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SAMENA TRENDS

FOR SAMENA TELECOMMUNICATIONS COUNCIL'S MEMBERS

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SES

THIS MONTH

INDUSTRY TRANSFORMATION & SUSTAINABILITY FRONTS

SAMENA TELECOMMUNICATIONS COUNCIL
BUILDING DIGITAL ECONOMIES

RISE IN RIYADH

11 January, 2023

Sustainable ICT Development

The Future of Digital Visions & Cross-Industry Innovation

Fairmont Riyadh
Riyadh, Saudi Arabia

The SAMENA Council RISE (Rising for Industry Sustainability & Efficiencies) Conference is about rising to new challenges and making progress as new digital applications, services, platforms, and new business as well as operating models surface on the digital horizon. RISE is also about addressing new needs of the businesses, economic sectors and industries, and the society at large. Thus "sustainability" takes the center stage and is assessed with the right policy lens and conducive regulatory measures. RISE, as a new model of leadership discourse and display, aims to contribute to the creation of new technology synergies and efficiencies within and beyond the ICT Industry, to help accelerate efficient digital transformation.

The RISE Conference in Riyadh aims to showcase how metaphorical desertification of the past is now catalyzing digitalization of the future.

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- **Championing Policy & Regulatory Achievements in KSA and the Region**
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FOR MORE DETAILS
+971.4.3642700

SAMENA
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Editor-in-Chief
Bocar A. BA

Contributing Editors
Izhar Ahmad
Javaid Akhtar Malik

Knowledge Contributions
etisalat by e&
Nexign
SES
Tech Mahindra

Publisher
SAMENA Telecommunications Council

Subscriptions
subscriptions@samenacouncil.org

Advertising
ads@samenacouncil.org

SAMENA TRENDS
trends@samenacouncil.org
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Industry Transformation & Sustainability Fronts

As economic growth and sustainability across every function of business and life occupy central space in future planning, it is important to acknowledge how digital adoption and the evolving ICT infrastructure can help define a new future of possibilities, which should be human-centric, digitally-powered, and sustainable. In the era of 5G, when network technology deployment models have evolved, when radio access network is undergoing evolution, and where business and environmental sustainability are major catalysts of new collaboration initiatives, we have multiple complexities and to manage to remain on the path to growth and sustainability.

To accelerate 5G deployment, to meet agility and scalability KPIs in deployment, and to fast-forward 5.5G development, preferences are cloud deployment models catering to multiple possibilities centrally or at the network Edge, and to utilize microwave backhaul solutions.

On the RAN front, Operators are clear on their preferences on moving ahead with Open RAN. Among key drivers of this shift appears to be, one, the potential to make full use of 5G and to open doors for 6G and, two, the promise of reduced energy consumption—both of which are important considerations for any next-generation Telecom Operator. From cost to complexity, from standardization to security, there is much to be looked at on Open RAN, however. Moreover, there is a need to establish the right mechanism and understanding of Open RAN, and to map out various challenges, such as interoperability, operational complexity, cybersecurity, costs, operations management and performance, among others. There is also a need to be aligned on Open RAN trials and on the best practices. The GCC Open RAN consortium has multiple objectives to fulfill in this regard, especially with respect to opening new pathways for operator-to-operator collaboration.

From the sustainability perspective, Operators' enabling role in tackling the region's environmental issues is clear enough, as Operators are in a position to power green initiatives in the region and foster digital development approaches and visions of digitalization and improved service delivery when increasingly smart-city projects are being planned and executed.

As network design, technologies, and deployment methods evolve and as bandwidth and capacity, dynamic routing, and premium digital experiences become the norm, defining a sustainable digital future for the business and the society also requires tremendous focus on cybersecurity. Telcos capture significant information on network users, which offers new business opportunity to provide users and enterprises services based on this data. Effective usage of this data in the era of emerging technology along with adequate cybersecurity measures can be a strong differentiator for communications service providers, operating in the complex communication service value-chain.

Transformational contributions and innovation are required from all stakeholder groups, considering multiple evolutions are in progress, ranging from technology to policy, and from service delivery to immersive experiences.

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

At Broadband Commission's Fall Meeting, Parallel to UN General Assembly, SAMENA Council Reiterates Need for Innovatively Unlocking Access to Diversified Capital to Fill Broadband Connectivity Gaps Around the World

SAMENA Telecommunications Council's CEO, Bocar BA, as Commissioner to the UN Broadband Commission for Sustainable Development, during the Commission's Annual Fall Meeting, held on 18 September 2022 in New York, emphasized on the importance of broadening the base of contributors for broadband infrastructure financing and funding, echoing the tenor of many discussions taking place around the world to unlock new capital and innovatively fill digital connectivity gaps through new partnerships. The Annual Fall Meeting of the Broadband Commission this year focused on broadband's role as a key driver of the transformation of education and the consequential importance of universal, inclusive, and affordable access to connectivity. The meeting highlighted the importance of the BBCom's 2025 advocacy targets and how to achieve them in the remaining three years, dived into the role of technology in education, how smaller businesses can make big contributions towards broadband ecosystem development, and stressed the centrality of continued multi-stakeholder engagement. The meeting called on policy makers to broaden the base of contributors to broadband infrastructure funding and financing, to ensure that access to connectivity is universal, inclusive, and secure (with an emphasis on children),

and that content and services are locally relevant and available and purposeful. Skills development with a focus on digital skills and discernment of information were highlighted as critical to reap the benefits of digital transformation going forward. "We have made significant progress globally in ensuring universal access to broadband continues to improve, but much remains to be done," said Paula Ingabire, Rwanda's Minister of Information Communication Technology and Innovation representing Rwandan President Paul Kagame, Co-Chair of the Commission. "The mission of the Broadband Commission still rings as relevant today as when it was first formed. We must continue to strive for universal access to meaningful, safe, secure, and sustainable broadband communications services that are reflective of human and children's rights. Public-private partnerships continue to be a key tactic towards enabling us to achieve this objective." At the meeting, the Broadband Commission launched its annual State of Broadband Report, focusing on the shifting realities of the pandemic era. According to the report, COVID-19 sparked a surge in Internet use, but challenges to universal connectivity remain. The report also explores four principal barriers to achieving universal connectivity: lack of skills, lack of access, lack of devices, and a lack of the means to pay for necessary equipment. Addressing the persistent digital divide and meeting the Commission's advocacy targets requires strategies, policies and a conducive regulatory environment, says the report. That environment should encourage affordable, meaningful, safe and inclusive broadband services, and it should attract the large investment that is needed. "The need for greater access to broadband that is fit for purpose in this new world has never been more urgent," said Doreen Bogdan-Martin, Director of ITU's Telecommunication Development Bureau and Executive Director of the Commission, "we need the right regulatory environment and the right strategies and policies." Commissioners leading working groups on Smartphone Access and AI Capacity Building presented findings and recommendations of their final reports. The preliminary findings of the interim discussion paper of the Working Group on Data for Learning were also introduce.

SAMENA Council Draws on Telecom Operators' Enabling Role in Powering Arab Region's Environmental, Socio-Economic, and Digital Transformation Goals Toward Sustainability

SAMENA Council, during the Arab Virtual Week for Sustainability and Environment, conjointly organized by the Environmental Center for Arab Towns and the Clean Energy Business Council (CEBC), highlighted the role of Telecom Operators and ICT-enabled solutions in driving impact across various sectors, where smart manufacturing, digital agriculture, smart buildings and mobility could contribute significantly in reducing carbon potential. ICTs and other technologies such as modern sensors, big data analytics, artificial intelligence, the internet of things, and Operators' strategic collaborative steps to accelerate cooperation for the protection of the environment, addressing climate change challenges as well as reducing the carbon footprint through their operations, can contribute in aiding the region's burgeoning digital economies to transition to greener digital economies. Bocar BA, CEO & Board Member, representing the voice of SAMENA Council, described how the Telecom/ ICT Private Sector, even as it itself undergoes evolution, is dramatically improving the human experience (for example, the level of happiness, motivation, and productivity attained in the UAE), providing new data and voice benefits, promoting digital channels and e-commerce, bringing cloud and AI-based capabilities that benefit citizens and enable smart-city planning, and transforming core and emerging economic sectors of the region. The Arab region is digitally transforming and economic diversification visions are gradually coming to life. However, the region has to mitigate challenges associated with population growth, economic activity, high consumption rates, and high adoption rate of digital services and applications. Unless acted upon in a smart sustainable way, such challenges can place unforeseeable pressures on the sustainability and on the overall business and societal life." BA stated that "With Telecom Operators' enabling role in tackling Arab region's environmental, socio-economic, and urban development requirements, as well as in providing meaningful connectivity throughout the region, and that too with a sustainability mindset, it is critical that we adopt and sustain implementable policy-making and enabling regulatory approaches. Green initiatives in the region should be powered by digital development approaches and visions of digitalization and service delivery enabled by Telecom Operators." As the Industry speedily reaches the year 2030 and evolution of network technologies, including of Wi-Fi network bandwidth and capacity, dynamic routing, and premium digital experiences become the norm; as industrial internet shapes up; as 5G moves into its next phase; and as "green" development brings energy consumption and environmental impact to the forefront of business strategies, initiatives such as the MoU signed earlier this year by stc Group, Zain, Etisalat by e&, Omantel, among others and the Saudi & Middle East Green Initiative, focusing on shaping the sustainable future through environmental protection, energy transition, and sustainability-driven programs would prove to be foundational toward meeting sustainability needs of the region. Moreover, it is also important to be cognizant of the interfaces being created between the Digital Economy and the Space Economy. To this effect, various aspects of sustainability, including those relating to sustainability of the outer space, should also be considered. It is through Space that we could imagine supporting global security and sustainability on multiple fronts.

Sustainability and Inclusiveness Among Key Principles that Govern Digital Transformation; Telecom Operators, Regulators, Tech Providers Have a Direct Role in Reimagining Broadband, Says SAMENA Council CEO

Addressing a China Mobile International hosted leadership gala dinner during the Gulf Information Technology Exhibition (GITEX), SAMENA Telecommunications Council's CEO, Bocar BA, described how digital multilateralism has become inevitable and how sustainability challenges, including in digital infrastructure development through robust financing, are prompting unprecedented, out-of-the-box approaches to materialize. BA outlined how industries and niche segments are now being extensively driven by digitalization, new digital offerings, differentiated value-propositions, and how industry stakeholders need to capitalize on new opportunities relating to Industry 4.0, smart-city projects, and proliferating 5G applications across education, healthcare, oil & gas, port operations, and other verticals that are of most relevance to the economic diversification visions of this region. BA, in his leadership speech, acknowledged that "This region, led by the collaboration and expertise from the likes of China Mobile, e& Group from the UAE, as well as other valued members of SAMENA Council, and supported by enabling policies and improved regulatory approaches, are fostering an open, fair, and non-discriminatory business environment, ensuring the safety and stability of supply chains in relevant areas, and advancing inclusiveness. Such support is central to the pace and progress of digitalization and digital transformation, and to our collective aspiration of making 5G a success for all. The pace at which digital transformation is taking place, sustainability and inclusiveness must remain the key principles for driving digitally-powered economic growth, creating new human experiences, and exploring new areas of inter-industry and inter-regional co-operation for both human development and environmental protection." The SA-ME-NA region as a whole, and the GCC sub-region in particular, is leading in digital transformation by championing accelerated adoption of 5G, while ground for 5G Advance (or 5.5G) is being prepared. The emerging 5G opportunity landscape offers a reflection into the visions of the regional governments and demonstrates an understanding among industry stakeholders about the true potential of 5G. Regional Telecom Operators' leadership in 5G network deployment is particularly noteworthy, as it is being powered by strong collaboration with Tech Providers, innovation, attention to life-changing and new business solutions, and an overarching focus on thriving and governing sustainably. An advocacy continuum, BA's keynote during the GITEX week supported and promoted the role of Telecom Operators, Regulators, and Tech Providers, especially since each stakeholder has a direct stake and responsibility in reinforcing and reimagining broadband's role as a key driver of digital transformation across Education, Healthcare, Financial Service Delivery, thus signifying universal, inclusive, and affordable access to connectivity. Furthermore, strong collaboration among the industry stakeholders is central to meeting targets set forth by the ITU, where SAMENA Council chairs the Industry Advisory Group on Development Issues (IAGDI), and by the UN Broadband Commission, where SAMENA Council has contributed extensively to help build consensus and implementable recommendations for funding and financing the next wave of broadband infrastructure development around the world. Such recommendations include broadening the base of contributors and adopting innovative financial approaches and instruments that engage leading financial institutions with the ICT industry.

The State of Broadband Report 2022

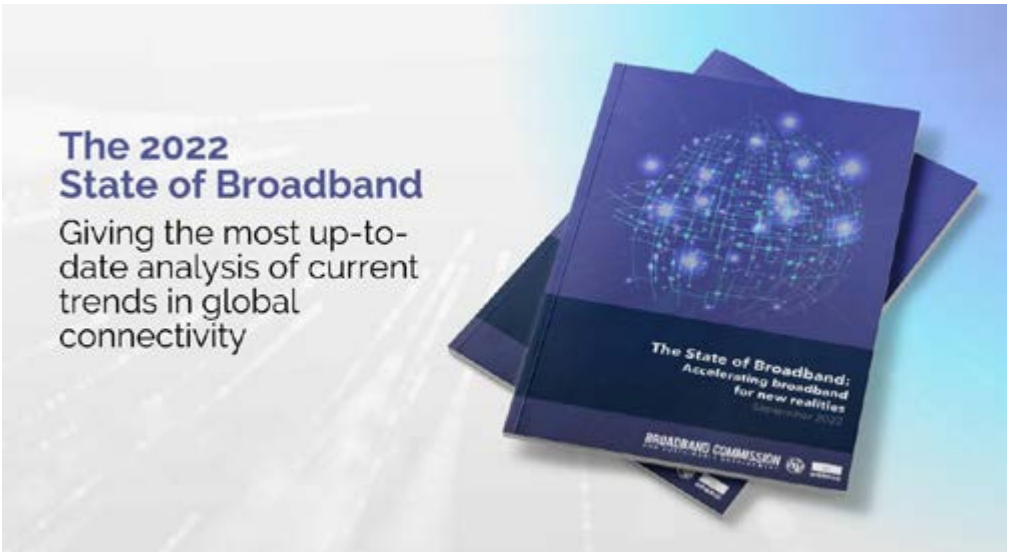
Innovative Mechanisms and Instruments to Unlock Access to Capital to Support Telecom Operators

The BBCom's WG on 21st Century Financing, Funding, and Investment Models for Bridging Broadband Connectivity Gaps, chaired by SAMENA Council, has identified the need for fundamental paradigm shifts that require, among others, to broaden the base of contributors. One innovative way to move forward with implementation of this recommendation is to create new partnerships and bring together the telecom and the banking/financial services industries to create an innovative instrument such as a "Broadband Bond". Such a Broadband Bond could be built on the general principle of bond-financing, whereby an issuer may raise capital by selling a "low-interest debt instrument" to investors on the open market. Because bond financing carries longer maturity and the risk lies primarily with the issuer (banks), such a risk profile offers an attractive investment profile for telecom operators to carry out infrastructure expansion (e.g. rural areas), Capex debt re-financing or procurement of additional spectrum. The capital market, overall, provides the ability to tap new investors and offers structural advantages. Partnerships with capital market stakeholders, in turn, enable access to a new class of investors around the globe. In this context, the Broadband Bond approach is befitting recommendation No 1: Broadening the base of contributors and can serve as a major source of liquidity for ongoing and future financing needs of various industries, including telecoms.

We are at a critical point in time, where immediate action is required to eliminate the most pressing issues with regard to the provision of meaningful universal access to connectivity. In this regard, SAMENA Council is exploring innovative mechanisms and instruments to unlock access to capital to support telecom operators.

This example of private partnership can be designed to fulfil (i) financing needs for initiatives and telecom projects that are aligned with the SDGs and aligned with the UN Broadband Commission's recommendations, and with the private sector's investment needs; (ii) investor diversification goals within the telecoms and financial services industries; and (iii) common goals of sustainable, "green", and citizen-centric imperatives. In summary, the new instrument is built on the premises of:

1. Using a combination of monetary and non-monetary, or in-kind, contributions, based on project needs and the various strengths of collaborative financing;
2. Making smarter investments and thus a move away from "funding" (out of a moral imperative) to "financing", which is more commercially grounded and relates to making good investments, while contributing to socio-economic development; and
3. Collaboration between governments, commercial banks, development finance institutions (DFIs) and the private sector to meet funding gaps is increasing, including through blended finance or the strategic use of development finance to mobilize additional finance for sustainable development in developing countries.



ITUPP-BUCHAREST 2022

UN Member States Elect Five Leaders at the ITU

Member States of the International Telecommunication Union (ITU) have elected Doreen Bogdan-Martin of the United States of America as the organization's next Secretary-General.
Bogdan-Martin will be the first woman to lead ITU, which was established in 1865 and became a United Nations specialized agency in 1947.

The election took place during ITU's Plenipotentiary Conference (PP-22) in Bucharest, Romania, on Thursday, with representatives of Member States voting during the meeting's morning session. Bogdan-Martin won the position with 139 votes, out of 172 votes cast.

"Whether it's today's children or our children's children, we need to provide them with a strong and stable foundation for growth," Bogdan-Martin said. "The world is facing significant challenges – escalating conflicts, a climate crisis, food security, gender inequalities, and 2.7 billion people with no access to the Internet. I believe we, the ITU and our members, have an opportunity to make a transformational contribution. Continuous innovation can and will be a key enabler to facilitate resolution of many of these issues."

Bogdan-Martin will begin her four-year term as ITU Secretary-General on 1 January 2023.

The Secretary-General-elect has pledged "to continue driving this institution to be innovative and increasingly relevant for our Member States, better positioning all of us to embrace the digital environment and make progress on achieving UN Sustainable Development Goals and connecting the unconnected."

Bogdan-Martin was endorsed by her country's government as a candidate to make the digital future inclusive and accessible for everyone, especially in developing countries.

As chief architect of ITU's development work in recent years, Bogdan-Martin

"I fully believe in the power and potential of connectivity to drive economic growth and transform healthcare, education, employment, gender equality and youth empowerment. We are riding a powerful wave of innovation, and we need to seize this opportunity to improve peoples' lives – especially those who are excluded. What we do now will affect generations to come.

Digital technologies will be crucial to efforts to meet the 17 SDGs and build a strong and stable foundation for global development. Today's world is facing significant challenges – escalating conflicts, a climate crisis, food security, gender inequality, and 2.7 billion people who have still never connected to the internet. I believe ITU and its members can make a transformational contribution to forging a better world. Our sector is one of continuous innovation, and it can, and will, be a key enabler in helping mankind address many of these critical issues.

As Secretary General, I will continue to push this institution to be even more agile, innovative and relevant, to help everyone, everywhere, embrace tomorrow's digital environment and the huge opportunities it brings. "

-- Doreen Bogdan-Martin

has emphasized the need for digital transformation to achieve economic prosperity, job creation, skills development, gender equality, and socio-economic inclusion, as well as to build circular economies, reduce climate impact, and save lives. Her current term as Director of ITU's Telecommunication Development Bureau ends on 31 December 2022.

Mario Maniewicz (Uruguay) was reelected for his second term as Director of ITU's Radiocommunication Bureau, which is responsible for maintaining and implementing the Radio Regulations treaty that harmonizes international spectrum use and satellite orbits, and for developing the related technical standards.

Seizo Onoe (Japan) was elected as Director of ITU's Telecommunication Standardization Bureau, which is responsible for developing international technical standards for telecommunication and ICT (information and communication technology) through a membership of governments, private companies, and technical experts from around the world.

Cosmas Zavazava (Zimbabwe) was elected Director of ITU's Telecommunication Development Bureau, which is responsible for mobilizing global efforts to connect the unconnected through promoting equitable and inclusive digital development, upgrading infrastructure and capacity for developing countries, and initiatives to extend the benefits of technologies to all.

They form the ITU leadership team together with Secretary-General-elect Doreen Bogdan-Martin (U.S.) and ITU Deputy Secretary-General-elect Tomas Lamanauskas (Lithuania).

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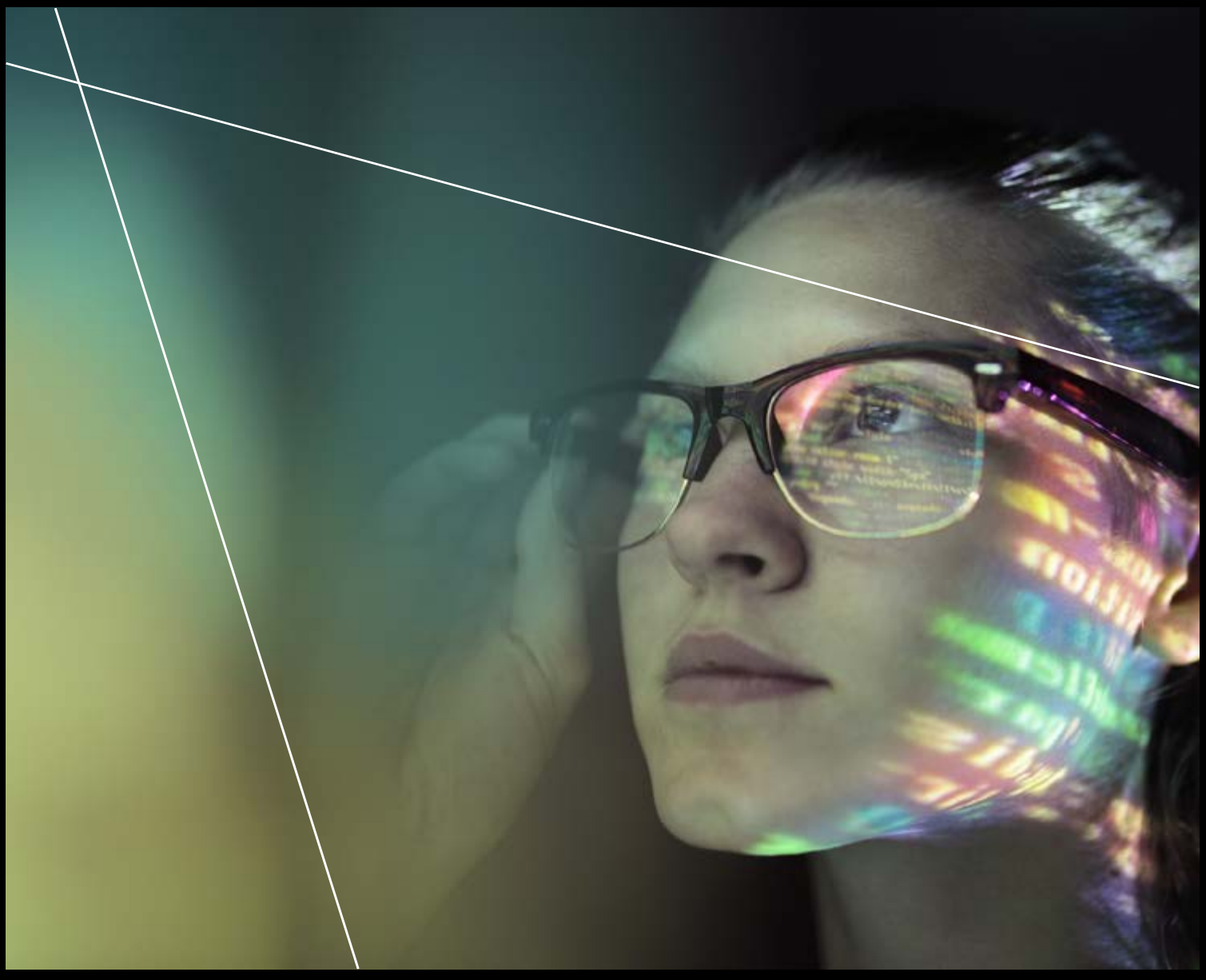

O3b mPOWER

SES Talks to SAMENA Council

Mohammad Marashi
SVP, Product and Strategy, Networks Product
SES

As a leader in global content connectivity solutions, SES operates the world's only multi-orbit constellation of satellites with a unique combination of global coverage and high performance, including the commercially-proven, low-latency Medium Earth Orbit O3b system.

Q. Currently 37 years in the business, SES is a pioneer in space. How will SES continue to play its role in satcoms and continue to deliver amazing experiences on Earth?

A. After 37 years of being in business, SES has grown from being a European player focussing on satellite TV distribution to a leading content connectivity solutions provider that is delivering innovative services to our data customers.

We have achieved this in 2 ways; first through acquisitions over the decades and second and more importantly through innovative technology adoption. Some examples include when we were among the first in Europe to broadcast high-quality HD (High Definition) content to satellite TV homes and first in the world to invest and deliver satellite-based low-latency broadband services through our O3b MEO (Medium Earth Orbit) constellation.

For both its Video and Networks businesses, SES always offers the latest and most advanced technologies to meet the ever changing and challenging demands of its partners and customers. Now, after almost four decades of service, SES continues to remain committed to placing our customers' needs above all and innovating to make sure we offer the best services.

Q. The most-awaited O3b mPOWER satellites will start launching this year. Please share with us the company's MEO journey that leads to O3b mPOWER.

A.SES's MEO journey started back in 2009. We were one of the early investors of O3b Networks whose mission was to connect the other three billion. When the first batch of satellites launched in 2013, we could not have expected what awaited us. O3b's MEO network reduces latency, increases throughput by an order of magnitude and improves both voice and video quality. We went on to fully acquire O3b Networks in 2016.

> *One of the unique features about O3b mPOWER is the ability for us to enable our customers to choose where they want to land the beam on. This means that our MENA customers either in Telco or government who are keen to have their own O3b mPOWER gateway can chose its location depending on their operations and connectivity usage – something which is highly valued by our customers in this region.*

For the last 10 years, we have seen how our MEO constellation positively shaped business and communities. For example, in the Central African Republic, service from O3b, has enabled Orange to rollout 3G and 4G cellular services in 10 cities. Orange was also able to provide better quality broadband services to businesses, boosting secured mobile data and payment services across the country.

After having seen how O3b has transformed our customers' businesses and communities' lives, it is no wonder that we started thinking how we can deliver even better performance and flexibility in connectivity services, and that is when we envisioned our second-generation of MEO satellites, O3b mPOWER. Built by Boeing, the O3b mPOWER satellites will start launching this year. Just like O3b, it will operate in the medium earth orbit at about 8,000km away from the Earth's surface. O3b mPOWER will be providing unrivalled high throughput, unmatched flexibility, constant low-latency and uncontended capacity, enabling customers to support multitude of segments, including Government, Fixed Data, Energy, Cloud & Mobility.O3b mPOWER enables us to enhance our services and tailor them to fit our customers' needs in the most efficient way.

Q. What can you tell us about the O3b mPOWER technological ecosystem? Who are your key partners and how will this system impact market segments in a data-dependent world?
A.The uniqueness of O3b mPOWER lies in the ecosystem of partners. We do not only have satellite partners who will be helping us build and launch the satellites, we also have a very robust network of ground equipment and software partners.

Our ground equipment partners such as Gilat, Intellian, ALL.Space, and Comtech have been developing equipment that will allow us to simplify and optimise our networks. For example, our customers' terminals and gateways have been designed and built to make sure that they are easy to install and are of low-maintenance.

Additionally, through our software partners, we are building an automation and service orchestration platform where network services can be effectively and easily managed by our customers and channel partners.

Q.What does O3b mPOWER mean for the MENA region?
A.With the launch of O3b mPOWER satellites, we will be able to offer our customers all around the world unrivalled high throughput, unmatched flexibility, constant low-latency and uncontended capacity in 2023. More specifically for the MENA region we recently signed a tripartite agreement between e& (Etisalat), Microsoft and SES, where e& will be hosting the co-located SES O3b mPOWER and Microsoft ground station to facilitate connectivity to the Cloud so that customers can optimise their global business operations and accelerate their digitalisation plans while unlocking more value for their businesses.

One of the unique features of O3b mPOWER is the ability to enable our customers to land beams wherever they choose. This means that our MENA customers either in Telco or in government who are keen to have their own O3b mPOWER gateways can choose its location depending on their operations and connectivity usage – something which is highly valued by our customers in this region.

Q.What other revolutionary plans do you have in store for the upcoming years?
A.For the upcoming years, we will continue to develop our offerings by tailoring and enhancing our products and services jointly with our customers to meet their growing and changing needs. In addition to the six satellites, we will be launching initially, we will be additionally launching five more satellites to deliver enhanced throughput and performance.

We have also ordered another software-defined geostationary satellite, SES-26, for the region. The totally digital satellite will replace NSS-12 at 57 degrees East to extend content and connectivity services flexibly across Europe, ME, Africa and Asia and will support government communications solutions across the region.

Through our multi-orbit satellite services, we can enable our telco customers to meet the rapid growth in mobile data usage in their markets and support them in complying with their digital inclusion requirements. At the same time, our different tier of services could cater to companies and organisations who need secure and reliable networks for staying connected among offices. At SES, we understand that our customers' demands can vary, and we aim to fulfil their connectivity needs seamlessly with a flexible selection of services.

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- AI Driven Network Operations

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Tech Mahindra Talks to SAMENA Council

Tech Mahindra, a part of the multi-billion dollar conglomerate, Mahindra Group, represents the connected world, offering innovative and customer-centric information technology experiences in the age of digital economy.

Q. What is the state of 5G wireless deployments in Africa?

A. The rollout of 5G technology across African countries is still in its nascent stage, but 5G will essentially drive unprecedented inclusive growth in Africa. There are currently 24 operators across 18 African countries who are evaluating/testing/trialing/deploying 5G. Eight operators have already deployed 5G into pre-commercial or commercial networks. Vodacom, MTN and Rain have deployed pre-commercial or commercial networks in South Africa. Telma Madagascar switched on its 5G commercial network to offer subscribers high-speed services enabled by the new generation of mobile connectivity. MTN has tested 5G in Nigeria and Uganda; Safaricom has trialed the technology in Kenya and Gabon telecom has tested it in Gabon. MAFAB Group has acquired 5G License to deploy nationwide services in Nigeria. There is rapid growth of 5G trials conducted in African countries such as Gabon, Kenya, Nigeria, and Uganda. According to GSMA mobile economy report, 3G will remain the most dominant network (58%) for the 1.05 billion mobile connections projected in Africa by 2025. "the focus in the near term for operators and other stakeholders is to increase 4G uptake," the report states. Indeed, 4G connections are expected to account for only 27% of mobile connections by 2025—up from 4% today and 5G will uptake 3% by 2025.

> *According to GSMA mobile economy report, 3G will remain the most dominant network (58%) for the 1.05 billion mobile connections projected in Africa by 2025. "the focus in the near term for operators and other stakeholders is to increase 4G uptake*

Manish Vyas
President, Communications, Media and Entertainment Business, and
CEO, Network Services
Tech Mahindra

Tech Mahindra

Q. What benefits will 5G bring to consumers and businesses in the region?

A. 5G offers greater capacity, higher data rates, lower latency and it will support further innovations such as the internet of things (IOT), network slicing, creating a smarter connected world. Compared to other countries, 5G deployment has increased 2-3% **of** digital GDP in Africa.

As broadband penetration in Africa is low, 5G is expected to offer an alternative to fixed broadband at affordable cost for consumers in Africa. This will also enable digital ecosystem for a hyperconnected Africa and empower citizens to bring more innovation into their daily life and thus create employment opportunities. Due to higher data rate speed, consumers can also enjoy high speed live streaming and television like experience on their home broadband, mobile phones, TV set etc. 5G's extraordinary speeds, greater capacity and virtually unlimited connectivity will help customers with faster payments, connected vehicles, connected homes, better mobile service, safer streets, and enhanced entertainment.

> *5G adoption among enterprises in Africa will act as strong catalyst for the same. For mining industry in Africa, 5G will enable safe mines and thereby controlling accident rates. It will make semi-autonomous operations possible and increases productivity by 15-30%.*

Africa is a hub for natural resources like mines and mineral and 5G will foster productivity and efficiency across these industries. 5G offers its features of low latency with wider coverage and hence provides opportunity to enhance productivity, efficiency, and safety at minimal cost. 5G also offers intelligent and cost-effective surveillance in a control environment with proper privacy protection therefore enabling additional security for citizens. 5G will enable smart agriculture including drone-based farming, remote crop monitoring and multiple crops with higher efficiency. Some of the large enterprises have already deployed private wireless network for the specific use cases specially in mining & manufacturing. 5G will further accelerate the digital adoption and different set of use cases emerging including low latency and massive IOT use cases.

Q. 5G offers extremely fast, low latency connections. What advantages will this bring to enterprise organizations in Africa?

A. 5G is propelling force for fourth industrial revolution. It brings array of disruptive transformative technologies such as AR/VR, AI/ML, metaverse, cloud enablement etc. This innovative transformation spurs force multiplier effect into enterprises such as digital healthcare, education, oil and gas, mining, manufacturing, smart retail, smart homes, real estate etc. Africa is going to witness exponential GDP growth. 5G adoption among enterprises in Africa will act as strong catalyst for the same. For mining industry in Africa, 5G will enable safe mines and thereby controlling accident rates. It will make semi-autonomous operations possible and increases productivity by 15-30%.

Government organizations will benefit largely through safer connected cities with intelligent remote surveillance enabled by 5G. It will further improve education industry by supporting online education with faster and uninterrupted internet and digital learning resources. Healthcare sector is expected to evolve with 5G in Africa. Remote video consultation, analytics based preventive care will become seamless through 5G. With disruptive technologies in automation and sensors, telemedicine, remote tracking patient health, video consultation as well movements of staff and equipment in hospitals, will increase efficiencies in healthcare sector.

- Below are some of the benefits across industries
- Operational cost optimization – OPEX and CAPEX reduction
- Agile and flexible model to address dynamic demands of IOT applications
- Quality assurance - centralized remote monitoring, workforce enablement
- Enterprise transformation
- Enhanced connectivity
- Minimize supply chains bottlenecks

Q. How should CIOs plan and architect their networks to maximize the promise of 5G technology?

A. CIOs and organizations must develop a clear roadmap for rationalizing their legacy 2G and/or 3G networks ahead of mass-market 5G rollout. It is critical for them to have foundational infrastructure availability and readiness for 5G such as spectrum, fiber, devices, labs, business case etc. There should be clear-cut articulation of 5G relevant use cases & prioritization, architectural blueprint & roadmap of 5G platforms based on use cases. Organizations must invest in building agile organization empowered with emerging technological skillsets. Stringent security measures and ensuring 5G service assurance while adopting 5G technology are extremely important.

> *Healthcare sector is expected to evolve with 5G in Africa. Remote video consultation, analytics based preventive care will become seamless through 5G. With disruptive technologies in automation and sensors, telemedicine, remote tracking patient health, video consultation as well movements of staff and equipment in hospitals, will increase efficiencies in healthcare sector.*

> *5G deployment must be seen from different lens altogether. Cloud deployment models are better suited as it provides better agility and scalability. There are multitude of cloud's possibilities which must be carefully considered including Central, EDGE, Far-Edge, as different use cases require different setup. Building a smooth, 3GPP complied and clear-cut 5G deployment roadmap with business use cases should be one of the key priorities.*

Q. What do you see as challenges for enterprises in Africa as 5G networks are deployed across the continent?

A. Despite the projected growth and excitement over the potential of 5G in Africa, there are apprehensions about investor and market readiness for the technology. In Africa, we see few potential infrastructural, operational and manpower challenges that needs to be addressed on priority to ensure a seamless deployment of 5G. For instance, 5G requires spectrum within multi frequency ranges. Its availability and cost have an impact on the profitability. Due to the high costs of building 5G infrastructure, coverage is not expected to be widespread for another four or five years. Big commercial deployments will likely be restricted to a minority of countries in Africa. More than 60% of subscribers still use legacy services due to lack of availability of affordable devices. Hence, subscriber migrations will be a challenge to CSPs. If we look at the operational challenges, end-to-end service-based operations lead to transformational complexity in stack and processes. New architecture and platforms promote disruptive technologies that require a new operational model. Diminishing traditional revenue will create a need for finding new models of investments. Additionally, there is a lack of specialized local skillsets and manpower for emerging technologies in Africa.

Q. What are some of the critical aspects CIOs and IT teams should keep in mind when deploying 5G in their IT environment?

A. 5G has been designed differently than its predecessor technologies and has adopted web scale deployment architecture and methodology. Hence 5G deployment must be seen from different lens altogether. Cloud deployment models are better suited as it provides better agility and scalability. There are multitude of cloud's possibilities which must be carefully considered including Central, EDGE, Far-Edge, as different use cases require different setup. Building a smooth, 3GPP complied and clear-cut 5G deployment roadmap with business use cases should be one of the key priorities. They should strategically plan to minimize vendor lock-in, and mismatch in hardware vendors, network configurations and policies. Actively provisioned deployment and 5G service monitoring is necessary to ensure seamless operation. Automation coupled with predictive and proactive monitoring is also vital since real time application will be using underlying 5G network infrastructure and availability must be of paramount importance. I would also emphasize on developing a legacy rationalization plan and hiring and retaining critical skills relevant to emerging 5G technologies.

Q. Will the rollout of 5G in Africa accelerate digital transformation initiatives?

A. 5G is a key accelerator for digital transformation. It is a platform to enable differentiated experience for consumers and enterprises. 5G roll out in Africa will have compounding effect on economies, consumer, and enterprises. The GSMA estimates that mobile technologies and services generated 9% of GDP in sub-Saharan Africa in 2019 – a contribution that amounted to more than $155bn of economic value added. This figure is expected to increase significantly in the 5G era, especially as the technology will have a greater application in enterprise use cases, compared to previous generations. In sub-Saharan Africa, 5G FWA will be a primary use case for enterprises and consumers. This will have multifold increase in consumption of highspeed broadband and other related applications. To achieve the vision of Digital Transformation, key industry players including telco companies, enterprises, system integrators, application providers, device manufacturers must collaborate with a common goal to unlock the potential of 5G and bring the new real life use cases for both consumer and enterprises in Africa. 5G wireless network brings high speed, low-latency, reliability, and edge computing power, which enables seamless, smart, connected experiences, new edge use cases like AR/VR, and widespread IoT deployment. The arrival of 5G is all set to transform the enterprise world, accelerate Industry 4.0 digitalization journey and enable much-needed business transformation in Africa.

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MEMBERS NEWS

stc Group Showcases Its Most Innovative Digital Solutions at the Global Artificial Intelligence Summit

stc Group, the leading digital enabler in the region, is participating in the second edition of the Global Artificial Intelligence Summit 2022, which will be hosted in Riyadh. The group will present a range of integrated digital solutions that include most notably, infrastructure, AI platforms that enables multiple sectors in health care, research, agriculture, community. stc Group will also spotlight on the AI traffic safety technology, which helps in predicting traffic accidents using artificial intelligence, based on a number of factors, including speed, traffic volume and other factors that will anticipate potentially dangerous areas, which are most prone to accidents. stc Group will participate in the summit's sessions, to discuss the artificial intelligence technologies. The group will present its most advanced digital solutions via artificial intelligence that will contribute to the development of smart cities and communities. The digital solutions will include the diagnostic AI radiology services, AI imagination technology which allows creating images from text descriptions via audio signals. Furthermore, AI technology in agriculture industry by detecting the health of agricultural cultivated land to improve the efficient management and production of crops. The Group will be signing a number of memoranda of understandings, most notably stc Academy with King Saud University to enable development and innovation in the areas of artificial intelligence with the aim of enhancing research cooperation, by sharing long-standing experiences in the implementation of training programs and research projects. Furthermore, stc will sign an agreement with SCAI to improve AI and infrastructure solutions in Saudi Arabia. In addition, stc Group will be signing a MoU with "SDAIA" to implement a number of national initiatives related to digital technologies and AI with the aim of exchanging experiences and knowledge. This MoU will provide consultations and explore opportunities, where associated listed beneficiaries on "Ehsan" platform can benefit from the technical services of stc's sustainability platform. The Global AI Summit, organized by "SDAIA" Saudi Data and Artificial Intelligence Authority, under the slogan "Artificial Intelligence for the Good of Humanity" by presence of 200 speakers, will discuss a number of topics that show the implications of artificial intelligence on the most important sectors, through their participation in working sessions, discussions, accompanying workshops, and through the associated exhibition, to explore used cases of artificial intelligence by local and international innovative bodies.

stc & "SDAIA" Sign MOU to Develop Digital Technologies and Artificial Intelligence Solutions

stc Group and "SDAIA" Saudi Data & Artificial Intelligence Authority signed a Memorandum of Understanding (MOU) in implementing several national initiatives to enhance the artificial intelligence and digital solutions, during the Global AI Summit held in Riyadh. The MOU aims to develop and research artificial intelligence solutions in association with enabling technologies. It also tends to localize digital solutions and exchange experiences and knowledge in the field of data management and governance. This memorandum is seeking to benefit from "inspireU" program through participating in spreading the culture of entrepreneurship and innovation. The role of stc under this MOU is to support the data quality globally within the best practices, along with assisting startups in adhering to data governance and implementing a personal data protection system. Similarly, this MoU persists in localizing artificial intelligence, developing algorithms, and contributing to accelerating the rate of compliance with data regulations at national level along with activating awareness messages to

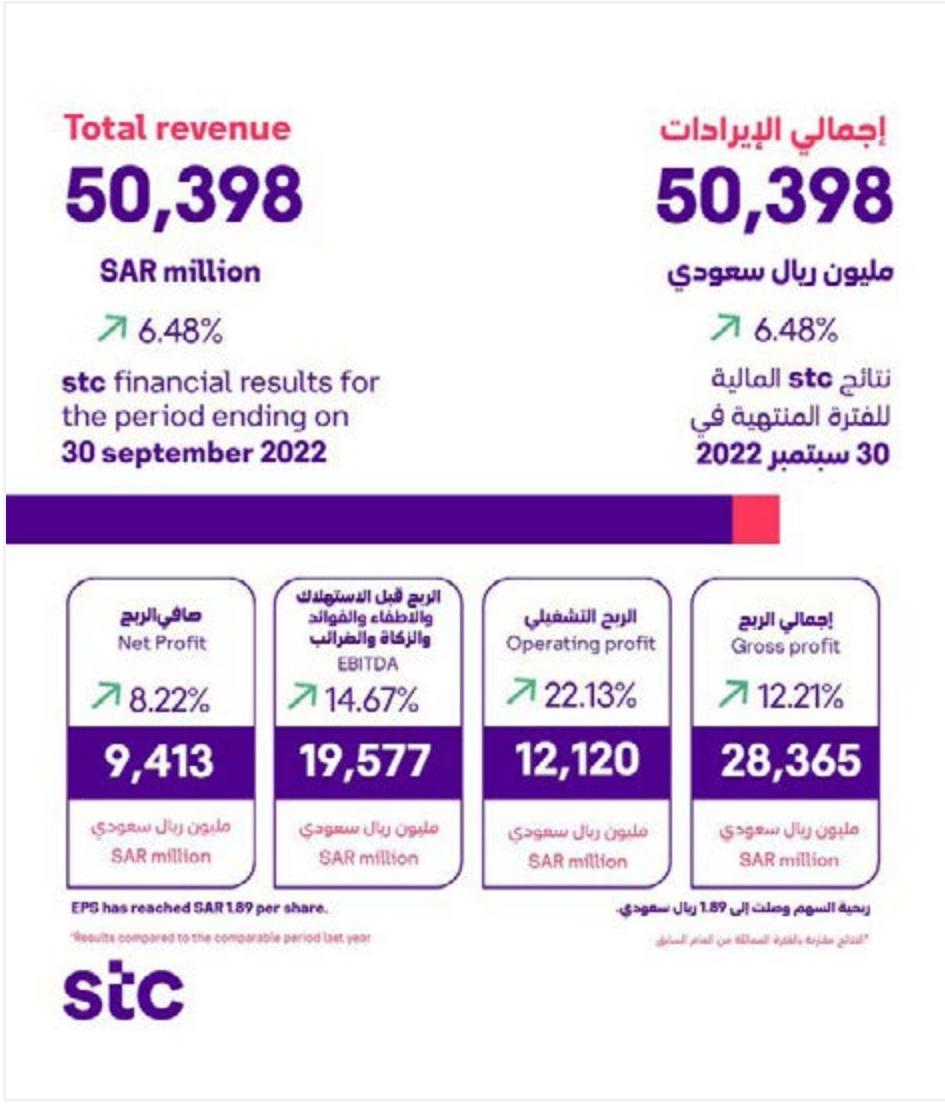
protect personal data. The memorandum is also providing the digital solutions and services available on the stc's sustainability platform to charities that are listed on "Ehsan" platform. It also tends to cooperate towards supporting and enabling the NGO's projects and programs adopted by "SDAIA". Furthermore, it pursues to develop environmental services and products, and specialized volunteering projects, as well as it will provide assessments to evaluate the capabilities and competencies of trainees, employees and leaders. The memo also includes exchanging experiences and knowledge, providing consultations, and exploring opportunities and career development programs through the stc Academy to accelerate the development of young people in the fields of data and artificial intelligence. Eng. Olayan Alwetaid, Group CEO of stc said: "Our collaboration with the Saudi Data and Artificial Intelligence Authority confirms stc's role in enabling the digital system for artificial intelligence, by the dissemination of research and development, and enhancing the digital capabilities through strategic partnerships to accelerate the transformation stages and transition to reliance on artificial intelligence, to support the digital economy in line with the Kingdom's Vision 2030."

stc Continues Its Investment in Protecting the Digital Infrastructure in the Kingdom by Launching the Security Pass Program for Suppliers

stc Group launched the cybersecurity assurance program for suppliers, thus the group became one of the first companies in the world to launch this service, and this comes as part of its commitment to enabling the digital infrastructure of the Kingdom. It is worth noting that the Security Pass program will assure suppliers of strict standards by adopting best cybersecurity practices. The program aims to motivate suppliers to adhere to stc's cybersecurity standards, by obtaining a certificate of compliance with cybersecurity controls. Suppliers can also confirm their compliance with the requirements of stc Group for cybersecurity by obtaining the certificate from the audit and evaluation companies approved by it. This program comes from stc Group's keenness to secure and protect the institutions and companies it serves. In line with its mission to support the region's technology sector and enable digital infrastructure, the launch of the certificate will enhance protection against cyber attacks on users and service providers and reduce third-party cybersecurity risks. Engineer Haitham bin Mohammed Al-Faraj, Chief Technology Officer of stc Group, said: "The launch of the Supplier Security Pass program represents another important step towards transforming the Kingdom into a hub for innovation. As cybersecurity risks continue to grow and prove more costly to businesses and industries around the world, our new certification will help ensure the protection of our partners, the Kingdom's broader technology ecosystem, and the future of the IT sector. This service is particularly important as businesses and organizations are often challenged by potential cybersecurity risks. Our new certification will provide essential support and ensure the protection of our partners and suppliers." This step will encourage stc group partners to obtain the Cyber Security Assurance Certificate. This will help to avoid unexpected accidents by adopting stc group standards. Obtaining a Security Pass certificate is a prerequisite for signing any partnership contract with stc Group.

stc Announces the Company's Preliminary Financial Results for the Period Ending at 30 September 2022

stc announced the company's preliminary financial results for the period ending at 30 September 2022. Revenues for the 3rd quarter reached SAR 16,468m with an increase of 4.66% as compared to the comparable quarter last year. For the 9 months period of 2022, the revenues reached SAR 50,398m with an increase of 6.48%. Gross Profit for the 3rd quarter reached to SAR 10,040m with an increase of 19.97% as compared to the comparable quarter last year. For the 9 months period of 2022, the Gross Profit reached SAR 28,365m with an increase of 12.21%. Operating Profit for the 3rd quarter reached to SAR 4,576m with an increase of 43.36% as compared to the comparable quarter last year. For the 9 months period of 2022, the Operating Profit reached SAR 12,120m with an increase of 22.13%. Earnings before Interest, Taxes, Zakat, Depreciation and Amortization (EBITDA) for the 3rd quarter reached to SAR 7,073m with an increase of 26.17% as compared to the comparable quarter last year. For the 9 months period of 2022, the Earnings before Interest, Taxes, Zakat, Depreciation and Amortization (EBITDA) reached SAR 19,577m with an increase of 14.67%. Net Profit for the 3rd quarter reached to SAR 3,541m with an increase of 21.10% as compared to the comparable quarter last year. For the 9 months period of 2022, the Net Profit reached SAR 9,413m with an increase of 8.22%. In accordance with the dividends distribution policy for three years period starting from the 4th quarter of 2021, which was ratified during the Ordinary General Assembly Meeting on 30-11-2021. In addition to the amendment on the dividends distribution policy, which was ratified by the Extraordinary General Assembly Meeting on 30-8-2022, by distributing an amount of SAR 0.40 per share per quarter, stc will distribute a total of SAR 1,996.15 million in cash dividend to the shareholders for the 3rd quarter 2022, representing SAR 0.40 per share as the total number of Treasury shares related to the Employees Stock Incentives Plan stood at 9,629,357 shares at the end of the third quarter 2022 and those shares are not entitled for any dividends distribution. The eligibility of dividends shall be for the shareholders at the close of trading on Wednesday 02-11-2022 and as per the registered shareholders in stc's shareholders registry in the Depository Center at the end of the 2nd trading day following the eligibility date. Dividend distribution date will be on Tuesday 22-11-2022. Commenting on these results, Eng. Olayan Mohammed Alwetaid, stc Group CEO, stated that we are proud of the group's positive financial result, which indicates the group commitment towards its comprehensive strategy and investments diversification in multiple domains; which had a clear and tangible impact on profits growth while achieving a sustainable return for the company's shareholders. Alwetaid also pointed out that during the third quarter of this year, stc's general assembly approved the increase of the company's capital to SAR 50 billion, which considered the largest capital increase in the history of the Saudi stock market, making the company the second largest listed company in terms of capital. This increase aims to support the group in achieving its strategy that aimed at expansion and growth, along with maximizing the return for its shareholders, by increasing and diversifying investments and seizing the expected growth opportunities in the telecommunications and information technology sectors in the Kingdom of Saudi Arabia and the region.



stc Wins Several Awards for Its Effective and Resilient Business Continuity Plan

Kuwait Telecommunications Company – stc, a world-class digital leader providing innovative services and platforms to customers, enabling the digital transformation in Kuwait, announced that it has won two awards from two separate award agencies for its effective business continuity management and scenario planning. stc received two awards, the first from Continuity, Insurance and Risk (CIR) Magazine during its 24th Annual Business Continuity Awards Ceremony for the category 'Global Award 2022' and the second from Business Continuity Institute for the category 'Most Effective Recovery 2022' at the BCI Middle East Awards. The prestigious titles were awarded to stc after displaying the implementation of its business continuity plan and organizational resilience capabilities to both award agencies. The business continuity awards stc received are a testament to the Company's effective and resilient plan, which had been activated at several levels including the Covid-19 pandemic. After a rigorous screening and assessment process implemented by the award agencies, stc was awarded the various titles due to its preparation plans of various disaster scenarios that maintained operational continuity. The awards display stc's ability to navigate through cultural challenges that were formed due to disruptions, such as the pandemic, by implementing effective plans to work remotely, maintain network performance and capacity, and ensure business operations run smoothly. Commenting on the awards, stc CEO, engineer Maziad Alharbi said, "The awards we received reflect the strength and resilience of our business continuity plan which was tested at the highest levels during the onset of the pandemic. At stc, we find it critical to implement a robust business continuity plan that is adaptable to various scenarios and conditions during times of uncertainty. The effective management of our business continuity measures allowed stc to continue delivering the same quality of service to its customers during a period that triggered global challenges." In recognition of the two awards, Alharbi thanked the Risk Management Team and the organizers for their diligent and in-depth review of the Company's business continuity strategy. Alharbi added, "When it comes to business continuity, our objective is to not only plan and strategize for unexpected events, but also utilize today's technology to minimize possible disruptions in our service. As a telecom and digital solutions provider, we greatly value and account for the critical role we play as a provider of various communication channels for our valued customers. Given that role, it is essential that we continue to enhance and develop our services to ensure that we always maintain those communication lines operational."

stc Reveals a Whitepaper in Collaboration with GCC Open RAN Consortium

To further enhance its collaboration with other regional operators and building on its earlier announcement to establish a joint GCC Consortium in a step to accelerate the early adoption of Open Radio Access Network (Open RAN) solutions in their brownfield networks with a robust regional ICT ecosystem, the Consortium launched a regional community open lab that provides shared facilities and access to members and vendors for Open RAN solution trials and validations. To establish the right mechanism and understanding of Open RAN, today the consortium announces the publication of a whitepaper titled "Open RAN for Brownfield Operators Challenges and Opportunities". The white paper sets out the challenges of deploying Open RAN in brownfield networks, such as interoperability, operational complexity, cyber security, performance, and TCO

issues. As well, addressing the potential opportunities, mainly 5G prospects, disaggregation, the path to 6G, and Automation. Furthermore, the white paper discusses the summary of recent Live trials and the community Open Lab. stc Group will continue to work with Open RAN consortium members and other stakeholders aligning on Open RAN trials, technology strategy, and leveraging on international partners' experience for the early adoption of Open RAN. Allowing stc to strengthen its drive and strategical drive towards a digital future, a pillar of its DARE strategy and an essential element of the Kingdom's drive towards vision 2030. Eng. Bader A. Allhieb, stc Infrastructure VP said: "stc Group is committed to promoting and working with the operator members from GCC Open RAN consortium to achieve the objective of accelerating Open RAN adoption in brownfield networks. The whitepaper release announcement indicates the entry into a new era of operators' collaboration to promote the development of open RAN technology, which leads to growth of our local ICT sector and provides a trusted avenue for new entrants, in both the hardware and software fields to work with operators."

stc Partners with the "COFE App" in New CSR Campaign

Kuwait Telecommunications Company – stc, a world-class digital leader providing innovative services and platforms to customers, enabling the digital transformation in Kuwait, announced its collaboration with the "COFE App", an online coffee marketplace, through a new interactive campaign. The initiative falls in line with stc's corporate social responsibility (CSR) program, and ongoing mission to support local small to medium sized enterprises (SMEs) in Kuwait. stc indicated in a statement that the campaign, held in collaboration with the COFE App, in which individuals who download the COFE App will be awarded a free coffee drink from stc. The free coffee will be distributed through different coffee shops listed on the App across different dates, starting with "The Coffee Bean" and "CAF" during the month of August and Sept. The concept behind the initiative stems from stc's commitment to support the local economy by backing SMEs across various levels. stc had previously organized numerous initiatives that aimed to shed light on local entrepreneurs, SMEs, and start-ups in Kuwait. As a leading pioneer and advocate for digital transformation, stc actively organizes or participates in initiatives that reinforces the interaction with the local community. Commenting on this initiative, Danah AlJasem, General Manager of Corporate Communications at stc, said, "We are excited to launch our new campaign in collaboration with the COFE App, an innovative coffee marketplace platform. The values behind this campaign align with some of the key pillars behind our extensive CSR campaign, as well as our corporate strategy which focuses on enabling digital transformation in Kuwait. Through our collaboration with COFE App, we invite all coffee lovers to download the App and follow our official social media accounts to learn more about what we have in-stored." AlJasem stressed that stc's partnership with COFE App confirms the Company's interest in supporting Kuwaiti youth projects, Online Apps and innovative local entrepreneurship initiatives, that add value to the economy, enhance the business environment and develop youth skills and their innovative initiatives. The partnership reinforces stc's efforts to promote youth activities, entrepreneurship and innovation, that support technology and digital solutions. AlJasem added, "When implementing the framework and initiatives under its CSR strategy, stc spares no effort in achieving its set out objectives to positively impact society. Considering its role within the private sector, stc will continue to form fruitful collaborations and strategic partnerships with local businesses of various sizes, enabling the Company to create a larger impact in the community and local economy." Also commenting on the collaboration, Ali Al Ebrahim, CEO of the COFE App, said, "We are proud to partner with stc, one of the leading telecom providers in Kuwait and the region to showcase our innovative platform. This summer campaign invites coffee lovers to download the COFE App and get a free drink from stc. Additionally, the app includes a wide selection of the top international and coffee brands with smart delivery options as well as added benefits." Al Ebrahim added, "I would like to extend my sincere gratitude and appreciation to the team at stc for organizing and launching this initiative. I would also like to thank the participating coffee shops for their support and participation. We look forward to the upcoming activities in this partnership, and collaborating once again with stc in the near future on other initiatives."

stc and HUAWEI Accomplished the First Global 1.2T/Channel Trial of the DWDM Network

stc, the leading digital enabler in the region, announced that in collaboration with Huawei, the first Global 1.2T/channel trial in its DWDM optical network has successfully completed. Known as the Dense Wavelength-Division Multiplexing optical fiber technology that is used to increase the bandwidth of existing fiber networks. The completion of the project reflects stc's leadership and pioneering advantage in the ultra-high-speed transmission field and verifying the 1.2T/channel transmission capability on the stc live network. The optical layer uses the Super C technology (120 channels in one pair of fiber), and the maximum single-fiber capacity can reach 48T, providing bandwidth assurance for Saudi Arabia's new services and applications such as: e-government, smart healthcare, smart education, as well as it accelerates Saudi Arabia's digital transformation. "stc Group has been the leader of the region in the field of optical transmission innovation and has paid a great attention to large-capacity transmission technologies," said Eng. Bader Allhieb, Infrastructure VP of stc Group. "Huawei's 1.2T high-speed transmission technology maximizes the single-fiber capacity by 4 times and greatly improves the bearer efficiency of optical networks. In the future, stc Group and Huawei will continue to cooperate and explore the ultra-high-speed optical transmission field, accelerate the application of innovative technologies, construct more efficient optical networks, and provide high-quality connection services to cope with explosive traffic growth." The pioneering vision and leadership of stc Group in the digital market, is a contributor to the success of KSA's vision 2030 of digitization and automation. As the digital market leader in Saudi Arabia, stc Group has been committed to modernizing telecom infrastructure, strengthening its technical advantages and network capabilities, and ultimately providing an excellent user experience.

stc Group Successfully Concludes Its Contribution with the Latest Specialized Carriers' and Wholesale Projects

stc Group concluded its contribution in the Capacity European Conference, which was held in London. The group provisioned the event through a Diamond Sponsorship. It also showcased its latest projects in data centers, most notably Center3 and submarine cable projects as well as the services it provides to the telecom service providers, international operators and the international business sectors. The conference focused on the future of digital infrastructure networks. It is the largest of its kind as it has been held for 22 consecutive years as well as it brings together network operators, data centers, cloud service providers, Internet exchange services, content providers, satellite companies, and more. stc's continued participation in Capacity Europe 2022 is a confirmation on its role as the largest digital enabler in the Middle East , as it provides the capacities and speeds necessary for its customers. stc Group has invested in strengthening the digital infrastructure and developing a highly efficient network of global submarine cables in line with the Kingdom's 2030 vision of increasing digitization in the Saudi market. Eng. Mohammed AlAbbadi, Group Chief Carrier and Wholesale Officer, represented stc Group in the main keynote panel of the conference, which was about (What does the future hold for telecoms in an inflationary environment?). He explained that higher expectations for what infrastructure can deliver today, requires higher investment, therefore finding the proper partnerships to extract value is vital. stc Group recently launched center3 with the aim of developing digital business and enhancing investment opportunities in international communication services and data centers. In the direction of providing the latest communication, hosting technologies and raising the capacity of data centers connect the three continents Asia, Africa and Europe. Center3 seeks to manage big data, high-speed computing, and local and international service providers by managing the digital infrastructure assets owned by stc from data centers, submarine cables and internet exchange points.

Launch of Center3 to Enhance Digital Economy Growth in KSA

stc Group, the leading digital enabler, inaugurated one of its largest and significant projects, Center3 Company, the digital regional center for the Middle East and North Africa. The new company will be the owner of the digital infrastructure assets owned by stc group, including data centers, submarine cables, international points of presence, and internet exchange points. The inauguration took place in the presence of H.R.H Prince Mohammad bin Khalid Al Abdullah Al-Faisal, Chairman of the Board of Directors of stc Group, His Excellency the Minister of Communications and Information Technology, Eng. Abdullah bin Amer Alswaha, and a number of excellencies and senior executives of stc Group. Center3 will be a group of carrier-neutral data centers and a provider of international communication for the telecommunications sector through a submarine fiber-optic network. It aims to develop digital businesses and enhance investment opportunities in international communication services and data centers by providing the latest communication and hosting technologies and raising the capacity of data centers to meet the needs of the markets across Asia, Europe, Africa, and the rest of the world. "The stc Group launched Center3 to enhance the digital system, which in turn will contribute to enhancing the Kingdom's position as a regional digital center. This launch is in line with our strategy to expand the scope and markets to achieve digital empowerment", said Eng. Olayan Alwetaid, stc Group CEO. "At Center3, we aim to build an integrated ecosystem of cables and data centers that seeks to attract Hyper-scalers, big data, and local and international service providers", said Fahad Alhajeri, Center3 CEO. "Center3 will provide data center services, international communication and Internet exchange services through its assets. We will work to achieve the company's vision of making the Kingdom the main digital hub connecting the three continents Asia, Europe, and Africa. as well as leading the largest share of Internet exchange and data traffic in the region", added Alhajeri. With the launch of Center3, stc Group would have completed the digital system pursuit by launching a number of companies in the fields of cybersecurity, artificial intelligence, cloud computing, Internet of Things and digital infrastructure. This will contribute to transforming the digital industry in KSA into a leading industrial power and a global logistics center, as well as the development of the local industrial sector, which puts Saudi Arabia at the forefront of global countries, through the transformation of business environments and the local community to be digitally connected in order to achieve digital economy and progress. Previously at LEAP, the International Conference, stc group has announced the launch of an initiative to establish a main digital center for the Middle East and North Africa, with an investment of $1 billion, with the aim of enabling growth in the Kingdom's economy and GDP. This comes in cooperation with regional and international partners. The center will link three continents, benefiting from the strategic location of the Kingdom, and promoting investment in international communication services and data centers. It will include the installation of several highly efficient cables to meet the future requirements of cloud services, by investing in an advanced fiber-optic network that ensures continuous service availability. On another note, the group had also recently inaugurated the submarine cable "Saudi Vision Cable", which is a high-speed submarine cable in the Red Sea through its first landing station in Jeddah, which extends over a distance of 1,160,000 meters, and provides high-speed access across the borders of the Kingdom of Saudi Arabia through four landing stations, Jeddah, Yanbu, Dhaba, and Haql.

stc Group Signs 7 Memorandums of Understanding to Develop & Research AI Technologies

stc Group, the regional digital enabler successfully concluded its mission at the Global AI Summit 2022 after unveiling a variety of digital solutions. On the sidelines of the summit, the group also signed multiple memorandums of understanding with the Saudi Data and Artificial Intelligence Authority, the Saudi Company for Artificial Intelligence, King Saud University, Matarat Holding and the American company Honeywell, in addition, solutions by stc a stc group subsidiary signed an MoU with Dell, on the sidelines of the Global AI Summit 2022, which was hosted in Riyadh. The MOU that stc Group signed, with the Saudi Data and Artificial Intelligence Authority (SDAIA) aimed at developing, researching and localizing artificial intelligence solutions and possible related technologies and exchanging experiences as well as knowledge in the fields of data management and governance. Furthermore, the group signed a tri-MOU with "SDAIA" and "SCAI". While the MoU with the Saudi Artificial Intelligence Company "SCAI" aimed at developing the technical landscape in the Kingdom, cooperating in the development and research of artificial intelligence and possible related technologies. To enable growth and

innovation, stc Group represented by the stc Academy signed a MOU with King Saud University in the field of artificial intelligence to enhance research & cooperation, by sharing long-standing experiences in the implementation of training programs and research projects, smart cities solutions, preventive maintenance, and future economies. Moreover, stc Group, represented by "iotsquared", which is owned by PIF and stc Group signed a MOU with "Matarat Holding" company to enhance the airports' digital infrastructure by supporting IoT and artificial intelligence applications, in addition to another MOU with the American company Honeywell, to enhance cooperation in launching smart city initiatives for industrial sectors, as well as to benefit of Honeywell's "HCS" and "Movilizer" platforms. Finally, solutions by stc a stc group subsidiary signed a MOU with Dell to develop security control systems to protect and secure information systems across all industries, supply the demand within the AI technologies, to contribute to the digital transformation in the Kingdom.

Arabsat and SpaceX Sign Contract to Launch 7A Satellite, Falcon 9 Will Carry Arabsat 7A to Its Orbital Position 30.5 East

Arab Satellite Communications Organization (Arabsat) announced that it has selected SpaceX's Falcon 9 to launch its new satellite, Arabsat 7A. Arabsat 7A is the first Arabsat 7th generation satellite and is considered one of the latest satellite technologies in terms of manufacturing, payload, efficiency of performance, and coverage flexibility. This announcement marks the third time that Arabsat has selected SpaceX for launch: first in 2019 with Falcon Heavy's launch of Arabsat and SpaceX will also launch Arabsat's BADR-8 satellite on Falcon 9 next year. Al-Hamedi Al-Anezi, CEO of Arabsat, said, "We value our work with SpaceX. The signing of this agreement is an extension of the trusted relationship with SpaceX that has been built over the past few years since the launch of Arabsat 6A. Arabsat 7A will be one of

Arabsat's first software-defined payload satellites, offering high throughput Ku-band capacity to help Arabsat expand its services into several verticals to enhance its portfolio of products and solutions over the Middle East, Africa and beyond, to parts of Europe." "We're excited to be selected for our third Arabsat launch," said SpaceX Vice President of Commercial Sales Tom Ochinero. "Having worked together on the Falcon Heavy launch of Arabsat 6A and the upcoming launch of BADR-8, our work with Arabsat is a testament to our Falcon fleet's reliability and safety."

etisalat by e& to Hire 500 UAE Nationals in the Next Five Years Under the Federal Program 'NAFIS'

Etisalat UAE, branded as etisalat by e&, has announced a Memorandum of Understanding (MoU) with Emirati Talent Competitiveness Council (ETCC) to participate in the NAFIS initiative that will involve the hiring and empowering of more than 500 Emirati professionals in its retail, customer service, technology and IT space in a span of five years. Providing the new hires with the skills, expertise and platform to excel, the initiative strongly supports their career progression in the telco industry and significantly contributes to the UAE's national agenda to move towards a knowledge-based economy. The MoU was signed by Masood M. Sharif Mahmood, CEO of etisalat by e&, and H.E. Ghannam Al Mazrouei, Secretary General of the Emirati Talent Competitiveness Council - the federal entity responsible for NAFIS - at GITEX Global 2022, one of the region's largest technology events. Senior officials from both entities witnessed this significant moment. The signing acts as an extension of etisalat by e&'s Emiratization efforts and builds on the success of the partnership held earlier this year with the Ruler's Court in Al Dhafra Region. As per the latest agreement, etisalat by e& will focus on hiring 100 UAE nationals by the end of 2022. It will also facilitate training programmes that contribute to developing and enhancing their skills and expertise in their current roles. Commenting on the agreement, H.E. Ghannam Al Mazrouei, Secretary General of the Emirati Talent Competitiveness Council, said: "NAFIS reflects the interest of our wise leadership for UAE citizens to equip the next generation with competencies that are founded on curiosity, openness and a diverse range of professional skillsets. This can only be achieved by providing them with opportunities that meet their aspirations and ambitions for the future. Since the inception of NAFIS, the program has collaborated with key private sector partners to provide job opportunities that meet the qualifications and aspirations of capable and talented UAE nationals. "The NAFIS agreement with etisalat by e& meets these requirements, highlighting the joint effort to create opportunities for 500 UAE nationals and contribute to the overall growth of the UAE economy. The telecom sector has always been a major enabler of job creation, especially in information technology, marketing and technical areas, as well as customer service and sales. This is a positive development for the younger generation who are actively looking to participate in the retail sector." Al Mazrouei indicated that the recruitment plan with etisalat by e& will take place in a phased manner, making sure the UAE Nationals are equipped with the tools to take on their new roles in the telecom, technology and retail sectors. "Thanks to partners like etisalat by e&, these opportunities will go a long way in benefitting the immense talent in the country and adding value to their career path of choice." Masood Sharif Mahmood, CEO, etisalat by e&, said: "We are proud to be part of the NAFIS initiative and play a critical role in contributing to the UAE leadership's vision of creating opportunities for Emiratization in the private sector. We will work closely with the potential candidates to identify their competencies and support their career growth in the communications and IT sector. This is a testament to the continuous efforts etisalat by e& has put into investing in UAE National talent and guiding them to become the future leaders, in line with the aspirations of the government. In the telecom and technology sector, one of the most vital sectors that contribute to the country's economy, these new hires will play an integral role in progressing the country's digital economy and raise its competitiveness across various global indicators." Ali Al Mansoori, Chief Human Resources Officer, etisalat by e&, said: "For more than four decades, we have worked tirelessly to explore limitless possibilities for hiring and empowering Emirati talent with the right skills and working environment. The partnership with

NAFIS will enable etisalat by e& to ramp up efforts in providing new job opportunities across our departments, mainly in the sales, customer service, technology and IT departments. We plan to appoint 100 UAE nationals in these areas, making them brand ambassadors. This will also include empowering new employees with training and upgrading their skills and knowledge, chiefly through our partnerships with globally renowned universities so that we can meet the varying requirements of the departments and prepare them for the future." The collaboration between etisalat by e& and NAFIS includes supporting initiatives and programmes aimed at encouraging UAE nationals to work in the private sector and enjoy the benefits that will serve their long-term professional interests. etisalat by e& is also committed to encouraging other private sector partners to participate and register with the NAFIS program and implement such initiatives and programmes within their organizations. As part of the initiative, new employees will undergo a 33-day training program comprising product and soft skills training, mainly training them on the sales framework, transaction system and interaction guide, whilst upgrading their business know-how and knowledge of various products and services. Earlier this year, etisalat by e& concluded an MoU with the Ruler's Court from the Al Dhafra region with an objective to provide job opportunities for more than 100 Emiratis across call centers, preparing them to become tomorrow's leaders. Moreover, etisalat by e& has achieved one of the highest Emiratization rates in the country, reaching a 51 per cent talent pool of UAE nationals. It is one of the first companies to encourage and empower Emirati women in the ICT sector, with 76 per cent of total female employees comprising UAE Nationals. There are several training programmes made available by etisalat by e& for UAE National employees such as the AI Graduate Program as well as courses focused on the professional development of the youth who are leaders of the future. Already, 100 graduates were recruited for the AI Graduate Program as part of the activities lined up in preparation for the completion of 50 years of e& (formerly known as Etisalat Group). These graduates were also trained in affiliate programmes related to customer service, finance, sales and business that was offered by e& enterprise, a specialist business pillar of e&. The IQRAA platform, the first-of-its-kind AI-powered educational mobile application, will also provide a comprehensive and distinct set of educational content. It is the first platform in the region to integrate blockchain technology into human resource operations.

e& and SES Join Forces to Offer One-Hop Connectivity to Microsoft Azure

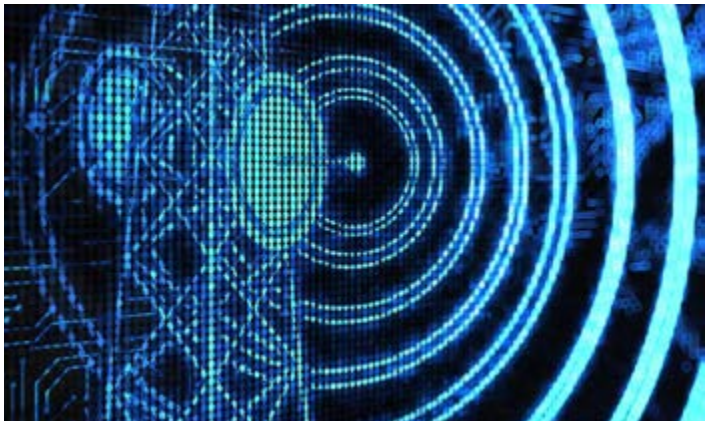
The Carrier and Wholesale Services (C&WS) division of e& (formerly known as Etisalat Group) recently announced its partnership with Microsoft and SES to host the co-located SES O3b mPOWER and Microsoft ground station at Ras Al Khaimah. The first O3b mPOWER ground station in the region will facilitate one-hop connectivity to the cloud from remote sites so that customers can optimize their global business operations smoothly. The partnership will also enable companies - regardless of their location - to accelerate their digitalization plans while unlocking more value for the businesses. This trio partnership will mean that e& network services can be easily connected and extended via SES's second-generation medium earth orbit (MEO) constellation – O3b mPOWER – which aims to deliver high-speed connectivity services from tens of megabits to multiple gigabits per second to one site. The one-hop connectivity to Azure Cloud and SES's satellite network also enables simplicity, flexibility but also minimizes any network latency delays. The ground station at Ras Al Khaimah is one of the eight initial O3b mPOWER gateway sites which will support both customer data services and the TTC (Telemetry, Tracking and Control) control of the satellite system. "SES's O3b mPOWER satellite services will enhance cloud-enabled capability to meet critical industry connectivity needs with greater resiliency and enable users in e&'s customer base to benefit from enabling Cloud applications regardless of where they are located," said William Chappell, Vice President of Azure Global, Microsoft. "This partnership is an important milestone in providing customers with the ability to optimize business operations in a flexible and agile manner while accessing connectivity to the cloud from remote sites via satellites and leveraging e&'s global network with space coverage. e& will capitalize on the success of O3b mPOWER satellites to deliver fiber-like connectivity to meet growing customer demands globally," said Nabil Baccouche, Group Chief Carrier & Wholesale Officer, e&. "Through this partnership, our international customers will have access to cloud-based services and platforms regardless of their location." John-Paul Hemingway, Chief Strategy & Product Officer of SES, said, "These are exciting times as the extended relationship with e& will enable all three companies to take another step towards delivering high-performance, low-latency networks virtually anywhere. Regardless of their remote locations, customers worldwide will be able to access and experience cloud-based applications seamlessly. Our ground-breaking O3b mPOWER system will provide new levels of cloud-scale satellite connectivity, intelligent automation and managed services and support digitalization across a wide range of sectors."

