their businesses achieve better outcomes.

An essential first step to do so, however, is to assess the digital skills needed and ensure there's organizational alignment in creating a reskilling program. From there, it's imperative to create an environment that celebrates learning and development so that workers feel empowered by reskilling initiatives. Finally, there must be clear goals and metrics to measure the outcomes and successes of the program.

This strategy would be common to most telecom operators in the region, as most share the same business models in the delivery of integrated digital communication services. The difference in the types and number of roles that a given operator may define for its future workforce, ultimately, will be a function of ambitions, national ICT visions, economic diversification goals and market dynamics.

A Connected Future Powered by Enterprise Software

Digitization remains one of the key enablers of economic diversification and a capable digital workforce, will be critical to attaining these economic goals. Particularly within the telecom industry, where connectivity empowers technological progress, a robust employee pipeline with the necessary

The digital future of the MENA region looks bright. By keeping talent at the forefront of its objectives and prioritizing the development of digital skills, the MENA region will be well positioned to reap the benefits of connectivity and enterprise software, cementing its leading position in the global economy.

skills to advance the digital economy is imperative.

The digital future of the MENA region looks bright. By keeping talent at the forefront of its objectives and prioritizing the development of digital skills, the MENA region will be well positioned to reap the benefits of connectivity and enterprise software, cementing its leading position in the global economy. 🌱

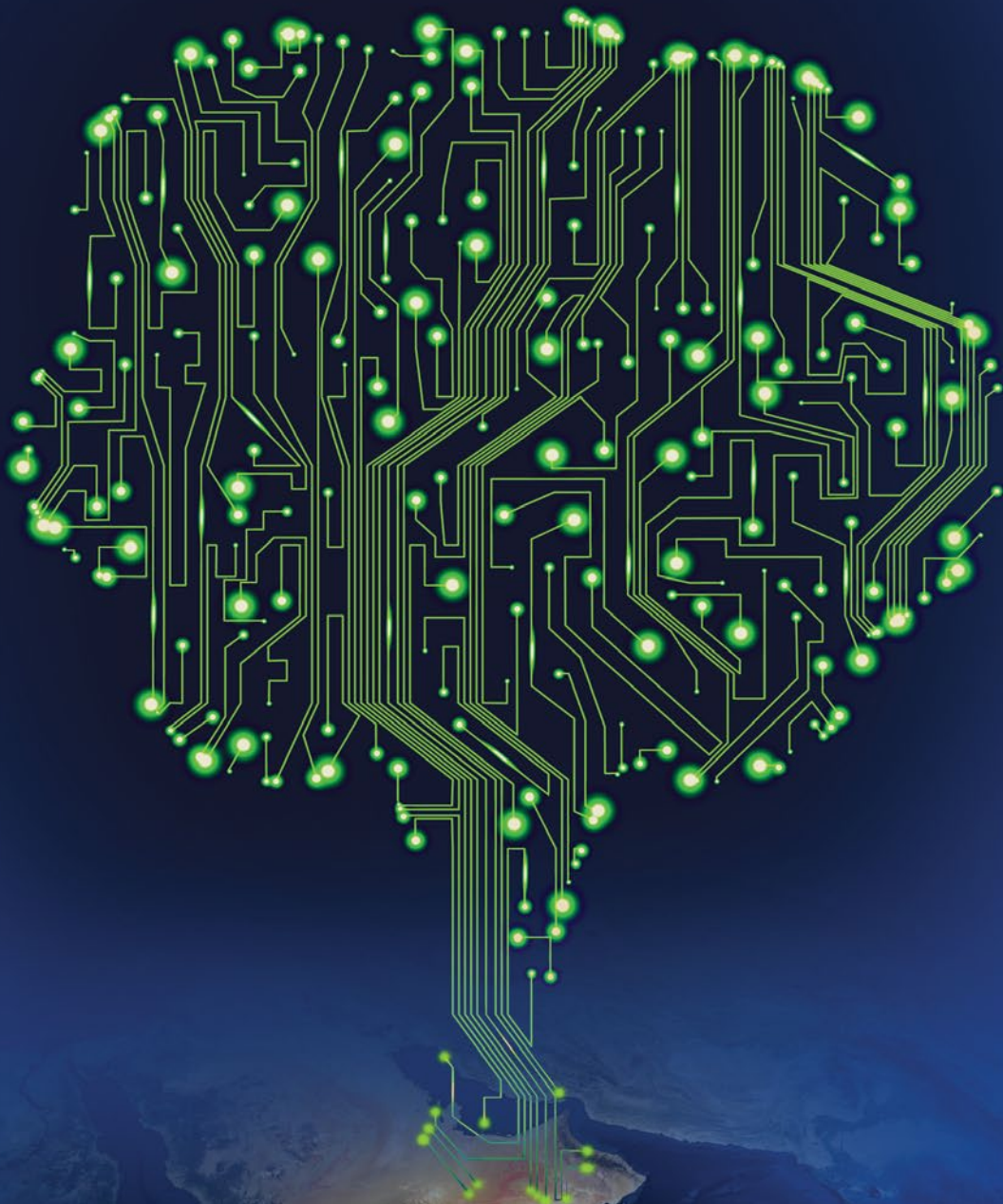
Vista is a leading global investment firm with more than \$81 billion in assets under management as of June 30, 2021. We believe the transformative power of technology is the key to an even better future – a healthier planet, a smarter economy, a diverse and inclusive community and a broader path to prosperity. We view education and digital skills as critical to realizing this vision.

*Note: Pluralsight is a Vista Equity Partners portfolio company.

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WHOLESALE NEWS

Nkom Notifies ESA of Proposed Price Regulation for Telenor's Wholesale Fixed-Wireless Service

Norway's National Communications Authority (Nkom) has sent a draft decision regarding price regulation related to Telenor Norge's wholesale fixed-wireless broadband to the EFTA Surveillance Authority (ESA). In a press release regarding the matter, the regulator confirmed that the operator will be required to offer wholesale fixed-wireless broadband 'at prices which mean that the buyer of access is not

put in a margin squeeze'. To ensure Telenor complies with this proposed regulation, the Nkom has said it will conduct margin squeeze tests and gross margin tests on the operator's retail fixed-wireless offerings twice a year. With the ESA now having one month to comment on the Nkom's proposals, the regulator has said it will consider any feedback from the European body when it is received before issuing its final decision on this matter.

Telekom Malaysia to Provide Astro with Wholesale Infrastructure and Connectivity Solutions


Telekom Malaysia and MEASAT Broadcast Network Systems (Astro) have inked deals to collaborate in delivering 'a high quality digital experience to all Malaysians', with the pair claiming the partnership 'signifies both companies' commitment to support the [government's] Jalanan Digital Negara (JENDELA) initiative in providing wider broadband coverage and a better experience nationwide'. Through a strategic collaboration, Telekom Malaysia – via its TM Wholesale unit – will provide Astro with a full suite of infrastructure and connectivity solutions that comprise a range of wholesale services, including 'high speed broadband (HSBB)', bandwidth, backhaul and internet access'. Utilizing TM's HSBB service, Astro will be able to provide broadband services to its customers across a wide area without needing to build new infrastructure of its own. Meanwhile, Telekom Malaysia's internet access solution will enable Astro to offer 'high performance internet connectivity and a comprehensive solution to its customers'. TM will also provide Astro with its Content Delivery Network (TM CDN), a newly developed content platform service, which is expected to enable the latter to strengthen its video streaming efficiency of its current service offerings. Commenting on the collaboration, Astro chief executive Henry Tan said: 'This strategic partnership

with TM lays the foundation for Astro to be an internet service provider. Astro's goal is to provide Malaysians with the best digital experience and broadband value proposition. Leveraging on the strength of TM's wide HSBB network will enable Astro to realize new revenue streams, scaling our broadband service with content bundles, or standalone broadband and other product lines. This deal gives us more flexibility to offer great value and convenience to our customers.' Telekom Malaysia's CEO Imri Mokhtar added: 'This strategic collaboration also demonstrates our commitment to ensure Malaysians are provided with a seamless and 'always-on' connectivity experience. We are happy to work with Astro and this is yet another testament to our pivotal role as the enabler of Digital Malaysia aspirations.'



CNMC Reworks Telefonica's Wholesale Fiber Obligations

Spain's National Commission for Markets and Competition (Comision Nacional de los Mercados y la Competencia, CNMC) has approved definitive regulations relating to the country's wholesale broadband access markets (Markets 1/2020 and 3b/2014). In a total of 696 municipalities – which are home to around 70% of the Spanish population – Telefonica will be exempt from offering its competitors wholesale access services to its

optical fiber networks. In the remaining 7,453 municipalities, where there is less competition between operators, wholesale access obligations will continue. By way of a comparison, the number of 'competitive zones' stood at just 66 in 2016. Within three years, the CNMC says it will assess whether it is necessary to review the areas considered 'uncompetitive' or potentially withdraw wholesale fibre regulation throughout the territory completely. 

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ARTICLE

5G - Ushering in a New Era of Intelligent Video Surveillance

While the Covid-19 pandemic has presented myriad challenges for one & all, it has also brought with it immense opportunities that were never apprehended earlier. One such aspect is the issue of safety and hygiene, which is set to witness a huge fillip with the intervention of 5G. Ram Ramachandran, Senior Vice President and Head, Middle East & Africa at Tech Mahindra, presents you with the changing times that video surveillance is set to witness in the near future.



Ram Ramachandran
SVP & Head, Middle East & Africa
Tech Mahindra

**Tech
Mahindra**

The 5th generation of wireless connectivity, aka 5G, is not just a mere advancement over 4G mobile technology. With speed 100x that of 4G networks, 5G cellular network has the ability to connect all intelligent man and machines. Ubiquitous wireless connectivity of the fifth generation of the network brings more than just speed to the table – ultra-reliable low latency, multi-access edge computing, network slicing, and more. Promising high performance and efficiencies, 5G is set to break new ground, transform the user experience, and enable innovative business solutions. Safety and security are of the top concerns globally, for both public and enterprises. 5G will add tremendous value to camera-based analytical solutions.

The global video surveillance market was valued at \$42.94 Bn in 2019 and is projected to reach \$144.85 Bn in 2027. Global video analytics is expected to grow at a Compound Annual Growth Rate (CAGR) of over 18% during 2020-2025.

According to industry research, the GCC security and surveillance market is expected to grow at a CAGR of 6.2% during 2019-25. Government initiatives, such as Qatar National Vision 2030, Saudi Vision 2030 and Dubai Vision 2021, are slated to boost the growth of non-oil economy of many countries in the GCC region during the forecast period. Such enhanced social infrastructural developments in these countries would create more opportunities for the implementation of security and surveillance systems. It further states that the government and transportation vertical held the majority of the revenue share in the GCC security and surveillance market over the past years and this will continue during the forecast period due to wide usage of these systems in the defence sector as well as across government offices and buildings.

The United Arab Emirates, as a case in point, already has a well-developed infrastructure, and envisions to expanding its role as a hub for wholesale and retail trade, tourism, and as a real estate destination. This growth in various sectors augments the need for security advancements, thereby providing tremendous opportunities for the growth of the video analytics solutions. Additionally, the government's efforts to promote smart city projects focus on transforming services across various sectors, such as transportation, infrastructure, communication, and others. This will also offer a fillip to the video analytics market in the country. As per a report, it is estimated that video surveillance is witnessing fast-paced growth by outpacing the total commercial security market in the region. The industrial and commercial sectors will hold close to 50% of the share in the total video surveillance market.

5G & VIDEO ANALYTICS

Before getting into the intricate details of 5G's influence on video analytics, let us check some interesting facts. 5G download speeds range from around 50 Mbps to 1.8 Gbps or more, which varies as per the network conditions. To give you an example, a 3GB movie that took almost half an hour to download via 4G would only take around 30 seconds on 5G networks. Having said that, latency can also disrupt streaming content and cause a slight delay when sensor networks take in data, transmit it somewhere else for processing, and then respond. With IoT applications like autonomous vehicles, fast response times with low latency connections are essential. Current 4G networks generally have latency rates between 50-100 milliseconds, but 5G could potentially reduce that rate to 1-4 milliseconds, creating incredibly reliable and high-performance networks. When such stats are presented before the consumers, one would really not need any further reason to shift to 5G. Isn't it!

Camera-based solutions require to stream HD quality images/videos to the data centres. With the enhancement in analytical capability, end-users have started demanding insights to be derived out of these huge data getting generated continuously. A 4K HD quality camera guzzle out 25 Mbps. This data needs to be analysed in near-real to real-time.

Data says human reference time is 200-300 ms. 4G technology operates ~ 100-200ms and 5G claims 1ms latency. With a traffic capacity of 10Mbps per square metre in hotspot area and user experienced data transfer rates up to 1Gbps, 5G is thus becoming a game-changer in the world of safety & security surveillance.

With 5G's capability of Enhanced Mobile Broadband (eMBB) and Ultra-reliable Low Latency (uRLLC) services coupled with Multi-Access Edge Compute (MEC), near-elimination of responsiveness (aka latency) will be a boost to the video surveillance application. Not to mention the quantum leap of the image quality as 5G promises to support 4k /8K HD quality video streaming.

5G-enabled CCTV cameras are being used in face recognition, object recognition, event recognition, intelligent image processing, remote asset management, behavioural detection, and analytics, thereby offering whole new possibilities of video analytics. Going ahead, we will witness video surveillance systems being powered by AI (Artificial Intelligence), machine learning and deep learning algorithm as these video analytics solutions can detect objects or events of interest, by analysing and monitoring live video streams or recorded images from the surveillance cameras.

VIDEO ANALYTICS: SOME USE-CASES

There is no doubt that every industry, private, public, or government will stand to be benefitted from the rollout of 5G intelligent network. The technology will impact any solutions under the ambit of camera-based real-time video analytics. Tech Mahindra along with one of its partners Deep Sight AI Labs present to the world a plethora of use cases critical for the safety & security of personnel & assets under consideration. A few of them are:

- COVID protocol adherence
- Workplace safety adherence
- Fire hazard alert
- Visual quality inspection
- Perimeter surveillance and intrusion detection

The integration of IoT devices in video and data analytics provides us with massive amounts of data that can be leveraged to draw actionable insights.

FUTURE OF VIDEO ANALYTICS WITH 5G

5G's high speed, ultra-low latency, and secure connectivity will enable the widespread adoption of video analytics solutions – Implementation of an intelligent network would help in the modernization of legacy video surveillance systems, real-time data processing, the shift to edge / cloud, uninterrupted streaming on devices, and more.

Opportunities are endless. As the world has begun shifting towards the concept of 'smart cities', 'intelligent devices', and 'smart manufacturing', camera-based analytical solutions are already experiencing a rise in demand in the global market. Pandemic has provided the much-needed boost to the industry to deliver touchless innovative solutions. 5G would act as an enabler to the ever-increasing population's requirement of safety & security. Additionally, the wireless network will make CCTV installations quicker and economical. The cameras will move away from the need for traditional cabling. Drone-mounted and Unmanned Vehicle-Mounted (UAV) cameras applications are increasingly being adopted by governments and enterprises alike. With real-time data processing capability over MEC, ultra-low latency 5G services are poised to take the world by storm.