Enhanced Customer Experience & Managed Service Capabilities at the Core of etisalat by e&'s Newly Launched E-Care Program

Etisalat UAE, branded as etisalat by e&, has announced the launch of the E-care program, that will efficiently support customers through a range of end-to-end bespoke managed network and infrastructure solutions. etisalat by e& will elevate the customer experience and operational agility by enhancing its in-house capabilities and joining forces with key technology players to deliver maximum benefits. In recent years, the subscription adoption rate for managed services has increased as businesses shift to a more reliable and professionally managed service solution. As part of the E-care program, etisalat by e& is investing heavily in enhancing its technology platforms, team skillsets, and partner ecosystem. Having always channeled its efforts towards managing and fulfilling customer expectations, its new approach of designing and deploying innovative and integrated solutions will help customers in building a robust infrastructure leading to sustainable growth with the expertly-designed and professionally managed new service offering, etisalat by e& supports customers by reducing the total cost of ownership, allowing them to focus on their core business and sustainable growth. Hamad Mohamed Al Marzooqi, Senior Vice President of Pre-Sales and Business Operations, etisalat by e& said: "At etisalat by e& we are on a mission to deliver outstanding customer experiences at all times. With the E-care program, we are revamping our end-to-end managed network and infrastructure services to cater to our customers' evolving needs. One of the key building blocks of the E-care program is to create unique value propositions for our customers through our in-house capabilities supported by a robust partner ecosystem. We look forward to rolling out the E-care program that will strengthen our managed services offering as we stay committed to delivering strong value for our customers and continue to be their trusted partner." E-care program fortifies the managed services offering of etisalat by e& by providing bespoke end-to-end managed network and infrastructure operations covering customers' infrastructure from hardware to software, networking, new solutions acquisition and setup, and support services. Etisalat Group has changed its brand identity to e&, effective from 23 February 2022. Its strategy

aims to accelerate growth through the creation of a resilient business model representing the Group's main business pillars. The telecoms business currently continues to be led by etisalat by e& in e&'s home market and by e& international in the subsidiaries outside of the UAE, upholding the Group's rich telecoms heritage, bolstering the strong telecoms network and maximizing value for the Group's various customer segments. Ramping up the digital services for individual customers to elevate their digital-first lifestyle, e& life brings next-generation technologies through smart connectivity platforms in entertainment, retail and financial technology. To enable the digital transformation of governments, large-scale enterprises and corporates, e& enterprise focuses on maximizing value through its end-to-end solutions in cybersecurity, cloud, Internet of Things (IoT) and Artificial Intelligence (AI), as well as deploying mega projects. e& capital allows the Group to focus its efforts on driving new mergers and acquisitions while maximizing shareholder value and strengthening global presence.

etisalat by e& Injects Investment to Expand Capacity of Cell Towers in Egypt



Hazem Metwally, CEO of Etisalat by e&, said that the company has a total of 9,000 cell towers across Egypt, after adding about 650 new base stations this year, noting that a capacity expansion is carried out annually for all stations with investments ranging between EGP 4–5bn. This came during the company's annual press conference, on the sidelines of the 42nd edition of the GITEX Global exhibition and conference, which was held from 10 to 14 October. Metwally stressed that the 4G technology has caused a great leap during the last stage in upgrading the communications service. He pointed out that the 4G is the latest boom in the telecommunications sector in Egypt, and the company continues to support its services to meet the growing customer requirements, noting that the company is also ready to operate the

5G services, when it is officially launched by the National Telecom Regulatory Authority. He added that the telecommunications sector relies on long-term investments, even in difficult circumstances. He added that inflation and economic conditions have caused a rise in operating costs, and that the company continues to pump new investments in developing the network despite the fluctuation of the foreign exchange rate against the pound and the increase in service operating costs, stressing that currency fluctuation is the most influential factor on costs. "The Egyptian market is characterized by strong fundamentals," he said. Metwally explained the company's intention to inject new investments in renewable energy sources to operate the network in line with the policy of the parent group, equivalent to a portion of its consumption of conventional energy, especially as its technical feasibility is constantly improving. Metwally said that the company's investment policy after changing its brand is based on the principle of acquisitions and mergers, provided that it adds value or establish entities, pointing out that the company's projects in the new administrative capital are progressing at an accelerated pace He explained that the parent group has a vision after changing the brand represented in the development of our role as a telecommunications operator in light of the existence of growth opportunities in different fields and providing more services to customers to transform from a telecommunications operator to a technology at the level of individual and corporate clients in all markets of the region. He stressed that his company pays great attention to raising the efficiency of human elements and attracting strong specialized cadres, indicating that the coming period will witness a focus on technology and marketing departments, and there will be institutional steps in this regard. We are currently looking at more investment opportunities that are being studied, pointing out that the basic investments in the network and support for technological development in Egypt and the region are basic investments for the network.

etisalat by e& Launches the All-New 'Business Pro'

Etisalat UAE, branded as etisalat by e& has announced the launch of the all-new business proposition 'Business Pro' that is aimed to meet the digital needs of businesses by providing benefits that will facilitate office, remote work and hybrid working... Business Pro offers the next generation of internet solutions that are holistically designed to deliver high-speed internet based on the size of the workforce as well as user-specific benefits. The proposition is an all-in-one solution crafted to ensure complete business mobility by equipping each employee to work remotely or in a hybrid working environment. Employees will have access to user packs comprising a host of collaborative, communication, productivity and security tools. Esam Mahmoud, Senior Vice President, SMB, etisalat by e&, said: "Businesses undergoing a digital transformation are constantly looking at how they can add more value to their customers. Business Pro is an evolution of the previous customer propositions where we've built in more benefits at the same cost. The launch of the next generation of internet solutions is part of etisalat by e&'s continuous efforts to empower businesses with scalable and advanced solutions, thereby growing their business, managing costs optimally and increasing revenue." Business Pro enables office, remote and hybrid working models and is built based on the number of users in the business. The benefits for both businesses and employees include high-speed internet, firewall, managed devices, landline-on-the-go, website builder, and much many more benefits to boos business productivity and ostomies operation. Etisalat Group has changed its brand identity to e&, effective from 23 February 2022. Its strategy aims to accelerate growth through the creation of a resilient business model representing the Group's main business pillars. The telecoms business currently continues to be led by etisalat by e& in e&'s home market and by existing subsidiaries for e& international, upholding the Group's rich telecoms heritage, bolstering the strong telecoms network and maximizing value for the Group's various customer segments. Ramping up the digital services for individual customers to elevate their digital-first lifestyle, e& life brings next-generation technologies through smart connectivity platforms in entertainment, retail and financial technology. To enable the digital transformation of governments, large-scale enterprises and corporates, e& enterprise focuses on maximizing value through its end-to-end solutions in cybersecurity, cloud, Internet of Things (IoT) and Artificial Intelligence (AI), as well as deploying mega projects. e& capital allows the Group to focus its efforts on driving new mergers and acquisitions while maximizing shareholder value and strengthening global presence.

e& Ventures into the Metaverse with 'e& Universe' and Two Use Cases at GITEX Global 2022

e&, formerly known as Etisalat Group, is set to enthrall stand goers at GITEX Global 2022 by inviting them to enter the next digital universe with the soft launch of their virtual world, e& universe. This move marks a significant achievement in the Group's transformation journey to a global technology and investment conglomerate, as it takes its first steps into the metaverse. Making its debut at GITEX Global 2022, one of the region's largest technology exhibitions and conferences, e& universe will virtually welcome visitors, empowering them to traverse the virtual and physical worlds, profoundly changing the way they interact. Alongside e& universe are two use cases, Metaverse Service and etisalat by e&, aimed to give visitors varied experiences in art, music, entertainment and a glimpse into digital retail of the future. The UAE has made great strides in the metaverse arena and this latest launch from e& highlights its commitment to the vision of the leadership in enhancing the country's position as its stands at the forefront of global ICT industry, with the adoption of the most advanced of technologies. Globally, there have been several investments towards building the technology and infrastructure for the metaverse, touching more USD 120 billion during the first five months of this year, doubling since 2021. * e& is not only showcasing the latest technological innovations but is also creating an incredible immersive and innovative experience through e& universe, a first of its kind venture in the region. The move to the metaverse is a start of a remarkable journey into the next digital frontier for the Group as it seeks to do things differently, develop and launch technology solutions that will empower customers and businesses so as to offer heightened interactive experiences. At e&'s stand this GITEX Global, visitors will embark on a journey that elevates their digital experiences by transporting them to a whole new level of social engagement. The Group is ready to build a world of new possibilities where the future is all about unlocking creativity, exploring immersive storytelling experiences, and building a world of new possibilities. The metaverse is a realm e& is still exploring, given its potential to transform the world of technology and digitalization journeys. When it comes to harnessing the benefits of the metaverse, the Group is working closely with its partners to develop it as the platform where audiences can interact in unique ways. Developed in partnership with HTC, the leading manufacturer of virtual reality and mobile devices, e& universe will be hosted virtually on Mars. The specific Mars spot is Arcadia Planitia, a vital location that is considered the most suitable for future life on the red planet and may serve as an aspirational and strategic location for the future. It is a subtle nod to the UAE's National Space Strategy and the success of the Hope Probe mission, the first mission led by an Arabi-Islamic country, and in line with the vision of the UAE leadership. For the first time in the history of GITEX Global 2022, visitors will virtually experience the e& stand through e& universe and view the futuristic technology showcases at the event. This is only a glimpse of what is to come in the realm of e& universe. The next phase will open doors of opportunities for visitors to purchase digital assets and non-fungible tokens (NFTs), watch virtual concerts and sporting events as well as engage in other unique digital experiences. Marking significant achievements in e&'s journey to revolutionize the customer experience as a global technology and investment conglomerate, the e& universe showcase is also accompanied by two other use cases offering unique experiences through the metaverse. In one of the use cases, e& has partnered with SK Telecom to create Metaverse Service which will take visitors through multiple virtual spaces and unique avatars, so that they can explore opportunities for social networking in the metaverse. This platform provides the opportunity for visitors to enjoy the exclusive e& NFT exhibition alongside special artworks by international artists, listen to famous K-pop music, poems, and various entertainment shows through the platform's virtual and augmented reality technologies. After selecting from one of six locally-designed avatars, visitors will also journey through the metaverse with Emirati actor, producer, TV personality and social media influencer, Saoud Al Kabbi as he shares his poetry and experience of his first-time presence in the metaverse. This partnership with SK Telecom is also aimed to revolutionize services for e& life changing the face of media and entertainment in the region with the launch of exclusive content for the metaverse. The second use case in collaboration with Huawei, gives insight into the virtual retail space, where visitors can enter the virtual world of etisalat by e&'s business center. Here visitors can experience virtual shopping in a 3D universe, enabled by an enhanced live 5G network. Visitors can collaborate, navigate and communicate using etisalat by e&'s products and services in real-time using their hand movements, headsets, feedback controllers or voice commands. e& universe and the two use cases of Metaverse Service and etisalat by e& business center are tangible examples of e&'s efforts in investing in advanced technologies and creative innovations as it continues to explore limitless possibilities that digitally empower societies. The Group's mission to Make Possible will also reflect in the expansion of its digital services and solutions provided to governments, businesses and individual customers in the UAE and the countries where it operates.

e& Enterprise Launches engageX, a Communications Platform as a Service (CPaaS) Solution

e& enterprise, part of e& (formerly known as Etisalat Group) announced the launch of engageX, a growing Communications Platform as a Service (CPaaS) ecosystem that customizes any end-user customer experience journey with seamless, multi-channel communications. CPaaS enables real-time communication capabilities with a cloud-based delivery model, which helps businesses to accelerate their digital transformation programmes by enhancing and personalizing customer engagement. CPaaS entirely replaces legacy infrastructure and interfaces, considered a barrier for organizations hoping to provide quality communication services. Gartner predicts that by 2025, 95% of global enterprises will utilize API-enabled CPaaS offerings to uplevel their digital competitiveness. The global CPaaS market is expected to grow by $ 10.19bn during 2022-2026, accelerating at a CAGR of 17.85 percent. CPaaS solutions will witness an uptake with companies being able to add real-time communication capabilities to any pre-existing business applications by deploying application programming interfaces (APIs). These capabilities include SMS, Voice, Video and Instant messaging. The engageX solution is in line with the e& enterprise vision to help businesses and governments embrace new technology, drive real transformation and create Intelligent Value, continuously adjusting the solutions provided to best suit the customer requirements. "We are launching engageX, our CPaaS offering, to elevate the quality of customer experience provided by enterprises and government entities in the region. engageX will elevate the CPaaS ecosystem, building on strategic partnerships with industry leaders, end-to-end professional service including developers' advocacy and consultancy," said Salvador Anglada, CEO, e& enterprise. As part of its professional services, engageX enhances customers' user experiences by identifying the existing communication channels and then assesses, co-creates and implements a seamless Omni-channel end-user journey that is specific to each customer type. Solution consultancy and developer advocacy ensure proper customer success management, and 24x7 customer support services ensure optimal service quality. Etisalat Group has changed its brand identity to e&, effective from 23 February 2022. Its strategy aims to accelerate growth through the creation of a resilient business model representing the Group's main business pillars. The telecoms business currently continues to be led by etisalat by e& in e &'s home market, upholding the Group's rich telecoms heritage, bolstering the strong telecoms network and maximising value for the Group's various customer segments. The telecoms business is led by existing subsidiaries for e& international in 16 countries where the Group operates, with a focus on growing an international portfolio of world-class modern digital telcos by providing the best customer experience, building world-class digital capabilities and embracing expansion opportunities. Ramping up the digital services for individual customers to elevate their digital-first lifestyle, e& life brings next-generation technologies through smart connectivity platforms in entertainment, retail and financial technology. To enable the digital transformation of governments, large-scale enterprises and corporates, e& enterprise focuses on maximizing value through its end-to-end solutions in cybersecurity, cloud, Internet of Things (IoT) and Artificial Intelligence (AI). e& capital allows the Group to focus its efforts on driving new mergers and acquisitions while maximizing shareholder value and strengthening global presence.

Mobily Joins the Africa-1 Cable System Consortium to Boost the KSA's Digital Economy

Etihad Etisalat (Mobily) announced joining the new Africa-1 cable system consortium, which will enhance Saudi Arabia's connectivity with various locations across the Middle East, Africa and Europe through advanced connection capacities, new routes integrated with Mobily's national networks across the Kingdom, and border interconnection points with

telecommunication networks in neighboring countries. The new consortium consists of Mobily (KSA), Etisalat and G42 (UAE), Pakistan Telecommunication Company, Telecom Egypt, Zain (Sudan), and Algeria Telecommunications Corporation (Algérie Télécom), in addition to other global service providers. By joining the Africa-1 consortium, Mobily plays a pivotal role in enhancing KSA's digital infrastructure, in line with the objectives of Saudi Vision 2030, aiming to provide a faster and more reliable internet connection. This step will also enable stronger telecommunication services to meet the needs of Mobily customers across both public and private sectors along their journey of digital transformation. Thamer A. AlFadda, Senior Vice President Wholesale & Carrier Services, said: "Mobily affirms its commitment to supporting digital transformation programs and working diligently to achieve the goals and mission of the Saudi Vision 2030. We join the Africa-1 consortium with an eye to creating a positive impact on various sectors by adding a new line to the global telecommunications network through the Kingdom. This will enhance the resources available to our various clients locally and regionally by providing a direct connection to global strategic locations." The new sub-sea cable system will feature advanced technologies that takes the KSA's telecommunication network to a new level of high performance, while users can benefit from improved services. The cable system will be landing in a new strategic landing station in Duba, northwest of Saudi Arabia. The project is expected to be ready for service by the end of 2024. The 10,000 km sub-sea cable will initially have landings in the KSA, UAE, Egypt, Sudan, Algeria, France, Pakistan, Kenya, and Djibouti. The following phase will include additional landings in Yemen, Somalia, Tanzania, and Mozambique. The system will be equipped with ASN 1620 Softnode transmission equipment, featuring high-performance 200/300/400 Gb/s advanced coherent XWAV line cards. This project is the latest in a series of initiatives by Mobily to improve the customer experience through new and advanced technologies. Moreover, Mobily continues to support digital transformation by providing high-quality and more reliable internet speeds that meet international standards, in addition to activating its strategy, enhancing its distinguished infrastructure capabilities, increasing its diversity, emphasizing its flexibility, and making it the operator of choice among clients.

Mobily Reports Healthy Growth in Revenues, EBITDA in Q3 2022

Saudi Arabian mobile network operator (MNO) Etihad Etisalat (Mobily) has published its financial results for the three months ended 30 September 2022, reporting a 6.2% year-on-year increase in revenues to SAR3.828 billion (USD1 billion), up from SAR3.606 billion in 3Q21. The company claims that the positive result was due to the growth of all revenue streams, coupled with a 'healthy growth' in its fiber-to-the-home (FTTH) and overall subscription base. Further, EBITDA increased to SAR1.487 billion in 3Q22, up by 7.0% y-o-y, while interest and financial charges grew 19.7% y-o-y to SAR150 million in the period under review, reflecting the increase in interest rates. Net profit, meanwhile, improved by 32.7% y-o-y from SAR281 million to SAR373 million in 3Q22. CAPEX for the first nine months of 2022 amounted to SAR935 million versus SAR885 million for the similar period of the previous year.

Mobily Announces the Establishment of the Digital Hub Through a New Carrier Neutral IX & Infrastructure Expansions Initiatives

Mobily announced its investments in new submarine cables, terrestrial networks, data centers and internet exchange at the Capacity Europe 2022 Conference, which took place in London. The conference brought the carrier community together under one roof to discuss current and future partnerships, collaborative projects, and the transformation of the wholesale telecom ecosystem fueled by rapid digital transformation. Mobily was a Gold Sponsor at the event and announced and shared its

infrastructure expansion initiatives with the carrier community. Mobily's wholesale strategy envisages the development of state-of-the-art digital infrastructure that will contribute to the achievement of KSA Vision 2030 targets and the Kingdom's focus to be the digital hub in the region. Eng. Thamer Alfadda, Senior Vice President of Wholesale & Carrier Services at Mobily, highlighted that they accelerated national and international infrastructure expansion efforts across submarine and terrestrial networks and DC capacity, as well as new partnerships to enable a carrier-neutral internet ecosystem that is vital for the sustainable growth of ICT sector and contribute to Kingdom's digital hub vision. Mobily's infrastructure expansion spans across several areas including submarine cables, terrestrial networks, data centers, and a neutral internet exchange platform. Mobily has joined SEA-ME-WE 6 submarine cable consortium and will land the 126Tbps capacity cable in its new Yanbu cable landing station when it becomes operational in 2025-Q1. Africa 1 is additionally other submarine cable that Mobily invests in, which spans 10,000km with landings in Kenya, Djibouti, Pakistan, United Arab Emirates, Kingdom of Saudi Arabia, Egypt, Algeria, and France. Furthermore, to these two new cable investments, Mobily has also highlighted its recent Memorandum of Understanding (MoU) with Telecom Egypt to construct the first point-to-point submarine cable connecting the KSA to Egypt. MoU aimed to explore various new ways to connect international capacity to Europe in the west, through Telecom Egypt's network, and to the GCC in the east, through Mobily's network, which is made possible by expanding the two companies' networks and connecting them to neighboring countries. Moreover, Terrestrial connectivity is a focus area on the infrastructure expansion. Benefiting from Kingdom's strategic geographic position, Mobily has recently invested in border touchpoints with UAE, Qatar, Bahrain, Kuwait, Jordan, Iraq, and Yemen to increase capacity and ensure seamless connectivity for Saudi terrestrial crossing (transit traffic) as well as the traffic that originates or terminates in KSA, beside modernizing the Saudi National Fiber Network (SNFN) with end-to-end network transformation and agile automation by constructing the Middle East's first 5G and B2B-driven, ultra-broadband optical backbone network. Carrier neutrality is a key pillar that Mobily emphasizes on to build its digital hub ecosystem and they have recently partnered with Equinix, a top-tier and the largest global data center and Internet Exchange platform provider, to establish full carrier-neutral Internet Exchange (IX) in the JED1 datacenter facility, a significant gateway for traffic which place KSA digital bridge between Europe, Asia, and Africa and aims to improve the peering ecosystem in the region. JED1 Data center will function as a network-dense and neutral interconnection hub, which makes a compelling commercial case for global and regional ISPs, Operators, OTTs, Content providers, and Enterprises to land and peer in Jeddah, therefore decreasing latency with the removal of trombone effect that arises from the traffic to different hosting locations. Mobily has also developed a strategic plan to expand Data Center capacity, where overall DC capacity will reach 10 MW, and this will also support Mobily's digital hub. With these significant investments in national backbone, global interconnectivity, integrated digital infrastructure, Data centers, and service delivery capabilities, Mobily aims to strengthen its position as a leading digital enabler partner for operators and digital ecosystem players in the region.

Mobily Wins Two Awards from Technology Achievement Awards (TAA) in the Business Organization in Middle East and Africa (MEA BUSINESS)

MEA Business Magazine recently announced the winners of the Technology Achievement Awards 2022. Winners were presented with their awards trophies during GITEX Technology Week (10-14th October). The annual awards recognize innovation, leadership, and excellence in technology in the Middle East and Africa. The awards are supported by MEA Finance, Creative Middle East media and the SAMENA Telecommunications Council. Kenneth Mitchen, Executive Director and Publisher of MEA Business Magazine, stated, "Congratulations to all the winners of the MEA Business Technology Achievement Awards 2022. We are honored to recognize the outstanding achievements of this year's winners". A large number of nominations were evaluated by a panel of judges, coming down to 28 categories, won by 17 organizations and 3 individual achievement awards. The winners were decided after in-depth evaluation of their products, services and solutions. Award winners included organizations, individuals, and government departments.

Omantel and CBO Sign MoU to Offer Fintech Accelerator Program

The Central Bank of Oman (CBO) signed a Memorandum of Understanding (MoU) with Oman Telecommunications Company (Omantel) at Omantel Headquarters to conduct an Accelerator Program in order to enable fintech startups in the Sultanate of Oman. Signed by His Excellency Tahir bin Salim Al Amri, CBO's Executive President, and Talal bin Said Al Mamari, Omantel's CEO, this MoU comes in light of CBO's Oman Fintech Framework and Roadmap that aims at establishing a comprehensive and nurturing fintech ecosystem in Oman that supports and promotes Fintech Start-ups, Small & Medium Enterprise (SMEs), Banks and Technology Firms. The partnership brings together the expertise and shared vision of the CBO and Omantel to support local fintech start-ups in Oman. Starting on November 14th, the six-month Accelerator program will support innovative fintech start-ups through the challenges of the highly competitive fintech industry utilizing mentorship, training, networking and fundraising support. H.E. Tahir bin Salim Al Amri said, "Fintech is vital to the future of the Sultanate of Oman's financial sector, and we are committed to supporting fintech start-ups in the country. This program is one of the manifestations of that mission. We are delighted to be working with Omantel to provide strategic direction and regulatory advice to local fintech start-ups." Talal Al Mamari, CEO of Omantel, said "We are excited for this partnership with the CBO which leverages our shared vision and strengths to contribute to the growth of fintech start-ups in the country. We are committed to leading digital transformation in Oman and to create meaningful opportunities for local start-ups to develop and thrive, and we strongly believe that our collaboration with the CBO in this area will be a game changer for the country's fintech sector."

Omantel's "Fikra" Creates New Opportunities for Innovative Employees

Omantel, the leading provider of integrated telecommunication services in the Sultanate of Oman, has launched an in-house program for employees who submit innovative ideas that could be converted into solutions or projects, offering them rewards like the opportunity to join a world-class accelerator, potentially gain funding, and get one year of paid or unpaid leave. The initiative is considered to be one of the advanced projects that Omantel is currently working on to promote a culture of innovation and entrepreneurship among employees. The initiative is called "Fikra" which provides a platform that delivers solutions related to innovation within technology, and anything that would add value to Omantel and maintain its position as a leading telecommunication company. Through the Fikra portal, employees can submit startup ideas, project ideas, and challenges that can be incubated, supported or addressed through Omantel Innovation Labs – a platform that was created to leverage Omantel's strengths to promote innovation and entrepreneurship in new and emerging technologies. "The Fikra program stems from Omantel's philosophy of nurturing and incentivizing our talent and enabling them to turn their ideas into great products and solutions that help overcome different challenges" said Dr. Ghalib bin Saif Al Hosni, Chief People Officer at Omantel. "Our employees are our most precious asset, and we have a firm belief in their creativity and ability to propose innovative solutions because of their familiarity with the customer's needs. Through this program, we hope to generate fresh ideas from our employees and thus boost innovation within the organization, with the ultimate goal of raising the bar in our industry". He added, "The program builds on the presence and capabilities of Omantel Innovation Labs. We are confident that the program will be the catalyst for our employees to unlock their true potential while enabling the Company to further contribute to achieving the objectives of Oman Vision 2040". To qualify for the Fikra program, Ghada Jaifar Al Said, Senior Manager of Omantel Innovation Labs, further explained the process "The selection is based on a set criteria including the value addition to Omantel, the viability of the idea, and individual capabilities." "An extensive educational program, which includes relevant workshops, will complement the program and emphasize the fundamental frameworks and skillsets required to succeed. Our team is also available to support the employees in improving their submissions and developing their ideas." The assessment will be carried out by an internal committee which includes members from relevant departments within the company. 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 an optimum customer satisfaction, Omantel plays a key social role to provide the required support and assistant to all sectors amongst the Omani society.

Omantel Launches "Mashora" Program to Boost Employee's Wellbeing

Omantel, the leading provider of integrated telecommunication services in the Sultanate of Oman, has a firm belief that its employees are the most valuable asset. To this end, the company leaves no stone unturned to provide their staff with an excellent positive working environment that enables them to demonstrate their talents and creativity as well as to improve their performance constantly. Omantel's efforts are not just limited to providing the company's employees a progressive work environment but also advisory services that enhance their talents and competencies. To accomplish this, Omantel has launched "Mashora", a program that aims to provide the necessary support and guidance for employees who face pressures and challenges, whether in the workplace or at a personal level. The program is designed with focus on the emotional wellbeing of the employees. Through the program, employees are encouraged to share the difficulties they encounter, whether at work or at a personal level, with company counselors who will provide them with the necessary assistance and guidance. Omantel believes in the importance of providing a suitable working environment for its employees. The Company places

this among its top priorities in order to ensure providing its employees with a healthy working environment, which will have a positive impact on the company's employees and the quality of services they provide to customers. The "Mashora" program aims to help employees overcome stress, anxiety, obstacles and challenges and rise above conflicts in the workplace. The program enables staff to address these obstacles at an early stage, which will definitely have a positive impact on their individual and institutional performance. The program also contributes to building positive relationships between employees in the workplace, as well as promoting awareness on the importance of mental and psychological wellbeing. The company guarantees complete confidentiality in all consultations and data to adhere to work ethic. Commenting on this, Dr. Muhanned Dawood Al Asfoor, Senior Proficient of HR at Omantel, said, "The "Mashora" Program was launched taking into consideration the urgent need to deal with pressures that employees face in recent times, not only at work but also in their personal life. Such pressures may affect the employees' performance as well as their mental wellbeing. "Mashora' Program is considered to correspond with other programs and initiatives for employees all of which aim to create an ideal work environment. The program focuses on the human side of the employees and ensures complete confidentiality, and we consider it essential to provide support to our employees and stand by them, not only in matters related to work, but also in matters outside the scope of the company". "The need for such programs became greater after the-Covid 19 pandemic and its accompanying psychological, health, social and other pressures. The "Mashora" program comes in a bid to help staff to deal with these issues in a scientific and professional manner." Dr. Muhanned added. Reflecting on the continuous support Omantel offers to institutions and companies that are concerned with mental health, Dr. Muhanned Al Asfoor, said, "In our constant efforts to support ideas and innovations, "Remedy" has been incubated through Omantel's Innovation Labs, which provides technology and technical support in the mental health sector. As a result, we have cooperated with Remedy in creating an electronic platform for the "Mashora" program to provide data and digital statistics relating to the program. Moreover, conducting electronic questionnaires to know the employees' needs regarding mental wellbeing is vital to understand our employees, with the data and information accumulated being confidential". 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 an optimum customer satisfaction, Omantel plays a key social role to provide the required support and assistant to all sectors amongst the Omani society.

Zain Launches All-New Zain Great Idea 7 Startup Accelerator Program

Zain, the leading digital service provider in Kuwait, announced the launch of Zain Great Idea 7, the all-new season of its renowned tech startup accelerator program in collaboration with Brilliant Lab. The program continues its mission to enrich the tech startup ecosystem in Kuwait and further push it forward towards expansion into the MENA region. The announcement was made during the special ceremony held at Zain's main headquarters in Shuwaikh, attended by Zain Kuwait CEO Eaman Al Roudhan, the company's executive management, members of venture capital firms and startup funds, business partners, local entrepreneurs, and ZGI alumni. During her opening speech at the event, Zain Kuwait CEO Eaman Al Roudhan said: "Very pleased to welcome you all tonight at our head office to witness together the launch of the all-new season of our innovative program – ZGI 7." Al Roudhan shared some highlights from the most recent edition of ZGI: "Last year, we turned an exceptional chapter in the history of ZGI, the program I personally take great pride in. The sixth edition was the first of its kind, as it came in an entirely virtual fashion during the pandemic. But with our entrepreneurs' dedication, and in spite of many challenges, ZGI 6 alone yielded over USD 4.5 million of investments in the participating startups, helping them kick-off operations in the market." Al Roudhan continued: "ZGI 6 featured over 170 startups, 25 of which reached the final phase with full acceleration. In addition, we saw the highest number of female entrepreneurs in the history of the program, making 40% of the total number of participants." "Such continuous achievements reflect ZGI's value in driving our vision to empower tech startups in Kuwait, a small market in its size but a great one in its ambitious youth. Today, as our program enters its second decade, we embark together on a new adventure with ZGI 7, which will continue its core mission of accelerating tech startups and empowering young entrepreneurs from Kuwait and the Arab world." added Al Roudhan. Al Roudhan continued by shedding more light on the new season: "We are well aware that entrepreneurs have great ambition and very busy schedules filled with tight deadlines, and so this year, we will offer greater flexibility and more freedom for every participant to choose the sessions and programs that best suit their schedules and business needs. We will also expand the content and activities of the program to take our entrepreneurs to many destinations, including Riyadh, Cairo, Dubai, and Abu Dhabi, to expose them to the best experiences and success stories from other entrepreneurs, investors, and similar programs from the region and world." "ZGI will always take entrepreneurs towards the best experiences that bring them sustainable growth, not only to help grow their businesses, but grow themselves as well. We also always strive to leverage on our partners ecosystem to connect our

entrepreneurs with venture capital firms and business partners to help them put a steady first step in the business world. I look forward to an exciting experience for everyone with our seventh season, and wish you all the best of luck." Al Roudhan concluded. Last year, Zain celebrated 10 years of Zain Great Idea as one of the most successful projects under the umbrella of its Innovation and Entrepreneurship strategy. Investments in ZGI startups are well over KWD 6 million (USD 20m) to this date. 30% of ZGI alumni now own thriving and active businesses to this day across local and regional markets, and 40% of these businesses have raised capital. Throughout a decade, ZGI has empowered, trained, and invested in over 1,500 passionate Kuwaiti and Arab young people, whom many of which attended the event to witness a new chapter of the ZGI story. Zain learned a lot from previous seasons and heard what ZGI alumni had to say about how to further refine the program year after year. And so, this year the company is offering greater flexibility and more freedom for every participant to take part in the sessions and programs that best suit their schedule and unique business needs. For example, some relatively advanced entrepreneurs have already finished preparing the most essential parts of their businesses and have no need to take part in the bootcamp that covers the essentials and basics of building startups. So, this year, they have the chance to skip this session and save their time for other more advanced sessions that are more suitable to their needs and level. This year, ZGI will also focus on regional expansion through unique programs held throughout MENA like Riyadh, Dubai, Abu Dhabi, and Cairo. These programs are set to cover crucial topics like establishing and accelerating startups, communicating with investors and funds, building teams and brands, one-on-one consultancy sessions, enriching innovation, challenges facing entrepreneurs in today's markets, local and regional success stories, and much more. ZGI 7 is also set to offer a new win-win concept that serves both entrepreneurs and fresh graduates. Zain will host a special career fair-like event that links ZGI participants with students and graduates of various studies. The entrepreneurs will have an invaluable opportunity to introduce their businesses, attract local talents, and build their future teams, while graduates get a chance to be a part of the next big success story. Zain strongly believes in the crucial role played by private sector organizations in supporting social and economic sustainability projects. The company is committed to printing a positive impact through all its activities, and this has led it to embrace the most influential topics in the community, perhaps most importantly the support of youth, entrepreneurship, and innovation, not only in Kuwait, but across the entire region. ZGI offers a refreshed opportunity for local talents and the region's entrepreneurial community. Throughout six successful editions, the program has empowered, trained, and invested in hundreds of creative and driven Kuwaiti and Arab youth, of which many now own thriving and active Small and Medium-sized Enterprises (SMEs) to this day in local and regional markets. Zain is well aware of the crucial role played by private sector organizations in supporting social and economic sustainability projects. Springing from its growing commitment towards practicing its social responsibility, the company is committed to printing a positive impact through all its activities. This has led Zain to embrace the most influential issues in the community, including the support of youth, entrepreneurship, and innovation.

Zain Awarded by Liferay in Recognition of Its Innovation-Driven Digital Customer Experiences

Zain, the leading digital service provider in Kuwait, was awarded 'Best B2C and Marketplace Company' by Liferay Inc., the leading provider of digital platforms that creates enterprise-level, cloud powered optimized digital experiences to accelerate innovation. The award recognizes Zain for its innovation-driven digital customer experiences. The award ceremony took place at GITEX Global 2022 attended by Daaij Al Oud, Zain Kuwait Network Engineering Director, and Moussalam Dalati, General Manager, Middle East and Africa, Liferay who recognized the telecom provider's success in leveraging innovative technologies to elevate customer experience capabilities. With a longstanding partnership since 2016 between both companies, the award recognizes Zain's future enabled efforts in web content management, search results, integration across applications, and more. Utilizing state-of-the-art digital services through Liferay's Digital Experience Platform (DXP), the collaboration with Zain has created an innovative approach in adopting cloud services which have become integral to digitally advanced societies. With upgraded end-to-end customer lifecycle experiences and data-driven personalization in a connected and secure environment, Zain has enhanced its expertise and capabilities to take its customer experience to the next level. Daaij Al Oud, Zain Kuwait Network Engineering Director, stated, "As a frontrunner in the telecom industry, we consider it our responsibility to elevate customer experiences using latest and relevant technologies. Our relationship with Liferay contributed to the success of our comprehensive development strategy of providing best products and services, paving the way for a digital society and a knowledge economy." With the focus on the oncoming 6G technology and its innumerable benefits and possibilities, the telecom sector is expected to make strides never imagined in enterprise services. This is certain to enhance Zain's value proposition in addition to its high-level performance and reliability available across the region. Moussalam Dalati, General Manager, Liferay Middle East and Africa said, "Zain is a forward-thinking organization, and this vision and philosophy also aids the progress of its customers using its enterprise solutions. In the last five years alone, we have witnessed massive transformative developments that have supported the enterprise growth of Zain's customers. We are extremely pleased to honor them and their efforts with this special award in contributing to industry growth, thereby leading the way for accelerated transformation through an agile and sustainable customer journey model in this dynamic business landscape. With Liferay's open-source, flexible and scalable solution on cloud and on prem, customers of Zain will continue to enjoy unified, seamless and delightful experiences." Zain continues to achieve its strategy towards fully transforming into an integrated digital service provider, through which it aims at empowering a more efficient business sector in the Kuwaiti market. This award reflects Zain's commitment in further pushing the digital transformation wheel in Kuwait by contributing to advance the local business sector, as the company considers itself an active partner in creating the future of smart life in Kuwait on all levels.

Zain Awarded "Partner of the Year" by Westcon-Comstor for Supporting SMEs

Zain Kuwait announced the successful completion of 5G carrier aggregation (CA) tests with two frequency bands in the 2.3GHz and 3.5GHz (C-band) ranges in partnership with Huawei, demonstrating a data download speed of 2.5Gbps. The operator noted that the 5G CA test was in anticipation of the Communication and Information Technology Regulatory Authority (CITRA) releasing a new national spectrum plan allocating additional spectrum bands to support further 5G development. As reported by Kuwait Times, Zain noted that 5G CA with two 'middle spectrum' bands will play a significant role increasing 5G signal reach and fuel 5G service capacity beyond current network capabilities to meet ever-growing market

demand for mobile broadband data and applications. Zain Kuwait CEO Eaman Al Roudhan declared: 'The successful test is a key milestone towards the 5.5G era and Zain's advanced network in Kuwait. It complements our strategy to develop our infrastructure to further empower digital transformation in Kuwait and contribute to Kuwait Vision 2035 … We will continue delivering our customers state-of-the-art digital experiences and empower the rapidly growing digital ecosystem in Kuwait. This will support and accelerate the use of cloud storage, cloud computing, Artificial Intelligence, and IoT applications.' Zain Kuwait leads the country's 5G mobile market in terms of 5G subscription volume ahead of rivals STC and Ooredoo, while it competes very closely with Ooredoo for the largest market share in terms of total 2G/3G/4G/5G subscriptions.

Zain Kuwait Tests 5G 2.3GHz/3.5GHz Carrier Aggregation

Zain Kuwait announced the successful completion of 5G carrier aggregation (CA) tests with two frequency bands in the 2.3GHz and 3.5GHz (C-band) ranges in partnership with Huawei, demonstrating a data download speed of 2.5Gbps. The operator noted that the 5G CA test was in anticipation of the Communication and Information Technology Regulatory Authority (CITRA) releasing a new national spectrum plan allocating additional spectrum bands to support further 5G development. As reported by Kuwait Times, Zain noted that 5G CA with two 'middle spectrum' bands will play a significant role increasing 5G signal reach and fuel 5G service capacity beyond current network capabilities to meet ever-growing market demand for mobile broadband data and applications. Zain Kuwait CEO Eaman Al Roudhan declared: 'The successful test is a key milestone towards the 5.5G era and Zain's advanced network in Kuwait. It complements our strategy to develop our infrastructure to further empower digital transformation in Kuwait and contribute to Kuwait Vision 2035 … We will continue delivering our customers state-of-the-art digital experiences and empower the rapidly growing digital ecosystem in Kuwait. This will support and accelerate the use of cloud storage, cloud computing, Artificial Intelligence, and IoT applications.' Zain Kuwait leads the country's 5G mobile market in terms of 5G subscription volume ahead of rivals STC and Ooredoo, while it competes very closely with Ooredoo for the largest market share in terms of total 2G/3G/4G/5G subscriptions.

Arthur D. Little Joins Lunar Economic Development Organization EURO2MOON

Arthur D. Little (ADL) announced its membership of EURO2MOON, a non-profit organization created to promote responsible use of the Moon's natural resources while accelerating the cis-lunar economy across Europe. Founded by Airbus Defence and Space, Air Liquide, and ispace Europe, EURO2MOON will now benefit from ADL's extensive experience and expertise in space technology development, which stretches back to the Apollo missions of the 1960s. The aim of EURO2MOON is to position Europe as taking a leading role in the development of the cis-lunar economy, creating a strong industrial ecosystem based on an ambitious "In Situ Resources Utilization" (ISRU) vision. It will focus on the exploration of the lunar surface and the utilization of its resources in a commercial but sustainable way. Topics to be addressed include long-duration transport, life support, and energy needs for scientific and commercial applications. ADL worked with NASA during the planning and execution of its missions to the Moon. Today, only one experiment from the Apollo 11 landing remains active and functioning – the Laser Ranging Retro-Reflector (LRRR) experiment, which ADL played a key role in developing. The LRRR's precise measurement of Earth-Moon distances has significantly improved understanding of both terrestrial and lunar physics. ADL has been closely involved in the commercial development of the space sector ever since and is currently conducting a major study of future satellite applications for the European Space Agency (ESA). Based in Luxembourg, EURO2MOON's ultimate objective is to build a platform that supports a common industrial vision and promotes it among the European industrial and institutional ecosystems, including recommendations on global roadmaps, demonstration concepts, and commercial programs. Matteo Ainardi, Leader of the Aerospace & Defense Global Center of Competence at Arthur D. Little, comments: "In the context of increased momentum around space exploration, and the development of the cis-lunar economy, the Moon will be a major focus over the coming decades. A shared European vision around both the responsible use of lunar resources and more sustainable delivery systems is essential. Space remains an area of international cooperation that should be encouraged, but this requires meaningful and effective collaboration between relevant parties. ADL is proud to be a member of EURO2MOON, which is committed to building a future united by the same ambition."

Latest Blue Shift Report from Arthur D. Little Delivers Realistic View of The Metaverse

Arthur D. Little (ADL) has published The Metaverse, Beyond Fantasy, the latest in a series of new reports from the company running under the 'Blue Shift' banner, which explore the impact of new technologies on business, society and humans. The Metaverse, Beyond Fantasy looks beyond the hype and delivers a realistic picture of the Metaverse for businesses, focusing in particular on the technologies necessary to enable it. While the Metaverse is not a new concept, the past few years have seen a rapid acceleration of both development and adoption, driven by the convergence of three industries: gaming; collaboration and productivity tools; and social media and networks. Yet while the size of the Metaverse market is difficult to estimate, the report emphasizes that companies should not underestimate its potential importance to their business. The report looks at the key enabling technologies of the Metaverse,

including artificial intelligence (AI), Internet of Things (IoT) and blockchain, and provides a six-layer architectural framework for understanding the Metaverse's current development status. While the report concludes that businesses today face a world of unconnected proto-metaverses, with technological challenges remaining, it also urges them to take steps now to understand the current market and position themselves for the future. Dr. Albert Meige, Director of Blue Shift at Arthur D. Little, comments: "The Metaverse is essentially the future version of the internet, with new technologies poised to transform online usage and business models in the same way that the smartphone revolutionized the web. And while we are still about a decade away from a complete, fully immersive version of the Metaverse, huge opportunities already exist. The question is, how to grasp them? "This report delivers an unprecedented analysis of the technological and business maturity of the Metaverse. And some of the conclusions it reaches differ quite widely from what other commentators have said previously."

AT&T to Upgrade U.S. Customs and Border Protection Networks

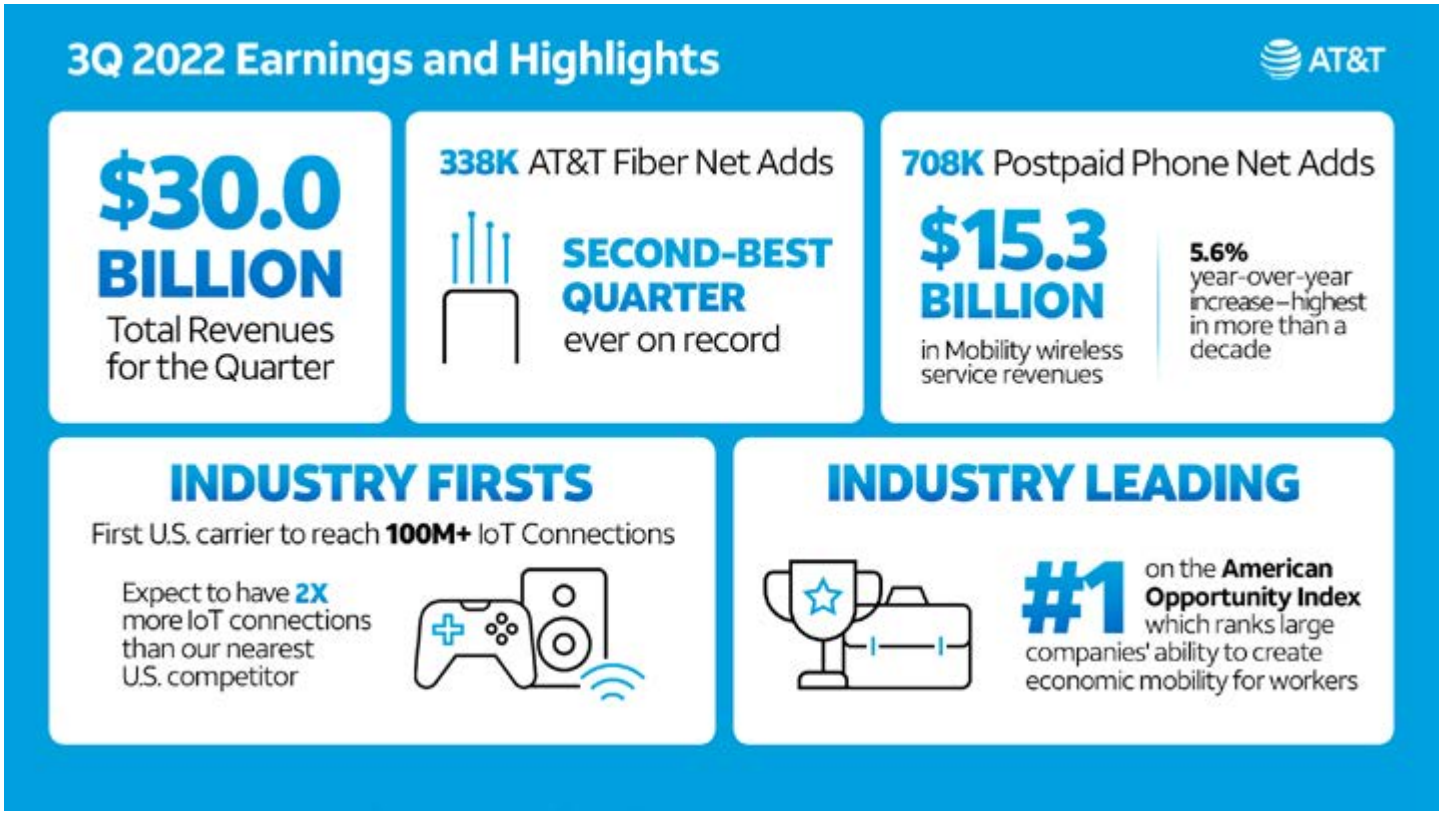
AT&T was awarded a task order to modernize the U.S. Customs and Border Protection's (CBP) voice and data networks to help ensure reliable, high-speed wireline and wireless connectivity among CBP's Federal Law Enforcement Agents nationwide. The task order is valued at $119 million over 11 years if all options are exercised. It was awarded via the General Services Administration's Enterprise Infrastructure Solutions contract. U.S. Customs and Border Protection is one of the world's largest law enforcement organizations with more than 60,000 employees. It is charged with keeping terrorists and their weapons out of the U.S. while facilitating lawful international travel and trade. On a typical day, CBP apprehends more than 1,000 individuals for suspected crimes; screens more than 1 million international travelers; prevents 404 dangerous pests from entering the U.S.; processes more than 74,000 truck, rail and sea containers; and seizes nearly 4 tons of illicit drugs. CBP aims to enhance the nation's security through innovation, intelligence, collaboration and trust. It requires reliable, highly secure voice and data communications among its agents to support its comprehensive approach to managing U.S. borders, customs operations, immigration, and agricultural protection. AT&T was selected to modernize CBP's voice and data networks to support CBP's mission objectives. This task order is an expansion of our work for CBP. The services we will provide to CBP under the new task order include virtual private networking services, cloud connectivity, National Security and Emergency Preparedness services, audio conferencing capabilities, and managed network and security services, among others. AT&T is expected to provide CBP with reliable, highly secure connectivity to support voice and data communications across the enterprise. Under the agreement, CBP has the option to acquire additional capabilities from AT&T, such as Managed Trusted Internet Protocol Services, IP-based Voice, unified communications, and more. "This new task order allows us to deliver our advanced communications capabilities to support the important work CBP's agents do, day in and day out, to protect our nation at all points of entry: from our borders to airports and seaports. It's an honor to be able to serve those who serve us by ensuring they have speedy, reliable access to the data critical to support their mission, their agents, and all Americans."

AT&T Seeks Partner for USD10bn Fiber JV

AT&T Inc. is in discussions to create a joint venture (JV) that would invest billions of dollars in the expansion of the telco's fiber-optic networks, Bloomberg reports, citing people familiar with the matter. As per the article, AT&T is working with Morgan Stanley to help bring in an infrastructure partner to the venture, which is expected to be valued at between USD10 billion and USD15 billion. The discussions are still at an early stage, however, and could still fall apart, the sources warned. The companies hope to conclude the process later this year, or in early 2023. While no interested parties have been named at this stage, alternative asset managers such as Brookfield Asset Management, KKR, CDPQ, Macquarie, CVC and Blackstone are expected to come into play, after pursuing similar infrastructure agreements in Europe and Latin America in recent years.

AT&T Underlying Revenues Up 3% in Q3 On Mobile, Fiber Customer Growth

AT&T reported underlying revenues up 3.1 percent year-on-year in the third quarter, driven by strong customer growth and price increases at its mobile business and its expansion of fiber broadband coverage. The US operator said it added 708,000 postpaid phone subscribers in the quarter and 338,000 new fiber subscribers.



AT&T Launches Fiber in Vanderburgh County, Indiana

Just as Indiana farmers are harvesting the crops they planted in the spring, residents of Vanderburgh County are reaping the benefits of fiber-optic technology, planned and planted by AT&T* earlier this year. AT&T CEO John Stankey today visited Vanderburgh County, where he and County Commissioner Cheryl Musgrave announced the first locations to get AT&T Fiber as part of a countywide, $39 million network deployment. This public-private partnership is an example of AT&T's work with local governments looking to expand broadband access and narrow the digital divide in their communities. AT&T is building fiber to more than 20,000 locations in the county – a largely rural community where roughly one-third of homes, farms and businesses did not have access to fixed broadband service before this fiber build. "We have a once-in-a-generation opportunity to bring high-speed, reliable broadband to communities across the country," said AT&T CEO John Stankey. "Combining public sector funding and private sector investment is the most cost-effective way to ensure more Americans are able to take advantage of robust connectivity. This type of public-private partnership can serve as a model to help close the digital divide once and for all." Vanderburgh County officials used federal funds made available by the American Rescue Plan Act of 2020 to bring fiber broadband to the area. Under

that agreement, Vanderburgh County contributed $9.9 million in public funds to the project and AT&T covered the remaining $29.7 million. Vanderburgh County officials recently agreed to extend the network to 90 additional locations, bringing fiber coverage to more unincorporated parts of the county. "If you live in a big city, you probably take your high-speed internet for granted. But it's a different story in rural parts of the country," said Cheryl Musgrave, commissioner, Vanderburgh County. "Fortunately, through this collaboration with AT&T, thousands of our rural neighbors will have a new story to tell, because they'll also have access to fiber-powered broadband. "I'm truly excited to see the impact this new connectivity will have on our schools and families, and the economic growth of our community," Musgrave added. AT&T worked quickly to bring the benefits of fiber to Vanderburgh County residents and businesses, with the network core becoming operational only seven months after the previously announced contract agreement was finalized. That allowed AT&T to connect the first fiber locations earlier than expected. The project will be completed by November 2023. The new fiber network is capable of delivering speeds up to 5 Gbps on both upload and download. The faster speeds and capacity mean customers can now connect to data intensive online tools and applications, deploy precision agriculture technologies and access vital education resources. AT&T has extensive experience deploying fiber-optics across Indiana. In fact, hundreds of thousands of locations in the state have access to AT&T Fiber today. AT&T is also currently working with the City of Boonville and the City of Martinsville on public-private partnerships to bring AT&T Fiber to those communities. AT&T is committed to connecting more Americans to reliable, high-speed broadband internet in several ways, including expanding and upgrading our network and participating in the federal Affordable Connectivity Program (ACP). The ACP provides eligible households with a benefit of up to $30 a month (up to $75 on qualifying Tribal lands) to reduce the cost of broadband service and can be applied to all our AT&T Fiber speed tiers. Additionally, you can apply your ACP benefit to Access from AT&T to get internet speeds of up to 100Mbps, where available, for $0.

AT&T Launching Campaign to Help Close the Digital Divide

A teen writing their college essay on a mobile phone in a fast-food parking lot because they don't have internet at home. A cancer patient forgoing their follow-up telehealth appointment due to a lack of internet connectivity in their neighborhood. And a family lacking the bandwidth needed to enjoy a Friday night movie together. These moments, and countless others, demonstrate the challenges of living in the digital divide — the gap between those able to fully participate in the modern online world and those who cannot. For the millions living in the digital divide across the country, this isn't a temporary inconvenience, it's a daily reality. Left unaddressed, the digital divide could continue to be a chasm between the haves and have nots within our society. If we don't urgently confront the challenges posed by the digital divide, we all miss the creativity, ingenuity and problem-solving of our peers and neighbors. This October, as part of our $2 billion commitment from 2021 to 2023 to help close the digital divide, AT&T is launching their Bridge to Possibility: Closing the digital divide, together campaign. This is a month-long, company-wide initiative to drive awareness of the digital divide and the collective response needed to address it. Building this bridge requires us to come together across businesses, nonprofits and government to make meaningful progress. With advancements in technology, federal investments in broadband infrastructure and a renewed commitment to digital equity, we have a once-in-a-generation opportunity to bring high-quality connectivity to millions of homes, schools and businesses in communities that need it most. But building a bridge to possibility requires us to go beyond providing access to affordable high-speed internet. We must also demonstrate how broadband connectivity tangibly improves lives. We'll share stories of how we're continuously tackling the challenges of access, affordability and adoption. Working with states, Tribal governments and municipalities, we're committed to bringing high-quality connectivity to parts of the country with limited or no access, like through our public-private partnership with Vanderburgh County, Indiana and our ongoing work with Tribal lands. With our nonprofit relationships, we're adding to our network of Connected Learning Centers to support communities in Atlanta, Detroit, Los Angeles and others. Connectivity sparks possibility no matter where you are. Additionally, thousands of AT&T employees and our Employee Groups (EGs) will mobilize to give back to their communities. We'll recognize their commitment to social good with city celebrations where employees will assemble 10,000 connected learning kits for students in need and host device distributions across the nation, along with additional volunteer activities. Together, with our people and our collaborators, we are helping create healthier, stronger communities. Our greatest impact can only be realized when we bring the benefits of broadband and digital access to all.

FirstNet Expands 5G and In-Building Connectivity

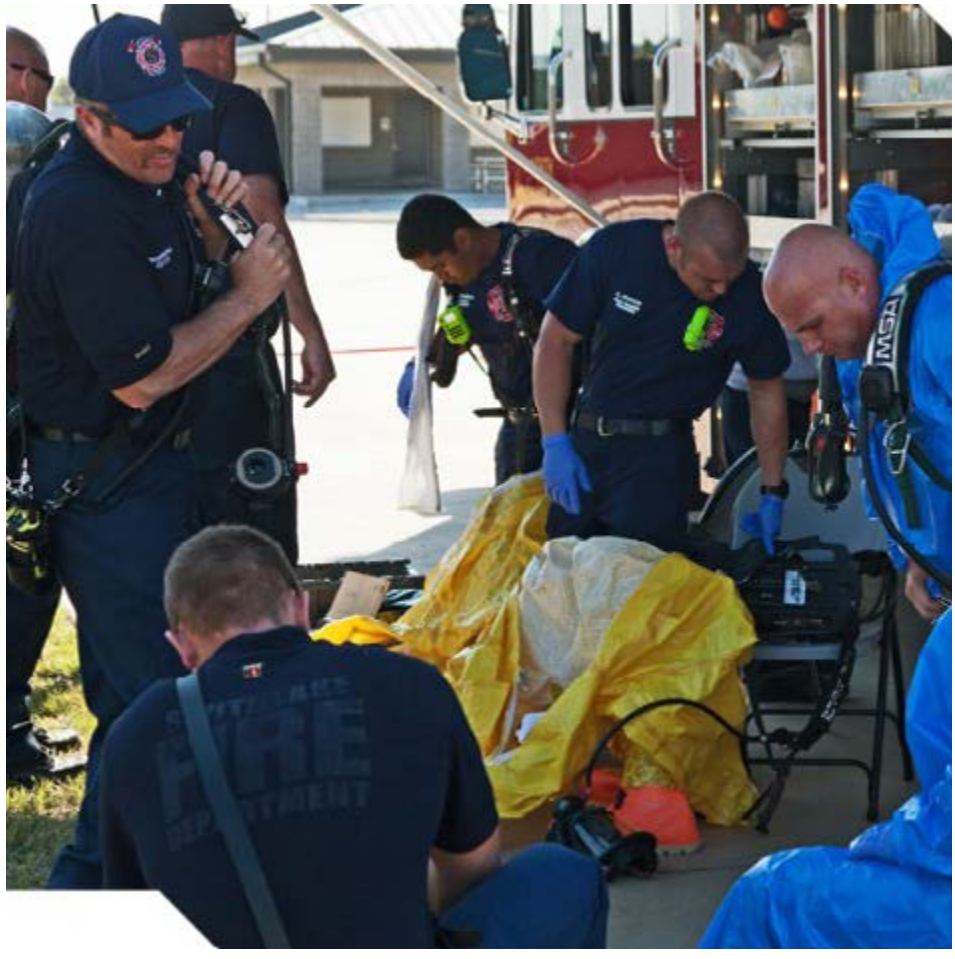
FirstNet®, Built with AT&T covers more first responders than any network in the country. And as America's public safety wireless communications provider, AT&T is furthering their critical communications by expanding 5G on FirstNet, boosting dedicated in-building connectivity and enhancing 9-1-1 resiliency across Tennessee with FirstNet as a wireless backup.

Expanding 5G on FirstNet, the only network built with and for the nation's first responders: Now, public safety in more than 40 cities – including Boston, Charlotte, Chicago, Minneapolis, Nashville, Phoenix, Seattle and St. Louis – can access AT&T mid-band 5G+ spectrum to get the early benefits of its ultra-fast connectivity in a way that meets their unique mission needs. That means first responders in about 100 markets across the country have access to at least 1 of the 3 flavors of 5G (using low-, mid- and high-band spectrum) we're delivering on FirstNet.

Boosting dedicated in-building connectivity where public safety needs it most: Following the network investment from the First Responder Network Authority (FirstNet Authority), qualified first responder agencies on FirstNet can now get Cell Booster Pros for use in areas where they've previously experienced connectivity challenges – all at no cost to them. It's just one more way our unprecedented public-private partnership is strengthening public safety's command and control of their network. The Cell Booster Pro is an enterprise-grade mini cell site that provides reliable connectivity for public safety on FirstNet, as well as employees and visitors on the AT&T commercial network. The Cell Booster Pro transmits public safety's high-quality Band 14 spectrum as well as AT&T commercial LTE. With the ability to mesh 3 of these mini cell sites within a building, agencies can increase coverage by up to 45,000 square feet, supporting nearly 200 users. Thousands of devices are available to first responder agencies across the country – all at no additional cost to them.

Enhancing 9-1-1 resiliency across Tennessee: We are also uniquely positioned to equip 9-1-1 call centers, or public safety answering points (PSAPs), and first responders with an integrated infrastructure that allows them to be more flexible, resilient and agile. That's why we integrated AT&T ESInet with the FirstNet network to extend network connectivity to remote PSAPs that are either hard to reach or experiencing an outage. And the State of Tennessee is leading the country in deploying this innovative solution at every PSAP across the state. This further protects the nearly 7 million people who call the Volunteer State home. Interoperability with FirstNet enables redundancy, resiliency and agility with AT&T ESInet so that PSAPs can focus on keeping their communities safe. If AT&T ESInet detects a disruption to the primary connection of a 9-1-1 call center, it will automatically route 9-1-1 calls over the FirstNet network to a remote PSAP. This integration strengthens PSAPs to maintain operations and creates a path for future Next Generation 9-1-1 technologies, including videos and images. These technologies allow PSAPs to coordinate with first responders more efficiently, improve situational awareness and reduce response times.

Why is this important? AT&T is the only carrier that can provide end-to-end emergency communication solutions, from 9-1-1 to dispatch to response. And as public safety's partner, it's about where first responders need connectivity. Emergencies are unpredictable and during these critical moments, the public safety community needs reliable, interoperable communications. Today, more than 21,800 agencies and organizations – accounting for 3.7 million connections1 – use FirstNet to stay mission-ready. We've seen significant growth in FirstNet because the public safety community recognizes commercial networks aren't designed to properly handle the specific and niche demands of first responders. And commercial networks are not subject to the rigorous level of oversight and accountability by the federal government. That's why public safety has FirstNet.



China Mobile International (CMI) and Tuya Smart Signed a Partnership Agreement to Promote the Deployment and Implementation of IoT

Tuya Smart, a global IoT development platform service provider, has signed a partnership agreement with the Middle East division of China Mobile International (CMI) to promote the deployment and implementation of IoT solutions and projects across the Middle East and Africa, while aiming to improve technical support for smart business, smart cities and more. Tuya's Johnny Lu said: 'With the help of China Mobile and other channel partners, Tuya-enabled smart devices can quickly enter thousands of households across the globe.'

China Mobile International and Yahsat Announce Major IoT Initiatives

The continuing potential of IoT as a business model has been underlined by two recent deals involving major players in both mobile and satcom markets, in this case China Mobile International Middle East company (CMI) and Yahsat. Tuya Smart, a global IoT development platform service provider, and CMI announced this week that they had signed a strategic partnership to promote the deployment and implementation of IoT solutions and projects across the Middle East and Africa (MEA). They also announced that they will together provide more technical support for smart environments such as smart business and smart cities. Meanwhile Yahsat, the UAE's flagship satellite solutions provider, has announced a minority investment in eSAT Global, an IoT connectivity solutions provider that, it says, will bring a new disruptive, low-cost, low latency, direct-to-satellite IoT service to the market. In addition to Yahsat's investment in eSAT, Thuraya, its mobility business, has signed a commercial agreement with eSAT, which will provide Thuraya with secure and long-term access to an end-to-end low power wide area network (LPWAN) IoT system and portfolio. The partnership with eSAT will, the two companies says, enable Thuraya's service partners to address critical IoT requirements in key segments, including smart agriculture, environmental monitoring, digital maritime and cold-chain tracking. The new platform, which will leverage Thuraya's existing and future MSS GEO satellites, will enable millions of devices to be serviced simultaneously and efficiently in a cost-effective way. The service requires no terrestrial repeater infrastructure or backhaul, while providing seamless coverage across the globe. Devices equipped with the new eSAT communication module will be able to communicate with satellites using very low transmit power anywhere within Thuraya's footprint. Thuraya, in collaboration with eSAT, is planning to launch the IoT system and portfolio and commence commercial activities by Q4 2023.

Cisco Tackles Video-Meeting Fatigue with Host of Technology Innovation to Empower the Hybrid Work Model

A recent study focused on executives and knowledge professionals commissioned by Cisco and conducted by Dimensional Research showed that more than half (56%) of employees spend most of their time in meetings when working remotely with 33% saying that it takes up half of their workday. This has resulted in 95% of employees experiencing video meeting fatigue. The overall fatigue is attributed mainly to technological issues, which comprise of background noise, poor sound, and video quality. These elements have actively contributed to physical ailments with 81% employees reporting headaches, neck and shoulder strains and eye strains over time. In the long run, this has also made employees consider leaving their current employers, with 42% planning on making the move within two years citing video meeting habits. Commenting on the findings of the report, Ahmad Zureiki, Head of Collaboration Business, Cisco MEA, said: "The modern work environment is not confined to a single space or device anymore. It's flexible, it's mobile, it's hybrid. Business leaders in today's world know that their employees are their #1 asset, and that means finding ways to both accommodate employee priorities and reimagine the workplace to improve remote work." He added: "With the hybrid working model

becoming the new normal, we had to create new techniques where employees are not overworked or drained out at the end of each workday. We believe that the best technology is also the most intuitive, which is why our Webex platform is using new technology-enabled solutions to constantly improve and reduce fatigue and stress." Cisco has been tackling these pain points with its Webex platform that is continuously innovating to limit video-meeting fatigue by introducing targeted solutions and software. Cisco's Webex platform now uses Artificial Intelligence (AI) to translate people's natural and nonverbal gestures into animated images, allowing users to make simple actions like raising hands or giving a thumbs up without clicking a button. Accessibility is also taken into consideration, with Webex featuring real-time closed caption and translation capabilities in over 100 languages, tackling auditory and language challenges in meetings. The platform has also integrated new options to improve the experience for every employee. This includes a new polling and Q&A tool for feedback and questions anonymously, as well as Personal Insights, which gives every employee an easy method to assess how they spend their work hours. Cisco Webex also uses devices, like Webex Desk, Webex Desk Mini and Room Bar solutions with dedicated software to reduce stressors commonly seen during extended meetings. This includes advanced noise cancelation feature to filter out distracting noises from the environment specially during the calls in shared spaces or home office. The cognitive Webex devices also provide dynamic framing which allows people to get up and stretch their legs while remaining on screen. The cameras in these devices also enhance the view of the conference rooms for remote participants, by automatically detecting them and providing individual streams, ensuring everyone is equally present on the screen and allowing participants to understand what every attendee is saying.

Cisco and BCIT Partner to Skill the Next Generation of Cybersecurity Leaders

As more Canadian organizations face risk from the rise of cyber threats and attacks, a recent study from Cisco and Angus Reid shows that over a third (36%) of Canadian organizations say they lack the talent to properly invest in cybersecurity infrastructure. The British Columbia Institute of Technology (BCIT) and Cisco Canada have partnered on the Industrial Network Cybersecurity (INC) Lab to address the global demand for cybersecurity talent. The INC Lab is a state-of-the-art facility for students in BCIT's INC diploma program that merges cybersecurity and industrial network skills with game-based learning and real-world scenarios. Taught alongside Cisco Networking Academy, students learn to defend against cyberthreats to industrial, manufacturing, and critical infrastructure organizations. "The INC program is a direct response to the industry's growing need for cybersecurity skills to protect critical infrastructure and keep our communities running," said David Leversage, Program Champion, BCIT. "The INC Lab gives students an edge – they hone their skills using the same industrial controls and latest Cisco technology found in the real-world. There is no other institution in North America that offers this type of immersive experience, and our in-demand graduates can pursue high-paying jobs in one of the hottest job markets." The INC program addresses the ongoing digital and cybersecurity skills gap facing Canada. Nearly two-thirds of Canadian businesses are struggling to find and hire the necessary talent with digital skills for their organizations. Of the 69% of respondents planning to hire more staff, 24% ranked cyber security as the top skill they're looking to fill. In B.C. alone, 8 in 10 job vacancies require skill training or post-secondary education. "The financial impact of cybercrime is set to cost the world $10.5 trillion by 2025. As more of our infrastructure is digitized – utilities, petroleum, food supply systems and more – it is critical that we have the talent to protect our industrial networks from threats and attacks," said Shannon Leininger, president, Cisco Canada. "Cisco is investing its resources and expertise to help governments and the public sector fuel digital skills training and secure a pipeline of cybersecurity leaders. Canada relies on these skilled professionals to keep our communities safe and productive, while building toward a more resilient future." Cisco Canada invested in the INC Lab by providing Networking Academy curriculum and technology that simulates control systems found in industrial settings like manufacturing plants and facilities. The investment was made through Cisco's Country Digital Acceleration program, which forms strategic partnerships with governments to help build digitally inclusive societies, more resilient economies, and the workforce of the future. The INC program is already helping to close the security skills gap, with a second cohort graduated this past June. The program's popularity has resulted in 100% of graduates securing roles in relevant industries or pursuing further education. Overall student intake has doubled to 40 students, from the initial cohort of 20. "Our customers in the energy, resources and industries sectors are facing increased business complexity. They require highly trained support to ensure the safety and security of their operations, both digital and otherwise," said Kelly Michell, president, Charter. "Graduates from the INC program provide Charter with a pipeline of skilled cybersecurity talent to meet the growing needs of Canadian businesses. We train, grow and mentor INC grads to set them up for a successful career in cybersecurity."

Abu Dhabi Digital Authority, Cisco Sign Framework Agreement at GITEX Global 2022

The Department of Government Support, represented by the Abu Dhabi Digital Authority (ADDA), has signed a framework agreement with Cisco at GITEX Global 2022. The agreement aims to provide digital transformation value-added services to ADDA and Abu Dhabi government entities through Cisco's National Digital Transformation (CDA) program. The CDA program is aligned with the UAE's national agenda to transform the country's economic model towards sustainable growth through the transition to a digital economy. It aims to support digitalization efforts across key industry sectors, build digital skills, and develop the country's innovation ecosystem to achieve the UAE's Centennial Vision for Digital Transformation by 2071. Within the framework agreement, Cisco supports the government's focus on cybersecurity, one of the key national sectors in the UAE, and is working with ADDA to develop a value-added program to advance the agency's security strategy agenda for the Abu Dhabi government. ADDA Director General Dr. Mohamed Abdel Hameed Al Askar said: "Through the ADDA-Cisco Framework Agreement, we will continue to identify strategic pathways to strengthen, simplify and accelerate Abu Dhabi's digital transformation. We remain focused on exploring more constructive collaborations that will contribute to the strategic development of Abu Dhabi's digital agenda." Mansoor Al Marzouqi, Executive Director, Strategic Planning, ADDA, said: "Enhancing the digital capabilities of government entities in Abu Dhabi is fundamental to what we do at ADDA. Our vision is to leverage emerging technologies and deliver groundbreaking government services and solutions that enable Digital transformation of all Abu Dhabi government entities. Our partnership with Cisco will strengthen our commitment to creating a world-class digital ecosystem in Abu Dhabi, supported by innovative digital solutions that will drive efficiencies at scale." Abdelilah Nejjari, Managing Director, Cisco Gulf Region, said: "We are delighted to have signed a framework agreement with the Abu Dhabi Digital Authority. Through our CDA program, we are proud to play a role in the national digital agenda, and to support the UAE, its businesses and Residents create new value. Through the CDA program, Cisco will partner with ADDA to arrange knowledge transfer webinars and events for Abu Dhabi government entities and grant them access to a full suite of digital transformation technologies, products and services.

Consumers Want More Transparency on How Businesses Handle Their Data, New Cisco Survey Shows

Cisco published its 2022 Consumer Privacy Survey, an annual global review of consumers' perceptions and behaviors on data privacy. This year's survey highlights the critical need for further transparency as consumers say their top priority is for organizations to be more transparent on how they use their personal data. The survey also showed that while, in theory, consumers are supportive of AI (with 54 percent willing to share their anonymized data to improve AI products), many (65 percent) have lost trust in organizations due to their use of AI. "Organizations need to explain their data practices in simple terms and make them readily available so that customers and users can understand what is going on with their data. It is not just legally required; trust depends on it," said Harvey Jang, Cisco Vice President, Deputy General Counsel and Chief Privacy Officer. This year, 81 percent of respondents agreed that the way an organization treats personal data is indicative of how it views and respects its customers – the highest percentage since Cisco began tracking it in 2019.

Consumers Are Increasingly Taking Action

In response to the erosion of trust in organizations' ability to protect data, many consumers are taking action to better protect their data themselves including:

- 76 percent say they would not buy from a company who they do not trust with their data
- 37 percent indicated they had indeed switched providers over data privacy practices
- 53 percent say they manage their cookie settings from a website before accepting
- 46 percent of those with a home listening device say they turn it off regularly to protect their privacy

Ever-evolving technologies make it difficult for consumers to trust companies with their data. Most respondents believe the potential benefits of AI outweigh the risk, provided proper de-identification is in place, with 54 percent willing to share their anonymized personal data to help improve AI-based products and decision-making. However, there is a disconnect between businesses and consumers: while 87 percent of organizations believe they have processes in place to ensure automated decision-making is done in accordance with customer expectations, 60 percent of respondents expressed concern about how organizations are using their personal data for AI. Powerful steps organizations can take to address this include giving consumers the opportunity to opt-out of the AI application and explain how their AI application works. Finally, more than half said national or local government should play the primary role when it comes to protecting consumers data. Many consumers do not trust private companies to be responsible with personal data on their own accord. As governments and organizations continue to demand protections on data transferred outside their national borders, more are putting in place data localization requirements, demanding data to be physically stored in the country or region where it was collected. Yet data localization comes at a price. The Cisco 2022 Data Privacy Benchmark reported that 88 percent of surveyed organizations experience significant additional operational costs due to data localization. Consumers are evenly split on the value of data localization (41 percent in favor, 41 percent against) if it adds cost to the products and services they buy. "We hope that the insights from this survey will motivate organizations to continue to prioritize their customers' desire for security, privacy, and transparency," said Brad Arkin, Cisco Senior Vice President, Chief Security and Trust Officer.

Cisco Delivers Trailblazing Innovations to Help Cloud Operators Save Energy and Drive Operational Efficiencies

Continuing on its commitment to power an inclusive future for all by connecting more people and things, Cisco shared new solutions for helping enterprises, webscale and hyperscale companies deliver richer cloud applications and services while balancing their needs for more bandwidth, using less space and power.

Growing Challenges in the Data Center

The applications and workloads we rely on to do our jobs and live our connected lives generate heavy loads of traffic, challenging data center operations for cloud service providers. Operators are balancing shifts in demand requiring them to add performance and capacity while keeping their operations secure, economical, sustainable, and easier to manage. Supporting complex, high-bandwidth and low latency applications like AI/ML, 5G, virtual and augmented reality are driving the need for 800G capacity, along with the need to connect multiple data center buildings together at high data rates.

Cisco's Advantage

Cisco is leading the way by providing choice to its customers with options for disaggregated open-source operating systems along with integrated, cloud-optimized embedded network operating systems. Customers making the transitions to 100G/400G/800G data center fabrics can rely on Cisco to help achieve the benefits of cost-effective scaling, sustainability and investment protection being demonstrated today in massive internet backbones around the world, featuring high-performance, high capacity switching and routing solutions. “Cisco marked its moment in history in 2019, debuting the foundation for the Internet for the Future, helping communication service providers around the world build a stronger, more efficient internet to connect more people and things,” said Jonathan Davidson, Executive Vice President and General Manager, Cisco Enterprise Networking and Cloud and Mass-scale Infrastructure Group, Cisco. “Today, we are announcing how we can uniquely apply those principles and innovations to support companies designing and building data centers for the future to achieve their sustainability goals. Our approach to meet customers where they are now vs. forcing a one-size-fits-all policy fosters flexible and open operations without restrictions.”

Marking Major Milestones

Cisco Silicon One continues to demonstrate its versatility by expanding to more use cases within the data center. It supports ethernet for optimal interoperability and fully scheduled fabric for ultimate performance of AI/ML traffic, offering customers more flexibility to evolve as their network performance needs change. Today Cisco introduces new routing and switching solutions featuring the G100 processor, which provides the programmability, bandwidth and efficiency necessary for today’s traffic demands. Compared to solutions built from 12.8Tbps switches, the G100 can provide 25.6Tbps with up to a 77% reduction in power and can save nearly 9,000 kg of CO2 emissions per year. (1)

Cisco's Solutions for Cloud Data Centers

At the Open Compute Project Global Summit today, Cisco is showcasing its portfolio of innovations for cloud operators that will redefine the economics of the cloud, helping customers meet their sustainability goals while boosting performance to support

increasing demands for connectivity.