Shaping the Future Cities

By 2025, as per estimates, there could be over 75 billion connected devices around the world. Security surveillance systems ought to ensure the highest level of availability, reliability, and speed, which ultimately warrants the deployment of a 5G network for IP camera-based remote video surveillance systems. Around 56 cities worldwide have already deployed surveillance technologies powered by automatic data mining, facial recognition, and other forms of artificial intelligence.

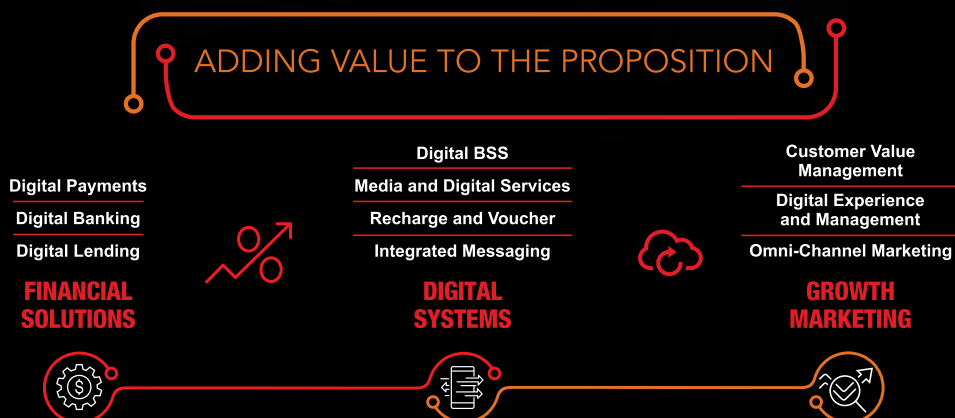
With the assimilation of 5G, cameras, and analytics all get together, the result can be anybody's guess. We would be able to live in a world where walking on the roads will be safer and driving will be easier, all thanks to 5G-powered video surveillance. Needless to say, that the possibilities of using technology to enhance the quality of life are beyond imagination, and 5G just empowers us to realize the dream of a SMART & SECURE CITY! 📍



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TECHNOLOGY NEWS

Satellite Technology to Accelerate Financial Inclusion, Digital Finance

The Bangko Sentral ng Pilipinas (BSP) sees the issuance of the implementing rules and regulations (IRR) on expanding the provision of internet service through satellite services as further promoting financial inclusion and digital finance in the country. Issued under Department Circular No. 002, Series of 2021, by the Department of Information and Communications Technology (DICT) on sept. 28, the IRR aims to promote the development of an inclusive and vibrant satellite industry by liberalizing access to satellite systems. Expanded access to satellite services is expected to accelerate the rollout of internet connectivity for the unserved, underserved, and geographically isolated and disadvantaged areas of the country. With the issuance of the IRR, banks, fintech companies, and other financial sector entities will be further guided in exploring ways of tapping into satellite technology for their operations, particularly toward expanding presence in underserved communities. "With

enhanced countryside connectivity, we see previously unserved and underserved areas being reached by digital financial services, especially those designed for the lower income segments, like remittances, bills payments and the opening of transaction accounts," BSP Governor Benjamin Diokno said in a statement Thursday. Internet connectivity is recognized as a critical enabler of financial and economic inclusion as financial transactions and services shift to online platforms. With expanded internet service, banks, and other financial service providers (FSPs) will be able to better serve rural areas with more access points, such as automated teller machines and cash agent services that rely on internet connectivity. Meanwhile, with the launch of the Philippine Identification System and its electronic know-your-customer facility, greater internet access will allow more unbanked rural clients and low-income communities to use digital financial services and

benefit from digital innovations. Signed into law by President Rodrigo Duterte in August 2018, Republic Act 11055, or the Philippine Identification System Act, aims to establish a single national ID for all Filipinos and resident aliens. The national ID shall be a valid proof of identity that shall be a means of simplifying public and private transactions, enrollment in schools, and opening of bank accounts. It will also boost efficiency, especially in dealing with government services where people will only need to present one ID during transactions. "These developments will contribute towards the BSP's financial inclusion targets, namely that first, 70 percent of the adult population should own a transaction account, and second, that half of all retail payments should be in digital form by 2023," Diokno said. The BSP encourages FSPs to seek opportunities from this policy reform for innovation and market expansion toward accelerating financial inclusion in the country.

XL Tests Huawei's 'RuralStar Pro' Solution; Telkomsel Launches 5G in Papua

Indonesian mobile network operator (MNO) XL Axiata, working in partnership with Huawei Indonesia, has carried out tests of a new wireless broadband solution dubbed 'Huawei RuralStar Pro', with a focus on exploiting its ability to provide 4G LTE backhaul in rural areas. The trial was carried out in Kalimantan and the two parties said that it suggests the solution will be useful in expanding broadband connections to remote areas, where so far there are often problems related to limited backhaul access. The RuralStar Pro trial yielded download data transmission speeds of up to 106Mbps over a distance of 31km. In unrelated news, as part of its ongoing 5G network rollout XL's rival Telkomsel said it has deployed next generation infrastructure in Papua province, eastern Indonesia. the MNO has reportedly installed equipment in

advance of the XX Papua National Sports Week (PON) 2021. During the event, the public and visitors have been invited to use the new 5G network as part of Telkomsel's initiative 'to strengthen an inclusive and sustainable national digital ecosystem

by presenting Trifecta Digital Telkomsel'. During the test phase for the new 5G network in Papua, Telkomsel reported a download speed of up to 1Gbps with latency of 8ms in trials in Sorong.



EE Begins Using 700MHz Spectrum for 'Indoor 5G'

British mobile network operator (MNO) EE, a subsidiary of BT, has announced the next phase of its 5G rollout, confirming it has



switched on 'indoor 5G' at more than 50 sites across the UK. With a view to delivering 'high-performance connectivity for its customers', the cellco noted in a press release that it is using some of the 700MHz spectrum it secured at auction earlier this year for these new sites. With the cellco claiming the development will strengthen indoor 5G performance and capacity in areas with existing 5G, while also delivering new connectivity in other areas, EE's Director of Mobile Networks, David Salam, said: 'We've got big ambitions for 5G connectivity in the next decade, and this is the latest milestone in our journey to provide our customers with unrivalled connectivity. This next stage of our 5G rollout will enable our customers to enjoy even better 5G, keeping them connected to the things that are most important to them.' Looking ahead, as part of its ongoing network investment EE has pledged to extend its 5G network to reach half of the UK's population by 2023, with nationwide coverage expected by 2028.

Internet of Things Goes to Space With Small Satellite Sensors

Satellite constellations for Internet of Things (IoT) deployments are growing. The latest plan to extend IoT connectivity beyond standard terrestrial systems involves a series of launches slated to begin during the second quarter of 2023. Rocket Lab plans to launch 25 Kinéis satellites in New Zealand between April and December. The goal is for these small low-orbital satellites to provide real-time geospatial intelligence and global monitoring services. Kinéis provides satellite-based IoT connectivity. The company was created in 2019 by French space agency Centre National d'Etudes Spatiales (CNES) and IoT technology firm Collecte Localisation Satellites (CLS), says Alexandre Tisserant, Kinéis's CEO. Among its activities during the past two years, Kinéis has been operating the Argos System, a collaboration that includes CNES, the National Oceanic and Atmospheric Administration (NOAA), the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) and the Indian Space Research Organization (ISRO). The satellites are being used to collect information about the climate and the environment, as well as to monitor wildlife and fisheries. Kinéis aims to provide affordable IoT connectivity where traditional technologies, such as cellular, LoRa and Wi-Fi, cannot reach. Currently, only 15 to 20 percent of the world has such terrestrial IoT connectivity, Tisserant says, and that opens an opportunity for satellites. In the past, satellite technologies have been considerably more expensive than alternative solutions, he explains, but Kinéis is attempting to bring that cost down with its low-orbital satellites and transmitting sensors. So far, its technology is being used to track animals in remote areas, as well as fishing boats, and it could monitor containers at sea, smart agriculture, and connectivity and utilities in remote areas. At present, Kinéis has eight satellites in orbit. The units, which weigh 30 kilograms (66 pounds), fly in low Earth orbit at a distance of 650 kilometers (404 miles). With these eight satellites circling the planet, connectivity is typically available for 15 minutes, followed by a wait period of a few hours before the next satellite comes

within range. This rate of connectivity is sufficient for those with a fixed infrastructure, or for monitoring the movements of animals. However, for use cases such as fighting illegal fishing operations, IoT systems require more regular data capture. With 25 nanosatellites in space, Tisserant says, what had originally been one or two hours of waiting for a signal will be reduced to only ten minutes. To enable IoT deployments, the company is building both the satellites and the units in sensor devices that communicate with those satellites. These small devices are designed to send relatively small packets of data, he notes, and they require low-energy supplies at a low price. By offering both the satellites and the sensor units, Tisserant reports, "We are democratizing connectivity." Kinéis and Rocket Lab have agreed on a fixed span of dates from April to December 2023 to launch the satellites. Each one is about the size of a large shoebox, and they will all be launched from New Zealand. The company chose Rocket Lab, Tisserant says, because "They are the most reliable micosatellite launcher." The Kinéis sensor units send packets of information for localization, but they can also transmit pressure, temperature and humidity data. In one application, devices transmit such sensor information from ocean buoys. The data is captured on Kinéis's server, which can provide a basic location, such as a dot on a map, while the company partners with software providers to obtain more detailed information. The technology is more expensive than standard terrestrial IoT solutions by a factor of three, Tisserant says. However, the price is expected to drop as more sensors are deployed. The relatively large bandwidth in which transmissions are sent means the density of sensors can be high, he explains. "So that capacity will be growing," Tisserant states, and the price is expected to drop with that growth. "We're targeting millions of devices" that will connect to the system. Some of the earliest applications have centered around tracking wildlife, for instance. Kinéis makes a unit that weighs just 3.5 grams (0.1 ounce), which can be built into the collar of an animal

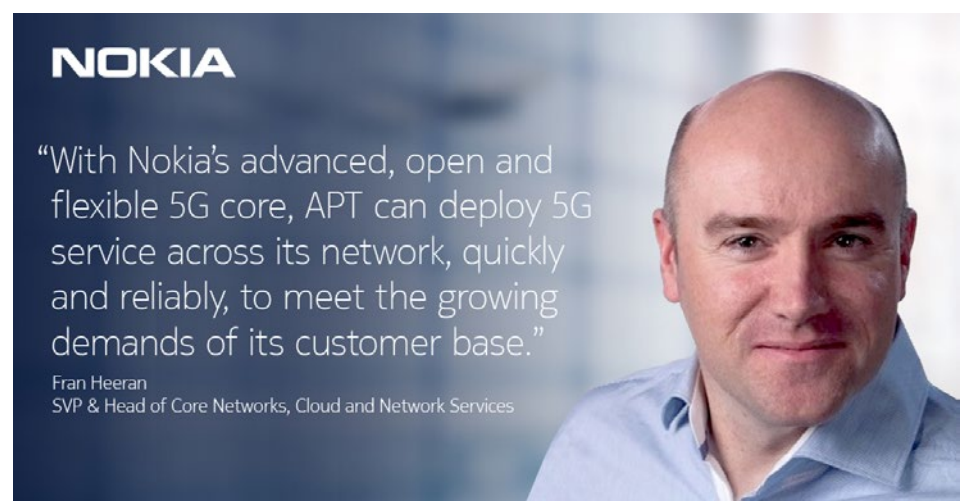
as small as a bird. The satellite IoT system can be deployed to augment existing IoT solutions, Tisserant reports. For example, one company that is already using LoRa technology to track containers could choose to add the satellite-based data when those containers were out to sea. The technology is also being used by governments that are tracking industrial fishing boats to save protected sea life. The data collected by Kinéis's units on

boats can help users locate fishermen and ensure that specific areas are not being overfished. The sensor units can include a GPS device or use the satellite's own localization with the Doppler effect. The latter option, he notes, is lower in energy and thus requires a smaller battery and less frequent recharging. A program led by Kinéis, the North Australian Indigenous Land and Sea Management Alliance, the Commonwealth Scientific

and Industrial Research Organization, Microsoft and several universities is employing satellites to protect indigenous lands from destruction by grazing animals. Herds of feral cattle and buffalo are causing damage in parts of Australia that have great significance to indigenous peoples, both culturally and otherwise. The animals, in some cases, are rubbing away rock art, trampling important waterways and damaging sacred ceremonial areas.

APT and Nokia Launch Live 5G Service Over Shared Wireless Network

Finnish vendor Nokia has announced that its 5G Core is serving Asia Pacific Telecom (APT's) live 5G Non-Standalone (NSA) and VoLTE service, using the Multi-Operator Core Networks (MOCN) capability to share the 5G RAN. In a press release regarding the development, the vendor claimed that – supported by Nokia Cloud Packet Core, Registers, Signaling, Policy, Charging, cloud infrastructure, NetGuard security and NetAct network management – APT 'can now launch their 5G new services at ease'. According to Nokia, the 3GPP standard-compliant Nokia Core network software provides APT smooth integration with the shared radio network and unlocks full MOCN capabilities. Meanwhile, the full cloud-based solution will reportedly pave the way towards zero-touch automation capabilities that drive greater scale and reliability. APT's president, Nan-Ren



Huang, said of the matter: 'We are pleased to work with our long-term strategic partner Nokia on launching 5G services by utilizing their 5G NSA Core this year. With this rollout, we are now serving reliable 5G

and VoLTE connection, new services, and premium 5G experience to our subscribers across the island, powered by Nokia's Core and software solutions.'

Gigabit Speeds Now Available to Almost 87% of All Premises, Nkom Reports

The National Communications Authority (Nkom) has revealed a notable increase in the number of homes and businesses which have access to gigabit speeds. According to the regulator, at mid-2021 86.5% of the country's premises were able to sign up for a fixed broadband service offering downlink speeds of 1Gbps, up from 52.9% a year earlier. At the lower end of the scale, meanwhile, 98.3% of homes and businesses could access downlink speeds of 30Mbps, broadly unchanged from 98.2% at mid-2020, while the percentage of premises with access to speeds of 100Mbps stood at 90.4% at 30 June 2021, up from 88.6% a year earlier.

With regards to uptake, the Nkom reported that the number of residential fixed and fixed-wireless broadband subscriptions increased to 2.226 million at the end of June 2021, up from 2.178 million a year earlier, with the lion's share of those – 1.396 million, up from 1.242 million – connecting via fiber-based technologies. Cable-based broadband subscriptions fell marginally, to 557,000 (June 2020: 585,000), while xDSL-based subscriptions continued to decline, accounting for just 6% of the total (134,000) at mid-2021, down from around 12% a year earlier. By comparison fixed-wireless broadband subscriptions saw a notable uptick, reaching 104,000 at 30 June 2021,

up from 54,000 a year earlier. Meanwhile, as part of its bi-annual publication of communications data, the Nkom also issued an update on the availability of 5G, noting that as of mid-2021 outdoor 5G population coverage stood at 23.3%, up from 5.4% a year earlier, while indoor 5G coverage stood at 11.3% at mid-2021 (with no comparable figure for mid-2020). There was, though, a notable difference in accessibility between densely populated areas and other parts of the country, with outdoor coverage in the former standing at 27.8% at mid-2021, compared to just 4.6% for the latter. 📶



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REGULATORY NEWS

EU Lawmaker Says U.S. Tech Giants Should be Regulated Where They are Based

U.S. tech giants such as Apple (AAPL.O), Google, Facebook (FB.O) and Amazon (AMZN.O) should be regulated by the EU country where they are based under proposed EU rules, a top lawmaker said on Tuesday, knocking back efforts by some countries to broaden the planned act's scope. The country-of-origin principle is set out in EU antitrust chief Margrethe Vestager's draft rules known as the Digital Services Act which requires U.S. tech giants to do more to police the internet for illegal and harmful content. The principle means Ireland is responsible for regulating Apple, Alphabet (GOOGL.O) unit Google and Facebook because they have their European headquarters there while Amazon is subject to Luxembourg's supervision. France and a few other countries are seeking to broaden the scope, worried that enforcement concentrated in just two countries may weaken the rules and also slow down decision-making. Lawmaker Christel Schaldemose, who is steering the DSA through the European Parliament and has power to amend or add other provisions to it, supports the

act's core proposal. "It makes sense to keep the country-of-origin principle," she told Reuters in an interview. Schaldemose however wants to go one step further than Vestager by including a ban on some targeted advertising in the DSA. "Targeted advertisements that are based on your behavior on Facebook, for instance, that should not be allowed. Advertisements

based on the fact that you have visited websites for buying shoes and things like that, classic commercial advertisements should probably be allowed," she said. Schaldemose said she hopes to finalize her draft with other lawmakers in the next two months so she can thrash out a deal with EU countries next year before the proposed rules can be implemented.



ITU Gives Nod to Non-Cellular 5G Standard

The International Telecommunication Union's Radiocommunication Sector (ITU-R) recognized the world's first non-cellular 5G technology standard, a move designed to provide enterprises the ability to autonomously manage networks without operators. Dubbed ETSI DECT-2020 NR, the specification will be included as part of 5G standards in IMT-2020 technology recommendation, with the aim of democratizing IoT usage and decentralizing infrastructure. In a statement, European standards member group ETSI noted the development eliminated network infrastructure and single point failure, while

enabling companies to operate without middlemen or subscription fees, as well as store and consume the data generated in the best way "they see fit for them". This could be used anywhere from on-premise, in public cloud or anything in between. ETSI further explained the standard supports use of shared spectrum, enabling access to free international frequencies including 1.9GHz. On the technology side, non-cellular 5G is built on different principles from cellular 5G, with one of the biggest differences coming from a decentralized network. In this instance, "every device is a node, every device can be a route, as if

every device is a base station", and these devices automatically find the "best route" to allow for reliable communication. Jussi Numminen, vice chair of the ETSI technical committee, pointed to a lot of hype around private networks, but claimed this was the first 5G technology to support shared spectrum operation and multiple networks in mobile system frequencies. "With the ETSI standard you get immediately access to a free, dedicated 1.9GHz frequency internationally. It is a perfect match for massive IoT," he explained.

Investing in Fixed Network Infrastructure to Boost Regional Digital Economy



On October 19, 2021, the Ultra-Broadband Forum (UBBF) 2021, themed "Extend Connectivity, Drive Growth", was held in Dubai. At the event, Bocar A. BA, CEO of the SAMENA Telecommunications Council, delivered a keynote speech titled "Investing in Fixed Network Infrastructure to Promote the Development of Regional Digital Economy." He shared his insights and suggestions on how to promote fixed network infrastructure, provide effective digital services to boost digital economy, and build an ultra-broadband network affordable to everyone. Bocar believes that the power of broadband needs to be fully leveraged to accelerate economic recovery, create new opportunities, and promote the digital economy, and "the Internet is the lifeblood of digital economy." He also emphasized that advanced ICT infrastructures, including elastic networks, mobile broadband innovations, fixed broadband innovations, cloud communications, artificial intelligence,

and new Internet protocols, are key to providing high-quality and enhanced network connectivity. To meet the needs of billions of connections in the future, Bocar mentioned that an intelligent world "built on enhanced connectivity" is required. This intelligent world requires "bigger pipes and the right protocol, specifically, the right Internet Protocol", to support "human-to-human, human-to-machine, and machine-to-machine digital life". Such connectivity requires IP addresses. Only IPv6 can solve "the IP address shortage issue forever." Evolution to IPv6+ and enhancing connectivity help "our society to thrive in the digitally-driven future." Bocar also said that an intelligent world starts with ultra-broadband. "By 'ultra' we don't just mean ultra-low latency, ultra-high bandwidth and data transmission rates, and massive connections. In fact, we are referring to the enablement of 5G transport, Internet of Things, data center interconnects, enterprise cloud applications, rendition

of virtual-reality content through fast and stable transport networks," he added. He stressed that broadband networks are a necessary investment. By promoting the construction of fixed network infrastructure and providing effective digital services, ensure that everyone "can afford broadband connectivity and quality-of-service."

However, due to the digital divide, this goal is still far from being achieved. Bocar believes that the digital divide means three categories of divides:

1. Divide between developed nations and developing nations.
2. Divide between affluent communities within a country versus poor communities/households.
3. Divide between population segments.

To bridge this digital divide, a reliable ICT infrastructure that can support "data demands of both people and machines" needs to be built. As more and more people and things go online, continuous investment in communications networks is required to ensure fast connections and data transmission between people, between people and things, and between things and things. In light of this, fiber and IPv6 must be used in fixed network infrastructure construction. In Bocar's view, fiber needs to be physically brought closer to end users. In addition, IPv6 enhanced innovation (IPv6+) needs to be deployed on each end user device, IoT, or cloud service. In this way, not only massive address space can be provided, but also the digital experience quality of all services can be improved. Bocar concluded this speech by calling for faster deployment of fibers and transition to IPv6 and IPv6+ to achieve the goal of extending connectivity and driving growth.

Czech Operators Offer Concessions on Network Sharing Deal

Deutsche Telekom and PPF have submitted proposals to EU antitrust authorities outlining potential changes to the network sharing arrangement between their Czech units T-Mobile CZ and mobile operator O2 Czech Republic. According to Reuters, the operators – together with infrastructure provider CETIN - are looking to avoid fines for violating EU antitrust laws after the

European Commission issued charges against them in July 2019. IN 2016, the EC opened an investigation into whether the network sharing deal between the units would reduce competition in the market by removing the incentive for providers to "unilaterally invest in network infrastructure." The Czech Republic has some of the highest wholesale data charges in Europe, with MVNOs

claiming that T-Mobile's wholesale rate is 40% more expensive than the price that it offers to its customers. According to TeleGeography, the EC considers T-Mobile, O2 and CETIN to be largely accountable for this following the signing of a network sharing agreement by the mobile providers in 2011. This agreement was aimed at improving time and cost efficiencies for the operators given that there are a number of regulatory hurdles relating to mergers. However, the EU's antitrust regulators are concerned that circumventing the rules in this way may in fact violate them. Reuters notes that as part of the concessions, O2 and CETIN have "offered to modernize the mobile network by using multi-standard Radio Access Network (RAN) equipment in certain radio frequency layers and also set and review the

financial conditions for unilateral network deployments", as well as offering cost-based pricing for investments or services offered by their partners. Additionally, the companies proposed limiting information exchange to purposes "absolutely necessary" for operating the shared network, with CETIN pledging to prevent "spill-over" of information between T-Mobile and O2 Czech Republic. If the proposals are accepted, they will be in force until 28th October 2033. The EC has stated that it will consult with third parties, including Vodafone, before it reaches a decision on whether to accept the proposals. If it declines, the EC could fine each company as much as 10% of their global revenue. Last month, Vodafone hit out at the Czech Telecommunication Office (CTU) for failing to address the network sharing arrangement.

Telecom Regulator Invites Firms to Submit Plan for Implementing 5G

The much-awaited 5G trial has moved a step closer to happening with Nepal's telecom regulator asking firms to submit expressions of interest to prepare an action plan for implementing the super fast new technology for mobile networks. The Nepal Telecommunications Authority has given potential applicants a November 10 deadline to send in their "master action plan for implementation and promotion of 5G in vertical sectors". The Nepal Telecommunications Authority has given potential applicants a November 10 deadline to send in their "master action plan for implementation and promotion of 5G in vertical sectors". The authority said that 5G equally aimed to establish industrial communications in vertical sectors such as automotive, healthcare, manufacturing, energy, food and agriculture, city management, government, public transportation, media and others to help digitize the economy and contribute towards global digital transformation. The expected date of commencement of the assignment is mid-January 2022, the authority said. Ambar Sthapit, Director of the Nepal Telecommunications Authority, said they were in discussion with Nepal Telecom to begin a 5G test. The government has allowed the state-owned telecom giant to conduct the trial. The Ministry of Communication, Information and Technology has given approval to the authority to determine the frequency for 5G trial. The authority, however, is yet to issue approval for the frequency Sthapit said they would also study the readiness of different sectors to adopt 5G technology. According to the authority, the study will also find out how 5G technology will impact social, economic and technological growth and help digital transformation by analyzing national and international scenarios. The final study report needs to be submitted by the consultant firm within six months from the date of the contract, as per the authority. The 5G technology is meant to deliver higher multi-Gbps peak data speeds, ultra-low latency, more reliability, massive network capacity, increased availability, and a more uniform user experience to more users, the authority said. The 5G wireless mobile network was expected to be set up in Kathmandu and three other major cities under a pilot project by the end of the last fiscal year. The Nepal Telecommunications Authority had rolled out its Trial Working Procedure 2021 for 5G mobile internet service, allowing telecom companies to conduct test runs of the super fast 5G technology, but they have not been able to move ahead



as spectrum allotment has been held up. The working procedure was released on July 19, but the trials had to be postponed due to setbacks resulting from recent political developments, officials said. On February 1, the authority submitted a proposal to the National Frequency Determining Committee to allow 5G operation in the country. According to the authority, 5G bands can be used on the existing ones. As per the technology-neutral principal policy, the operator can use 3G, 4G or 5G on the same band by obtaining permission from the authority. The authority will provide spectrum to telecom operators without cost to carry out 5G trials, and they cannot charge users during the test period either. Nepal is racing to become the first country in South Asia to offer super fast connectivity, but political instability may prevent it from achieving the goal. Telecom operators in India have already started 5G tests in different parts of the country with the government allowing trials in May this year. Digital Nepal Framework has identified "One Nation, Eight Sectors and 80 Digital Initiatives" to enable Nepal to make growth potential by leveraging disruptive technologies and driving socioeconomic growth. The key sectors acknowledged by the framework are digital foundation, agriculture, health, education, urban infrastructure, energy, tourism and finance. As per the authority's work procedure for the 5G trial, the test may last two-three months or even a year, and no charge will be applied during the period. As of mid-September, the country had a total 33.45 million internet subscribers, according to a report of the authority. The 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.

NCC, Other Regulators Move to Combat E-Fraud, Standardize Regional Roaming Tariffs



The Nigerian Communications Commission (NCC) and other telecoms regulators under the auspices of West African Telecoms Regulators Assembly (WATRA) are set to develop technical and regulatory modalities aimed at combating rising wave of electronic frauds, and standardizing regional roaming tariffs in the sub-region. This was the crux of a two-day meeting organized by WATRA in collaboration with the Economic Community of West Africa States (ECOWAS), which started on October 26, 2021 at Rockview Hotel in Abuja. The meeting, which was attended by representatives of telecoms regulators from countries across West Africa, provided a platform for key participants and stakeholders to deliberate on building a unified market in telecommunications services in West Africa, to combat roaming and cyber-related frauds, and achieve the standardization of roaming tariffs among ECOWAS member-states. Addressing stakeholders at the meeting, Executive Vice Chairman of NCC, Prof. Umar Garba Danbatta, who is also the Chairman of WATRA, underscored the centrality of the meeting by emphasizing that, as businesses move online, the fraudsters are also going digital. Danbatta, who was represented by NCC's Director, Technical Standards and Network Integrity, Bako Wakil, said, based on this fact and in order to give West African citizens and businesses the confidence to fully take advantage of the enormous benefits of Information and Communications Technology (ICT), there was a need for regulators to tame and outpace the fraudsters. "About 75 per cent of trade within ECOWAS is informal, and

thus poorly recorded. Therefore, digitizing this trade through employing many forms of electronic payments is a significant step towards formalizing, governing and boosting intra-ECOWAS trade activities. Our ambitions are to formalize informal trade, including agricultural commodities as well as boosting intra-regional trade and this requires us to improve collaboration on combating electronic fraud," Danbatta said. Danbatta informed the delegates to the forum that electronic fraud is not just an African or a West African issue but a global phenomenon. He cited studies that revealed 54 per cent of consumers in the European Union said they are most likely to come across misleading/deceptive or fraudulent advertisements or offers on the Internet. On the regional roaming service, the WATRA Chairman said the Assembly has the vision of a 'Digital ECOWAS' where improved sub-regional roaming regulation can help to facilitate an economic integration in the region. "Our citizens, traders and companies will trade better when they can use their telephones to call contacts in other ECOWAS countries and when they can use their data subscriptions at no extra cost while travelling or doing business within the region. So, reducing and eventually eliminating the cost of roaming will also be a very significant contribution towards boosting trade within the region." The EVC expressed satisfaction at the level of collaboration among national regulatory authorities in the sub-region on the one hand; and between WATRA and ECOWAS, to achieve a common goal, on the other hand, describing such synergy as a great indicator of progress and internalization of

best global practices. "I am very pleased to see the excellent collaboration and the sharing of workload between the telecommunications body and personnel within ECOWAS and WATRA. Their roles have become complementary and mutually reinforcing-policies legislative frameworks that have been designed at the ECOWAS level, while WATRA does the follow-up work of information-sharing, dialogue and learning dispersal amongst regulatory authorities. It is indeed becoming a well-articulated symphony," he added. Earlier in his welcome address, the Executive Secretary of WATRA, Aliyu Aboki, emphasized the value of a trusted digital economy to any nation. He cited a study by Accenture, which concludes that "a trusted digital economy would stimulate 2.8 per cent additional growth for major firms, with the new transactions generated totaling \$5.2 trillion of value creation in the economy," hence, the establishment and operationalization of national and regional anti-fraud committee. Aboki commended ECOWAS for "allowing this regional sharing of the enormous task of building Digital ECOWAS to work very well through WATRA, which is a regional manifestation of this collaborative structure". The WATRA Chief restated that WATRA, as a mechanism for regional regulatory collaboration, will work in unison and ensure its vision is speedily executed by making sure that no nation in the region is left behind. Speaking at the forum, the Acting Director, Digital Economy and Post, ECOWAS, Dr. Raphael Koffi, noted that while e-fraud in the provision of communication services has always been an issue being collectively tackled, variance in termination rates agreed in commercial roaming agreements has also constituted an obstacle to harmonization of roaming tariffs which, he said, collaboration between WATRA and ECOWAS is set to achieve. Participants at the event were updated on the status of the implementation of the Removal of Surcharges on International Traffic (SIIT) on ECOWAS countries; establishment of a uniform tariff cap for roaming call termination in the ECOWAS region, among others.