What’s New

- Introducing new 800G platforms, Nexus 9232E and Cisco 8111, powered by Silicon One G100 that delivers 26.5T in a single chip using innovative 100G-based SerDes design to drive higher power efficiency and scale in just 1RU.
- With 256 x 112G SerDes, these compact platforms support market-leading 32 ports of 800G, including 64 ports of 400GbE or 256 ports of 100GbE using breakout cables to enable significantly higher densities in a small footprint.
- These platforms represent major engineering advancements needed to support high-performance connectivity demands, such as with bandwidth-intensive AI/ML compute clusters, and designed for modernizing multi-level data center fabrics in public and private clouds.
- In addition to providing operational cost and carbon savings, Cisco is also offering flexibility in design choices, including:
  - Integrated systems, such as with Cisco Nexus and NX-OS, that support VXLAN, multi-tenant, multi-site, and multi-case as well as ACI, for data center and cloud deployments.
  - Disaggregated systems, such as with Cisco 8000 using open-source/3rd party Network Operating Systems (NOS) in hyperscaler environments.
  - Cisco is also introducing two new high-density industry-standard QSFP-DD800 form factor optical transceivers that double the port bandwidth and connect single mode fiber links in the data center up to 2km.
  - These new optical transceivers allow customers to maximize bandwidth on new 800G platforms with high density breakouts to 400G and 100G interfaces while protecting existing investments with backward compatibility to QSFP transceivers.

Industry Response

"Today, power, energy, and space efficiencies are critical for cloud operators that are spending billions of dollars to run their data centers. What Cisco is offering with its Silicon One solutions demonstrates significant change in the economics for data center operations, offering customers a less is more model that will carry

them into the future with plenty of capacity and performance to outpace demand."

— Ray Mota, CEO and Principal Analyst, ACG Research

"We applaud Cisco on its commitment to open computing with the versatility of its Silicon One architecture that can support high-bandwidth applications like AI/ML. The OCP community can significantly benefit from such disaggregated, open, efficient, and sustainable fabrics."

— Omar Baldonado, Director, DC Networking, Meta

"We are happy to see that the Cisco 8000 router series powered by Silicon One supports SONiC. The combination of 800G port throughput, architectural flexibility, integrated security, and SONiC support on Cisco platforms provide the community with new choices to build scalable, high-performing solutions based on open networking innovations. SAI on Silicon One enables SONiC users to adopt with a short onboarding time."

— Dave Maltz, Technical Fellow and Corporate Vice President, Azure Networking, Microsoft

"As a Cisco partner, Edge relies on Cisco's technologies for its performance and reliability. So when it came time for Edge to scale its network to handle massive traffic growth and 400Gbe connectivity at mass scale, we turned to Cisco 8000 Series. Through these solutions, we can effectively serve as a major network and cloud provider to our nationally renowned R1 institutions, as well as our growing R2 and R3 institutions."

Reimagine Growth With 5G -Ready Comviva Digital Business Solutions Powered by The Microsoft Cloud

Comviva, the global leader in mobility solutions, announced BlueMarble "Compact BSS", a comprehensive, cloud-native, 5G-ready solution, that leverages Microsoft Azure, Dynamics 365 and TM Forum's Open Digital Architecture (ODA). BlueMarble Compact BSS will bring CSPs to the forefront of platform economy – building services for a larger ecosystem faster and efficiently, making them available to enterprise customers as cloud applications and generate additional revenues for CSPs. Comviva BlueMarble's speed and modularity, coupled with Microsoft Azure's security and scalability, will enable CSPs to quickly transition to a modern, open, and secured software-based technology architecture, that they can leverage to bring new channels and services to the market. Comviva's Compact BSS is a comprehensive, modular, secured, and future-ready solution that will enable CSPs to accelerate innovation, increase agility, rationalize costs, drive the digitization of adjacent industries, and create sustainable impact. Commenting on the partnership, Jason Zander, Executive Vice President, Strategic Missions and Technologies, Microsoft said: "The Microsoft Cloud is playing an increasingly vital role in CSP infrastructure and operations, especially with 5G. This requires significant flexibility and agility in the BSS layer, to truly monetize the 5G opportunity. We are pleased to see that Comviva is harnessing the power of the Microsoft Cloud to deliver innovative new experiences for the customers." Manoranjan (Mao) Mohapatra, Chief Executive Officer at Comviva said, "At Comviva, we are passionately committed to jointly creating a new digital future for CSPs. The new BlueMarble Compact BSS on Cloud is a great forward step to help telcos engage digitally, accelerate innovation, and compete more effectively. By integrating Microsoft Azure's capabilities into our BlueMarble BSS solution, we're empowering operators with an integrated, highly configurable monetization platform for future innovation and commerce. We are delighted to build this new platform for growth and progress with Microsoft Azure cloud."

Latest Policy and Regulatory Developments in Major LATAM Telecoms Markets

Cullen International's latest Latin America (LATAM) Telecoms Update highlights policy developments affecting the regulation of radio spectrum, wholesale networks and consumer protection in six markets in the region: Argentina, Brazil, Chile, Colombia, Mexico and Peru. Some of the highlights from 24 June 2022 to 19 September 2022 include:

Argentina assigned local spectrum in the 2.6 GHz band to incumbent mobile operators Claro, Telefónica and Telecom for a total US$27.7m, while Colombia consulted on possible uses of the 6 GHz band and on an update of its spectrum management plan.

In **Mexico**, América Móvil spun off its tower sites into a new business, while the Mexican government took a controlling stake in Altan Redes which owns the wholesale-only mobile network in the country. The telecoms regulator IFT published its 5G committee's work plan including ways to facilitate effective 5G implementation and use cases for 5G in Mexico.

Brazil adopted new measures against robocalls, and Colombia approved a new quality of service (QoS) regulation for fixed, mobile and satellite services.

Other news includes **Brazil** consulting on simplifying its licensing framework to establish a single telecoms service license, and **Peru** establishing a working group to propose satellite solutions that could contribute to closing the connectivity gaps in Peru, mainly in rural areas.

Successful Launch of EUTELSAT HOTBIRD 13F Satellite

Eutelsat Communications (Euronext Paris: ETL) announced that EUTELSAT HOTBIRD 13F satellite was successfully launched into Geostationary Transfer Orbit by American space launch provider SpaceX using a Falcon 9 rocket that lifted off from Cape Canaveral, Florida, USA at 01.22 pm Eastern time on October 15th (corresponding to 5.22 am UTC and 7.22 am CET on October 15th). The separation of the all-electric satellite occurred after a 35-minute flight and the spacecraft systems initialization was successfully completed over a period of 3 hours. EUTELSAT HOTBIRD 13F is one of two satellites built by manufacturer Airbus Defence and Space. EUTELSAT HOTBIRD 13F is based on the Eurostar Neo telecommunications satellite platform, developed under an ESA Partnership Project with Airbus designed to foster innovation and competitiveness in the European space industry. Once into orbit and positioned, the satellite EUTELSAT HOTBIRD 13F will, with its twin EUTELSAT HOTBIRD 13G, reinforce and enhance the broadcast of more than a thousand television channels into homes across Europe, Northern Africa and the Middle East. Moreover, the satellites will offer advanced features in terms of uplink signal protection and resilience. The two satellites will be replacing three older satellites at Eutelsat's 13° East flagship neighborhood position. Pascal Homsy, Eutelsat Chief Technical Officer said: "Our congratulations to the Eutelsat, Airbus and SpaceX teams for successfully launching our EUTELSAT HOTBIRD 13F satellite into geostationary orbit. This satellite brings the latest technology resources of the new Eurostar Neo platform at our leading 13-degree East position and confirms a long-term partnership between Airbus and Eutelsat".

EUTELSAT KONNECT Satellite Selected by Liquid Intelligent Technologies for Broadband Connectivity Services

Eutelsat Communications (Euronext Paris: ETL) and Liquid Intelligent Technologies (Liquid), a business of Cassava Technologies, a pan-African technology group, have signed a multi-year, multi-beam agreement for capacity on the EUTELSAT KONNECT satellite to address the connectivity needs of Small and Medium Enterprises (SME) and Small Office / Home Office (SOHO) customers in Uganda, South Sudan and the Eastern regions of the Democratic Republic of Congo. Under the agreement, Liquid will leverage capacity on the EUTELSAT KONNECT satellite to increase its portfolio with affordable internet services in territories underserved by terrestrial networks. Liquid is already a long-standing partner of Eutelsat, where it uses Ku-band capacity on Eutelsat's EUTELSAT 7B satellite for VSAT services in Sub-Saharan Africa under a long-term contract that was renewed and expanded in 2021. Liquid will also host the first EUTELSAT KONNECT ground gateway in Sub-Saharan Africa, thus reinforcing its dominance as a key satellite Ground Segment / Teleport operator in Africa, further cementing the existing relationship with EUTELSAT. Located in Krugersdorp, South Africa, the gateway will help Eutelsat expand local coverage and secure and create new business opportunities by offering enhanced broadband service performance. EUTELSAT KONNECT is a new-generation High Throughout Satellite offering unrivalled operational flexibility and extensive in-orbit resources to bring broadband services to Africa. Since entering full service more than a year ago, the satellite has gained strong momentum through multiple agreements with telecommunications operators in many of the most densely populated countries on the African continent. Scott Mumford, CEO of Liquid Satellite Services, commented: *"We offer satellite services in over 27 African countries, impacting the lives of over 1.3 billion people. With this agreement, we will expand our service portfolio to include Ka-band services for the first time. We have always been early innovators and investors towards initiatives and technology that will help us realize our vision of creating a digitally connected future that leaves no African behind." Michel Azibert, Eutelsat's Deputy CEO, added: "This new agreement testifies to the strong appeal of our EUTELSAT KONNECT satellite in Sub-Saharan Africa and its pertinence in supporting telecom operators in bridging the digital divide. By reinforcing our relationship with Liquid Intelligent Technologies, we will be able to leverage the Eutelsat fleet's extensive coverage of Sub-Saharan Africa combined with Liquid Intelligent Technologies' unique expertise and local know-how to deliver best-in-class services to businesses across the continent."*

Successful Launch of New-Generation EUTELSAT KONNECT VHTS Satellite

Eutelsat Communications (Euronext Paris: ETL) today announced that EUTELSAT KONNECT VHTS satellite was successfully launched into Geostationary Transfer Orbit by Arianespace using an Ariane 5 rocket that lifted off from the Guiana Space Centre in Kourou, French Guiana, at 9.45 pm Universal Time (11.45 pm CET) on Wednesday 7 September. The separation of the all-electric satellite occurred after a 28-minute flight and the spacecraft systems checkout was successfully completed over a period of 3 hours. EUTELSAT KONNECT VHTS, a very high throughput satellite built by Thales Alenia Space, will provide fixed broadband and mobile connectivity across

Europe, North Africa and the Middle East. Delivering 230 beams over Western Europe and with a Ka-band capacity of 500 Gbps, EUTELSAT KONNECT VHTS is the largest geostationary satellite ever ordered to date in Europe. It has embarked the most powerful 5thgeneration digital transparent processor, offering capacity allocation flexibility and an optimal spectrum use. This state-of-the-art satellite, offering a capacity seven times that of its parent satellite EUTELSAT KONNECT launched in 2020, comes with several major firmly committed customers for satellite broadband connectivity, namely Orange via its Nordnet affiliate for the French coverage, Telecom Italia Mobile over Italy and Thales Alenia Space to serve notably the government connectivity services. These commitments testify to the ability of geostationary satellites to provide an attractive solution for bridging the digital divide, at a time when access to connectivity plays a crucial role in both economic and social development. Eva Berneke, CEO of Eutelsat, said: "Our congratulations to Arianespace and the Guiana Space Center teams for successfully launching our EUTELSAT KONNECT VHTS satellite into geostationary orbit. Thanks to this fine-tuned collaboration between three French players of excellence, Eutelsat, Thales Alenia Space and Arianespace, we are able to bring connectivity to the next level in Europe and participate in bridging the digital divide everywhere on the continent".

GO Telecom Meets Coverage Requirements of 3.5GHz License

Saudi fixed broadband provider Etihad Atheeb Telecommunication, which trades as GO Telecom, says the country's Communications and Information Technology Commission (CITC) has confirmed that it has met the rollout terms of its 3.5GHz fixed wireless license. Under the terms of its concession, GO was required to cover at least 10% of the cities in which it operates. GO currently offers fixed broadband access using TD-LTE and fiber-to-the-home (FTTH) networks.

5.5G is a Key Milestone on the Path to an Intelligent World

The Striding Towards the Intelligent World Summit at HUAWEI CONNECT 2022 successfully concluded today. David Wang, Huawei's Executive Director of the Board and Chairman of ICT Infrastructure Managing Board delivered a keynote speech titled Embracing the 5.5G Era: Striding Towards the Intelligent World at this summit. In this speech, he stressed that 5.5G is a key milestone on our path to an intelligent world and released Huawei's latest series of white papers on the intelligent world. Wang also called upon the ICT industry to coordinate efforts around eight facets of this vision. By working together to further define and refine the industry vision and standards for the 5.5G era, the industry will move ever faster towards the 5.5G era and the intelligent world. In the future, individuals, households, and industries will have higher requirements for digital infrastructure. For individuals, immersive services like XR and holographic communication are maturing, and connectivity experience is set to increase from 1 Gbit/s to 10 Gbit/s. Mobile DOU will surge from today's 15 GB to 100 GB. Requirements for latency and ubiquitous connectivity will also increase. For households, the demands generated by advanced services like 24K 3D VR games and holographic education and meetings are creating a full-fiber, 10 Gbit/s era. For industries, digital transformation has now entered the fast lane. Industrial-grade applications such as smart manufacturing and power grid dispatching are raising diversified requirements for connections,

quality, and sensing, while also triggering explosive growth in demand for computing power and storage. Wang noted, "We must continue to work hard if we hope to reach an intelligent world. The 5.5G era is an important milestone on this path – one we cannot miss. In the 5.5G era, we will need ubiquitous 10 Gbit/s experience; intelligent and high-quality compute scheduling; highly autonomous L4 networks; Cloud Native 2.0 services for enterprises, and a 10-fold increase of computing effectiveness, storage, and infrastructure energy efficiency." He went on to highlight Huawei's belief that it will need the support of customers, ecosystem partners, industry organizations, and academic institutions to continue evolving and reinforcing digital infrastructure, thereby accelerating the advent of the 5.5G era and intelligent world. More specifically, he said that industry players would have to come together to:

- Promote the allocation of more spectrum to accelerate industry development and continue exploring new 5.5G use cases with greater commercial value
- Define the technical paths forward and standards for F5.5G
- Quickly reach a consensus on evolution towards Net5.5G
- Define a profile for L4/L5 autonomous networks and promote unified standards
- Build an open and diversified computing industry for shared success and redefine the computing architecture
- Define a storage architecture that meets diversified data processing requirements
- Build a cloud foundation for the intelligent world and cultivate a stronger cloud service industry ecosystem
- Adopt a unified NCIe system to help industry save energy and reduce emissions with innovative ICT technologies and solutions.

Wang also released Huawei's latest series of white papers, which are titled Striding Towards the Intelligent World. Guided by the next steps relating to the eight facets mentioned above, these white papers explore both the opportunities and challenges that will be presented to major ICT infrastructure domains by emerging business needs and technological developments. The white papers also outline key trends in these domains and specify actions that the company recommends the industry should take before 2025. Huawei's Chief Strategy Architect Dang Wenshuan then took the stage to discuss the contents of the white papers in more detail. He emphasized two concepts the company would like to promote as we move towards 5.5G and eventually the intelligent world:

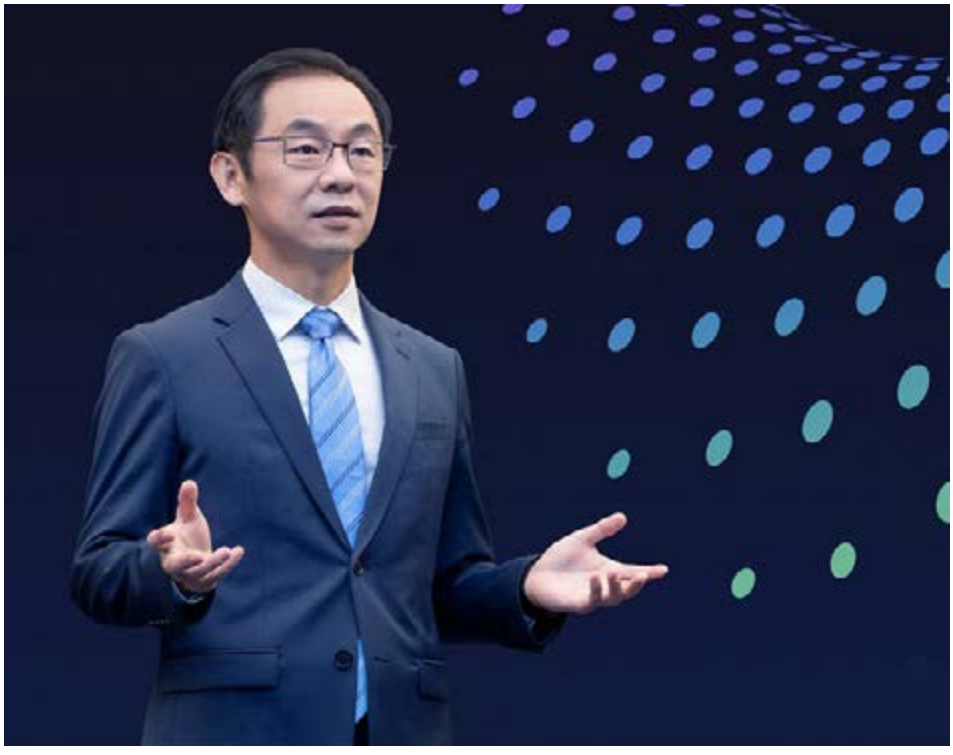
1. "ICT for Intelligence" which focuses on constant innovation and evolution in different ICT domains to improve key capabilities, and
2. "Intelligence for ICT" which focuses on the intelligent and architectural innovation within the ICT industry itself that will be needed to address challenges like increasingly complex O&M, ensuring user experience in diversified service scenarios, and green development. Addressing these challenges will help us make the most of existing and coming core ICT capabilities and lead us to the intelligent world faster.

Huawei, FTI Partner to Localize Digital Energy Industry in Saudi Arabia

Huawei and First Communications and Industry signed a partnership agreement for localization and the digital energy industry, on the sidelines of the Local Content Forum in Riyadh. Communications and Information Technology in Saudi Arabia, as it was sponsored by the Local Content and Government Procurement Authority to promote and develop local industries. The agreement contributes to the development of the digital energy sector and the localization of its industry, which is one of the objectives of the "Rawafed" program of stc, which aims to transfer knowledge, technology and global expertise from Huawei in cooperation with "Alawwal", by supporting it with professional manufacturing capabilities and expertise, Transferring knowledge to national competencies, providing job opportunities, and contributing to local supply chains in Saudi Arabia. This partnership comes in implementation of the agreement signed by STC Group with Huawei during the "LEAP" conference in Riyadh, and is an extension of the initiative to establish a digital energy localization plant to support the data center sector in Saudi Arabia. The recently signed agreement focused on Alawwal Company providing the factory site, while Huawei will rehabilitate integrated production lines for the factory, equip offices, a training and production support center, in addition to warehousing facilities. The agreement also included the two sides continuing to discuss future ways of cooperation in other opportunities for industrial localization within the Kingdom. This agreement is a practical step to support increasing the proportion of local content, which contributes to achieving the goals of "Vision 2030", by providing digital energy equipment locally, which increases keeping pace with technologies globally in new local industries, creating an attractive business environment and supporting technical innovation, which in turn It will boost the growth of the digital economy in Saudi Arabia.

Huawei Launches Innovative Solutions to Find the Right Technology for the Right Scenario

On the second day of HUAWEI CONNECT 2022 Bangkok, Huawei launched a range of innovative infrastructure solutions to drive industry digitalization by finding the right technology for the right scenario. Industry stakeholders gathered and held discussions around the theme "Innovative Infrastructure to Unleash Digital", exploring the future directions and opportunities for industry digitalization. They analyzed the challenges of different industries striving to go digital, and Huawei introduced solutions supported by its technical strengths to help address these challenges. Ryan Ding, President of Huawei Enterprise BG, said in his keynote speech "Empowering Industry, Creating Value" that "Deeper digital transformation will help companies better adapt to an ever-changing world." According to Ding, using its connectivity, computing, and cloud technologies, Huawei is working with its partners to drive ongoing industry innovation and multi-tech synergy, creating scenario-based solutions for diverse customer needs. He added that this will create greater value and make it easier for customers to go the "last mile" of their digital transformation. Bob Chen, Vice President of Huawei Enterprise BG, discussed how multi-tech synergy is critical for finding the right technology for the right scenario. He explained in his keynote speech "Innovative Digital Infrastructure Accelerates Digital Transformation" that "Data is at the core of digital transformation, and data ingestion, transmission, storage, and analysis are key steps. Huawei provides full-stack products and product portfolios to support end-to-end data processing, accelerating customers' digital transformation." At the event, Huawei launched the Huawei Empower Program, a global partner development plan, which is intended to help develop a thriving digital ecosystem for global partners. This program will help Huawei's partners build three types of capabilities to better serve customers: digital transformation consulting and planning, product and portfolio expertise, and solution development. Through this program, Huawei will conduct joint innovation with partners via OpenLabs, empower partners with a new framework, a new plan, and an integrated platform, and build a talent pool through the Huawei ICT Academy and Huawei Authorized Learning Partner (HALP) programs. Huawei also announced that it would invest US$300 million in this program to support global partners in the next three years. During the event, Huawei also officially released its white paper, Data Storage Power – The Digital Cornerstone of High-Quality Development. Examining the development of the storage industry, the white paper defines quantitative indicators to measure data storage capabilities and analyzes the current data storage landscape across different regions around the world. It aims to help governments and enterprises better evaluate, design, and build data storage capabilities. Gu Xuejun, Vice President of Huawei IT Product Line, said: "The data storage capability is currently measured by capacity. However, with the rapid development of the industry and the emergence of new, diversified data services such as AI and big data, capacity alone is not enough to measure the future development and construction of storage systems. We need a more scientific definition and evaluation system to effectively measure data storage capabilities." Gu added, "I consider this white paper to be a meaningful exploration that will generate more interest in promoting the development of the data storage industry. Only when data is well stored, quickly computed, and stably transmitted through networks can digital infrastructure unleash the value of data and better promote high-quality economic and social development." The three-day conference in Bangkok is the first stop on HUAWEI CONNECT's global tour in 2022. For the first time in the Middle East, Huawei will introduce its Huawei CONNECT global event to Dubai. The 2nd stop of Huawei Connect 2022 will be running in parallel with GITEX GLOBAL 2022 on October 11th and 12th at Madinat Jumeirah. At the event, Huawei will cover industry digitalization and the opportunities it brings, and how technologies like AI, Cloud and 5G are uncovering fresh value across all industries.



Huawei and IEEE UAE Section Jointly Release L3.5 Data Center Autonomous Driving Network White Paper

At HUAWEI CONNECT 2022 in Dubai, Huawei and IEEE UAE Section jointly released the L3.5 Data Center Autonomous Driving Network White Paper, with industry forerunners UAE's Ankabut and Commercial Bank of Kuwait (CBK) witnessing the release. This white paper provides deep insight into the architecture, key capabilities, and typical application scenarios of L3.5 autonomous driving networks (ADNs) in data center scenarios, as well as deployment practices for key sectors such as finance, public service, and energy. Serving as an informative point of reference for enterprises, this white paper can help to take the automation and intelligence of data center networks (DCNs) to new levels. According to the white paper, as the digital economy becomes a key driver for global economic growth and enterprise data centers expand rapidly, data center networks urgently need to solve the following most pressing problems:

Multi-cloud and multi-DC heterogeneous networks have become the norm for enterprises. As such, enterprise customers need to centrally manage and coordinate multi-cloud DCNs and multi-vendor network devices as well as implement highly automated networks. The ADN needs to seamlessly integrate into enterprises' O&M systems and IT processes, which vary significantly between enterprises, so as to implement intelligent closed-loop management throughout the process. To address the preceding challenges, the White Paper proposes the L3.5 data center autonomous driving network, which implements high-level automation and intelligence capabilities such as unified management, flexible orchestration and collaboration, and simulation in multi-cloud and multi-vendor networks, in addition to interconnecting with enterprises' IT management systems to achieve end-to-end automation. The White Paper illustrates the key technologies of L3.5 ADNs for data centers:

Open programmability platform: centrally manages heterogeneous networks and devices. Intent orchestration platform: provides more than 100 generic NE models for flexible orchestration through drag-and-drop operations, implementing flexible orchestration of network-wide service flows without breakpoints. This, in turn, helps implement highly automated multi-cloud and multi-vendor heterogeneous networks and provision cross-cloud networks in seconds. APIs published from orchestrated service flows: are flexibly invoked by enterprise IT management systems on demand. In this way, the ADN can seamlessly integrate into enterprise O&M systems and IT processes, slashing the number of work orders and reducing the amount of repetitive manual work by more than 70%. "Huawei's data center autonomous driving network is the industry's first to evolve from L3.0 to L3.5. This is the result of our deep insight into real-world service scenarios and pain points of customers across sectors such as finance, public service, and manufacturing, as well as our joint innovations with industry forerunners," said Arthur Wang, Vice President of Huawei's Data Center Network Domain. "The White Paper shares best practices across these sectors, with the aim to enhance enterprises' competitiveness in the digital economy era by optimizing their network architectures and operating modes and helping them build agile and reliable services while reducing their OPEX and CAPEX." To date, Huawei's Data Center Autonomous Driving Network Solution has been deployed in data centers of more than 10,000 customers across sectors such as finance, public service, manufacturing, and energy.

2nd Annual Edition of Huawei Innovation Day Discusses How Collaboration Can Unleash Innovation for a Sustainable Digital Future in Middle East and Africa

Huawei, a leading global provider of information and communications technology (ICT) infrastructure and smart devices, held the second annual Huawei Innovation Day with customers, partners and technology experts from the Middle East and Africa. Held in parallel with GITEX GLOBAL 2022, the Huawei MEA Innovation Day 2022 was organized in partnership with the Arab ICT Organization (AICTO) under the theme of "Collaboration to Unleash Innovation for Sustainable Digital Future". The annual event gathered the region's government leaders from different sectors, industry analysts, ICT ecosystem partners and international standardization, and Huawei's senior leadership team. Jeff Wang, Global President of Public Affairs and Communications Huawei, delivered the opening keynote speech to highlight Huawei's commitment to supporting the MEA digital transformation and ICT sustainability future. "Today, we have heard from customers and partners from the Middle East and Africa who are leveraging our technologies to enable new business models, boost competitiveness and spur sustainable economic growth." Wang said, adding, "We also heard amazing stories of how technology is being applied to solving some of the greatest challenges facing humanity such as climate change, energy transition, inclusion and women empowerment. Such outcomes inspire us to continue innovating to power a better future for all." H.E. Eng. Mohamed Ben Amor, Secretary General of the Arab ICT Organization (AICTO), the event partner, delivered the keynote speech, highlighting the importance of collaboration between various regional stakeholders and global partners to build an integrated ICT ecosystem for a sustainable digital economy. "We are delighted with this collaboration with Huawei around an insightful topic increasingly becoming the keystone for sustainable technological development," H.E Ben Amor stated, adding, "If "innovation" was always and will remain the engine of economic and social progress with a profound transformational impact on our lives, technological innovation will be, without any doubt, the compulsory way towards a better digital future. Therefore, we highly trust that technological innovation will help transform challenges into opportunities and shorten the path to achieving our common goals. This requires, in particular, a strong regional and international cooperation framework to strengthen national and regional innovation systems and models leading to innovative and sustainable technological initiatives." Steven Yi, President of Huawei Middle East & Africa, added: "We are honored with the distinguished audience in our Innovation Day MEA 2022. Our mission remains to bring the broadest ICT ecosystem together to inspire change and deliver socioeconomic growth. We are hopeful the lessons we take from the event today will help bring us closer to an open, intelligent world that has been our mission from Day 1." Additionally, various keynotes were also delivered by H.E. Zhang Yiming, Ambassador of the People's Republic of China to UAE, H.E. Dr. Fadia Kiwan, Director General of Arab Women Organization, H.E. Dr. Khaled Wali, Director of the ICT Department at the League of Arab States, H.E. Eng. Mohamed Ben Amor, Secretary General of the Arab ICT Organization, , H.E. Dr. Mohammed Al-Ohali, President of KFU (King Faisal University) and Jawad Abbasi, Head of MENA, GSMA. This year's Huawei MEA Innovation Day covered themes such as green ICT for the sustainable future of sectors and industries, the ICT talent ecosystem, and empowering women in ICT in the MEA region. In a panel hosted by Toni Eid, founder of Telecom Review Group & CEO of Trace Media, panelists discussed the importance of open partnerships and collaborations for shared success in building the ICT Ecosystem in MEA, the role of Digital Power in telecom networks, and green solutions in cloud. The panel was attended by H.E. Dr. Elsadig Gamaleldeen Elsadig Karar, Director General of the Telecommunications and Post Regulatory Authority of Sudan (TPRA), Dr. Jassim Haji, President, International Group of Artificial Intelligence, Dr. Fahem Al Nuaimi, Ankabut CEO, UAE and Dr. Ammar Al Husaini, Deputy Director General at Central Agency for Information Technology, Kuwait. Huawei also delved into emerging technologies in the Middle East and Africa, highlighting the importance of cybersecurity and discussing the benefits of integrating technologies like 5G, Cloud, and AI in supporting verticals, key industries, businesses, and public services A key topic Huawei explored at the Huawei MEA Innovation Day this year is building talent ecosystems to create future ICT leaders and strategies for strengthening the ICT skill development path for key sectors and industries. ICT talent is significant in driving digital transformation and realizing national plans and visions. In a panel discussion with key industry and academics, the role of public-private partnerships in fostering innovation and equipping the youth with the right tools to become future ICT leaders was

highlighted. The second panel discussion moderated by Caroline Faraj, CNN VP and CNN Arabic Editor-in-Chief, shed light on the important topic of empowering the role of women in tech. In the digital era, Huawei strongly believes that more opportunities and support must be given to women to ensure they have access to the education and training they need to be competitive in the digital economy. Equipping women with these skills has proven to promote social integration and inclusive and diversified societies. The panel was attended by Dr. Fatma Taher, IEEE UAE Section Chair, Dr. Eman Said Al Abri, Dean of the College of Computing and Information Sciences, the University of Technology and Applied Sciences, Oman, Dr. Mardin Abdullah Anwar, Director of ICT and Statistics at Salahaddin University, Erbil, Iraq and Rania Halimeh, Regional Director, META, Logical Operations. Panelists discussed the importance of public and private partnerships to nurture innovation, local female ICT talents and create ICT future leaders, improve university curriculums and programs in light of ICT accelerated innovation, and fill the talent gap in cybersecurity, among other topics. Shunli Wang, Huawei's Vice President in the Middle East delivered the closing remarks during the event, and highlighted the need to lead new ways for public-private sector collaborations to drive shared success and "Unleash Innovation for a Sustainable Digital Future in MEA region". Wang also mentioned Huawei's focus on 5.5G which will soon become a reality, enabling a 10 Gbps experience and a hundred billion connections. "More markets in MEA – such as Jordan – have already announced the launch of 5G. We look forward to supporting Jordan in introducing the benefits of 5G, and we call for maintaining a fair, unbiased, and transparent 5G business environment. We believe that providing equal opportunities to global 5G vendors based on existing work track record, global experience, cost, and international standards effectiveness will ensure raising the bar in the competitiveness of the local telecom market and efficiently contribute to the national plans and visions," concluded Wang.

5.5G Is Necessary for Bridging 5G to 6G: Huawei's Dr. Wen Tong

At the Industry Conference & Exhibition (IC&E) 2022 hosted by the Next Generation Mobile Networks (NGMN) Alliance, Dr. Wen Tong, Huawei Fellow and CTO of Huawei Wireless, delivered a keynote speech titled "Bridging 5G to 6G". In his speech, Dr. Tong explained the driving forces and plans that can help 5G evolve into 6G, noting that 5.5G is a necessary step to accelerating this development.

New Services Drive 5G to 5.5G to Provide New Capabilities.

5G is developing worldwide, with up to 40 base stations available on average for every 10 thousand users. In China, 5G is serving more than 30 vertical industries, directly creating an economic output worth US$1.3 trillion in 2021. Emerging 2C and 2B applications require further advancements in 5G capabilities, and this is driving the evolution to 5.5G, which will be defined by the improvements on enhanced Mobile Broadband (eMBB), ultra-reliable low-latency communication (URLLC), and Massive Machine-Type Communications (mMTC), and also new capabilities for sensing, passive IoT, positioning, and intelligence. With them, 5.5G will be able to support 10 Gbps downlink, 1 Gbps uplink, 100 billion-level connections, and native intelligence, embarking on a new journey of 5G.

Ultra-high Bandwidth Is Essential to Downlink 10 Gbps.

Ultra-high bandwidth is only possible with sufficient spectrum, and this highlights the urgent need to fully use sub-100 GHz resources. By adding 200 to 400 MHz bandwidth of the 6 GHz band and 800 MHz bandwidth of mmWave to the existing 100 MHz FDD and 100 MHz TDD spectrum pools, the industry will be able to bring 10 Gbps to all users anytime, anywhere.

Uplink-Downlink Decoupling for Multi-Band Convergence Is the Basis of Uplink 1 Gbps.

Industry digitalization requires uplink to be far more powerful than downlink. With uplink-downlink decoupling, uplink and downlink spectrum on different bands can be flexibly combined to support 2B, including existing FDD spectrum and newly defined uplink-only spectrum. Through uplink/downlink decoupling, spectrum convergence will be possible to ensure 1 Gbps uplink. To date, uplink-downlink decoupling has been commercialized in mining, steel, and many other industries to ensure 1 Gbps uplink for simultaneous 100-channel transmission of HD videos, 360° remote control, and other 2B applications. "5.5G will bridge 5G to 6G. 5.5G and 6G will be fundamental to linking the physical world to digital and intelligent worlds," Dr. Tong concluded. "The success of the mobile industry depends on unified standardization and industry collaboration. Let's jointly advance to 5.5G and boost collaboration to accelerate technology maturity for a sustainable future."

Huawei Launches Annual ICT Competition in Lebanon

Huawei launched the 6th edition of its annual ICT Competition in Lebanon to support "aspiring students" in the country, the Chinese tech giant said in a press release. From October to December, thousands of undergraduate students are expected to participate in the competition, which is being held virtually, Huawei said. "Huawei is committed to developing the ICT industry by investing in local young talent and creating an open, collaborative ecosystem," Public Relations and Governmental Affairs Director of Huawei Lebanon Mohamad Sharara said in the press release. Lebanese Telecommunications Minister Johnny Corm highlighted Huawei's role in empowering Lebanon's youth. "Collaborating with a global technology company reconfirms our commitment to empower our nation's youth and prepare a future generation for Lebanon's digital transformation journey," Corm was quoted as saying by the Huawei press release. Winners of the Huawei ICT competition are expected to receive internships, opportunities to join Huawei, and 20,000 U.S. dollars in cash prize.

Huawei Middle East Vice President Reaffirms Commitment to Jordan's ICT Development

In an exclusive meeting with a group of Jordanian media, Shunli Wang, Huawei's Vice President in the Middle East, reaffirmed the company's commitment to supporting the development of Jordan's telecom sector and the wider ICT ecosystem. The senior regional executive confirmed the company's mandate in the ICT talent ecosystem in Jordan through the continuous investments in CSR initiatives and programs targeted at nurturing the local talent. With these initiatives, Huawei aims to develop the future technology leaders that can drive Jordan's digital transformation, socio-economic development and the Kingdom's future digital economy. Wang further highlighted that the company is looking to introduce the 5G network benefits to Jordan, coupled with AI, Cloud and other advanced technologies to better serve the citizens' needs. He also called for maintaining a fair, unbiased and transparent 5G business environment. Huawei believes that providing equal opportunities to all global telecom vendors based on a proven track record of existing work with operators, global experience, cost and industry standards will ensure the international competitiveness of Jordan's telecom market. The Regional Vice President stated that Huawei started business in Jordan 17 years ago and has maintained close relationships and strong collaborations with three local carriers – Zain, Orange and Umniah – to jointly provide continuous and secure network connections and services across the country. In addition, the company maintained an excellent record of zero accidents in the past 17 years. Huawei engineers and experts have always supported their customers and partners in challenging times such as the heavy snow and COVID-19. Huawei Jordan currently has over 300 direct employees and contributes more than 2,000 indirect jobs. The global ICT leader serves customers across diverse sectors to achieve their digital transformation goals by utilizing its international experience and best practices and providing advanced technologies, solutions, products and services to enrich people's lives. "Huawei has always been customer-centric and committed to creating value for its customers in Jordan. In addition, we attach great importance to openness and collaboration for shared success. We are dedicated to transparent communications with customers, partners, government regulation bodies, industry organizations, universities and think tanks. We hope to work with all stakeholders to achieve core technological innovations and support the development of Jordan's ICT ecosystem, creating more value for promoting industry upgrades and social development," Wang added. In the 5G business, in particular, Huawei has helped some Middle Eastern countries to build high-speed 5G networks and reach 11 million 5G users, including 1.3 million home users. In addition, the company partnered with carriers to explore 5GtoB services for critical sectors such as the oil and gas and ports, helping them to improve production efficiency and safety, reduce operational costs, and create opportunities for operators to enter the new blue ocean of the industry. Wang attributed the company's success in the 5G business to its strong R&D and continuous bold investments in innovations. Huawei started researching 5G technologies in 2009 and maintained heavy investment in R&D and innovation over the years. Huawei's R&D investment over the past decade has exceeded $132.5 billion. In 2021 alone, the company invested $22.4 billion in R&D, or 22.4% of the company's total revenue. Huawei has one of the largest patent portfolios in the world. By 2021, it held more than 110,000 active patents across more than 45,000 families. This led to a successful 5G business and the

signing of more than 3,000 commercial contracts for industrial 5G applications globally. Wang further highlighted that the company provides a wide range of telecom and ICT solutions, products and services to Jordanian customers. This includes the traditional telecom industry lines such as 2G, 3G, and 4G networks for Zain, Orange and Umniah, serving around 5 million citizens in Jordan with zero accidents over 17 years. Other industry examples include ICT infrastructure in banking for the top three banks; storage in MoDEE; network of PSD; video conferencing systems for Jordan's Ministry of Justice; university campus network for the top five universities in Jordan and more. On the consumer side, Huawei provides the full range of Huawei Consumer business group products such as smartphones, laptops, watches, accessories and more.

Huawei Targets European Health, Fitness Sectors

A leading Huawei executive told IFA Berlin only Alphabet spends more on R&D as he discussed how health and fitness had become a key focus for the Chinese company, and revealed pricing details for two of its latest smartphones. William Tian, president of the west European region at Huawei's Consumer Business Group, insisted the company remained committed to the area and claimed it ranked second in shipments of health and fitness devices in 2021 on more than 100 million units. He noted the vendor's latest fitness-focused wearable, the Watch D, is already able to measure blood pressure and could ultimately be capable of assessing blood sugar levels. Tian stated more than 80 research institutes had partnered with Huawei on health and fitness R&D, with a dedicated facility opened at the vendor's headquarters in 2021. During IFA Berlin, it also unveiled a partnership to incorporate fitness tracking app Strava's features into its devices. "We are still innovating", Tian said, adding Huawei continued to bring "many new technologies and products" to its customers. Tian highlighted the 60MP selfie camera of its nova 10 and nova 10 Pro smartphones, which were unveiled in July. Both run a Snapdragon 778G 4G processor and Huawei's EMUI 12 OS, with the nova 10 priced from €549 and Pro from €699, each in 8GB RAM and 256GB storage guise. Nova 10 offers a 6.67-inch OLED and 4000mAh battery, versus a 6.78-inch display and 4500mAh power pack on the Pro. European pricing for the Watch D starts at €399: GSM Arena reports the device is due on sale from October.

MCIT and Microsoft Open First Global Datacenter Region in Qatar

Qatar's Ministry of Communications and Information Technology (MCIT) in partnership with Microsoft have announced the launch of the country's first hyperscale cloud datacenter region. Launched at an event held under the patronage of Mohammed bin Ali Al Mannai, Minister of Communications and Information Technology, the Microsoft cloud datacenter region in Qatar joins the world's largest cloud infrastructure footprint, significantly enhancing Qatar's competitiveness on a global and regional level in line with Qatar National Vision 2030 and increasing the country's position as a leader in the digital era. The launch of the Microsoft cloud datacenter region in Qatar was recently announced during a special celebratory event entitled "Qatar's Digital Journey into the Future", in the presence of esteemed ministers and high-level private sector executives, as well as Microsoft's global and regional executives.

Key impact

The Microsoft cloud datacenter region in Qatar will have a significant impact on the development of the local economy and support the country's efforts to diversify its economy, build talent and attract foreign investment Speaking at the opening ceremony, Al Mannai said: "The launch of the Data Centre is considered an important milestone in the process of transforming Qatar into an advanced and pioneering digital center in the Middle East and the world. This journey was inspired by the Qatar National Vision 2030, which aims to establish a diversified and competitive national economy." He continued: "These pioneering projects in the field of digital transformation, communications and information technology would not have been achieved without the ambitions

of the country's wise leadership and its vision to this vital sector, believing in its crucial role in the development of other economic sectors. Legislative and legal regulation of the sector and enhance its attractiveness."

Cloud workloads

Businesses of all sizes and industries can now host their cloud workloads in Microsoft's Qatar datacenter, availing enterprise-grade reliability and performance. Customers can begin leveraging Microsoft Azure to develop advanced applications using AI, data and analytics, IoT and hybrid capabilities with advanced digital security and more, as well as Microsoft 365, the world's productivity cloud that delivers best-of-breed productivity apps delivered seamlessly through cloud services. With over 100 compliance offerings – the broadest set of compliance offerings and programs of any public cloud provider – the Microsoft cloud significantly empowers customers to meet local compliance and policy requirements. This includes the National Information Assurance Certification issued by the National Cyber Security Agency, which Microsoft received earlier this year. President of Microsoft EMEA, Ralph Haupter stated: "Across Qatar, Microsoft customers are already leveraging our trusted cloud to innovate, achieve their business goals and do more with less. We are proud to deliver the first hyperscale cloud datacenter region to the country, which will significantly amplify opportunities for even more transformation." "With its longstanding history as an early adopter of technology, Qatar has completely embraced cloud solutions and revolutionized entire industries to develop a new, advanced digital economy. Today's announcement will enable the country to take these groundbreaking innovations to the world, showcase its standing as a leader in digital transformation and cement its place as a global hub for innovation," said Lana Khalaf, Microsoft Country Manager.

Meeting customers' demand

Microsoft customers across industries, including the Ministry of Communication and Information technology through its national initiatives such as TASMU PLATFORM, and Qatar Digital Government, as well as the Supreme Committee for Delivery & Legacy, and many others, have already embraced the Microsoft Cloud to develop digital capabilities and innovate in their industries. In 2021, MCIT partnered with a global consortium of partners led by Ooredoo to bring to life the TASMU Platform, a one-of-a-kind, ground-breaking, smart city solution. Microsoft has played a vital role as a global technology enabler throughout this collaboration. "In our continued, unwavering efforts to build a Smart Qatar that is digitally-powered and innovation-driven, we are committed to harnessing the power of integrated cloud-based technologies to offer endless potential value to the people of Qatar," said Reem Mohammed Al Mansoori, Assistant Undersecretary of Digital Society Development at MCIT.

Delivering new opportunities

The Microsoft cloud datacenter region Qatar will drive growth and scale for the more than 100 Microsoft partners in the country, as well as global partners looking to establish themselves in the country. Microsoft partners such as EY, Ooredoo, Vodafone, QDS, PWC, ICT, Malomatia, Intel, Mannai, Meeza, Starlink, Veeam and more, are delivering transformative solutions across the Microsoft Cloud to drive customer success. More than 70% of Qatari Startups are on the Microsoft Founders hub. These startups have the potential to go on and become the next unicorns of their industries. Also a minimum of 11 global partners and ISV established operations in Qatar last year alone. IDC's research also sheds light on downstream revenues generated by Microsoft's partner ecosystem. The findings reveal that for every $1 of Microsoft cloud-generated revenue, the partner ecosystem is expected to generate $7.87 by 2026, up from $6.41 by 2023.

Microsoft Cloud to Add US$39 billion to UAE Economy

Microsoft, the world's biggest software company, expects its cloud services portfolio to add more than $39 billion and about 100,000 jobs to the UAE economy in the next four years, a study has shown. About 17 per cent of that revenue will come from the US technology company's cloud data center regions in Abu Dhabi and Dubai, according to the report conducted by the International Data Corporation. Microsoft's cloud business caters to the growing number of cloud-born companies or organizations in the UAE that have most or all of their assets on the cloud, said Naim Yazbeck, Microsoft's general manager for the UAE. The company is also "continuing" discussions with local authorities on potential partnerships to use its cloud services in highly regulated sectors, he told The National at Gitex Technology Week in Dubai. Microsoft and its partners will spend about $3.4bn to support local businesses in UAE data center regions, it said. "The pandemic created an exponential need for digitization; everyone required things to be digital, touchless, etc. and technology had been playing a big role. Of course, the cloud enabled all of those," said Mr. Yazbeck. "The cloud has been a critical factor in allowing many sectors — from education to payments and financial services to retail — to continue to operate." The Microsoft study follows the opening of the company's first cloud data center region in Qatar, which is expected to add more than $18bn to the Gulf state's economy and generate more than 36,000 jobs. The adoption of

cloud technology in the UAE and the GCC is growing because of the rise of technology focused young consumers and an evolving digital landscape in the region. The global cloud computing market was valued at $368.97bn in 2021 and is projected to grow at a compound annual rate of about 16 per cent from 2022 to 2030, with emerging technology such as artificial intelligence and machine learning among its primary drivers, according to

Grand View Research. Meanwhile, global spending on public cloud services is expected to rise by more than 20 per cent annually to $495bn this year — about $84bn more than what was spent in 2020 — and hit $600bn in 2023, according to research firm Gartner. Aside from Microsoft, other global technology companies such as Amazon and Oracle have also set up data centers in the UAE to support the country's technological push. The cloud has been a critical factor in allowing many sectors — from education to payments and financial services to retail — to continue to operate. Naim Yazbeck, general manager of Microsoft UAE Microsoft, its partners and customers are expected to add more than 97,000 jobs to the UAE economy, either through direct employment or through the indirect generation of jobs in other organizations, the study said. This will include an estimated 29,000 IT jobs, "highlighting the ongoing need for collaboration between public and private entities on skilling programmes to ensure that qualified professionals are on hand to assume these roles", it said. Microsoft's cloud customers and partners in the UAE include the Abu Dhabi Digital Authority, the Ministry of Education, First Abu Dhabi Bank, Mashreq Bank, DP World, Dubai International Airport and Majid Al Futtaim Retail. More than two thirds of the jobs created by Microsoft's cloud business in the UAE will directly deal with the technology itself, while the rest will be at the end-user level, which highlights the need to boost the skills of users, Mr. Yazbeck said. "The challenge is the availability of skills. We are focusing, with the government, on skilling the workforce. You need more skills at a high pace," he said. "In specific highly regulated industries, we are looking if there is a way to partner with them so they can leverage the advantages of the cloud."

Nokia Appoints Shaun McCarthy as President of North America Sales

Nokia announced that Shaun McCarthy has joined the company as President of North America Sales. Shaun will be responsible for leading all aspects of sales across the US and Canada, accelerating revenue growth, and helping customers to adopt transformative networking technologies that enable the next phase of digitization. Shaun will report directly to Chief Customer Experience Officer Ricky Corker. Shaun brings more than 20 years of experience leading sales teams and driving go-to-market strategies in the telecom, hyperscale, and technology industries. He joins Nokia from Cisco where he was vice president of worldwide sales for the Mass-Scale Infrastructure Group. At Cisco, he was instrumental in building a world-class sales team, leading multiple strategic M&A activities, and incubating new solutions with lighthouse customers. He has also served in several leadership roles at a number of Silicon Valley companies, including Palo Alto Networks, Brocade, and Vyatta. As President of North America Sales, Shaun's mission will be to help Nokia's customers build innovative new revenue generating services, grow existing revenue streams, and reduce their costs. Shaun's sales team will lead customers through major architectural evolutions, including the transition to 5G, broadband modernization, and the deployment of private wireless solutions across industries. Ricky Corker, Chief Customer Experience Officer of Nokia, said: "I am delighted to welcome Shaun to lead the North America sales team. Shaun has a proven track record of leading successful teams, building long-term relationships with customers, and helping customers in their digital transformation journeys. His extensive experience in modernizing sales organizations will ensure that we are engaging customers in new and interesting ways." Shaun McCarthy, President of North America Sales at Nokia, said: "It's an incredibly exciting time to join Nokia. Nokia's end-to-end networking portfolio is firing on all cylinders, the opportunities to help customers modernize their operations and accelerate growth are plentiful, and the time to close the digital divide is now. In North America, we need to create ubiquitous access to today's digital world, and no company is better positioned than Nokia to enable innovative, high speed, reliable, and affordable broadband access across rural and urban communities." Nokia is supplying 5G technologies across its portfolio to the major service providers and leading operators, as well as hyperscalers, enterprises, and government organizations in the US. Nokia provides the critical networks the US counts on with decades of experience and investment in US infrastructure. The company has an unrivalled track record of innovation in the US, including Nokia Bell Labs, which pioneered many of the fundamental technologies that are being used to develop 5G and fiber broadband standards. Today, more than 90 percent of the US population is connected by Nokia network solutions while seven out of 10 fiber homes in the US are connected using Nokia fixed network equipment.

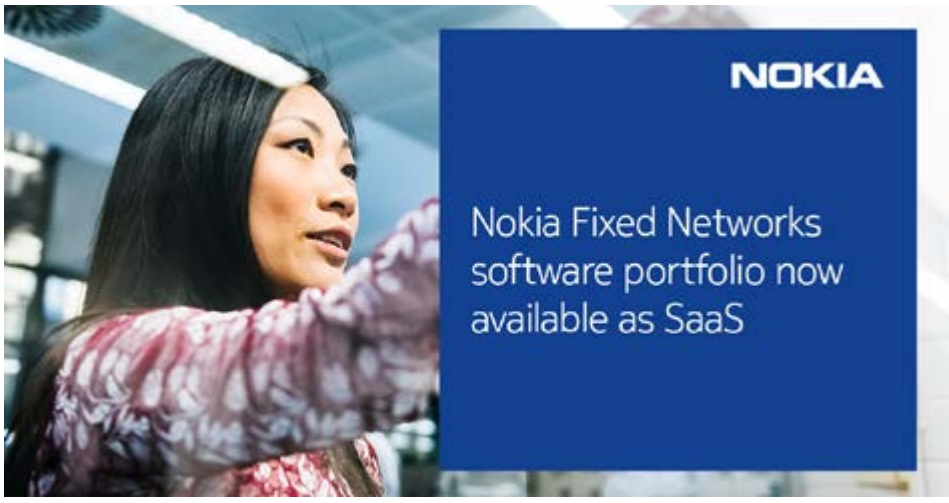
Nokia Announces Most Advanced Fiber Broadband Platform in the World

Nokia has announced the world's first Generation 6 broadband platform, designed for a 'fiber-for-everything' world where fiber broadband networks evolve to become a single infrastructure for all services. The new Lightspan MF-14 platform extends the upper end of Nokia's fiber broadband portfolio bringing unmatched capacity, low latency, intelligence, six nines reliability and the highest power efficiency, enabling operators to address broadband needs for the next decades. The new platform will be premiered at the Network X event in Amsterdam from 18 to 20 October. The industry is entering a 'fiber-for-everything' era. Once operators have deployed fiber-to-the-home, their networks pass every other building in the street, as well as the homes, meaning they can connect businesses and other services. Fiber PON will be capable of supporting high bandwidth consumer services, industry 4.0 applications, business connectivity, 5G transport and smart city services. This creates more revenue opportunities, lowers TCO and significantly reduces overall power consumption. This new broadband era, designated Broadband 6 by the World Broadband Association (WBBA), requires a new technical solution. Nokia's pioneering Lightspan MF-14 is the first Gen 6 optical line terminal (OLT) in the world and has already been selected by customers building 25 Gb/second capable networks in Europe, North America and Asia Pacific. Geert Heyninck, Nokia's VP Broadband Networks, said: "Fiber-to-the-home is becoming fiber-for-everything. This is enabled by several technology advances, most notably higher speed PON technologies to accommodate all new services, and SDN to bring more intelligence in the network. If you think about it, the massive number of connection points on fiber make it a challenge to get an instant view of everything that happens in your network, fully automate network control, and perform actions with no service interruption. Our current portfolio is doing an excellent job in supporting many of these requirements for today's and tomorrow's services, but we are looking ahead. The MF-14 platform will suit operators who are planning large scale 25G PON, 50G and even 100G PON within the same environment." In his recent report* Erik Keith, Senior Research Analyst for Broadband Infrastructure at S&P Global, says: "The PON market is at a pivotal moment in the evolution of networks, where fiber broadband means so much more than residential connectivity. There is a huge opportunity for service providers to connect everything much more efficiently by leveraging their existing fiber broadband networks. After all, the same fiber cables that were originally laid in residential areas also pass commercial buildings such as office blocks, hospitals and government properties. This approach eliminates multiple overlay networks, minimizes digging up the streets, and lowers energy use substantially. The new Lightspan MF-14 OLT can enable operators to deploy a solution that will last for decades, while providing a

platform that can increase network performance exponentially compared to most networks in use today." Based on new, advanced hardware and disaggregated software design, MF-14 is a generation leap in fiber access solutions. It is the highest capacity platform in the industry and the only solution ready for mass delivery of 25G, 50G and 100G PON services. It's also the industry's first OLT with the six-nines availability and sub-millisecond latency needed for mission critical industry 4.0 and 5G transport services. Frontier Communications, the first in the U.S. to trial 25G PON, is also the first to evaluate MF-14 in its live network. Frontier's Scott Mispagel, SVP National Architecture and Engineering, said: "We are proud to be the first to embrace this next-generation platform. This is another way for us to provide customers with the fastest broadband available. The MF-14 platform will support our path to 100G using our existing fiber network and future-proof our network with speeds that will continue to outpace cable and other technologies for generations to come." In July this year CityFibre – the UK's largest independent full fiber infrastructure platform – signed a 10-year equipment agreement to support its nationwide network upgrade. John Franklin, CTIO, CityFibre said: "As we accelerate our full fiber rollout to serve a third of the UK market by 2025, the demand placed on those networks will also accelerate. MF-14's flexibility and capacity will help us to meet the needs of our partner's and their customers for generations to come."

Nokia Announces SaaS for Fixed Networks Portfolio Line-Up

Nokia has announced a cross-portfolio line up of Fixed Network solutions now available on a Software-as-a-Service (SaaS) basis. The SaaS delivery model reduces IT dependencies, and with a usage-based subscription can deliver up to 25% lower cost of ownership. Already available on bare metal servers and in the cloud, Nokia's market-leading Fixed Networks applications can now be deployed by operators on a SaaS delivery model with a portfolio including the Altiplano Access Controller and WiFi Cloud Controller. Operational tools for automated activation of end-user fiber modems, predictive care and network build and management



are also part of the line-up. Sandy Motley, President, Fixed Networks at Nokia, said: "SaaS gets operators started quickly. No special IT set-up means reduced upfront deployment costs, and in a highly competitive world, operation efficiency is key to both high quality customer service and business profitability." Operators can start with a small investment and subscription plan and can easily scale up and down based on business success. Tasks and risks related to cloud infrastructure are eliminated allowing them to focus on their core business: running the fixed access network. Sandy continued: "Operators can tailor the subscription package choosing the Service Level Agreements and levels of support to meet their operational needs. They can deploy different Nokia SaaS instances for use in production, lab testing, pilots, or development." Metronet and LUS Fiber use Nokia's all-inclusive SaaS service where Nokia performs the application hosting, including the set-up, monitoring, maintenance and updates. Julie Kunstler, Chief Analyst at Omdia, said: "Being able to opt out of running software on costly, complex, on-premise infrastructure is a big advantage for operators. Furthermore, a SaaS model means more flexibility and an easier path to delivering new services."

Nokia to Lead the Next Phase of Europe's 6G Flagship Project

Nokia announced that it will lead the Hexa-X-II project, the second phase of the European 6G flagship initiative. This new phase will expand the Hexa-X partner list to 44 organizations that are tasked with creating the pre-standardized platform and system view that will form the basis for many inputs into future 6G standardization. The Hexa-X-II project has been awarded funding from the European Commission as part of the first call of the Smart Network and Services Joint Undertaking (SNS-JU). This is the next significant step toward bringing together key industry stakeholders in Europe. The goal of both Hexa-X and Hexa-X-II is to establish Europe as leader in 6G. Hexa-X-II represents the full value chain for future connectivity solutions. Its members range from network vendors and communication service providers to verticals and technology providers, as well as the most prominent European communications research institutes. Peter Vetter, President of Nokia's Bell Labs Core Research, said: "Nokia is honored to lead in this pioneering project. In the 6G era, the digital, physical and human worlds will become far more integrated. Our goals must reflect this level of integration and inter-dependency. As billions more people and devices get connected, urbanization intensifies, and we strive to manage the limitations on energy and materials, the role of networks and 6G will only deepen. It is essential that we keep the larger context in mind as we imagine the new network." Enabled by the outcomes of Hexa-X innovations, the Hexa-X-II consortium will strive to overcome the following societal challenges:

Sustainability: Hexa-X-II will research technologies that contribute to a zero-carbon footprint and limit energy and material consumption.

Inclusion: Hexa-X-II aims to provide connectivity to people in developing countries as well as to the under-privileged members of developed societies.

Trustworthiness: Hexa-X-II will ensure data transparency, security and privacy, and network robustness.

As part of the announcement, Ericsson takes the role as technical manager for Hexa-X-II. Orange, TIM SpA, TU Dresden, University of Oulu, IMEC and Atos will help coordinate various work packages such as radio evolution and innovation, future devices and flexible infrastructure, smart network management and values, and requirements and ecosystem. Nokia has been at the forefront in commercializing every generation of wireless technology, from the first GSM call to the best performing

4G networks and the world's fastest 5G connections. Nokia and Nokia Bell Labs, the world-renowned industrial research arm of Nokia, pioneered many of the fundamental technology innovations that are being used to develop 5G standards. In addition, Nokia is already laying the foundations for 5G-Advanced in 3GPP Releases 18 and 19, which will further enhance 5G capabilities and enable new verticals. These new capabilities include features like XR, super-accurate positioning, improved coverage, and AI/ML for the 5G-RAN. Many of these technology developments will bridge the gap between 5G and 6G. In addition to Hexa-X-II and Hexa-X, Nokia also leads 6G-ANNA, the German 6G lighthouse project and plays an instrumental role in establishing the Horizon Europe Smart Network and Services joint undertaking. The Hexa-X-II project aims to start work on 1 January 2023, with a planned duration of two and a half years.

Nokia and Flex to Combine 5G SA Private Wireless and Industry 4.0 Expertise for Advanced Manufacturing Solutions in Brazil

Nokia announced a collaboration with Flex Brazil to deploy 5G SA private wireless networks in its manufacturing facilities in Brazil. Initial use cases will focus at increasing wireless applications and exploring the potential of 5G for reliable connectivity, massive transfers of operational data and greater layout flexibility on the shopfloor. Nokia Digital Automation Cloud (Nokia DAC) will provide the private wireless on-demand service as well as MX Industrial Edge computing and digital-enabling applications. The collaboration reflects the long-term goal of both companies to introduce innovative Industry 4.0 solutions in the supply chain and manufacturing verticals, to make operations more agile and cost effective with 5G technology, becoming a lighthouse to other companies interested in pursuing this journey. Flex, a multinational electronics company with over 100 sites worldwide, provides innovative technologies that play a key role in manufacturing and supply chain operations. A leader in Industry 4.0, they deliver to its various global customers using already today technologies such as advanced simulation, automation and robotics, analytics, IoT and additive manufacturing (3D printing). Private wireless is seen as the key enabler to enhance competitiveness linked to the digital transformation resulting increased efficiency, agility and sustainability. Offered as-a-service, Nokia DAC combines plug-and-play 4.9G/LTE and 5G industrial-grade network connectivity with on-premise edge computing to provide the data management and processing to support real-time applications for smart manufacturing, predictive maintenance, remote operations and many other applications. Nokia

Network Digital Twin creates a digital twin of the private 5G network and its connected devices. This enables Flex to monitor network operations in real time and predict maintenance needs and potential downtime in advance, reducing disruptions in production and making its factories more efficient and productive in the future. Nokia Bell Labs innovations focusing on novel networks applications will be experimented at Flex to enable new forward-looking use cases of deterministic networking for reconfigurable production lines. Marcelo Marcomini, Industry 4.0 Executive for Flex Brazil, said: "We welcome the collaboration with Nokia to join us on this journey to expand the scope of our solutions by integrating Nokia's 5G private wireless expertise to improve our current operations efficiency and prepare for the future of manufacturing at the same time." Marcelo Entreconti, Head of Enterprise for Latin America, Nokia, said: "The partnership will leverage our strength in advanced networking and mission-critical communications with Flex long experience in manufacturing and supply chain innovation. Together, we will explore the power of Industry 4.0 to transform how we manufacture and distribute goods in this new digital world." Nokia has deployed mission-critical networks to more than 2,200 leading enterprise customers in the transport, energy, large enterprise, manufacturing, webscale, and public sector segments around the globe. It has also extended its expertise to more than 450 large private wireless customers worldwide across an array of sectors and has been cited by numerous industry analysts as the leading provider of private wireless networking worldwide.

Nokia's Single RAN and Cloud RAN Solutions Pass GSMA's NESAS Security Audit

Nokia's Single RAN Base Station portfolio as well as its 5G Cloud RAN solution have passed the GSMA's bi-annual Network Equipment Security Assurance Scheme (NESAS) audit, the company confirmed. Nokia's portfolio is fully compliant with all security requirements defined by the GSMA and standards organization, 3GPP. The NESAS audit ensured Nokia's products and compliance processes underwent a complete audit by a GSMA-approved independent auditor. Nokia complies with NESAS' – Development and Lifecycle Security Requirement version 2.1. Nokia's 'Design for Security' process, which enables product security features and controls to identify, mitigate and manage security vulnerabilities, was utilized to enforce NESAS requirements. This process is a mandatory and integral part of Nokia's product development, security testing, and software life cycle management. The NESAS audit also covered Nokia's Cloud RAN solutions, which are also created with Nokia's 'Design for Security' process. Operators are increasingly interested in exploring the capabilities of Cloud RAN in the 5G world and trialing a hybrid approach where it co-exists in the network with Classic RAN with purpose-built baseband. Nokia's Cloud RAN solution comes with feature-richness and full feature parity with Classic RAN including seamless continuity and the same carrier-grade high performance. NESAS audits and tests network equipment across the telecommunications industry to ensure it conforms to a security benchmark, reflecting the security requirements of regulators, governments, and mobile operators. It provides a universal and global security framework that provides confidence to mobile operators purchasing equipment from suppliers. The scheme also means that operators do not have to duplicate work such as security testing on multi-vendor products, it also increases the transparency and comparability of products from different suppliers. Ari Kynäslahti, Head of Strategy and Technology at Nokia Mobile Networks, said: "We are pleased to see our Single RAN and Cloud RAN portfolio confirmed as NESAS-compliant in this audit. We place a premium on ensuring our products are intrinsically secure and our rigorous 'Design for Security' process ensures we identify and mitigate any potential security threats before they happen. As 5G networks roll out around the world, it has never been more important to provide our customers and the wider industry with the assurance that our technology is secure, and this accreditation gives us another layer of credibility supporting that aim."

Nokia and MEXT Collaborate on 5G Private Wireless in Turkey

Espoo, Finland – Nokia and MEXT, the Turkish Employers' Association of Metal Industries Technology Center, announced that they are partnering to advance digital transformation of the Turkish industrial sector and enable the local ecosystem to jointly work on 5G private wireless innovation. Nokia will deploy its 5G private wireless Digital Automation Cloud (DAC) solution at the MEXT Technology Center, connecting more than 10 manufacturing use cases on display and adding more. MEXT is operating one of the world's largest and most comprehensive digital transformation and capability building centers. Located in Istanbul, Atasehir, it supports Turkish industrial companies along their digital transformation journey towards Industry 4.0. The Technology Center includes an ecosystem of more than 50 globally recognized technology providers, universities, and institutions. Nokia will become a partner of MEXT and collaborate within this ecosystem, enabling 5G technology experience in the industrial context, although 5G is not currently commercially available in Turkey. Ozgur Erzincan, Country Manager Turkey at Nokia said: "It is our great pleasure to collaborate with MEXT in the context of digitalization of the industrial manufacturing sector in Turkey, a key industry for the Turkish economy. Although 5G is not yet a commercial reality in Turkey, there is a lot of interest from Turkish enterprises to explore the possibilities of 5G private wireless solutions. For us at Nokia, it is of utmost importance to support a local 5G vertical ecosystem and be the trailblazer in the Turkish Industry to leverage 5G for increased competitiveness." Efe Erdem, Executive Director of MEXT Technology Center, said: "MEXT builds on and enhances the technology and innovation capacity of manufacturing companies, encourages them to define their digital transformation roadmaps and start the execution as well as foster their engagement with world class technology providers on their transformation journey. With the deployment of private wireless Nokia Digital Automation Cloud in our technology center, the whole Turkish industry will experience a cutting-edge 5G solution, which comes with Nokia's expertise of hundreds of private wireless deployments around the globe." Nokia has deployed mission-critical networks to more than 2,200 leading enterprise customers in the transport, energy, large enterprise, manufacturing, webscale, and public sector segments around the globe. The company has extended its expertise to more than 485 large private wireless customers worldwide across an array of sectors.

Nokia Selected to Upgrade Stealth Communications' Core Network for Increased Capacity and DDoS Security

Nokia announced it has been selected by Stealth Communications to upgrade the New York City-based internet service provider's metro core network throughout this high-density metropolitan area. Nokia's IP routing solutions will be deployed to build a core router mesh network for increased capacity and scale, enabling Stealth Communications to offer high-speed 100GE and 400GE services to its multi-tenant building business customers both now and into the future. Stealth Communications provides connectivity services to a broad roster of customers in such enterprise segments as finance, real estate, education, and government through its 80-mile fiber-optic system that connects hundreds of commercial office buildings. To increase capacity and scale within its network and ensure reliability, Stealth is investing in its metro core by implementing 400GE connectivity. Nokia will deploy its 7750 Service Router (SR) platforms, featuring its ground-breaking FP routing silicon. The 7750 SR platforms include the Nokia 7750 SR-14s core routers with FP5 line cards for future-ready 800GE capability. Initial roll out will include the FP4 line cards. Nokia will also work with Stealth Communications to extend the provider's IP core network to bring 100GE connectivity to its multi-tenant buildings, using the Nokia 7750 SR-1se and SR-2se. Additionally, Stealth Communications chose the 7220 Interconnect Router (IXR-D2L), powered by SR Linux, for cost-effective edge aggregation and automation to simplify deployment and management. SR Linux is a ground-breaking open network operating system (NOS) that makes data center infrastructure scalable, flexible and easier to operate. Stealth Communications has also selected the Nokia Deepfield Defender for protection against Distributed Denial of Service (DDoS). Deepfield Defender provides a holistic perspective on DDoS attacks across the entire network as they happen, enabling the highest levels of protection and mitigation for Stealth Communications and its business customers. Using big data analytics along with Deepfield Secure Genome,™ its proprietary security intelligence feed, Deepfield Defender accurately detects DDoS attacks in real time. It leverages advanced techniques, including AI/ML to compile the most efficient mitigation and dynamically instructs Nokia FP silicon to surgically block all DDoS attack traffic right at the network edge. Shrihari Pandit, President and CEO, Stealth Communications, said: "For nearly a decade, Stealth has provided New York City's businesses with the fastest and most reliable internet service available, all over our own fiber infrastructure. We are eager to grow our network capacity and add flexibility to meet the future needs of our current and prospective customers. Nokia is the right partner to help us do that by providing solutions that offer scale, reliability and DDoS security where it is most needed." Vach Kompella, Vice President, IP Networks Division, Nokia, said: "As a leading provider of internet services in New York City, Stealth Communications has been looking to offer higher scale interface options such as 100GE and 400GE to its growing customer base. We are pleased to partner with them to ensure their network has the required scale and capacity to meet customer demand for new internet services, while ensuring reliability and DDoS security within the network."

Nokia and Vodafone New Zealand Team Up to Accelerate Network Innovation with 5G-Advanced and 6G

Nokia announced it has signed an innovation focused Memorandum of Understanding with Vodafone NZ to collaborate on the development of new applications and services enabled by the capabilities of Nokia's advanced mobile network technology. The collaborative agreement, which comes as the two organizations celebrate 30 years of partnership in New Zealand, will focus on accelerating the opportunities of Vodafone's extensive 4G/5G network. The companies will also look to explore the capabilities of 5G-Advanced and 6G networks in the future. Through joint resource investment in technology validation, demos and field trials, it will seek to further ignite innovation in advanced networks, developing commercial opportunities and future use cases in areas from network slicing and private networks to industrial automation, artificial intelligence, machine learning, Edge compute and 6G enabled future. The collaboration will keep New Zealand at the forefront of global advances in network technology and enable it to play a key role in shaping how the next generation of

technologies will be used to enhance peoples lives, the economy and the environment. "Nokia has a proud 30 year history of bringing the world's best mobile technology to New Zealand with Vodafone, most recently helping Vodafone deliver a world class 5G network. This collaboration will pave the way forward to 5G-Advanced and ultimately 6G," says Tommi Uitto, President of Mobile Networks at Nokia. "New Zealand has a thriving and dynamic telecommunications environment, which provides a perfect backdrop to pioneer innovation - innovation that will enable incredible advances in connectivity, services and the associated digital transformation." "At Vodafone we're helping customers unlock the magic of technology, and to do that, they need fast, reliable connectivity. We have invested extensively in our 4G and 5G networks with Nokia and the innovation collaboration announced today is an awesome next step", said Tony Baird, Vodafone New Zealand's Wholesale & Infrastructure Director. "A relentless focus on innovation - and bringing leading technology and expertise to Aotearoa - is how we help Kiwi businesses, industry and people realize the huge potential of advanced mobile networks in the short term, while putting us firmly on the path towards a 6G future in the longer term."

Nokia and AIS Trial 25G PON Solution

Thai telecoms operator AIS and Finnish vendor Nokia have completed trials of a 25G PON solution, using the telco's existing optical line terminals (OLTs). The OLT was connected simultaneously to three end user devices with a combined speed of 37.5Gbps using a 25G PON optical network terminal (ONT) at 25Gbps, an XGS-PON ONT at 10Gbps and a GPON ONT at 2.5Gbps. According to a statement from the vendor, all services can be served with the same, single fiber at the same time. Nokia adds that the solution enables AIS to offer customers speeds of up to 25Gbps on the existing platform without the need to install new fiber, and also allows the telco to offer enterprises a high speed and low latency replacement for point-to-point (P2P) connections, which it claims are costly and less scalable. In addition, the technology can be used for 5G backhaul.

Nokia Enhances GBI's Optical Network Capacity Between Middle East and Europe Through Capacity Upgrade

Nokia announced it is providing optical upgrades to Gulf Bridge International, a global cloud, connectivity and content enabler in the Middle East. This solution will increase GBI's international network capacity ahead of the World Cup to enable high-speed connectivity between Doha, Qatar and Milan, Italy. Nokia's PSE-V coherent technology will allow GBI to provide important capacity upgrades to its existing subsea cables and terrestrial links spanning two seas and three countries to meet customer demand for additional bandwidth between the Middle East and Europe. GBI will upgrade its Nokia 1830 Photonic Service Switch (PSS) optical transport platforms with new network interface cards powered by the Photonic Service Engine V (PSE-V) digital signal processors. This will enable upgrade to wavelength connections from 50 Gbps to 200 Gbps over GBI's existing end-to-end subsea cable and terrestrial links spanning thousands of km and will allow the introduction of 400 Gbps services in the future. The solution maximizes the capacity of two existing subsea cable links by greatly improving the optical spectrum efficiency through advanced techniques such as continuous baud rate adjustment. It also eliminates regeneration of the optical signal over two long-haul terrestrial links. Removing the need to convert between optical and electrical signals to boost the optical signal at intermediate regeneration points increases network efficiency and reduces latency and cost. Gavin Rea, Chief Technical Officer at GBI, said: "We selected Nokia because its proven PSE technology will enable us to grow the capacity of our subsea cables and terrestrial networks efficiently and cost-effectively. We will be able to meet our customers' increasing demand for the best connectivity

services between the Middle East and Europe while ensuring that we can increase speed and capacity in the future. These routes are critical to our international carrier-grade fiber-optic Smart Network that connects service provider, cloud provider and enterprise customers to important financial and communications hubs across the Middle East, Europe, Africa and Asia." Manuel Ortiz Fernandez, Senior Vice President of EMEA Webscale Business, said: "There is a growing need for wholesale services that provide higher speed, reliable connectivity between cloud data centers, co-location facilities and interconnection hubs in the Middle East and Europe. We are delighted that GBI has selected Nokia to upgrade important routes of its Smart Network. GBI's customers will benefit from the scale, reliability and efficiency of our optical solution while GBI will be able to increase network capacity while reducing network operations costs."

VoX Solutions Partner Jawwal on International A2P SMS

Palestine Cellular Communications (Jawwal) has entered into an agreement with Vox Solutions for direct termination of A2P SMS international traffic to Jawwal's network. The partnership between Vox Solutions and Jawwal will see the secure delivery of A2P messages for Jawwal's clients as well as international businesses, by controlling the entry and delivery of A2P SMS traffic. This provides network protection from fraud, leveraging both the Vox team expertise and its VOX-360 platform capabilities. VOX-360 is a platform in that can mitigate Flash Calls as part of its suite of A2P Voice and SMS anti-fraud solutions. "Banking, travel, transportation, healthcare, and other verticals are increasingly using A2P messages to send notice, authentication, and confirmations to their customers. For both companies and customers, high quality and timely messaging delivery is a must," said Malak Ziadni, marketing director at Jawwal. "This exclusive partnership with Vox Solutions, to terminate the International A2P traffic in our network, guarantees a reliable, high quality and secure delivery of A2P services for any regional or global brand." In addition, the VOX-360 platform has features related to antifraud, flash call authentication, A2P SMS monetization and mobile identity, enabling mobile operators to detect and block spam, as well as fraudulent traffic before they impact end users. "We are very excited to be the trusted exclusive A2P SMS partner for another leading communication service provider. This is an important milestone in becoming the A2P voice & messaging partner of choice in the Middle East. It also represents a great recognition of Vox Solutions' capability to offer the highest quality and security of international A2P messaging delivery at large-scale," said Ehsan Ahmadi, CEO of Vax Solutions. "Ultimately, we are here to help mobile operators, such as Jawwal, to optimize the monetization of their assets and ensure long term revenue growth and innovation, and also to help global brands reach their customers with the best response time, wherever they are."