GSMA Forms 5G Regional Group in Asia

The GSMA established the APAC 5G Industry Community, designed as an ecosystem to support industry innovation and business opportunities across next-generation networks, edge-cloud services and enterprise IoT. The APAC 5G Industry Community comprises 12 contributing members across the mobile value chain as well as the existing IoT and 5G emerging market community, which has some 500 members in more than 30 countries. GSMA head of Asia Pacific Julian Gorman explained in a statement the group aims to “unlock the power of 5G connectivity so people, industries and society thrive”, noting the industry association is committed to playing “a leading role in supporting and amplifying the vital work our industry is doing at this time”. The contributing members are: Thailand's Digital Economy Promotion Agency; Malaysia Digital Economy Corp; Indonesia's Ministry of Communication and Information Technology (Kominfo); AIS; Axiata Group; Globe Telecom; Maxis; Telkomsel; Viettel; DHL; Huawei; and Schneider Electric. Gorman noted 2021 showed how critical digital transformation can be, as it enabled people and businesses

to combat the continued impacts of Covid-19 (coronavirus). “As digitalization has accelerated, it has become clear that digital inclusion is of the utmost importance. Collaborative approaches will be key as more 5G networks are launched in the region as they unlock new and innovative technologies.” Initially, the Community set up three industry interest groups covering manufacturing and logistics, ports and transportation, and healthcare to support members. A new

report from GSMA Intelligence released at the event shows how collaboration can help countries in Asia Pacific continue to progress towards fully-fledged digital societies. The Digital Societies Report in Asia Pacific: Accelerating progress through collaboration tracked the progress of Australia, Bangladesh, India, Indonesia, Japan, Malaysia, Pakistan, Singapore, South Korea, Thailand and Vietnam.



ComReg and eir Clash Over Role of Independent Watchdog

Irish telecoms regulator the Commission for Communications Regulation (ComReg) and fixed line incumbent eir are reportedly at loggerheads after the former raised doubts over the ability of an independent watchdog to properly assess the relationship between eir's wholesale and retail units. According to The Irish Independent, ComReg has suggested it could introduce new regulatory controls on eir, as it believes that the independent oversight body (IOB) established in May 2019 as part of a High Court settlement between the parties is unable to assess the effectiveness of the company's regulatory governance model. ComReg apparently lacks confidence that a 'clear

and unambiguous set of measures, arrangements, structures and internal controls are in place' to ensure that the telco is complying with its regulatory obligations. Its concerns have been raised following the publication of the IOB's first annual report on the implementation and effectiveness of an undertaking by eir in relation to its regulatory governance. For its part, eir has suggested that ComReg's concerns regarding the IOB are 'very confusing', with the telco pointing out that the regulator had helped to design and establish the oversight body. In a statement, eir claimed that ComReg's disappointment with the positive IOB report was 'consistent with the recent EU

Commission's decision which criticised ComReg's over-regulation of eir'. The issue is understood to have now been referred for mediation. TeleGeography notes that the establishment of the IOB formed part of a EUR3 million (EUR3.5 million) settlement by eir in December 2018, after ComReg had initiated a legal action over the lack of proper controls between the company's retail and wholesale divisions. ComReg had taken the operator to court following ongoing complaints from rival operators, which had claimed eir was giving favourable treatment to its own retail arm, despite its wholesale division being legally obliged to give equal priority to all providers.

EU Countries Green Light New Data Governance Framework



27 EU ambassadors have adopted the general approach to the Data Governance Act on Friday (1 October), providing a mandate that forms the basis for negotiations with the EU Commission and Parliament. The Data Governance Act (DGA) is a legislative proposal to establish a data governance framework for sharing

industrial data. The initiative is intended to bring together the vast amount of data produced by Europe's industrial base to provide the critical mass needed for big data analytics and artificial intelligence. Most European companies, especially SMEs, are reluctant to share their data because they fear breaching privacy laws

or confidentiality requirements. The DGA's objective is to address this gap by setting up a governance structure for data sharing markets. This will include establishing common standards, interoperability, and reciprocity of access in the context of Common European Data Spaces. "This law will not oblige anyone to share their data, but for those who want to make their data available for certain purposes, it creates a safe and easy way to do it and to stay in control," said Boštjan Koritnik, Minister for Public Administration for Slovenia, the country holding the rotating presidency of the EU Council. The positions of the co-legislators are not dissimilar; hence EU diplomatic sources close to the negotiations told EURACTIV they are expecting a final agreement to be reached shortly, with the first session between the European Parliament, Council, and Commission planned for 20 October.

Ukraine Revamping Regulators

Ukraine's independent telecoms regulator the National Commission for State Regulation of Communications & Informatization (NCCIR or NKRZI) will be restructured as the National Commission for State Regulation of Electronic Communications, Radio Frequency Spectrum & Postal Services as part of the country's plans to mirror European legislation. The Ministry of Digital

Transformation reports on its website that parliament (the Verkhovna Rada) has passed a bill at its first reading to revamp the NCCIR and 'create preconditions for Ukraine's entry into the Single European Digital Market'. The Ministry also reported that an auxiliary regulatory body, the State Service of Special Communications & Information Protection of Ukraine, will undergo restructuring, with a first phase

to begin in January 2022 and a second stage to be completed by 2025, under a presidential decree signed on 22 October 2021. The reforms 'based on modern European approaches' will optimize the State Service's structure, remove 'unusual functions' from its list of responsibilities, and refocus its operations on 'cyber protection of critical infrastructure.'

Cellco Association Urges Govt to Change SIM Rules, with Registration Deadline Four Months Away

According to the Communication Service under the Government of Tajikistan, by the end of June 2021 only 65.5% of mobile SIM cards in the country had been registered with the required user ID to meet regulations ahead of the latest re-registration deadline set for 15 February 2022. The Association of Mobile Operators of Tajikistan has issued a notice reminding

citizens of the requirements to re-register their SIMs (which in many cases requires the replacement of ID via the purchase of a newer version ID/passport issued from 2014 onwards) to avoid loss of services. As reported by Asia-Plus, the Association also proposed to the government that it reconsider its rules on SIM ownership – being enforced via Decree No. 64 of

February 2019 – which limit an individual to registering a maximum of two SIMs to their name across all networks (as opposed to two per network prior to the decree, TeleGeography notes). The statement asserted that removing all restrictions on the usage of SIM cards per subscriber would act as an 'incentive' to accelerate the re-registration process.

O! Declines to Pay for 2300MHz License in Bishkek

Kyrgyzstan's Ministry of Digital Development issued a press release dated 12 October 2021 stating that mobile operator Nur Telecom (O!) has decided not to buy the 2300MHz TDD spectrum license covering capital city Bishkek which it won at auction last month. In the auction completed on 27 September 2021, O! had placed a winning bid of KGS353.2 million (USD4.2 million) for a 1×20MHz (2340MHz-2360MHz) frequency license, while rivals MegaCom and Beeline won larger bandwidths of 1×40MHz apiece with bids of KGS296.1 million and KGS360.1 million respectively. The Ministry reported that MegaCom and Beeline have now paid for their Bishkek 2.3GHz licenses, transferring KGS281.3 million

and KGS342.1 million respectively to the state budget – these figures being slightly lower than the winning bids initially reported by the State Communications Agency (SCA). TeleGeography notes that the Bishkek 2300MHz spectrum had been returned to state ownership for re-auction following an investigation led by the State Committee for National Security launched in April 2020, which resulted in the reversal of two previous SCA decisions (Orders No. 115-pr/123-pr, March 2020) permitting cableco Ala-TV's private sale of the entire 100MHz block to Beeline and its conversion from MMDS (TV transmission) to TD-LTE without public tender.

T-Mobile, O2 Offer Czech Concessions in EC Probe

Deutsche Telekom and PPF proposed changes in operating a network sharing agreement sealed between their subsidiaries in the Czech Republic, in an effort to alleviate competition concerns raised by the European Commission (EC). In a statement, the EC explained it sought feedback regarding concessions offered by T-Mobile CZ, and PPF's O2 Czech unit and telecoms infrastructure arm CETIN, in relation to an investigation it commenced in 2016 over concerns a network sharing deal between the parties could reduce infrastructure innovation and competition. A preliminary assessment which was adopted by the Commission in August claimed the network sharing deal "may restrict competition" by reducing the ability and incentives of the companies to "unilaterally invest in network infrastructure" and therefore could negatively affect the ability of T-Mobile and O2 to compete in the Czech market. To alleviate EC concerns, the companies have offered to modernize the mobile network through deploying multi-standard RAN equipment in certain radio frequency layers, alongside ensuring provided investments or services have cost-based pricing. Another proposal would minimize information exchange to the "absolutely necessary" for the needs to operate

the shared network, and for CETIN to prevent information "spill-over" between T-Mobile and O2's Czech units. If accepted, the commitments made by the companies would be in force until 28 October 2033. In case these proposals get breached after approval, the EC could impose a fine of up to 10 per cent of each company's global turnover.



Arcep Confirms 5G Spectrum Applicants in Reunion, Mayotte

The Authority of Regulation for Electronic Communications and Posts (Autorite de Regulation des Communications Electroniques et des Postes, Arcep) has confirmed that it has received 5G spectrum applications from a number of companies in the French overseas territories of Reunion and Mayotte. The process was kickstarted on 3 August 2021 and the deadline for applications was 12 October. In Reunion the watchdog has received bids from Orange, Societe Reunionnaise du Radiotelephone (SFR Reunion), Telco OI (Free Reunion) and Zeop Mobile. All four companies have requested spectrum in the 700MHz and 3.4GHz-3.8GHz bands.

In Mayotte, meanwhile, 700MHz frequencies have been requested by Orange, SFR Mayotte, Telco OI Mayotte and Maore Mobile. Maore Mobile and Telco OI Mayotte have also applied for 900MHz spectrum. All 700MHz/900MHz bidders will now progress to the 'auction phase', in which Arcep judges the financial criteria of the respective offers. Applications for frequencies in the 3.4GHz-3.8GHz range, however, do not exceed the available spectrum blocks, so these can be distributed without an auction. The watchdog expects to hand over the frequency authorizations by March 2022. 📡

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A SNAPSHOT OF REGULATORY ACTIVITIES IN THE SAMENA REGION



Afghanistan

The Afghanistan Telecom Regulatory Authority (ATRA) has issued a statement claiming that all telecom sites across the nation's 34 provinces have been operational and that services have been expanded to unserved areas. The regulator – now operating under the aegis of the Taliban government, following the group's takeover in August this year – noted that the operation of around 1,300 sites had been halted during the fighting. On the order of the acting communications minister and ATRA chairman Mualawi Najeebullah Haqani, the Taliban government has taken control of telecom sites previously held by foreign armed forces, whilst Afghan Telecom (Aftel) equipment that had been removed has been reclaimed by security services and re-installed. In addition, the official has ordered that telcos be barred from relocating sites and infrastructure on security grounds. The ATRA adds that sites that were destroyed during the fighting have been restored in many areas of the country and that services have been expanded to previously-unserved areas. According to the regulator, coverage in Nangarhar province has been increased to 99%, 3G services were activated in districts of Urzgan and Kunar and telecom services were made available in Kharwar district of Logar for the first time. Elsewhere, the infrastructure restoration

process is ongoing in Helmand and Kandahar provinces. In a related development meanwhile, the ATRA also claimed that it had met with representatives of telecom companies regarding issues including the regulation of the sector, expansion of services and security and safety. At the meeting, the acting ATRA chairman issued several instructions to the operators, including forbidding the monitoring of calls in relation to legal cases and ordering operators to filter or block websites with pornographic content. Further, the providers were told to contact the ATRA or communications ministry regarding any security concerns and to take steps to expand 4G and fibre-optic network coverage. Operators were also urged to increase investment, to lower prices and improve coverage. The ATRA added that it had assured the attendees of its cooperation with matters such as frequency rights, SIM registration and other related fields. The regulator did not specify which companies attended the meeting, though a separate press release was issued regarding discussions with Afghan Wireless Communications Company (AWCC) related to the cellco's plans for investment in the expansion and improvement of services.

(October 21, 2021) commsupdate.com



Bahrain

The Telecommunications Regulatory Authority of the Kingdom of Bahrain has launched its promotional campaign aimed at introducing the mechanisms for registering new domain names for Bahrain (.bh), demonstrating the importance and benefits of using the domain name for Bahrain, and clarifying the next stages that TRA will follow to make domain names available to businesses and the public in an easy and accessible manner. A domain name is a name in English or Arabic letters chosen to be the address and the identity of the website and its services. It is worth noting that the TRA is managing and regulating the domain name registration services of Bahrain in both languages. Domain names will be available for assignment with mainly IT companies, including telecommunications companies licensed by TRA wishing to assign domain names on behalf of TRA so that assignment is available for local and international customers. The new process of registration is fast, simple, and secure cutting the time of registration from days to minutes. Being able to register your (.bh) domain in such a quick manner is a boost

to Bahrain's digital presence in key sectors such as tourism, culture, and the economy. The move is aimed at accelerating the kingdom's drive to deliver an increasing number of its services online. "TRA has launched an advanced and globally accredited online system for registering domain names, which will contribute to the development of an important aspect of the future vision of digital transformation at the public and private levels." Says Director of Cyber Security & Technical Affairs, Eng. Mohamed Abdulla Alnoaimi. "The registration of the domain name of Bahrain gives a Bahraini identity to local trademarks in particular or to individuals in general who are interested in the technology field, which distinguishes them from the rest of the names of other websites in the Internet world. Registration of names will become accessible to everyone and in an easy way compared to the previous situation." He continued This campaign will also clarify the various options for registering domain names for websites, including global domain name registration websites, introducing the process of moving from one registrar to another in the event the

domain name owner wants to move, and clarifying mechanisms for filing complaints and resolving disputes in the event of a dispute over the right to use between domain name owners etc. In addition to (.bh) domain name, (البحرين) an International Top Level Domain Name in Arabic has been assigned for those wishing to use the names of their websites in Arabic. Priority will be granted to those with a (.bh) digital presence and local extensions (i.e edu.

bh) to book Arabic extensions for six months from the launch of the service, after which it will be made available to the general public. TRA would like to note that during the quarter 4 of 2021, registration will be open for trademark & CR holders initially, followed by locally based entities and institutions and individuals, and then registration will be open to the international public.