Claro Brasil Taps SES for Amazon Satellite Connectivity

Claro Brasil, operating via its corporate solutions division Embratel, has signed a multi-year capacity renewal with international satellite operator SES. The contract will enable the delivery of 4G/5G-ready mobile services via SES's medium earth orbit (MEO) O3b mPOWER network. The contract will see connectivity extended to around 260,000 inhabitants of eight of the most isolated cities the telco serves via SES's multi-orbit satellite network across the Amazon region. Under the renewal agreement, Embratel could potentially leverage transmission speeds of 4Gbps. SES will continue to serve other communities in the region using SES's geostationary (GEO) satellite-delivered backhaul capacity.

SES, Microsoft Virtualize Satellite Ground Networks

SES expanded a partnership with Microsoft to cover creation of fully-virtualized satellite ground stations, seeking to bolster customer offerings with a cloud-native service delivery architecture. The Satellite Communications Virtualization Program aims to create a network of companies providing software-defined radios, customer edge terminals, virtual network functions (VNF) and edge cloud services. Microsoft plans to begin seeking companies to join the program in Q4. The companies claimed the terrestrial element of satellite communications will benefit from using standardized and non-proprietary hardware, enabling remote updates for equipment which is typically located in hard-to-reach places. SES and Microsoft stated the virtualized ground systems could also serve as an industry blueprint to better align cloud and satellite network architectures. The VNF and edge cloud applications can be used to address evolving customer needs at a faster rate while the virtualized environment will enable new services such as network slicing, SES stated. Steve Kitay, senior director Azure Space at Microsoft, said satellites are a "key enabler" in providing its cloud services to customers. John-Paul Hemingway, chief strategy and product officer at SES, noted terrestrial mobile networks have employed "virtualization and cloud-native" architectures for several years "to maximize flexibility".

SES Successfully Launches Second and Third C-Band Satellites on ULA Rocket

SES announced that the SES-20 and SES-21 satellites were successfully launched into space by the United Launch Alliance's (ULA) Atlas V rocket from Cape Canaveral Space Force Station in Florida, United States, at 5:36 local time on Tuesday, October 4. Both C-band satellites will enable SES to continue delivering TV and radio to millions of American homes and provide other critical network communications services. SES-20 and SES-21 will operate in the 103 degrees West and 131 degrees West orbital slots, respectively, and are expected to begin operations in November 2022. These launches are part of a broader Federal Communications Commission (FCC) program to clear a portion of C-band spectrum to enable wireless operators to deploy 5G services across the contiguous U.S. (CONUS). In response to this mandate from the FCC, satellite operators such as SES are required to transition their existing services from the lower 300 MHz to the upper 200 MHz of C-band spectrum to make room for 5G. SES-20 and SES-21 are the second and third C-band satellites that SES has launched as part of its effort to free up the lower 300 MHz of C-band spectrum across the U.S. by December 2023 while maintaining uninterrupted services. SES-22 was the first C-band satellite to be launched on June 29, 2022. "The successful launch of SES-20 and SES-21 will allow us to support our customers in delivering high-quality sports and entertainment to tens of millions of US households while delivering on our promise to repurpose spectrum to enable U.S. leadership in 5G," said Steve Collar, CEO of SES. "The second phase of our U.S. C-band clearing activities is fully on track and we are grateful for the hard work of our partners at Boeing and ULA." "We're excited to support our commercial partner SES in their C-band transition efforts to meet the FCC's objective to deploy 5G service across the U.S. Their mission aligns with our mission to connect the world and these capabilities will enable uninterrupted commercial services to many Americans," said Gary Wentz, ULA vice president of Government and Commercial Programs. "The Atlas V delivered the satellites accurately to a near-geosynchronous orbit 22,300 miles (35,888 km) above the equator. Thank you to the ULA team and our partners for ensuring the successful delivery of this multi-payload mission to orbit." "Our unique dual-launch configuration was again successful on this mission," said Ryan Reid, President of Boeing Satellite Systems International. "That coupled with the ULA Atlas V's ability to achieve an advantageous orbit enables SES to get these satellites into service in a matter of weeks. We appreciate the faith SES has put in our industry team to make that happen."

SES-Led Consortium to Work with European Space Agency, EC on Satellite Quantum Cryptography System

An SES-led consortium of 20 European companies, with the European Space Agency (ESA) and European Commission support, will design, develop, launch and operate the Eagle-1 satellite-based system for Quantum Key Distribution (QKD), enabling in-orbit validation and demonstration of next-generation cyber-security across Europe. To implement the cryptographic key exchange system of Eagle-1, the consortium will create the QKD (quantum key distribution) payload, terrestrial optical station, scalable quantum operational networks and key management system to interface with national quality of service (QoS) class identifiers (QCIs). Together with its European partners, SES will build the first sovereign European space-based QKD system, developing and operating a dedicated low earth orbit (LEO) satellite and building a QKD operations centre in Luxembourg. The project is co-funded by the ESA contribution of Germany, Luxembourg, Austria, Italy, the Netherlands, Switzerland, Belgium and the Czech Republic under Artes, as well as the European Commission through Horizon Europe. Using the Eagle-1 system, ESA and the EU Member States will achieve the first step to demonstrate and validate QKD technologies from low earth orbit to the ground. The Eagle-1 project will provide valuable mission data for next generation Quantum Communication Infrastructures (QCIs), contributing for example to the EU plans to deploy a sovereign, autonomous cross-border quantum secure communications networks. The Eagle-1 satellite is due to launch in 2024 and will then complete three years of in-orbit mission supported by the European Commission. During this operational phase, the satellite will allow European Union governments and institutions as well as critical business sectors early access to long-distance QKD to path the way towards an EU constellation enabling ultra-secure data transmissions.

SES and RCSC to Provide O3b mPOWER Services in Kazakhstan

Republican Centre for Space Communications (RCSC), a subsidiary of the Ministry of Digital Development, Innovations and Aerospace Industry and SES, the leading global content connectivity solutions provider via satellite, announced today that they will jointly offer high-speed connectivity services to businesses across Kazakhstan. The services will be delivered via O3b mPOWER, SES's second-generation non-geostationary (NGSO) satellite system, and will be made available to various industries, including telecommunications, onshore energy, mining, maritime and enterprises via RCSC, offering these companies to drive digitalization in the region with expanded high performance network capabilities. As part of the agreement, SES and RCSC will build an in-country gateway in the Almaty region that will allow Kazakhstan-based companies to quickly deploy and leverage O3b mPOWER's high-speed and low-latency network connectivity for customer applications and offices, as well as partake in the governmental digital inclusion programmes. The gateway will also enable delivery of services to other bordering countries in the region, including Uzbekistan, Kyrgyzstan and Tajikistan. Launching in Q4 2022, O3b mPOWER is a satellite communication system located in the medium earth orbit (MEO) with a vast service offering. One key service available in Kazakhstan in 2023 is SES's Trunk mPOWERED, which will enable customers to extend their core networks with uncontended, multi-gigabit services quickly. "As we expand our partnership with SES, we are proud to open Kazakhstan to new high-speed connectivity solutions via satellite. Our joint expertise and understanding of opportunities in the country allows us to offer satellite-enabled services that will bring new technologies and growth for businesses across Kazakhstan," said Malik Zhuiriktayev, Chairman of the Board of JSC RCSC. "Transforming the digital landscape for business across the globe is one of the key mission pillars of the O3b mPOWER system. We are very excited to further strengthen our partnership with RCSC and jointly introduce high-throughput and low-latency satellite-enabled services to Kazakhstan," said Steve Collar, CEO of SES. "O3b mPOWER is a unique NGSO system – local businesses will have guaranteed access to reliable and high-speed networks, whenever and wherever they need it, allowing them to flexibly and

swiftly address the changing connectivity demands of their customers." The latest agreement highlights the deepening of the partnership between SES and RCSC to evaluate and bring NGSO capabilities to the country. In 2021, both companies conducted demos connecting remote villages in Kazakhstan using SES's first-generation O3b satellites, setting record-breaking speeds via satellite recorded in the country (380Mbps downlink and 120Mbps uplink). Additionally, SES also organised a series of 3G and 4G demos with leading mobile network operators, such as Kcell, proving O3b mPOWER's ability to easily expand local networks with satellite-enabled connectivity.

Mandatory Inherent Defects Insurance in Saudi Arabia

As per report issued by Simmons & Simmons; In June 2018, the Kingdom of Saudi Arabia (KSA) became the first of the Gulf Cooperation Council (GCC) countries to introduce mandatory inherent defects insurance (IDI) for construction projects in the private sector. Whilst this insurance has been mandatory in KSA for four years now, its integration has been staggered, many of the projects to which it applies are unlikely to have reached practical completion yet and the standard policy wording, which was only introduced in March 2020, remains untested. In the meantime, Market interest in the product remains high, and there are perhaps some unrealistic expectations of, and confusion about, what the policy is designed to cover, its scope, who can benefit from it and how it will operate in practice. In this paper, we seek to explain what risks this policy is designed to meet and whether it does so and, of equal importance, consider what it is not designed to meet. We also look at the potential problems with its application and highlight some of the questions it raises. For example: What benefit does the contractor obtain from the policy? Can the contractor/designer be named as an insured? Does the insurer retain subrogation rights? How does this cover interact with other insurances that might be obtained in respect of construction projects?

stc Bahrain Launches Its Latest Fiber Campaign

stc Bahrain, a world-class digital enabler, has launched its fiber campaign with exciting offers to existing and new customers, including a six-month free subscription. Customers will be able to enjoy free fiber for six months starting from BD 5.5 a month. Those who switch to stc Bahrain will be given the same fiber broadband quality with higher benefits and competitive prices. stc Bahrain is also offering twelve months free stc TV (including OSN) and Shahid VIP subscription, open to customers who are subscribed to select stc plans. Karim Tabbouche, Chief Consumer Officer at stc Bahrain, said: "As more households in Bahrain are using fiber broadband, we are excited to be offering customers exclusive fiber offers when they switch to stc so that they can enjoy the same high-quality fiber with higher benefits and competitive prices. We are also proud to be a top choice by our customers for our value-added offerings, rates, quality customer service, and high-network connectivity services. Customers will be offered the same quality services at better prices with many benefits." The launch of the campaign also aims to educate consumers about fiber broadband networks and to help them distinguish between various service offerings. "All fiber is the same" is the theme of the campaign, communicating the fact that all telecom operators provide fiber of equal quality and speed, providing consumers with the knowledge they need to make decisions about their fiber broadband services. The campaign is launched in light of the new study launched by the Telecommunications Regulatory Authority that shows Bahrain's fiber broadband plans are the cheapest in the GCC. Based on the latest market data, around 65 percent of households in the Kingdom have fiber broadband services, compared to 42 percent in 2019, an increase in subscriptions by 34 percent.

stc Bahrain Launches Its Third Technical Capacity Program in Partnership with Huawei

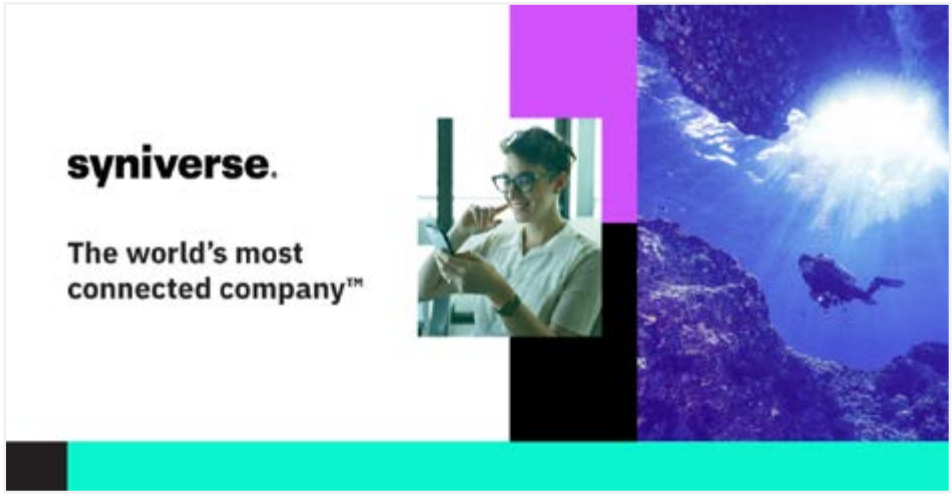
stc Bahrain, a world-class digital enabler, launched its third technical capacity program that aims at investing in the development of its employees across technical areas/domains. The training program was launched with the signing of a 2 year strategic partnership agreement between stc Bahrain and Huawei, to develop the capabilities of employees and improve operations. The program has been split into two phases to deliver company's strategic priorities. The program has been designed to upgrade people knowledge and skills around Technology, Network and Digital ecosystem that shall serve the business need to adopt and adapt to innovation and expansion in the Digital Telecom space. Sara Khonji, Chief People Officer at stc Bahrain, said: "At stc Bahrain, we believe that growth and expansion of business is organically driven by people who invest their skills and abilities to deliver new and unique propositions. We are proud to design and deliver this unique program for our people around Cloud/AI/Data Analytics/Network Technology and ICT that shall support us in delivering promise to the customers in form of better experience and value and at the same time building the people strength for organic and inorganic career growth. Our resolve is to keep on investing on people." Huawei has been our key partner in delivering successfully our 2 previous cohorts with over 6,000 hours of onsite/ online training and we see this 3rd cohort bringing new learning opportunities across to people to enhance their personal and professional growth.

Syniverse Earns Industry Honors in Roaming and Data & Financial Clearing from Kaleido Intelligence

Syniverse, "the world's most connected company", today announced that it has been named by Kaleido Intelligence as the top overall leader in mobile roaming for the second consecutive year out of more than 40 vendors that were evaluated. The Company was also ranked first in Data & Financial Clearing. In this category, the Company improved its position to "Leader" over the 2021 overall ranking. Kaleido Intelligence's Vendor Hub report provides an in-depth assessment of leading roaming vendors, their product strengths, roadmap strategies and competitive analysis scoring on an annual basis. The report highlights the evaluated vendors' strengths across seven product categories:

- Steering of Roaming
- Sponsored Roaming
- Roaming Hubs
- IPX
- Roaming Analytics & VAS
- Data & Financial Clearing
- Fraud Management & Security

In addition to being ranked the overall Roaming "Leader" and Data & Financial Clearing "Leader", Syniverse achieved an additional "Champion" ranking, Kaleido's



highest designation, in the IPX, Fraud Management & Security, and Roaming Analytics & VAS categories. In total, Syniverse placed as a "Champion" in five of the seven product categories evaluated. Syniverse also was named a "High Flyer" in the remaining two categories of Steering of Roaming and Sponsored Roaming. Syniverse's rankings were determined based on feedback provided by mobile operators to Kaleido Intelligence and a detailed analysis conducted by Kaleido analysts. The criteria used by the analysts centered on the company's unique market positioning, problem-solving capabilities, innovation, and leadership, and on the vendor's position to meet evolving MNO/MVNO needs and requirements. Kaleido Intelligence is a specialist consulting and market research firm delivering telecom research at the highest level. The Kaleido Vendor Hub report provides an in-depth assessment of leading roaming partners, their product strengths, roadmap strategies, and competitive analysis scoring.

Syniverse Earns MEA Business Magazine Technology Achievement Award 2022

Syniverse, "the world's most connected company", announced that they were presented with an award at the MEA Business Magazine Technology Achievement Awards 2022. Syniverse's Evolved Mobility Solution was recognized in the Exceptional Products/Services Category. The award was presented to Syniverse at GITEX, 2022. Evolved Mobility, Syniverse's 3G-to-Voice over LTE ("VoLTE") Roaming solution, provides a 3G fallback on 4G- and 5G-only serving networks, enabling voice and data services for inbound roamers using VoLTE enabled devices. Serving network operators can therefore recover revenues from inbound roamers, while also building an enhanced customer experience for served roamers. Adopted by leading operators such as AT&T and Verizon, Evolved Mobility offers mobile operators who run 4G- and 5G-only networks the ability to maintain and grow critical inbound roaming revenues as the serving network from non-VoLTE-supported served network operators. Served operators who have not yet launched VoLTE roaming can recover revenues from inbound roamers while also building an enhanced customer experience for served roamers. "Syniverse has been at the forefront of the connected world for more than 30 years. Evolved Mobility is another example of how our innovation keeps moving forward," remarked John McRae, President Carrier, Syniverse. "With 3G network sunsets on the horizon, 4G- and 5G-only operators could see portions of their inbound voice and data roaming revenues disappear without the ability to connect to operators who haven't enabled VoLTE. Not only does this solution protect those revenues, but it also allows for an improved customer experience for their roaming partner's subscribers throughout the transition." The Technology Achievement Awards recognize the achievements of the region's leading firms and technology providers at the forefront of digital transformation. The selection of the winners is based on research, input from industry experts, and evaluation of the utility and the technological innovation and solutions. The MEA Business Magazine Technology Achievement Awards are supported by SAMENA Telecommunications Council, of which Syniverse is a member. McRae continued, "We couldn't be more pleased to accept this Technology Achievement Award from MEA Business Magazine. It's yet another validation of the need for, and importance of, Syniverse's Evolved Mobility solution." John McRae, President, Carrier, Syniverse said "Syniverse has been at the forefront of the connected world for more than 30 years. Evolved Mobility is another example of how our innovation keeps moving forward. With 3G network sunsets on the horizon, 4G- and 5G-only operators could see portions of their inbound voice and data roaming revenues disappear without the ability to connect to operators who haven't enabled VoLTE. Not only does this solution protect those revenues, but it also allows for an improved customer experience for their roaming partner's subscribers throughout the transition. We couldn't be more pleased to accept this Technology Achievement Award from MEA Business Magazine. It's yet another validation of the need for, and importance of, Syniverse's Evolved Mobility solution."

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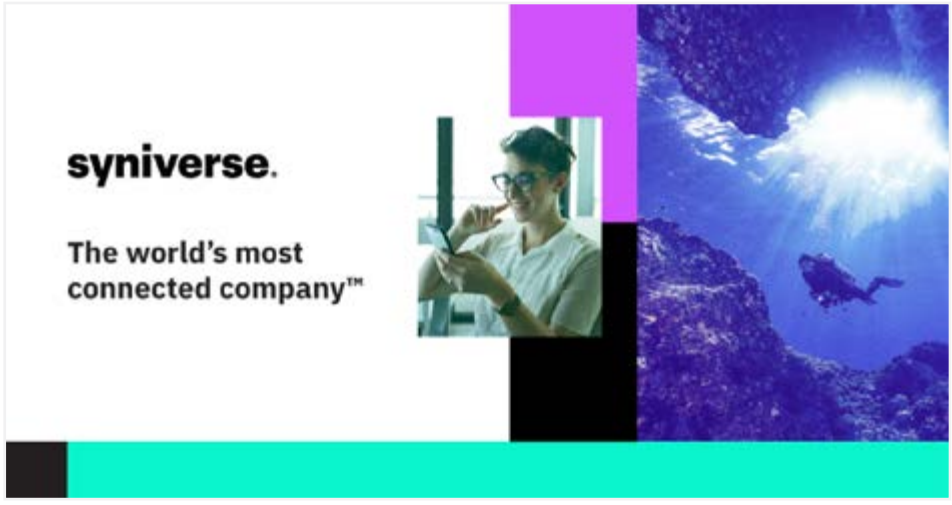
- Fraud Management & Security

In addition to being ranked the overall Roaming "Leader" and Data & Financial Clearing "Leader", Syniverse achieved an additional "Champion" ranking, Kaleido's highest designation, in the IPX, Fraud Management & Security, and Roaming Analytics & VAS categories. In total, Syniverse placed as a "Champion" in five of the seven product categories evaluated. Syniverse also was named a "High Flyer" in the remaining two categories of Steering of Roaming and Sponsored Roaming. Syniverse's rankings were determined based on feedback provided by mobile operators to Kaleido Intelligence and a detailed analysis conducted by Kaleido analysts. The criteria used by the analysts centered on the company's unique market positioning, problem-solving capabilities, innovation, and leadership, and on the vendor's position to meet evolving MNO/MVNO needs and requirements. Kaleido Intelligence is a specialist consulting and market research firm delivering telecom research at the highest level. The Kaleido Vendor Hub report provides an in-depth assessment of leading roaming partners, their product strengths, roadmap strategies, and competitive analysis scoring.



Tech Mahindra Launches YANTR.AI to Enhance & Simplify Field Services

Tech Mahindra, a leading provider of digital transformation, consulting, and business re-engineering services and solutions, announced the launch of YANTR.AI - a transformational cognitive Artificial Intelligence (AI) solution to enhance and simplify field services. It will further strengthen Tech Mahindra's BPaaS (Business Process as a Service) portfolio and provide actionable insights to enterprises for better planning and execution of field services. YANTR.AI is designed to provide operational efficiency, enhance productivity, and improve workflow control by combining advance analytics, AI, Machine Learning (ML) & optimization along with people to hyper-automate field operations, thereby increasing cost efficiency and improving customer experience. The solution will provide end-to-end visibility and recommendations to further strengthen fieldwork planning and address the demand & supply chain appropriately. It can also help customers discover lags & opportunities and strategize efforts in the right direction to create a flawless field ecosystem. Birendra Sen, Business Head – Business Process Services, Tech Mahindra, said, "Technology is not just the backbone of the global economy, but is also a strategic tool which can turn insights into solutions, uncover trends and predictions, and transform businesses in a sustainable manner. Today, there is an increasing need for technologies and platforms that turn insights into ready products that can be utilized by enterprises. To meet this burgeoning need and further our goal of providing best-in-class digital solutions to enhance business agility, simplify operations, and future-proof enterprises, we have launched YANTR.

AI. It will enable enterprises to improve visibility & velocity and reduce vulnerabilities & variability while providing insights for better forecasting, planning, and execution of field services operations." This solution will enable Tech Mahindra's customers to address the full spectrum of field services needs including enhanced technician productivity, improved Service-Level Agreements(SLA), and reduce unmet demands across sectors such as Telecom, Utilities, Oil & Gas, Retail, etc. Tech Mahindra believes in DigitALL philosophy for comprehensive Business Transformation. Digital technologies catalyze the transformations – they humanize businesses by helping them think, sense, connect, communicate, secure and act better than before. As part of NXT. NOWTM framework, which aims to enhance 'Human Centric Experience', Tech Mahindra focuses on investing in emerging technologies and solutions that enable digital transformation and meet the evolving needs of the customer.

Tech Mahindra Launches End-To-End ESG Offerings to Accelerate Sustainable Transformation of Enterprises Globally

Tech Mahindra, a leading provider of digital transformation, consulting and business re-engineering services and solutions, announced the launch of its end-to-end ESG (Environment, Social, Governance) portfolio to help businesses achieve their sustainability goals. Through these offerings, Tech Mahindra will enable businesses to configure, launch, analyze, manage sustainability targets, and help them achieve ESG goals. Through these offerings, Tech Mahindra will help customers to reduce their current carbon emissions footprint by renovating across operations, supply chains, and processes. The offerings will enable Tech Mahindra's customers to strengthen their commitment towards sustainability goals, while maintaining and creating business value. Sandeep Chandna, Chief Sustainability Officer, Tech Mahindra, said, "Sustainability has always been at the core of how we do business at Tech Mahindra. We have been a proud flag bearer of sustainable development and over the years, we have improved our sustainability strategy and scaled our spending on sustainability measures to mitigate the impacts of climate change while also creating value for our stakeholders. With our comprehensive ESG offerings, we are taking a step further to help our customers shape a better and sustainable future." With the help of new technologies and a robust partner ecosystem alongside specialized team of experts, Tech Mahindra will assist customers in measuring, monitoring, improving, and achieving ESG plans by offering

tailored solutions for distinct needs. The organization's ESG offerings are developed by leveraging the research and insights garnered during the last 15 years of operations in the domain.

Tech Mahindra and SoftTech Join Forces to Digitally Transform the Global Construction and Infrastructure Industry

Tech Mahindra, a leading provider of digital transformation, consulting, and business re-engineering services and solutions, announced a strategic partnership with SoftTech, a provider of advanced digital solutions for the construction and civil infrastructure industry, to digitally transform the global construction and infrastructure industry. The partnership will combine the technological capabilities of Tech Mahindra and the domain expertise of SoftTech to provide customized solutions for end-to-end digital transformation of business in the construction and infrastructure industry. The partnership will enable customers across the government and corporate sectors to streamline business operations, boost efficiency, and improve customer experience by leveraging leading-edge technologies like AI (Artificial Intelligence), ML (Machine Learning), BIM (Building Information Modelling), Digital Twins, Augmented Reality (AR), Virtual Reality (VR), Mixed Reality (MR), Construction Wearables, Robotics, Metaverse, and Internet of Things (IoT). Jagdish Mitra, Chief Strategy Officer and Head of Growth, Tech Mahindra, said, "The construction industry contributes 13% to the global GDP, and is required to continuously re-invent and innovate to become more efficient and address cost burdens. The industry has taken valuable strides in digitization, and the many examples of successes have increased the demand for next-gen technologies. Tech Mahindra and SoftTech aim to build more sustainable and responsible solutions for social and environmental impacts within AEC (Architecture-Engineering-Construction) space. An innovative online inspection-approval system, ERP solution for the real estate and construction industries, an online building information model, etc. are among the strengths of our partnership". The partnership will further strengthen Tech Mahindra's market position in the construction industry and empower organizations with seamless implementation and integration of digital solutions across departments, functions, and the workforce at the desk and on the field. Tech Mahindra and SoftTech will also work towards cross-skilling their resources through training programs for knowledge sharing on various tool implementations, scaling applications, etc., thereby creating a skilled talent pool for innovative and scalable solutions. Vijay Gupta, Founder, Chairman and Managing Director

at SoftTech, said, "We believe that the construction industry is at the cusp of undergoing a complete digital transformation, and our partnership with Tech Mahindra creates a great platform to cater to the needs of the industry. With Tech Mahindra's industry-leading expertise in the manufacturing segment, the company has succeeded to scale the business upwards to cross a billion-dollar run-rate. We are confident that this, combined with their deep-tech capabilities in 5G and Metaverse, will provide our products scalability in terms of customer base and technical know-how, which will help deliver more value to international construction and infrastructure clients." Tech Mahindra believes in DigitALL philosophy for comprehensive Business Transformation. This partnership is in line with Tech Mahindra's focus on digital growth, under the NXT.NOW™ framework, which aims to enhance 'Human Centric Experience', Tech Mahindra focuses on investing in emerging technologies and solutions that enable digital transformation and meet the evolving needs of the customer.

Telecom Egypt Says It Has Received No Official Offers for Part of Its Stake in Vodafone Egypt

Telecom Egypt has issued an official statement following reports which had claimed that Qatar's sovereign wealth fund, Qatar Investment Authority (QIA), is seeking to acquire part of the stake held by the former in mobile network operator (MNO) Vodafone Egypt. According to Telecom Egypt, it has not received any official offers from any entity regarding this matter, though it did say it would examine and evaluate any official offers submitted to it with regard to its Vodafone Egypt stake in cooperation with its financial and legal advisors. Prior to Telecom Egypt's statement, Bloomberg Asharq – citing three unnamed sources – reported that QIA was looking to purchase up to 25% of Vodafone Egypt's shares, from the 45% stake that Telecom Egypt currently holds in the cellco. Meanwhile, local press source Enterprise said a source with first-hand knowledge of the matter claimed that sovereign funds Saudi Arabia's Public Investment Fund and Abu Dhabi's ADQ are also eyeing part of Telecom Egypt's stake in Vodafone Egypt.

Zain KSA Deploys Huawei's New 5G RAN Product MetaAAU

Zain KSA in cooperation with Huawei deployed the third-generation 5G RAN product MetaAAU for the 5G carrier aggregation coverage extension. Zain KSA is serving a growing 5G customer base with plans to become a one-stop digital partner and business technology provider in Saudi Arabia. To provide more capacity to 5G users, Zain KSA incorporated an additional 5G carrier, seeking to support more 5G use cases, including cloud computing, IoT, AI, and machine learning solutions while continuing to deliver excellent user experiences. By integrating MetaAAU into its 5G network, Zain KSA will enable more users to benefit from its wide range of services after expanding coverage and capacity and increasing the network speed. MetaAAU is the latest and most advanced product of Huawei's third-generation 5G RAN product series. It achieves best performance and lowest power consumption by applying a wide range of leading wireless technologies and represents a key path for evolution to 5.5G network. MetaAAU introduces the new extremely large antenna array (ELAA) architecture, multi-channel technology, and innovative algorithms to double the scale of arrays compared with the previous-generation AAU. This solution can improve network performance while slashing energy consumption. Zain KSA's Chief Technology Officer, Eng. Abdulrahman Hamad AlMufadda said, this new upgrade to our 5G network serves our strategic goal to deliver world-class 5G experiences that match up to Saudi Vision 2030's goals of transforming the Kingdom into a digital economy hub powered by Industry 4.0 and supporting a high quality of life for its communities. Building on our elaborate 5G infrastructure, we launched the 5G carrier aggregation feature in 2020, achieving ultra-fast Internet speeds of 2.4 Gbps. Now with the accelerating industry ecosystem development, and as more and more 5G smartphones support this feature, we are extending the population coverage of 5G dual carriers and bringing the ultra-fast user experience to more customers. In addition to the carrier aggregation benefits, the innovative MetaAAU product will support enhanced coverage capability and greatly improve our customer experience across several fields including business, e-commerce, and gaming. President of Huawei 5G Product Line, Ritchie Peng said, Huawei has made deep efforts in Massive MIMO technology. MetaAAU is our third-generation Massive MIMO product and a major product in Huawei's third-generation 5G RAN series. Its extremely large antenna array technology makes it possible to use higher frequency bands and higher bandwidth to serve the mobile industry in the future. We will continue to provide innovative solutions to help Zain KSA to build the leading performance network and provide a better user experience to end users.

Zain Saudi Arabia Moves Forward with Tower Sale

Zain Saudi Arabia has transferred ownership of a subsidiary, Zain Business Ltd, to the Kingdom's Public Investment Fund (PIF), paving the way for the sale of the cellco's tower infrastructure which was approved in February this year. As reported by MENAFN, a statement to the Saudi stock exchange on Sunday disclosed that the PIF has changed the transferred division's name to Golden Lattice Investment (GLI), which will be the holding company for Zain Saudi's tower infrastructure units. Under the agreement, all these units will be transferred to GLI within 18 months of financial completion, by which time at least 3,000 sites should already be transferred over. As part of the asset purchase agreement, Zain Saudi will receive a cash amount of SAR2.4 billion (USD639 million) and a 20% stake in GLI. In February Zain Saudi Arabia's Board of Directors approved the binding offer submitted by a PIF-led consortium to acquire an 80% stake in the 8,069-tower passive infrastructure in a deal valued at SAR3.026 billion. The PIF is expected to take a 60% share, with Sultan Holding Company and Prince Saud bin Fahd bin Abdulaziz each obtaining 10% shares and Zain initially retaining 20%, although the PIF will have a call option on this portion.

ZainTech Enters Agreement to Acquire Leading Managed Cloud Provider, BIOS Middle East

ZainTech, the one-stop digital and ICT solutions powerhouse of Zain Group, announces it has entered into an agreement for the complete acquisition of BIOS Middle East, a regional managed secure cloud provider with a presence in the United Arab Emirates, Saudi Arabia and Oman. The acquisition, subject to regulatory approvals, will result in the full migration and integration of BIOS Middle East's operations within ZainTech over the next 12-18 months. Since its establishment in 2002, BIOS has served over 300 global and regional customers by offering managed services and cloud solutions with 24x7x365 support and a measurable SLA. CloudHPT, Amazon Web Services, Microsoft Azure, managed multi-cloud access, security as a service, infrastructure as a service, and disaster recovery as a service are just a few of the capabilities provided by over 140 BIOS professionals across the region. Commenting on the agreement, Bader Al Kharafi, Zain Vice-Chairman and Group CEO said, "This deal represents a major step in ZainTech's expansion strategy and our determination to transform Zain into a leading ICT and digital lifestyle provider. ZainTech is key part of Zain's value accretive '4Sight' strategy centered on evolving Zain's core telecom business to maximize value and build on the company's many strengths to selectively invest in growth verticals beyond standard mobile services." Andrew Hanna, ZainTech CEO said, "Managed cloud is a highly relevant and critical business area for our region, and with BIOS's established strong customer base, years of experience, and exceptional team, this strategic acquisition will supercharge our capabilities in hybrid and multi-cloud managed services and expand our offerings." Hanna continued, "ZainTech is a young company focused on becoming a leading technology partner to corporates and governments in the region. We look to achieve this through organic growth and acquisitions of value-adding companies. The decision to acquire BIOS was driven by its relevance, presence, leadership, market access, and expertise." Hanna concluded, "Integrating the BIOS operations within ZainTech, coupled with leveraging Zain Group's regional footprint and advanced network, will enable us to provide customers the best enterprise cloud experiences in the region." Dominic Docherty, BIOS Middle East Managing Director, said, "BIOS shares with ZainTech the goal to become the region's leading multi-cloud managed service provider. This deal will allow us to accelerate and scale towards that goal, with further benefits to both our customers and people. I am excited and energized to become part of the ZainTech team". ZainTech's cloud business supports organizations, in regulated and non-regulated industries across its footprint in leveraging the power of the cloud to deliver transformational IT outcomes. Through global alliances, significant investments in automation, and strong advisory, professional, and managed services, ZainTech's cloud business brings customers high-quality cloud capabilities with flexible pricing that helps optimize and reduce their total cost of ownership.

ARTICLE

Harnessing the Power of 5G to Change Lives and Businesses

Khalid Murshed
CTIO
etisalat by e&

When we thought about bringing 5G to the people, we had our heart set on being the difference and leading the way in the era of 'connectivity renaissance.' Staying future-focused, we brainstormed how we could revolutionise people's lives by implementing innovative technologies that serve them in the best way possible.

These past four decades, the essence of 'connectivity' has undergone several iterations in the UAE. The UAE leadership has always recognised the importance of driving innovation and establishing a world-class digital infrastructure to boost the country's socio-economic growth for the benefit of its citizens and residents. As the country's first telecommunications service provider founded in 1976, we were guided by similar principles to pave the way for a better tomorrow: deploying technologies that are connecting people and bringing them closer to what is important to them.

> *5G deployment is accelerating the UAE's digital transformation boosting the country's reputation as the Middle East technology and digitalisation hub. We are proud to have been instrumental in maintaining the UAE's network leadership with one of the fastest and most advanced networks in the world as well as its global FTTH penetration leadership.*

From launching voice connectivity to introducing the Middle East's first broadband internet service, followed by the region's first 3G network and 4G in the UAE, we've come a long way. Since the beginning of the international 5G development journey, Etisalat UAE has led the regional and international standardisation activities working in close coordination with UAE's Telecommunications and Digital Government Regulatory Authority (TDRA). This has included putting the necessary technical specifications and regulatory environment in place, while ensuring timely availability of unique spectrum resources. By 2019, we'd enabled key sites across the UAE with 5G. In hindsight, the implementation of the 5G network in the UAE before 2019 was so important for the economy, especially as the pandemic hit soon after, disrupting the way organisations did business and forever impacting people's lives as well as industries and economies.

Today, we can see that 5G deployment is accelerating the UAE's digital transformation boosting the country's reputation as the Middle East technology and digitalisation hub. We are proud to have been instrumental in maintaining the UAE's network leadership with one of the fastest and most advanced networks in the world as well as its global FTTH penetration leadership.

5G makes phenomenal visitor experiences possible at Expo 2020 Dubai, the fastest 5G event on Earth

5G is not about bringing yet another piece of technology to the table. The core reason for implementing 5G revolves around changing lives, and we have already seen how 5G has revolutionised industries and sectors, offering enterprises the opportunity to hyperscale and expand to new geographies.

With the unprecedented level of 5G speed, we were able to harness the power of next-generation technology and networks to provide excellent coverage with optimal performance to Expo 2020 Dubai.

Implementing cutting edge digital services across a 483-hectare site required a highly resilient 5G, WiFi and fixed network with cutting edge digital services. To ensure that visitors could enjoy spectacular experiences at Expo 2020 Dubai, it was imperative to implement the 5G network that allowed us to run flawless digital and telecom operations, host superior data connections, as well as provide robust security and pavilion infrastructure. We did this by deploying 8,500 mobile access points, 700km of fibre optic cable, 800km of cabling for indoor mobile and Wi-Fi network requirements, two data centres within the site, and redundancy delivered as a dedicated fallback Wi-Fi network.

Through 5G, international participants at the 192 country pavilions were able to tap seamlessly into e&'s cloud technologies, Big Data, AI and Machine Learning solutions as well as our digital applications such as targeted marketing, Cloud Talk, end-to-end managed digital signage solutions, pavilion analytics and more.

With the unprecedented level of 5G speed using mid-band spectrum – a median download speed of 1.1 Gbps over six months – we were able to harness the power of next-generation technology and networks. We are proud that we provided Expo 2020 Dubai with the fastest speed on record anywhere in the world and were instrumental in powering the expo's ranking as the fastest event on earth.

In fact, the 5G network performance at Expo 2020 Dubai has far superseded all mega global events from the 2022 Super Bowl to MWC Barcelona 2022 and the Summer Games in Tokyo, 2021.

5G as the ultimate enabler for digital transformation

5G networks can deliver the level of performance needed for an increasingly connected society. Let's think back to when we used 4G mobile networking. We were faced with the limitations of watching top-quality videos through our smartphones whenever we so desired. 5G has eradicated the buffering times that were previously experienced with 4G, as well as eliminated the need for telephones. In addition to providing low latency, higher speeds, increased bandwidth, and more efficiency, 5G has the capacity to interconnect a range of devices at the same time.

Through 5G, international participants at the 192 country pavilions were able to tap seamlessly into e&'s cloud technologies, Big Data, AI and Machine Learning solutions as well as our digital applications such as targeted marketing, Cloud Talk, end-to-end managed digital signage solutions, pavilion analytics and more.

5G is already offering endless innovative possibilities to springboard from. It has opened the doors for us to deploy end-to-end Internet of Things (IoT) technologies to enterprises as we work towards a smarter, safer and more sustainable world. 5G will evolve to become the fulcrum which delicately holds the possibilities to drive optimal operations of various sectors and industries such as smart and sustainable cities, retail, fintech, Industry 4.0, oil and gas, utilities, manufacturing, logistics, healthcare, eGovernment and defence.

Building on our 5G advanced capabilities, I foresee that we will continue to enable emerging use-cases and applications over secured 5G slices spanning from interactive cloud gaming for entertainment to mission-critical communications across the country. Such an expansive 5G portfolio will focus on the strengthening of immersive customer experiences and will include Augmented Reality (AR) and Mixed Reality (MR), as well as supporting massive communications for broadband IoT applications. We will also see the rapid development of fully automated industries equipped with 5G robotics, leading to autonomous driving both on the ground and in the air. I have no doubt that 5G along with ever-evolving AI, Big Data and blockchain technologies, will drive our transformation towards achieving the country's objectives for a digital economy across all domains of our smart cities.

Expo 2020 is not our first 5G mega-project, and it certainly won't be our last. We will continue to bring pride to the UAE and encapsulate the spirit of new-age technology that will benefit individuals, enterprises and governments. We will achieve this by delivering premium connectivity enabled by a strong infrastructure through our 5G and fibre optic capabilities at Etisalat UAE.

REGIONAL NEWS

UAE e-Commerce Business Set to Gain Momentum in the Post-Covid Era

E-commerce in the UAE is set to gain further momentum as more businesses and shops gear up to strengthen their online services in the post-Covid-19 era, experts say. Hatem El Safty, CEO of Business Link, said the UAE's e-commerce sector is growing at a faster pace and soon it will join global powerhouses like the United States and China as high-net-worth individuals and millionaires flock to the emirate and show interest in Information Technology, online services, and start-ups. "Based on the recent inquiries we have received; it is evident that the UAE has become a global favorite for entrepreneurs and investors alike. Most inquiries come from Sri Lanka, Russia, Egypt, and the UK and we are incredibly positive about this influx of interest from foreign investors," El Safty said. Elaborating, he said rising internet penetration, growing incomes, increasing presence of international players, and quick adoption of digital payment solutions drove significant growth in the e-commerce sector during the pandemic. The UAE e-commerce market is expected to reach $27 billion this year chiefly due to exponential growth in Dubai's small and medium enterprises as the emirate hosts more than 10,000 SMEs.

E-commerce sales in the UAE are estimated to grow by an average of 23 percent per annum between 2018 and 2022, according to Statista. Faisal Qureshi, Chief Marketing Officer at Business Link, said the UAE's e-commerce sector has a promising future as more investors are keen to set up their businesses in the country. "We have observed an increasing trend of entrepreneurs wanting to start a business in the UAE. Especially post-Covid, increased people are interested in setting up their business here because of the incentives and support from the government," Qureshi said. "If you are an entrepreneur on the rise and looking to invest, expand your business, or going to launch a start-up in the UAE, reach out to Business Link. We will offer you a step-by-step guide to establish your base in one of the fastest growing economies in the region," El Safty said. Additionally, he said investors can also consult the business advisor group for a free session if they choose to discuss some prospects. "E-commerce growth continues to accelerate in the coming months. The sector has the potential to be tremendously profitable, partially due to the nation's young and tech-savvy demographic," El Safty concluded.

UAE Ranks Third in the World in Internet Speed, 44th in Digital Well-Being

According to a recent report, the UAE ranks 44th in the world regarding digital well-being. The Digital Quality of Life Index (DQL) studies over 7.2 billion people all over the world and ranks quality of life based on digital factors such as internet speed, quality, affordability and security. The UAE's Internet quality ranks third in the world - 54 per cent better than the global average. Internet quality takes into account speed, stability and growth. The Emirates mobile Internet speed ranks higher than fixed broadband in the global ranking, at 247.7 Mbps/s. Since last year, DQL reports, mobile Internet speed in the UAE has improved by 29.8 per cent, and fixed broadband speed has increased by 28.1 per cent.

Source: The Digital Quality of Life Index (DQL) studies over 7.2 billion people all over the world and ranks quality of life based on digital factors such as internet speed, quality, affordability and security.

Report by UNESCO IITE and Huawei Highlights the Vital Role of ICT in Higher Education in the Middle East

A joint report by the UNESCO Institute for Information Technologies in Education (UNESCO IITE) and Huawei has revealed the importance of developing ICT talents and creating relevant ecosystems to enhance ICT skills in the Middle East and expand access to career opportunities in the digital world.

Titled: "Talent Ecosystem for Digital Transformation: Insight Report on ICT in Higher Education and Technical and Vocational Education (TVET) in the Middle East and Pakistan", the joint publication aims to provide evidence about the capacities for ICT talent development and recommendations for decision-makers and other stakeholders on strengthening the digital skills required for employability in the digital era labor market. The report covers Bahrain, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, UAE and Pakistan. Commenting on the report launch, Mr. Tao Zhan, Director of UNESCO IITE, said, "UNESCO has identified ICT as a tool for accelerating the progress towards the Sustainable Development Goals (SDGs), including equitable access to quality education for all. The report highlights how joint efforts by governments, universities, international organizations, and the business community can have a lasting impact on the region's socio-economic transformation." Mr. Shunli Wang, Vice President of Huawei Middle East, said, "As the report shows, ICT is a powerful tool to facilitate social impact. We are proud to see countries in the region prioritizing ICT skills development to drive sustainable growth. Public-private partnerships are key to achieving ICT talent-nurturing goals. In collaboration with our partners and customers, Huawei will continue to play its role in enhancing ICT skills across the region and preparing the youth for the future of work." "The report also demonstrates a direct link between ICT talent development and digital transformation. Huawei, therefore, remains committed to providing the latest technologies and expertise to advance digitization across the region, while working with partners to ensure the talent is available to drive digitization. We also realize that our partners and the communities we serve have prioritized environmental protection. Huawei's digital power solutions can drive green development through promoting renewable energy, electrification of transport and greening of digital infrastructure to cut carbon emissions," Mr. Wang added. Higher education and TVETs are considered significant enablers of digital transformation and vital components of national visions and strategies for economic development by most of the countries. Therefore, modernizing education systems and upgrading ICT infrastructure have become national priorities across all surveyed countries. Proper infrastructure and qualified human capital are pivotal for achieving SDGs. This focus is reflected in the ever-increasing number of institutions offering ICT-related studies. For example, 23 universities and colleges (out of 30 higher education institutions) in Oman admit students to ICT-related majors. In Iraq, 12 vocational schools offered computer and information technologies courses during the 2018–2019 academic year. In Pakistan, the government has set up the Allama Iqbal Open University (AIOU), the Virtual University of Pakistan (VU), and the Information Technology University to promote ICT in higher education and TVET. Equal access to technical, vocational, and university education is one of the pillars of SDG 4. Data shows efforts taken to address gender inequality in higher education in the region are bearing fruit. The report revealed that female enrolments grew at an annual rate of 5.1% in Saudi Arabia from 2012 to 2018, whereas female students in Qatari public higher education institutions generally outnumbered their male counterparts. In public higher education, the ratio reached 322 to 100 in the 2019–2020 academic year. Digital transformation is conditional on the availability of advanced ICT infrastructure and high connectivity in many countries in the region. Mobile-cellular subscriptions rate is high across the region: 186 per 100 inhabitants in the UAE, 159 per 100 inhabitants in Kuwait, 132 per 100 in Qatar and 124 per 100 in Saudi Arabia. Countries in the region have prioritized collaboration to fast-track ICT talent development, with Huawei leading talent development efforts in the region among ICT private enterprises. In Saudi Arabia, Huawei backs the Saudi Talent Enabling Program (STEP) to nurture 10,000 local talents by 2023. In Oman, Huawei operates ICT academies at Sultan Qaboos University and the University of Technology and Applied Sciences. Huawei has also run an ICT Academy at the University of Bahrain, aiming to train more than 500 students per year in such technologies as cloud computing and AI. Huawei runs the ICT Competition "Seeds Program for the Future in Jordan" to stimulate innovative thought, accelerate integration with advanced technology and upgrade the skills of university students.

Bahrain, Saudi Arabia Discuss Cooperation in IT, ID Card

Bahrain's Information & eGovernment Authority (iGA) recently held a meeting with the Saudi Data and Artificial Intelligence Authority (SDAIA) and the Secretariat General of the GCC to follow up on directives by the GCC Smart Card Technical Team and discuss cooperation in IT. The meeting was in line with GCC efforts to implement the initiatives of the General Secretariat's Economic and Development Affairs, which aim to promote technical integration among Gulf countries. The iGA team was led by Deputy CE of Electronic Transformation, Dr Zakariya AlKhajah and Saudi's team by Director of Public Security and head of the GCC integration team, Brigadier Hamad bin Ali Al Harbi. The Kingdom of Bahrain eKey service and system experience was shared in the meeting along with iGA's efforts to continuously develop eservices, channels and projects noting the support of the Minister of Interior, Lt. Gen. Shaikh Rashid bin Abdullah Al Khalifa. Dr. AlKhajah revealed that the eKey's Basic and Advanced versions are being used by over 611,000 beneficiaries to access more than 153 eServices available via the National Portal, Bahrain.bh. Multi-Factor Authentication (MFA), further improvements to the eKey system, and a facility for eSignatures are all currently under consideration. The agenda covered a range of other items, including methods to accelerate the integration of Bahrain's and Saudi Arabia's ID verification systems with each other as per a previous agreement, which stipulated that this project was to be the first phase of a larger Secretariat General plan to connect the systems of all GCC countries. Benefits of integrating the systems were also discussed, including allowing Bahraini citizens to access Saudi Arabia's Unified National Platform my.gov.sa using the same eKey usernames and passwords they use in Bahrain without the need to create new accounts when visiting Saudi Arabia. The same will apply to Saudi citizens, who will be able to use their Identity Authentication system to access bahrain.bh. This will streamline commercial and investment procedures between the two countries, allowing users to carry out online transactions using a digital ID, without the need for Bahraini investors to visit Saudi Arabia or vice versa. Dr. AlKhajah highlighted Bahrain's commitment towards implementing and supporting ambitious digital initiatives towards comprehensive electronic integration between the GCC countries.

Saudi Arabia, Qatar Discusses Promotion of Growth of Digital Economy

Minister of Communications and Information Technology Eng. Abdullah Bin Amer Al-Sawaha met with Minister of Communications and Information Technology and President of Communication Regulatory Authority of the State of Qatar Eng. Mohammed Al-Mannai. Prince Mansour Bin Khalid Bin Farhan, Saudi Ambassador to the State of Qatar, too attended the meeting. The meeting comes within the framework of the visit of the delegation of the Communications, Technology and Information System to Qatar. The visit aims to open new horizons and cooperation between the two countries in the field of technology and innovation, and activate the role of the region in the field of the digital economy. During his meeting with his Qatari counterpart, Eng. Al-Sawaha discussed the importance of activating the partnership between the two brotherly countries in the fields of supporting the growth of the digital economy and innovation, in addition to activating the initiatives included in the Saudi-Qatari Coordination Council.

97% Mobile Phones Used by Pakistanis Built Locally

97 percent of the mobile phones used by Pakistanis are made domestically, according to Almas Haider, Chairman of the Engineering Development Board (EDB). Except for one brand, all mobile phones are made in-country. At a session on alternative energy sources hosted by the EDB and titled "Solar panel and allied equipment production policies," he made the comments. A $1.25 million order for the first batch of mobile phones to be exported has been placed with EDB, he added. He stated that EDB is engaged in the localization of solar panels. The government is establishing a comprehensive policy for the solar business, according to federal minister for industries and production Murtaza Mehmood. This policy calls for the conversion of agricultural tube wells and public buildings to solar power. A federal Minister noted that a national evaluation indicated that Pakistan's demand for solar energy (including off-grid and on-grid) was expected to be approximately 4 GW in 2022 and to rise to about 6-7 GW in the following two years. With such a high demand, he continued, "It was important to seek for alternatives to promote and incentivize local manufacturing of solar panels and related equipment. The Minister stated that by reducing charges and taxes on imported solar panels, Pakistan could begin the process of local manufacture with assembly in the first phase. Pakistan also has stockpiles of essential raw materials for producing solar wafers. After that, he said that a 5-year plan was required to further streamline the tax and tariff system in order to give local manufacturers a level playing field. According to him, the current administration wants to encourage the country's move towards solar energy by providing incentives like tax breaks and the duty-free import of equipment and plants. Furthermore, according to Murtaza Mehmood, Pakistan's solar sector cannot compete with that of China since solar panels are produced there more cheaply. He urged the private sector to be competitive in the global marketplace while stating that the government is focused on removing barriers for regional businesses.

LIPTC Signs Agreement with Cisco

Libya's state telecoms holding company, LIPTC, signed an agreement with the American ITC giant Cisco. The agreement included several points, the most important of which are:

1. Implementation of digital transformation and data automation projects in joint cooperation between the two companies in order to develop a specific plan and timetable for the implementation of these projects.
2. Identifying some projects to achieve the 2025 vision of the holding company: smart citizen, smart companies, smart cities, smart countries; As well as promoting the services provided by telecommunications companies to all Libyan sectors.
3. Training specialists on the latest developments of Cisco, by providing the Libyan Academy of Communications and Informatics for accredited training courses.

LIPTC said this strategic agreement comes for the purpose of accessing the highest technologies that benefit the telecommunications sector in the Libyan market, and providing the highest telecommunications services through the Holding Company as well as its subsidiaries, whether for mobile services, Internet services and connectivity networks.

Sarsabz Pakistan Mobile App Claims Fastest Growth Within the Agri-Sector

Being near to completing one year since its launch, the 'Sarsabz Pakistan' mobile app has garnered immense popularity and attention amongst the Pakistani farmers' community. The app recently marked a record number of more than one hundred thousand downloads in a short time span of ten months, making it the country's fastest-growing mobile app within the agriculture sector and the top-rated educational app on Google Playstore. The Sarsabz Pakistan app caters to multiple needs of the farming community, providing them with timely farm advisory and information updates to help maximize their crop yield and productivity. The advisory support features of the app include crop planning support to manage multiple farms and crops in a given season with step-by-step alerts on crop management, a calculator tool for planning precise application of fertilizer according to the 4R rule – right source, right rate, right time, right place, requesting general advisory and free soil and water testing visits by qualified Fatima Group agronomists to maximize crop yield through effective use of fertilizer. At the same time, the information update features of the app also assist the farmers through crucial weather updates and forecasts for timely planning and application of farm inputs, ensuring easy accessibility to fertilizer at company rates through a comprehensive list of nationwide Sarsabz dealers along with their contact and location details, updates on current commodity market rates, and latest news bites related to the agriculture sector. While expressing her views about this platform, Rabel Sadozai, Director of Marketing and Sales at Fatima Fertilizer said, "The Sarsabz Pakistan app is completely free for farmers to use and benefit from its information and advisory-based features. It serves as a convincing prologue to the fact that digital transformation of Pakistan's agriculture sector is the only way to realize its utmost potential so that it can play a pivotal role in reviving our over-stressed economy." Speaking further about the app's future improvements, Rabel said, "We plan to further enhance this app by allowing farmers to avail quick micro loans and lease farm machinery on easy terms, so they can procure and manage essential farm inputs in a timely and convenient manner." Pakistan's agriculture sector is transforming at a snail's pace towards modernization. However, the success of platforms like the Sarsabz Pakistan app indicates a dire demand for Pakistani farmers to modernize their farming practices through the use of technology and achieve maximum possible growth and efficiency.

Tunisia Ranks Fourth in Africa in E-Government Development Index

Tunisia has moved up three spots to 88th out of 193 countries with in the latest global ranking of the United Nations E-Government Development Index (EGDI). Tunisia, which scored 0.6530 in this edition, compared with 0.6526 in the previous one, is fourth in Africa, through the development of digital administration. The EGDI is published every two years by the United Nations Department of Economic and Social Affairs (UN DESA). It is an indicator based on indices of e-services, telecommunications and human capital. The South African government's performance in developing e-government places the emerging country at the top of the list on the African continent. South Africa moves up to 65th in the world with a score of 0.7357. Mauritius is in second place by ranking 75th in the world and manages to improve its score to 0.7201. Third on the continent, Seychelles is 85th with a score of 0.6793. Tunisia is fourth on the African scale, followed by Morocco (101st) with a score of 0.5915. Then come Egypt (103rd), Ghana (106th) and Cape Verde (110th). Algeria ranks 112th in the world and 9th in Africa. Kenya (113th) closes the African TOP 10. The report points out that only four African countries are among the top 100 countries in terms of EGDI in the last two publications of the United Nations Department of Economic and Social Affairs. They are Tunisia, Mauritius, Seychelles and South Africa.

Saudi Crown Prince Sets Up $24 Billion Fund to Boost Telecoms, Tech Sectors in the Region

Saudi Arabia has announced the launch of a new $24 billion fund to bolster key sectors in five neighboring countries Bahrain, Oman, Jordan, Sudan and Iraq. Launched by Crown Prince Mohammed bin Salman bin Abdulaziz, Prime Minister, Chairman of the Council of Economic and Development Affairs and Chairman of the Public Investment Fund (PIF), the initiative will include the establishment of five investment firms in these countries to boost key sectors such as infrastructure, real estate development, mining, healthcare, financial services, food and agriculture, manufacturing, telecoms, and technology among others. The announcement follows the launch of the Saudi Egyptian Investment Company (SEIC), a wholly owned PIF subsidiary, in August 2022. The announcement comes on the second day of the 6th Edition of the Future Investment Initiative (FII), which is taking place in Riyadh, with the participation of leading investors, innovators, and world leaders. According to PIF, the five new companies will contribute to an increase in regional investment opportunities for PIF's portfolio companies and Saudi Arabia's private sector, bolstering attractive financial returns over the long term, and creating more avenues for strategic economic collaboration with the private sector in the target countries as well as enabling the Saudi private sector. These investments by PIF align with the Fund's strategy, which includes seeking new investment opportunities in the Middle East and North Africa to build lasting strategic economic partnerships and achieve sustainable returns, grow PIF's Assets Under Management, and diversify Saudi Arabia's sources of revenue, while underscoring the objectives of Vision 2030.

Etisalat Expands 4G Network to Herat

UAE-backed cellco Etisalat Afghanistan has expanded 4G services to Herat province, Khaama Press reports. 4G services will be available to the cellco's customers for the same price as its 3G plans, the company noted. Commenting on the development, the operator's CEO was quoted as saying: 'The rollout of 4G will enable our valued customers to benefit from the fast and reliable internet anywhere and anytime'.

Pakistan to Expand IT Sector

The Prime Minister Shahbaz Sharif said that the government is committed to facilitating the expansion and growth of the information technology (IT) sector in the country. According to a statement released by the Prime Minister's Office, Sharif said at a meeting that "the IT and telecom sector has great potential that needs to be unpacked." He said the IT and telecom sector should achieve a target of 5 billion U.S. dollars as a contribution to the country's GDP within a year, adding that the government would extend its full support through a comprehensive package in consultation with the industry leaders. Sharif further added that plans are underway to build IT training and incubation centers, telecommunications companies and software houses for the exponential growth of this promising service sector. The prime minister was briefed in the meeting that with a workforce of around 40,000 IT professionals, Pakistan has a thriving IT and telecom sector, the statement said. The country has around 195 million mobile phone users with a growing mobile phone manufacturing capacity, added the statement.

Liquid South Sudan Rebrands as Liquid Intelligent Technologies

Liquid Telecom South Sudan, the local unit of pan-African technology group Cassava Technologies, has officially rebranded as Liquid Intelligent Technologies South Sudan, reflecting its transformation into a 'one-stop-shop technology group' for local businesses and consumers. The rebrand also marks Liquid's launch of several new business-focused services, including cloud and cyber security, which add to its existing range of products. Since its launch in South Sudan in 2019, Liquid has brought terrestrial fiber connectivity to the country, linking it to its network across the East Africa region and beyond, including Burundi, Kenya, Rwanda, South Sudan, Tanzania and Uganda. This network is able to deliver affordable internet access to South Sudanese homes and businesses, while providing fiber connectivity to the capital Juba, connecting mobile operators, carriers, enterprises, and government organizations. Liquid has also invested in VSAT broadband service to extend reliable internet access and enable seamless operations to remote regions while providing backup service to those living in urban centers. 'This strategic rebranding to Liquid Intelligent Technologies is us saying that our customers and the country are now positioning for future applications that run on the assets that we have built in Africa,' said Liquid Intelligent Technologies South Sudan CEO Martin Mushambadope, adding: 'Fast, reliable, pervasive, and affordable internet is a human right. This is a cornerstone of Liquid's investment strategy in South Sudan with terrestrial fiber, satellite, and other wireless technologies. With this rebrand, Liquid will create more recognition and awareness of our ability to provide connectivity and digital solutions for local businesses, empowering them to transform their operations and compete on a bigger scale.'

Qatar State Fund Eyes Vodafone Egypt Stake

The Qatar Investment Authority (QIA) reportedly reached an advanced stage in talks to buy a 20 per cent stake in Vodafone Egypt from Telecom Egypt, part of a wider $2.5 billion investment in state-owned assets in the North African country. Bloomberg reported the potential agreement could be signed by the end of this year. It's not clear which other companies are also being targeted by Qatar's state sovereign wealth fund. In a statement to the stock exchange on Thursday (20 October), Telecom Egypt indicated it had not received any official offer regarding a sale of shares in Vodafone Egypt. Telecom Egypt owns 45 per cent of Vodafone Egypt, while Vodafone Group holds 55 per cent. The UK-based group is in the process of selling its majority stake to Vodacom Group, although the transaction has not yet been completed. In July, Vodafone CEO Nick Read conceded the deal has been "slightly protracted" due to a need to get clearance from national and financial regulators, but expressed confidence that the matter would be concluded soon. Reports last month indicated Vodacom had gained approval from the National Telecommunications Regulatory Authority. However, the Financial Supervision Department of the Reserve Bank of South Africa apparently still needs to approve the deal.

Oman Awarded First IoT License

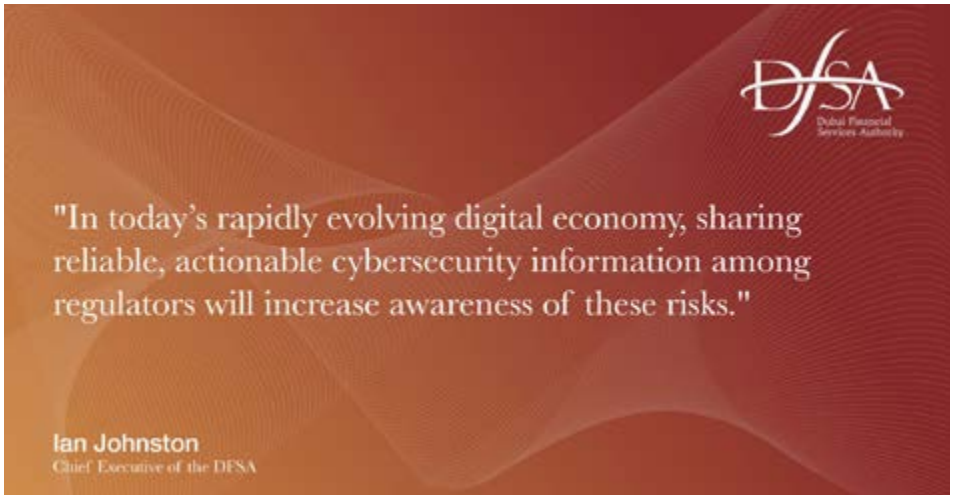
An Omani technology start-up, Artificial Recognition Technology (ART), has been awarded the first ever license by the Telecommunications Regulatory Authority (TRA) to provide IoT services, reports the Oman Observer. ART received its IoT Service Provider concession under the recently enacted IoT Security Regulation Framework and Standard 2022. ART's MD Arfat al Aghbari said: 'While our vision is to optimize digital transformation solutions in Oman and regionally, our mission is to connect the unconnected through our large-scale LoRaWAN Gateway network to cover all areas of Oman. This will enable the 4th Industrial Revolution to take hold in the Sultanate of Oman, thereby spawning the growth of smart cities through deployments of wider and affordable networks that, in turn, will improve the quality of life of individuals and the community.'

UAE Ministry of Economy and Planning & SDAIA Sign MoU

The UAE Ministry of Economy and Planning has signed an MoU with the Saudi Data & AI Authority (SDAIA) to explore ways AI and data can strengthen policymaking and economic growth. The agreement was signed in Riyadh by Faisal bin Fadhil Alibrahim, Minister of Economy and Planning, and Dr Abdullah bin Sharaf Alghamdi, President of SDAIA. The MoU creates a framework for closer strategic cooperation in key areas, including developing indicators monitoring the impact and effectiveness of social and economic policies in the kingdom. Government data modelling and simulation techniques will be substantially enhanced through this partnership. The frequency of policy evaluation will also be strengthened to better understand how the kingdom's public plans, programmes, and initiatives impact the economy, business, and civil society. Both parties will also deepen cooperation by accelerating the integration of the latest economic and scientific reports and intelligence into new social and economic government policy. The Ministry's strategic agreement with SDAIA underpins a concerted effort to support and develop economic policy and development by turning data into a strategic asset that can be applied to pursue the public good. It will enable the kingdom to keep pace with the latest developments in data analytics and artificial intelligence, supporting economic growth in line with Saudi Vision 2030.

UAE Regulators Host Cyber Risk Supervisory College

The Dubai Financial Services Authority (DFSA), the Central Bank of the United Arab Emirates (CBUAE) and the Abu Dhabi Global Markets (ADGM) Financial Services Regulatory Authority hosted the second edition of the GCC Regulators Cyber Risk Supervisory College. The college is a meeting of regulatory authorities that supervise financial institutions operating in the GCC region. The purpose of the college is to discuss the role of the GCC regulators in mitigating cyber risk, share experiences, discuss current and upcoming cyber risk supervision initiatives, and discuss areas for potential collaboration. The college focused on current trends in cyber risk supervision, technology risks related to digital assets and distributed ledger technologies, as well as supervisory expectations of cyber risk management practices applied by regulated institutions. Ian Johnston, Chief Executive of the DFSA, said: "The financial services industry is one of the sectors most targeted by cybercriminals, making cybersecurity a shared priority. In today's rapidly evolving digital economy, sharing reliable, actionable cybersecurity information among regulators will increase awareness of these risks." Ahmed Al Qamzi, Assistant Governor for Banking and Insurance Supervision at the CBUAE said: "The CBUAE has defined a clear action plan to improve the cyber infrastructure in the UAE's financial system, as it comes as part of the CBUAE's strategic indices in which we contribute to various pillars of the Global Cybersecurity Index. We appreciate the efforts taken by the stakeholders and regulators and affirm our commitment towards raising the necessary awareness to further enhance the UAE's financial system resilience from potential threats." Emmanuel Givanakis, CEO of ADGM Financial Services Regulatory Authority said: "As the financial services regulatory body in ADGM an International Financial Centre, creating a trustworthy and agile environment for our stakeholders is at the core of our regulatory framework. We consider the cyber-resilience of our licensed



entities as a top priority and are consistently striving to deepen our understanding of the inherent and emerging risks in the area of cybersecurity to protect our stakeholders in particular the investors. In keeping with the pace of change, amidst aspects of increased technological complexity, a key emphasis is placed on our responsibility to promote the adoption of policies and practices that aim to create stable and safe financial ecosystems that are responsive to change."

Kuwait Ranks 2nd Among GCC in 5G Network Availability

Kuwait ranked second among the Gulf Cooperation Council (GCC) countries in terms of the availability of the 5G telecommunications network, with a rate of 33.6%, according to a report issued by Opensignal, an analytics company measuring mobile network experience. In terms of download speed through the 5G technology, the UAE topped the GCC countries with a speed of 316.8 MB/s, with Qatar in second place with 278.5 MB/s, and then Kuwait with 263.4 MB/s. The same three countries also topped the list of download speeds in terms of peak rate, as the UAE scored 743.3 MB/s, Qatar 713.4 MB/s, Kuwait 663.7 MB/s, followed by Saudi Arabia 635.9 MB/s, Sultanate of Oman 503.5 MB/s, and Bahrain 469.4 MB/s second in that order. It is noteworthy that Saudi Arabia and the Sultanate of Oman recorded a difference in the rate of peak speed to normal times, an average of 2.7 times in favor of peak times. The results of the upload speed through the 5G technology were much slower than the download speed. Qatar topped the average download speed in the region, then the UAE at 27.6 MB/s, Kuwait at 24.6 MB/s, then Saudi Arabia at 23.7 MB/s. second, then Bahrain at 15.3 MB / sec, and finally the Sultanate of Oman at 13.5 MB / sec.

The following are the specific speeds of the 5G network services when used:

1 – Kuwait ranks first in 5G video experience, at 75 points, being the only market where users have an excellent experience (75 points or higher on a 100-point scale).

2 – The UAE ranked second at 72.4 points, then Bahrain at 71.5 points, Saudi Arabia at 68.8 points, Qatar at 68.6 points, and then the Sultanate of Oman with 67.9 points.

3 – The UAE topped the GCC countries in gaming experience via 5G with a score of 74 points, followed by Qatar at 69.6 points, Bahrain at 69.6 points, Kuwait at 67.4 points, the Sultanate of Oman at 61.5 points, and Saudi Arabia at 59.7 points.

4 – In the experience of voice applications, such as: WhatsApp, Skype, Facebook Messenger, and FaceTime via 5G, Qatar topped with 80.6 points, followed by Kuwait with 79.6 points, the UAE at 79.5 points, Saudi Arabia at 78.1 points, Bahrain at 77.7 points, and the Sultanate of Oman at 77.4 points.

5 – The fifth-generation technology continues to progress in the countries of the Cooperation Council, so that users can enjoy improved speeds, according to OpenSignal.

Tunisie Telecom and Huawei to Launch Innovation Laboratory

An innovation laboratory aimed at stimulating the growth of the 5G network in the coming years will be created in Tunisia, this is what has been agreed between the national fixed and mobile operator Tunisie Telecom and the Chinese group providing solutions in the information technology and communication sector " Huawei. The objectives of this innovation laboratory will be to select partners in the technological ecosystem and develop digital solutions, test and validate them to make commercial applications, Tunisie Telecom said, without specifying the exact date of launching this laboratory. The two parties agreed on the creation of this laboratory during the annual event "Tunisie Telecom & Huawei Strategy to execution Summit 2022" which was held recently under the theme "Together, create the future", in Tunis, on the occasion of the 20th anniversary of their partnership. On this occasion, CEO of Tunisie Telecom, Lassâad Ben Dhiab reaffirmed the solidity of the partnership between the two major players in the ICT sector in Tunisia, stressing that "the success of Tunisie Telecom is based on solid and sustainable strategic partnership agreements. The General Manager of Huawei Tunisia, Lin Xingshuo said that this cooperation with Tunisie Telecom will help Tunisia to better position itself in this new digital world and to accelerate its digitalization. On the sidelines of this meeting, the two parties signed a memorandum of understanding to strengthen cooperation between them.

Pakistan Networks: 96% of Flood-Damaged Sites Repaired

Industry watchdog the Pakistan Telecommunication Authority (PTA) has announced that 96% of damaged network sites in flood-affected areas have been restored. At its peak 3,386 sites were damaged by the recent floods, but repairs carried out by the telcos, civil and military authorities and the PTA have restored 3,251 of those sites, the regulator confirmed. Only 135 sites remain offline, with those mostly located in inaccessible areas of Balochistan and Sindh but the PTA notes that other sites are active in those areas, preventing a communication blackout. The PTA added that it had recorded 120 breaks in national fiber-optic backhaul infrastructure, but all of these have now been repaired.

TDRA Recognized at Brandon Hall Awards 2022

H.E. Eng. Mohammad Al Zarooni, Deputy Director General for Information & Digital Government Sector. The Telecommunications and Digital Government Regulatory Authority (TDRA) announced that its Digital Enablers Training Program and Digital Capabilities and Awareness Strategy have won gold and silver medals at the Brandon Hall Awards 2022. The Digital Enablers Training Program has won two gold medals for Best Use of Technology for Learning and Best Learning Team categories, and a silver medal for Best Association Professional Development Program. The Digital Capabilities and Awareness Strategy have won the silver medal for Best Advance in Creating a Learning Strategy category. Commenting on this achievement, H.E. Eng. Mohammad Al Zarooni, Deputy Director General for Information & Digital Government Sector said: "The UAE has become a title for success in the field of digital transformation, with a long list of achievements that draw the attention of stakeholders in this field. We are proud of the recognition for two of our key programmes that we have adopted within the framework of digital enablement of society and government, in line with TDRA's strategic role." H.E. Al Zarooni indicated that granting the award to the Digital Enablers Training Program and the Digital Capacity Building and Awareness Strategy constitutes a meaningful step towards achieving the objectives of the Digital Government Strategy, which aims to enhance national capabilities in society, noting that the Digital Enablers Training Programme is one of many programmes provided by TDRA through its Virtual Academy, which plays an active role in spreading the culture of digital transformation and training in future skills, tools and concepts. It is also considered part of TDRA's social responsibility efforts. TDRA Virtual Academy is one of the digital enablers included in the comprehensive digital transformation roadmap, which has contributed to training more than 300,000 trainees from 50 countries over the past years. The Digital Enablers Training Program was launched with the aim of building the skills of government and private sector employees with regard to digital transformation enablers, to enhance the necessary capabilities in this field, in order to provide digital services that meet the needs of customers, and enhance the building of an integrated and comprehensive digital life in the UAE.

UNICEF Holds Program on Online Safety of Children in Bangladesh

"After opening the Facebook account, I gave the password to a friend. He started spreading various information, pictures from messenger to my relatives. I was humiliated in many ways by my family, relatives. I was bullied by my friends. After that, I was forced to change my Facebook account." Sabina was sharing her experience online at the closing ceremony of the program, "Be Smart, Use Heart" on the theme "Online safety of every child in Bangladesh" at Bangladesh Shishu Academy in Dhaka. Kamrangichar resident Masuma shared a similar experience. Due to lack of security, this student was eventually bound to change her SIM and mobile phone. In a study, "An Assessment of Viewership of the Online Safety Intervention of Child Protection" by Unicef, a survey was conducted on internet users aged 10-19 years in 28 districts of Bangladesh and 2.5% of adolescents were found to have been victims of cyber bullying in the last six months. At the end of the research presentation, Dr. Suaib Mohammad of Search Limited said that although the percentage of bullying is low here, its impact is very high. Due to cyber-bullying, victims as well as their family members are in danger. SM Latif, joint secretary, Ministry of Women and Child Affairs, said: "We are moving towards the fourth industrial revolution – artificial intelligence. But unfortunately, the negative effects of the internet on us increase further. About 70% of students now use the internet. The internet is an addiction like drugs. So, we need to know our limits while using it." Monira Hasan, Unicef Bangladesh Child Protection specialist, presented her paper on "Enhancing Child Online Protection and Engaging Adolescents as Agents of Change in Bangladesh". She said that between 2018-2021, trained social workers of UNICEF and MOSW received 4,90,217 calls at Child Helpline 1098 (CHL) from children asking for cyber safety. In addition, during the Covid-19 pandemic, the education of children and teenagers was transferred to online platforms in large numbers, so the issue of online safety has become essential. Therefore, this program is being conducted with the aim of creating a safe learning space for safe online participation of children. Grameenphone Head of Communications Khairul Bashar said that in addition to the awareness program, online safety should be highlighted in textbooks. Unicef's Child Protection Section Manager Elisa Kalpana, Grameenphone Head of Partnership and Strategic Project Rasna Hasan and Head of Social Impact Farhana Islam, among others, spoke on the occasion. According to Unicef, more than 500,000 children and adolescents, 470,000 secondary school students, 73,947 teachers and 50,000 parents have been trained under the online safety program.

Ooredoo Finalizes Myanmar Exit Deal

Qatar's Ooredoo Group has entered into a definitive agreement to sell its Myanmar division to Singapore-based Nine Communications for an enterprise value of approximately USD576 million and total equity consideration of USD162 million. The sale comprises the transfer of the Qatari Group's 100% stake in Ooredoo Asian Investments (Singapore) (OAI), the holding company that owns mobile provider Ooredoo Myanmar and Ooredoo Myanmar Fintech Limited (OMFL). The transaction is subject to customary closing conditions, including regulatory approvals in Myanmar. Regarding the sale, Ooredoo Group CEO and MD Aziz Aluthman Fakhroo was quoted as saying: 'Ooredoo Group has gone through an extensive business review resulting in a reassessment of its overall strategic direction. The difficult decision to divest from our Myanmar business is a direct result of this review to reshape our portfolio as a leading telecommunications company. It was important for us to make this call at a time when Ooredoo Myanmar is performing at its strongest to ensure the business continues from strength to strength. We will ensure a smooth transition with the least possible disruption adhering to all local requirements.'

Saudi Minister of Communications and Information Technology delivers the speech at the Plenipotentiary Conference of the ITU

The Minister of Communications and Information Technology, Chairman of the Board of Directors of the Communications and Information Technology Commission, Eng. Abdullah bin Amer Al-Sawaha, has delivered Saudi Arabia's speech at the International Telecommunication Union's (ITU) Plenipotentiary Conference (PP22), held in Bucharest, Romania. Addressing the first main session of the conference, Al-Sawaha outlined the Kingdom's work to pursue the strategic goals of the ITU and ensure a sustainable digital future for all – drawing particular attention to the major achievements in the domestic and global digital arena carried out in collaboration with the ITU over the last four years. Al-Sawaha highlighted the Kingdom's progress towards a digital economy, detailing a USD 3 billion incentive package that supported the connection of 3.5 million houses to the optical fiber network (FTTH). Some of the top achievements highlighted by the Minister included Saudi Arabia's top ten global rankings in internet speed and penetration, top three ranking globally in the digital divide (scoring less than 1%), and the Kingdom's second placing among G20 countries in spectrum allocation. Turning to digitalization and society, His Excellency drew attention to Saudi Arabia's growing resource of digital skills and capabilities, where ICT jobs increased from 150K to 318k over the past four years to form region's largest pool of digital talent. Moreover, women's participation in the digital field has exceeded 30.5%, higher than the EU, G20, and Silicon Valley averages. Al-Sawaha revealed that digital entrepreneurship has tripled in the Kingdom, with this year's venture capital financing exceeding the total value of the previous three years. Saudi Arabia has presented three unicorn companies to the region, while this year women's participation in digital entrepreneurship reached a level three times higher than previous score. Looking to the future, Al-Sawaha described the many ways in which the Kingdom is harnessing technology and innovation to create smart cities, the foremost example being THE LINE that forms part of the NEOM project. THE LINE is a civilizational revolution that puts humans first, with no carbon emissions and 95% of land preserved for nature. It will also be the location of Saudi Arabia's world-scale, green-hydrogen-based ammonia production facility – a USD 5 billion project that reflects the Kingdom's commitment to maintaining its leading position in the field of renewable energy. Al-Sawaha concluded his speech by conveying the Kingdom's pride in its 57-year membership of the ITU. He stressed Saudi Arabia's determination to continue its efforts to support the Union's initiatives, consultation groups, committees and councils through its presidency, membership or sponsorship, in order to reinforce the ITU's promotion of increased coordination and standardization in the digital world, to empower humanity and enable a prosperous future for all.

Saudi Arabia's Contactless Payment Penetration Rate is '94% of all Digital Transactions'

Saudi Arabia has been one of the leading countries in contactless payments, with a penetration rate of 94 percent of all digital transactions as compared to 70 percent in other developed countries, Maria Madvedeva, vice president at Mastercard Saudi Arabia and Bahrain, told Arab News. "The percentage of Saudi youth willing to experiment with new methods (of payments) is about 69 percent. But the rest of the world is at 60 percent. The desire to really look at new solutions is extreme here in the Kingdom," she told Arab News during the Global AI Summit in Riyadh. Madvedeva is betting on the Saudi fintech ecosystem to continue to expand rapidly, and believes that Mastercard will grow with it. "As we have seen opening up of Open Banking, as we'll see opening up of buy now, pay later and Central Bank Digital Currency technologies, we will continue to invest and grow together with the country in those areas," she said. She added: "We have so many opportunities to convert cash, and look into digitizing over different cash aspects in government, commercial, business, and also in the personal space." As the rise of buy now, pay later options is increasing within the Kingdom, Madvedeva believes that installment payment options will be the future of Saudi consumer buying, adding that Mastercard will play a huge role in enabling that technology in the Kingdom. Mastercard has also signed a three-year partnership with Saudi Esports Federation as an official sponsor to one of the largest gaming events in the world, Gamers8. Madvedeva said that the partnership aims to promote digital payment acceptance within the gamers' community in the Kingdom. "Our agreement is creating

the payment hub with the Saudi Esports Federation that would take gamers beyond physical cards, and into the world of the Metaverse and virtual reality space," she explained. The company has also launched Mastercard Ventures that aims to drive the adoption of virtual reality and the Metaverse in the Kingdom. Mastercard has recently acquired a minority stake in Saudi-based fintech company, HyperPay, to fuel digital payments between merchants. "HyperPay has been a cornerstone of us being embedded into the Saudi ecosystem," Madvedeva said. Moreover, she stated that the company has made an investment into Network International in Saudi Arabia. Network International is part of the Saudi Fintech Hub Sandbox and it is working closely with Mastercard to drive new payment methods in the Kingdom.

SpaceX Receives Starlink License in Qatar

Qatar's Communications Regulatory Authority (CRA) announced on that it has granted SpaceX a license to provide Starlink satellite internet service. According to the CRA, SpaceX subsidiary Starlink Satellite Qatar was awarded an Individual License for the Provision of Public Satellite Telecommunications Networks and Services. The license was granted after consultation with stakeholders and other government departments. The CRA said in a statement that the license will help to improve the availability of telecommunications services in remote areas of the country, particularly in areas such as oil and gas platforms at sea, ships, yachts, and aircrafts where internet is not fully available, and provide complementary and alternative telecommunications services for individuals and enterprise consumers. "The grant of this license is consistent with international trends in the field. It contributes to the development of the Information and Communications Technology sector and encourages more foreign investments in the country; therefore, diversifying the national economy, which supports Qatar National Vision 2030," the statement said. (via Gulf Times) With the granting of the license in Qatar, SpaceX is now allowed to operate in two countries in the Gulf Cooperation Council, a union that consists of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. SpaceX received a license in Bahrain earlier this year. The company has not announced when Starlink service will be available in Qatar or Bahrain, although the SpaceX availability map shows Qatar is expected to receive the service in Q1 2023, while Bahrain has a more general "2023" timeline.

Digital Investment Boost for Key Pakistan Cities

Pakistani e-commerce platform Daraz this week launched the country's first automated smart distribution centers in Karachi and Lahore in collaboration with Cainiao Network, the logistics arm of China's Alibaba Group, the first such set-up in South Asia. Equipped with innovative smart technologies such as an automatic assembly line and a smart distribution set-up, the centers are the most technologically advanced logistics facilities in South Asia, and mark Cainiao's first deeply integrated distribution center network in the region. The two facilities span more than 50,000 sq m each, and have capacity to process 428,400 orders daily. Cainiao has so far built hundreds of automated distribution centers of varying scales in China, and 10 smart distribution hubs across Europe, Asia and America. Dr. Ding Hongwei, general manager of Cainiao Technology, said Pakistan had been selected as the first location in South Asia to set up smart distribution centers because of the potential of its digital sector. "Our great confidence in the investment in Pakistan comes from its significant growth and high potential of the digital sector, and strong support from local government in infrastructure and policy as well," Ding said. "We constantly innovate our operations and technology in Pakistan to continue scaling and enhancing our customer experience," Bjarke Mikkelsen, CEO and founder of Daraz Group, said at the launch ceremony earlier this week. "Daraz is introducing smart technology in the country to bring more efficiency in our logistics," said the CEO. "Launching our centers in Karachi and Lahore is a key step of this partnership, and we look forward to growing it in future." Daraz officials said with the launch of the smart distribution centers, sorting capacity would increase manifold and manual errors would go down by more than 90 percent. "This will benefit the entire business chain and improve the customer experience," said Ahmed Tanveer, chief operating officer of Daraz Pakistan. Pakistan's e-commerce market is projected to generate $7.6 billion in revenue in 2022. The market volume is projected to grow by $9.1 billion by 2025, according to Statista, a Germany-based provider of market and consumer data.

Pakistan Imports Cell Phones Worth US$102 Million in July, August

Pakistan imported mobile phones worth $101.864 million during the first two months (July-August) of the current fiscal year 2022-22, and registered a negative growth of 64.38 per cent when compared to $285.947 million during the same period of the last year. Pakistan Bureau of Statistics (PBS)'s data shows that on a month-on-month (MoM) basis mobile phone imports registered 62.51 per cent growth and remained $63.060 million in August 2022 when compared to $38.804 million in July 2022. Mobile phone imports registered 62.16 per cent negative growth on a year-on-year basis in August 2022 when compared to $166.710 million during the same month of last year. The overall telecom imports into the country remained $169.438 million during the first two months of the current fiscal year 2022-23 and registered 53.84 per cent negative growth when compared to $367.051 million during the same period of last fiscal year. However, on a YoY basis, the overall telecom registered a negative growth of 51.311 per cent and remained $101.537 when compared to $208.558 million in July-August 2021-22. On MoM basis overall telecom imports registered 49.54 per cent growth and remained $101.537 million in August 2022 when compared to $67.901 million during July 2022. Other apparatus imports remained at $67.574 million in July-August 2022 and registered 16.68 per cent negative growth when compared to $81.104 million during the same period of last fiscal year. On a year-on-year basis other apparatus remained $38.477 million in August 2022 and registered 8.06 per cent negative growth when compared to $41.848 million in August 2021 and registered 32.24 per cent on a MoM basis when compared to $29.0097 million in July 2022 The local manufacturing plants have manufactured/ assembled 14.94 million phone handsets during the first seven months (January-July) of 2022 compared to 1.16 million imported commercially, says the Pakistan Telecommunication Authority (PTA). The local manufacturing plants have manufactured/ assembled 0.86 million mobile phones handsets in July 2022. The manufactured/assembled mobile phones handsets by local manufacturing plants during the calendar year 2021 stood at 24.66 million compared to 13.05 million in 2020, i.e., 88 per cent increase. The commercial imports of mobile phones handsets stood at 10.26 million in 2021 compared to 24.51 million in 2020, revealed the official data of the PTA. The locally-manufactured/ assembled 14.94 million mobile phones handsets include 8.6 million 2G and 6.33 million smartphones. Further as per the PTA data, 54 per cent mobile devices are smartphones and 46 per cent 2G on Pakistan network.

Omani, Saudi Firms Sign MoU for Investment in ICT

Omani and Saudi companies have signed several agreements and memoranda of understanding (MoU) to invest in the ICT sector, reported Oman News Agency (ONA). These agreements come within the framework of the visit of a Saudi delegation, headed by Abdullah Amer Al Swaha, Minister of Communications and Information Technology. Present at the signing ceremony was HH Sayyid Kamil Fahd Al Said, Itcha Group's Chairman of the Board of Directors. The first agreement, between Ithca Group and Saudi Thiqah Company, aims to enhance cooperation between the Sultanate of Oman and the Kingdom of Saudi Arabia (KSA) in the field of implementing a product conformity, standardization and legal calibration system. It was signed by Said Abdullah Al Mandhari, CEO of ITHCA Group and Ayman Abdullah Al Fallaj, CEO of THIQAH Company. Further, an MoU was signed between THIQAH company and Rihal company to cooperate in developing and implementing joint projects in the field of e-services and information technology (IT). The MoU was signed by Ayman Abdullah Al Fallaj, CEO of THIQAH Company and Azzan Qais Al Kindi, CEO of Rihal Company. The Omani firm Osos and Saudi firm Cloud Solutions signed an MoU on mutual marketing between the two parties in the field of cloud technology solutions. This MoU was signed by Zahir Al Busaidi, OSOS Board of Directors member and Abdullah Al Mayman, CEO of Cloud Solutions. Moreover, a memorandum of understanding was signed between Oman's TmDone company and Saudi Jahez company to study and evaluate means of cooperation in the field of delivery services. This MoU was signed by Ghassab Salman Al Mandeel, CEO of Jahez Company and Yasir Said Al Barami, CEO of TmDone.

Bahrain Prepares to Host First Arab Cyber Security Summit

Preparations are in full swing to host the first edition of the Arab International Cyber Security Summit in Bahrain in December. The event will be held under the patronage of His Royal Highness Prince Salman bin Hamad Al Khalifa, the Crown Prince and Prime Minister, at the new Exhibition World Bahrain, from December 6-8. The summit will be attended by representatives and officials from a number of GCC and Arab countries and cyber security experts and companies from around the world. Addressing a press conference, National Cybersecurity Centre Chief Executive Officer Shaikh Salman bin Mohammed Al Khalifa stressed the importance of the summit for decision-makers, said a Bahrain News Agency report. He stressed the steady growth in the speed of communication technologies with the preparation of the launch of the 5.5G networks, which will contribute to accelerating the transmission of data, which will entail many challenges. "The summit will be an opportunity for decision-makers, specialists and experts in the field of information technology to exchange information, consult and talk about challenges and obstacles," he said. The first edition of the summit aims to develop strategies on how Bahrain and the rest of the world can face the challenges of technological developments, improve data protection and networks. The event will also highlight the important role played by national and international infrastructure in shaping the cyber environment through workshops and discussion sessions from various experts and participating security companies. The summit also aims to address current and emerging cyber security threats, enhance defense, develop policy and shed light on Arab and international efforts in the field of cyber security. Bahrain has put in place the national cybersecurity strategy in accordance with the Kingdom's Vision 2030 to achieve cybersecurity goals, said the report.

UAE and UN Satellite Initiative to Help Bahrain and Nepal Gain Access to Space

A space initiative by the UAE and UN is helping to give access to space to nations that are trying to develop their own space programs. Bahrain and Nepal were recently selected to add their technologies into a satellite called PHI-1. The modular satellite is part of the Payload Hosting initiative by the UN Office for Outer Space Affairs (Unoosa) and the Mohammed bin Rashid Space Centre. Private companies will help build the satellite for the space Centre, with technologies from Bahrain and Nepal to be added in. A launch date has not been given. Unoosa Acting Director Niklas Hedman said that the program is helping emerging space nations build capacities in space science and technology. "I already look forward to seeing the results of the PHI program boosting the space industry in Bahrain and Nepal," he said. Bahrain's National Space Science Agency (NSSA) will develop the Aman payload, which will help secure communication between the satellite and ground station. Nepal's Antarikchya Pratisthan, a non-profit organization, will build the 'Danfe Space Mission' – technology that will study operations of drones in space. "Aman is considered the first Bahraini payload fully designed, integrated and tested by NSSA," said Mohamed Al Aseeri, chief executive of Bahrain's space agency. "This opportunity is unprecedented in our quest to contribute meaningfully to the global effort towards sustainable, peaceful use of outer space and building national capacity in the space field." Bahrain has increased investment in space over the past few years and is a signatory of the US-led Artemis Accords, an international agreement that outlines peaceful space exploration. The UAE and Bahrain have worked together on another satellite – the Light-1 Cubesat – which was launched last year to study charged particles above thunderstorms. Bahrain and Nepal's selection in the first round of the Payload Hosting Initiative will help the nations' engineers to build skills and gain experience in space technologies. Abhas Maskey, the founder of Antarikchya Pratisthan Nepal, said that their involvement will help the organization move closer to Vision 2050 – a program that aims to launch Nepal's first astronaut in space by 2050. "If Nepal is to progress as a spacefaring nation, the country has to take each and every opportunity available to develop self-reliance, perform research and development and build capacity for space," he said. Nepal launched its first satellite NepaliSat-1 in 2019. Since then, it has been trying to increase activities in space, but its space program is struggling to get a decent budget, according to local reports. The National reported earlier that the Mohammed bin Rashid Space Centre would try to develop at least two satellites under the Payload Hosting Initiative each year to help create access to space for developing nations.

Bahrain ICT Investments Expected to Create Over 770 Jobs

The Bahrain Economic Development Board (EDB) has attracted $98m (BHD37m) worth of direct investments from 14 international companies in its Information and Communications Technology (ICT) sector in the first 3 quarters of 2022. Over 770 jobs are expected to be created as a result of these investments in order to help the kingdom reach the objectives of its Economic Recovery Plan by advancing economic growth. Commenting on the investments, Musab Abdullah, executive director of Investment Development – ICT at the Bahrain Economic Development Board, said: "We are pleased to see more and more ICT companies calling Bahrain home for their regional operations. Continuous development in the ICT sector is a strategic priority for the kingdom. The kingdom's highly qualified local talent, best-value operating costs, as well as its strategic location and connectivity to the entire region positions Bahrain as the destination of choice for global ICT companies." Meanwhile, the ICT sector is a major pillar in Bahrain's economy. The sector generates large number of high-value jobs, of which 59 per cent are held by Bahraini nationals. According to statistics released by the Ministry of Finance and National Economy, the ICT sector contributed 6.8 per cent to Bahrain's real GDP at the end of Q4 2021. Overall, Bahrain's EDB attracted $921m (BHD348m) in direct investment from 66 companies during the first nine months of 2022. The investments are expected to generate over 4,700 jobs over the next three years in key sectors, including financial services, ICT, logistics, manufacturing and tourism.

BNET Launches Final Migration Phase for Batelco Fiber Circuits

Bahrain's National Broadband Network (BNET) has announced the launch of the final phase of the remaining Batelco fiber circuits to BNET, as part of the asset ownership transfer from Batelco. The project is a key part of the implementation of the Fifth National Telecommunications Plan to make BNET the operator of a national fiber-optic broadband network, providing wholesale broadband network services to all licensed operators. A joint project team has been formed by Batelco and BNET with a mandate to manage, implement, and supervise the migration process of the remaining Batelco fibre circuits to BNET, supervised by the Telecommunications Regulatory Authority (TRA). The project is expected to be concluded in the second half of 2023.

Oman's First Satellite Set for Orbit

The first Omani satellite, Aman, has successfully prepared for its launch into the Low Earth Orbit, at Newquay, Cornwall, in the UK. Integrated into a launch vehicle, the LauncherOne rocket, the satellite will be taken on its journey into space later this year. Satellite integration is a major step in meeting the objectives of Oman's first space mission. The Sultanate of Oman represented by ETCO, an Oman-based emerging technology innovator; Virgin Orbit, a leading US-based satellite launch company; SatRev, Polish nanosatellite manufacturer and operator and TUATARA, specialists in advanced AI, data analytics and cognitive technology solutions, continue to work on Oman's mission to space. The work undertaken, led to the first Omani CubeSat satellite, Aman, being integrated with the spacecraft during a procedure conducted at Newquay Airport, in Cornwall. The Virgin Orbit integration team led the event, beginning with a final cleaning and checkout of the Omani satellite, ensuring that the Remove Before Flight (RBF) items on the CubeSat were taken away. Once the satellite was prepared, it was placed in the launch dispenser, followed by a series of rigorous checks. "Satellite integration marks an important milestone in the plan to send the first Omani spacecraft into space this year. It is encouraging to witness this first-of-its-kind project in the country's history unfolding and we are looking forward to see it through to a final stage that will occur later this year when it will be launched into the low Earth orbit.", explained Abdulaziz Jaafar, ETCO Chief Executive Officer. "Integration went as planned and it was a complete success. All risks have already been minimized due to the Fit-Check event that occurred during the previous month, where the same Virgin Orbit integration team was on-site at SatRev headquarters in Poland to perform a detailed walkthrough of all planned integration steps." – said Grzegorz Zwoliński, CEO SatRev. The project is fulfilling the Oman Vision 2040, a national program aimed at fostering economic competitiveness and social well-being, stimulating growth and building confidence in all economic, social and developmental relations. Oman's space program will enable groundbreaking scientific research and capture high-resolution satellite images, which will be further analyzed digitally using Computer Vision, Machine Learning, and AI solutions developed by TUATARA in strategic partnership with ETCO. The Omani space project intends to provide long-lasting benefits and unlock new horizons for the next generation of world space explorers and innovators in the space sector, while investing in national talent that will build a promising future for Oman. Looking forward to delivering added value up and down the country, the project will encourage and support companies in Oman to accelerate its transformation into a space-related economy.

Telecommunications Market Indicators & Projections for the Arab World

Arab Advisors Group announced the release of its 17th edition of telecommunications market indicators and projections covering the Arab world. Through separate reports, Arab Advisors Group provides country-based key indicators pertaining to fixed voice, cellular, and Internet services across 18 Arab countries. Each report covers historical data back to 2017 with a 5-year forecast ending 2026. "The telecommunication market of the MENA region remains healthy and with distinct variations among regions. Understanding the nuances of the indicators is key to unlocking opportunities of different levels of maturity across the telecoms value chain which in many countries has developed to highly vibrant eco-systems." Commented, Fayez Abu Awad, Chief Advisor, Arab Advisors Group.

The readily available reports are:

- Algeria's Telecommunications Market Indicators and Projections
- Bahrain's Telecommunications Market Indicators and Projections
- Egypt's Telecommunications Market Indicators and Projections
- Iraq's Telecommunications Market Indicators and Projections
- Jordan's Telecommunications Market Indicators and Projections
- Kuwait's Telecommunications Market Indicators and Projections
- Mauritania's Telecommunications Market Indicators and Projections
- Lebanon's Telecommunications Market Indicators and Projections
- Morocco's Telecommunications Market Indicators and Projections
- Oman's Telecommunications Market Indicators and Projections
- Palestine Telecommunications Market Indicators and Projections

Arab Advisors Group will be releasing the remaining reports throughout the year covering Qatar, Libya, Saudi Arabia, Sudan, Tunisia, the UAE, and Yemen. A list with all previous versions of these reports, alongside our newly and previously published telecom and media research reports, can be viewed on our comprehensive library. Arab Advisors Group's team of analysts in the region produced over 5,600 reports on the Arab World's communications, media, and financial markets. We released our first telecommunications market indicators and projections reports in 2006, totaling 239 reports to date. To date, Arab Advisors Group serves over 945 global and regional companies by providing reliable research analysis and forecasts of Arab communications and media markets to these clients.

Qatar to Host ITU Plenipotentiary Conference in 2026

The International Telecommunication Union (ITU) will hold its next Plenipotentiary Conference, known as PP-26, in Doha, Qatar, four years from now, delegates from governments around the world agreed today. The Plenipotentiary Conference, where delegates representing ITU's 193 Member States set the organization's four-year strategic plan and budget, is ITU's highest decision-making body. ITU is the United Nations specialized agency for information and communication technologies, with a mission to help connect the world sustainably while leaving no one behind. The decision to host PP-26 in Doha was adopted by consensus among the Member State delegations present Tuesday morning, during the second week of ITU's current Plenipotentiary Conference, PP-22, in Bucharest, Romania. The quadrennial gatherings serve as milestones on the path to global digital transformation, which ITU aims to align with United Nations sustainable development priorities. "I applaud the decision to hold the next ITU Plenipotentiary Conference

in Qatar, the successful host nation of previous important ITU events," said ITU Secretary-General Houlin Zhao. "PP-26 – marking less than four years until 2030 – will support accelerated digital uptake, which is crucial for achieving the UN Sustainable Development Goals and ensuring that everyone is connected by the end of the decade." Zhao recalled Qatar's hosting of ITU's World Telecommunication Development Conference in 2006, the Connect Arab Summit in 2012, and ITU Telecom World in 2014. Qatar's Minister of Communications and Information Technology, H.E. Mohamed bin Ali Al Mannai, attending today's session in person, called

the quadrennial Plenipotentiary "the primary event where ITU Member States define the role of the Union in driving the development of telecommunications [and] information and communication technologies (ICTs)." Following endorsements by delegates from countries and regions worldwide during today's plenary session, Romanian official and PP-22 Chair Sabin Sărmaș noted the "overwhelming support" for Qatar to host the 2026 conference and offered to share best practices and insights with the next Plenipotentiary Chairperson. "The State of Qatar has a strong ICT infrastructure that is compliant with international standards, making it one of the leading countries in the world in this regard," Minister Al Mannai said in his proposal to host the conference in Doha. "The State of Qatar is also a world leader in organizing and hosting major events, including high-level global and regional conferences across a variety of sectors." ITU's member states last week elected a new leadership team for 2023-2026, headed by Secretary-General-elect Doreen Bogdan-Martin, who is currently the Director of ITU's Telecommunication Development Bureau. Underlining the challenges ahead for ITU and its membership between now and the newly announced PP-26, ITU's latest statistics show an estimated 2.7 billion people – or one-third of humanity – still lacking access to the Internet. Stark digital divides persist despite accelerating progress over the last two decades and a global connectivity surge during COVID-19.

Middle East Public Cloud Market to Reach US$9.8 Billion by 2027

The Middle East public cloud market is expected to grow at a CAGR of 21% until 2027 and reach an estimated AED36 billion (US$9.8 billion), said Antti Ålander, Senior Channel Manager, EMEA, BitTitan. With IT spending for cloud computing increasing at an exponential rate in the Middle East, BitTitan sees greater growth prospects for its business across the region. "The region is in a very active adoption phase for public cloud services and XaaS (anything as a service) across a wide range of businesses for the next few years," he said.

Increasing penetration

Published by Blueweave Consulting, the Middle East Public Cloud Market Report released earlier this year mentions increasing penetration of cloud services among SMEs as a key driver for the growth of the public cloud market in the region, in addition to increasing demand for Artificial Intelligence (AI) and machine learning services and solutions that enable businesses to monitor, analyze and visualize large volumes of unprocessed data. "Small businesses in the region, especially in the UAE and Saudi Arabia, are expanding their cloud deployment initiatives to enable faster business analytics that will empower their enterprises to compete more aggressively in the market and achieve future growth," added Alander, who will be heading the participation of BitTitan, the global leader in cloud migration and managed services automation, through its international distribution partner Logicom at the forthcoming Gitex Global. The highlight of BitTitan's participation at Gitex will be the relaunch of a licence called the Tenant Migration Bundle for Microsoft 365 to Microsoft 365 migrations with MigrationWiz, which is intended to be used as part of the toolset managed service providers and system integrators use to onboard their clients to Microsoft 365 or Google Workspace in most effective way without disruption to client business.

MigrationWiz

MigrationWiz automates large part of the onboarding projects – specifically scoping and moving existing data from other systems to destination Microsoft/Google tenant (or between cloud tenants). "This enables the IT partner and client to focus on more important matters such as fast and disruption free onboarding experience from client perspective, or enabling their engineers to focus on more profitable tasks from a partner perspective," explained Alander. Looking ahead, BitTitan predicts expanded Microsoft Teams usage beyond chatting as a future trend that will present opportunity for businesses to integrate and automate processes in the new interface.

New possibilities

"Another very interesting case will be the just announced cooperation between Salesforce and WhatsApp. This presents further new possibilities when it comes to engaging your contacts who didn't finalize their shopping cart or prefer chatting over speaking on the phone and can potentially drive sales growth for businesses looking to improve their sales performance in the near future," said Alander.

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ARTICLE

How to Unlock the B2B Growth

The increasingly tough competition in a saturated B2C market and the impact of OTT services have put CSPs' growth strategies under pressure. To create and capture new revenue streams, telecom operators are steadily shifting focus from the consumer segment to the business segment by creating enterprise-centric service portfolios. According to TM Forum, modern CSPs receive about 90% of their revenue from B2C, but in the next 5-10 years, more than 75% expect to get nearly half of their revenue from B2B. Moreover, B2B is an immense opportunity in the 5G era, with a raft of digital transformation projects underway across industries. From mission-critical network support to securing data exchange between connected devices, 5G is expected to sustain various use cases within the B2B market.

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In the Middle East, Allied Market Research estimates that the value of 5G B2B activity will reach $297 million by 2028. To fully exploit these opportunities and monetize 5G investment, MENA telecom leaders are investing in new capabilities, with edge computing being a priority. This trend ties in with operators' efforts to grow revenues beyond core telecom services. To succeed in this market, however, it is necessary to overcome a number of challenges.

B2B Consolidation: Primary Challenges

First, many CSPs resist changing their traditional B2B business model based on centralized control and low business agility. Modern B2B customers have high expectations and want to get the same experience as the B2C segment. Among other things, they require frictionless customer services, fast responses, and personalized offerings based on their unique needs. Besides, 5G business clients need automated low-latency services able to process high volumes of data without delay.

Hassen Hamza
Business Development Manager
Nexign

Second, CSPs lack a comprehensive convergent billing environment capable of handling the complex B2B offering and covering all available products, including partner products, and technologies. Software currently used to bill and invoice complex B2B products and services lacks high-quality automated billing solutions, and a lot of the tasks are manual. Hence, B2B customers receive multiple bills for several products from the same operator and face discrepancies between product fulfillment and product invoicing.

Third, 5G technologies are expected to increase the complexity of B2B dedicated products and services, but many operators are still not ready to handle them effectively. For example, in the MENA region, 5G monetization is still in the early stage: the existing primary 5G offerings include fixed wireless access and EMBB aimed mainly at residential users. At the same time, the B2B offering remains weak, and improving it requires time and resources to address the whole 5G enterprise segment and implement changes on CSPs' side.

Strategies to Advance B2B for Revenue Growth

Improving B2B for revenue growth requires focusing on three primary aspects: end-to-end B2B solutions, long-term partnerships, and B2B2X offering.

First, CSPs should advance the total experience provided to their B2B segment by simplifying and automating processes used for delivering services to businesses. They should act as digital service providers by offering end-to-end B2B solutions that include infrastructure services and digital platforms. Moreover, CSPs will need to ease and speed up the order processing for B2B clients and ensure the absence of any errors during the sales procedure. It is also necessary to provide appropriate reactivity and complete transparency in the after-sales processes, such as dedicated customer care, transparent billing, and invoicing and collection processes.

Besides, the total end-to-end experience provided to B2B clients can be advanced with Multi-access Edge Computing (MEC), a type of network architecture employing cloud computing and an IT service environment at the network's edge. MEC transfers mobile network processing functions from a centralized location to diverse distribution points and helps decrease latency and expand the range of applications and services delivered to B2B clients. Along with 5G, MEC contributes to the digital transformation of CSPs, generates new revenue opportunities, and creates competitive advantages.

Second, another essential telco revenue growth factor is building the right partnerships and valuable partner ecosystems. Partnering with the proper entities and having the capability to integrate new partners easily, quickly, and smoothly will allow CSPs to offer specific B2B services based on unique market demands.

The right partner ecosystem is especially valuable for 5G monetization. For instance, having the right partner with advanced knowledge of the specific business or industrial sector helps successfully implement private 5G networks, such as in industrial sites and airports, in order to expand existing business capabilities and provide businesses with new services and functions unavailable in other systems. In this case, CSPs would act as service enablers handling systems integration, platforms, and data management. These offerings could be interesting for the Middle East, where power and manufacturing enterprises are looking for their own wireless infrastructure. In particular, Allied Market Research predicts that the Middle East market for private networks (including hybrid networks) will reach $144 million by 2028.

Most significantly, private 5G networks have already proven their effectiveness for businesses requiring high reliability and low latency of services, such as smart factories and smart manufacturing. 5G-enabled technologies' use cases are especially impactful in projects related to predictive maintenance, digital twins, self-driving machines, augmented reality, autonomous mobile robots, and others. For example, Ford utilizes 5G to improve communication, safety of the manufacturing process, and quality of products and services. With the help of 5G, the company has successfully reduced delays, achieved wider bandwidth, and improved security and reliability at its factory.

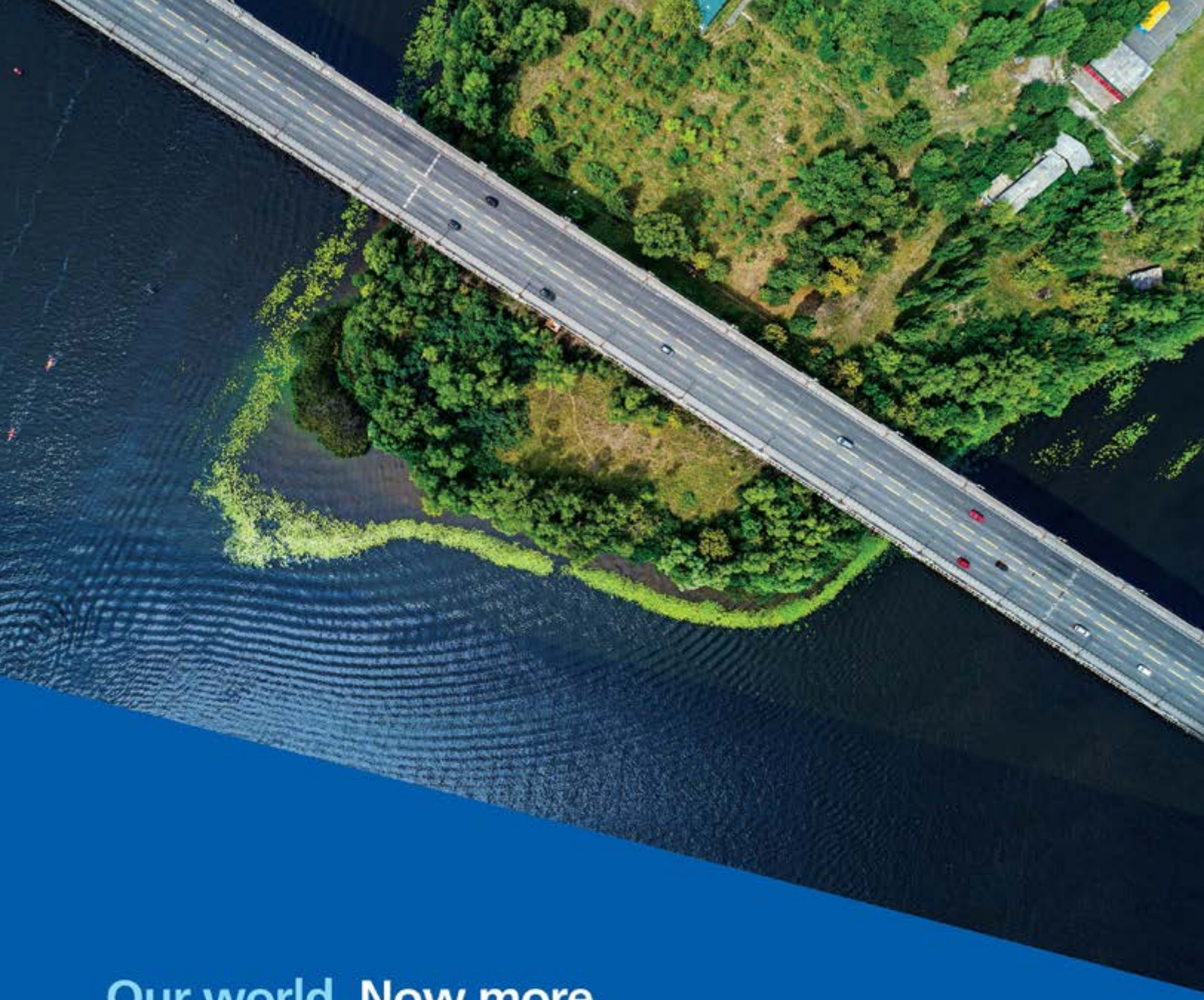
AR running on 5G networks could also enable on-site workers to conduct maintenance, repair, and operations supplies safely. For instance, Schneider Electric's Le Vaudreuil Factory has successfully tested 5G for an AR application that enables operators to superimpose real-time data and virtual objects onto cabinets, machines, or an entire plant. Ultimately, more devices will get connected, the 5G ecosystem will evolve, and costs for deployment will decrease, so private 5G networks could become an increasingly desirable choice for smaller manufacturers and businesses of all sizes.

Finally, CSPs should adopt a broader perspective on future-proof capabilities that will empower them to harmonize revenues from any use case. Therefore, Nexign has introduced a new cloud-native, microservices-based solution designed to help operators consolidate all revenue sources on a single convergent platform. Nexign Revenue Management lets CSPs get unlimited flexibility to capitalize on emerging monetization models and services beyond connectivity while balancing operational efficiency in the increasingly complex environment. It also covers the entire revenue management process and is ready to work with any telecom services, digital subscriptions, or third-party products and bundles.

Positioning Telcos for the B2B Future

During the last few years, B2C data are being considered as a commodity with declining revenues due to the high competitiveness among CSPs and the steadily shrinking international voice market. It has become clear that the B2B market is the only high potential market for telcos. To thrive in this market, CSPs should develop an efficient and focused B2B investment strategy and new offering schemes with innovative, competitive, and personalized products and enhanced business support system environments.

At this stage of 5G deployment, with standalone networks emerging throughout the region, CSPs could provide industry-defining services and capitalize on enabling enterprises to harness such network capabilities quickly and easily. The more businesses see value and monetization opportunities in 5G, the more telecom operators benefit from these services.



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SATELLITE NEWS

Egypt Plans to Launch First Satellite to Monitor Climate Changes in Africa

The Space Committee of the Egyptian Syndicate of Engineers unveiled during a conference Egypt's plan to launch the first satellite specialized in monitoring climate changes in African countries, in partnership with Chinese parties. The announcement comes in the lead-up to the UN climate conference (COP27) scheduled to be held in Sharm el-Sheikh Nov. 6-18, in what constitutes an important step to confront climate challenges, especially in countries most vulnerable to the harmful effects of climate change. Speaking at the Oct. 22 conference, Ahmed Farag, head of the Space Committee of the Syndicate of Engineers, said that a prototype of the satellite will be displayed in Sharm el-Sheikh in conjunction with the UN climate conference sessions in order to explain the role and goals of this satellite. Farag added that the launch of the satellite aims to monitor climate changes in Africa, such as the phenomena of desertification, the increase in carbon emissions, water vapor and wind speed, and this is very important and useful for Cairo and all countries of the African continent to support them in facing the negative effects of climate change. He said that several workshops and educational seminars were held in partnership with a number of specialized experts to activate the syndicate's Space Committee, which was established in August. The seminars also aimed to emphasize the role of educational and research institutions in space science and tackled the close relationship between space and the climate. A source from within the governmental Egyptian Space Agency told Al-Monitor on condition of anonymity that there are indeed Egyptian plans to launch two satellites in Africa — one of which is specialized in monitoring climate changes and whose launch date has yet to be set. Farag said that negotiations are underway with a Chinese party, which he did not specify, to take part in the launch process along with the Academy of Scientific Research and Technology. The details, according to the source, are to be announced upon completion of the negotiations. Also, the source added, another satellite is to be launched in 2023 with the aim of measuring the proportion of plasma in the upper atmosphere. The source also said that the COP27 hosted by Egypt for the first time is a good opportunity for the country to put forth the efforts it is deploying to confront the negative effects of climate change on the African continent, by adopting all sorts of modern technological means in order to win the confidence of international institutions in a bid to provide the necessary funding to support these efforts and achieve the desired goals. Osama Shelbaya, dean of the Faculty of Navigation Sciences and Space Technology at Beni Suef University, told Al-Monitor that Egypt's plan to launch a satellite to monitor climate changes in Africa is important to confront climate-related challenges and the resulting phenomena by monitoring them before they occur and developing plans to deal with them, to avoid or limit any damages or negative effects. He added that launching satellites is very costly, which prompted Egypt to resort to Chinese parties within the framework of Egyptian efforts to confront climate change, which will culminate with the hosting of the COP27. Sami Hashem, head of the Egyptian parliament's Education and Scientific Research Committee, concurred, as he told Al-Monitor that Egypt's plan to launch the first satellite to monitor climate changes in Africa is unprecedented, and it serves as evidence of the state's use of all modern scientific and technological means to limit the harmful effects of climate changes on both Egypt and Africa. African countries, he said, are the most affected and exposed to desertification, water shortage, beach erosion and drought, among other effects. Hashem added that the launch of the satellite is beneficial not only for Egypt, but for all African countries, and it will have a vital and effective role in facing climate challenges, so focus should be on it at the COP27.

Starlink Files for Indian Satellite License

Starlink, the Low Earth Orbit (LEO) satellite broadband provider backed by Elon Musk's SpaceX venture, has reportedly applied to the Department of Telecommunications (DoT) for a global mobile personal communication by satellite services (GMPCS) license, the Economic Times writes, citing unnamed officials. The concession would be the first step towards launching commercial satellite broadband services in India, but DoT officials were cited as adding that Starlink will also need authorization from the Department of Space and spectrum rights before it can begin offering services. The application makes Starlink the third company to file for a satellite broadband permit from the DoT, with Airtel's OneWeb and Jio Satellite Communications having already begun the licensing process.

SpaceX to Launch the 3,500th Starlink Satellite

SpaceX is gearing up to launch another batch of Starlink satellites to low Earth orbit (LEO). Liftoff is scheduled to occur at 10:50 AM EDT (14:50 UTC) on Oct. 20 from Space Launch Complex 40 (SLC-40) at Cape Canaveral Space Force Station in Florida. This mission–known as Group 4-36–will see Falcon 9 loft 54 Starlink satellites to the fourth shell of SpaceX's Starlink constellation, bringing the total number of Starlink satellites launched to over 3,500. Nine minutes later, the engine chill process will begin. In this process, a small amount of liquid oxygen is allowed to flow through the turbopumps of each of the nine Merlin 1D engines on the first stage. This thermally conditions the pumps ahead of the high flow of this cryogenic fluid during engine ignition and avoids the creation of bubbles of oxygen that could damage the pumps. At the T-6 minute mark, RP-1 load will finish on the first stage and the tanks will get ready for pressurization ahead of strongback retraction. The strongback retraction process will begin at around T-4 minutes with the opening of the top clamp arms followed by a roughly one-and-a-half-degree rotation away from the rocket. LOX load will end on the first stage at around T-3 minutes and will continue on the second stage until approximately T-1 minute and 40 seconds. Once propellant loading is complete, the rocket and ground systems will prepare for liftoff. This includes purging the propellant lines to both the booster and second stage as well as performing final software checks. At T-1 minute, control of the automated countdown sequence will be handed over to Falcon 9's onboard computers in a process SpaceX calls "startup." At this point in the sequence, the tanks will also start to pressurize to flight levels. Shortly after, the launch director will then give the go or no-go decision to proceed with the launch. At T-3 seconds, the onboard computers will command ignition of all nine Merlin 1D engines on the first stage, which will ramp up to full power 2.8 seconds later. If engine health is confirmed to be good, the rocket will command the ground computers to release the hold-down clamps, allowing the vehicle to lift off. The flight profile for this mission follows a similar one to all recent Starlink missions to shell four from Cape Canaveral, where the vehicle arches to the northeast over the Atlantic Ocean. The rocket will pass through the area of maximum aerodynamic pressure–or max-Q–roughly one minute and 10 seconds into flight. Roughly two and a half minutes into the flight, Falcon 9's first-stage engines will shut down in an event called main engine cutoff–or MECO. A few seconds after this, both stages will separate and the second stage will ignite its single Merlin 1D Vacuum (MVacD) engine. This will be MVacD's first of two burns during the mission and will last approximately six minutes. Shortly after ignition, the payload fairing halves will separate. While the second stage and Starlink satellites continue on their flight to the target 232-by-336 kilometer orbit, the first stage and fairing halves will return to Earth for recovery and reuse. The first stage will execute its traditional entry and landing burns, targeting a touchdown on SpaceX's Autonomous Spaceport Drone Ship A Shortfall Of Gravitas (ASOG). The fairing halves, meanwhile, will orient themselves for reentry using cold gas thrusters and then parachute down to a soft splashdown on the ocean. These will be recovered by SpaceX's multi-purpose recovery vessel Doug. Both recoveries will occur more than 650 km downrange in the North Atlantic Ocean. Once both the second stage and Starlink satellites have reached orbit, the second stage will initiate an end-over-end rotation maneuver. This will aid in the dispersion of the satellites after deployment, which should happen at around T+15 minutes. Once the satellites are deployed, the MVacD engine on the second stage will perform another burn for deorbit and disposal over the Pacific Ocean. Elon Musk recently shared a video on Twitter of this process as captured by one of the satellite's onboard engineering cameras on a prior mission. Thursday's launch is aiming to put 54 more Starlink satellites into the fourth shell of the first generation of the constellation, bringing the total of Starlink satellites launched to 3,505. Out of these, 275 satellites have already reentered. Of the ones remaining in orbit, 63 are non-maneuvering and 2,704 are in their operational orbit. Falcon 9's first stage for this mission, B1062, will be flying for the 10th time after previously supporting the launch of two GPS-III satellites, two private Crew Dragon missions, the launch of the Nilesat 301 geostationary satellite, as well as four prior Starlink missions. This will put 1062 as the sixth booster in the fleet to reach SpaceX's initial goal of flying the first stages 10 times with minimal refurbishment between flights. SpaceX's launch on Thursday will be the 63rd launch dedicated to Starlink and the company's fifth launch of the month. Another Starlink mission from the Cape was previously scheduled to launch next week; however, this was delayed into November to prioritize maintenance work at the launch pad, as well as to ensure schedule priority for commercial customers. SpaceX's next mission from Florida will therefore be the long-awaited launch of the USSF-44 mission onboard a Falcon Heavy rocket, currently scheduled for no earlier than Oct. 31. Work has been underway at Launch Complex 39A for the past two weeks to prepare the ground systems for the fourth launch of the world's most powerful operational rocket.

Elon Musk's SpaceX Partners with Philippine Tycoon on Satellite Service

Billionaire Elon Musk's Space Exploration Technologies Corp (SpaceX) is expanding into the Philippines by offering satellite broadband service to businesses and the government. Data Lake Inc, a Philippine-based firm partly owned by tycoon Henry Sy Jr, said it signed a deal to be the first partner of SpaceX's Starlink in Southeast Asia. "The Philippines is an archipelago, and connecting our country to the wider world often requires extensive infrastructure," Data Lake Chairman Anthony Almeda said in a statement. The Philippines is made up of more than 7,600 islands, many of them isolated and with mountainous terrain, making broadband coverage difficult for companies. Around 20 tropical storms also typically hit the country every year, often damaging infrastructure and cutting communication links between islands and provinces. SpaceX's Starlink uses a network of thousands of satellites to provide internet access to far-flung regions or when communications are disrupted during natural disasters. In the Philippines, only seven out of every 100 people have fixed broadband subscriptions, lagging behind regional peers like Singapore, Malaysia and Thailand, data from the World Bank show. Earlier this month, the Philippines' information and communications technology ministry said the entry of Starlink in the Philippine market was scheduled for 2023.

Starlink Launches Internet Service for Vehicles on the Go

Space X's satellite internet service Starlink is now taking orders for a new product which provides 'high-speed, low latency' connectivity to moving vehicles in remote locations. Hot on the heels of its new service for connecting aircraft to high-speed web access announced last week, Starlink is now offering the same treatment to moving land vehicles, utilizing its constellation of internet disseminating satellites. It seems to be an upgrade from a previously launched 'Starlink for RVs' service (RV, or recreational vehicle, is an American word for a sort of caravan) which had the stipulation that you had to be parked up to use it. The new service allows you to connect to Starlink's services while moving, which is certainly more useful for GPS. For some reason the mobile version is called 'Flat High Performance'. "The new Flat High Performance Starlink allows users to enjoy high-speed, low-latency internet while in-motion," reads the website. "With a wide field of view and enhanced GPS capabilities, the Flat High Performance Starlink can connect to more satellites, allowing for consistent connectivity on the go." We're told the necessary hardware is designed for a permanent installation on a vehicle and is resilient in harsh environments, and both the standard and mobile versions need a clear view of the sky to work. They're taking orders now for the mobile version with deliveries beginning in December. Last week Starlink started taking orders for a 350Mbps broadband unlimited data service for aircraft customers called Starlink Aviation, designed to allow things like gaming and streaming to be done from the skies. So, it's clearly on a bit on a mission to fill every conceivable niche of remote connectivity. Obviously, you don't need to lean on Elon Musk's satellite system to get the GPS working while bombing up the M1, or anywhere else there is terrestrial tower coverage – which is most inhabited places. Instead, this service is designed for when you are driving in remote areas with no service – making this another niche application, but perhaps a useful one if you do find yourself on a road trip somewhere out in the sticks and don't have any mobile coverage. How big the market is for people driving recreationally into deserts and other such places operators have deemed too remote to bother with remains to be seen, but we can think of a couple of chaps that could have found a use for it.

Soyuz Launches GLONASS Navigation Satellite from Plesetsk

Russia has added another satellite to its current satellite navigation network with the successful launch of a Soyuz-2.1b/Fregat rocket. Liftoff occurred at 5:52 AM Moscow Time (02:52 UTC) on Oct. 10 from the Plesetsk Cosmodrome in the northwestern part of Russia carrying GLONASS-K1 No. 17. The GLONASS constellation of satellites is very similar to the US Global Positioning System (GPS) and European Galileo satellites. GLONASS uses satellites in medium Earth orbit broadcasting highly accurate timing signals which receivers can use to triangulate their locations. GLONASS satellites broadcast four navigation signals in the L-band: unrestricted L1 and L2 signals for civilian use, and equivalent restricted signals for the Russian military. The GLONASS satellites are positioned in three different planes 120 degrees apart from each other with eight satellites in each plane. This particular satellite will function in medium Earth orbit at an altitude of 19,100 km (11,900 mi) and a 64.8° inclination. This plane allows for coverage to higher latitudes, which can be difficult to reach with traditional GPS networks operating at a 55° inclination. The first satellite in the GLONASS network was launched in 1982, eventually reaching full capacity in 1996. Previous satellites in the GLONASS constellation had short lifetimes, resulting in 140 different satellite launches as old ones failed and needed replacing. In 2001, the switch was made to the Uragan-M model, which offers a fivefold increase in accuracy as well as an improved on-orbit lifespan. The current generation of GLONASS-K1 satellites, including No. 17, is expected to continue working for 10 years. These satellites can be launched aboard a Proton rocket, or in the case of Sunday's launch, aboard a Soyuz. The K series of satellites has a major improvement over older versions. It includes the first unpressurized GLONASS satellites, allowing them to work solely in the vacuum of space. In addition, it has a reduced mass of only 750 kg (1,650 lb) compared to the older M series which has a mass of 1,450 kg (3,200 lb). The three-stage Soyuz-2.1b vehicle was topped with a Fregat upper stage for the GLONASS launch. The Fregat, when used in conjunction with Soyuz, allows satellites to be placed into higher or more complex orbits than could be achieved using just the core vehicle. In the case of GLONASS missions, it allows for direct insertion into medium Earth orbit. The Soyuz-2.1b is a modernized version of the Soyuz family of rockets, which trace their history back to Sergei Korolev's R-7, the world's first intercontinental ballistic missile. The R-7, which first flew in 1957, was also used to launch the world's first satellite, Sputnik, and formed the basis of the rockets that carried Yuri Gagarin's Vostok 1 mission into orbit. It also deployed the Soviet Union's earliest probes to the Moon and other planets. The Soyuz-2 series was engineered to improve performance and reliability. Digital flight control systems replace the analog equipment used on earlier versions of the Soyuz, while the first and second-stage engines have also been upgraded. In addition, the Soyuz-2.1b uses an RD-0124, a more powerful third-stage engine. Soyuz launched from Site 43/4 at the Plesetsk Cosmodrome in Northwest Russia. Plesetsk is one of four Soyuz launch sites worldwide – alongside the Vostochny Cosmodrome in Eastern Russia, the Baikonur Cosmodrome in Kazakhstan, and the Centre Spatial Guyanais in Kourou, French Guiana, although launches from the latter have been placed on hold during the ongoing Russian conflict with Ukraine. The ignition sequence for the Soyuz rocket began 16 seconds before liftoff. That includes the first stage, which consists of four boosters clustered around the second stage. Each one contains an RD-107A engine. At the same time, the second stage, also known as Blok-A ignites its RD-108A engine that includes additional vernier motors to help steer as the rocket ascends. All three stages burn RG-1, the Russian equivalent to the rocket grade kerosene known as RP-1 used in the US, and use liquid oxygen as an oxidizer. After 118 seconds, the first-stage boosters are depleted and separated with the help of vented gases to push them away from the vehicle. This results in a pattern known as the "Korolev Cross," named after the chief designer of the Soyuz. At around three and a half minutes into the flight, the fairings protecting the GLONASS satellite separated as the rocket escaped the thicker portion of the Earth's atmosphere. Four minutes and 45 seconds into the flight, as Blok-A neared the end of its burn, the third stage, known as Blok-I, fired its engine while Blok-A is still lit. This process is known as hot staging. Many Russian rockets use this procedure to ensure Blok-I remains settled through separation and prevent the need for additional separation motors. A few seconds later, separation occurred. Blok-I continued to burn for an additional five minutes before shutting down, placing the satellite into a parking orbit. At this point, the Fregat upper stage and GLONASS-K1 No. 17 were released from Blok-I and separated from the launch vehicle. The Fregat used storable propellants, unsymmetrical dimethylhydrazine and dinitrogen tetroxide, and was fitted with an S5.98M engine which can be restarted multiple times. The engine performed three different burns over three and a half hours to place the spacecraft into its final orbit. At that point, GLONASS-K1 No. 17 separated from the Fregat. Once in this final orbit, the satellite is expected to be designated Kosmos 2559. This marks the 13th Soyuz rocket so far this year and the fourth of the Soyuz-2.1b.

MACRA Licenses Starlink to Provide Satellite Broadband in Malawi

The Malawi Communications Regulatory Authority (MACRA) has announced that it has granted a license to operate high speed, low latency satellite broadband services to Starlink, the satellite internet service of SpaceX. According to the regulator, the process commenced in February 2022 and the authorization was granted after 'following Starlink's successful license application and subsequent negotiations. MACRA added that the firm has been issued with a Network Facilities license, a Network Services concession and an Application Services license. Starlink's low-orbit satellites are designed to offer high speed, low latency broadband internet in remote and rural locations across the globe.

China-Aided Project Helps 100,000 People in Rural Uganda Access Satellite TV

China has officially completed the installation of the satellite television project in 900 Ugandan villages that face connectivity challenges. Chris Baryomunsi, Ugandan Minister of Information, Communication, Technology and National Guidance, officiated at the handover ceremony held in Katabi village in the central Ugandan district of Wakiso. He praised China for its technical support to Uganda, noting that the support will drive development in communities. Aoge Mengdai, Chief Executive Officer of StarTimes Uganda, the project contractor, said 900 villages have been connected to satellite television service since 2018 when the project was executed. And more than 100,000 people in 18,000 households, 2,700 schools and health centers have access to satellite television. StarTimes is a Chinese pay-TV company. "The benefits are beyond simply accessing TV. These children can now access television learning and video demonstrations which are very useful in practical learning. They can also compare with other schools outside their community," Mengdai said. He added that adults can now access key health and commercial information, as well as benchmark their dreams against other developing communities. At the Johannesburg Summit of the Forum on China-Africa Cooperation (FOCAC) held in South Africa in 2015, the Chinese government pledged to provide satellite television for 10,000 African villages.

Wise County Gets Grant for Satellite-Based Internet

The Virginia Coalfield Economic Development Authority has made a $232,500 grant to the Wise County Industrial Authority to be used to finance low earth orbit space-based broadband through Starlink Satellite Internet to additional unserved and/or underserved children in Wise County. The grant funds will be used for the cost and expense of hardware and wiring; and for two-year subscriptions for 94 residences in Wise County with the purpose being to expand education and telehealth access in Wise County. According to the IDA's application, this will result in a grand total of 438 students that will receive Starlink Satellite Internet service in Wise County. Wise County has committed to provide $155,000 in leveraged funding toward the project. For background on Starlink, see our previous story "Reaching for the stars" which looks at the push to use Starlink's satellite-based internet to reach places unserved by conventional fiber. "VCEDA was appropriated $500,000 in the Virginia state budget for FY2023 and $500,000 in FY2024 for initiatives intended to expand education and telehealth

access," said VCEDA Executive Director/ General Counsel Jonathan Belcher in a statement. "Previously, in FY2022, VCEDA also received $500,000 for this purpose and developed the VCEDA Education and Telehealth Access fund to administer the funds being received from the state." The first application approved from the fund was for the Appalachian Council for Innovation (ACI) for its project to provide the initial low earth orbit Starlink Satellite Internet service to unserved and/or underserved children in the VCEDA footprint. The project was done by ACI in association with various local school districts, resulting in a grand total of 719 children in four counties being provided access to Starlink, including connections made possible by leveraged funding from the participating localities of Dickenson, Russell, Tazewell and Wise counties, according to ACI. The grant application approved by VCEDA and closed recently will further that program. After the initial two-year subscription has passed, individual account holders will be responsible for the ongoing monthly subscription unless other support mechanisms are found, according to the Wise County application. "Discussions concerning the funding being received by VCEDA in FY2023 have resulted in several of the county industrial development authorities expressing a desire to apply for the funds for the Starlink projects in their respective jurisdictions," Belcher said in a statement, noting Wise County's IDA was the first to submit an application. "Data shows students with high-speed broadband perform at one-half letter grade better than those without," Wise County Industrial Development Authority Executive Director Brian Falin said in a statement.

Second Time Lucky: AngoSat-2 Enters Space

Angola launched its AngoSat-2 communications satellite on12 October aboard the Proton-M Blok DM-03 rocket from the Baikonur Cosmodrome, Kazakhstan, reports Africanews.space. The high-throughput satellite (HTS) is based on the Eurostar-3000 platform with a design lifespan of 15 years, enabling near-complete Ku-Band coverage of southern Africa plus C-Band coverage of the entire African continent and a significant part of southern Europe. The ill-fated USD328 million AngoSat-1 orbiter was launched in December 2017 but was lost shortly afterwards, prompting AngoSat-2 to be built by Russia's Reshetnev Information Satellite Systems at no cost to Angola. According to statements from Angolan officials including the telecoms minister Mario Augusto da Silva Oliveira, AngoSat-2's services will contribute to reducing the digital divide by extending ICT access to more Angolans, while development of satellite services will go hand-in-hand with investment in national broadband infrastructure, including submarine and terrestrial fiber-optics.

Starlink Launches Services in Guadeloupe, Martinique

Starlink has launched its satellite internet access service in Martinique and Guadeloupe, with a planned debut in French Guiana in 2023. The company charges EUR450 (USD446) for equipment and connection, with a monthly subscription of EUR65; the satellite broadband link provides download speeds of between 50Mbps and 200Mbps. Arcep granted SpaceX's Starlink satellite broadband project a ten-year license covering the 10.95GHz-12.70GHz and 14GHz-14.5GHz bands to provide internet in France in February 2021. In April 2022, however, the concession was revoked on a legal technicality, after the original decision to grant two frequency bands to the company was over-ruled by France's highest administrative court, the Conseil d'Etat. The authority said that the decision to award the license 'could impact the market of access to high-bandwidth internet and affect the interests of end users', therefore it would have been required by the law to carry out public hearings before granting the licenses, a step which Arcep omitted. Starlink secured a new concession (for the 10.95GHz-12.70GHz and 14GHz-14.5GHz bands) in June 2022.

OneWeb Successfully Deploys 36 New LEO Satellites

OneWeb has successfully added 36 new LEO (Low Earth Orbit) satellites to its constellation. With the UK not set to bring its vertical space launch capabilities online until next year, the British satellite operator turned to NewSpace India Limited (NSIL) to conduct the launches from the Satish Dhawan Space Centre in Sriharikota, India. Radhakrishnan D, Chairman-cum-Managing Director at NewSpace India Limited, said: "The successful launch of 36 OneWeb satellites via the GSLV-MkIII from the Satish Dhawan Space Centre is a historic moment for NSIL and ISRO (Indian Space Research Organization). We worked closely with the OneWeb team to support this milestone launch, which has been accomplished in a record time of a few months, while also illustrating the opportunities for satellite connectivity in India. We look forward to strengthening our partnership with OneWeb and utilizing the potential that LEO connectivity has to deliver broadband services across India." The lift-off took place on Sunday, 23rd October 2022 at 00.07hrs local time. OneWeb's satellites were dispensed in nine phases over a period of 1 hour and 15 minutes. Sunil Bharti Mittal, Executive Chairman of OneWeb, commented: "Today's launch is a significant milestone for OneWeb. This new phase of our launch program from India brings us a step closer to not only enhancing our global coverage but also delivering connectivity in India and South Asia, particularly to the communities who need it most." OneWeb's constellation is now up to 462 satellites, 70 percent of its planned LEO satellite fleet, and is on track to activate global coverage in 2023. In March, a planned launch of OneWeb's satellites was put on hold after Russian space agency Roscosmos refused to proceed unless the British government sold its stake in the firm and the company guaranteed they will not be used for military purposes. Neil Masterson, Chief Executive of OneWeb, said: "I am delighted that we have been able to resume OneWeb's launch program. This launch was made possible thanks to the hard work by our team and our partners at ISRO and NSIL, as well as shareholder Bharti Global. "The spirit of collaboration exemplified by this international effort is at the core of our strategy to scale up our global coverage network. At OneWeb, we remain laser-focused on removing barriers to connectivity, ensuring that we deliver for communities and customers globally."

Virgin Orbit to Launch First Satellite in Europe Within Six Weeks

Richard Branson's small satellite service provider Virgin Orbit Holdings Inc will be doing its first launch from European soil within the next six weeks, its founder said recently. "Virgin Orbit can launch satellites into space from anywhere in the world into any orbit at a days notice," Branson said during a press conference in Milan. "We are doing the first launch from European soil into space within the next six weeks ... from Cornwall," he added. Founded by Branson back in 2017, the company began commercial service in 2021.

SpaceX Confirms Availability of Starlink Service in Japan

Elon Musk's SpaceX confirmed via Twitter (10 October) that its Starlink broadband service is now available in Japan, marking its first live service in Asia. Back in September 2021 Japanese telco KDDI (au) signed a contract with the Low Earth Orbit (LEO) operator to provide high speed internet connectivity to remote islands and mountainous regions of Japan and au base station backhaul, via the US firm's satellites. In a press release at the time, KDDI said that from 2022 some 1,200 locations would be able to benefit from high speed, low-latency satellite broadband internet. According to the Starlink coverage map, as of today Starlink's satellites are live in the north of Japan, including the capital Tokyo.

SpaceX Falcon 9 Rocket Launches 2 Satellites on Record-Tying 14th Mission

SpaceX launched a Falcon 9 rocket on its record-tying 14th mission, sending two commercial communications satellites to orbit. The Falcon 9, topped with Intelsat's Galaxy 33 and Galaxy 34 satellites, lifted off from Florida's Cape Canaveral Space Force Station on Saturday at 7:05 p.m. EDT (2305 GMT). The Falcon 9's first stage came back to Earth and landed on SpaceX's A Shortfall of Gravitas droneship about 8.5 minutes after launch. The robotic ship was stationed in the Atlantic Ocean, a few hundred miles off the Florida coast. It was the 14th launch and landing for this particular booster, according to a SpaceX mission description (opens in new tab).

The rocket previously helped launch the GPS III-3 and Turksat 5A satellites, the Transporter-2 rideshare mission and 10 big batches of SpaceX's Starlink internet satellites. Fourteen missions is the record for a Falcon 9 first stage, first set just last month during a launch that lofted the BlueWalker 3 communications satellite and 34 Starlinks. Galaxy 33 was deployed about 33 minutes after liftoff and Galaxy 34 followed suit five minutes later, SpaceX confirmed via Twitter (opens in new tab). The duo "are the next satellites in Intelsat's comprehensive Galaxy fleet refresh plan, a new generation of technology that will provide Intelsat Media customers in North America with high-performance media distribution capabilities and unmatched penetration of cable headends," Luxembourg-based Intelsat wrote in a statement (opens in new tab). "It is critical to Intelsat's U.S. C-band clearing strategy." Saturday's launch was the third for SpaceX in a four-day stretch. On Wednesday, the company launched the Crew-5 astronaut mission for NASA as well as a batch of 52 Starlink satellites. Saturday's flight was originally supposed to launch on Thursday evening (Oct. 6), but the Falcon 9 initiated an auto abort shortly(opens in new tab) before the planned liftoff. The abort was caused by a small helium leak, SpaceX founder and CEO Elon Musk said via Twitter Thursday (opens in new tab). SpaceX then pushed the launch back to Saturday to perform additional vehicle checks.

UK Prepares for Its First Satellite Launch

The UK's commercial spaceflight program is set to take off with its first ever orbital satellite launch. The first launch will take place from Spaceport Cornwall in the south-west of England as a 'horizontal launch'. A specially modified Boeing 747 from Virgin Orbit called Cosmic Girl, with a rocket attached under its wing, will take off from a runway. In flight over the sea, the LauncherOne rocket will launch from the wing, taking multiple small satellites into orbit. The plane will then return to the Spaceport, able to launch more satellites in future. Several small satellites will be launched into orbit on the first UK mission for launch for navigation and communications applications Several of the satellites have been built in the UK, including a research satellite from RHEA Group, which was built by Open Cosmos in Oxfordshire. The first Welsh satellite will also be on the launch, from Cardiff-based Space Forge. It will test the process of using the unique microgravity environment of space to manufacture special materials that are much more difficult to make on Earth. There are several other spaceports currently planned or under construction in England, Scotland and Wales.

Soracom Adds Native Satellite Support to Global IoT Connectivity Platform

Soracom, Inc., a global provider of advanced IoT connectivity, announced it has expanded its IoT connectivity offerings to include native support for satellite messaging capability, allowing SMBs, SMEs and enterprise customers to manage SatIoT connections and billing directly through the Soracom platform. This capability is now available on a Technical Preview basis, with support available today for Astrocast, with additional satellite services to follow. The launch of native support for satellite enables customers with remote monitoring, asset tracking and other use cases to "bring their own" compatible satellite hardware and manage all of their connections and billing in one place. In addition, users can integrate advanced platform services supporting device management, cloud integration and secure private networking into IoT use cases requiring satellite communication. Native satellite support is a new addition to Soracom's "blended" IoT networking offering. Soracom has provided native support with integrated billing for cellular and

Sigfox since 2018, and, in July 2021, added support for Wi-Fi, Ethernet, and satellite via Soracom Arc. Arc lets individual developers, startups, and enterprises build IoT solutions using their connectivity of choice, with the unique ability to easily switch, add, or blend connectivity options as requirements change – all without rearchitecting applications. Terrestrial cellular networks now reach 90% of the world's population, but cover only 15% of the earth's surface, according to Astrocast. IoT deployments in remote locations, such as those found in precision agriculture, industry, mining, energy, and maritime and other industries, require the ubiquitous network availability that only satellite coverage can provide. “Soracom is committed to accelerating IoT deployments around the world and ensuring success at scale, no matter what combination of hardware, cloud platform, and wireless connectivity the use case requires,” said Kenta Yasukawa, cofounder and CTO at Soracom. “With the addition of native satellite support, we are empowering our customers to build new experiences around connected devices while reducing total cost of ownership, accelerating speed to market, and ensuring complete control over every connection.” "There is significant demand within many industries for IoT deployments across the 85% of the globe that currently has zero cellular coverage," said Fabien Jordan, cofounder and CEO at Astrocast. "Cost effective, low power, bidirectional satellite technology brings new opportunities for a broad range of innovative use cases. Combining the Soracom platform's capability and ease of use with Satellite IoT gives integrators and organizations a chance to explore and develop a new dimension to their IoT deployments." Soracom’s native support for satellite-based IoT messaging is now offered on a Technical Preview basis.

Garmin Launches InReach Messenger for Device or App-Based Satellite Communication

Garmin announced an addition to its InReach lineup with the Garmin InReach Messenger device and a Garmin Messenger companion app. Garmin's InReach line provides a way for those who frequently travel outside of cellular service to communicate with friends, loved ones, and emergency responders using satellite communication. The InReach Messenger is a $299 gadget with a small display on it. You can use InReach Messenger when paired with your smartphone or as a stand-alone device to send and receive messages, including sending an SOS message to the Garmin International Emergency Response Coordination Center. When it's paired with the Messenger app, you can send and receive messages with individual contacts or in group messages. The app will automatically pick the best network to send the message through, be it cellular, Wi-Fi or satellite. The InReach Messenger has 28 days of battery life, is IPX7 rated for immersion in up to 1 meter of water, and takes up little space, measuring 3.1 by 2.5 inches and weighing 4 ounces. If your phone dies and you need to use Messenger, you can charge your phone using the small device to give you enough power to call for help. Any messages you send in the Garmin Messenger app will require the recipient to sign up for and use the free Messenger app on their mobile device. There's no fee to use the Messenger app on its own. Garmin has had satellite communication products for years. In fact, I tested the InReach Mini earlier this year and just about had to use it to call for help after a friend and I decided to go hiking in very deep snow while being completely underdressed and underprepared. So, the InReach Messenger isn't a direct reply to Apple's new Emergency SOS via satellite that's launching in November on the entire iPhone 14 lineup. But Garmin's timing couldn't have been better. Satellite communication via a smart device is a hot topic right now, thanks to Apple's announcement, and the conversation will no doubt will draw a subset of users who want broader and more capabilities from a satellite communication product. Based on my past experience with a Garmin InReach device and what Garmin promises to be possible with Messenger, I have no doubt that Garmin's offering has more features. However, it also carries with it a monthly fee that starts at $15, and to some extent requires that you carry a secondary device. Apple's service, however, is free for the next two years and is built directly into an iPhone you'd already have in your pocket. There are pros and cons to that, of course. For example, if your iPhone's battery is empty, you can't send any messages, satellite or not.

Lynk Global Bids for Satellite 5G First

Satellite player Lynk Global detailed plans to launch a 5G base station into space later this year, a move it described as a world first. The company noted the 5G test was being funded by an undisclosed partner and the payload is scheduled to launch in December, when it flies its second commercial satellite. Lynk Global claims to have patented the ability to connect to existing standard 5G devices using space-based infrastructure in 55 countries. It indicated the latest trial would prove the ability to send a 5G signal from space to regular handsets. The company received a US license for its satellite-to-phone service earlier this month which it previously stated would enable it to operate globally. CCO Dan Dooley stated his company was "years ahead of everyone else" in terms of enabling operators to cover "100 per cent of their geographic territories". Dooley added Lynk Global is actively testing its existing service in 12 countries on five continents. Earlier this year, the company disclosed it had contracts with 15 mobile operators covering 36 countries. Although it is quick to highlight its advanced status, Lynk Global is not the only player to target connection with off-the-shelf handsets. Vodafone Group-backed AST SpaceMobile is also making a play in this space and signed a deal with Nokia earlier this year covering 4G and 5G kit. Aside from these rivals there are a plethora of other companies targeting operator contracts for providing mobile connectivity from birds in orbit, while several device manufacturers have started to market early use-cases with their latest smartphones.

Avanti Turns to Regional Operator Partnerships to Expand Satellite Coverage

U.K.-based Avanti Communications is seeking more partnerships to grow its footprint after securing its first major deal to use another regional satellite operator's capacity. Avanti announced a five-year partnership with Turkey's Turksat Sept. 13 that pools more than 100 gigabits-per-second (Gbps) of Ka-band capacity between them across Africa and the Middle East. The deal combines Avanti's Hylas 4 and Hylas 2 satellites with Turksat's recently launched Turksat-5B to sell broadband in areas with limited terrestrial infrastructure. Turksat had signed a contract in 2019 to use capacity on Hylas 2 — which covers Europe, the Middle East, and eastern and southern Africa — for three years with an option for a one-year extension. Their expanded partnership "is a milestone for Avanti's business and the first time we are partnering with another strong regional satellite operator to access their capacity," Avanti CEO Kyle Whitehill told SpaceNews. Whitehill said the company is "continuing to seek out partnerships that harness satellite technology, and help individuals, businesses and communities to thrive." He said Avanti has "committed 75% of our total investment" to bring more connectivity to Africa. The company recently launched a managed satellite service called Avanti Extend, which is focused on helping mobile

operator customers bring connectivity 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," he said. Avanti is also currently building a satellite gateway in Senegal to extend the coverage of Hylas 4, the operator's latest satellite, to West Africa. While Avanti's fleet of five satellites are in geostationary orbit, Whitehill said the company is developing hybrid network products and services that integrate capacity from lower orbits and terrestrial network capabilities. Regional satellite operators are keen to partner with Starlink and other low Earth orbit broadband constellations to meet growing demand for bandwidth, executives from some of these companies said Sept. 13 during the World Satellite Business Week conference in Paris.

Marlink Boosts Its Smart Network Solutions for Maritime and Enterprise Customers with Starlink

The global leading managed service provider for business-critical communication networks and digital solutions adds Starlink's high-speed, low-latency solution to its services Oslo, Paris, Palma de Mallorca, 22 September 2022. Marlink, the smart network solutions company, has added SpaceX's Starlink service to its offerings, strengthening its connectivity solutions portfolio for maritime and enterprise customers. As experts and pioneers in satellite communication solutions, Marlink and OmniAccess will leverage Starlink – a high-speed, low-latency broadband internet service enabled by a constellation of satellites in Low Earth Orbit – to complement their portfolio of smart network solutions and services globally. Under the agreement, Marlink and OmniAccess will act as global "authorized Starlink integrators" for maritime and enterprise customers. Marlink's integration of Starlink with existing highly reliable VSAT, LTE (4G/5G) and terrestrial connectivity solutions will result in a seamless user experience. Marlink and OmniAccess will orchestrate the different connectivity paths to provide their extensive global customer base with unmatched communications network solutions that will substantially improve customers' business-critical applications, passenger communications, and crew and remote workers' welfare. "This ability to utilize Starlink is giant step in our strategy to provide our customers with the best-in-class user experience, combining our industry-leading GEO satellite connectivity solutions with the next generation LEO high-speed, low-latency services," said Erik Ceuppens, CEO, Marlink Group. "We are looking forward to working with SpaceX to integrate Starlink as part of our smart network solutions, creating a superior global connectivity service for our extensive maritime and enterprise customer base across the world." "Adding Starlink to its offerings will bring a new dimension of connectivity to Marlink's global customer base," said SpaceX Vice President of Starlink Sales Jonathan Hofeller. "This low-latency, high-bandwidth broadband experience will allow enterprise and maritime customers to manage their remote businesses more efficiently than ever before."

Xtendnet to Offer Satellite Broadband for UK and Europe

A multi-national group of satellite and telecom veterans from the US, UK and mainland Europe have launched a challenger satellite broadband service Xtendnet for underserved businesses and consumers in Europe. The UK service is to be officially launched at trade show Connected Britain as the start-up targets mobile network operators, internet service providers and a significant percentage of the population that fixed lines cannot reach. The service is connected to Arabsat's BADR-7 high-throughput satellite and based on Forsway's Xtend system. XtndNet promises users 50 Mb download speeds. The XtndNet service is available now in the United Kingdom and Ireland, and will expand to Germany, Scandinavia, the Baltics and Africa in 2023. According to UK market regulator Ofcom there are at least 100,000 under- connected locations in the British isles, with under three Mbps and no other options for an affordable, fast and reliable broadband connection. Many say this could be a very low estimate, as homes in urban areas are underserved by Britain's two main broadband providers. There is a widespread suspicion that the number of town dwellers who live too far from a BT exchange is an unreported story. The alternative broadband supplier is one of the most complained about service providers in Britain. There are more than 100,000 households throughout the UK without an adequate broadband connection, according to Travis Mooney, CEO at XtndNet. "Those people are left behind as everything from government services to grocery shopping and television now rely on broadband connectivity," said Mooney, who hinted that a resolution is finally at hand. "Our service uses a satellite download to immediately remedy this challenge for users throughout the UK and Ireland; simply point a dish, install a router and we can provide almost anyone an immediate upgrade, bridging the digital divide," said Mooney. The success of Xtndnet hinges on its ability to create a sales channel to fulfil the latent demand. "We are excited to show easy it can be for ISPs to extend their service offering to rural, underserved areas – with no investment required," said Mooney. Xtendnet is offering 'zero-Capex access' platform, available immediately and it will back its channel with marketing, technical and operational support to launch their local services. XtndNet provides individual wholesale satellite broadband internet access services to resellers, such as DSL providers, which can be white labelled. BADR-7, also known as Arabsat-6B, was produced by Airbus Defence and Space-led consortium EADS Astrium, with Thales Alenia Space designing and building the spacecraft's communications payload. The satellite was the 6th satellite within the Arabsat fleet and its 15 year life expectancy comes to an end in 2030. It operates at the orbital position of 26 degrees East. The satellite uses several gateway locations, which are all based in Europe. The Gateways bridge terrestrial broadband services with the satellite via ground stations using Ka (18-40 Ghz spectrum) and Ku band (of 12-18 GHz).