(October 18, 2021) TRA Bahrain



Egypt

The National Telecom Regulatory Authority (NTRA) has started implementing an urgent plan to expand cell phone coverage on five main roads. NTRA will launch a limited tender for companies licensed to establish and operate mobile phone base stations at a cost of EGP 324m. The service will start operating by 2022. The authority will finance the project through the Universal Service Fund (USF). USF is a fund concerned with financing the projects of the national communications and information technology plans and the infrastructure projects necessary to provide basic telecommunications services. This comes within the framework of the role of NTRA in developing and disseminating telecommunications services throughout the country, with the aim of enhancing national and social cohesion and achieving economic growth. It is also part of the national project to cover main roads with mobile service and providing basic communication services and road aid on strategic roads across Egypt. NTRA explained in a press release today that these

measures include providing mobile phone coverage in strategic roads in the governorates of Ismailia, Suez, New Valley, Aswan, Giza, Beni Suef, and Minya. The first road is extending across the 30th of June axis from Cairo-Ain Sokhna Road to the Cairo-Ismailia Desert Road, connecting the governorates of Ismailia and Suez. The second road is the Paris Lake spillway road in the New Valley governorate. The third road connects Aswan-Abu Simbel Road to Arqin in Aswan governorate. The fourth road is Al-Kuraymat Road to Beni Suef, linking Giza Governorate with Beni Suef. The Fifth road connects the Cairo-Assiut Desert Road and Cairo-Aswan Eastern Desert Road in Minya governorate. NTRA, through the help of USF, previously financed projects to establish, operate, and provide mobile phone services for 17 strategic roads across the country, with a total length of 2,700 km and a cost of EGP 862m within the framework of an integrated plan to cover new roads with telecommunications services.

(October 11, 2021) dailynewsegypt.com



Lebanon

Lebanon's parliamentary Media and Communications Committee yesterday issued an urgent warning that the telecoms sector could 'collapse' within days due to fuel shortages. Voice and internet services have been intermittently suspended in various regions in recent months after problems stemming from the country's financial crisis, and electricity shortages were exacerbated by shortages of diesel to power back-up generators, with vital sectors including hospitals, education and communications all suffering as a result. The latest statement from the Committee disclosed: 'The quantity of diesel at Lebanon's state-owned Touch and Alfa mobile companies and the state-run telecommunications company Ogero, which operates fixed lines and fixed internet, is enough to run for only a few days, [without which] telecom services will crumble.' Arab News notes that the Committee yesterday agreed to 'open an additional credit for Ogero to meet its needs for fuel and spare parts, at a value of LBP350 billion [USD232 million] in the 2021 budget.' Telecoms minister Johnny Korm is expected to present the issues to Cabinet today. Head of the Committee, Hussein Hajj Hassan, highlighted some of

the problems facing the sector: 'The dilemma is not limited to the inability to secure diesel, but also the inability to purchase spare parts, whose prices have become exorbitant. In addition, we have thefts targeting telecom networks in Lebanon, some stolen pieces of spare parts and transmission poles are being sold online. It turned out that Touch and Alfa, which get diesel from oil facilities, now have to pay for it in dollars, so now government institutions are required to pay in dollars. This is complicated because companies do not have the right to buy with dollars from the market, and this increases the cost, and this foreign currency is not available.' Committee member Rola Al-Tabash explained further to Arab News: 'We would slide into a new crisis that paralyses everything in Lebanon and isolates it from the world if diesel for the telecom network's generators is not provided. The Ministry of Energy's policy over the years has led to this inability to secure power. The General Directorate of Oil, which considers itself an independent administration, has set its prices in dollars, and the state cannot buy with dollars.'

(October 6, 2021) Arab News



Nepal

NTA is preparing the roster of cyber consulting/audit firms. Only the firms on the list will be able to secure cyber security projects with telecom operators and ISPs in the country. The roster will help firms carry out the project adhering to the Cyber Security Bylaw, 2077. NTA expects to soon release the roster (standing list) of the consulting/audit firms to head cyber security of ISP and telcos in Nepal. NTA has already reminded telcos and ISPs in the country that security audit is mandatory. This means all the communications service providers in Nepal will have to comply with the Cyber Security Regulation 2077. Only the firms in the roster could serve with information security and cloud security auditing of telecom and internet service providers licensed by NTA. Cyber security firms will be selected by NTA on the basis of their experience and the extent of capacity. The telecom companies and ISPs would only collaborate with the firms listed in the roster. The regulator NTA has also set the minimum criteria for cyber security firms seeking approval to serve. Domestic and international firms can apply to serve as candidates to serve as auditing firms of service providers in Nepal. NTA has requested vying Cyber Security Consulting/Audit firms to submit their application/proposal documents in either softcopy via email or hardcopy at its office as early as this fiscal year. Cyber security has grown intense over the past few months in Nepal. Just a few months ago, there was a temporary suspicion of the NTC server coming under attack.

(October 9, 2021) nepaltelecom.com

Nepal Telecommunications Authority (NTA) has urged all stakeholders for making arrangements for the unhindered use of the internet service. Stating that the internet service has become disrupted at many places of the country due to the haphazard cut-off of the optical fiber at various places, the NTA urged for making arrangements for the unhindered use of the internet service. In a press release today, NTA urged the bodies concerned not to cut off the optical fiber at a time when efforts are being made to resolve the dispute over the rate of pole rent between the Internet Service Providers Association of Nepal (ISPAN) and the Nepal Electricity Authority (NEA) by holding discussions among the Ministry of Communication and Information Technology, the NTA, NEA, and ISPAN. "A highly essential service of the State has been disrupted with the cutoff of the optical fiber. There is a provision in the Telecommunications Act, 2053 BS that says it would be a punishable offense if anyone disrupts this essential service. The Authority expresses its regrets over the act of disruption of telecommunication service like this," NTA stated. NTA has called on all the bodies concerned to take legal action against anyone causing obstruction to the State's very essential service and to safeguard such infrastructures, laying emphasis on seeking solutions through talks. "All sides should sit together and sort out the problems through mutual discussions, and we heartily request all sides concerned including NEA and the IPAN to make arrangements for the unobstructed use of the internet service, as only talks are the solution to every problem," reads the press release. (October 3, 2021) english.khabarhub.com



Oman

The Ministry of Social Development and Omantel have signed an settlement below which Omantel will arrange a center for cloud companies for the ministry. Dr Laila Ahmed Al Najjar, Minister of Social Development and Talal bin Said Al Mamari, CEO, Omantel signed the settlement. As per the settlement, Omantel will arrange an integrated contact center for cloud communications to offer IT options and companies inside safe, high-quality, and versatile cloud surroundings. Services lined by this settlement embrace cyber safety, digital information storage, and the issuance of periodic reviews. The name center can even be linked to the ministry's CRM system and can velocity up transactions and add extra accuracy in coping with current records data. These integrated options will assist ministry's officers' entry common reviews on the efficiency of the models and name center staff. Such reviews will allow them to observe up the efficiency indicators in keeping with administrative insurance policies associated to the general public sector. Commenting on the signing of this settlement, Laila Al Najjar mentioned, "Through this agreement, we intend to upgrade the services and operational processes of the Ministry. We seek to benefit from the solutions and cloud

services provided by Omantel, which are known for being flexible and of high quality and most importantly meet the ministry's requirements." She added, "These options and applied sciences will make the method of receiving inquiries, reviews, complaints, household counselling and beneficiary companies in a versatile, quick, correct and safe method. They can even facilitate following up on records data from completely different departments and digital storage for lengthy durations. The transfer will contribute in direction of updating the ministry's programs and companies to assist e-government." Talal bin Said Al Mamari, mentioned, "Signing this agreement reflects the confidence of our customers in the advanced services provided by Omantel. Today, we are pleased to have the Ministry of Social Development join the list of government agencies benefiting from our state-of-the-art ICT solutions. Omantel is keen to provide the latest technologies and communications solutions and leverage its vast experience and capabilities to ensure that the Ministry achieves the maximum benefit from this project. I am confident that this cooperation will enhance government's efforts towards digitizing governance and will link various public organizations." (October 21, 2021) newsdeal.in

With the rollout of 5G telecom technology threatening to unleash a new wave of tower building in the Sultanate, the Telecommunications Regulatory Authority (TRA) is weighing regulation to ensure, among other things, that new towers are aesthetically appealing in their design, particularly when constructed in scenic and culturally significant areas. The measurements are the part of guidelines set out in draft regulation on Communication towers published recently by the Authority to click feedback from Industry stakeholders and the general public. Before they are formally adopted into law. To date there are estimated 3200 3G, 4G and 5G mobile network sites distributed across the length and breadth of the country, a figure that is set to grow when a third operator commences operating likely before the end of this year. The proliferation of telecom towers in

recent years, the Authority noted, has necessitated the adoption of framework that regulate the construction of new towers. Besides mandatory telecom licensees to obtain approval before constructing new towers, the proposed regulation requires that new instructions should be designed with the aesthetic standards and specifications of the area in line with the elements of the environment surrounding as much as possible, such as using color and architectural styles that minimize the visual impact on the public. Additionally, hardware and other equipment installed on the towers should be suitably concealed, it noted. Furthermore, to reduce the wanton construction of new towers, the draft regulations advocate the concept of shareable towers with the original licensees encouraged to leave space and capacity to other licensees on tenancy basis. (October 16, 2021) omanobserver.om



Pakistan

The Pakistan Telecommunication Authority (PTA) has revoked the licenses of fixed wireless provider Wi-Tribe for failing to comply with the conditions of its concessions after a commercial dispute with infrastructure provider edotco led to the discontinuation of its services. The tower infrastructure provider switched off Wi-Tribe's network in July 2020 following a disagreement between the two companies over edotco's services. Wi-Tribe argued that edotco had demanded 'huge sums of money for disrupted and faulty services' and had shut down the provider's facilities without the necessary notice 'as an extortion and blackmail exercise to gain commercial advantage'. Wi-Tribe submitted a complaint to the PTA regarding the matter, but that case remains pending. In its submissions to the PTA, Wi-Tribe stressed that its commercial relationship with edotco was imposed upon it following the acquisition of its original infrastructure partner Towershare by edotco and that Towershare's pricing and services had been competitive. In its decision the PTA highlighted that, regardless of the cause of the disruption, licensees are obligated to ensure provision of services to customers and that Wi-Tribe had failed to do so. The watchdog went on to state that Wi-Tribe had not taken 'proper, reasonable and justifiable measures' for the continuation of its licensed services, noting that by January 2021 Wi-Tribe was

no longer providing services in any of its licensed areas. As such, the PTA determined that Wi-Tribe had violated the conditions of its license and revoked the concessions. (October 27, 2021) commsupdate.com

The Pakistan Telecommunication Authority (PTA) has awarded spectrum licenses for Next Generation Mobile Services (NGMS) in Azad Jammu and Kashmir (AJK) and Gilgit Baltistan (GB) to a trio of mobile operators, following the completion of the auction process in late September. Cellcos Zong, Telenor Pakistan and Ufone were each awarded additional spectrum for the region for the provision of 3G and 4G services. As previously reported by TeleGeography's CommsUpdate, the auction comprised frequencies in the 1800MHz and 2100MHz bands, with the former split into two 2x5MHz blocks and five lots of 2x1.2MHz whilst the latter was sold as six lots of 2x5MHz. Each of the trio claimed one of the 2x1.2MHz blocks in the 1800MHz band, whilst Zong won the remaining 2x10MHz in that band for USD14.398 million after 18 rounds of bidding against rival cellco Jazz. In the 2100MHz range, meanwhile, Telenor was awarded 2x15MHz at the base price of USD13.05 million. (October 12, 2021) commsupdate.com



Qatar

Qatar had developed a mature telecom sector which has been able to absorb the additional data demands made on it during the pandemic. Mobile services based on LTE are universally available, and this has helped the two operators Ooredoo Qatar and Vodafone Qatar to migrate to 5G. In combination with a strong fiber rollout, the country is aiming to provide gigabit services nationally. 5G services are largely based on 3.5GHz spectrum made available following an auction in early 2019. BuddeComm notes that the pandemic continues to have a significant impact

on production and supply chains globally. During the coming year the telecoms sector to various degrees is likely to experience a downturn in mobile device production, while it may also be difficult for network operators to manage workflows when maintaining and upgrading existing infrastructure. Overall progress towards 5G may be postponed or slowed down in some countries. On the consumer side, spending on telecoms services and devices is under pressure from the financial effect of large-scale job losses and the consequent restriction on disposable

incomes. However, the crucial nature of telecom services, both for general communication as well as a tool for home-working, will offset such pressures. In many markets the net effect should be a steady though reduced increased in subscriber growth. Although it is challenging to predict and interpret the long-term impacts of the crisis as it develops, these have been acknowledged in the industry forecasts contained in this report. The report also covers the responses of the telecom operators as well as government agencies and regulators as they react to the crisis to ensure that citizens can continue to make optimum use of telecom services. This can be reflected in subsidy schemes and the promotion of tele-health and tele-education, among other solutions.

Key developments:

- Regulator amends wholesale tariffs on mobile networks through to 2023;
- Regulator gains increased powers allowing it greater scrutiny of telcos;
- Increasing international capacity assisting Qatar's long-term development goals as stated in the Qatar National Vision 2030 program;
- Report includes the regulator's market data reports to December 2020, telcos' financial and operating data to June 2021, Telecom Maturity Index charts and analyses, an assessment of the global impact of Covid-19 on the telecoms sector, recent market developments.

(October 8, 2021) developingtelecoms.com



Saudi Arabia

(October 12, 2021) commsupdate.com

The Communications and Information Technology Commission (CITC) has opened a public consultation on its plan to auction spectrum in the 2100MHz band for Non-Terrestrial Networks (NTN) technologies such as 5G-non-terrestrial networks (5G-NTN), mobile satellite services (MSS), internet on airplane (A2G), and internet of things via satellite (MSS-IoT). The authority is aiming to award 2x30MHz of paired spectrum at 1980MHz-2010MHz/2170MHz-2200MHz, divided into two blocks of 2x15MHz each. Block A2 (1995MHz-2010MHz/2185MHz-2200MHz) will be initially limited to MSS services, with the successful bidder given the option to apply for an upgrade of the licence for terrestrial technologies. The concessions will be valid for eleven years, from 1 January 2022 until 31 December 2032. The CITC is inviting all interested parties to submit their comments by 30 October 2021. The CITC has also updated its timeline for forthcoming spectrum auctions, with plans to hold a number of tenders in 2021/22: for 2100MHz airwaves in Q4 2021; for 600MHz, 700MHz and 3.8GHz-4.0GHz in Q1 2022; and for 1500MHz and 26GHz in H2 2022.

CITC has published an updated document on the "Regulation and Allocation of Commercial Spectrum Bands Identified for the International Mobile Telecommunications (IMT)". The Communications and Information Technology Commission (CITC) has updated the IMT regulatory document in furtherance of its National Spectrum Strategy, which aims to unlock the potential of radio spectrum in Saudi Arabia by 2025 for a smarter and safer future. The updated regulatory IMT document is part of the implementation plan for CITC's Spectrum Outlook for Commercial and Innovative Use 2021-2023. This further strengthens CITC's strategic transition towards the role of a "Digital Regulator", and it is an expression of CITC's continuing support for the Kingdom's transformation into a digital society, with the aim of achieving a global leadership position in the field of radio communications and wireless technologies.