OneWeb to Restart Broadband Satellite Launches

Satellite operator OneWeb, which is partly owned by the UK Government, has announced that 36 of their Low Earth Orbit (LEO) based ultrafast broadband satellites have just arrived at the Satish Dhawan Space Centre in Sriharikota, India, ahead of an expected launch to space next month. The operator has already launched 428 of their small c.150kg LEO based ultrafast (100Mbps+) and low-latency (sub-100ms) broadband satellites into space – orbiting at an altitude of around 1,200km – and their initial plan is to build a constellation of 648 (588 are needed for coverage – the rest are for redundancy), which is enough for a reasonable level of global coverage. This is due to complete by the end of 2023. However, readers may recall that a lot of their prior launches took place in Russia, which ended after the invasion of Ukraine set off a chain of events that continues to unfold (here). The operator ended up taking a £200m hit after Russia blocked the launch of 36 satellites and impounded them (here), which left OneWeb with the unenviable task of needing to find new launch partners. The good news is that they were able to find solutions with both rival SpaceX (here) and New Space India Limited (NSIL) – here, which is the commercial arm of the Indian Space Research Organization (ISRO). After a lot of work, the next batch of OneWeb's GEN1 LEO spacecraft has now been shipped to India's Satish Dhawan Space Centre (SDSC – SHAR) in Sriharikota, ready for launch. Neil Masterson, OneWeb CEO, said: "OneWeb's dedication to industry collaboration has allowed us to successfully navigate the everchanging global environment and prepare for yet another milestone launch. We are proud of our ability to adapt and remain on track to deliver global connectivity in the hardest to reach places. With many thanks to our top-of-the line partners ISRO and NSIL, as well as our shareholder Bharti Global for their continued stewardship, we were able to facilitate this upcoming pioneering launch in Sriharikota India." Radhakrishnan D, Chairman-cum-MD, NewSpace India Limited, added: "Undertaking the launch of 36 OneWeb satellites on-board GSLV-MkIII from India is a historic moment for NSIL and ISRO. We are excited to see the arrival of the satellites and the Ground Support Equipment in India in preparation for the launch. Teams at NSIL/ ISRO are sincerely working towards providing the best of the Launch Service solutions and support for OneWeb satellites, and we wish their teams great success in their forthcoming activities at SDSC-SHAR and launch." The launch will be the company's 14th overall, and the satellites will be put into orbit by the heaviest ISRO rocket, the GSLV-MkIII (pictured – top). One additional launch will then take place this year, and three more are targeted for early next year to complete the constellation. The announcement doesn't say when OneWeb's launch will take place, although publicly available data on launch schedules suggests that the related "OneWeb 1A" mission – with an estimated launch cost of between $46m to $62m – is projected to take place by the end of October 2022.

Speedcast to Offer Starlink Service to Enterprise and Maritime Customers

Speedcast, a global communications and network service provider, will begin offering Starlink's high-speed, low-latency connectivity to its enterprise and maritime customers as part of a deal announced today at The World Satellite Business Week Summit in Paris. Starlink introduced its enterprise and maritime connectivity services and equipment earlier this year, delivered via the world's largest constellation of highly advanced satellites operating in low Earth orbit. From oil rigs and merchant vessels to mine sites and yachts, Starlink allows users to connect from the most remote locations and waters across the world. Speedcast designs and deploys technology and frequency-agnostic solutions for customers to deliver the highest levels of performance and operational efficiency. The company has been supporting customer trials to demonstrate the capabilities of Starlink as part of a seamlessly integrated service. "Starlink is an exciting new communications pathway for customers, offering significant diversity and added capacity at a time when remote sites continue to push to the farthest ends of the Earth and when bandwidth demand is ever increasing," says Joe Spytek, chief executive officer at Speedcast. "As a trusted, agnostic integrator of next-generation technologies for customers, we're excited to add Starlink to our toolkit to make ubiquitous connectivity a reality for remote operations around the world." "We're excited to provide Starlink's high-speed, low-latency internet to Speedcast enterprise and maritime customers," says Jonathan Hofeller, vice president of Starlink sales at SpaceX. "This significant leap in connectivity will open even more possibilities for companies to manage operations anywhere on Earth."

Vodafone Satellite Tech Precisely Locates IoT Devices, Supports V2X

Vodafone and Topcon Positioning Group are developing a mass-market, precise positioning system to locate Internet of Things (IoT) devices, machinery and vehicles with a greater degree of accuracy than using individual global navigation satellites systems (GNSS). Vodafone claims that vehicles, scooters and even robot lawn mowers can be securely monitored in real-time to within a few centimeters when connected to Vodafone's global IoT network and using technology from Topcon – instead of within a few meters with navigation satellite signals. They can offer this GNSS correction service because of their respective terrestrial footprints across Europe. Vodafone intends to offer a singular module configuration that can extend across national borders. The companies are to embark on trials with customers trials in Germany, Spain and the UK, starting this month. The companies aim to test the service, called Vodafone GNSS Corrections, using various devices connected to Vodafone's global IoT network, which has more than 150 million connections. Its pan-European network covers 12 countries. The Topcon Positioning System provides cloud-based corrections which are sent to vehicles and devices. In turn, they derive accurate locations in open sky conditions, that is, when receivers on the ground are not close to obstructions such as trees or reflections from a GNSS signal. To provide pinpoint locations, a GNSS module needs to compensate for inaccuracies caused by satellite constellations, receiver hardware and atmospheric conditions. Topcon's dense network of fixed reference stations run the calculations to overcome these distortion based on the constant flow of GNSS data. Vodafone says great accuracy is critical to the mass adoption of vehicle to anything (V2X) technology whereby driverless vehicles communicate with other vehicles, road users, and infrastructure and for autonomous machinery and robots. Vodafone's new precise positioning will complement to its Safer Transport for Europe Platform (STEP), which was announced in March and allows entities to communicate without line of sight. Apparently STEP has been successfully tested in Germany and the UK and will be made available via Vodafone Automotive and third-party apps later this year. A Precise Positioning Service also complements the existing asset tracking and fleet telematics solutions already provided by Vodafone Business for enterprise customers across 54 countries.

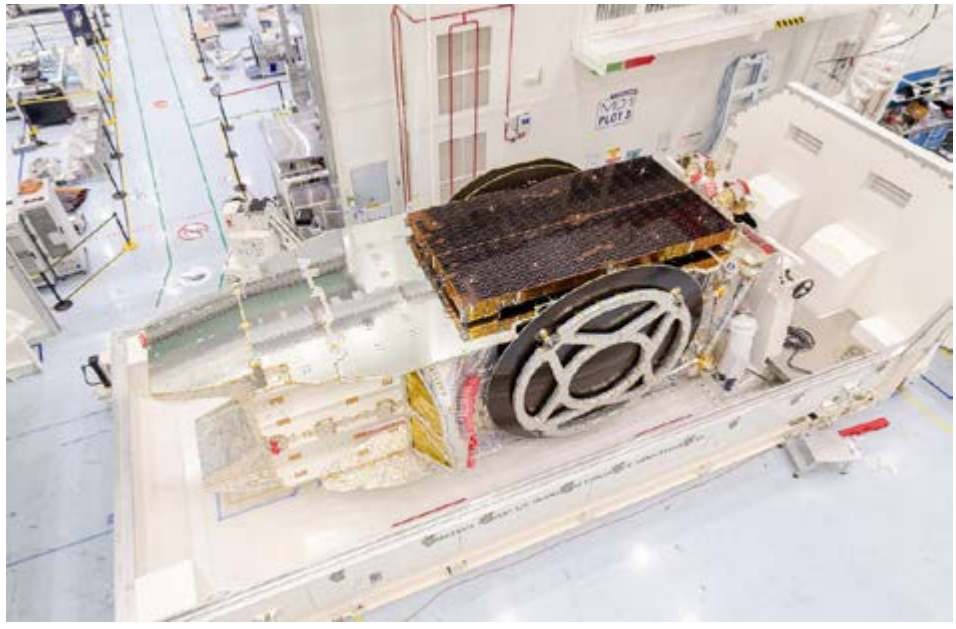
SpaceTech Start-Up OQ Raises US$13 million and Seeks to Position Saudi Arabia as a Satellite Hub

OQ Technology, a Luxembourg-based operator of 5G Internet of Things satellites, raised €13 million ($13.02m) in a Series A funding round co-led by Saudi Aramco's entrepreneurial arm Wa'ed Ventures and Greece-based Phaistos Investment Fund. The funds will be used to grow OQ's 5G IoT satellite constellation, further develop its proprietary technology and acquire more licenses. OQ's technology enables applications requiring fast and real-time data processing in remote and rural areas through small satellites in low Earth orbit (LEO). OQ is currently expanding operations and is establishing two global subsidiaries, including one in Saudi Arabia, with the aim of positioning the kingdom as a leader in satellite and space technology, Wa'ed said in a statement. The unit being planned in Saudi Arabia will be located in the city of Al Khobar and is set to be one of the Middle East's biggest data and network operations center for 5G satellite services, as well as the first in the kingdom and wider Mena region, it added. "Against a challenging economic backdrop, our decision to seek funding was rewarded with a raise that will help us achieve our immediate goals in terms of growth, expansion into Middle East, Africa, Asia, South America and Oceania, increasing our spectrum licenses and patents portfolio, and further our product development," said Omar Qaise, founder and chief executive of OQ. Saudi Arabia is stepping up its efforts in the space race. Riyadh set up the Saudi Space Commission which, along with the Ministry of Investment and the Public Investment Fund, has been mandated to develop strategies and pour investments into space technology. In 2020, the kingdom earmarked $2.1 billion for its space program, as part of its Vision 2030 initiative that seeks to tap emerging technology and diversify its economy's reliance on oil. In July, Saudi Arabia became the fourth country in the Middle East and 21st globally to sign the US-led Artemis Accords, an agreement that outlines peaceful exploration of the Moon and beyond. Other Middle East nations that have joined the pact include the UAE, Bahrain and Israel. 5G satellites, meanwhile, are more reliable than standard 5G connections: to gain access to the internet using 5G — or any broadband connection — a user must be within range of a cell tower. With satellites, internet access is possible even in the most remote areas. Currently, the most aggressive 5G satellite company is Starlink, which is under Elon Musk's SpaceX. It has already launched more than 3,000 satellites into orbit, with 46 deployed this week. OQ's third satellite mission earlier this year was aboard a SpaceX Falcon 9 rideshare mission. The global 5G satellite

communication market is expected to hit almost $34bn by 2030 from more than $2.5bn in 2021 at a compound annual growth rate of 33.3 per cent, according to Prescient and Strategic Intelligence. OQ, which also has offices in Dubai and Rwanda, has already accomplished several LEO satellite deployment missions, and more are being planned to increase its constellation. Established in 2016, OQ's services are being used in industries such as energy, mining, logistics, maritime, agriculture and defence. The Saudi investment will also involve developing new products in co-ordination with the local business ecosystem and universities, which in turn will support the Vision 2030 agenda, the statement said. "Our investment in OQ Technology is the true manifestation of our mission to position the kingdom as the center of gravity for global tech ventures," said Fahad Alidi, managing director and chief executive of Wa'ed. "We envision OQ to become the nucleus to building a full SpaceTech ecosystem that starts with the kingdom and outspreads to the surrounding region." Wa'ed Ventures, founded in 2013, is a $200m venture capital firm wholly owned by Saudi Aramco, the world's biggest oil company. It aims to promote economic diversification and new business growth in the kingdom by investing in high-growth tech start-ups across multiple sectors.

Thales Alenia Space Partner with Eutelsat to Deliver High-Speed Broadband Across Europe

Thales Alenia Space (Thales 67%, Leonardo 33%) will support the delivery of high-speed broadband across Europe as well as connectivity services by providing the SpaceGate ground connectivity solution to EUTELSAT KONNECT VHTS satellite. Thales Alenia Space already developed for Eutelsat the digital EUTELSAT KONNECT VHTS satellite based on the full electric Spacebus NEO platform and expected to be launched September 6th, 2022. The SpaceGate satellite access network solution, designed for High Throughput and Very High Throughput satellites, will provide a wideband connectivity with the best spectral efficiency, significantly increasing the EUTELSAT KONNECT VHTS ground segment performances. It is composed of baseband equipment to be deployed in the Eutelsat ground stations as well as terminals, allowing internet connectivity over fiber-less areas thanks to the satellite. The SpaceGate's flexible and modular solution has been developed with the support of French and European Space Agency's CNES and ESA research & development programs, Cyber secured by Thales design, SpaceGate is also adapted to Software Defined Satellites including constellations. Marc Henri Serre, EVP Telecommunications at Thales Alenia Space declared: "Bridging the Digital Divide is a priority for the growth in France and



in Europe, we are proud to contribute to this important target by offering a French/European network access solution which is also matching the sovereignty and connectivity key stakes. We are also very enthusiast to reinforce our collaboration with Eutelsat and by implementing together new innovative challenges". Pascal Homsy, CTO of Eutelsat added : "We're delighted to be teaming up with one of our long-standing industry partners, Thales Alenia Space, on this new line of ground segment products for our EUTELSAT KONNECT VHTS satellite. This partnership is yet another proof of our ongoing commitment to digital inclusion, and will bolster our service offering provided by this satellite, which spearheads our strategy of shifting to telecom connectivity. By offering a ground segment designed and built by one of the leading space companies in France to complement the ground infrastructures developed by our other partner, Hughes, we're also supporting France's space sovereignty in this market".

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WHOLESALE NEWS

ITS Selects Adtran's Fiber Access Platform for Its Wholesale Network

UK-based ITS Technology Group (ITS) has selected Adtran's 'open and disaggregated 10G fiber access platform' to future-proof its wholesale network, which it markets under the 'Faster Britain' banner. In a press release regarding the matter, it was suggested that the wholesale network provider selected the Adtran 10G fiber access platform because it uses an open and disaggregated architecture that eliminates vendor lock-in while providing the flexibility needed to sell services through a diverse set of partners and channels. Further, it was said that the software-defined platform offers leading service scalability that will enable ITS to support its business today and in the future with minimal infrastructure changes. Commenting, Mike Goodwin, CTO at ITS Technology Group, said: 'As experts in delivering full-fiber infrastructure and the provisioning of wholesale Gigabit-capable services, we rely on partners like Adtran to provide high-quality solutions to help us stay ahead of the technology curve. Our partners benefit from our deployment of XGS-PON technology as it allows us to deliver basic broadband for Ethernet services over the same customer connection. We're impressed with Adtran's engagement, support and willingness to work with us in achieving our ambitious objectives.' ITS designs, builds and operates wholesale, gigabit-capable, full fiber networks for business services in the UK, and the company has claimed that Faster Britain is on track to pass 25% of the country's business premises by the end of 2022.

Orange Poland Makes Changes to Wholesale Offer

Orange Poland is revamping its wholesale internet offer for small and medium-sized operators, making it cheaper and faster to connect via its networks. From 1 November the installation fee for bitstream access (BSA) will be cut to PLN 1 (USD0.20) under a six-month promotion, while Orange is also making it simpler for wholesale partners to configure the services they take. The offer applies to Orange networks in areas where its services are regulated and also in rural regions covered by the state's Operational Program Digital Poland (Programu Operacyjnego Polska Cyfrowa, POPC). Orange says its wholesale offer is used by almost 3,000 smaller operators.

TalkTalk to Invite Bids for Its Wholesale Business Contracts

British broadband provider TalkTalk is planning to invite rival network operators to provide connectivity for its wholesale business contracts, Bloomberg reports. Openreach, the infrastructure arm of BT Group, is understood to currently provide the underlying network for most of TalkTalk's wholesale services, and is now asking BT's rival infrastructure operators to submit competing offers for this work. According to the report, TalkTalk's wholesale clients currently make up more than a third of the company's total turnover, representing around GBP600 million (USD690 million), while the company has claimed to hold a more than 25% market share in the UK's high speed Ethernet market, following the acquisition of rival Virtual1 earlier in the year.

Openreach Considering Lower Wholesale Rates

BT Group's infrastructure division Openreach is considering lowering the wholesale rates which it charges to third party providers for access to its network. A report from Bloomberg says proposals being discussed include lower line rental costs, no volume commitments for sellers, and a cut to the amount charged for migrating customers from copper lines to fibre. Rivals such as Vodafone, Sky and TalkTalk all use Openreach infrastructure to provide retail services.

Malaysia 5G Wholesale Operator Finalizes Access Deals

The four major mobile operators in Malaysia worked out terms of access agreements with wholesale 5G network management outfit Digital Nasional Berhad (DNB) after months of negotiations, with all detailing plans to launch services soon. In stock market filings, Celcom Axiata, Digi Malaysia, Telekom Malaysia and U Mobile detailed the signing of ten-year deals with DNB. The moves come three weeks after all but U Mobile inked equity deals to take stakes in the state-owned special purpose vehicle. Digi stated the reference access offer is expected to be published after approval by the Malaysian Communications and Multimedia Commission. It tipped the move to a single 5G wholesale network to lead to a gradual shift from a traditional network ownership model towards a leasing approach. Digi added it will continue 5G network testing with its technology partners and DNB, and will soon offer compatible services Celcom Axiata detailed plans to automatically enable access to 5G services for customers on selected post-paid and prepaid plans from 1 November. It plans to waive access fees until 31 December. U Mobile's 5G service will be available on 3 November. YTL Communications was the first to launch 5G service in the country earlier this year.

Ukraine Regulator Reports on Fall in Active Mobile Subscriptions; Rise of Roaming

Ukraine's National Commission for State Regulation of Electronic Communications, Radio Frequency Spectrum and Postal Services (NCEC) reports that the number of active mobile subscriptions on the country's main mobile networks declined from over 50 million in the early stages of Russia's full-scale invasion in February to around 44 million by the end of August. The NCEC also reported that Ukrainian users of international roaming services peaked at five million per month in March as people were forced to flee to the borders, compared to pre-war monthly averages of below two million, while in recent months the international roaming demand has settled to average around 4.2 million-4.4 million. Assisted by preferential tariffs for refugees facilitated by Ukrainian operators and their European network partners, average data consumption on international roaming jumped from a pre-war 500MB per subscription per month to 1.5GB in March-April before reaching about 3GB in the summer months. Average voice usage in international roaming grew from nine minutes in January to around 60 minutes by the end of the summer. National roaming between Ukrainian networks – implemented countrywide in March – proved to be a consistently useful solution, the NCEC reported, enabling people to get a mobile phone signal from other operators if their own provider's local base station was damaged or temporarily shut down. The regulator reported stable national roaming usage statistics of around 700,000 SIMs per month. The NCEC also noted that despite significant losses of income and capacity, not to mention dangerous conditions, Ukrainian communications providers have continued to restore damaged networks, including sections in newly liberated territories, and continue to work on introducing new technologies for the population.

Virgin Media Ireland and Vodafone Ireland Ink Wholesale Network Access Deal

Virgin Media Ireland has agreed a wholesale network access deal with local mobile network operator Vodafone Ireland, under which the latter will be able to offer fixed broadband services over the former's infrastructure. According to The Irish Times this represents the first wholesale deal that Virgin Media Ireland has struck, and in speaking with the local press outlet the company's CEO, Tony Hanway, claimed the development would support more competition in the market, while he suggested other deals could follow. Commenting, the executive said: 'We will continue to compete like mad at retail level [with Vodafone] but our wholesale division will sell capacity on our network to third parties. The first third party to do that is Vodafone. It's a new departure for us and the thinking is that we're putting a massive amount of money [into] bringing the network up to full fiber over three years. Our network would never be at 100% utilization.

We would always have spare capacity'. Virgin Media Ireland is currently one year into a three-year upgrade of its entire HFC network to full fiber. Having previously announced these plans in November 2021, the operator is now reported to have upgraded more than 150,000 premises to fiber-to-the-premises (FTTP) technology, and is aiming to increase that figure to 240,000 by the end of 2022, rising to around one million by 2025.

MCMC Extends Public Inquiry Related to Access Pricing Review

A public inquiry on a review of the Mandatory Standard on Access Pricing (MSAP) has been extended by the Malaysian Communications and Multimedia Commission (MCMC). Having announced the launch of the inquiry earlier this month, the regulator had initially set a deadline of 21 November 2022 for submissions but has now confirmed the closing date has been pushed back to 3 January 2023. No reason for this extension was given, however. The MCMC's public inquiry paper released earlier this month set out its preliminary views on which facilities and services in the Access List should be subject to price regulation. It is seeking feedback from interested parties on several specific issues, including its approach to developing economic cost models for specific services, particularly on use of the long run incremental cost (LRIC) methodology.

Honduran Watchdog Consults on Tariff Overhaul

The National Telecommunications Commission (Comision Nacional de Telecomunicaciones, Conatel) has initiated a consultation into telecoms tariffs and costs in Honduras. The document – posted on the regulator's website – explains: 'This commission, taking into account the importance of tariff regulation, considers it opportune and convenient to review the Regulation of Tariffs and Costs of Telecommunications Services, contained in the Normative Resolution NR028/99 and its aforementioned reforms.' Conatel says it hopes to pave the way for an open regulatory policy, aimed at renewing and expanding the existing regulations so that they are compatible with current business practices. It seeks to promote investment and development, modernize and improve efficiency, promote free, fair and effective competition and lay the groundwork to ensure greater transparency in regulatory processes.

TalkTalk Creates Two New Wholesale Divisions; Announces Plan for B2B Ethernet Supply Tender

UK-based TalkTalk Group (TTG) has announced the creation of two new wholesale divisions to support both its B2B and consumer wholesale segments. In a press release the company said that this development reflected 'the material growth in both areas, the integration of newly acquired Virtual 1, and the focus on accelerating take up in high bandwidth [fiber-to-the-premises] FTTP and Ethernet services across the group's Wholesale Platform'. TTG's newly formed TalkTalk Business Wholesale Services division will reportedly offer premium and high bandwidth services to resellers, aggregators and system integrators, and will trade under two names, TalkTalk Wholesale Services and Virtual1. Meanwhile, the group's Consumer Wholesale Services division is reported to have more than one million residential subscriptions on its books, including those belonging to SSE Phone and Telecom – which TalkTalk struck a deal to acquire from OVO Energy last month – as well as Telecom Plus and Shell Energy. Finally, TalkTalk confirmed its intention to launch a competitive tender for B2B Ethernet services, noting that a combination of the Virtual1 and TalkTalk network footprint now extends to over 3,000 on net exchanges, placing 1,500 high bandwidth Ethernet orders per month across on net, off net and latent solutions. TTG claims to have over 25% market share of the UK's B2B high speed Ethernet market and, in the first three months of this year, said it took 31% share of all new Openreach connections. According to the company, the tender presents a 'major opportunity for both large scale and smaller providers, covering 14 areas across the UK', while it also 'reflects the newly competitive environment in wholesale infrastructure supply'.

CRAN Introduces New Interconnection Rates

The Communications Regulatory Authority of Namibia (CRAN) has introduced new interconnection rates for mobile/fixed voice calls and SMS. Under the regulator's decision, from 1 October the mobile/fixed termination rate (MTR/FTR) will be NAD0.05 (USD0.00291) per minute, down from NAD0.10 previously, while termination of SMS will remain at NAD0.01 per message. CRAN CEO Emilia Nghikembua said: 'This decision is important as one of the largest cost components for operators providing voice services is that of interconnection, and this reduction shall therefore enable more competition in the sector … For now, consumers will not directly benefit from this reduction in terms of paying less for voice calls but may indirectly benefit from increased competition in the industry which will increase the variety of services and products. CRAN is, however, investigating other possibilities to reduce voice call rates, to give consumers relief over the medium term and a decision will be communicated in due course.'

Malaysia 5G Wholesale Network Faces Delay

Digital Nasional Berhad (DNB), the company managing Malaysia's controversial single 5G wholesale network, confirmed two mobile players pulled out of a deal to take stakes in the state-owned entity, requiring the shareholding arrangement with the other four operators to be renegotiated. In s statement, DNB explained despite share agreements being confirmed and ready to be executed by six MNOs by the 30 August deadline, two companies made last-minute decisions not to participate. DNB said transaction documents need to be updated to account for equity subscriptions reduced to four operators, which will require additional internal approvals. It noted discussions with all six operators on the terms for access to the 5G network are progressing under a separate and independent track. Earlier in the week, Reuters reporting Maxis and U-Mobile turned down an offer to be minority shareholders. Telekom Malaysia YTL Communications, the two smallest mobile players in the country, were the first to agree to take stakes, and were followed by Celcom Axiata and Digi, which are in the process of merging. DNB said 5G coverage reached about 30 per cent of populated areas and is on track to hit the target of 80 per cent coverage of populated areas by 2024.

Canadian Operators Agree to Emergency Roaming and Mutual Assistance Commitments

Major Canadian telecoms network operators have signed a Memorandum of Understanding on Telecommunications Reliability 'to ensure the reliability and resiliency of communications networks that are a significant lifeline for those in need during natural disasters, network failures and other impactful emergencies.' The action was ordered by Minister of Innovation, Science and Industry Francois-Philippe Champagne in response to a massive outage on the Rogers network in July. Participating companies – Rogers, Bell, Telus, Eastlink, Cogeco, SaskTel, Shaw (including Freedom Mobile), Tbaytel, Telesat, Videotron, Xplornet and Zayo – agreed to three main Protocols: Emergency Roaming; Mutual Assistance; and the Emergency Network Outage Communications Protocol. The Minister noted that, from 9 September: 'Should one of these providers be faced with a major network outage, the other companies have committed to provide the support and assistance necessary so that Canadians can reach loved ones, access 911, and conduct business transactions. As part of this agreement, the companies also commit to providing clear and timely communications to keep Canadians and appropriate authorities informed about response and restoration during major network outages.' A series of additional steps are being worked on, including: The Canadian Security Telecommunications Advisory Committee (CSTAC) is examining further measures (within six months) to ensure robust and reliable telecommunications networks across the country. The Canadian Radio-television and Telecommunications Commission (CRTC) is pursuing a detailed investigation of Rogers' recent outage, including new measures the latter is putting in place. Innovation, Science & Economic Development Canada (ISED) is reviewing appropriate regulatory measures to be implemented aimed at strengthening the reliability and safety of networks. Work on a Public Safety Broadband Network is also progressing.

Ukraine Will Join EU Roaming Zone

Ukraine aims to join the European free mobile network roaming zone via a digital cooperation agreement signed this week at the eighth meeting of the EU-Ukraine Association Council in Brussels, a move which would allow travelers between Ukraine and the EU to access voice, text and mobile data services without additional charges. As reported by AA.com.tr, Ukrainian Prime Minister Denys Shmyhal announced: 'We signed the Digital Europe Program with a total budget of EUR7.5 billion [USD7.45 billion] that includes some very important digital technologies and also joining the roaming space in the EU.' EU Commissioner for Enlargement Oliver Varhelyi stated: 'We are exploring now sound options for associating Ukraine fully in our roaming area to enjoy the same lowered tariffs between Ukraine and the EU', adding that if Ukraine's telecoms market integrates with the EU it would be of benefit 'not only for the markets but for the people to be able to maintain contact'.

Algar Given Roaming Deadline

Brazil regional operator Algar Telecom has been given 30 days to negotiate a new roaming contract with Claro to support the provision of IoT connectivity. It was recently established that Algar has violated competition rules by providing 'permanent roaming' for IoT/M2M services in regions where it has not been licensed to operate.

Free Mobile and Orange Extend Roaming Deal for Three Years

France's Authority of Regulation for Electronic Communications and Posts (Autorite de Regulation des Communications Electroniques et des Postes, Arcep) has agreed to an extension of the national roaming agreement between Free Mobile and Orange. Their 2G and 3G roaming deal was signed in 2011 and is set to expire on 31 December this year. The regulator has now approved an extension to 31 December 2025.

Austria Ends Regulation of Wholesale Broadband Markets

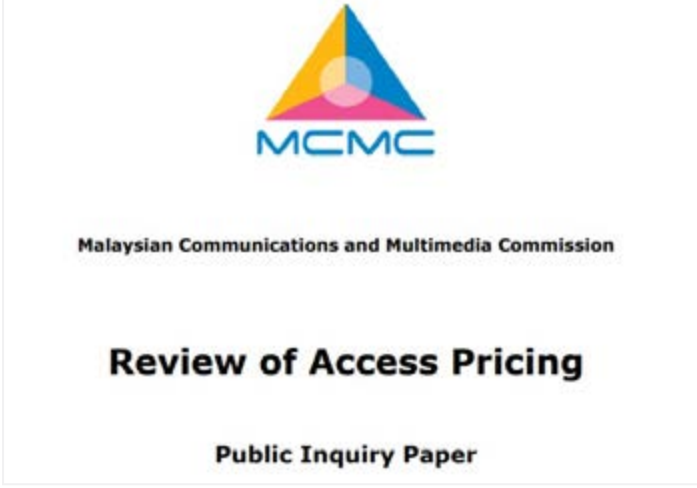
Austria's Telekom Control Commission (TKK) has announced that it has released the wholesale broadband markets from regulation, with a view to accelerating fiber-optic expansion across the country. Following extensive market research, the regulator has determined that A1 Telekom Austria no longer has a dominant position in the provision of consumer products in large parts of Austria and would therefore not be subject to any regulation in this segment anyway. Complete deregulation ultimately became possible because A1 Telekom Austria has concluded private contracts with 19 alternative providers for access to its network over the next five years at least. Overall, this currently covers around 80% of the demand for broadband wholesale products. Furthermore, A1 Telekom Austria has promised to grant other interested providers access to the network under the same conditions in the future. 'The TKK's decision is a milestone in the liberalization of the telecommunications markets. From now on, it will no longer be the requirements of the regulatory authority, but contracts under private law that will ensure broadband coverage for the whole of Austria and ensure competition – of course under the watchful eye of the regulator,' commented Klaus M. Steinmaurer, spokesman for the TKK and Managing Director of the Telecommunications and Post department at the Regulatory Authority for Broadcasting and Telecommunications (RTR).

Anatel Approves TIM Brasil's Proposed WholeSales Product Reference

The National Telecommunications Agency (Agencia Nacional de Telecomunicacoes, Anatel) of Brazil, has approved TIM Brasil's proposed wholesale product reference (oferta de referencia de produto de atacado, ORPA). The agency found no objections to the proposal, which includes 5G and IoT access, and the decision was signed off by competition superintendent Jose Borges on 26 September. The measure is one of the remedies applied in relation to the takeover of Oi Movel by TIM Brasil and rivals Claro and Vivo.

MCMC Launches Review of Access Pricing

A public inquiry on a review of the Mandatory Standard on Access Pricing (MSAP) has been launched by the Malaysian Communications and Multimedia Commission (MCMC), as it seeks to determine cost-based prices for those services included in the Access List Determination (ALD) for the period 2023 to 2025. With the MCMC's public inquiry paper setting out its preliminary views on which facilities and services in the Access List should be subject to price regulation, it is seeking feedback from interested parties on several specific issues, including the regulator's approach to developing economic cost models for specific services, particularly on use of the long run incremental cost (LRIC) methodology. According to the watchdog, it has been working with licensees since April 2022 to collect relevant data and to develop economic cost models that it has used to calculate 'appropriate' cost-based prices. Meanwhile, for the purposes of the public inquiry, the Access List facilities and services have been classified into five major categories, the MCMC confirmed, with those being: 'fixed services'; '4G mobile services'; '5G mobile services'; 'infrastructure sharing'; and 'digital terrestrial broadcasting multiplex service'. A deadline of 21 November 2022 has been set for submissions to the public inquiry.



TECHNOLOGY NEWS

UAE Becomes 11th Market to Access Transcelestial Comms

Transcelestial is expanding into the UAE with systems integrator LinkQuest FZCO to introduce wireless laser communications, which will help people achieve faster and more reliable connectivity. The region's telecom companies, service providers, government, as well as enterprises from the oil and gas and banking-related sectors will make use of the facility. The expansion adds to the fast-growing list of markets including the US, Singapore, Philippines, Malaysia, Indonesia, India, Taiwan, Mongolia, Hong Kong and Australia. "The UAE currently faces two essential communication hurdles: spectrum congestion and network outages. Transcelestial wireless laser comms offers the best solution to address these head-on, being spectrum-free and not susceptible to fiber-related downtime. Partnering up means we can offer a less costly, time-saving alternative to customers whose connectivity plans are delayed by fiber cuts or right-of-way issues, often caused by fiber cables that can take months to resolve," said Mash Khan, CEO of LinkQuest FZCO. Since 1993, UAE-based LinkQuest FZCO has provided supply and turnkey network solutions, as well as network-enabled services to multinational telecom companies, service providers and governments across the Middle East, Pakistan and various African countries. Globally, UAE has the second-highest 5G take-up, with the government regularly investing more in 5G, as well as in infrastructure for connectivity. Laying fiber or RF solutions are the most common practice, but both options come with their own hurdles such as high costs associated with civil work, right-of-way issues, as well as complications when navigating difficult terrain. In Dubai, where fiber is mostly laid underground, it is also necessary to dig tunnels for laying fiber. In addition, accidental fiber cable cuts are also observed in every network, forcing operators to keep fully-equipped teams on standby should a cut interrupt service. Going to market with LinkQuest FZCO in the UAE means that Transcelestial's solution will be sold, implemented and supported locally through an authorized partner. Spanning over two decades, LinkQuest's strong market presence in the telecom solutions sector means that organizations can look forward to localized support via a dedicated point of contact when deploying Transcelestial's technology. "Setting up reliable connectivity infrastructure quickly is essential for the UAE, which aims to be a global leader in the technology space. Wireless laser communications helps provide that without the hassle of digging tunnels to lay fiber or risking downtime due to accidental fiber cuts. Partnering with Linkquest FZCO will allow us roll out connectivity at a faster time-to-market than traditional fiber cables for UAE organizations and provide the necessary customer support," said Rohit Jha, CEO and Co-Founder of Transcelestial. Transcelestial's proprietary wireless technology creates an invisible laser communications network between buildings, cell towers and poles without the need for physical wires, delivering fiber-like speeds at a fraction of cost and time compared to fiber optic cables.

Poland Provides DVB-T2 Update

Poland's National Media Institute (KIM) has completed monitoring the level of Poles' readiness to receive DVB-T2/HEVC terrestrial broadcasts. According to the National Broadcasting Council (KRRiT), the research lasted for over a year and found that the number of household unable to receive such broadcasts fell from 2.27 million to 0.99 million over this period. It adds that the knowledge provided by KIM helped, amongst other things, to create an information campaign aimed at viewers. Although Poland was due to complete the transition to DVB-T2/HEVC by June 30 this year, one multiplex (MUX-3), used by the public broadcaster TVP, is still being allowed to use the old DVB/AVC standard until December 31, 2023.

Singapore Claims First 6G Lab in SEA

The Infocomm Media Development Authority (IMDA) teamed with Singapore University of Technology and Design (SUTD) to launch the Future Communications Connectivity Lab, which they claim is the first physical 6G laboratory in the Southeast Asia. IMDA stated the laboratory will combine 6G R&D with SUTD's AI Mega Centre, and is designed to advance Singapore's future communications and connectivity capabilities as well as talent. Lew Chuen Hong, IMDA CEO, said the "innovations today are not possible without constant investment and keeping our eyes on the next bound…This is the start of our efforts to tap into the promise of future communications tech and become a global node of excellence". The lab is part of Singapore's SGD70 million ($49.7 million) Future Communications Research & Development Program, which is hosted by SUTD and supported by the National Research Foundation. SUTD president Chong Tow Chong said it is "pleased to partner IMDA, to progress the industry's research and educational institutions for talent development in Singapore's wireless communications ecosystem". IMDA stated the testbed will follow 3GPP and open RAN standards to provide "easy evaluation of research outcomes". It added Singapore forged partnerships with institutions including the 6G Flagship in Finland, and the Korean Institute of Communications and Information Sciences.

Bharti Airtel Launched Its 'Always On' IoT

Bharti Airtel has launched its 'Always On' IoT connectivity solution in India, comprising dual profile M2M eSIMs allowing IoT devices to stay connected across multiple mobile network operators (MNOs). Airtel's solution complies with the Automotive Research Association of India (ARAI) AIS-140 standard implemented by the Ministry of Road Transport & Highways setting mandatory requirements for device connectivity and tracking in buses, private fleets and other public transport. As per law, all registered buses and taxis have to mandatorily install such devices, while the government recently also mandated vehicles carrying hazardous goods to install AIS-140 compliant trackers. Other uses include emergency vehicles, mining and construction vehicles and other mission-critical use cases.

Bangladesh's First IoT-Based Delivery Solution DigiBox Starts Officially

State Minister for ICT Division, Zunaid Ahmed Palak inaugurated Digibox, the first entirely "Made in Bangladesh" IoT Smart delivery solution. "Digibox developed by the ekShop of a2i offers seamless last-mile delivery, storage, and pick-up experience. It champions ICT Division's motto of 'Made in Bangladesh' for hardware and software solutions," the state minister said in the chief guest's speech at the inauguration event held at the ICT Tower, Agargaon, Dhaka. While speaking as the chief guest at the event, he said the private sector employed more than 1 lakh people in the past four years to deliver products. "But as there is a lack of logistics infrastructure, a lot of innovation is still needed in the sector. And this is where ICT Division's ekShop comes in," he said. Zunaid Ahmed Palak added that Amazon started this service called "Amazon go Locker" in 2018, so did Alibaba in the same year, while India started back in 2020. "All of these solutions are either American, European or Chinese and would cost anywhere between $15000-$30000 per installation, where ekShop-Digibox is completely manufacturing them in Bangladesh and saving on that cost," he further added. At present, there are about 2,500 e-commerce companies in the country and at least 50,000 business pages on Facebook. The local e-commerce sector is expected to be worth Tk26,000

crore or $3 billion next year, said Zunaid Ahmed Palak. "It is a pleasant surprise to see a Bangladeshi-made solution for end-mile logistics incorporating IoT and next-generation technology," Daraz's Global CEO Bjarke Mikkelsen said. Daraz is proud to partner with the ekShop-Digibox initiative for its last-mile delivery solution and hopes to expand or multiply its reach in the near future," he added. Describing the features of Digibox, Rezwanul Haque Jami, Head of Digital Business at Aspire to Innovate (a2i) Program, said it is well-suited for solving storage and distribution challenges in any industry. With its help, companies have improved their operations while reducing labor costs, asset losses, and automated regulatory compliance. For e-commerce logistics, it allowed users with the fastest delivery-retrieval cycle. There is no more missed delivery or returns or extra delivery cost. "Digibox is designed in such a way that one single installation can serve up to 300 customers a day, without spending Tk50-100 per delivery; that is a saving of Tk5-Tk9 lakh a month," he added. Currently, DigiBox has been installed on Daraz

Tejgaon Hub, Zigatola Hub, Mohammadpur Hub, Celebrations Point (Gulshan), BCC Bhaban - ICT Tower and Agrabad Hotel Chattogram. So far, in only a few weeks of operations, the system collected and distributed more than 5000 parcels. This portrays the sharp demand for this kind of simple yet sophisticated IoT logistics device in the market. Apart from the places, work is underway to install DigiBox on Jamuna Future Park, Shimanto Shambhar, North South University, Dhaka University, and Mirpur as part of its nationwide expansion agenda. It is estimated that with 1000 such boxes across Bangladesh, the total logistics lead time can be reduced by 50% for the whole ecommerce sector. Dr. Dewan Muhammad Humayun Kabir, project director at Aspire to Innovate (a2i) Program, chaired the event, while Bjarke Mikkelsen, Global CEO of Daraz, Alibaba Group, and Syed Mostahidal Hoq, Managing Director of Daraz Bangladesh spoke at the program.

German Cellcos Progress Plans to Eliminate Mobile 'Grey Spots'

German mobile network operators (MNOs) Vodafone, O2 Telefonica and Telekom Deutschland have revealed they are working closely to eliminate dead network signal spots in rural parts of Germany to improve mobile phone coverage. In a press release, Vodafone published an update on progress to date, noting that, working with Telekom, the pair have now closed more than 2,600 'grey spots' since signing the cooperation agreement in early 2021, with around 400 more areas to follow. Further, Vodafone noted that its agreement with Telefonica has also finally kicked into gear. 'The starting signal has also been given for the cooperation between Vodafone and Telefonica: Vodafone is now using the network technology of the operator O2 Telefonica, which has been the only operator there up to now, at its first locations,' the statement read. In turn, O2 Telefonica customers can access Vodafone's network in these locations, while in its own press release O2 Telefonica revealed that under its pact with Telekom, so far mutual access has been provided at 200 cell phone sites, with up to 700 locations set to follow by the end of the year – affording coverage to some 100,000 Germans.

Bullitt Targets Satellite Phone Space

Rugged phone manufacturer Bullitt Group was tipped to become the latest to equip standard devices to receive satellite signals, with BBC News reporting the company aimed to launch a product in early 2023. The news service stated UK-headquartered Bullitt plans to launch a device capable of sending and receiving messages in February 2023. Bullitt co-founder Richard Wharton stated it hopes to "jump ahead" of rival services and devices with a smartphone "capable of two-way messaging". The Bullitt phone is expected to automatically link to one of two global satellite networks in areas lacking mobile coverage. It will run a chip developed over the past 18 months by Asian manufacturer, Wharton told BBC News. There is growing interest in equipping standard mobile devices to receive satellite signals, with rumors Apple's latest iPhone will offer connectivity to Globalstar birds and a Google executive this week indicating a future version of Android will be compatible. Late last month, T-Mobile US revealed a deal to deliver connectivity from the second generation of SpaceX satellites, one of several operators and specialist players exploring such deals.

NBN Co Selects Nokia's 5G mmWave FWA Technology

Finnish vendor Nokia has been selected by Australia's NBN Co to supply 5G fixed wireless access (FWA) mmWave customer premises equipment (CPE) for the latter's upgraded fixed wireless offerings. According to Nokia, in what it claimed is a world-first the CPE it will provide can support high frequency mmWave bands and enable gigabit speeds for premises within a 7km radius of a radio base station. Nokia's CPE comprises an outdoor unit installed on the roof of the premise and an indoor unit providing user interfaces for the customer, connecting to the outdoor receiver with a 2.5Gbps Power over Ethernet connection. In a press release regarding the matter it was noted that an upgrade program will see NBN Co's existing fixed wireless network footprint – which currently covers almost 650,000 premises – extended 'by up to 50%', also bringing FWA to approximately 120,000 former satellite-only eligible premises. Meanwhile, it was noted that the 5G mmWave upgrade program will utilize the 28GHz band, to be operated in Non-Stand Alone (NSA) mode, along with cmWave spectrum and will help enable faster speeds on the network, including the launch of two new wholesale high speed tiers – 100Mbps and 250Mbps. Commenting, Jason Ashton, Executive General Manager, Fixed Wireless and Satellite at NBN Co, said: 'We are facing a step-change in demand for broadband in rural and regional areas, with an estimated 300% increase in demand for data on our fixed wireless network over the next ten years. Nokia's 5G mmWave solution allows NBN Co to better utilize both our sub-6GHz and 5G mmWave spectrum allocations to vastly extend the range, speed and capacity of our existing fixed wireless network and improve the end user's experience.'

NTT Docomo Tips 6G to Fuel Sci-Fi Style Applications

Takehiro Nakamura, chief technology architect of Japanese operator NTT Docomo, highlighted 6G's potential to provide augmentation of human capabilities but stressed it had no ambition to win the global race to network deployment. Speaking during the digital event's day three keynote, Nakamura portrayed a vision of 6G operating on very high spectrum bands improving current communications applications while providing the basis for advanced technology previously seen in science fiction. This includes use of sensors, data and artificial intelligence to create so-called "human augmentation". In terms of timelines for 6G, the executive expects standardization discussions in the mid-2020s with a final agreement by 2028 and commercial deployment in 2030. However, he noted "some companies [and] some countries are very aggressive to deploy the new generation system," adding this meant there was a chance some could go live in 2028 or 2029. The latter timescale fits with timelines previously cited in some markets and vendors. Although clearly enthused by the possibilities of 6G, Nakamura dismissed the suggestion NTT Docomo would be the first global player to hit the button on the technology as it had been with 3G back in 2001. Discussing the importance of being the first to launch, he added "it is not so important anymore" citing its "bad experience" as the pioneer of 3G with initial system deemed unstable. "In 4G and 5G we did not have any motivation to be [the] world's first operator, but we want to be in the first group of operators to launch new generation systems," Nakamura stated, noting this policy was being followed into the 6G era.

Fastweb Ups Peak 5G Download Rate to 1.6Gbps

Italian telco Fastweb has upgraded the maximum download speed available on its 5G network to 1.6Gbps. According to a report from MondoMobileWeb, the peak rate now matches that given by its 5G network sharing partner, WINDTRE. In July this year Fastweb claimed 60% population coverage for its 5G service.

Cloud Carib Signs Memorandum Of Understanding with CTU

The Caribbean Telecommunications Union (CTU) signed a memorandum of understanding (MoU) with Bahamian-based cloud service provider Cloud Carib for cyber security and other information and communication technology (ICT) services. Specifically, the MoU provides for the creation of a single ICT space by delivering sovereign cloud, data residency, data sovereignty, mission critical services and cyber security in support of member states, in support of the digital transformation of regional governments. The signing took place at a press conference during the CTU/ICT Conference held at Margaritaville Beach Resort. Officials said the issue of cyber security has become even more important as governments move their services online. "We, all members of the CTU, should be driven to protect future generations. And how we build protection for future generations is by driving a hyper competitive market and envisioning not the services of today, but those that will protect the future generations yet born," Cloud Carib Chief Executive Officer Scott MacKenzie said during yesterday's press conference. "This MoU is simply one member's commitment to the member states, that there is a company dedicated to the region's vision of a single ICT space and our business is focused on realizing that vision with each member state before 2030. The CTU is our vehicle of collaboration and if this event has proven anything to me, it is the commitment of member states to realize the vision and not only discuss and debate change, but act and prove to the citizens and peoples of the region that we can make it happen before 2030." In addition to cyber security, other matters being addressed during this week's conference include fintech and how to digitize money in the region. "Tomorrow we will hold a ministerial seminar, where members will be brought up to date on some of the trends in ICT including 5G and the forecast for the region over the next three to five years. We will also discussion new satellite technology that will help to bridge that digital connectivity gap," CTU Secretary General Rodney Taylor said.

ZTE, China Mobile Test 5G NTN Solution

Chinese vendor ZTE, full-service provider China Mobile and the China Transport Telecommunications and Information Group, have showcased what they claim is the world's first field trial 5G Non-Terrestrial Network (NTN) technology at the 5G-Advanced Industry Development Summit in Beijing. The trials demonstrated services such as short messages and voice services, with performance meeting expectations. As such, the satellite-based solution was considered 'very likely feasible' and would be used in emergency communication service pilot projects in Beijing, Yunnan and other provinces. The trial comprised a series of tests of the direct connection between a handset and satellite, which the operators claim provides support for ubiquitous connection, more use cases, integrated industry chains and low operating and maintenance costs. Regarding the NTN solution, ZTE explained: 'The trial was based on the 3GPP R17 and was based on a network architecture using high-orbit satellite for transparent forwarding to implement end-to-end link interconnection among terminals, satellites, terrestrial gateways, base stations, core networks, and service servers. The L-band satellite and terrestrial gateways – located between the NTN terminal and the base station – were responsible for air-interface message transmission. The terrestrial gateways were interconnected with the 5G NTN base station. The terminal was connected to the terrestrial core network and service platform through the satellite, gateways, and NTN base station in turn to implement end-to-end service interconnection.'

Operators Tip 5G-Advanced to Boost XR, IoT

Executives from China Mobile and Orange opened up on how best to deliver 5G-Advanced, a journey that aims to enable a range of services including XR and the metaverse, along with benefits for the IoT. 5G-Advanced, as part of 3GPP Release 18 in 2024, is flagged as the next milestone in the 5G era and an evolution of the latest generation of mobile technology. During a webinar accompanying the publishing of a GSMA white paper on 5G-Advanced, Nan Hu, a vice director at China Mobile Research Institute, cited the gains made through collaboration in the operator's deployment of standalone (SA) 5G and explained the same approach would be key to unlocking the next phase in the technology's development. China Mobile is developing cross-layer technology designed to cope with the demands XR will place on data rates and latency, which Nan noted will require "massive radio resource". The cross-layer approach essentially enables services and RAN to be aware of each other to boost capacity and reduce latency. Nan said China Mobile is targeting a ten-time hike in capacity over current 5G networks, and latency of between 5ms and 10ms. Another "hot topic" for 5G-Advanced will be integrated sensing and communications (ISAC). Nan cited autonomous driving as a potential beneficiary, with improved distance detection and image resolution over current systems. Benoit Graves, head of 3GPP RAN standardization with Orange, noted the IoT is another area operators are focusing on, with 5G-Advanced expected to deliver benefits for so-called reduced capability (red cap) devices including smartwatches, wearable medical monitors, AR/VR goggles. Graves noted power efficiency "is a critical element for our network" and so Orange is looking to 5G-Advanced to contribute to its carbon emission and net zero goals, with the technology offering a means to optimize RAN "power performance and increase efficiency with automation". Each operator also discussed combining TDD and FDD networks, a move Nan said will "change the paradigm for spectrum utilization" by suppressing interference within cells. Testing with prototypes achieved upload data rates of 1.4Gb/s with a 4ms delay, he said.

NTT Docomo Claims First 5G Network with Both Sub-6 GHz and mmWave

Japanese telco NTT Docomo claims to have the world's first commercial 5G Standalone (SA) network that enables smartphones to simultaneously use both mid-band (sub-6 GHz) and mmWave frequencies, known as 5G NR Dual Connectivity. The announcement was made with wireless technology company Qualcomm, which was keen to showcase that smartphones powered by its Snapdragon 8 Gen 1 platform are able to exploit the full speed of the new network. Operational since the end of August, NTT Docomo's 5G NR-DC network is pitched as a significant milestone in the evolution of 5G. This is because 5G services typically operate using either sub-6 GHz frequency bands, or the mmWave frequencies that offer higher speeds but typically lower range. Many network operators around the world have chosen to deploy 5G in mid-band frequencies alongside existing 4G networks, and the success of these has somewhat sidelined the mmWave technology, which has largely been confined to networks operating in the US, such as Verizon. In fact, the GSM Association felt compelled last year to launch an accelerator initiative to drive awareness of mmWave technology to "underline the role that mmWave plays in unlocking the full potential of 5G." According to Qualcomm and NTT Docomo, the combination of sub-6 GHz and mmWave bands brings to market new capabilities for both consumers and enterprises, offering both high speed in dense urban areas and seamless wide-area coverage. Qualcomm claims that users with specific handsets are already seeing download speeds of up to 4.9Gbps and upload speeds up to 1.1Gbps in urban areas when using the new network. These handsets are the Sharp Aquos R7, Samsung Galaxy S22, Samsung Galaxy S22 Ultra, and Sony Xperia 1 IV, all of which are based on its Snapdragon 8 Gen 1 platform. Durga Malladi, Qualcomm Senior VP for Cellular Modems and Infrastructure, said that with 5G NR-DC, NTT Docomo can deliver to users the high capacity of 5G mmWave and wide coverage of 5G mid-band. Meanwhile, NTT Docomo EVP and CTO Naoki Tani said that his firm would continue to bring cutting-edge technologies to customers to make mobile environments more comfortable. Qualcomm said it will continue to develop new 5G Standalone technologies, including network slicing technology and developing faster speeds through NR-DC. The company is also working with Ericsson and Thales on technology that could deliver a 5G network service from low-Earth orbit satellites. This is based on changes in Release 17 of the 5G specifications from the 3GPP telecommunications standards body, which allow for satellite-driven 5G non-terrestrial networks (5G NTNs).

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REGULATORY NEWS

Member States Elect Doreen Bogdan-Martin as ITU Secretary-General

Member States of the International Telecommunication Union (ITU) have elected Doreen Bogdan-Martin of the United States of America as the organization's next Secretary-General. Bogdan-Martin will be the first woman to lead ITU, which was established in 1865 and became a United Nations specialized agency in 1947. The election took place during ITU's Plenipotentiary Conference (PP-22) in Bucharest, Romania, with representatives of Member States voting during the meeting's morning session. Bogdan-Martin won the position with 139 votes, out of 172 votes cast. "Whether it's today's children or our children's children, we need to provide them with a strong and stable foundation for growth," Bogdan-Martin said. "The world is facing significant challenges – escalating conflicts, a climate crisis, food security, gender inequalities, and 2.7 billion people with no access to the Internet. I believe we, the ITU and our members, have an opportunity to make a transformational contribution. Continuous innovation can and will be a key enabler to facilitate resolution of many of these issues." Ms. Bogdan-Martin has held leadership positions in international telecommunications policy for over two decades. Throughout her career, she has brokered innovative and visionary partnerships with the private sector, civil society, and other United Nations agencies to accelerate digital inclusion and connectivity. Bogdan-Martin will begin her four-year term as ITU Secretary-General on 1 January 2023. The Secretary-General-elect has pledged "to continue driving this institution to be innovative and increasingly relevant for our Member States, better positioning all of us to embrace the digital environment and make progress on achieving UN Sustainable Development Goals and connecting the unconnected."

Inclusive digital development

Bogdan-Martin was endorsed by her country's government as a candidate to make the digital future inclusive and accessible for everyone, especially in developing countries. US President Joe Biden, in a 20 September statement backing her candidacy, said: "Ms. Bogdan-Martin possesses the integrity, experience, and vision necessary to transform the digital landscape." As chief architect of ITU's development work in recent years, Bogdan-Martin has emphasized the need for digital transformation to achieve economic prosperity, job creation, skills development, gender equality, and socio-economic inclusion, as well as to build circular economies, reduce climate impact, and save lives. Her current term as Director of ITU's Telecommunication Development Bureau ends on 31 December 2022. Among her campaign priorities, she said she would "lead ITU into a new era of global and regional partnerships," adding that the organization "must evolve and sometimes break from old ways" to stay relevant.

Electing ITU's other top leaders

At the ITU Plenipotentiary Conference, Member States will also elect candidates to the posts of Deputy Secretary-General, Radiocommunication Bureau Director, Telecommunication Standardization Bureau Director, and Telecommunication Development Bureau Director. The voting for ITU's senior leadership will be followed by elections for the 12-member Radio Regulations Board and for regionally allocated Member State places on the 48-seat ITU Council, which governs ITU between quadrennial Plenipotentiary Conferences.

Broadband Commission Highlight's Role of Digital Technology in Globe's Future - Commissioners Address Pandemic-Driven Realities and Review Next Steps for Meaningful Universal Connectivity

Digital technologies should form the foundation of education and skills-building as communities continue to adapt to the realities brought on by the COVID-19 pandemic, according to the Broadband Commission for Sustainable Development, which met on Sunday at its annual fall meeting. The Broadband Commission, made up of public and private sector leaders, makes policy recommendations centered around broadband connectivity to accelerate progress toward achieving the UN's 2030 Agenda for Sustainable Development. At the New York meeting, the global technology and development body also emphasized the need for public-private cooperation to develop national strategies to enhance digital skills and advance school connectivity. "We have made significant progress globally in ensuring universal access to broadband continues to improve, but much remains to be done," said Paula Ingabire, Rwanda's Minister of Information Communication Technology and Innovation representing Rwandan President Paul Kagame, Co-Chair of the Commission. "The mission of the Broadband Commission still rings as relevant today as when it was first formed. We must continue to strive for universal access to meaningful, safe, secure, and sustainable broadband communications services that are reflective of human and children's rights. Public-private partnerships continue to be a key tactic towards enabling us to achieve this objective."

Advocacy targets aimed at broadband development

To mobilize efforts to achieve universal connectivity–the international aim to connect all of humanity to the Internet—the Broadband Commission puts broadband connectivity at the forefront of global policy discussions. The Commission's "2025 Advocacy Targets" focus on providing policy and programmatic guidance for national and international action in broadband development. About 2.7 billion people— one-third of the global population—still lack access to the Internet, with even fewer people enjoying reliable broadband access, according to the latest statistics from the International Telecommunication Union (ITU). With only three years left to meet the Commission's set of seven targets, the fall meeting set out to address the remaining gaps for reaching universal broadband connectivity. "The successful expansion and rapid adoption of high-speed connectivity experienced over the recent decades, and especially over the last two years of the pandemic, has been transformative for our daily lives, societies and economies," said Commission Co-Chair Carlos Slim. "Digital services that have proven so essential during this crisis are however still out of reach, too expensive or complicated to use for too many people around the world."

Technology's role in education

During the meeting, convened ahead of the U.N.'s Transforming Education Summit at the opening of the 77th Session of the U.N. General Assembly, the Commission called for universal, inclusive and affordable connectivity for the digital transformation of education. "Accelerating broadband for the new realities of a rapidly changing world is as important as it is timely," said Catherine M. Russell, Executive Director of UNICEF and a Commissioner of the Broadband Commission, who hosted the meeting. "Three years since UNICEF and ITU launched the Giga initiative with this group of Commissioners, we have connected more than 2 million children to the Internet. However, the global learning crisis remains real and the pandemic has made it worse. The Transforming Education Summit is a rare opportunity to drive new commitments and investments in innovation so we can reach every child."

Smaller businesses can make big contributions

The meeting also explored innovative approaches to increasing affordability of access to digital services and devices—including for home-based work and learning—with a focus on micro, small and medium-sized enterprises (MSMEs) and the most vulnerable populations. The approaches examined considered the current economic environment. "I am pleased that MSMEs are featured prominently in this year's State of Broadband report," said ITU Secretary-General Houlin Zhao, a Co-Vice Chair of the Commission. "Innovation does not

come just from big industry. Startups and entrepreneurs make vital contributions in this area, and we should continue to work toward ensuring greater participation from small business throughout ITU's work."

A forum for multistakeholder engagement

More than 40 Commissioners and representatives attended the Broadband Commission meeting comprising government leaders, as well as heads of international organizations, private sector companies, civil society and academia. Special guests also attended, including Amandeep Singh Gill, UN Envoy on Technology, and Rabab Fatima, UN Under-Secretary-General and High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States (UN-OHRLLS). Among other topics, participants discussed how connectivity and technological innovations are enabling swift adaptation to hybrid education; empowering learners through open education resources and data; building capacities of civil servants for effective digital transformation; and providing platforms for strengthening the literacy necessary for navigating digital spaces. Addressing the persistent digital divide and meeting the Commission's advocacy targets requires strategies, policies and a conducive regulatory environment, says the report. That environment should encourage affordable, meaningful, safe and inclusive broadband services, and it should attract the large investment that is needed. "The need for greater access to broadband that is fit for purpose in this new world has never been more urgent," said Doreen Bogdan-Martin, Director of ITU's Telecommunication Development Bureau and Executive Director of the Commission, "we need the right regulatory environment and the right strategies and policies." Commissioners leading working groups on Smartphone Access and AI Capacity Building presented findings and recommendations of their final reports. The preliminary findings of the interim discussion paper of the Working Group on Data for Learning were also introduced. During the meeting, Mr. Zhao, whose second term as Secretary-General at ITU ends this year, was presented with a certificate of appreciation for his commitment to bringing broadband to the top of the global policy agenda and to supporting digital cooperation for reaching universal connectivity.

Government to Ensure 5G Services Remain Affordable in India: Union IT Minister Ashwini Vaishnaw

Telecom companies will now not require any approval from authorities for laying cables or installing mobile towers or poles over private properties. Government has said that it will ensure that the 5G services are affordable in India. The Union IT Minister Ashwini Vaishnaw has said that his expectation was that 5G services will reach in every part of the country. "Our expectations are that 5G should reach in every part of the country in next two to three years. We'll ensure that it remains affordable. The industry is focusing on both urban as well as rural areas: Union IT minister," ANI tweeted quoting the minister. Meanwhile, telecom companies will now not require any approval from authorities for laying cables or installing mobile towers or poles over private properties, according to new Right of Way Rules notified by the government recently. The government also notified rules for using electric poles, foot over bridges etc for installation of small mobile radio antennas or laying overhead telecom cables along with charges to ease roll out of telecom networks specially 5G services. "Where the licensee proposes the establishment of overground telegraph infrastructure over any private property, the licensee shall not require any permission from the appropriate authority," the notification dated August 17 said. However, the telecom companies will need to submit an intimation, in writing, to the appropriate authority, prior to the establishment of a mobile tower or pole over a private building or structure, according to the Indian Telegraph Right of Way (Amendment) Rules, 2022. In their intimation to government authorities, telecom companies will need to submit details of the building or structure, where the establishment of a mobile tower or pole is proposed, and a copy of certification by a structural engineer, authorized by the appropriate authority, attesting to the structural safety of the building or structure, where the mobile tower or pole is proposed to be established. Telecom companies using street furniture for the installation of small cells will be required to pay Rs 300 per annum in urban areas and Rs 150 per annum in rural areas per street furniture, the notification said. For installing cable using street furniture, telecom companies will be required to pay Rs 100 per annum per street furniture, according to the notification.

TDRA Congratulates Amazon for Launching Its Regional Cloud Services Data Centers in the UAE

The Telecommunications and Digital Government Regulatory Authority (TDRA) congratulates the tech leader Amazon Web Services (AWS) for the launch of the new AWS Middle East (UAE) Cloud Region in the UAE on schedule set since the launch of the project in the first half of 2021. AWS, through its new data centers, will be able to provide many innovative services and solutions to companies operating in various fields such as healthcare, financial services, advertising, marketing, manufacturing, travel and hospitality, among others. H.E. Eng. Majed Al Mesmar, TDRA Director General, commended Amazon for this step. He said: "It reflects the leading position of the UAE as a digital economy hub. It also signifies the confidence of major international companies in the advantages available in the UAE. We consider this step as a milestone in our race to a sustainable digital future, which we build in partnership with the private sector, as a reflection of our wise leadership vision to consolidate a comprehensive and integrated digital life." H.E. Al Mesmar added: "This step coincides with the first year of our second 50 years' journey, which will be full with leading achievements. It also corresponds to the increasing importance of cloud computing, which has become an integral part of the root technologies of the Fourth Industrial Revolution era. We commend the tireless efforts of TDRA's team in coordination with the service providers to provide advanced ICT infrastructure for Amazon, which enabled it to complete this project on schedule. We also thank the government entities that supported this achievement, including Abu Dhabi Investment Office, Dubai FDI, Dubai Digital

Authority, local customs authorities, and many others. We believe that the prospects for this project will soon be evident through the broad networking that will benefit many institutions." H.E. Al Mesmar thanked the telecom service providers in the UAE for their cooperation in this project and for their efforts to establish a strong infrastructure that attracts investments. He added that telecom companies will always be the active partner in shaping the process of sustainable digital transformation. Isabella Groegor-Cechowicz, Vice President of World-Wide Public Sector EMEA Sales said "By leveraging the new AWS UAE Region, there are more opportunities for government organizations and industry to harness the power of the cloud to accelerate innovation and digital transformation in line with the UAE's economic and national agendas. The new region will drive job creation and provide training for highly sought-after technology skills whilst also offering the UAE's customers access to the most advanced cloud technologies with the highest levels of security, availability, and resiliency. The UAE has established itself as a leading global digital hub, and AWS is proud to be supporting its ambitions for future growth.

FCC to Explore Using 12.7GHz Band for 5G, 6G and Beyond

The Federal Communications Commission (FCC) has voted to explore repurposing up to 550MHz in the 12.7GHz-13.25GHz ('12.7GHz') range for next-generation mobile broadband services. The watchdog notes: 'The FCC expects that this inquiry is the first step in providing for more intensive use of the 12.7GHz band, unlocking a significant expanse of valuable mid-band frequencies that may play a key role in delivering on the promise of next-generation wireless services, including 5G, 6G, and beyond.' The FCC has also extended the 180-day freeze on filing applications for new or modified authorizations in the 12.7GHz band, pending the outcome of the new proceeding.

Internet Surge Slows, Leaving 2.7 Billion People Offline in 2022

An estimated 2.7 billion people – or one-third of the world's population – remain unconnected to the Internet in 2022. New data from the International Telecommunication Union (ITU), the United Nations specialized agency for information and communication technologies, point to slower growth in the number of Internet users than at the height of COVID-19. An estimated 5.3 billion people worldwide are now using the Internet. While continued growth is encouraging, the trend suggests that without increased infrastructure investment and a new impetus to foster digital skills, the chance of connecting everyone by 2030 looks increasingly slim. "The COVID-19 pandemic gave us a big connectivity boost, but we need to keep the momentum going to ensure that everyone, everywhere can benefit from digital technologies and services," said ITU Secretary-General Houlin Zhao. "This can only be achieved with more investments in digital networks and technologies, implementing best practice regulation, and a continued focus on skills development as we move to a post-pandemic era." ITU's new estimate of 2.7 billion people unconnected compares with an updated estimate of 3 billion people unconnected worldwide in 2021. In 2019, prior to the COVID pandemic, an estimated 3.6 billion people, or nearly half the world's population, were unconnected. Amid concerns about slowing progress, ITU analysis indicates two major challenges in terms of advancing the world's digital transformation:

- First, achieving universal connectivity – which in effect means bringing the remaining one-third of humanity online – will prove increasingly difficult. Most relatively easy-to-connect communities now have access to technologies like mobile broadband, spurring rapid and widespread uptake of digital services. Those still offline mostly live in remote, hard-to-reach areas.
- Second, the shift from basic to meaningful connectivity – by which people not only have ready access to the Internet but are able to use it regularly and effectively to improve their lives – is complex. Often, such challenges are overlooked or under-estimated. Barriers can include slow Internet speed; limited affordability of hardware and subscription packages; inadequate digital awareness and skills; and linguistic and literacy barriers, as well as issues like gender discrimination or the lack of reliable a power source. All these need to be addressed if everyone is to enjoy equitable access to online resources.

Doreen Bogdan-Martin, Director of the ITU Telecommunication Development Bureau, said: "While the rise in the number of people using the Internet worldwide is positive, we should not assume the robust growth witnessed in recent years will continue unabated. Those who are still not using the Internet will be the most difficult to bring online. They live in remote areas, often belong to disadvantaged groups, and in some cases are unfamiliar with what the Internet can offer. That is why our target needs to be not just universal connectivity, but universal meaningful connectivity." ITU defines 'meaningful connectivity' as a level of connectivity that allows users to have a safe, satisfying, enriching and productive online experience at an affordable cost. Globally, the number of Internet users grew by 7 per cent and Internet penetration – the share of individuals using the Internet – grew by 6 per cent between 2021 and 2022. However, growth is unevenly distributed across regions. Areas with low Internet penetration have achieved the fastest growth over the past year – following a typical diffusion pattern for new and emerging technologies.

- Africa, the least connected of ITU's six world regions, achieved 13 per cent year-on-year growth of Internet penetration. Today, 40 per cent of the population in Africa is online.
- The Arab States showed robust growth, with the Internet now reaching 70 per cent of the population.
- In Asia and the Pacific, Internet penetration grew from 61 per cent in 2021 to 64 per cent in 2022, relative to the region's population.
- The Americas, the Commonwealth of Independent States, and Europe each achieved 3 per cent growth, with more than 80 per cent of the population online in each region.
- Europe remains the most connected region globally, with 89 per cent of its population online.

EU Regulators Group Against Big Tech Paying for Telco Infrastructure

A group of European telecom regulators does not support the idea of having big tech firms such as Google and Netflix paying for telecommunications infrastructure, it said in published initial findings. The findings by the Body of European Regulators for Electronic Communications (BEREC) come as the European Commission is debating whether internet platforms should be obliged to fund digital infrastructure such as 5G telecoms networks, given they make heavy use of it. "BEREC has found no evidence that such (a direct compensation) method is justified given the current state of the market," the BEREC conclusions said. The telecommunications industry has argued Google, Netflix, Meta, Amazon, Microsoft and Apple should pay for a "fair share" of telecom infrastructure as their services make up more than half of internet traffic. However, digital rights groups fear that if the big tech firms fund infrastructure, they will also strike deals with telecom firms to give their own traffic preferential treatment, undermining the principle of net neutrality. In a reaction to the BEREC findings, telecom lobby group ETNO - the European Telecommunications Network Operators, which represents Deutsche Telekom, Orange Group, Telefonica and others - rejected the BEREC findings as outdated and said it would submit new evidence to the Commission to support its position. BEREC's findings said the internet had proved resilient to changing traffic patterns in the past and following ETNO's proposals "could be of significant harm". EU industry chief Thierry Breton has said the European Union will review the matter early in 2023.

EU Consults Stakeholders on Semiconductor Value Chain

The European Commission and the 27 Member States have announced the launch of a consultation on the semiconductor value chain as part of the proposal for a European Chips Act. Companies active in the semiconductor supply chain and firms relying on semiconductors to deliver their products or services are invited to submit views, evidence and data before 11 November.

CTU Inks Deal to Accelerate Digital Transformation in the Region

THE Caribbean Telecommunications Union (CTU) signed a joint declaration with the Organization of American States (OAS) to accelerate digital transformation in the region. The signing was done through the OAS' Inter-American Telecommunication Commission (CITEL); the Latin American Telecommunications Regulators Forum (REGULATEL); and the Regional Telecommunications Technical Commission (COMTELCA), a specialized institution of the Central American Integration System (SICA). CTU Secretary General Rodney Taylor said "the CTU strongly supports multilateral collaboration with inter-American agencies because it provides opportunities to explore areas of cooperation on matters of digital transformation and harmonized regulation policies, which are all critical to the region's social and economic development." He added, "The CTU looks forward to strengthening collaboration and promoting the interests of the Caribbean among inter-American organizations. The region needs to learn from each other's experiences, know what works within the context of small developing states and focus on the development of regional development as a key long-term objective." The signing took place at the International Telecommunication Union's Plenipotentiary Conference 2022. The declaration seeks to enable digital transformation in the Americas through the promotion of regulatory frameworks focused on user needs, with special attention being given to vulnerable groups, unserved/underserved areas, remote populations and people with disabilities. The CTU said this collaboration will enable the union to develop special cooperative relationships to further accelerate its existing 21st-century government initiative, in which it supports and works with Caribbean governments to improve government services so that they are personalized and responsive thereby enhancing citizens' end-to-end experience of public services. Similarly, the CTU will promote and support actions to unleash the potential of digital transformation among its partner organizations. Importantly, the joint declaration also establishes the framework for the parties to develop a harmonized telecommunication/

ICT environment through the implementation of intelligent, harmonized regulation to promote the development of ICT services in the region. The joint declaration therefore provides an additional layer of collaboration between regulatory bodies from the partner organizations and will support the Caricom Heads of Government recent mandate to establish a Caricom single ICT regulator. According to Statista Research Department, as of January 2021, the Dutch territory of Aruba had the highest internet penetration rate in the Caribbean, with over 97 per cent of its population online. As of that point in time, the sovereign state in the region with the highest percentage of citizens online was The Bahamas, with a rate of 85 per cent. Meanwhile, around 37 per cent of Haiti's population, and under 20 per cent of St Martin's, were using the Internet. Also during this time, Chile had the highest social media reach within Latin America and the Caribbean. Jamaica's Internet penetration rate stood at 68.2 per cent of the total population at the start of 2022.

ITU and UAE Sign Host Country Agreement for 2023 World Radiocommunication Conference in Dubai

The International Telecommunication Union (ITU) and the United Arab Emirates (UAE) have signed an agreement for the hosting of the next World Radiocommunication Conference (WRC-23) to be held at the Dubai World Trade Centre, Dubai between 20 November and 15 December 2023. The WRC-23 host country agreement was signed in Bucharest, Romania, at the ITU Plenipotentiary Conference (PP-22). Held every four years for a period of four weeks, the World Radiocommunication Conference (WRC) is mandated to update the Radio Regulations, the sole international treaty governing the use of the radio frequency spectrum and the geostationary and non-geostationary satellite orbits. "As the world works towards achieving the 2030 Agenda for Sustainable Development, collaboration, cooperation, and consensus building are more critical than ever to enable all countries and their citizens to have access to affordable and sustainable digital technologies and services," said ITU Secretary-General Houlin Zhao. "I would like to sincerely thank the United Arab Emirates and the city of Dubai for agreeing to host the next World Radiocommunication Conference." WRC-23 will bring national government authorities and telecommunication regulatory agencies together with representatives of key radiocommunications users and providers to consider crucial policy and technical regulatory discussions at the global level. H.E Engineer Majed Sultan Al Mesmar, Director General of the UAE Telecommunications and Digital Government Regulatory Authority (TDRA), said: "We are eager to host the WRC-23 and we are determined to make it a success story to be added to the many milestones in our fruitful relationship with the ITU. By hosting WRC-23, the UAE would be the only country that has chaired and hosted all the ITU-affiliated conferences. We welcome all the participating countries, and we wish them a pleasant stay in the UAE, and we hope that all the desired results of this conference will be achieved, on the way to promoting digital transformation and increasing communication between parts of the world in a way that contributes to achieving sustainable development." International cooperation throughout the four-year conference cycle supports the availability of radiocommunication services that are free of harmful interference, as well as future investment in these essential resources. "WRC-23 will provide ITU Member States the opportunity to update the Radio Regulations which play a key role in shaping the future of technical and regulatory frameworks necessary to provide a solid foundation for the further advancement of innovative and affordable technologies that define how we work, do business, communicate, acquire knowledge, access vital services and much more," said Mario Maniewicz, Director of the ITU Radiocommunication Bureau.

ACCC Delves Deeper into Telstra, TPG Deal

Australia's competition watchdog called for additional comments from stakeholders into its preliminary view of a proposed spectrum sharing agreement between Telstra and TPG Telecom, after failing to sate initial concerns. The Australian Competition and Consumer Commission (ACCC) stated it remained concerned high concentrations of spectrum holdings might deter incumbents from offloading surplus licenses and instead incentivize them to prevent others accessing it. It explained to grant authorization, it must be satisfied the transaction would not substantially lessen competition, or ensure the benefits to the public outweigh any downsides. The agency is reviewing an application for the acquisition of certain TPG Telecom spectrum tied to three interrelated network agreements which are being considered together. "We are looking extremely closely at all aspects of these agreements, as a decision either way can have significant long-term effects", ACCC commissioner Liza Carver stated. Carver explained the ACCC is assessing how the proposed infrastructure and spectrum arrangements will change the incentives and ability of Telstra, TPG Telecom, Optus and others to compete and invest in mobile infrastructure. "There is still a lot of work to do on this complicated and nuanced review." "At this stage we have not reached any overall conclusions, but welcome further submissions from stakeholders and consumers alike on the issues raised." Submissions are due by 14 October. A decision is likely be announced in early December. The ACCC estimates the arrangement to actively share mobile infrastructure in certain regional and urban fringe areas covers about 17 per cent of Australia's population. Rival Optus called for the regional element to be rejected.

China Unicom Granted Mexican License by IFT

Mexico's Federal Telecommunications Institute (Instituto Federal de Telecomunicaciones, IFT) has granted China Unicom an operating license, El Economista reports. The concession was reportedly requested in March and awarded in July, but the decision has only now been made public. As per the article, the Chinese telco – which has set up shop in the Polanco neighborhood of Mexico City – will initially focus on dedicated links, data transmission and capacity provision, but has not ruled out exploring the delivery of mobile and fixed service to the mass market.

Arcep Hits Free Caraibe with EUR300,000 Fine for Rollout Non-Compliance

Paris-based watchdog the Authority of Regulation for Electronic Communications and Posts (Autorite de Regulation des Communications Electroniques et des Postes, Arcep) has confirmed that it has fined Free Caraibe for non-compliance with its deployment obligations in Guadeloupe, French Guiana, Martinique, Saint Barthelemy and Saint-Martin. Back in 2017 Arcep awarded Free Caraibe 800MHz, 900MHz, 1800MHz, 2100MHz and 2.6GHz frequencies in the five French overseas territories, and established in December 2020 that the company had not fulfilled its agreed rollout schedule. At that juncture the regulator gave the telco a year to rectify the matter – something that it did not do. In the event, Free Caraibe switched on commercial services on 17 May 2022. As per its initial rollout schedule, Free Caraibe was required to deliver the following level of mobile and mobile broadband coverage by 22 November 2018:

- 50% of the population of Guadeloupe;
- 30% of the population of French Guiana;
- 50% of the population of Martinique;
- 75% of the population of Saint Barthelemy; and
- 75% of the population of Saint-Martin.

As per a decision dated 26 September (published on 18 October) Arcep fined Free Caraibe EUR300,000 (USD295,415) for its slow rollout. The watchdog notes that the fine took into account the investments that Free Caraibe had made in its network deployments since the expiry of its formal notice, as well as the eventual launch of the commercial offering.

Polish Industry Body Calls for 3.5GHz Licensing

The Digital Poland Association (Cyfrowa Polska) has written to the government to request that 3.5GHz C-band spectrum be made available for 5G services 'as soon as possible'. The award of 3.5GHz licenses stalled due to the COVID-19 pandemic and has been delayed further while the government updates the Act on the National Cybersecurity System (KSC). The President of Cyfrowa Polska, Michal Kanownik, said that the allocation of 5G spectrum is 'necessary and urgent', particularly given the influx of refugees from Ukraine, which is placing additional strain on Poland's mobile networks. He added: 'In the long term, the new generation network will be a factor supporting further GDP growth and increasing the competitiveness of the Polish economy against the background of the European Union countries.' Poland and the Netherlands are the only two EU countries which have not yet awarded 3.5GHz spectrum licenses. Operators in Poland are currently offering 5G services using 2100MHz and 2600MHz spectrum which was originally used for 3G and 4G networks.

Ofcom Proposes New Net Neutrality Guidance

Ofcom has today proposed to revise its guidance on how the 'net neutrality' rules should apply in the UK. This follows the announcement of our new program of work to ensure that digital communications markets are working well for people and businesses in the UK. Ofcom is responsible for monitoring and ensuring compliance with the net neutrality rules and providing guidance on how broadband and mobile providers should follow them. The rules themselves are set out in legislation, and any changes to the law would be a matter for Government and Parliament. The principle of net neutrality is that internet users – not their broadband or mobile provider – have control over what they do online. Net neutrality has played a critical role in allowing people to access the content and services they want, and content and app owners to reach customers online. Since the current rules were put in place in 2016, there have been significant developments in the online world – including a surge in demand for capacity, the emergence of several large content providers such as Netflix and Amazon Prime, and evolving technology including the rollout of 5G. So Ofcom has carried out this review to ensure net neutrality continues to serve everyone's interests. We want to make sure that net neutrality continues to support innovation, investment and growth, by content providers as well as broadband and mobile companies. Getting this balance right will improve consumers' experiences online, including through innovative new services and increased choice. While net neutrality remains important to support consumer choice, we propose more clarity in our guidance so that broadband and mobile providers can:

- offer premium quality retail broadband or mobile packages; for example, ones with low latency (to send data and receive a response very quickly);
- develop new 'specialized services', which could include supporting applications like virtual reality and driverless cars;
- use 'traffic management' measures to avoid congestion over their networks at peak times; and
- offer 'zero-rating' packages in many circumstances – which means not charging users for accessing certain services, for example online public health advice provided by the NHS.

DoT Publishes New NFAP; Claims TRAI Worries Have Been Addressed

India's Department of Telecommunications (DoT) has published a new National Frequency Allocation Plan (NFAP) that includes additional bands for 5G. Telecom Minister Ashwini Vaishnaw was cited by the Economic Times as saying that the NFAP 2022 strikes a balance between standardization and innovation, is dynamic and adaptive and will facilitate ease of doing business in the sector. The document makes additional spectrum in several bands available for 5G services, including in the sub-1GHz range, 70MHz in the mid-band (below 4GHz) and 1,6750MHz of additional spectrum above 24GHz. The Minister also discussed the ongoing rollout of 5G technology, urging providers to accelerate the deployment to 10,000 base stations per week, and the consultation on the draft telecom bill which is set to overhaul the sector's regulatory framework. The minister claimed that the issues regarding the potential diluting of the Telecom Regulatory Authority of India's (TRAI's) powers have now been addressed and that the draft telecom bill will focus on user protections. As part of the consultation process for the new bill, the TRAI and local experts had expressed concerns that the proposed legislation transfers powers to the DoT and away from the independent watchdog, removing several checks and balances on the DoT and transforming the TRAI into more of a consultative body than regulatory agency.

ITU to Promote Internet Connectivity in Rural Nigeria

An agency of the United Nations, the International Telecommunications Union (ITU), is to partner the Ministry of Communications and Digital Economy to promote Internet connectivity in rural Nigeria. This was disclosed at an event organized by Women in Technology in Nigeria (WITIN) to commemorate International Women's Day, 2022. The recently appointed Secretary-General of the ITU, Doreen Bogdan-Martin, stated that only a few rural parts of Africa are online, noting it is essential for women in pastoral areas to be linked to the Internet. "We are working with Nigeria's Ministry of Communications and Digital Economy to connect Nigerian rural women. We want to make sure that every rural area in Nigeria is connected, especially for rural women that are producing most of the foods that we eat. "We have discovered that 70 per cent of Africa's foods are produced by rural women but only 34 per cent of them use the Internet. These women need to be connected," she said. Bogdan-Martin noted that farmers can use technology to monitor crops, predict weather conditions, and fight pests. She added that collaborating with the government's agency will enable rural women have Internet access in order to enhance their productivity. Founder of WITIN, Martha Alade, said technology is a vital tool in the agricultural sector from the farm to the market. Alade affirmed that WITIN will continue to aid agricultural research, provide information to include the girl child in the ICT sector by organizing trainings, and also curb gender-based violence. During the event, Executive Vice Chairman (EVC) of the Nigerian Communications Commission (NCC), Umar Danbatta, prompted farmers to use technology to improve agriculture, create employment, and boost production. "Today, the telecommunications industry plays a crucial role in providing the requisite support for the diversification of the economy through improving the knowledge economy using ICT as an enabler. It has enhanced human capabilities in areas such as health, education, agriculture, finance, transportation, commerce, and governance," he said.

Thailand Approves Landmark Merger

Thailand's telecoms regulator gave the green light to a proposed merger of True Corp and dtac nearly a year after the tie-up was first mooted, but added a number of conditions to the controversial deal aimed at protecting consumers. The National Broadcasting and Telecommunications Commission (NBTC) approved the deal after first confirming it had the power to make a decision on the merger, Bangkok Post reported. Thailand's regulator imposed a price cap and controls on the combined entity, which GSMA Intelligence figures showed would have a market share of around 55.5 per cent based on its Q3 estimates. In addition, the NBTC will require the new operator to provide third-party verification of its cost structure and fees for at least five years, and break out voice, data and messaging tariffs separately based on average-cost pricing, the newspaper wrote. The merger will reduce the number of major mobile players in Thailand to two and faced resistance from some NBTC board members, opposition political party Move Forward, the Thailand Consumer Council and current market leader AIS. NBTC began reviewing the proposed tie-up in February.

EU Targets Device Security with Draft Legislation

Manufacturers of all manner of connected devices could face penalties of up to €15 million if they fail to comply with new cybersecurity rules proposed by the European Commission (EC). The Commission published a draft of the Cyber Resilience Act which aims to boost the security of connected devices and software sold throughout the European Union. Notably, manufacturers will be forced to take responsibility for the security of products through their entire life cycle. Thierry Breton, Commissioner for the Internal Market, highlighted many hardware and software products are not subject to any security requirements. "When it comes to cybersecurity, Europe is only as strong as its weakest link, be it a vulnerable member state, or an unsafe product along the supply chain." Breton noted any unsecured device, ranging from computers and smartphones to toys and cars, "is a potential entry point for a cyberattack". Penalties for violations of the new rules will be harsh, with fines for the most serious breaches of up to €15 million or 2.5 per cent of global annual revenue, whichever is higher. Companies could also be fined up to €10 million or 2 per cent of revenue for less serious violations, while those providing "incorrect, incomplete or misleading" information could face penalties of up to €5 million or 1 per cent of revenue. The European Parliament and the Council will now examine the draft Cyber Resilience Act. Once adopted, companies and member states will have two years to adapt to the new requirements.

Court Rejects Telia's Appeal Over Bite's Acquisition of MEZON Assets

Lithuania's Supreme Administrative Court has ruled in favor of Bite Lithuania in an appeal over its acquisition of the MEZON brand and its spectrum launched by rival Telia Lietuva. Bite purchased the MEZON-branded retail broadband business, including its radio frequency and network assets, subscription base and sales network, in December 2020 after the transaction was approved by regulatory authorities. In February 2021, however, the Vilnius Regional Administrative Court decided to accept and assess a complaint from Telia against the decision of the regulatory authorities to allow Bite to acquire the spectrum of MEZON. On 16 June 2021 the Vilnius District Administrative Court fully rejected Telia's claim, but the following month the operator filed an appeal to the Supreme Administrative Court. BNS reports that this court has now also rejected the complaint and upheld the ruling passed by the Vilnius District Administrative Court.

Arcep Launches Frequency Auctions in French Guiana, Saint Barthelemy and Saint-Martin

Arcep has launched the frequency allocation procedure in the 700MHz and 3.4GHz-3.8GHz bands in French Guiana, Saint Barthelemy and Saint-Martin, and in the 900MHz and 2.1GHz bands in Saint Barthelemy. The regulator highlighted that the deadline for submitting applications has been set as 13 December 2022, with the procedure scheduled to be completed in the second quarter of 2023. The regulator is planning to award four blocks of 2×5MHz paired spectrum in the 700MHz band and 38 blocks of 10MHz spectrum in the 3.4GHz-3.8GHz band in French Guiana, Saint Barthelemy and Saint-Martin. The authorizations will be valid for 15 years, with each successful bidder allowed to purchase a maximum of 10MHz in the 700MHz band and 100MHz in the 3.4GHz-3.8GHz band. Regarding the 900MHz and 2.1GHz bands in Saint Barthelemy, Arcep will put on offer one paired 2×4.8MHz block (910.1MHz-914.9MHz/955.1MHz-959.9MHz) and one 2×5MHz (1945.1MHz-1950.1MHz/2135.1MHz-2140.1MHz), with the authorizations set to be valid until 30 April 2025.

India Watchdog Fines Google Billions Over Dominance

The Competition Commission of India (CCI) fined Google INR13.4 billion ($162 million) after a probe spanning several years over anti-competitive practices relating to its Android OS, the latest regulator to target the search giant's grip on the market. In a release, the antitrust watchdog explained it had ordered Google to change its ways after finding the company abused its dominant position by mandating device manufacturers install its entire exclusive Google Mobile Suite under Mobile Distribution Agreement without giving vendors the choice to opt out. The same agreement allowed Google to ensure key entry points including the Google App and Chrome browser are set up on Android handsets, furthering the discovery engine's already significant position. The CCI argued Google established a monopoly through various market agreements to govern its rights including anti-fragmentation, Android compatibility and revenue sharing agreements, with competitors unable to "avail the same level of market access" as the US company. It also highlighted revenue generated from YouTube and other apps had resulted in unhealthy market barriers and "status quo bias". The CCI investigated Google's licensing, app store, search services, mobile browsers and video hosting platform in India, concluding the company held a dominant position in all five sectors.

Canada Readies Rogers, Shaw Mediation

Canada's Competition Tribunal set a timeline of late October for the start of mediation between authorities and the parties involved in a proposed buyout of Shaw Communications by rival Rogers Communications. The controversial takeover would combine the companies. It has been continually opposed by the country's Commissioner of Competition Matthew Boswell, despite attempts to appease concerns with a deal to sell Shaw Communications' Freedom Mobile should their deal go through. In a notification, the tribunal noted the mediation was a confidential process which "assists the litigating parties to attempt to negotiate a consensual resolution to their dispute". If it fails, the case will likely have to be decided by the tribunal. The proposed deal is already behind schedule. When announced in March 2021, it was expected to close in the first half of 2022, though the operators announced in May the process was on hold while they tried to negotiate a settlement to get it through the authority. In numerous statements Rogers Communications and Shaw Communications have asserted the takeover is in the best interests of consumers, citing perceived benefits of investment in digital infrastructure and job creation. The competition authority's concerns are based around a cut in consumer choice and potential higher prices, which the operators argue would be allayed by the divestment of Freedom Mobile.

Anatel Orders Vivo to Extend 4G Coverage Instead of Paying a Fine

Brazil's National Telecommunications Agency (Agencia Nacional de Telecomunicacoes, Anatel) has offered Telefonica Brasil (Vivo) the opportunity to extend its 4G network rather than pay a fine of BRL45.2 million (USD8.5 million). The watchdog explains: 'The obligation-to-do sanction was evaluated by the Agency as the most appropriate measure for the specific case, in a discretionary judgement considering the factual and socioeconomic context and the relevance to the public interest.' As per the statement, Anatel wants 70% of the 4G expansion work to take place in the underserved North-east region of the country. Vivo's compliance with the matter cannot result from RAN sharing, network rental agreements or industrial exploitation contracts. Further, the sum of the costs related to the installation/maintenance of the must be greater than, or equal to, the amount of the fine. The precise indiscretion that prompted Vivo to be penalized has not been disclosed. It is unclear if Anatel's action is related to a recent decision by the Federal Court of Goias to fine Vivo for poor quality of service (QoS) in that state between 2015 and 2019. (Note: as Goias is located in the Center-West Region this may not be the case.)

Malaysia Secures Backing for National 5G Network

Malaysian authorities made progress in divvying up ownership of a controversial national 5G wholesale network as four major operators agreed to acquire a combined 65 per cent stake. Celcom Axiata, Telekom Malaysia and YTL Communications will each take a 17.5 per cent stake in Digital Nasional Berhad (DNB). Digi Malaysia signed up for 12.5 per cent, with the Ministry of Finance retaining 35 per cent. Digi's holding will increase to 17.5 per cent if a proposed merger with Celcom doesn't close by mid-2023, with the Ministry's stake dropping to 30 per cent. The operator agreed to pay MYR178.5 million ($38.4 million) for its stake. Digi stated all stakeholders made significant progress in discussions related to the access agreements and regulatory framework. Maxis and U-Mobile previously declined to take stakes in DNB, forcing it to renegotiate shareholding arrangements with the remaining operators.

Government Urged to Extend Energy Price Cap to Telecoms Sector

The Association of Mobile Operators in Romania (Asociatia Operatorilor Mobili din Romania, AOMR) – which includes Orange Romania, Vodafone Romania and Telekom Romania Mobile Communications – has urged the government to include telecom operators among the sectors covered by measures approved last week capping electricity prices at a subsidized rate of RON1 (USD0.21) per kWh for 85% of their consumption, reports Economica.net. The AOMR warned in a statement that Emergency Ordinance No. 119/2022, which prolongs and amends the energy cap and subsidy scheme until the end of August 2023, will have 'a major destabilizing effect on telecommunications services and seriously affect investment plans in the industry.' The companies notably warned that failure to guarantee them capped electricity prices could reduce their interest in bidding for 5G spectrum later this year and lead to price rises for end users.

Far EasTone Calls for NCC to Resolve Spectrum Dispute Ahead of Merger Hearings

Far EasTone (FET) has called on Taiwan's National Communications Commission (NCC) to deal fairly with matters concerning spectrum that are expected to arise from the proposed merger of Taiwan Mobile and Taiwan Star. Local press outlet The Taipei Times notes that the urging from FET comes ahead of two public hearings that are scheduled to be held by the regulator this week regarding the proposed tie-up of the two companies, as well as FET's planned acquisition of rival Asia Pacific Telecom. With the Taiwan Mobile-Taiwan Star merger expected to give the enlarged entity a total of 60MHz of spectrum in the sub-1GHz band range, FET has highlighted that this would surpass the upper limit of one-third of all auctioned spectrum in that range, which was set under the 'Regulations for Administration of Mobile Broadband Businesses'. For its part, Taiwan Mobile has argued that such a spectrum cap would be unreasonable in the wake of the two planned mergers, and has instead suggested that the NCC relax the rules so that the limit companies can hold be raised to 40% of all auctioned sub-1GHz spectrum.

Senator Pushes for 3.1GHz-3.45GHz Auction; Funds Can Be Used for Rural Rip-and-Replace Scheme

US Senator Mike Lee, a Republican from Utah, has introduced a bill that would require the Federal Communications Commission (FCC) to auction spectrum in the 3.1GHz-3.45GHz band. Senator Lee explains the bill as follows: 'To auction spectrum and to authorize the FCC to borrow funds from the Treasury, to be repaid out of auction proceeds, to ensure rural communications providers have the resources to replace communications equipment and services to protect their networks from Chinese Communist Party espionage.' If passed, the FCC would have to seven years to auction 350MHz of spectrum in the band. The bill, which was introduced on 12 September, has been referred to the Committee on Commerce, Science, and Transportation. The FCC faces a USD3 billion shortfall as it seeks to reimburse small-scale US operators who need to remove Huawei/ZTE equipment from their networks on national security grounds. As directed by the Secure and Trusted Communications Networks Act of 2019, the FCC is taking steps to reimburse communications providers with ten million or fewer subscriptions to remove, replace and dispose of Chinese-built equipment. The reimbursement program is being funded by a USD1.9 billion congressional appropriation, but 'Priority 1 applicants' (operators serving fewer than two million subscriptions) have submitted approximately USD4.640 billion in cost estimates that are reasonable and supported.

EU Plots Tech Giant Network Consultation

The European Commission (EC) began preparing to launch a consultation on whether US tech giants should cover some of the costs of telecoms networks in the region, Reuters reported, the bloc's latest move to address claims of an uneven playing field. Internal Market Commissioner Thierry Breton, reportedly stated the consultation would open in Q1 2023. In addition to exploring if big names including Google, Facebook and Amazon should contribute to operators' networks, Breton reportedly stated the consultation will also cover potential regulation of the metaverse. The consultation process will run for up to six months, after which the EC will submit any proposals. European operators have long called on US tech companies to contribute to development and operation of their networks. Telecoms industry group ETNO recently published a report noting Meta Platforms, Alphabet, Apple, Amazon, Microsoft and Netflix now account for 56 per cent of traffic on fixed and mobile networks, but have made "little or no contribution" to development costs. In May, EC EVP Margrethe Vestager stated work had begun regarding whether and how big tech companies should contribute to telecoms networks. The EC is introducing the Digital Services Act (DSA) and Digital Markets Act (DMA) as part of efforts to rein in US tech giants.

T-Mobile US Dominates 2.5GHz Auction; Pays USD304m for 7,156 Licenses

Following the conclusion of Auction 108 on 29 August, the Federal Communications Commission (FCC) has confirmed that T-Mobile US secured the largest number of 2.5GHz licenses on offer. The cellco paid a total of USD304.325 million for 7,156 regional concessions. By contrast, the North American Catholic Educational Programming Foundation – the next largest bidder in terms of the number of spectrum permits secured – bid for just 107 licenses. In terms of financial commitments, the next company in line was PTI Pacifica (trading as IT&E), which operates in Guam and the Northern Mariana Islands, followed by Guam-based TeleGuam Holdings, which trades as GTA. PTI Pacifica paid a total of USD17.690 million, while TeleGuam paid USD16.565 million. Auction 108 – the FCC's sale of unused spectrum in the 2496MHz-2690MHz (2.5GHz band) – drew to a close after 73 rounds of bidding. In total, the auction process generated gross proceeds of USD427.790 million, while 145 of the 8,017 available licenses went unsold.

Germany Calls for Latest Tranche of Network Projects

Germany's transport and digital infrastructure authority opened applications for a fresh batch of schemes to be funded by a €300 million pot set aside to develop open network technologies. The Bundesministerium fur Digitales und Verkehr (BMDV) plans to fund projects which aim to develop new products, processes or services for either hardware or software components of mobile network technologies. It covers innovations for private and public mobile networks across protocols from 2G through to future standards. The agency added joint and individual applications for the interoperability of open interfaces would be funded. Cash will be allocated from the Innovative Network Technologies in Mobile Communications segment of a wider cash pot, which has already been partly allocated by the ministry. BMDV noted all projects must be completed by the end of 2024, with feasibility studies having a maximum timespan of eight months. The deadline for applications is 14 October. Volker Wissing, Minister for Digital Affairs and Transport, said Germany aimed to support "research into innovative network technologies and open network architectures in mobile communications", adding it was "laying the foundations so that new generations of mobile communications can be introduced more quickly".

EU Proposes New Law to Make Manufacturers Liable for Device Security, Breach Reporting

The European Commission has released its draft Cyber Resilience Act. The legislation proposes new requirements for connected devices in terms of security, from basic design elements to customer support in the event of a cyber-attack or security breach. The law must still be discussed and approved by the European Parliament and Council, after which manufacturers and sellers would have up to two years to implement the changes. First announced by Commission President Ursula von der Leyen in her State of the Union address in September 2021, the Cyber Resilience Act was already the subject of a public consultation earlier this year. According to the Commission, the proposal puts more responsibility on the part of manufacturers to ensure that their devices which connect to the internet are designed to be safe and supported if hacked. Consumers and businesses should benefit from greater transparency on security, increasing trust in digital products, while the EU is also hoping to set a new global standard, which other countries will follow to improve cybersecurity. The legislation includes rules for bringing products with digital elements to market, essential requirements for the design, development and production of such products, obligations for businesses in relation to these products, requirements for putting in place procedures to address eventual vulnerabilities during the life of the product and an obligation to report actively any exploited vulnerabilities or security incidents. The remit of the new law will be wide, covering any hardware or software that connects to another device or network, via a wired or wireless connection. Certain exemptions will apply in sectors with their own legislation, such as automotives, aviation or medical devices. Software as a service is not covered either, but may fall under other EU legislation such as the NIS 2 directive covering essential services. The industry group CCIA warned that the legislation could create new 'red tape', slowing the time to bring new technology to market due to

extensive conformity processes required for new devices. It could also force service providers to turn to only EU-approved equipment, creating a new barrier to trade. Under the Commission's proposal, the obligation to report security breaches would come into effect a year after the law enters into force, and the other obligations only within two years. Each EU state will name a regulator to enforce the rules, and this body will be able to order changes in products, ban unsafe products and conduct product recalls. In addition, it could fine companies that do not comply with the rules.

ComReg Consulting on Review of Termination Markets

Ireland's Commission for Communications Regulation (ComReg) has launched a consultation on its review of the fixed and mobile voice termination markets, and confirmed it proposes removing the significant market power (SMP) designations and obligations it previously imposed via decisions in 2019 and 2020. According to ComReg, it plans to do so as termination markets are no longer identified as being susceptible to ex-ante regulation by the EC, while based on the Irish watchdog's assessment set out in its consultation, it believes that the markets would fail a 'Three Criteria Test' set out in Article 67 of the European Electronic Communication Code (EECC), meaning they cannot be subject to SMP regulation. As such, with the markets no longer susceptible to ex ante regulation, ComReg has said it proposes to withdraw all existing SMP designations and obligations, although it has confirmed it plans to impose a six-month sunset period on fixed line incumbent eir in respect of the withdrawal of the existing SMP-based interconnection obligations 'in order to provide certainty to other SPs [service providers] and allow them time to make alternative operational interconnection arrangements should they be required'. Previously, ComReg's 2019 Termination Markets Decision, published in May that year, designated 22 fixed service providers ('FSPs') and six mobile service providers ('MSPs') as having SMP. Meanwhile, a follow-up decision – '2020 Further Termination Decision', dated October 2020 – designated an additional three FSPs with SMP. Comments on ComReg's consultation are being accepted until 7 December 2022, following which the regulator will consider the feedback and review its proposals, before notifying draft measures to the EC and the Body of European Regulators for Electronic Communications (BEREC).

DoT Publishes Draft Telecommunications Bill

India's Department of Telecommunications (DoT) has published its draft Indian Telecommunications Bill, 2022 and invited comments on the proposed legislation by 20 October. Once passed into law, the new act will provide the overarching regulatory structure for the sector, replacing as the industry's principal piece of legislation the Indian Telegraph Act, 1885 and the Indian Wireless Telegraphy Act, 1933, both of which will be repealed. Amongst the changes proposed by the new bill are plans to allow spectrum to be assigned through auction or administrative processes depending on need and options to waive fees and penalties if required to protect the interests of consumers or ensure fair competition. The draft also provides greater clarity regarding the rules for insolvent operators. Providers will be permitted to continue operating whilst undergoing insolvency proceedings, provided that certain conditions are met. If the company is unable to meet these requirements, however, assigned spectrum would revert to government control. Elsewhere, meanwhile, the draft bill expands definition of 'telecommunications services', to include over-the-top (OTT) communications, subjecting providers of such services to additional regulation.

EC Commissioner Lays Out Metaverse Attack Plan

Thierry Breton, European Commissioner for the Internal Market, outlined a three-step plan around the continent's metaverse ambitions, while announcing the launch of a VR and AR coalition to encourage investment in the sector. In a blog, Breton explained the metaverse was one of the European Commission's (EC) most pressing challenges and its plan to foster the virtual world will focus on people, technologies and infrastructure. Breton said the new environment must "embed European values from the outset", with private virtual worlds developed based on interoperable standards and "no private player" effectively holding all the power or setting terms and conditions. "Innovators and technologies should be allowed to thrive unhindered," he said, adding the EC would not tolerate new private monopolies. Breton believes shaping the metaverse depends on its ability to master and develop cutting-edge technologies in Europe, and build a sustainable ecosystem. To help its drive, the EC officially launched the VR and AR Industrial Coalition, first touted in 2020, bringing together stakeholders "from key metaverse technologies". The coalition will focus on a specific roadmap, endorsed by more than 40 EU companies spanning large organizations, SMEs and universities. Breton added Europe was investing in a number of metaverse-related technologies including photonics, semiconductors and new materials, arguing there is a need to pool EU, national and private funding to truly push its vision. Lastly, the EC will focus on building resilient connectivity infrastructure. Breton said the amount of data being exchanged in virtual spaces will be greater than ever, putting "intense pressure" on connectivity infrastructure. Pointing to the challenge, said even today increasing volumes of data was being carried on infrastructure, but decreasing revenue had reduced the appetite to invest and strengthen them. To that end, the EC will call on all market players benefitting from digital transformation to make a fair contribution to goods, services and infrastructures.

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A SNAPSHOT OF REGULATORY ACTIVITIES IN THE SAMENA REGION

Algeria

Algeria's government presented a new General Policy declaration to parliament, placing the improvement of the quality of connectivity and universal access to high speed internet among its priorities. As reported by Algerie Presse Service, Prime Minister Aimene Benaberrahmane declared: 'Improving the quality of connectivity for the benefit of citizens, economic operators and public establishments and the generalization of access to high and very high speed internet in a ubiquitous manner, are among the priorities of the action of the government.' The PM highlighted recent achievements in connectivity projects, noting that work was underway to increase international bandwidth capacity to 3.8Tbps by the end of 2022 (compared to 2.8Tbps in 2021 and 1.4Tbps in 2019) via optimization of existing infrastructure, while plans are afoot to join a new submarine cable project earmarked for commissioning in 2025 to strengthen the resilience of the international transmission network and gradually replace legacy cables. (October 6, 2022) www.commsupdate.com

Bahrain

In an effort to encourage innovation and simplify the testing of emerging technologies in the kingdom, Bahrain's Telecommunications Regulatory Authority (TRA) has launched a new Innovation License. Developing an environment where digital technologies can thrive underpins the kingdom's position as one of the world's most advanced telecommunications markets. The Innovation License enables live testing of new technologies and services through a light-touch regulatory environment known as a Regulatory Sandbox. In addition, the TRA aims to provide stakeholders with clarity and confidence by enabling a flexible environment. TRA General Director Philip Marnick said: "The TRA believes that innovation is the key to maintaining leadership in the digital space. Accordingly, we encourage companies, universities and other stakeholders to test and trial new wireless technologies and services in Bahrain. We are confident that this initiative will further strengthen Bahrain's position as a technology and regulatory innovator. It will also allow the TRA to continue supporting and collaborating with organizations across the telecommunications industry." Holders of an Innovation License will be able to carry out live trials of emerging technologies with consumers to gain insight into how the new products and services may work in the market in addition to having quick access to the radio spectrum for wireless tests. In an effort towards facilitating and attracting investment in emerging technologies, the Innovation License fees will be affordably priced. (October 11, 2022) www.tradearabia.com

TRA Bahrain host the Telecommunications and Media Forum (TMF), where telecom and media regulators from across the Middle East and Africa will meet to discuss the industry's priorities and best practices. The TMF, is being organized with the International Institute of Communications (IIC). Speakers from Bahrain, Saudi Arabia, Jordan, the UK, the USA, Germany, and many other countries will provide a regional view on topics such as digital transformation, innovation and competition, infrastructure and connectivity, digital media and on-demand services, and privacy, safety and security. Members of civil society and policymakers will also attend the forum. Philip Marnick, General Director of TRA, said: "The telecoms industry in the MENA region is rapidly changing with the development of new technologies and services. Regulators must adapt to this evolving landscape to ensure innovation flourishes and new services are delivered. We need to ensure consumers get access to the services and features they need while being protected on-line. Bahrain, one of the most connected and advanced telecommunications markets in the world is proud to host the Telecommunications and Media Forum. The forum will allow participants to learn from each other and discuss effective approaches to the market challenges we all face. We look forward to presenting Bahrain's experience as one of the world's most advanced and competitive markets – with world-leading 5G coverage and extensive fiber availability and playing a leading role in shaping the future of the telecommunications industry." (September 15, 2022) www.satelliteprome.com

Bangladesh

The number of customers of telecom operators in the country continued to decline in August, as per the latest data from Bangladesh Telecommunication Regulatory Commission (BTRC). As per the data from the regulator, the total number of customers in the country dropped by about 500,000 in August to 183.5 million. The country's top operator Grameenphone alone lost about 950,000 customers in August, taking its subscriber base from 84 million to 83.1 million. Grameenphone lost another 800,000 customers in July, losing about 0.17 million customers in the last two months. However, the country's other two operators — Robi and Banglalink — added about 200,000 and 300,000 customers respectively in August while state-run operator Teletalk's figures remained almost unchanged at 6.7 million. However, the number of customers gained by the other two private operators was not sufficient to cover the number of customers lost by Grameenphone in July and August. According to sources, the mobile subscribers in the country continued to decline in August after the regulator banned Grameenphone from selling new SIMs at the end of June citing its inability to provide quality service and high frequency of call drops. In the two months, the country's mobile subscribers base dropped by 900,000 regardless of customer gains by the other operators. However, on a year-on-year basis, operator subscribers in the country still have been decent. On a year-on-year basis, the number of customers of Robi increased by 5.2% to 54.9 million in August, while the number of subscribers of Banglalink rose by about 4.7% on a year-on-year basis in June to about 38.7 million. Despite the recent fall, the number of subscribers of Grameenphone remained almost unchanged year-on-year in August, retaining its position as the market leader, accounting for 45.30% of the market share based on subscribers. Insiders said the overall growth in the number of subscribers has slowed down in the industry, but it is expected to gain momentum again once the ban on Grameenphone SIM sales is lifted. It is also noteworthy that, despite the ban on the telecom operator, BTRC has recently allowed Grameenphone to sell unused pre-approved old numbers that were not in operation for over 450 days. (October 13, 2022) www.dhakatribune.com

The Bangladesh Telecommunication Regulatory Commission (BTRC) has recently directed International Internet Gateway (IIG) service providers to disconnect bandwidth connections of 316 internet service providers (ISPs) for not renewing licenses and not taking approval of tariffs before rolling out their services. In Bangladesh, the IIG service providers enable the ISPs to cater to end consumers through the exchange of data without the ISPs having to go through networks in other countries. However, Md Emdadul Hoque, president of the Internet Service Provider Association of Bangladesh, told The Daily Star yesterday that 40 per cent of the ISPs have already regained their connections as they have already got tariff approvals and applied for renewing licenses. Of the ISPs, 228 did not take approval of tariffs, 84 did not renew licenses and 4 did neither, according to BTRC documents. According to the Regulatory and Licensing Guideline for ISP in Bangladesh, the ISPs must renew their licenses every 5 years and the licensee has to obtain an approval of tariffs before rolling out a service. The telecom regulator also warned that if the IIG service providers enabled any new connection to the 316, legal steps would be taken as per the telecom act. "We have already disconnected the bandwidth connections," said Aminul Hakim, CEO of IIG service provider BD HUB. The ISPs can resume their service renewing their licenses, said Subrata Roy Maitra, vice chairman of the BTRC. In early July, the BTRC had directed the IIG service providers to disconnect bandwidth connections of 286 ISPs for not converting their licenses into some categories in accordance with guidelines. There are about 2,000 ISPs in Bangladesh.

(September 30, 2022) www.thedailystar.net

Egypt

The telecom regulator National Telecommunications Regulatory Authority (NTRA) has announced an increase in daily use of mobile internet services by 46 percent during the summer of 2022 compared with the same period in 2021. The number of mobile internet users rose by about 9.4 million. The NTRA said in its report that rates of fixed internet use increased by 32 percent and that the number of fixed internet users grew by about 904,000.

(October 5, 2022) The Daily News

Held by the National Telecommunications Regulatory Authority of Egypt (NTRA) from September 18th to September 22nd, and with the participation of 7 African and Arab countries, proceedings of the Egyptian African Telecom Regulatory Center's (EG-ATRC) third training session have commenced today. EG-ATRC is held in line with NTRA's plan to build African cadres in telecommunications as well as exchange experiences, technical and commercial practices with African counterparts in telecom authorities. It also comes in line with the Government's instructions to reinforce mutual relations with African countries. Training topics to be embarked upon in EG-ATRC's third session are type approval and smart cities, as the African governments seek to maximize the utilization of Egypt's smart city modules; like the New Administrative Capital and the City of New Alamein, etc. To this end, the session's agenda provides opportunities for seamless

communication among African experts to exchange insights and utilize the leading experience of Egypt in this field. In this regard, NTRA had inaugurated EG-ATRC as the first of its kind in Africa to provide training courses in telecom-regulation. The center actually paves the road for telecom experience to be exchanged across the African countries and aims to achieve a unified vision among telecom regulators, and other relevant African entities, through a specialized training program. Such a training program actually encompasses many academic and professional experts from Egypt who would contribute to a promising digital economy across Africa. Furthermore, EG-ATRC aims to provide training courses for 150 specialized individuals annually, via specialized training courses designed and taught by an elite of international experts.

(September 18, 2022) www.tra.gov.eg

Iran

Iran has announced plans to launch another domestically-built satellite, the Zafar-2, into orbit, IRNA reported, citing the Iran University of Science and Technology. Zafar-2 follows first satellite Navid, built in 2011, second satellite Mobin, built in 2013, and third satellite Zafar-1, built in 2015. The university said it has gained satellite technology to fulfill the country's needs and is ready to export the know-how to other countries. Iran started its research activities in the field of aerospace in the mid-90s. Khayyam was the last satellite launched into space on 09 August, by a Russian Soyuz sent up from Kazakhstan's Baikonur Cosmodrome, to monitor Iran's borders and improve the country's management and planning of agriculture, natural resources, environmental issues, mining, and natural disasters.

(September 15, 2022) www.telecompaper.com

Jordan

Jordanian industry watchdog the Telecommunication Regulatory Commission (TRC) has signed an agreement with mobile provider Zain which it says paves the way for the introduction of 5G services in Jordan. The agreement is the third of its kind, with Zain's rival mobile providers Umniah and Orange Jordan having inked equivalents last month. Details of the agreement were not disclosed but Minister of Digital Economy and Entrepreneurship Ahmed Hanandeh noted that the government is looking to facilitate the establishment of 5G infrastructure and to incentivize the introduction of 5G services.

(September 12, 2022) www.commsupdate.com

Kuwait

Kuwait's Ministry of Communications (MoC) has signed an agreement with an advisory body to complete a feasibility study on the privatization of fixed telecoms networks through a public-private partnership project, TimesKuwait.com reports. MoC spokesperson Mishaal Al-Zaid said that the project had received significant attention from Rana Al-Faris, who holds the dual roles of Minister of State for Municipal Affairs and Minister of State for Communications & Information Technology. At a meeting with the Advisory Office on Investment & Development of the Telecommunications Sector attended by the Joint Committee of the Department of Public-Private Partnership Projects, the minister reportedly urged the agencies involved to 'speed up work and overcome all obstacles' to implement the project 'as soon as possible'. Al-Zaid said the latest step came after several meetings involving the MoC and partnership agencies to develop fixed telecoms networks, and falls within the ministry's aspirations to provide new employment opportunities for Kuwaiti youth and boost national revenues in line with Kuwait's Vision 2035. The MoC is Kuwait's monopoly PSTN fixed voice network operator and the owner of national DSL and fiber broadband networks to which it facilitates wholesale access for ISPs. GCD adds that in August 2019 the Higher Council for Privatization was reportedly part-way through a feasibility study for privatizing the MoC's fixed telecoms operating division, but it has taken more than three years for further developments on the issue to emerge.

(September 30, 2022) www.commsupdate.com

Lebanon

The CEO of Lebanese cellco Alfa, Jad Nassif, has outlined a 'network availability action plan' to be implemented in coordination with the Ministry of Telecommunications (MoT), stating that currently '60% of Alfa sites enjoy a high service availability that ranges between 90%-96% in regions such as Jbeil, Keserwan and West Bekaa', dropping to 'less than 80% in other areas such as Beirut and Mrajeyoun' giving an average network availability of around 87%. The CEO said that the issue would be tackled on a region-by-region basis to achieve a target network availability figure of '95% on average across Lebanon'. To assist this plan, he added that '237 sites have been equipped so far with solar energy and work is underway to equip 50 additional sites.' The MoT is working with both Alfa and its fellow state-owned mobile operator Touch on network improvement plans, with the cellcos currently citing electricity outages and site thefts – including backhaul cable theft – as the two largest factors negatively affecting their services. Furthermore, the Alfa CEO claimed that his company will launch VoLTE services 'to 350,000 eligible [smartphone owners] in the first quarter of 2023'. Mr. Nassif also claimed that Alfa has full 'technical readiness' and 'preparedness' to launch 5G, disclosing that the operator has conducted 5G tests on eleven 'live' 5G sites in Greater Beirut with 1.8Gbps data speeds. On another issue, Nassif commented on customer behavior following Lebanon's recent state-ordered telecoms service price increases. From 1 July Alfa and Touch effectively raised rates fivefold in local currency, despite locally-denominated wages having lost most of their value during the country's economic crisis, in a move which the operators and the MoT deemed vital to return the sector to profitability and prevent networks from shutting down. Nassif stated that Alfa 'witnessed a drop in data and voice services consumption in the first two months after the new tariffs came into effect … within our expectations' but added: 'Today, this consumption is stabilizing, especially in terms of data, which indicates that the Lebanese are adapting to the adjustments in the sector which were inevitable to ensure continuity.'

(September 27, 2022) www.commsupdate.com

Nepal

The Nepal Telecommunications Authority has prepared a draft regulation that allows telecommunications service providers to merge. "Both voice telephone operators and internet service operators can go for merger once the proposed regulation comes into force," said Purushottam Khanal, chairman of the country's telecom regulator. The authority has proposed to facilitate mergers to streamline the telecommunications service industry. Currently, there is no guideline governing the merger of telecommunications operators. The authority has sent the draft regulation to the Ministry of Communication and Information Technology for its review. The ministry will forward it to the cabinet for final approval. Sebantak Pokharel, spokesperson for the Ministry of Communication and Information Technology, said they received the draft two weeks ago. "We will hold discussions on the draft with the concerned stakeholders and reveal the terms in it after it is finalized," he said. "The ministry will send the draft to the cabinet once it is decided." Khanal said a merger decision could be made by the annual general meeting of the telecommunications companies. He said the draft also contained a provision on forceful merger. "If the regulator orders problematic service providers to merge, they have to proceed accordingly. Two or more telecommunications operators can merge. The regulation will benefit small companies in rural areas too," he said. "Consolidation will strengthen telecommunications service providers in terms of investment, and customers will be spared the hassle of changing service providers if their company closes down," Khanal said. "This will increase the capacity of firms to install updated technology, promote service expansion and lessen overheads besides providing other benefits. It will also boost the confidence of customers." Khanal added that they had recommended to the government to facilitate merger of telecommunications operators. "We hope the government provides incentives to merge like waiving capital gains tax. This will encourage service providers to go for merger." According to the authority, there are 204 telecommunications service providers operating in the country. There are three voice telephone service providers—Nepal Telecom, Ncell and Smart Telecom—with 41.93 million voice telephone subscribers as of mid-July, according to the management information report of the authority. Among them, Nepal Telecom accounts for 22.51 million subscribers, Ncell 17 million and Smart Telecom 2.37 million. Internet subscribers in the country number 38.42 million, of which 20.69 million are mobile broadband users of Nepal Telecom, 9.18 million Ncell internet subscribers, 146,382 Smart Telecom internet subscribers and 8.39 million subscribers of other internet service providers. "Huge amounts are spent on technology and equipment in the telecom sector, but many of the firms collapse, resulting in wastage of money and loss of jobs," Khanal said. "If such telecom service providers are sustained through merger and brought into a competitive environment, it will benefit the company and the customer too," he said. "There are 138 internet service providers in Nepal resulting in a crowded playing field and making life hard for small-scale service providers." According to the management

information report, the authority has recommended payment of Rs733 million in foreign currency for bandwidth and service charges of different telecom operators for the period mid-June to mid-July. The authority has also recommended payment of Rs289.19 million in foreign currency for the telecommunications equipment of different telecom operators for the same period. According to Khanal, the authority had recommended merging telecommunications operators to the government in 2017. "We have made a few updates to the previous draft," he said. Service providers wishing to merge have to submit an application to the authority with an audit report and declaration. If the paperwork fulfils the requirements, the authority will provide an agreement in principle for the merger and facilitate the process. The authority has declared that aspiring telecommunications service providers need to have a paid-up capital of Rs50 million. "Hundreds of old telecommunications licensees do not have the required amount of paid-up capital," Khanal said. "They will have to come up with the required paid-up capital themselves or by merging with other companies." (October 11, 2022) www.kathmandupost.com

Nepal Electricity Authority has belatedly been permitted to apply for frequencies to operate next-generation remote smart energy meters, following a Council of Ministers decision to amend the Radio Communication (License) Rules. The changes make certain frequencies (within '30MHz to 10.5GHz' ranges) available for telemetry services to non-telecoms operators at a cost of NPR12 million (USD91,000) per MHz. NEA is expected to vastly expand its fledgling smart meter network with the eventual aim of installing six million devices. In February this year, IoT Time reported that NEA had been waiting three years for the opportunity to gain spectrum licenses in the 393MHz-398.5MHz band.

(October 6, 2022) NepaliTelecom

The Nepal Telecommunications Authority (NTA) has permitted government-backed Nepal Telecom to sell and distribute M2M/IoT SIM cards with a new dedicated number range, having previously ordered the telco to cease selling the SIMs last year. A report from Nepalitelecom.com says that the ban had caused revenue losses 'in millions' as the operator missed out on connecting 'a possible 400 M2M/IoT SIM cards every day.' Nepal Telecom representative Ranjit Lohiya confirmed that the company was resuming offering SIMs for device-to-device operations using a special number range as per the National Numbering Plan. The report added that Nepal Telecom had previously 'sold over 70,000 M2M SIM cards.'

(September 16, 2022) www.commsupdate.com

Oman

A license for postal and related services activity has been granted to three more companies, two of which are international and one is local, Telecommunications Regulatory Authority (TRA), said. A statement issued online by TRA said: "The authority issues a license for postal services and related services to international companies (foreign investment) and a local company classified under the category of small and medium enterprises, which are: iMile, Mandoobkum and Safe Way Express Cargo.The number of licensed postal companies is currently 40." The objectives of the licenses issued by the Authority are as follows:

1. To compete to provide better services in the postal services sector.
2. Provide options for beneficiaries.
3. Keep pace with the growth in e-commerce.
4. Provide permanent and temporary job opportunities, and training opportunities.

(September 20, 2022) www.timesofoman.com

Natural or legal persons, authorized by Telecommunications Regulatory Authority (TRA) to set up, manage or operate telecom towers, should from now on obtain a prior permit before starting to set up telecom towers whether on a public or private land. According to the new regulations, telecom towers should be set up at least three meters higher than the adjacent building and should be surrounded by a fence excluding the towers that are set up on building edges. The regulations issued by Salim bin Nasser al Aufi, Chairman of the Board of Directors of the Telecommunications Regulatory Authority on Sunday, apply to both permanent and interim telecom towers. As per the regulations, a licensee should, before submitting an application to set up a telecom tower, negotiate with the other licensees in the same area in order to share existing towers with them or provide proof of the impossibility of sharing the tower to the TRA. The licensee should propose three locations not within densely populated areas for setting up the tower to the authority to select the most suitable one. The licensee should complete the construction of the tower within a period of 120 days. Service and maintenance of the telecom tower should be carried out only by one of the companies authorized by the TRA. The telecom tower should have sufficient capacity to accommodate three more users at least. (September 19, 2022) www.omanobserver.om

Pakistan

In order to discuss the adoption of Wi-Fi 6E technology in Pakistan, the Ministry of Information Technology and Telecom held a meeting under the chairmanship of Member Telecom Omar Malik. The meeting deliberated on the inclusion of upcoming indoor-outdoor Wi-Fi 6E band technology and devices in Pakistan. It was attended by Meta Asia Pacific Policy Head Dr. Ismail Shah, Director General Pakistan Telecommunication Authority (PTA) Strategy and Development Mudassar Naveed, Director Frequency Allocation Board, DG Wireless MoITT, Director Pakistan Space and Upper Atmosphere Research Commission (SUPARCO/ PAKSAT), and other government officials, For the adoption of Wi-Fi 6E technology, a committee has been formulated already under PTA to conclude the timely inclusion of the Wi-Fi 6E emerging technological ecosystem in Pakistan. Existing Wi-Fi technology for end users creates a latency and capacity showstopper for next-generation technological inclusion of augmented reality (AR), virtual reality (VR), industrial and domestic robots Adoption of Wi-Fi 6E, Metaverse, and mass adoption of ultra-low latency gaming and animation industry business cases irrespective of the standard current home routers or outdoor Wi-Fi device are connected to optic fibre. The Inclusion of the Wi-Fi 6E standard shall set a base for cutting-edge technologies which shall be unlicensed and free spectrum to be widely adopted in Pakistan. Wi-Fi 6E requires new hardware on both broadcasting and receiving ends. Apart from Wi-Fi 6E, for the interest of new enterprises and small and medium enterprises (SMEs), the Internet of Things regime has already been opened in Pakistan for wide adoption of agri tech, smart homes, safe cities, disaster management, industrial automation, remote sensing, and lighthouse networks. (October 16,2022) technologytimes.pk

The government of Pakistan plans to generate billions of dollars in revenue by centralizing 'spectrum', available with different departments and organizations in the country, under the Spectrum Refarming Framework. At present, local telecom companies are using 400 MHz. According to rough estimates, 300 MHz spectrum was available with different organizations which the government wanted to offer to telecom companies. Officials stated that the government had auctioned spectrum in 2021 at a price of $30million per MHz and therefore could generate $9 billion by offering 300 MHz to different telecom companies. "The government will compensate the organizations and departments which had spectrum available to make their functioning smooth under the Spectrum Re-Farming Framework," said sources. The government also plans to launch 5G technology in the coming months and therefore, may fetch better prices by centralizing 'spectrum data'. Telecom companies in Pakistan are not utilizing enough spectrum and, as a corrective measure, the government hopes to auction more spectrum in the near future. Meanwhile, the IT ministry in a statement said that "as per Section 8.5.2 of the Telecommunication Policy 2015, the Ministry of IT and Telecommunication is glad to share the first of its kind draft Framework for Frequency Spectrum Re-Farming prepared with recommendations from PTA, PEMRA and FAB. The draft has been uploaded on the Ministry of IT and Telecommunications website for open consultation." "In view of the increasing demand for radio communication services worldwide, Spectrum ReFarming is considered a powerful and innovative approach to manage the spectrum dynamically so as to make it available for newer applications such as 4G, 5G, broadband wireless access and digital broadcasting," read the statement. "The framework shall facilitate in the effective utilization of the available spectrum, better quality and coverage of mobile broadband services and additional revenues for the national exchequer," explained the IT ministry. After the open consultation, the final draft shall be submitted to the Federal Cabinet for its final approval.

(October 9, 2022) www.tribune.com.pk

The Pakistan Telecommunication Authority (PTA) has updated the rules regarding service quality for the provision of fixed broadband services with a view to keeping pace with developments in the sector. The Fixed Broadband Quality of Service (QoS) Regulations, 2022 replaces the Broadband Quality of Service Regulation, 2014, and includes updated minimum speeds for fixed broadband services, thresholds for upload and download speeds and a new nationwide monitoring scheme. Under the new rules fixed broadband connections must provide speeds of at least 4Mbps downlink (previously 256kbps) and 2Mbps uplink. Operators must also ensure that download speeds experienced by customers are at least 80% of the advertised rate of their plan, whilst upload speeds must be 50% of the advertised rate for all technologies except xDSL, for which the uplink threshold is 25% of the rate specified in the user's plan. To monitor compliance with these rules the update also set standards for measurement and testing of relevant indicators and provides for the establishment of a National Measurement of Broadband (NMB) Program. Under this program, volunteers from a wide range of demographics and geographies will have a device pre-configured to measure internet performance installed in their homes. The PTA notes that the new rules also set more stringent thresholds for existing Key Performance Indicators (KPIs) – such as latency and packet loss – based on technological advancements in fixed broadband network. Further, new KPIs have been introduced including Web Page Loading Time and Bandwidth Utilization. (September 27, 2022) www.pta.gov.pk

Pakistan Telecommunication Authority (PTA) has carried out an independent Quality of Service (QoS) Survey in 14 cities of Punjab, Khyber Pakhtunkhwa, and Balochistan in order to measure the performance and quality of Cellular Mobile Operators' (CMOs) services being provided to their customers. During the survey, KPIs enlisted in the Next Generation Mobile Service (NGMS) license and Cellular Mobile Network Quality of Service (QoS) Regulations 2021, were checked using state-of-the-art automated QoS monitoring and benchmarking tool, said a news release. The checked KPIs pertained to voice, network coverage, SMS and mobile broadband,

and data services. The Drive test teams selected survey routes in such a manner to cover main roads, service roads, and the majority of sectors and colonies in the surveyed areas. Based upon the compliance level of each KPI against the threshold defined in the respective licenses and QoS Regulations, CMOs have been ranked between first to fourth position in Mobile Network Coverage and Voice Services as per compliance level in surveyed cities. Similarly, in the mobile broadband speed segment, the ranking has been done with respect to the highest data download and upload speed, network latency, and webpage loading time. The survey results revealed that CMOs are compliant with respect to upload and download speed to a great extent, while network latency and webpage loading time was found below the threshold. Similarly, SMS and voice KPIs have also been found below the licensed threshold in some areas. Eventually, necessary instructions have been issued to the operators for taking corrective measures so as to ensure improvement in the service quality up to the standards. The service quality monitoring activity is being carried out by PTA field teams with the ultimate aim to pursue the operators for the provision of better mobile services and to promote healthy competition among the operators. (September 21, 2022) www.urdupoint.com

The Pakistan Telecommunications Authority (PTA) has started issuing five-year renewable IoT licenses using LPWAN bands 433.05MHz-434.79MHz and 920MHz-925MHz, with four companies – Noby Solutions, IoT Technologies, LCC Pakistan and WeatherWalay – granted the first batch of permits. Licensees are obliged to report any network expansions to PTA, including the installation or addition of LPWAN Gateways. The move follows the PTA's publication of its IoT regulatory framework in February. (September 16, 2022) www.commsupdate.com

Qatar

The Communications Regulatory Authority (CRA) has issued an Individual License for the Provision of Public Satellite Telecommunications Networks and Services to Starlink Satellite Qatar, a division of SpaceX, following permission from the Minister of Communications & Information Technology Mohammed bin Ali Al-Mannai. The license authorizes Starlink to provide satellite broadband internet services to individuals and enterprises across Qatar via SpaceX's Low Earth Orbit (LEO) satellite constellation. Starlink Satellite Qatar will reportedly focus on both direct-to-consumer satellite internet and 'Starlink Premium' services for B2B and other high-demand users, enabling download speeds of 150Mbps-500Mbps and latency of 20ms-40ms, in addition to potential services supporting Qatari mobile network operators. Starlink's offerings are expected to enhance availability of telecoms services in remote locations, including offshore zones for oil and gas platforms, sea vessels and aircraft, while other potential use cases include back-up communications throughout Qatar in the event of a major telecoms network outage.

(September 30, 2022) The Peninsula

The Communications Regulatory Authority (CRA) participated in the Global Spectrum Management Forum 2022 hosted by the Central Radio Management Service (CRMS) of the Ministry of Science and ICT in Seoul, Republic of South Korea, from 6-7 September 2022. The Forum was attended by a large number of radio spectrum management officials from all over the world as well as many experts from various international organizations and other stakeholders from the radio spectrum monitoring field. During its participation in the Forum, CRA presented the radio spectrum monitoring network, which has been prepared for the FIFA World Cup Qatar 2022™, that will be hosted by the State of Qatar in November and December of this year. During its presentation, CRA's explained its preparations and readiness to monitor the radio spectrum through the strategic projects that have been implemented during the past few years and provided a summary of the most important systems that will be used during the FIFA World Cup Qatar 2022™, in addition to the planning considerations that were made to complete the radio spectrum monitoring network with state-of-the-art technologies to monitor the use of the radio spectrum and to ensure the protection of all the services, systems, and networks that will be used in the World Cup's stadiums that are close to each other, as it is the first experience of its kind in the history of hosting the World Cup from the radio spectrum management and monitoring perspective. CRA has implemented several projects related to radio spectrum management and monitoring, in preparation for the major and special events to be hosted by Qatar, including the upgrade of the Automated Frequency Management System (AFMS), the augmentation of the fixed and mobile monitoring stations and the radio spectrum sensors monitoring stations, to cover all the main venues of the FIFA World Cup Qatar 2022™, in addition to the drone detection system and the quality of service measurements system of the mobile networks by upgrading the existing system and installing several remote sensors units in the main venues of the FIFA World Cup Qatar 2022™. CRA is also executing a space radio monitoring system project that will be completed in November 2022 and used during the FIFA World Cup Qatar 2022™.

(September 8, 2022) www.cra.gov.qa

Saudi Arabia

Under the patronage of the Communication and Information Technology Minister Abdullah Alswaha, the Communications and Information Technology Commission (CITC) launched the “Digital Technology Forum" 2022. Under the theme "Enabling Local Technology Products", organized by CITC in partnership with the Ministry of Communications and Information Technology, the Saudi Export Development Authority and the Local Content and Government Procurement Authority. The Forum kicked off with a H.E. the Vice Minister of MCIT Eng. Haitham Alohali, H.E. the Vice Minister of Industry and Mineral Resources Eng. Osama Alzamil, H.E. the Governor of CITC Dr. Mohammed Altamimi, and H.E. the Digital Government Authority Governor Eng. Ahmed Alsuwaiyan. At the opening remarks, the CITC’s Deputy Governor for IT and Emerging Technologies Mr. Raed Alfayez showcased the IT sector’s growth indicators, which have increased from 43 Billion SAR in 2017 to 73 Billion SAR in 2021, with an annual growth rate of 14%, and expected to reach 103 Billion SAR in 2025. Alfayez emphasized the unlimited support from H.R.H the Crown Prince and Prime Minister Mohammed bin Salman Alsaud to the IT sector, which became the largest market in the region and one of the most promising sectors in achieving the Kingdom’s vision 2030 and a key component in supporting the digital infrastructure; and noted that we are witnessing qualitative leaps in the Kingdom's IT market. He also indicated that in the last year’s forum, the Commission launched its strategy to empower IT sector toward the future, which served as the starting point for drawing and building sector landscapes, identifying initiatives and projects that began to motivate technical investment by emphasizing the attractive investment environment, the Kingdom's potential for technical investment, and success stories. Alfayez highlighted the sector's leaps and effective initiatives in the Kingdom's IT market, where 9 companies are listed on the stock market, and has grown 350% in just one year. According to the Kingdom's IT market business's specialized classification, the Commission has registered over 500 companies in the ManassaTech. In the field of emerging technologies, specifically IoT, Alfayez confirmed that the IoT subscription rate has reached more than 10 Million subscriptions, because of the development of the IoT that covers more than 95% of urban areas and handles more than 500 Billion connected devices, the approval of “Connected Vehicles” Services for more than 20 commercial agencies, and in Cloud Computing, the service providers increased to 31 with 3 global companies. To foster an investment-friendly regulatory environment, the Commission issued several regulatory documents and guides, including Software Capitalization, IT market classification, and computing and IoT regulations. It also launched 12 enabling initiatives and 33 awareness-raising workshops to encourage supply and demand, as well as the Emerging Technologies Sandbox, which will support modern digital business models. The forum also witnessed several launches of products and services, as well as an accompanying exhibition that features more than 35 local technical products and Blockchain products of more than 30 local companies, as well as the announcement of 4 winning products with the Commission's Co-Innovation Award. (October 24, 2022) www.citc.gov.sa

The Communications and Information Technology Commission (CITC) has published the Non-Terrestrial Networks (NTN) regulations, which consist of three regulatory documents. The respective documents are “Regulations for Provisioning of Operation Services of Non-terrestrial Networks (NTN)”, “Regulations for Provisioning of Telecommunication Services over Non-terrestrial Networks (NTN)”, and “Regulation for Registration of Telecommunication Space Stations”. These regulations aim to enable these networks, create an encouraging regulatory environment that promotes investment, facilitate the adoption of the latest NTN wireless technologies and contribute to the thriving digital economy in the Kingdom. CITC has indicated that the regulations aim to provide communication services using cutting-edge wireless technologies and enable the wide spread of NTN technologies by following the principle of "technology-neutral". CITC has illustrated that creating a well-established regulatory environment for NTN will attract investments in the Kingdom that will play a vital role to unleash the full potential of these technologies. CITC pointed out that the NTN regulations will encourage investments in the ICT sector, develop the digital economy, and enable various technologies to the end user in the Kingdom. These technologies include Air- to- ground (A2G) communication, Mega Constellations, Satellite Internet of Things (SAT-IoT), 5G CGC, High Altitude Platform Technologies (HAPS), and Low Altitude Platform Technologies (LAPS). (September 21, 2022) www.citc.gov.sa

The Communications and Information Technology Commission has published the Spectrum Trading Regulations, as part of the efforts to implement its National Spectrum Strategy (2020-2025), the regulations aims to embrace a market-oriented approach to spectrum management. The Spectrum Trading Regulations allow access to spectrum through secondary markets to adopt new mechanisms for utilizing spectrum efficiently through frequency reuse. Furthermore, the types of spectrum trading that the regulations introduce are full and partial spectrum transfers. Moreover, CITC's objectives of introducing Spectrum Trading in the Kingdom are to promote innovations in wireless technologies, achieve efficient use of spectrum, and enhance the quality of services provided to end-users. In addition, the document aligns with CITC's aspirations to establish transparency in spectrum management procedures and improve the flexibility of access to spectrum. The Spectrum Trading Regulations document underwent public consultations before it was approved to consider and measure stakeholders feedback and needs of spectrum. (September 19, 2022) www.citc.gov.sa

The Communications and Information Technology Commission announces that the Frequency Licensing Fees Regulations entered into force. The regulations have been approved by the Council of Ministers in Decision No. (632) on 15/11/1443H (14/06/2022) and

will be applied to all frequency licenses. The approved regulations are intended to support investments in wireless technologies in the Kingdom, facilitate access to scarce spectrum, and accommodate the growing needs for spectrum as wireless technologies evolve. The regulations can be accessed via this link: Frequency Licensing Fees Regulations. (September 15, 2022) www.citc.gov.sa/en

Etihad Atheeb Telecom Co. (Go) received the approval of the Communications and Information Technology Commission (CITC) on commitment to deploy the network as per the CITC license for the 3.5GHz spectrum band, according to a bourse filing. The telco was informed in a letter issued by CITC. The approval was related to using the assigned spectrum to cover at least 10% of the populated areas in the cities under the license. The CITC will follow up on the company's obligations to ensure the optimal use of the frequency spectrum, in accordance with the license and relevant regulations. The company further will continue to enhance its infrastructure, deploy the network and fulfill its future obligations under the license. The telco indicated that there is no relevant financial impact, the statement added. In January, Etihad Atheeb obtained the CITC approval to extend the commitment period to deploy the network for an additional six months, Argaam reported. Meanwhile, the telco was informed in a letter issued by the CITC in May that the license to use the 3.5GHz spectrum band frequency will be canceled if it fails to fulfill its obligations.
(September 6, 2022) www.argaam.com

Sri Lanka

The Telecommunications Regulatory Commission of Sri Lanka (TRCSL) has approved a 20% hike in mobile, fixed voice, fixed broadband plans and VAS services, covering both pre- and post-paid customers, even though the move will up the pressure on millions of struggling Sri Lankans amid the country's ongoing financial crisis. 'We wish to inform our valued customers that, due to the continued escalation of operational costs resulting from the devaluation of the Sri Lankan rupee, tariff applicable on our services will be increased effective 5 September 2022,' telco operators including SLT-Mobitel, Dialog Axiata, Hutch Lanka and Airtel Lanka announced at the weekend. Adding to people's woes, the TRCSL also approved a 25% increase on all pay-TV services. This is not the first time the authorities have increased charges. In June this year, the government implemented a wave of tax reforms including a rise in VAT from 8% to 12% and an increase in the Telecommunication Levy from 11.25% to 15%. In a statement at the time, the office of the Prime Minister and Minister of Finance, Ranil Wickremesinghe, directed the TRCSL to implement the latter, with immediate effect. The Telecommunication Levy was reduced from 15% to 11.25% effective from 1 December 2019 which the government claims 'led to a decrease in revenue by 28% to LKR13.1 billion in 2020 from LKR18.3 billion in 2019. Hence, it is proposed to increase the Telecommunication Levy from 11.25% to 15% with immediate effect.' (September 6, 2022) www.commsupdate.com

South Sudan

South Sudan's National Communication Authority (NCA) has announced it is adjusting the exchange rate for telecoms tariffs following requests from the country's mobile operators. The current tariff exchange rate was set at SSP300 to USD1 back in 2020 but the effects of the COVID-19 pandemic and a rise in global oil prices (which led to higher costs for operators to power and maintain their networks) have prompted a review of the rates in order to ensure the continuity of networks and services. The move aims to gradually adjust the exchange rate for telecoms tariffs to the same level as the SSP600 holding base rate for the Bank of South Sudan. The adjustment will be carried out gradually over a 90-day period from 15 September to 15 December 2022.
(September 13, 2022) www.commsupdate.com

Turkey

Istanbul Medipol University Faculty of Engineering and Natural Sciences organized a "6G Conference" within the scope of 6th generation wireless communication technology studies. Speaking at the opening of the 2-day conference, Minister of Transport and Infrastructure Adil Karaismailoğlu said, "Cyber security is our top priority with the digital leap in 6G technologies." Expressing that the production, sharing and access to information has reached dizzying speeds, and the rules of the game have changed at the same time, Karaismailoğlu said that development and development can be possible by producing information, transforming the produced information into a product and introducing this product to the world. We increased our fiber line length, which was 88 thousand kilometers in Turkey, by 5.5 times, to 488 thousand kilometers. Of course, it is not enough, we will increase it much

more," he said. Deputy Minister of Transport and Infrastructure, Dr. Ömer Fatih Sayan also gave a speech. Sayan, stating that the communication sector is undergoing a rapid change, said that they prioritize locality and nationality in the communication ecosystem. Sayan stated that apart from physical products, the biggest capital in 6G is the patents held related to the standards, and said, "With this vision, we will continue to work as a group that is ready to make 6G patents in our local, national and R&D studies."

(September 19, 2022) www.btk.gov.tr

United Arab Emirates

UAE's Telecommunications and Digital Government Regulatory Authority (TDRA) announced the launch of the 800 Toll-free Number Portability service from one service provider to another, while ensuring that the number remains the same. The move is to enhance competition between the telecom service providers, and expanding the range of options for customers.The new service gives companies that have been assigned a toll-free number the option to retain the number and change the service provider, allowing them to experience services provided by both telecom providers in the UAE without the need to change the free phone number used by the company. TDRA had launched the Fixed Number Portability service in 2021, where more than 12,000 fixed numbers have been ported between service providers since the service release. The Fixed Number Portability service and Toll-free Number Portability service are a continuation of the Mobile Number Portability service launched by TDRA in 2013, through which more than 2 million numbers were ported. Commenting on these services, Eng. Mohammed Al Ramsi, TDRA Deputy Director General for the Telecom Sector, said: "Through the launch of the number portability service in its mobile, fixed and toll-free forms, we aim to enhance competition between service providers to provide the best services and offers." TDRA highlighted that number portability requires the customer to follow certain steps, including paying the bills due with the current service provider, and the number must not be partially or fully disconnected. After the porting process is completed, the customer will be given a grace period for settling his/her contractual financial obligations and paying the applicable due fees. (October 30, 2022) www.khaleejtimes.com

The Telecommunications & Digital Government Regulatory Authority (TDRA) attained membership in the European Foundation for Quality Management (EFQM), through which TDRA will support the implementation of EFQM's leading approach, aimed at enabling organizations improve their own performance and objectives as well as develop their respective human resources. TDRA will utilize the integrated services provided by the EFQM to better equip its own teams to drive excellence and cultural change and transformation, thereby delivering performance improvements and benefits to TDRA, its staff and clients. Commenting on this membership, H.E. Mohammad Al Kitbi, Deputy Director General of the Support Services Sector at TDRA, said: "TDRA is keen to establish partnerships and cooperate with key leading global organizations in various related work areas, with the aim of sharing success stories, conducting benchmarks, and utilizing the latest global managerial/administrative and occupational/professional systems in the development of TDRA's ways and methods of work, in addition to cadre qualification and training." His Excellency added: TDRA's membership in the EFQM will give us an opportunity to access the updated EFQM 2020 Model to develop work mechanisms and implement best international practices across all our operations. The EFQM Excellence Model aligns with our commitment to consolidate TDRA's pioneering position comprehensively. For us all at TDRA, excellence is a daily work program that we pursue according to specific and well-thought-out strategies and plans, in which all our staff carry them out in a positive work environment that raises individual and corporate efficiency and institutionalizes a culture of excellence based on total quality management and sustainable excellence standards, bringing happiness to customers and society as a whole." The EFQM is an innovative, not-for-profit organization, fusing data-driven insights, curated learning and development and networking opportunities for the benefit of organizations and individuals worldwide. EFQM aids stakeholders to grow, improve work methods and follow a common management philosophy among thousands of people all around the world.

(September 14, 2022) www.tdra.gov.ae

Yemen

Yemen's Sana'a-based Houthi government has announced the launch of several projects aimed at expanding and developing the communications infrastructure of several state-owned entities in Amran governorate, namely: fixed line operator the Public Telecommunications Company (PTC); mobile provider Yemen Mobile Company; and the General Institute for Telecommunications in Amran. Saba News writes that the projects will cost around YER4 billion (USD16 million), although no specific details of the programmes were published. Unveiling the projects, Minister for Telecommunications and ICT Misfer al-Numair was cited as saying that the investment would improve communications services for everyone in the province. (September 26, 2022) www.commsupdate.com

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REGULATORY ACTIVITIES BEYOND THE SAMENA REGION

American Samoa

The American Samoa Telecommunications Authority (ASTCA) acquired a total of 15 licenses in Auction 108 – the Federal Communications Commission's (FCC's) sale of unused spectrum in the 2496MHz-2690MHz (2.5GHz band). The telco paid USD970,750 for the concessions, which span five counties. As per FCC paperwork, ASTCA's chief rival American Samoa Telecom (BlueSky) was also a qualified bidder for Auction 108, but came away empty-handed. Elsewhere in the US overseas territories, PTI Pacifica (trading as IT&E), which operates in Guam and the Northern Mariana Islands, paid a total of USD17.690 million for nine licenses, while Guam-based TeleGuam Holdings (trading as GTA) paid USD16.565 million for three licenses. Finally, DOCOMO Pacific, which operates in both Guam and the NMI, bid USD1.260 million for three licenses.

(September 6, 2022) www.commsupdate.com

Angola

The President Joao Lourenco has issued a decision finalizing the transfer of ownership stakes in mobile market leader Unitel from private companies Vidatel and Geni to the State. The nationalization of the two shareholdings – representing 25% equity each – effectively raises the Angolan State's Unitel ownership to 100%, the Brazilian telco Oi completed the sale of a 25% stake in Unitel to Sonangol in a USD1 billion deal in January 2020, raising the Angolan state-run oil firm's effective share to 50%, due to it already owning 25% via its subsidiary Mercury Telecom (MSTelcom). Vidatel (registered in the British Virgin Islands [BVI]) is owned by Angolan billionaire Isabel dos Santos – daughter of former president Jose Eduardo dos Santos – but on 30 December 2019 the Provincial Court of Luanda ordered an asset freeze on her shares, and in December 2020 the BVI Supreme Court ordered judicial administrators to seize control of Vidatel's bank accounts and remove dos Santos' voting and dividend rights at Unitel. The database also confirms: the 25% share in Unitel held by Geni – fronted by Angola's Leopoldino do Nascimento ('General Dino', a close associate of former president dos Santos) – was seized in January 2022 by the National Asset Recovery Service (related to a criminal process initiated by the National Directorate of Investigation & Criminal Action under the Attorney General's Office), and transferred to a trustee, the State Assets & Participations Management Institute (Instituto de Gestao de Activos e Participacoes do Estado, IGAPE). Under a presidential decree of 5 August 2019, the Angolan state intends to sell direct/indirect stakes in Unitel as part of the country's 2019-2022 privatization program.

(October 31, 2022) www.commsupdate.com

Argentina

Argentina will stage a 5G spectrum auction in February 2023, as the inflation-wracked country attempts to boost government coffers. The date was revealed by Minister of Economy Sergio Massa, alongside a number of other advances that are slated for inclusion in the government's 2023 budget bill. Mr. Massa told the Chamber of Deputies: 'In February Argentina puts out the 5G tender and that tender will generate a volume of investment in the telecommunications sector.' Previously, on 23 December 2021 the National Communications Agency (Ente Nacional de Comunicaciones, ENACOM) published a list of frequencies that it deemed suitable for future 5G use. It included the following spectrum:

- 1427MHz-1518MHz (1500MHz band)
- 1770MHz-1780MHz/2170MHz-2200MHz (AWS-3 band)
- 2300MHz-2400MHz (2.3GHz band)
- 3300MHz-3600MHz (3.5GHz band)
- 24.25GHz-25.75GHz (26GHz band)
- 37GHz-43.5GHz (38GHz band)

(September 30, 2022) www.commsupdate.com

Australia

In the wake of last month's high-profile data breach which impacted Optus, the Australian Communications and Media Authority (ACMA) has announced it has now commenced a formal investigation into the matter. In a press release confirming the investigation, the ACMA said it plans to examine the data breach in regards to Optus' obligations as a telecoms service provider; specifically in relation to the acquisition, authentication, retention, disposal and protection of personal information, and requirements to provide

fraud mitigation protections. According to the regulator, it anticipates that the investigation 'will take some time', while it said its findings will be made public once it is complete. Commenting, ACMA chair Nerida O'Loughlin said: 'When customers entrust their personal information to their telecommunications provider, they rightly expect that information will be properly safeguarded. Failure to do this has significant consequences for all involved. All telcos have obligations regarding how they acquire, retain, protect and dispose of the personal information of their customers. A key focus for the ACMA will be Optus' compliance with these obligations. We look forward to full cooperation from Optus in this investigation.' (October 11, 2022) www.commsupdate.com

A statement of preliminary views on the authorization sought by Telstra and TPG Telecom (Vodafone Australia) for their proposed regional mobile network arrangements has been published by the Australian Competition and Consumer Commission (ACCC). In February 2022 Telstra and TPG inked what they called a 'ground-breaking ten-year regional Multi-Operator Core Network (MOCN) commercial agreement'. The two companies are now seeking authorization from the ACCC for the deemed acquisition of certain TPG spectrum, which is tied to three interrelated network agreements that are being considered together. In publishing its preliminary views on the matter, ACCC commissioner Liza Carver said: 'We are assessing how the proposed infrastructure and spectrum arrangements between TPG and Telstra will change the incentives and ability of Telstra, TPG, Optus, and other market participants to compete and to invest in mobile service infrastructure.' Specifically, the ACCC has said that, in respect of the competitive effects of the proposed transaction, it is considering whether it is likely to affect price-based competition and infrastructure-based competition, while the regulator is also considering the 'public benefits and detriments' likely to arise as a result of the deal. 'There is still a lot of work to do on this complicated and nuanced review, which is of critical importance to competition in the mobile telecommunication sector. At this stage we have not reached any overall conclusions, but welcome further submissions from stakeholders and consumers alike on the issues raised,' Ms. Carver added. In terms of the timings for the remainder of the process, the ACCC has set a deadline of 14 October for feedback on its preliminary views, while further submissions regarding the matter from the parties involved will be allowed until 'October/November 2022'. Finally, the ACCC has said it expects to issue a final decision regarding the proposed tie-up on 2 December 2022.