(October 5, 2021) citc.gov.sa



Sri Lanka

The Director General of the Telecommunications Regulatory Commission of Sri Lanka (TRCSL), Oshada Senanayake, has said that the agency has received legal approval to launch mobile number portability (MNP). In an online press conference Senanayake confirmed that MNP will break the current practice of locking customers in and is now expected to be implemented before the end of the year. As previously reported by CommsUpdate, back in April the TRCSL announced that fixed number portability (FNP) and MNP would likely be introduced from October 2021. At the time, Senanayake announced that the policy would be implemented 'in consultation with the Pakistan

Telecommunication Authority, due to its success in implementing number portability in Pakistan'. The official 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 consumers. 'MNP is going to create a lot of empowerments. The consumer will now have the right to decide on the best service providers that he or she would prefer to be with. Telcos will now have to give their 100 percent on service delivery, which is good for the industry,' Senanayake said in an earlier interview.

(October 15, 2021) commsupdate.com



Turkey

State-owned Turkey Wealth Fund (TWF) is considering a majority takeover of fixed and mobile operator Turk Telekom (TT), according to unnamed people with knowledge of the matter cited by Bloomberg. The sources said that the sovereign fund has yet to make a formal offer to TT's controlling banking consortium, which acquired the ownership in a 2018 debt-swap with the intention to sell to a strategic investor. The stake could be worth around USD1.6 billion based on its current market price, according to data compiled by Bloomberg, but the sources said that the two sides have so far differed on price. Bloomberg adds that international strategic investors from the Gulf region and China had previously shown interest in the TT stake but were reportedly deterred by concerns regarding the 2026 expiry date of the telco's fixed line license. TeleGeography's GlobalComms Database (GCD) says that TWF is currently allocated a 5% stake in TT, which is 55%-owned by LYY Telekomunikasyon, a Special Purpose Vehicle (SPV) formed by a group of 29 banks led by Akbank, Turkiye

Garanti Bankasi (Garanti Bank) and Turkiye Is Bankasi (Isbank) following a debt restructuring deal completed on 22 December 2018. The banking group acquired the controlling TT stake from Ojer Telekomunikasyon AS (OTAS), the local holding company of Dubai-based consortium Oger Telecom, in exchange for cancelling debts. In September 2019 the group selected Morgan Stanley as financial adviser for a planned share sale to a strategic investor. The Turkish Treasury retains a 25% TT stake plus special veto power via one 'golden share', while 15% of shares are classed as free float on the Borsa Istanbul (BIST). GCD adds that TWF owns a controlling 26.2% direct stake in Turkey's mobile market leader Turkcell (acquired in October 2020) alongside 100% ownership of satellite/telecoms group Turksat, which was the country's third largest fixed broadband operator as at end-June 2021, behind TT and Turkcell's Superonline division. TWF's wider asset portfolio spans eight sectors, valued at USD39 billion.

(October 1, 2021) commsupdate.com



United Arab Emirates

The UAE's Telecommunications and Digital Government Regulatory Authority (TDRA) has released a public consultation to obtain the views of stakeholders on its activities related to reviewing spectrum allocation for IMT applications. The Telecommunications and Digital Government Regulatory Authority (TDRA) has released a public consultation to obtain the views of stakeholders on its activities related to reviewing spectrum allocation for IMT applications in certain frequency bands, namely the UHF and 3.8 - 4.2 GHz bands and the 6 GHz band. Based on the cooperation with stakeholders, consultation results and response analysis, TDRA will update the part on the current and future uses of IMT within the Spectrum Future Foresight document of 2020-2025, and develop a vision on UAE's directions regarding the uses of these bands. Tariq Al Awadhi, Executive Director of Spectrum Affairs said: "In line with TDRA's vision 'The UAE is a global leading country in ICT', TDRA continues its efforts to align spectrum allocation with market needs on a proactive basis. "For this purpose, TDRA has prepared this consultation to invite ICT stakeholders globally in general, and the UAE in particular, to provide their views on the allocation of some key frequency bands in light of the increasing demand for innovative wireless services such as 5G and WiFi6e, with the aim of facilitating obtaining the appropriate spectrum resources for wireless networks, maintaining sustainable and continuous growth and developing the use of new wireless services." Al Awadhi highlighted that this consultation falls under TDRA's efforts to implement the principles of transparency, fairness and openness in dealing with customers, partners and other stakeholders. The consultation posed a set of specialized questions about the 470-694 MHz band, which was previously

used in terrestrial television broadcasts, the future of this band in light of the changing habits of viewing terrestrial television broadcasts in the UAE, and the need to review the use of this spectrum effectively. It also addressed long-term options for its use through new wireless technologies. The consultation also included points of discussion and consultation on the 3800-4200 MHz band, which is mainly used in fixed satellite services in certain geographical areas of UAE and on certain frequencies within the band. The consultation confirmed that based on the recent discussions in the Arab Spectrum Management Group (ASMG) meeting, the 3.8 GHz to 4.2 GHz band is a potential band for possible new innovative applications, given the potential of this range to be used more effectively considering existing services. This consultation opened the door for stakeholders to discuss any

additional problems related to spectrum resources, by presenting their views in addition to recommendations on how to solve these problems. (October 6, 2021) [TradeArabia News Service](https://www.tradearabia.com)

The Telecommunications and Digital Government Regulatory Authority (TDRA) announced that the 2G (GSM) shutdown process of in the UAE is proceeding according to the plan set by TDRA. The shutdown of 2G networks, also known as "GSM", in the networks of service providers (Etisalat and du) is scheduled for the end of 2022. The sale of devices supporting 2G only will be stopped in June 2022 in the UAE markets. TDRA confirmed that the aim of this process is to re-direct the resources allocated to 2G to support new generations of mobile networks. TDRA is currently working, in cooperation with service providers, to provide the best services by building modern and advanced networks that

meet the users' current and future requirements. TDRA drew the customers' attention to the shutdown date of 2G networks, to stop using 2G only supported devices by that date, and to use devices that support the newer generations of telecom networks, which enables access to the best telecom services. TDRA indicated that this step comes in light of the increasing importance of the ICT sector, the rapid development of telecom technologies, and the need to direct all capabilities towards adopting and using the latest and best technologies, which contributes to achieving a comprehensive digital transformation that ensures the provision of best smart services. TDRA emphasized that the UAE was a pioneer in implementing 2G, and today it is a leader in shifting to new generations of telecom technologies, in a new era

characterized by comprehensive digital transformation, IoT and smart cities, where there is a need for a modern and more capable network to communicate between huge number of devices. This step reflects the rapid development of the ICT sector, in which mobile networks play a major role, as the technology lifecycle includes the disappearance of an old technology when a new technology emerges, driving telecom companies to shut down the least effective networks to allow the operation and activation of the most effective ones. The activation of 2G mobile network (GSM) in the UAE dates back to 1994, and it is still active to date, despite the succession of generations until 5G, of which the UAE was a leading country in its application through a comprehensive strategy and a clear roadmap. 📰 (October 5, 2021) tdra.gov.ae

REGULATORY ACTIVITIES BEYOND THE SAMENA REGION



Australia

The Australian government is looking to impose more rigorous reporting rules on Telstra with a view to improving transparency in the delivery of voice services in regional and remote areas. In a press release regarding the matter, Minister for Regional Communications, Bridget McKenzie, said she was concerned about community perceptions that services in regional and remote Australia were not being maintained, noting: 'Regional and remote consumers place a high priority on access to reliable voice services, and the government is now proposing changes so that more detailed and up to date information will be available to the community.' As per Australia's Universal Service Obligation (USO), Telstra must provide a fixed

standard telephone service on reasonable request to premises anywhere in Australia. With this being both a legislative and contractual obligation, the fixed line incumbent is obligated to provide a reliable telephone service and provide connections and repair faults within a reasonable time. Under the proposed new reporting rules Telstra would need to publicly report on its performance at the local exchange level against key indicators, including service availability, connection timeframes, faults and outages, repair timeframes, appointment timeframes, complaints, and customer contact handling. Comments on the proposals have been invited by a deadline of 8 November 2021.

(October 13, 2021) commsupdate.com



Belgium

The Minister of Telecoms, Petra de Sutter, has announced the Federal Council of Ministers has approved the royal decrees which pave the way for an auction of 5G spectrum, which is now expected to take place in Q2 2022. Explaining the final auction terms take into account the concerns expressed within the Concertation Committee (a multilateral body of federal and regional government ministers), a complementary study on the potential impact of a fourth mobile operator, a public consultation and the opinion of the Council of State, Minister De Sutter said the process is now 'in the home stretch'. The spectrum previously reserved for a potential fourth mobile network operator

(MNO) has been reduced, allowing B2B providers to bid for a share of the available frequencies. The minister believes this addresses concerns surrounding the impact of a new entrant, such as the effect on investment, jobs and radiation levels, while also creating additional competition to lower costs and encourage innovation. The text will now be submitted to a vote in the Concertation Committee on 24 November. De Sutter will then work with regulator the Belgian Institute for Postal Services and Telecommunications (BIPT) to organize the auction planned for 2Q 2022.

(October 22, 2021) commsupdate.com



Brazil

The National Telecommunications Agency (Agencia Nacional de Telecomunicacoes, ANATEL) has confirmed that a total of 15 companies have submitted bids for its 5G auction. All relevant paperwork was filed by the 27 October deadline. Going forward, the 'price proposals' will be analyzed by the Special Bidding Commission (Comissao Especial de Licitacao, CEL) on 4 November. The 15 bidders are as follows: Algar Telecom, Brasil Digital Telecomunicacoes, Brisanet, Claro Brasil, Cloud2u, Consorcio 5G Sul, Fly Link, Mega Net, Neko Servicos, NK 108, Sercomtel Telecomunicacoes, Telefonica Brasil, TIM Brasil, VDF Tecnologia and Winity Telecom. The 5G auction includes frequencies in the 700MHz, 2.3GHz and 3.5GHz bands, as well as 26GHz millimeter wave (mmWave) spectrum. All spectrum bands will be divided into national and regional blocks – apart from the 2.3GHz band, which will be solely available on a regional basis. Any unsold

national spectrum will be divided into regional blocks, however. (October 30, 2021) commsupdate.com

The national telecommunications agency ANATEL has approved the framework authorizing using a TV White Area (TVWS). The brand new TVWS framework was authorized on September 30th and can function as a versatile solution to make environment-friendly use of spectrum whereas defending present and incumbent customers from interference. As global internet usage continues to rise, this decision marks a significant step towards addressing capacity demands in unserved, or underserved regions. The Dynamic Spectrum Alliance (DSA) complimented ANATEL on the decision and said it "marks a significant step towards addressing capacity demands in unserved, or underserved regions". "The COVID-19 crisis has added additional significance to this decision," says Martha Suarez, President of

the Dynamic Spectrum Alliance. "Access to TVWS will facilitate smaller Internet Service Providers (ISP) s and community networks operating in underserved areas to connect remote and vulnerable communities to vital services, leading to more digital inclusion." Enabling the use of White Space is also in line with similar regulatory decisions that have been approved in many other countries, such as United States, Canada, Colombia, United Kingdom, South Africa, Ghana,

Uganda, Mozambique, and Kenya. In the case of Brazil, the board of commissioners has adopted the general rules authorizing the operation of TVWS unlicensed devices on a secondary basis in the UHF and VHF bands (54-72 MHz, 174-216 MHz, 470-608 MHz, and 614-698 MHz). Further developments will take place in the coming months regarding the geolocation database and additional technical specifications of the devices.

(October 11, 2021) developingtelecoms.com



Canada

This Federal Court has denied requests from national telecoms operators Bell and Telus to block Quebec-based rival Videotron from purchasing 3500MHz 5G 'set-aside' mobile licenses in western provinces it won at auction earlier this year, IT World Canada reports. The court concluded that there was no basis for assertions that Videotron needed to have physical infrastructure

in British Columbia, Alberta and Manitoba to be eligible for the set-aside licenses (reserved for companies other than Bell, Telus or Rogers). Videotron welcomed the court's decision to refuse the stay request, although the case will continue with further arguments to be put forward by Bell and Telus in future hearings.

(October 29, 2021) commsupdate.com



Chile

Telecom regulator the Department of Telecommunications (Subsecretaria de Telecomunicaciones, Subtel) has granted Starlink – the Low Earth Orbit (LEO) satellite broadband provider backed by Elon Musk's SpaceX venture – approval to operate five satellite ground stations, enabling the operator to launch commercial services on a national level. The authorization covers sites in Caldera, Coquimbo, San Clemente, Puerto Saavedra and Puerto Montt and follows 'several months' of pilot tests in Sotomó (Los Lagos Region) and Caleta Sierra (Coquimbo Region). Commenting on the development, Undersecretary of Telecommunications Francisco Moreno, was quoted as saying: 'We are facing a true milestone in terms of digital inclusion that will provide our users with one more connectivity alternative. From Subtel we promote connectivity by sky, sea and land, bringing high-speed connections to different areas of our country, allowing students, entrepreneurs or

different productive sectors to be part of the digital revolution ... Furthermore, the interest of companies such as Starlink, Amazon and other low-orbit satellite providers reveals that Chile is an attractive country for investment in telecommunications.' Starlink is aiming to launch commercial services in parts of Chile by the end of the year, and accepting orders from interested customers. A subscription is priced at CLP92,600 (USD114) per month although no further details regarding the tariff, such as download limits or connection speeds are currently available. The company website does note, however, that its 'Beta' service provides downlink speeds of between 50Mbps and 150Mbps, with 'brief period of no connectivity at all'. In addition to the monthly price, subscribers must pay setup costs totaling CLP562,500, including CLP466,700 for the equipment and shipping fees of CLP95,800.

(October 21, 2021) commsupdate.com



Colombia

The Ministry of Information Technologies and Communications (Ministerio de Tecnologías de la Información y las Comunicaciones, MinTIC) has renewed the 1900MHz spectrum licenses held by Claro and Movistar via resolutions 02802 and 02803, which were dated 19 October 2021. The National Spectrum

Agency (Agencia Nacional del Espectro, ANE) reportedly assisted with the technical assessment. As part of the renewal conditions, both companies are obliged to update their technology and improve coverage and the quality of their services.

(October 22, 2021) commsupdate.com



Dominican Republic

The Dominican Telecommunications Institute (Instituto Dominicano de las Telecomunicaciones, Indotel) has announced that its auction of 5G-suitable frequencies has generated a total of USD73.789 million. Claro Dominicana submitted the largest bid, offering USD53.111 million for a 70MHz block of spectrum in the 3.3GHz-3.4GHz band. Altice Dominicana,

meanwhile, will pay USD20.678 million for a 70MHz block of 3.4GHz-3.5GHz spectrum. Claro's license will run for 20 years, while Altice's concession will only be valid for 14 years. The 5G frequencies will be formally awarded to the cellcos on 28 October.

(October 14, 2021) commsupdate.com



Finland

The Ministry of Transport and Communications (Liikenne- ja viestintäministerio, MoTC) has issued a decree under which the minimum level of speed that must be provided by universal broadband service providers will increase to up to 5Mbps. In a press release, the MoTC confirmed that the decree will enter into force on 25 October 2021, while it specified that as per the ruling minimum downlink speeds must be at least 3.5Mbps, while 'normal' speeds – defined as 'the speed that is maintained in 90% of cases during each four-hour measurement period' – must be at least 4.5Mbps, with maximum speeds required being

5Mbps. As noted in TeleGeography's GlobalComms Database, all consumers and businesses were initially entitled by law to a broadband subscription offering download speeds of at least 1Mbps from 1 July 2010. Plans for an increase to the minimum mandated downlink rate was then announced when the MoTC in April 2015 confirmed it would require operators to provide a higher minimum rate of 2Mbps; it was not, however, until May 2016 that designations of universal service providers for 2Mbps broadband connections were made.

(October 22, 2021) [commsupdate.com](#)



Germany

The Federal Network Agency (FNA) has published its draft decision for the framework conditions under which telecoms operator can gain access to the 'last mile' network of Telekom Deutschland in the next few years. The draft regulation proposes that the FNA will not regulate Telekom's new fiber-optic networks with the same intensity as its copper networks and will stop ex-ante regulation of access to the last mile of the new gigabit infrastructure. The non-discriminatory access to the fiber-optic networks of the Telekom is to be secured by an equal treatment obligation according to the Equivalence of Input principle (EoI), under which other companies can obtain access under the same system and process conditions as those available to Telekom itself. The fees paid by other operators to Telekom for the use of its fiber-optic networks are to be checked in the event of anomalies. In order to promote the expansion of fiber-optics, the planned regulatory framework also provides for expanded duct access to accelerate the expansion of the network and save unnecessary civil engineering costs. The fees for empty conduit access should, as before, be subject to approval. The regulation of Telekom's copper networks is to be retained for the most part, although the operator will now be obliged to notify in good time any migration to fiber-optic networks associated with the dismantling of copper infrastructure and to present

migration plans. The FNA will not give Telekom any guidelines as to whether and when it has to switch off parts of its copper network, as the regulation focuses on making the transition transparent for users, consumers and other providers with sufficiently long lead times. The FNA has announced its regulatory proposals in anticipation of the Telecommunications Modernization Act, which will come into force on 1 December 2021. Interested parties have until 15 November to comment in writing on the draft decision. 'The FNA is setting the course for accelerated fiber-optic expansion in Germany. Unlike the copper network, access to the fiber-optic network of Telekom is not regulated ex ante,' commented the FNA's President, Jochen Homann, adding: 'This is a big step and the signal for Telekom to rapidly expand its fiber-optic network. In return, it must allow competitors to use its fiber-optic network under the same conditions as its own sales department. The FNA reserves the right to intervene only in the event of anti-competitive abuse. The FNA expects Telekom and its competitors to use the new market regime to significantly increase their investments in fiber-optics. This reduction in regulation is a paradigm shift that shows that the FNA reacts flexibly and innovatively to new market developments.'

(October 13, 2021) [commsupdate.com](#)



Hong Kong

The Office of the Communications Authority (OFCA) has completed its latest 5G spectrum auction, raising a total of HKD1.877 billion (USD241 million) over 32 rounds of bidding. 255MHz of frequencies in the 700MHz, 850MHz, 2.5GHz and 4.9GHz bands was sold to the four incumbent cellcos under 15-year licenses. Hutchison 3 acquired concessions at 700MHz and 2.5GHz, SmarTone bought 700MHz, 850MHz and 4.9GHz spectrum, HKT secured frequencies in the 700MHz and 2.5GHz bands, while China Mobile Hong Kong (CMHK) won licenses at 700MHz, 2.5GHz and 4.9GHz. (October 28, 2021) [commsupdate.com](#)

The Office of the Communications Authority (OFCA) in Hong Kong said its auction of spectrum in the 600MHz, 700MHz, 850MHz, 2.5GHz/2.6GHz and 4.9GHz bands saw bids totaling HKD1.37 billion (USD176 million) at the end of its first day. Nine rounds of bidding were completed, with the auction continuing. The sale is being contested by the four incumbent cellcos: Hong Kong Telecommunications (HKT), Hutchison 3, China Mobile HK (CMHK) and SmarTone.

(October 26, 2021) [commsupdate.com](#)



India

The Department of Telecommunications (DoT) has amended the terms of the Unified License Agreement to alter the definition of Adjusted Gross Revenue (AGR) – the figure upon which most license and spectrum fees paid by telcos are based – to remove most income derived from non-telecom sources. The amended system introduces a new term, Applicable Gross Revenue (ApGR), which excludes revenue from other sources such as non-telecom operations, interest, dividends, gains from foreign exchange fluctuations and others. AGR is then calculated based on ApGR minus certain other revenues depending on the authorized service under the license. The move is part of the reform package for the sector that was approved by the government in September this year and aims to relieve some of the financial burden on the industry. Notably, the new AGR rules are effective from 1 October 2021 and are only applicable to dues arising after that date. The Economic Times writes that non-telecom items represent around 10% of the industry's revenue. The definition of AGR was the subject of a decades-long dispute between the government and the industry over the inclusion of revenue from non-telecom sources. The matter was mostly resolved in October 2019 when the Supreme Court ruled in favor of the DoT, leading to the imposition of backdated dues, penalties and interest totaling trillions of rupees on the sector. Mishandling of the case dragged the matter out for a further two years, however, as the court refused to provide clarification on certain elements of its decision, prompting further legal challenges.

(October 26, 2021) [commsupdate.com](#)

The Indian government's Department of Industrial Policy and Promotion has issued a statement confirming a decision to allow 100% foreign direct investment (FDI) in the ownership of all telecom services and telecom infrastructure providers via the 'automatic' route of approval, compared to the current 49% automatic approval threshold, as part of the telecom reforms package announced on 15 September. As reported by the Economic Times, the

decision qualifies all telecom services/infrastructure 'Category-I' providers (including Basic, Cellular, United Access Services, Unified license [Access services] and other relevant operators as permitted by the Department of Telecommunications) for 100% foreign ownership under the automatic route, whereas previously FDI beyond 49% required prior clearance by the government's Foreign Investment Promotion Board. A caveat remains, however, that all FDI in telecom services will be subject to the provisions of Para 3.1.1 of the FDI Policy which requires any FDI from a country sharing India's land border to be first approved by the government. (October 7, 2021) [commsupdate.com](#)

Indian telecoms operators including Bharti Airtel and Vodafone Idea (Vi) have received notices from the Department of Telecommunications (DoT) demanding a cumulative penalty of INR30.5 billion (USD411 million) within three weeks, relating to a 2016 dispute over interconnection provision. The Financial Express writes that the action risks sparking a fresh bout of litigation in the sector just weeks after the government approved a reform package which aims to put an end to legal battles by reducing regulatory burdens on service providers and promoting healthy competition. The penalty was originally recommended by the Telecom Regulatory Authority of India (TRAI) in October 2016 after high levels of congestion on established networks led to call failures made to and from the Jio network beyond permissible limits. The TRAI's action was ratified by the DoT's Digital Communications Commission in July 2019 but was suspended by the telecoms minister. A Bharti Airtel spokesperson, quoted by the Financial Express, said: 'We are deeply disappointed with the arbitrary and unfair demand based on TRAI recommendations of 2016 relating to provisions of point of interconnect to a new operator. These allegations were frivolous and motivated. Bharti Airtel takes pride in maintaining high standards of compliance and has always followed the law of the land. We will challenge the demand and pursue the legal options available to us.' (October 4, 2021) [commsupdate.com](#)



Indonesia

Indonesia's Ministry of Communication and Information (MCI, KemKominfo) has announced the completion of refarming of the 2.3GHz band following the auction of frequencies in May 2021. With the MCI looking to improve the quality of digital cellular services through the more efficient use of spectrum in Indonesia, in July the minister of communications Johnny G Plate announced that refarming would take place from 14 July to 28 September involving 'frequency changes at 15,577 Base Transceiver Stations (BTS) and carried out in stages in clusters in various regions' across the country. The nine clusters were designated as: Riau Islands; Northern Sumatra; Central Java;

Northern Sulawesi Banten, DKI Jakarta, Bogor, Depok, Tangerang, and Bekasi; West Java except Bogor, Depok, and Bekasi; East Java including Malang Regency and City, Kediri Regency and City, Blitar Regency and City, and Madiun Regency and City; East Java including the City of Surabaya, the Regency/City of Mojokerto, and the Regency of Sumenep; and Papua, Maluku, and North Maluku. The refarming process was carried out under plans agreed with domestic operators, including Telekomunikasi Selular (Telkomsel) and Smart Telecom (Smartfren) which won the 2.3GHz spectrum. As previously reported by TeleGeography's CommsUpdate, back in April KemKominfo issued

Press Release No. 133 / HM / KOMINFO / 04/2021 to announce the results of the 2.3GHz radiofrequency auction, completed between 19 and 21 April 2021. The ministry's tender was to allocate frequencies in the range 2360MHz-2390MHz with a block size of 10MHz each. At the close of the process, MCI confirmed that Telkomsel bid IDR176.9 billion (USD12.2 million) per block on the three lots of bandwidth offered – securing

two – while Smartfren bid IDR176.5 billion to win the other slot. As such, Telkomsel secured blocks A and C, while Smart Telecom won block B. In addition to the above, KemKominfo confirmed that refarming would also involve broadband wireless access (BWA) operator Berca Hardayaperkasa (trading as hinet), which is also a user of the 2.3GHz frequency band.

(October 6, 2021) commsupdate.com



Lithuania

Lithuanian telecoms watchdog the Communications Regulatory Authority (Rysiu Reguliavimo Tarnyba, RRT) has published plans for the upcoming sale of spectrum in the 700MHz band for 5G mobile services, set to take place in early 2022. The tender comprises the sale of one 2x10MHz block (713MHz-723MHz/768MHz-778MHz) and two lots of 2x5MHz (723MHz-728MHz/778MHz-783MHz and 728MHz-733MHz/783MHz-788MHz), with initial prices set at EUR5 million and EUR3 million (USD5.8 million and USD3.5 million), respectively. The RRT notes, however, that participants will be restricting to bidding on one spectrum block during the auction. The concessions are valid for 20 years. Winning bidders are subject to certain rollout and service provision and rollout obligations, including a requirement to launch commercial 5G services in at least one of the country's five largest cities (Vilnius, Kaunas, Klaipeda, Siauliai and Panevezys) within six months and to all five by 31 December 2023. Interested parties have until 25 January 2022 to submit auction documents to the RRT.

(October 27, 2021) commsupdate.com

The Ministry of Transport and Communications, the Communications Regulatory Authority (RRT), other public sector institutions and telecoms operators have agreed on strategic actions for the implementation of 5G mobile communications throughout the country. Under the agreement, the development of 5G will be carried out in the following stages: by 2022 5G should be available in at least one of the major Lithuanian cities; by 2023 connectivity should be available in the cities of Vilnius, Kaunas, Klaipeda, Siauliai and Panevezys; and by 2025 5G coverage should be available in all cities and across major international transport routes, including the Via Baltica motorway and the Rail Baltica line, as well as other national roads, railways, airports and seaports. Ultimately, Lithuania is aiming to cover 95% of households with speeds of 100Mbps by 2025.

(October 13, 2021) commsupdate.com



Malaysia

The Ministry of Communications and Multimedia (KKMM) wants telecommunication companies to jointly help the government in efforts to improve the country's communication network, especially in rural areas.

Communications and Multimedia Minister Tan Sri Annuar Musa said that apart from thinking of profits, telecommunication companies should also become equal service providers in urban, rural and interior areas. "I want more commitment from telecommunication companies because I often hear the laments of rural folks, meaning there are still gaps that need to be addressed. "I understand that rural areas are not so populated, so generally these companies do not want to invest in these areas which are not profitable but telecommunication companies must look at the approachability aspect to enable rural folks to get quality

Internet services," he said. He said this after conducting a survey of the Kampung Mongkos telecommunication tower site located about 110 kilometres from Kuching city today. Annuar also said that his ministry would continue to monitor construction projects as well as the upgrading of towers in Sarawak under Phase One of the National Digital Network (JENDELA) plan. "I will conduct spot checks from time to time to obtain direct information in areas where the service is not very satisfactory. "The people can lodge complaints on the JENDELA map portal at jendela.my to give feedback on services in their respective areas or apply for new services from the service providers," he said. For the record, the KKMM had allocated a total of RM4 billion to implement the JENDELA plan in Sarawak, with 749 new towers set to be built and existing towers to be upgraded. (October 24, 2021) malaymail.com



Malta

The Malta Communications Authority (MCA) has issued a decision which makes the provision of a 4Mbps broadband internet connection part of the country's universal service requirements. The decision

is effective from 1 December 2021. The provision of universal services is currently undertaken by national fixed and mobile operator GO.

(October 26, 2021) commsupdate.com



Mexico

Mexico's Federal Telecommunications Institute (Instituto Federal de Telecomunicaciones, IFT) has confirmed that it has sent a three-pronged spectrum proposal to the Senate as it seeks to pave the way for the 5G era. The proposals are as follows:

- A reduction in prices for bands earmarked to support 5G connectivity, in order to promote 'the efficient allocation of radio spectrum for these services'; 5G bands listed as 600MHz, L-band (1500MHz), 3.3GHz-3.45GHz and 3.45GHz-3.6GHz.
- A modification of existing 800MHz and 850MHz licensing blocks from nine cellular regions to 65 basic service areas to encourage smaller geographical rollouts by new operators; payments to be proportional to the economic level of the coverage area.
- The introduction of an accreditation scheme, whereby the provision of social coverage (i.e. serving towns lacking mobile broadband coverage) will reduce payment rights.

These proposed measures follow a proposal sent to the Ministry of Finance and Public Credit (Secretaría de Hacienda y Crédito Público, SHCP) this summer, seeking to reduce the high prices of radioelectric spectrum in Mexico. The IFT notes: 'It is important to note that the first two proposals do not imply a reduction in the budget income of the federation. In the first case, the reduction of the amounts of radio spectrum band rights that are not yet assigned for the provision of mobile services does not mean loss of income, precisely because they have not yet been assigned. Thus, if the amounts of the rights quotas are reduced, these bands will be much more attractive in future bidding processes, which will also result in new income from consideration and payment of rights for the federation and will avoid, as already happens,

that blocks of spectrum remain deserted in spectrum tenders.'