(September 30, 2022) www.commsupdate.com

Austria

The Regulatory Authority for Broadcasting and Telecommunications (Rundfunk und Telekom Regulierungs, RTR) has opened a public consultation on the deregulation of the fixed voice market for business customers. The draft suggests that the retail business market for access to subscriber lines at fixed locations is no longer relevant for sector-specific regulation and proposes that the existing obligations are lifted. Interested parties have been given until 30 November to submit comments.

(October 27, 2022) www.commsupdate.com

Azerbaijan

The Ministry of Digital Development and Transportation (MDDT) has adopted a new methodology for determining spectrum usage fees said Deputy Minister Rovshan Rustamov. To aid development of mobile services in the regions and reduce the digital divide, the new guidelines will notably allow flexible rates to be applied in different areas of the country. Under the plan, a 25% discount will apply in regions outside Baku, Sumgait and the Absheron district, while the fee will be 2.6 times cheaper in areas reclaimed during the military conflict with Armenia in 2020. The MDDT's website states the new methodology has been developed based on recommendations from the International Telecommunications Union (ITU), as well an examination of best practice in several other countries. In addition to the regional variations, the fees will be determined by a range of factors, including the technology implemented, the available bandwidth, and the size and number of frequency assignments. Meanwhile, the deputy minister has also revealed that a total of 420,000 households will be connected to GPON networks in Azerbaijan by the end of 2024. With some 370,000 homes passed by GPON infrastructure at the end of 2021, the minister noted the planned expansion will increase the country's minimum average internet speeds to 25Mbps.

(October 10, 2022) Trend

Belgium

The Belgian Institute for Postal Services and Telecommunications (BIPT) has granted Telenet permission to reorganize its 2G and 3G frequency allocations while the regulator finalizes details of the new 900MHz and 1800MHz permits obtained in this summer's multi-band spectrum auction. After consultation with the BIPT, Telenet had asked to migrate services to the 1765MHz-1785MHz/1860MHz-1880MHz frequency range between 28 November and 11 December 2022, and the 1945.0MHz-1959.8MHz/2135.0MHz-2149.8MHz range between 24 October and 6 November. Although Telenet should be able to make the switch overnight, a transition period of two weeks is foreseen for each band, during which the amount of spectrum used for each base station must not exceed 20MHz duplex for the 1800MHz band and 14.8MHz for the 2100MHz band. The BIPT determined the move facilitates the reorganization of the 1800MHz and 2100MHz bands, freeing up the 1760MHz-1765MHz/1855MHz-1860MHz range for allocation to Citymesh Mobile and the 1935.3MHz-1945MHz/2125.3MHz-2135MHz frequency block for Proximus. (October 21, 2022) www.commsupdate.com

Telecoms regulator the Belgian Institute for Postal Services and Telecommunications (BIPT) has published a draft Royal Decree to enable operators other than Citymesh and Gridmax to acquire a 3410MHz-3430MHz frequency block, after the two companies failed to bid for the spectrum in June's auction. The proposal amends the Royal Decree of 28 November 2021 concerning spectrum allocations in the 3600MHz range, which reserved the frequencies for Citymesh and Gridmax to enable their continued operation of WiMAX and LTE sites in several communes following expiry of their existing user rights in May 2025. Given the 100MHz cap on spectrum holdings in the band, Orange Belgium, Proximus and Telenet will be unable to take part in the new tender. The consultation will close on 21 October.

(September 26, 2022) www.commsupdate.com

The Belgian government has opened a consultation covering the development of broadband infrastructure in so-called white areas, where a network capable of delivering download rates of at least 100Mbps is not available and is unlikely to be deployed in the foreseeable future. EUR40.7 million (USD40.7 million) has been set aside to promote network rollouts in these underserved areas, with telcos able to bid to take part in the subsidized rollout scheme.

(September 9, 2022) www.commsupdate.com

Following the conclusion of the multi-band spectrum auction in July, the Belgian Institute for Postal Services and Telecommunications (BIPT) has adopted a series of decisions granting frequency user rights in the 700MHz and 3600MHz bands. In addition to the incumbent mobile network operators Orange, Belgium, Proximus and Telenet, two new entrants – Citymesh Mobile (a joint venture between Citymesh and Romanian-backed Digi Communications) and IT services provider Network Research Belgium (NRB) – also succeeded in securing spectrum in the bands. The BIPT has announced frequencies in the 700MHz band will be distributed as follows, with user rights valid from 1 September 2022 until 31 August 2042: Citymesh Mobile, which agreed to pay EUR19.335 million (USD19.4 million), has been assigned the ranges 703MHz-708MHz/758MHz-763MHz; Telenet, EUR21.34 million, 708MHz-713MHz/763MHz-768MHz; Orange Belgium, EUR122.86 million, 713MHz-723MHz/768MHz-778MHz; and Proximus, EUR122.87 million, 723MHz-733MHz/778MHz-788MHz. As for the 3600MHz band, the following spectrum has been allocated with user rights valid from 1 September 2022 until 6 May 2040: Citymesh Mobile 3430MHz-3480MHz (EUR30.99 million); 3480MHz-3580MHz (EUR55.8 million); Network Research Belgium 3580MHz-3600MHz (EUR10.97 million); Orange Belgium: 3600MHz-3700MHz (EUR54.85 million); and Proximus 3700MHz-3800MHz (EUR56.32 million).

(September 1, 2022) www.commsupdate.com

Bolivia

The Authority for the Regulation and Oversight of Telecommunications and Transport (Autoridad de Regulacion y Fiscalizacion de Telecomunicaciones y Transportes, ATT) has threatened to revoke the mobile license held by NuevaTel PCS (Viva), after blocking the unit's sale in August this year. The cellco was sold to Balesia Technologies by US-based Trilogy International Partners (TIP) for an undisclosed fee, in a deal that ostensibly closed in the second quarter of 2022. However, the industry regulator stepped in to block the transaction, citing a lack of transparency. Nestor Rios, Executive Director of ATT, has informed local journalists that Viva owes the government unpaid fees of BOB45.7 million (USD6.4 million) adding: 'The sanction for an illegal transfer is the revocation of the license. That is the procedure that is followed.' It is understood that Balesia submitted fresh documentation on 15 September, in an effort to push the deal through, only to antagonize the authorities when an unnamed Balesia representative asserted that the deal had concluded while attending the ExpoCruz 2022 event last month. The deal – which was first announced in March 2022 – involved the transfer of Trilogy's 71.5% indirect equity interest in its Bolivian subsidiary to Balesia, for a nominal purchase price. Peru-based Balesia owns and operates cell towers and fiber infrastructure in Mexico, Guatemala, Nicaragua, Costa Rica, Ecuador, Peru, Bolivia and Argentina.

(October 4, 2022) www.commsupdate.com

Brazil

The National Telecommunications Agency (Agencia Nacional de Telecomunicacoes, Anatel) has revoked Claro Brasil's decade-old 450MHz license, mirroring action taken against Oi and TIM Brasil last month. According to TeleSintese, the watchdog conceded that – unlike its rivals – Claro did actually utilize the frequencies. However, Claro's 450MHz launch – in 'several municipalities' – was said to be delayed. Claro was given 450MHz spectrum covering rural areas of all states in the north region, as well as rural parts of Bahia and Maranhao states and greater Sao Paulo. Previously, on 13 September Anatel's Board of Directors terminated the authorizations for the use of the 450MHz band held by Oi and TIM Brasil. Oi's concession covered the states of Goias, Mato Grosso, Mato Grosso do Sul, Rio Grande do Sul and the Federal District, while TIM's licenses spanned Espirito Santo, Parana, Rio de Janeiro and Santa Catarina. Both concessions were issued in 2012, with a view to providing rural coverage, but neither license was ever used. (October 11, 2022) www.commsupdate.com

The National Telecommunications Agency (Agencia Nacional de Telecomunicacoes, Anatel) has confirmed that the country's national mobile operators are permitted to launch Standalone (SA) 5G services using the 3.5GHz frequency band in a further five state capitals. The latest locations to receive the green light are as follows: Belem (capital of Para), Macapa (Amapa), Manaus (Amazonas), Porto Velho (Rondonia) and Rio Branco (Acre). With this action, all 26 state capitals – and federal capital Brasilia – have now been approved for SA 5G connectivity. The watchdog notes that a total of 5,275 SA 5G base stations have been activated in Brazilian capitals to date – double the minimum commitment previously established. This total represents 6% of the overall 93,159 cell sites in the country. By 2025, 6,370 5G base stations must be installed in the state capitals. In total, the state capitals are home to nearly a quarter of the Brazilian population. (October 6, 2022) www.commsupdate.com

Anatel's Board of Directors terminated the authorizations for the use of the 450MHz band held by Oi and TIM Brasil. Oi's concession covered the states of Goias, Mato Grosso, Mato Grosso do Sul, Rio Grande do Sul and the Federal District, while TIM's licenses spanned Espirito Santo, Parana, Rio de Janeiro and Santa Catarina. Both concessions were issued in 2012, with a view to providing rural coverage, but neither license was ever used. (September 13, 2022) www.commsupdate.com

The National Telecommunications Agency (Agencia Nacional de Telecomunicacoes, Anatel) has confirmed that the country's national mobile operators are now able to launch Standalone (SA) 5G services using the 3.5GHz frequency band in Fortaleza (Ceara), Natal (Rio Grande do Norte) and Recife (Pernambuco). The decision was made on 1 September, following advice from the government's Group for the Implementation of Solutions for Interference Problems (Grupo de Acompanhamento da Implantacao das Solucoes para os Problemas de Interferencia, GAISPI). SA 5G services are being introduced on a rolling basis in Brazil. The state capitals with live 5G networks are as follows: Brasilia, Belo Horizonte, Curitiba, Florianopolis, Goiania, Joao Pessoa, Palmas, Porto Alegre, Rio de Janeiro, Salvador, Sao Paulo and Vitoria. On 18 August Anatel's Board of Directors approved the postponement of the release date for 5G frequencies in all other state capitals to 28 October. (September 6, 2022) www.commsupdate.com

Brunei Darussalam

The Authority for Info-communications Technology Industry of Brunei Darussalam (AITI) has announced plans for 5G mobile network trial. In a press release regarding the matter, the regulator said it was working with wholesale operator Unified National Networks (UNN) and retail mobile network operators (MNOs) Datastream Digital, Imagine and Progresif to conduct a trial which would run for up to eight weeks, ahead of a commercial launch of 5G technology. According to the AITI, the objective of the 5G trial is to allow UNN and the MNOs to 'receive and evaluate valuable feedback from the trial participants, which will help to facilitate end-to-end network and process optimization in order to achieve a satisfactory and successful launch in the near future'. It has been confirmed that each service provider will select up to one hundred subscribers who meet a 'specific selection criteria' to become trial participants, and these users will be required to 'actively' provide feedback on experience and network performance. Those interested in taking part in the trial will reportedly be required to have an existing post-paid plan with their mobile provider and own a 5G-compatible device. Meanwhile, the AITI notes that UNN is in the final stages of completing the full modernization of its entire infrastructure to be 5G-ready. This modernization through 'RAN expansion and broadband network upgrade' will reportedly increase the capacity to manage the growing traffic and data volume as well as improve customer experience in Brunei. Commenting on the progress made with regards to the modernization of its network, UNN CEO Dr Steffen Oehler was cited by RCR Wireless as saying: '90% of base stations in the country are already modernized and in place with the technology to start 5G services in the country … The infrastructure is ready for the 5G launch.' (September 20, 2022) www.commsupdate.com

Burundi

The Agency for Regulation and Control of Telecoms (Agence de Regulation et de Controle des Telecommunications, ARCT) in Burundi has reportedly shut down mobile network operator (MNO) Smart Burundi over its failure to settle its tax arrears and the expiration of its operating license on 27 July. The ARCT requested Smart to cease all operations on 18 August at which point it reputedly owed around USD3.2 million in arrears. Further, the regulator noted that whilst Smart had filed to have its license renewed in March this year, its failure 'to provide the certificate of non-accountability requested by the Burundian Revenue Office which must confirm that the telecom company owes nothing to the tax authorities' meant that its concession subsequently lapsed. The beleaguered company has hit back, however, and in an interview with media outlet Iwacu, Jean-Marie Lacroix, commercial director of Smart, argued that the decision to close the cellco was politically motivated as it benefits one of its competitors, Lumitel – which is owned by Vietnamese Army-backed Viettel and which is 'suspected of harboring some members of the regime within its shareholding'. Nevertheless, the ARCT upholds that the measures are appropriate, with Director General Samuel Muhizi also adding that even if it resolves its financial situation, Smart Burundi may not be able to continue to operate. 'Renewing your operating license after the network has closed is a real obstacle course. The presidency gets involved since this requires a presidential decree, among other things,' he is quoted as saying. (September 6, 2022) www.commsupdate.com

Canada

The Canadian Radio-television and Telecommunications Commission (CRTC) has issued decisions on the terms and conditions for MVNO access to the networks of national infrastructure-based mobile operators Rogers, Bell and Telus, and Saskatchewan provincial operator SaskTel, who must now begin accepting requests for access to their networks and enter negotiations with regional mobile providers to agree on wholesale MVNO rates. The CRTC says its latest initiatives will:

- open the door for more companies, in particular smaller regional providers in rural areas, to provide greater competition and choice to more Canadians
- ensure that MVNO access is offered on current and future mobile networks, including 5G, 'denying several provisions that would make the MVNO access service more restrictive or difficult to use'
- prevent any provisions that would restrict regional providers from reselling their wholesale access to other MVNOs. (October 24, 2022) www.commsupdate.com

The federal telecommunications regulator says it has made decisions that it hopes will provide greater competition in the mobile wireless market. The CRTC says it is giving mobile virtual network operators which resell wireless communications service in more rural areas access to the wireless networks of Canada's largest telecom providers. The regulator says the changes will help ensure that the calls and data sessions of MVNO subscribers do not drop when they move between coverage zones and that MVNO access is offered on current and future wireless networks, including 5G. The CRTC says it is denying several provisions that would make the MVNO access service more restrictive and is preventing any provisions that would restrict regional providers from reselling their wholesale access to other MVNOs. Bell Mobility, Rogers, Telus and SaskTel must now begin accepting requests from regional wireless carriers for access to their networks and enter negotiations with regional wireless providers to agree on wholesale MVNO rates. The CRTC established a policy last year to help MVNOs to be launched in the Canadian market.

(October 20, 2022) www.thestar.com

Innovation, Science & Economic Development Canada (ISED) has stopped major national operator Telus from acquiring mobile broadband spectrum in Manitoba from the defunct Xplore Mobile, which shut down at the end of last month. Explaining its decision to block the frequency transaction application, ISED stated: 'The proposed transfer raised substantial concerns that the resulting concentration of spectrum would impede the ability of future mobile competitors to provide wireless services and effectively compete in Manitoba.'

(September 21, 2022) www.commsupdate.com

Congo

President Felix Tshisekedi of the Democratic Republic of Congo has ordered the implementation of the country's universal service fund (USF) within "a reasonable timeframe". The fund was created in October 2002 via framework law No. 013/2002 with the goal of delivering mobile connectivity to the majority of the country's population. It accrues funds via a 3% levy on operator revenue – and these funds have thus far not been utilized. Tshisekedi argues that this inaction has made "effective management" of the funds impossible, and has now ordered that the money be used to finance infrastructure initiatives to enable widespread and affordable access to ICT that reflects the "current configuration of the digital ecosystem."

(September 22, 2022) www.developingtelecoms.com

Costa Rican

The President Rodrigo Chaves Robles has confirmed that he has signed an agreement which will see state-backed utility firm/telco Grupo ICE return its unused 5G-suitable spectrum. The agreement covers frequencies in the 3400MHz-3500MHz and 3600MHz-3625MHz bands. President Chaves commented: 'Costa Rica must take full advantage of the benefits of technological progress and convergence, for this reason, the Government of the Republic committed itself to the Costa Ricans to materialize the deployment of 5G in Costa Rica – to resume the path of development and economic growth without leaving anyone behind.' In May 2022, in one of his first acts after assuming power, the new president ordered Grupo ICE to return all of the state-owned company's 5G-suitable spectrum holdings to the Ministry of Science, Technology and Telecommunications (Ministerio de Ciencia, Tecnologia y Telecomunicaciones, MICITT) within six months. Back on 25 June 2021 the MICITT notified Grupo ICE of its intention to retrieve the operator's 5G-suitable frequencies, as it sought to further the country's wider 5G ambitions. Subsequently, in November 2021 the Superintendency of Telecommunications (Superintendencia de Telecomunicaciones, Sutel) informed the MICITT that it was unwilling to reimburse ICE for its unused frequencies, prompting the state-backed company to dig in its heels.

(September 9, 2022) www.commsupdate.com

Cote d'Ivoire

Telecoms operators have met with representatives of the government and the Regulatory Authority for Telecommunications in Cote d'Ivoire (Autorite de Regulation des Telecommunications de Cote d'Ivoire, ARTCI) to discuss quality of service (QoS) issues. A report from Ecofin says the meeting was organized by the country's Minister of Digital Economy and Telecoms, Amadou Coulibaly, amid concerns that poor QoS levels are hindering efforts towards digital transformation. The parties have decided to reactivate a working group to discuss QoS improvements, while the ARTCI will be given additional powers to take steps to enhance service levels. Discussions will also center on how to deal with disruption from outside factors such as extreme weather, climactic changes, road works, building projects and energy outages. Cote d'Ivoire is served by three main telcos, Orange, MTN and Moov, plus several smaller operators which are active in the fixed broadband sector.

(September 26, 2022) www.commsupdate.com

Croatia

The Regulatory Agency for Network Operations (Hrvatska regulatorna agencija za mrezne djelatnosti, HAKOM) has invited applications for its multi-band spectrum auction which is scheduled to begin on 16 January. The sale includes 60MHz in the 800MHz band, 70MHz at 900MHz, 150MHz at 1800MHz, 120MHz in the 2100MHz range and 140MHz in the 2.6GHz band. Licenses will be valid for 15 years, with an optional five-year extension, and can be used for 2G, 3G, 4G or 5G networks. Applications will be accepted between 17 October and 4 November. There will also be up to 80MHz available in the 3.5GHz band for regional (county level) operations, though this will be allocated via a separate auction process. (October 13, 2022) www.commsupdate.com

Curacao

A company named TeraMobil has been granted a concession to provide telecommunications services including mobile telephony and internet access in Curacao, the country's Minister of Traffic, Transport and Urban Planning, Charles Cooper, confirmed to local media. The licensing permits TeraMobil to set up its own transmission towers, enter into agreements to use existing towers, and sign up customers. According to Cooper, a proposed national decree could lead to the introduction of mobile number portability (MNP), allowing customers of existing cellcos Digicel and UTS (Chippie) to switch networks while retaining their telephone numbers, while the government hopes that licensing new entrants will lead to improved competition and lower consumer prices.

(September 22, 2022) Curacao Chronicle

Cyprus

Turkcell has announced that it has been notified by the Turkish Republic of Northern Cyprus's (TRNC's) Information Technologies and Communication Authority (Bilgi Teknolojileri ve Haberlesme Kurumu, BTHK) that the 4G/5G frequency auction (scheduled to be held on 6 October) has been suspended due to an objection made to the Competition Board. The BTHK was planning to award 16 blocks of spectrum to the two existing mobile operators in the TRNC, KKTC Telsim and KKTCell. The 4G authorizations will have an 18-year validity and will require successful bidders to deploy 4G technology with minimum downlink of 30Mbps ten months after license award. Regarding 5G, the authorizations in the 700MHz and 3.6GHz bands will be valid for 15 years;

license holders will have three years to deploy 5G with minimum download speeds of 100Mbps to 60% of the population (95% within five years of license award). (October 7, 2022) www.commsupdate.com

Turkcell has revealed that its wholly-owned subsidiary Kuzey Kibris Turkcell (KKTCell), which operates in the Turkish Republic of Northern Cyprus (TRNC), is planning to participate in the forthcoming 4G/5G spectrum tender. The TRNC's Information Technologies and Communication Authority (Bilgi Teknolojileri ve Haberlesme Kurumu, BTHK) is planning to award 16 blocks of spectrum to the two existing mobile operators in the TRNC, KKTC Telsim and KKTCell. The 4G authorizations will have an 18-year validity and will require successful bidders to deploy 4G technology with minimum downlink of 30Mbps ten months after license award. Regarding 5G, the authorizations in the 700MHz and 3.6GHz bands will be valid for 15 years; license holders will have three years to deploy 5G with minimum download speeds of 100Mbps to 60% of the population (95% within five years of license award). (September 30, 2022) www.commsupdate.com

Ecuador

The Agency for Regulation & Control of Telecommunications (Agencia de Regulacion y Control de las Telecomunicaciones, ARCOTEL) has approved the framework for negotiating the renewal of Claro and Movistar's mobile concessions which expire in 2023. The new model establishes guidelines concerning a range of technical and commercial issues, including the fee for the new spectrum licenses, the operators' initial infrastructure deployment obligations, and the regulation of interconnection and network access. 'The negotiation of the concession contracts will be an important milestone for the government of President Guillermo Lasso, which will guarantee the continuity of mobile services while ensuring digital inclusion, connectivity, innovation, technological development and the provision of high quality services for the benefit of citizens', highlighted ARCOTEL. Claro (registered under its former brand name Conecel) and Telefonica-owned Movistar (similarly registered as Otecel) reportedly entered negotiations with the regulator over the new concessions in August last year.

(September 27, 2022) www.arcotel.gob.ec

The President Guillermo Lasso has announced his government plans to invest USD48 million by 2025 to expand telecoms connectivity throughout the country and reduce the digital divide. During the opening of a new Wi-Fi access point in Samborondon, Lasso revealed that 4G LTE coverage had been extended to 53 rural parishes in 17 provinces during the first 15 months of his administration, thanks to investment of USD9.8 million. In addition, there are now 6,000 free Wi-Fi points throughout the country – 886 deployed during Lasso's tenure – potentially providing internet access, online courses, ICT training and other services to 600,000 citizens. (September 7, 2022) www.commsupdate.com

Estonia

Estonia's three incumbent mobile network operators (MNOs) have pre-qualified for the forthcoming auction of 5G-capable spectrum in the 700MHz band. Telia, Elisa and Tele2 are in the running to expand their 5G frequency holdings after securing 3.5GHz licenses earlier this year. Six packets of 700MHz spectrum are on offer, with each carrying a reserve price of EUR1 million (USD972,000) and including 2×5MHz of spectrum. The sale is due to begin on 8 November and a maximum of two licenses can be won per bidder.

(October 17, 2022) www.commsupdate.com

The Consumer Protection and Technical Regulatory Authority (Tarbijakaitse ja Tehnilise Jarelevalve Amet, TTJA) has kicked off its latest 5G spectrum auction, offering six packets of frequencies in the 700MHz band (694MHz-790MHz). Each license includes 2×5MHz of spectrum and carries a reserve price of EUR1 million (USD993,000). A maximum of two licenses can be won per bidder. Applications for the auction are being accepted until 10 October, with the regulator expecting to begin the auction by mid-November and award licenses by the end of the year. The recent sale of licenses in the 3.5GHz band saw successful bids from Estonia's three incumbent cellcos, Telia, Elisa and Tele2.

(September 8, 2022) www.commsupdate.com

Germany

The Federal Network Agency (FNA, known locally as the Bundesnetzagentur) has set deadlines for MVNO-turned-MNO 1&1 Mobilfunk to end its dual role as a service provider (i.e. MVNO) and network operator. The company is required to end its sales operations as a service provider by the end of 2023 and all its business activities as a service provider by the end of 2025. 1&1, which has been a long-term presence in the MVNO market, acquired spectrum in the 2100MHz and 3.5GHz bands in 2019, and is on course to launch 5G services before end-2022. The watchdog explains: 'In principle, it is not possible for a mobile network operator to also act as a service provider for another network operator. 1&1 Mobilfunk was allowed to have a dual role for a

temporary period following the spectrum auction in 2019. The company has now been set deadlines to give up this dual role.' (October 24, 2022) www.commsupdate.com

The Federal Network Agency (FNA) has published for public consultation a position paper on the future allocation of certain mobile radio frequencies, with the aim of balancing the interests of established mobile operators with those of potential new market entrants. At the end of 2025 the allocations for the usage rights for spectrum in 800MHz, 1800MHz and 2600MHz bands will expire, and the regulator is aiming to give all market participants investment and planning security at an early stage as to how the frequencies will be made available again. The FNA's position paper outlines initial assessments of the further allocation procedure: due to the scarcity of frequencies, the FNA prefers an award process, specifically an auction, but for the 800MHz band, it proposes a 'frequency swap', whereby the existing usage rights would expire at the end of 2033, rather than 2025, while the usage rights for the 900MHz band would expire at the end of 2025 rather than 2033 and would then be assigned at the earlier date. The regulator states that this move would secure the existing LTE coverage based on 800MHz frequencies in the longer term, but would also enable newcomers to obtain spectrum in the range below 1GHz. Interested parties have until 21 November 2021 to submit comments on the position paper.

(September 26, 2022) www.commsupdate.com

Ghana

The Minister of Communications and Digitalization, Ursula Owusu-Ekuful, announced that all unregistered SIM cards will be blocked progressively from the end of October. According to the Ministry, the decision to delay account deactivations following the conclusion of the re-registration exercise on 30 September is not an extension to the deadline, but rather a 'temporary moratorium' to encourage customers to complete the process. In a statement, Mrs. Owusu-Ekuful said it was 'disconcerting' that almost ten million people had linked a SIM to their Ghana Card (stage one of the registration) but not completed the process by verifying their biometric data. 'There is no excuse for this since these individuals have their Ghana Cards, have started the process, and had ample opportunity to fully register their SIM Cards, including through the use of the self-registration app which is the first of its kind in the world,' the statement added. According to data released by the Ministry, approximately 28.96 million SIM cards had been linked to Ghana Cards as of 4 October, equivalent to 67.3% of the 42.75 million SIMs issued nationally. Only 18.93 million (44.3% of total issued) had been fully registered by the same date, however.

(October 18, 2022) www.commsupdate.com

The National Communications Authority (NCA) has announced a set of punitive measures designed to encourage mobile subscribers to complete the SIM registration campaign that began last November. Since 5 September, all four MNOs – AirtelTigo, Glo Mobile, MTN and Vodafone – are required to block outgoing calls and data services for a sequential batch of unregistered and partially registered numbers for 48 hours every week on rotational basis. In addition, subscribers who have not begun their registration will hear an automated campaign awareness message before their outgoing calls are connected. According to the directive, all mobile and data-only SIM cards which remain unregistered or partially registered after 30 September will be completely blocked and the holders will lose all services. However, these customers will then have another six months to complete the registration process, following which the numbers will be churned. Meanwhile, the telcos have been asked to configure their networks to allow Ghanaians living abroad to register their SIM cards using their passports instead of the Ghana Card until 31 December 2022, when they will also be required to regularize their registrations with the new ID card or suffer punitive measures. Customers who have completed stage one (linking their Ghana Card with their SIM) are encouraged to finalize the process by providing the necessary biometric data using the NCA's new self-registration app.

(September 6, 2022) www.commsupdate.com

Greece

The National Telecommunications & Post Commission (Ethniki Epitropi Tilepikoinonion kai Tachydromeion, EETT) has launched the process to select a new universal service provider. A consultation last month brought responses from just two firms, Nova and Wind, both of which are subsidiaries of United Group and are due to be merged to create a fully converged operation. Nova was chosen as universal service provider in 2016 and uses satellite technology to offer fixed voice and broadband services to 100% of the territory of Greece for an annual payment by the state.

(October 18, 2022) www.commsupdate.com

The National Telecommunications & Post Commission (Ethniki Epitropi Tilepikoinonion kai Tachydromeion, EETT) has opened a consultation process on the draft notice for the selection of a universal service provider. Admissions will be accepted until 11 October. In September 2016 Forthnet (now Nova) won a tender to provide universal services from 1 January 2017.

(September 13, 2022) www.commsupdate.com

Guatemala

The Superintendence of Telecommunications (Superintendencia de Telecomunicaciones, SIT) has confirmed that plans are underway to auction unused frequencies in the 2.5GHz-2.6GHz range, after receiving a number of requests from local mobile operators Claro and Tigo. Indeed, Comunicaciones Celulares (as Claro is legally known) has applied for 34 of the available 48 regional spectrum blocks. In contrast, Telecomunicaciones de Guatemala (Tigo) has applied for just five blocks, with a focus on larger spectrum allocations. In total 120MHz of spectrum will be distributed, with SIT boss Marco Antonio Baten Ruiz optimistic that the process will generate between USD30 million and USD50 million. The process could take between four and six months to complete, Mr. Ruiz warned. Going forward, the reorganization of the 700MHz band is said to be in its 'final stages', he added.

(September 8, 2022) www.commsupdate.com

India

5G newcomer Adani Data Networks – part of Indian conglomerate Adani Enterprises – has been issued a full Unified License, enabling it to provide any kind of telecom service, the Financial Express reports. Adani has repeatedly stated, however, that it has no intention of entering the retail telecom or consumer mobile sectors and is expected to utilize the authorization to simplify its operations and limit dependence on third parties. Adani Data Networks secured licenses for 26GHz frequencies in six circles – Andhra Pradesh, Gujarat, Karnataka, Mumbai, Rajasthan and Tamil Nadu – via the mass spectrum auction held earlier this year. The company plans to use the spectrum to provide private network solutions and enhanced cyber security for airports, ports and logistics, power generation, transmission, distribution, and various manufacturing operations.

(October 12, 2022) www.commsupdate.com

India's first 5G services were launched by Prime Minister Narendra Modi at the India Mobile Congress (IMC) event over the weekend, which also featured a raft of announcements and technology demonstrations from the country's vendors and service providers. Bharti Airtel was the first operator to launch 5G services on a commercial basis, with the telco switching on its 5G network in eight cities: Delhi, Mumbai, Varanasi, Bangalore, Chennai, Hyderabad, Nagpur and Siliguri. In a speech at the conference, Airtel Chairman Sunil Mittal added that 5G would be extended to most cities by March 2023 and would be available across the country by March 2024. The conference also saw Airtel demonstrate a virtual reality (VR) advertisement powered by 5G, as well as a VR and augmented reality (AR) education experience. Reliance Jio Infocomm (Jio), meanwhile, stuck to its plans to inaugurate its 5G services by Diwali (22 October), with the operator set to launch its own-branded 5G phone around the same time. Jio's 5G service will initially be available in Delhi, Mumbai, Kolkata and Chennai but will be extended nationwide by December 2023. For its part, cash-strapped cellco Vodafone Idea (Vi) offered little new information on its 5G deployment. The operator's rollout is understood to be awaiting the completion of its various fundraising initiatives and negotiations with vendors and infrastructure operators. Whilst Vi was not forthcoming regarding a timeline for its 5G launch, the cellco noted that it has developed a diverse range of India-specific use cases for the technology whilst it has also partnered with smartphone manufacturers – such as Samsung, Oppo and Vivo – to drive 5G ecosystem development. Vi's 5G demonstrations included a 5G SmartAgri solution that it says combines IoT, sensors, cloud and artificial intelligence (AI) technologies to deliver localized advice to small farms. Telecom Minister Ashwini Vaishnaw was quoted by the Economic Times as saying that state-owned operator Bharat Sanchar Nigam Limited (BSNL) was working towards the deployment of 5G in 200 cities within the next six months, with services to be launched as early as August 2023. According to the official, BSNL is targeting 80% to 90% coverage within two years. Separately, the minister disclosed that the government is planning to establish 100 5G labs across the country.

(October 3, 2022) www.commsupdate.com

The Communications Minister Ashwini Vaishnaw said that the new telecom bill is expected to be in place in 6-10 months. However, he emphasized that the government is not in a hurry. "Basis consultation process, we will create final draft. That draft will then go through committee processes of Parliament. Then it has to go (to) Parliament. I see a timeline of 6-10 months but we are not in a hurry," Vaishnaw was quoted as saying by news agency PTI. He said then when asked to comment about a timeline for implementation of the final bill. The Department of Telecommunications has set the deadline of October 20 on the draft bill. The bill seeks to replace three laws: the Indian Telegraph Act, 1885, the Indian Wireless Telegraphy Act, 1933 and the Telegraph Wires (Unlawful Possession) Act, 1950. However, with a view to ensuring smooth transition to the new framework and avoid any possible disruption, the bill provides for continuity of actions taken under the repealed laws.

(September 24, 2022) www.zeebiz.com

Indonesia

IndoTelko, citing a statement from the Ministry of Communication and Information (MCI, or KemKominfo), has reported that Indosat Ooredoo Hutchison (IOH) has walked away from the upcoming auction of 2.1GHz spectrum which is due to begin on 3 October. In an official notice dated 30 September, KemKominfo confirmed that three companies – IOH, Telkomsel (Telekomunikasi Selular) and XL Axiata – requested selection documents and submitted applications by 27 September 2022. However, having carried out an examination of the trio's applications per the Administrative Evaluation Stage (28 and 29 September), it declared that whilst Telkomsel and XL Axiata were declared 'complete', IOH had resigned from the process (through Letter Number 462/NOO/REL/22 dated 27 September 2022 regarding Notice of Not Continuing Participation in the Selection of Users of the 2.1GHz Radio Frequency Band for the Purpose of the Implementation of the 2022 Mobile Cellular Network). (September 30, 2022) www.commsupdate.com

The Ministry of Communications and Information (MCI) plans to sell off a spare 2×5MHz block of spectrum in the 2.1GHz band as it looks to push 5G deployments across the country. In an interview with the Jakarta Post, the head of the Indonesian Telematics Society (Mastel) Sigit Puspito Wigati Jarot described the 2.1GHz band as the "sweet spot spectrum" from the previous generation, as it could be used by operators to boost their capacity in the face of escalating data demand. While Sigit acknowledged that the total holding was fairly small at just 10MHz, the fact that it comprises blocks in the 1975MHz-1980MHz and 2165MHz-2170MHz frequency meant that "it is very likely that cellular operators will fight tooth and nail to win this part of the spectrum." Arif Angga, chair of Indonesian Internet Providers Association (APJII), noted that the technology has previously been used for mobile broadband but has now been designated a neutral frequency by the MCI, meaning that operators can use it to offer 2G, 3G, 4G or 5G services. XL Axiata has already confirmed that it plans to bid for the spectrum, while Smartfren and Indosat Ooredoo Hutchison have indicated that they may also attempt to procure the holding to gain a competitive advantage.

(September 11, 2022) www.developingtelecoms.com

Ireland

The Department of Environment, Climate and Communications (DECC) has published an update regarding the delivery of the country's National Broadband Plan (NBP). In doing so, the government body said that National Broadband Ireland (NBI), the company rolling out the new high speed fiber broadband network under the NBP, remains on track to pass 'in excess of 100,000 premises by the end of its third contract year (end of January 2023), having passed more than 85,000 premises at the end of September'. Also notable, the DECC confirmed that more than 20,000 premises had been connected to a high speed broadband service under the NBP as of 30 September 2022. A raft of detailed statistics regarding NBI's rollout and uptake were offered up by the DECC, confirming that by the end of September 2022 NBI had, among other things, installed 14.4km of fiber cable across the country. Meanwhile, with the company confirmed to have passed 85,411 premises across 25 counties with its infrastructure as of 30 September 2022, the number of premises available for order or pre-order of a service stood at 94,539 at that same date. With regards to uptake, meanwhile, NBI was confirmed to have completed 20,512 connections to its network as of the end of 3Q22. Broadband Connection Points (BCPs) are also being used to provide wireless connectivity as part of the NBP, to support remote working and connected communities by providing public access to free high speed broadband in advance of the main fiber deployment under the NBP. In this area the DECC confirmed that as of 30 September 2022 almost 280 public BCPs had been installed on the NBI network and were ready for connection. Meanwhile, BCPs at 470 schools within the 'Intervention Area' were also reported to have been installed and were 'ready for connection to the NBI network, (subject to connection by the Department of Education)'. (October 19, 2022) www.commsupdate.com

Ireland's Commission for Communications Regulation (ComReg) has published its response to a consultation on its plans for a short-term licensing framework relating to spectrum rights in the 700MHz and 2100MHz bands, while also setting out its final decision and draft regulations. Last month ComReg began consulting on proposals to issue short-term licenses for spectrum in the aforementioned bands with a view to avoiding 'significant consumer disruption'. With existing concessions in these bands scheduled to expire in October 2022, the regulator had hoped to have concluded a planned multi-band spectrum auction of 700MHz, 2100MHz, 2300MHz and 2.6GHz frequencies prior to that date. However, in July this year Ireland's High Court issued a stay order preventing the auction from proceeding, following an appeal against the regulator's plans for the sale process by Three Ireland. Having now received feedback on its plans from the nation's incumbent mobile network operators (MNOs) – eir, Three Ireland, Vodafone Ireland – the regulator said the trio supported its proposals 'in the main'. However, ComReg did note there was some disagreement with the proposed spectrum fees which the cellcos were said

to have called are 'excessive' and 'punitive'. Despite this, the watchdog did not accept the MNOs' view that short-term licenses have a nominal or low value, and as such confirmed it plans to set the fee for a 2×5MHz block of 700MHz spectrum at EUR410,000 (USD406,000) for a three-month period, while the fee for 2×5MHz block in the 2100MHz band will cost EUR212,000 for the same duration. In terms of next steps, ComReg said it will now seek consent from the communications minister to finalize the regulations as set out in the final draft form. Meanwhile, it has said that considering the imminent expiry of certain existing concessions, current licensees can now apply for the new short-term licenses, and the regulator will proceed to process any applications once the minister consents to making the appropriate regulations. (September 22, 2022) www.commsupdate.com

Jersey

Applications from companies interested in providing 5G services in Jersey have been invited by the Jersey Competition Regulatory Authority (JCRA). Applicants reportedly have until mid-November 2022 to submit their tenders, with the watchdog noting that companies 'will need to demonstrate their ability to provider Islanders with advanced services associated with the new technology'. According to the JCRA, once the tenders have been evaluated it will make recommendations for awarding licenses for up to three applicants. Meanwhile, the JCRA has also confirmed the remaining timeline for the licensing process, in which it envisages evaluating tenders and determining the outcome by the end of 2022. Subsequently it expects to announce the tender outcome and make recommendations for spectrum licenses to be issued by UK regulator Ofcom – which has responsibility for managing Jersey's radio spectrum – between January and March 2023. Finally, the JCRA anticipates that Ofcom will issue the concessions by June 2023, while the Jersey regulator will itself complete any necessary local telecoms licensing arrangements by that date. Commenting, JCRA CEO Tim Ringsdore said: 'Releasing the invitation to tender for 5G spectrum licenses marks a further important step in the process of ensuring Islanders have access to the next generation of mobile and wireless services. As would be expected, we've considered the views and examined the concerns of a wide range of stakeholders to reach this point. I'm confident that the packages being made available and application process for them are well-measured as a result.' (September 23, 2022) www.commsupdate.com

An update regarding proposed modifications to the Class II licenses assigned to Clear Mobitel (Jersey), Homenet, Jersey Airtel and Newtel has been published by the Jersey Competition Regulatory Authority (JCRA). Having previously issued a consultation on its proposed adoption of network sharing guidelines back in June 2022, the following month saw the regulator issue an initial notice of its intention to modify the four aforementioned operator's concessions in relation to those guidelines. As per a consultation on the matter, the JCRA said it had determined that it would be disproportionate to impose on these smaller operators a direct obligation to ensure that any network sharing arrangements comply with the guidelines; such an obligation is, however, being imposed on JT Jersey and Sure Jersey. While the modification to the four Class II licenses had been expected to take effect earlier this month, the JCRA has now confirmed it received a representation from one of the four companies regarding the matter – though it stopped short of identifying which one. As such, the regulator has said it will now consider the representation, while 'notice of its determination and of the status of such proposed modifications' are expected to be issued 'in due course'. (September 2, 2022) www.commsupdate.com

Kenya

Following the conclusion of Kenya's SIM registration program, the Communications Authority (CA) has announced that mobile operators have been given an additional 60 days to comply with the regulations, or face penalties. In February the regulator directed the country's mobile operators to ensure that the personal details of their subscribers were fully updated by 15 April 2022, in accordance with the Kenya Information and Communications (Registration of SIM Cards) Regulations 2015. However, in April the CA decided to extend the deadline by a further six months, to 15 October 2022, in order to give operators and subscribers sufficient time to register their details. At this date, the regulator claims that market leader Safaricom's compliance rate reached 93% and Airtel Kenya's stood at 91%, while a statement added that Telkom's case 'is still under review and more details shall be provided upon conclusion of the review'.

The CA reiterates that the additional 60 days is not an extension, but a period for mobile operators to take certain actions, including denial of service of unregistered SIM cards, to prompt further compliance. It will then undertake an audit to ascertain the level of compliance, and could then enforce penalties of up to 0.5% of an operator's annual gross turnover. (October 18, 2022) www.commsupdate.com

The government regained full control over Telkom Kenya after forking out KES6.09 billion (US$50.3m) for the 60% majority stake held by British investment

firm Helios Investment Partners. Sources speaking to Business Daily, said the equity firm has lost interest due to the failure to merge Telkom with Airtel, a move to create a more competitive entity against market leader Safaricom. Sources also said the government had priority to acquire the shares after the investment firm revealed its plans to quit the operator. The government wanted to keep the majority stake from being bought by an investor that did not align with the government's plans going forward for Telkom Kenya. Telkom Kenya is rooted in third place with around 5.2 million connections, up from 3.3 million in 2016. The merger between Telkom and Airtel collapsed in 2020 with both parties pointing the finger at regulatory delays.

(October 4, 2022) Ecofin Agency

Lithuania

The telecoms watchdog the Communications Regulatory Authority (Rysiu Reguliavimo Tarnyba, RRT) has confirmed the results of its auction of 5G mobile spectrum in the 700MHz band that started in May and concluded last month. The tender comprised the sale of one 2×10MHz block (713MHz-723MHz/768MHz-778MHz) and two lots of 2×5MHz (723MHz-728MHz/778MHz-783MHz and 728MHz-733MHz/783MHz-788MHz), with initial prices set at EUR5 million (USD4.9 million) and EUR3 million per lot, respectively. Telia Lietuva was the highest bidder, paying EUR23 million for the 2×10MHz block, while Tele2 bid EUR3.9 million and Bite Lithuania paid EUR3 million for the 2×5MHz allocations. Each winner will now be required to pay the initial part of the fee to the state budget within one month, following which the RRT will officially issue the permits to use the radio frequencies. Spectrum licenses are valid for an initial period of 20 years. Winning bidders are subject to certain rollout and service provision 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 of receiving their licenses, and in all five cities by 31 December 2023. An additional 5G spectrum auction comprising frequencies in the 3.5GHz band also concluded last month.

(September 9, 2022) www.commsupdate.com

Malawi

The Malawi Communications Regulatory Authority (MACRA) has officially awarded a mobile operating license to Malcel, as the new company seeks to compete with established mobile network operators Airtel and Telekom Networks Malawi (TNM). Capital Radio Malawi reports that the award of three licences to Malcel will enable it to install mobile phone towers, and provide mobile, ICT and broadband services. Malcel's founder and CEO Bonface Ndawala said that the company plans to begin the rollout of its network this year ahead of a scheduled launch of operations by October 2023. Malcel will invest around USD280 million in its operations and aims to roll out 1,350 mobile sites over five years. The operator is 60% owned by Eferio Communications, with 30% held by local company Bedrock Holdings and the remaining 10% by local and international shareholders. 'Let me take this opportunity to congratulate Malcel for successfully acquiring the mobile network license, it is my hope that this will induce competition in the telecommunications industry which will level the playing field and yield effective communication services for the ICT consumer,' said Minister of Information Gospel Kazako, adding: 'I urge Malcel to roll out their services with speed as consumers are anxious to see new services … My plea to Malcel is that you must not get into the trap of concentrating your operations in urban areas because rural people also need ICT services.' The development follows a report in May that another company – Nyasa Mobile – had announced its intention to roll out services by the end of this year. The firm, which is a subsidiary of Nyasa Manufacturing Company, has allegedly been in discussions with UK-based Vodafone Group about a potential strategic partnership. Numerous attempts by the government over the last 20 years to introduce much-needed competition to the mobile sector have so far failed. The market is characterized by high tariffs and poor service quality, with mobile penetration standing at just 59% of the population at the end of March 2022.

(October 26, 2022) www.commsupdate.com

Mexico

Víctor Manuel Perez Diaz, the President of the Communications and Transportation Commission of the Chamber of Deputies, has informed Milenio that his department will push to reduce the price of spectrum rights in Mexico, which he believes continue to hamper the deployment of 5G in the country. He commented: 'In terms of competition, we are far behind, and this situation cannot continue, especially when the 3.5GHz band is about to be tendered … it should not be considered a privilege, but a tool for knowledge, business and all kinds of transactions.' The article also quotes Alejandro Navarrete Torres, the Head of the Radio Spectrum Unit at the Federal Telecommunications Institute (Instituto Federal de Telecomunicaciones, IFT), who noted: 'We

have submitted proposals to the Ministry of Finance and the legislature to analyze the situation of the high cost of spectrum use in Mexico, which is up to 186% higher than the international average.' He suggested that the high prices and delayed spectrum tenders have cost the government around MXN4.5 billion (USD224.9 million) this year. In February 2022 the IFT approved its 'Annual Work Program 2022', paving the way for a 5G spectrum auction to take place this year. The eventual frequency sale will include the following bands: 600MHz, 1500MHz (L-band), 3.3GHz and 3.5GHz. An auction has not materialized however, with industry observers citing the high price of spectrum as a major stumbling block. In Mexico, successful bidders pay an upfront fee as well as an annual frequency usage fee for the duration of the concession; with licenses generally valid for 20 years the prices of the licenses are far higher than the equivalent concessions in other markets.

(October 18, 2022) www.commsupdate.com

Montenegro

Telecoms watchdog the Agency for Electronic Communications and Postal Services (EKIP) has launched the procedure for approving companies wishing to bid for spectrum in the 700MHz (694MHz-790MHz), 3.6GHz (3400MHz-3800MHz) and 26GHz (26.5GHz-27.5GHz) bands for use by public mobile networks. Operators have until 28 November to submit their applications to participate in the auction, which is tentatively scheduled to begin between 19 and 23 December. Issuance of final approval for use of the frequencies is expected in February or March 2023. (October 31, 2022) www.commsupdate.com

New Caledonia

The National Frequency Agency (Agence Nationale des Frequences, ANFR) has announced that the 700MHz frequency band will be freed up for mobile services by the end of October. Main national network broadcaster TDF began the process of releasing the spectrum earlier this month and the process is expected to conclude on 26 October, weather permitting. On 1 January 2023 state-owned national PTO Office des Postes et Telecommunications de Nouvelle-Caledonie (OPT-NC) will be assigned 700MHz spectrum and will use the frequencies for the continued rollout of 4G LTE and LTE-A services.

(September 30, 2022) www.commsupdate.com

New Zealand

Spark New Zealand hammered out a deal with the government for a direct allocation of 80MHz of 3.5GHz spectrum in return for earmarking additional funds for rural connectivity and agreeing to extend 5G services to more provincial towns. In a statement, the operator explained the non-binding agreement gives it long-term spectrum rights in the band from 1 July 2023. Spark committed to raising its funding to the Rural Connectivity Group by NZD24 million ($13.6 million) between 2023 and 2025, supporting the program's objectives to improve mobile coverage in rural areas and on state roads. CEO Jolie Hodson stated the agreement gives Spark "the certainty we need to continue investing in the rollout of 5G" across the country, "while delivering further connectivity improvements" in rural areas. "We look forward to working with government on the finalization of the binding management rights deed, and on the future allocation of 600MHz and mm-wave, which will be particularly important for rural 5G coverage." In May 2020, the government allocated Spark and 2degrees 60MHz each in the 3.5GHz band, and 40MHz to Dense Air. (October 20, 2022) www.mobileworldlive.com

Nigeria

The Nigerian Communications Commission (NCC) has published a Draft Information Memorandum for an auction of additional spectrum in the 3.5GHz band, following the successful sale of 5G licenses in that range in December last year. Interested stakeholders are invited to make written submissions by 11 November and participate in a public consultation on the draft to be held on 15 November, with the spectrum auction currently scheduled to take place on 19 December. The regulator plans to auction off the remaining two lots of 100MHz TDD spectrum in the 3.5GHz band, ranging from 3400MHz-3500MHz and 3600MHz-3700MHz. Each lot has a reserve price of USD273.6 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. The NCC has placed a cap of 100MHz as the maximum amount of spectrum that an operator can hold in the 3.5GHz band. Winning bidders will be required to

launch commercial 5G services within twelve months of the effective date of the license, and coverage should reach at least two states in each of the country's six geo-political zones within two years. MTN Nigeria and newcomer Mfab Communications emerged as the winners of last December's 3.5GHz spectrum auction, after each paying USD273.6 million for one lot of 100MHz TDD spectrum. Following the conclusion of the assignment stage, MTN selected spectrum in the 3500MHz-3600MHz band for an additional USD15.9 million, and the second lot (3700MHz-3800MHz) was assigned to Mafab. (October 24, 2022) www.commsupdate.com

Norway

The National Communications Authority (Nasjonal kommunikasjonsmyndighet, Nkom) has announced that 93.6% of the population now have access to broadband at speeds of 100Mbps or more, up from 90.4% a year earlier. With the regulator publishing a data update showing the development of broadband coverage in the country, among the other highlights was the fact that the availability of gigabit speeds had also increased, reaching 92.5% of the population at mid-2022, compared to 86.5% a year earlier. Of further note, Nkom reported that as of 30 June 2022 45.6% of the population had access to downlink speeds of 100Mbps or more via the 5G infrastructure rolled out by one of the nation's mobile operators, while access to speeds of at least 30Mbps via 5G stood at 65.7%. What the watchdog referred to as 'basic' 5G coverage was, meanwhile, up significantly year-on-year, reaching 81.5% at mid-2022, compared to 23.3% a year earlier. Despite the improvements in access to faster speeds, efforts will reportedly continue with a view to achieving the government's stated aim of having 100Mbps downlink speeds available to all Norwegians by 2025. To that end, Nkom director Pal Wien Espen was cited as saying: 'It is gratifying that more households have access to satisfactory broadband, but there are still too many who fall outside the digital community. It is an important national task to get everyone involved, and both the industry and the authorities must take a step forward in the next few years.'

(September 30, 2022) www.commsupdate.com

The regulator Nkom flagged plans to allocate frequencies in the 26GHz and 1500MHz bands for 5G services in 2023, although it noted that the timing of the award will depend on a number of factors. John-Eivind Velure, a director in the spectrum management department at Nkom, indicated there was sufficient demand for the bands from several companies. Nkom plans to publish a more detailed timetable later this year, once it has worked out how the allocations will be organized and whether or not certain coverage obligations should be attached to licenses. The two bands were among a total of five under consideration for 5G in Norway. Velure noted there has been little interest to date in the 738MHz to 758MHz and 40.5GHz to 43.5GHz bands, while further assessments are required for 2.3GHz. Norway allocated frequencies for 5G in the 703MHZ to 733MHz and 758MHz to 788MHz bands in 2019, and the 3.6GHz band in 2021.

(September 5, 2022) www.mobileworldlive.com

Philippines

The President has signed the Subscriber Identity Mobile (SIM) Card Registration Act into law, according to the Office of the Press Secretary. The new law requires all public telecommunications entities (PTEs) to register all SIM cards with a valid photo ID as a prerequisite to their sale and activation. It also directs telcos to disclose the information contained in the SIM card registration, should a court ask for it. Previously, the introduction of mandatory SIM registration was ratified by the House of Representatives and the Senate in February 2022 but was vetoed by then-President Rodrigo Duterte in April. According to the President's spokesperson, the President 'wanted to ensure that new laws are consistent with constitutional provisions guaranteeing individual privacy and free speech.'

(October 11, 2022) www.commsupdate.com

Poland

Polish mobile network operator (MNO) Polkomtel, which trades under the Plus brand, has been told it must pay PLN847 million (USD174 million) to renew its spectrum licenses in the 1800MHz band for a further 15 years. The renewal covers three separate licenses, which expire at the end of this year and together include 2×19.8MHz of paired frequencies. The operator uses the spectrum for 2G and 4G services. According to a report, the Office of Electronic Communications (Urzad Komunikacji Elektronicznej, UKE) based the renewal fee on the price of 1800MHz spectrum acquired by rivals Play (P4) and T-Mobile in 2013, adjusted for inflation. Plus holds the most spectrum of any Polish MNO, both in the 1800MHz band (39.8% of the total available) and across all bands combined (36.4% of the total available). (October 24, 2022) telko.in

Polish telecommunications regulator UKE has prepared a draft decision on the cost renewing licenses for the 2,100 MHz spectrum, reports Telko.in. According to the

proposal, P4, trading under the Play brand, will pay PLN 351.6 million; Orange Poland and Polkomtel, trading under the Plus brand, will spend PLN 351.6 million each; and T-Mobile Poland will pay PLN 340.0 million. The licenses will be valid until the end of 2037. The difference in the amounts is caused by the fact that the license for Play will be valid longer by one day, and T-Mobile Poland submitted its application on the issue in 2020. All the operators currently own 2x14.8 MHz blocks in this spectrum band, which is used for 5G, LTE and UMTS technologies.

(September 12, 2022) www.telecompaper.com`

Romania

Romania's Competition Council has announced that it will investigate the proposed takeover of telecom provider iNES Group by Cloudsys Telecom. In a statement, the antitrust body said it will consider the transaction in accordance with the provisions of the 1996 Competition Law and invite comments from all interested parties by 17 October. Founded in 1995, iNES Telecom was an early ISP pioneer in Romania and currently provides internet access, telephony, IPTV, data center, data transport and IT services in Bucharest and surrounding areas. Meanwhile, Cloudsys Telecom is authorized to provide terrestrial public connections with access to a fixed location or limited mobility, as well as phone services for public use, leased line, broadcast and internet services. The company is reportedly owned by Enjoy Smart Solutions.

(September 23, 2022) www.commsupdate.com

Following consultations on the specifications for Romania's upcoming 5G license auction in the 700MHz, 1500MHz, 2600MHz and 3400MHz-3800MHz frequency bands, the National Authority for Management & Regulation in Communications (ANCOM) has proposed several amendments to its original terms in response to operators' appeals. ANCOM has proposed to extend the validity of licenses in the 700MHz, 1500MHz and 3400MHz-3800MHz bands to 25 years (from the previously suggested 20 years), whilst keeping the proposed auction starting bid value unchanged at around EUR693 million (USD692 million). Furthermore, the regulator's latest draft document (see link below for the full text in Romanian) proposes a 30% reduction in the annual fees for the usage of new spectrum. Orange, Vodafone and Telekom Romania Mobile had asked ANCOM to reduce annual spectrum fees so that they could build networks faster and meet objectives of Romania's national strategy on service coverage and quality. Additionally, ANCOM scrapped a requirement for letters of bank guarantee ('performance guarantees') regarding license payments following requests from Orange and Telekom Romania Mobile. In another noteworthy concession, requested by Orange and Vodafone, ANCOM's latest draft plan stated that the mandatory number of covered localities under the new licenses will be reduced. The ANCOM previously proposed that the winning bidders ensure broadband coverage of most urban areas, existing motorways, international airports and modernized railways, as well as 600 specific localities identified as having no or poor mobile coverage. GCD shows that 2600MHz license expiry will be aligned with the existing rights in that band, which expire in April 2029. TeleGeography notes that ANCOM has scheduled an online Advisory/ Consultative Council meeting for 14 September 2022 for further discussion of the auction bidder selection procedure, the new spectrum tariffs and the general organization of the auction, with all interested parties invited to participate. (September 9, 2022) Economica.net

The National Authority for Management and Regulation in Communications (ANCOM) has requested opinions on the potential use of the 26GHz band for the provision of broadband electronic communications services in the country. In a statement, it said it is seeking to ascertain whether there is definite interest in providing such services using 26GHz spectrum in either the short-term (2023-25) or medium-term (2026-28). Stakeholders are invited to submit their comments by 16 September. ANCOM also pointed out that the 26GHz range (24.25GHz-27.5GHz) is made up of three other independent frequency bands, which are very different in terms of their historical use and regulation. These are the 24.25GHz-24.5GHz, 24.5GHz-26.5GHz and 26.5GHz-27.5GHz bands, with the first being licensed to Orange Romania, Vodafone Romania and SN Radiocomunicatii for the operation of radio relay links.

(September 2, 2022) www.commsupdate.com

Russia

The deployment of 5G networks is planned on the 4.4-4.99 Ghz band in Russia starting from 2024, reports Telecomdaily.ru citing the country's Deputy Prime-Minister Dmitriy Chernyshenko. The equipment will be designed by state-owned corporation Rostec, using local systems. Rostec initially had planned to start production of the equipment in 2023, with commercial deliveries from 2024. That roadmap is currently under revision as operators remain still more interested in supporting LTE networks. Russian operators could face problems developing their networks using home-spun equipment because they have multi-vendor equipment on their

networks. Using different equipment could create less stability, market watchers say. Operators are also not so positive about the deployment of 5G networks using 4.4-4.99 GHz spectrum, saying infrastructure equipment will in this case be twice as expensive. The offering of end-user devices able to work on those bands will also be poorer.

(September 12, 2022) www.telecompaper.com

Slovenia

A parliamentary home affairs committee in Slovenia has endorsed a bill which will finally transpose an EU directive on electronic communications. The EU Electronic Communications Code (EECC) should have been implemented by all member states back in December 2020 and Slovenia has so far been fined EUR800,000 (USD798,800) by the EC for the delays, The Slovenia Times writes. If enacted, the bill will replace the country's Electronic Communications Act of 2004, otherwise known as ZEKom. Some of the aspects covered by the update include network security measures, the use of public funds for broadband rollouts and market analyses.

(September 16, 2022) www.telecompaper.com

Spain

The National Commission for Markets and Competition (Comision Nacional de los Mercados y la Competencia, CNMC) has initiated disciplinary action against Xfera Moviles, a subsidiary of Grupo MASMOVIL, regarding its recent acquisition of regional operator Ahimas (Ahi+). As per the regulator's paperwork, Xfera did not notify the CNMC regarding its takeover of the smaller operator, thus breaching of the Law for the Defence of Competition. On 29 March 2022 the CNMC informed MASMOVIL that it needed to submit the deal for regulatory approval, as the deal would mean that MASMOVIL would exceed the sector's market share threshold. On 18 May the CNMC issued a first phase authorization – with no commitments – but the watchdog has now accused the telco of 'jumping the gun' by concluding the deal without the proper authorizations in place. The CNMC expects its investigation into the deal to close within three months. In December 2020 MASMOVIL agreed a EUR115 million (USD140 million) takeover fee for Ahimas; the deal was understood to have been quietly concluded in June 2022. TeleGeography notes that the rural telecoms specialist provides a full suite of telecoms services in regional locations across Extremadura, Castilla-La Mancha, Andalusia and Comunidad Valenciana. Ahimas was previously owned by Inversiones Locua, but MASMOVIL had held an acquisition option since 2016. (October 7, 2022) www.commsupdate.com

The Ministry of Economic Affairs and Digital Transformation, acting via the Secretary of State for Telecommunications and Digital Infrastructures, has launched a public consultation regarding its planned auction of 5G-suitable spectrum in the 26GHz band. The government proposes to offer twelve 1×200MHz nationwide licenses alongside 38 regional concessions. All licenses will be valid for 20 years (and extendable for a further 20 years).

(October 6, 2022) www.commsupdate.com

Telecom regulator, the National Commission for Markets and Competition (Comision Nacional de los Mercados y la Competencia, CNMC), has issued a EUR5 million (USD5 million) fine to Telefonica for its failure to fulfil its obligations relating to the takeover of pay-TV operator DTS (formerly Sogecable). The commitments – designed to maintain competition in the domestic market – were extended by the CNMC in July 2020, and in a statement the regulator noted: 'Among the obligations breached are those related to the information that Telefonica has to send so that it is possible to analyze the effective replicability of the retail commercial offers that include their own premium channels in their wholesale pay-TV offer.' The CNMC noted that it had issued the fine after the telco failed to satisfactorily convince it that it had complied with its commitments. The regulator said though, that Telefonica can appeal the decision in the High Court within two months of the notification.

(September 20, 2022) www.commsupdate.com

South Africa

Khumbudzo Ntshavheni, South Africa's Minister of Communications and Digital Technologies, has published a draft policy document proposing the trading of radio frequency spectrum for the first time. The long-awaited proposal is included in the 'Next Generation Radio Frequency Spectrum Policy for Economic Development (Spectrum Policy)', that was issued on 8 September. With regards to spectrum hoarding, the document states: 'The spectrum policy supports an efficiency in utilization of spectrum resources, and given the scarcity and value of spectrum to national development, hoarding of spectrum is not permissible … The regulator should put measures in place that prevents hoarding of spectrum including mechanisms for the implementation of the "use it or lose it" principle … Licensed spectrum that is unused for a period of

more than 24-months will be subjected to the use it or lose it principle.' The document continues: 'To promote economic development, market-based approaches such as spectrum trading, spectrum sharing, dynamic spectrum access use, and spectrum subletting and/or sharing between licensees which ensures public policy gains in the use of spectrum are permitted with prior approval of the regulator. The regulator must set standard operating rules, and terms and conditions applicable for trading, sharing, and sub-letting of spectrum.'

(September 9, 2022) www.commsupdate.com

Sweden

The Swedish Post and Telecom Agency (Post & Telestyrelsen, PTS) says the country could fail to reach its target for fixed broadband coverage by the end of 2025. The government had hoped to have a minimum 100Mbps connection available to 99.9% of the population by that date, but the regulator now says this will be a 'major challenge'. PTS is now studying to what extent satellite and mobile broadband networks will be able to meet the minimum speed target in isolated areas. On a positive note, the watchdog says a goal of having a 1Gbps service available to 98% of Swedes will be met thanks to continued government funding of rural fiber rollout projects, though it could be a few years after the end-2025 target date. A target of minimum 30Mbps speeds to 100% of the population is likely to be achieved thanks to mobile and satellite broadband coverage. Dan Sjoblom, PTS Director General, commented: 'It is very gratifying that the government's broadband support makes a difference throughout the country. Continued work with broadband support, in combination with cooperation with the industry and regional and local actors, is steadily bringing us closer to the broadband goals.' (October 12, 2022) www.commsupdate.com

The Post and Telecom Agency (Post & Telestyrelsen, PTS) has opened a consultation into proposed changes to minimum coverage requirements associated with licenses in the 900MHz, 2100MHz and 2.6GHz bands. The regulator is looking to alter the terms of 2100MHz and 2.6GHz concessions to ensure that main railway routes are included in operator rollouts. In the 900MHz band, meanwhile, one license of 2×10MHz will contain additional coverage obligations to ensure the availability of mobile broadband services on rural roads and rail lines. PTS now says it will involve regional authorities in the process to define the areas which will be included. A combined auction of 900MHz, 2100MHz and 2.6GHz spectrum is expected to be held in the third quarter of 2023, with existing licenses due to expire at the end of 2025. (October 5, 2022) www.commsupdate.com

Tanzania

The Tanzania Communications Regulatory Authority (TCRA) has concluded the auction of mobile spectrum licenses, earning a total of USD 187.5 million. TCRA said that five bidders participated in the auction, which was held on 11 October. Four bidders, namely Airtel, Vodacom, Tigo and Viettel which trades as Halotel, won a total of eleven blocks in different bands. No blocks remained unsold in the 700 MHz, 2,300 MHz, 2,600 MHz and 3,500 MHz bands.

(October 13, 2022) www.telecompaper.com

Thailand

Three of the five board members of the National Broadcasting and Telecommunications Commission (NBTC) are looking to apply tough remedies to the controversial merger deal between True Corporation and Total Access Communication (DTAC). According to an unnamed industry source, the board will begin by establishing whether or not it has the authority to approve or reject the merger outright. If the watchdog is unable to block the merger, the NBTC will seek to impose tougher measures on the tie-up, with some commissioners believing that the proposed draft measures are 'too weak'. As per the report, the draft prohibits the merger of True Move H Universal Communication (TUC) and dtac TriNet (DTN) – the mobile units of the respective companies – for a period of three years. The two units will also face a three-year ban on spectrum sharing, and will be forced to allocate 20% of their network capacities for MVNO use. However, the tougher measures are likely to see consolidation/spectrum sharing banned indefinitely. In November 2021 True Corp and DTAC – Thailand's second and third-largest mobile operators, respectively – agreed to merge their operations as they seek to topple Advanced Info Service (AIS) and create a new market leader. Thai agribusiness conglomerate Charoen Pokphand Group controls True Corp, while Norwegian telco Telenor is DTAC's largest shareholder. When completed, the enlarged player is likely to be worth an estimated USD8.6 billion.

(October 18, 2022) The Bangkok Post

Timor Leste

The government of Timor-Leste has allocated USD14.5 million to purchase Brazilian operator Oi's majority stake in Timor Telecom (TT) next year. Finance Minister Rui Gomes said that negotiations with Oi are ongoing and that a 'positive' result is expected, adding that the funds for the potential purchase have been earmarked as part of the General State Budget for 2023. The transaction involves a 54.01% shareholding in TT, controlled by Telecomunicacoes Publicas de Timor (TPT), in which Oi owns 76.14%, in addition to a direct 3.05% stake held by PT Participacoes SGPS. The Timorese government currently already holds a 20.59% stake in TT, with the remaining shareholders being VDT Operator Holdings (17.86%) and Timorese businessman Julio Alfaro (4.49%). In December 2016 Oi announced that, pursuant to its judicial reorganization plan, it had requested court authorization for the sale of its direct and indirect stake in TT to Investel Communications for USD36 million, in addition to the payment of the operator's debts to Oi in the amount of USD26 million, although it appears that this transaction failed to progress.

(October 4, 2022) News Agency Lusa

Trinidad and Tobago

The Telecommunication Services of Trinidad and Tobago (TSTT), and its fiber ISP unit AMPLIA Communications, are seeking permission to challenge an Appeal Court ruling at the Privy Council. The companies have filed an application for conditional leave to challenge the ruling of the local court in a lawsuit brought by the Telecommunications Authority of Trinidad and Tobago (TATT) in March 2021. That month the watchdog filed a claim against TSTT and AMPLIA seeking to recover TTD26.467 million (USD3.816 million) in unpaid contributions to the Universal Service Fund (USF). The hearing – which has already been upheld and then reversed – was due before the Appeal Court on Monday 26 September, but has now been adjourned to 8 November. The Privy Council (JCPC) is the court of final appeal for the UK overseas territories and Crown dependencies. (September 30, 2022) NewsDay

Trinidad and Tobago-based telco Flow is poised to extend fiber broadband services to Bloody Bay, Parlatuvier and L'Anse Formi on Tobago as part of a Universal Services Fund (USF)-backed rollout administered by the Telecommunications Authority of Trinidad and Tobago (TATT). Robindranath Maharaj, Flow's Director of Technical Operations, commented: 'Our teams have been here, working on the ground to get your areas ready for connectivity. To date, we have hundreds of homes and businesses ready for connection. Our technical plans will see us deploying over 45km of fiber.'

(September 1, 2022) www.commsupdate.com

United Kingdom

British telecoms regulator Ofcom has announced that it has decided to make changes to the technical conditions of mobile licenses held by O2 and Vodafone in response to requests by the two cellcos. In a press release regarding the matter, Ofcom confirmed that it will update the technical conditions of concessions held by Vodafone in the 900MHz, 1800MHz, 2100MHz and 2.6GHz bands. These variations will amend the licenses with updated parameters 'to reflect the latest technologies' and will remove technology restrictions within the licenses making them technology neutral. Meanwhile, the regulator also confirmed it will remove a restriction placed on O2's unpaired spectrum in the 2.6GHz band. This variation will remove a restriction on the 5MHz block within the mobile operator's unpaired spectrum allocation adjacent to Vodafone's unpaired allocation. According to the regulator, this will allow O2 to use an unrestricted 20MHz of spectrum compared with the 15MHz currently available. Meanwhile, Vodafone's license will be similarly varied.

(September 23, 2022) www.commsupdate.com

UK regulator Ofcom announced a probe into Amazon, Microsoft and Google's respective positions in cloud services, alongside a separate investigation into the role of communications apps and connected devices in the country. Starting with cloud, Ofcom stated its probe will explore if digital communications markets are working well for people and businesses in the UK, as the sector continues to gain more prominence. Ofcom explained cloud computing uses remote servers to offer a range of services and it has become an essential part of how products are delivered to telecoms users as well as those consuming TV, radio and audio content. The probe will see Ofcom launch a market study in the coming weeks looking at the three largest providers of cloud services, described by the regulator as "hyperscalers", to formally assess how the market is operating. It said the trio held 81 per cent of cloud market share in the UK, in a segment worth £15 billion in the country. "We will examine the strength of competition in cloud services generally and the position the three hyperscalers hold in the market," Ofcom stated. It will further consider any market features which might limit innovation and growth in this sector by making it difficult for other companies to enter. Once it concludes the study, it will

decide whether further action is required, which could include recommendations to the government to change policy, take competition enforcement action or refer the case to the Competition and Markets Authority. In addition, the regulator aims to commence a broad probe into how services including WhatsApp, FaceTime and Zoom are affecting traditional calling and messaging. It said it wants to understand "whether any limitations on their ability to interact with each other raises potential concerns". Devices including smart speakers and connected TVs will also fall under Ofcom's gaze as it seeks to judge whether the way the sector operates would require a more formal examination.

(September 22, 2022) www.mobileworldlive.com

United States

The Federal Communications Commission (FCC) has announced that its Enforcement Bureau has reached a settlement with Truphone to resolve the Commission's Notice of Apparent Liability issued against the MVNO earlier this year for 'failing to disclose accurate ownership stakes held by foreign entities and transferring control of FCC licenses and international section 214 authorization without Commission approval to do so'. In addition to admitting the violations, the company will pay a civil penalty of USD600,000 and enter into a robust compliance plan. The agreement requires any stake in Truphone held by Alexander Abramov, Alexander Frolov, or Roman Abramovich to be divested. (Note: While Truphone is an MVNO, FCC documentation notes that it indirectly holds a PCS license in Butte, Montana, via iSmart Mobile, which is a subsidiary of SmartCall. Because the company is in possession of a common carrier radio license, the watchdog has been able to hit it with a substantial fine.)

(October 24, 2022) www.commsupdate.com

The Department of Commerce's National Telecommunications and Information Administration (NTIA) has announced that it has awarded 23 grants as part of the Tribal Broadband Connectivity Program (TBCP). These new grants – totaling more than USD601.6 million – bring the total of the program to USD1.35 billion awarded to 94 Tribal entities. The new grants are being awarded in fifteen states: Alaska, Arizona, California, Colorado, Kansas, Minnesota, Montana, North Dakota, Nebraska, Oklahoma, Oregon, Texas, Utah, Washington and Wisconsin. In total, the TBCP – which forms part of the Biden-Harris Administration's Internet for All Initiative – will provide grants worth almost USD3 billion to Tribal entities. The funds are made available from the Consolidated Appropriations Act, 2021 (USD980 million) and President Biden's Bipartisan Infrastructure Law (USD2 billion). Additional grants will be announced on a rolling basis.

(October 12, 2022) www.commsupdate.com

The Federal Communications Commission (FCC) has announced that its Public Safety and Homeland Security Bureau has added equipment and services from two entities – Pacific Network Corp (and its wholly-owned subsidiary ComNet USA) and China Unicom Americas – to its 'Covered List' of communications equipment/services providers that have been deemed a threat to national security. FCC chairwoman Jessica Rosenworcel commented: 'Today we take another critical step to protect our communications networks from foreign national security threats. Earlier this year the FCC revoked China Unicom America's and PacNet/ComNet's authorities to provide service in the United States because of the national security risks they posed to communications in the United States. Now, working with our national security partners, we are taking additional action to close the door to these companies by adding them to the FCC's Covered List.' The so-called Covered List was first published in March 2021 and includes companies whose activities pose an unacceptable risk to national security of the US. PacNet, ComNet and China Unicom are all said to be 'subject to the exploitation, influence and control of the Chinese government'.

(September 21, 2022) www.commsupdate.com

The Federal Communications Commission (FCC) has announced that it is ready to authorize USD791.604 million via the Rural Digital Opportunity Fund (RDOF). The funding will be issued to six providers to bankroll new broadband deployments to an estimated 350,000 locations across 19 states. The top three states receiving funding are Illinois (USD212 million), Arizona (USD140 million) and Iowa (USD113 million). To date, the RDOF program has provided more than USD6 billion in broadband financing to 47 states. The RDOF Phase I auction (Auction 904) commenced on 29 October 2020, having attracted a total of 386 qualified bidders. In the event, the regulator awarded a total of USD9.2 billion in funding to 180 bidders. A total of 5.2 million unserved homes and businesses – around 99% of the locations included in the auction – will gain access to high speed broadband services as a result of the RDOF.

(September 1, 2022) www.commsupdate.com

Uruguay

The Senate has approved an amendment to Article 56 of the Law on Audiovisual Communication Services to allow cable TV operators to also offer fixed broadband services. The move will enable other companies to compete with state-owned national telecoms operator Antel, which was previously the only operator permitted to supply broadband services over fixed telecoms networks, as Article 56 barred cablecos from providing internet, phone and data transmission services to prevent cross-ownership. The Congress is still debating some proposed changes to other areas of the media legislation, but if these are approved and then signed off by President Luis Lacalle-Pou as expected, then private cable operators will have the right to request a license to offer fixed broadband services starting in January 2023. However, the amendment excludes operators providing TV services via satellite. The development comes after the Regulatory Unit of Communications Services (Unidad Reguladora de Servicios de Comunicaciones, URSEC) authorized five cable operators to offer broadband internet services in June. Cable Montevideo (Montecable), Tractoral (TCC), Korfield, Praimar and Riselco (Nuevo Siglo) were permitted to offer broadband to consumers after filing a legal action challenging the constitutionality of Article 56. In 2016 the Supreme Court of Justice ruled in their favor but the article remained in place due to lack of political support for its elimination.

(October 10, 2022) Bnamericas

Zambia

Airtel Zambia has completed its purchase of 60MHz of additional spectrum in the 800MHz and 2600MHz bands for a total consideration of USD29 million (payable in local currency), the cellco's parent company, Airtel Africa, confirmed. A statement from the group noted that the airwaves would be used to support the Zambian unit's network expansion for mobile and fixed wireless services – including a 5G rollout – and provide 'significant capacity' to accommodate growing demand for data in the market.

(October 17, 2022) www.commsupdate.com

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