(October 27, 2021) [commsupdate.com](#)

All 1700MHz/2100MHz AWS and 1900MHz PCS frequencies went unsold at the latest auction of unused 4G frequencies in Mexico. The auction generated a total of MXN1.35 billion (about \$65.6 million), with AT&T Mexico and Telcel the sole winners of selected spectrum blocks and, apparently, the sole bidders. Mexican press reports say that AT&T offered the biggest total bidding commitment – some \$52.5 million for 800MHz spectrum in various regions of the country. Telcel reportedly offered a more modest \$13.1 million for a block of 2.5GHz spectrum. According to news site Bnamericas, the reason that Mexico's spectrum tender didn't excite the market was that the prices were artificially high. These spectrum costs are established in the federal law on rights but set a barrier that may be too high to encourage the entry of new participants. Another potentially off-putting factor is high fragmentation of the blocks. However, the auction process is far from over. The Instituto Federal de Telecomunicaciones (IFT) cleared the 600MHz band for mobile use as long ago as 2018 and many commentators have been waiting with interest to see when it will be offered. There's no doubt that the planned tender for both the 600MHz and 3.5GHz bands will be greeted with more enthusiasm, most obviously because such an auction would have a role in enabling 5G deployment, making it a more enticing prospect. However, it's not yet clear when this auction will take place. It was reportedly scheduled for this year but next year now seems more likely.

(October 9, 2021) [developingtelecoms.com](#)



Montenegro

Telecoms watchdog the Agency for Electronic Communications and Postal Services (EKIP) has launched a public tender to award technology neutral licenses for wireless frequencies in the 900MHz, 1800MHz, 2GHz and 2.6GHz bands for mobile telephony services. The bidding is scheduled to take place between 1 and 24 December 2021 and the

concessions will be valid until 1 September 2031. The auction will be conducted using a combined format of a multi-round clock phase and a single round of sealed bids. Participation is open to companies and consortia with at least five years of experience in public mobile electronic communications network operation and service provision. (October 31, 2021) [commsupdate.com](#)



New Zealand

The Commerce Commission (ComCom) has released a draft determination proposing to continue regulation of number portability for both local and mobile telephone numbers for another five years. The regulator notes the proposed determination is essentially unchanged aside from a suggested modification to help facilitate the prevention of fraud in number porting, which builds

on work currently being progressed by industry body New Zealand Telecommunications Forum Incorporated (TCF). The current determination will expire on 19 December 2021 with the new determination then taking effect on 20 December 2021. Submissions are due by 26 October 2021 and cross submissions by 5 November 2021. (October 6, 2021) [commsupdate.com](#)



Niger

The Nigerian Communications Commission (NCC) has slated the country's 5G spectrum auctions for 13th December. The auctions form part of the regulator's Technology Deployment Plan, as well as the Nigerian National Broadband Plan (NNBP) 2020-2025. Interested parties must apply to bid before 27th October and subsequently participate in a Stakeholders' Engagement Program on 3rd November. TeleGeography reports that two lots of 100MHz TDD spectrum will be made available. The blocks will be in the 3.5GHz band from 3500MHz-3600MHz and 3700MHz-3800MHz, and each will have a reserve price of US\$197.4 million. The nationwide permits will have a validity period of 10 years. Bidders in the auction will not need to hold an operating license; if their bid is successful and they do not already hold a Unified Access Service License (UASL) they will automatically be granted one, albeit for a fee. The terms of the licenses require winners to launch a commercial offering within 12 months of the license's start date, and to connect at least one state in each of Nigeria's six main administrative regions within two years. (October 16, 2021) developingtelecoms.com

The Nigerian Communications Commission (NCC)

has published a Draft Information Memorandum for its upcoming auction of spectrum in the 3.5GHz band, as part of its 5G Technology Deployment Plan and in line with the Nigerian National Broadband Plan (NNBP) 2020-2025. Interested stakeholders are invited to make written submissions on the subject by 27 October and participate in a Stakeholders' Engagement Program to be held on 3 November, with the spectrum auction currently scheduled to take place on 13 December. The regulator plans to auction off two lots of 100MHz TDD spectrum in the 3.5GHz band, ranging from 3500MHz-3600MHz and 3700MHz-3800MHz. Each lot has a reserve price of USD197.4 million, with the nationwide spectrum licenses valid for ten years. To qualify to bid in the auction, applicants will not have to be an existing licensed network operator in Nigeria, although any successful bidder which does not already have a Unified Access Service License (UASL) will be granted one upon payment of the specified fee. Winning bidders will be required to launch commercial services within twelve months of the effective date of the license, and coverage should reach at least one state in each of the country's six geo-political zones within two years.

(October 8, 2021) commsupdate.com



Norway

Norway's National Communications Authority Nasjonal kommunikasjonsmyndighet, Nkom) has announced the conclusion of its 5G spectrum auction that got underway at the start of this week, confirming that four companies have walked away with new frequencies. With the sale process raising a total of NOK3.89 billion (USD444 million), all three of the nation's mobile network operators (MNOs) – Telenor Norge, Telia Norge and ice – laid claim to spectrum, with fibre-based fixed broadband provider Altibox rounding out the winning bidders. Telenor emerged as the biggest spender, offering NOK1.42 billion for 2x40MHz in the 2.6GHz band (NOK416 million) and 120MHz in the 3.6GHz band (NOK1.00 billion). It will, however, only have to pay NOK1.22 billion for its frequencies after accepting a voluntary commitment to provide downlink speeds of 100Mbps in underserved/unserved rural areas, which discounted the final price. For its part, Telia Norge bid a total of NOK1.07 billion for 2x30MHz in the 2.6GHz

band (NOK289 million) and 100MHz in the 3.6GHz band, though with it also accepting the voluntary coverage commitment, this reduced its final fee to NOK910 million. Rounding out the trio seeking a reduced payment in return for the coverage obligation, Altibox bid NOK53 million for a 50MHz block of TDD spectrum in the 2.6GHz band, and a further NOK781 million for 100MHz in the 3.6GHz band; after receiving its discount it will pay a total of NOK724 million. ice was the only provider not to take up the coverage commitment, agreeing to pay NOK554 million for an 80MHz block in the 3.6GHz band. According to the Nkom, all winning bidders have a number of options for paying for their new 20-year concessions, including the choice of making payments for their new frequencies on an interest-free basis over a five-year period, or paying over a longer 20-year period, though doing so with a 6% interest charge applying.

(October 1, 2021) commsupdate.com



Philippines

The National Telecommunications Commission (NTC) is reportedly mulling the introduction of fixed number portability (FNP) in the Philippines, according to its deputy commissioner Edgardo Cabarios. 'Congress opted to limit the number portability to mobile[services]. There are only around I guess, four million fixed line subscribers compared to 150 million subscribers of mobile market,' Cabarios said, adding: 'But we are considering, trying to see whether there is a need for

number portability to be used in the landline market'. The NTC introduced mobile number portability (MNP) on 30 September allowing users to keep their number when switching service provider, and a similar scheme could be put in place for fixed telephony users. Whilst take-up to date has been somewhat underwhelming – Melanie Manuel, the head of Telecommunications Connectivity Inc., the joint venture company of the three telcos charged with the task of handling MNP,

confirmed recently that only 1,000 subscribers had taken advantage of the new regime – in the long term, she is confident that users will get on board. Previously,

in July this year, Manuel had predicted that one million Filipinos would switch networks in the launch phase. (October 24, 2021) [commsupdate.com](#)



Portugal

The National Communications Authority (Autoridade Nacional de Comunicacoes, ANACOM) has confirmed that its multi-band 5G spectrum auction – which commenced on 14 January – has finally concluded, after 1,727 rounds of bidding. The process generated a total of EUR566.8 million (USD657.6 million). Alongside incumbent mobile operators PT Portugal (MEO), Nos and Vodafone Portugal, the auction also saw bidding activity from Grupo MASMOVIL-backed cableco Nowo, mobile network densification specialist Dense Air and the previously unknown Dixarobil, which is understood to be affiliated with Romania's Digi Communications.

Nos spearheaded the bidding, agreeing to pay EUR165.1 million for a combination of 700MHz, 900MHz, 2100MHz and 3.6GHz spectrum. Next in line was Vodafone (EUR133.2 million; 700MHz/3.6GHz), followed by MEO (EUR125.2 million; 700MHz/900MHz/3.6GHz). In terms of the 'new' bidders, Nowo bid EUR70.2 million for 1800MHz, 2.6GHz and 3.6GHz spectrum, while Dixarobil offered EUR67.3 million for spectrum in the 900MHz, 1800MHz, 2.6GHz and 3.6GHz bands. Finally, Dense Air committed to pay EUR5.8 million for 3.6GHz frequencies.

(October 28, 2021) [commsupdate.com](#)



Romania

The National Authority for Management and Regulation in Communications (ANCOM) has launched the competitive selection procedure for the auction of short-term spectrum licenses for unused mobile frequencies in the 800MHz, 2600MHz and 3.5GHz bands. The tender is expected to raise at least EUR72.5 million (USD83.9 million). ANCOM intends to auction a total of 195MHz of frequencies, with user rights valid from 1 January 2022 and expiry aligned with existing permits in the bands, as follows: one block of 2x5MHz in the 800MHz band (791MHz-796MHz/832MHz-837MHz), valid between 1 January 2022 and 5 April 2029 and with a starting price of EUR22 million; eight lots of 2x5MHz in the 2600MHz band (2530MHz-2570MHz/2650MHz-2690MHz), valid until 5 April 2029, EUR4.3 million per paired block; one block of 15MHz TDD in the 2600MHz band (2600MHz-2615MHz), expiry

5 April 2029, EUR3.5 million per block; and 18 lots of 5MHz TDD blocks in the 3.5GHz (3400MHz-3490MHz) band, expiry 31 December 2025, EUR700,000 per block. In terms of coverage obligations, 800MHz licensees will need to cover 95% of the population of 56 specified localities with mobile broadband download speeds of at least 2Mbps by end-2023, while rights holders in the 3.5GHz band must deploy 25 base transceiver stations (BTS) within a year of entry into force of the license, rising to 50 BTS after two years and 100 after three years and six months. Interested parties are invited to submit applications before 15 November. The regulator expects to announce the qualified bidders by 17 November, enabling the auction to begin no later than 25 November, the final results to be announced in December and permits granted by the end of the year.

(October 12, 2021) [commsupdate.com](#)



Sweden

The Swedish Post and Telecom Agency (Post & Telestyrelsen, PTS) has announced plans to auction licenses in the 900MHz, 2100MHz and 2.6GHz bands in the third quarter of 2023. The expiry dates of existing licenses in those bands have been harmonized at end-

2025 so that all the spectrum can be allocated in a single process. A market consultation is being planned for February-March 2022.

(October 26, 2021) [commsupdate.com](#)



Togo

The Electronic Communications and Postal Regulatory Authority (ARCEP) of Togo has launched a public consultation on plans to introduce mobile number portability (MNP) in the country. The consultation runs until 3 November 2021 and forms part of ARCEP's preparations to increase competition in a market dominated by two players – Togocom and Moov Africa Togo. In a statement the regulator confirmed:

'Portability will offer consumers the possibility of changing operator, while keeping their number with their original operator, in the event of dissatisfaction with the quality of service or to benefit from better offers and prices available from the competitor. In this sense, it constitutes a real lever of competition to boost the market.'

(October 24, 2021) [commsupdate.com](#)



United Kingdom

British telecoms regulator Ofcom has issued a decision updating the technical conditions of mobile concessions in the 800MHz band, saying that after consulting on the matter it had determined it was appropriate to do so. Setting out its judgment, the regulator confirmed the license amendment is available to all holders of Spectrum Access 800 MHz licenses on request. Licensees that wish to take advantage of these changes can apply to Ofcom for a variation of their concession. Among the changes made as part of the decision, Ofcom has aligned the in-block transmit power limit with the 700MHz band, with the permitted base station transmit power increased from 61 dBm/(5MHz) EIRP to 64 dBm/(5MHz) EIRP. This is accompanied by a change to the way in which the power limit is referenced, moving from per radio equipment to per antenna; as part of this change, femtocells must implement power controls to minimize interference to adjacent channels. Meanwhile, to help facilitate equipment manufacturers make equipment that can use both the 700MHz and 800MHz bands, Ofcom has changed some of the out-of-band and out-of-block limits. Such changes have been made to closer align the power limits with

the technical conditions set out in both the Spectrum Access 700MHz licenses and the European Conference of Postal and Telecommunications Administrations (CEPT) recommendation for the 800MHz band.

(October 28, 2021) [commsupdate.com](#)

Ofcom has published its decision on a new fiber-to-the-premises (FTTP) pricing offer that Openreach intends to introduce from 1 October 2021). With the regulatory requirements designed to ensure that the regulator can examine pricing proposals before they are introduced to ensure competition is not harmed, Openreach notified Ofcom of its planned 'Equinox Offer' on 1 July 2021. It subsequently launched a consultation process calling for feedback on the pricing plans, setting out a provisional view that it was not considering taking any further action. Having now considered the responses to its consultation, Ofcom has confirmed it will indeed not take any action regarding Openreach's pricing proposals, and the 'Equinox Offer' will now last until 30 September 2031 and be available across Openreach's FTTP footprint.

(October 1, 2021) [commsupdate.com](#)



United States

Auction 110, the latest sale of 5G-suitable spectrum by the Federal Communications Commission (FCC), commenced yesterday (5 October), generating opening day bids of USD672.4 million. The 33 qualified bidders include the likes of AT&T Communications (bidding as AT&T Auction Holdings), Verizon Wireless (Cellco Partnership) and T-Mobile US (T-Mobile License). Satellite TV giant DISH Network – which intends to

launch a new 5G network in 2022 – is understood to be bidding via a holding company called Weminuche. Auction 110 is offering bidders new flexible use licenses in the 3.45GHz–3.55GHz band throughout the contiguous US. The 100MHz spectrum band has been divided into ten 10MHz blocks and licensed by Partial Economic Area (PEA), for a total of 4,060 licenses.

(October 6, 2021) [commsupdate.com](#)



Vietnam

The Ministry of Information and Communications (MIC) outlined plans to hold a spectrum auction this quarter to enable operators to boost LTE capacity and formally launch 5G services next year. MIC Minister Nguyen Manh Hung said the country is determined to keep up with other operators around the world by commercializing 5G, the news agency wrote. The minister previously called for the regulator to allocate spectrum in the 2.6GHz band but didn't mention any additional bands. The Ministry also set the target for all citizens to use smartphones by 2023. GSMA Intelligence data showed smartphone penetration in Vietnam was 66 per cent at

end-September. Major operators Viettel, Mobifone and Vinaphone began testing commercial 5G services in 2019 in parts of the country's two largest cities, Hanoi and Ho Chi Minh City, using trial licenses. Last month, Viettel, working with Ericsson and Qualcomm, recorded a peak transmission speed of 4.7Mb/s using 800MHz of mmWave spectrum in a 5G trial. In May 2020, Fitch Solutions predicted the operators would quickly move to 5G because the government had prioritized the technology and the nation has mature handset manufacturing capabilities. 🇻🇳

(October 6, 2021) Vietnam News Service

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